Support to the Evaluation of Regulation (EC) No 648/2004 (Detergents Regulation)

Written by Sophie Upson, Carl Clarke
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Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs

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1 Executive summary

1.1 Study background and approach

The Detergents Regulation (Regulation (EC) No 648/2004[1]) establishes common rules designed to achieve the free movement of detergents and surfactants across the EU, while at the same time providing a high degree of protection to the environment and human health. As a regulation, it is directly applicable law in all 28 Member States (MS) of the European Union (EU) and it is also applicable to the other countries of the European Economic Area (i.e. Norway, Iceland and Lichtenstein).

The Detergents Regulation has not undergone a full evaluation since its entry into force in October 2005 and so, in the context of the Commission's Better Regulation Strategy, an ex-post evaluation of the legislation is now considered vital. Thus, in December 2016, the European Commission's Directorate General for the Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) commissioned Risk & Policy Analysts Ltd (RPA) and Mayer Brown LLP to support its evaluation of the Regulation. It was anticipated that the resulting study (as presented in this report) would contribute to the improvement of the Regulation's implementation or feed into an impact assessment study for a possible amendment or re-cast of the Regulation. The overarching objective of the study was to assess the **effectiveness, efficiency, relevance, coherence and EU-added value of the Detergents Regulation and its amendments[2]**.

The study approach has comprised a detailed literature review covering inter alia market reports and databases, such as Eurostat; reports from the European Commission and authorities/agencies in the MS; academic literature and grey literature. It has also involved a wide-ranging consultation including an Open Public Consultation (OPC) for organisations[3] and citizens, a survey designed specifically for SMEs (small and medium sized enterprises), telephone interviews with relevant organisations, targeted emails and a workshop.

1.2 Relevance

The study has shown that although the objectives of the Detergents Regulation (i.e. to achieve the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health) are still relevant considering the evolution of societal needs and technological developments, there are

[1] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32004R0648

[2] Commission Regulation (EC) No 907/2006 of 20 June 2006; Regulation (EC) No 1336/2008 of the European Parliament and of the Council of 16 December 2008; Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009; Commission Regulation (EC) No 551/2009 of 25 June 2009; and Regulation (EU) No 259/2012 of the European Parliament and of the Council of 14 March 2012.

[3] including public authorities and bodies responsible for implementing and/or enforcing the Detergents Regulation; companies (large and small); industry associations and sector groups representing companies in the detergents sector; trade unions; environmental and consumer NGOs; and universities and research institutes.

some areas where the Regulation has not kept pace and/or where new issues have emerged that could potentially be addressed within the framework of a revised Regulation.

For instance, multiple industry representatives indicated that innovative communication methods (e.g. QR codes[4]) are now available that could help to reduce the amount of information presented on product labels. Not only could this help to improve the clarity of information provided to consumers, it may also alleviate the administrative burden for the detergents industry. It was also noted that the Regulation is not well adapted to the refill sale of detergents (for example, it is not clear who is responsible for the correct labelling of products that have been refilled by a consumer) and that the dosing instructions required under Annex VII B need to be updated, e.g. to take account of modern load sizes and new concentrated/pre-measured detergent products.

Furthermore, it is not always clear to industry whether certain products available on the market are included within the Regulation's scope. For example, there is some confusion as to whether microbial cleaning products (with a claimed cleaning effect based on the action of bacteria) fall within the scope of the Detergents Regulation. The Regulation's scope may also need to be clarified for washing eggs/balls, cleaning wipes/scouring pads impregnated with detergents, scent booster products, related household products (e.g. waxes, polishes and textile dyes), and some 'do-it-yourself' cleaning products.

1.3 Coherence

In terms of gaps, our research has shown that there are some products (that could potentially be considered to be detergents) currently available on the EU/EEA market that fall outside the scope of the Detergents Regulation (e.g. products for washing and cleaning animals, air fresheners and scent boosters, and surfactant-free cleaning enhancers).

Consumer organisations, environmental non-governmental organisations (NGOs) and citizens, in particular, were concerned at some of the ingredients that are still permitted for use in detergents. From the perspective of human health, consumer organisations commented that carcinogenic, mutagenic and reprotoxic substances (CMRs)[5] and substances of very high concern (SVHCs) should not be permitted for use in detergents and that any hazardous nanomaterials (if present) should be labelled or removed from detergent products. From the perspective of the environment, the use of microplastics in detergents was seen as a particularly important issue that remains to be addressed. Other substances identified as a concern for the environment included persistent, bioaccumulative and toxic substances (PBTs); hormone disruptors; perfumes; complexing agents; brighteners and colourants. Furthermore, some consumer organisations were concerned that a lack of detailed ingredient lists on products restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain ingredients.

MS authorities and NGOs suggested some additional information that should potentially be included on product labels, including the scope of application/intended use for the product, security advice (e.g. "keep out of reach of children") and a suggestion to use the lowest recommended washing temperature. Two consumer NGOs also suggested that products could be labelled with information that would enable consumers to compare products based on their environmental impacts.

[4] i.e. matrix barcodes that are machine-readable and that contain information about the item to which they are attached.

[5] It should be noted that CMRs are restricted in detergents for consumer use under Annex 17 of REACH.

Nearly two thirds (64%) of organisations that responded to the OPC identified overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation. During the consultation, the principal areas of overlap/inconsistency were identified as being between:

- **the Detergents Regulation and Biocidal Products Regulation.** Several stakeholders noted that there is an overlap between the Detergents Regulation and Biocidal Products Regulation in the sense that some products would need to comply with the provisions (notably the labelling provisions) of both. Stakeholders explained that, in some cases, MS authorities and companies differ in their interpretation of the scope of the two Regulations, and that overlaps between these two pieces of legislation can result in duplicate labelling.
- **the Detergents Regulation and Cosmetic Products Regulation.** Stakeholders highlighted that there is a difference between the Cosmetic Products Regulation and the Detergents Regulation in the treatment of CMRs; i.e. CMRs 1A, 1B and 2, unless exempted, are not permitted for use in cosmetics, however, CMR 2 can still be used in detergents for consumer use[6] and CMRs 1A, 1B and 2 could still be used in detergents for industrial/institutional purposes). Stakeholders also pointed out that there is an inconsistency between the labelling of nanomaterials under the Detergents Regulation and Cosmetic Products Regulation (i.e. nanomaterials must be indicated on the label for cosmetics but there are no requirements for detergents). Furthermore, some stakeholders indicated that cosmetics must be labelled with a full ingredient list, unlike the Detergents Regulation that only requires some ingredients to be labelled.
- **the Detergents Regulation and REACH and CLP**. During the consultation, stakeholders identified some inconsistent definitions (e.g. "placing on the market", "manufacturer") between the Detergents Regulation, REACH and CLP. Inconsistencies were identified between the information that must be presented in the SDS under REACH and the information that must be provided for industrial and institutional detergents under the Detergents Regulation. There are also legislative overlaps between the Detergents Regulation and the CLP Regulation with regard to the labelling of allergens. During the consultation, several industry associations noted that as Regulation 542/2017 (Annex VIII of CLP) comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete.

1.4 Effectiveness

Most industry representatives agreed that the Detergents Regulation has helped to harmonize the rules in place in different MS and made it easier for companies to trade cross-border. There was also a strong opinion that the Detergents Regulation has been effective in terms of ensuring a high degree of protection to the environment, with some industry stakeholders even noting that the Detergents Regulation is seen internationally as the "golden standard" for the biodegradability of surfactants. Furthermore, the new limits on the phosphorus content of consumer laundry detergents and consumer automatic dishwasher detergents (CADD) introduced by Regulation (EU) No. 259/2012 were seen, by both MS authorities and industry, as having successfully directed the market to producing more environmentally friendly products.

While dosing instructions were generally perceived as an effective means of reducing the over-consumption of detergents, some stakeholders (including both MS authorities and industry) were

[6] CMR categories 1A and 1B are prohibited in consumer products under REACH.

concerned that the dosing information that must be provided according to the Regulation is now out of date. Consumer organisations also noted that consumers may not read, understand or correctly follow the instructions.

Most stakeholders (all groups) agreed that the Detergents Regulation has been effective in achieving its objective of ensuring a high degree of protection of human health, although it was also noted (particularly by industry stakeholders) that compared to other chemicals legislation (e.g. REACH, CLP and the Biocidal Products Regulation), the Detergents Regulation has had a lesser impact. There was general agreement across stakeholder groups that the labelling requirements of the Regulation are sufficient to inform consumers and downstream users about potential allergenic substances in detergents. However, some consumer organisations were concerned about some of the substances that are still permitted for use in detergents and that a lack of detailed ingredient lists on products limits the ability of consumers and other downstream users to make informed decisions and avoid products containing certain substances.

The sanctions put in place by the MS for infringements of the Detergents Regulation were generally perceived by MS authorities as dissuasive, effective and proportionate. However, many authorities appear to lack the resources to carry out proactive enforcement of the Regulation and, in most cases, inspections for the Detergents Regulation are coordinated with inspections for other chemicals legislation, such as CLP and REACH. It should be noted that concerns have previously been raised in relation to a lack of consistency in enforcement between MS, which potentially results in inconsistent implementation of the Detergents Regulation (RPA et al., 2017).[7] This may have reduced the overall effectiveness of the Regulation.

One instance has been identified of the safeguard clause being used (for the product POR-ÇÖZ, placed on the market in Germany). There was a split in view across respondents regarding the safeguard clause. While MS authorities and consumer associations generally agreed that the safeguard clause is an important and beneficial element of the Detergents Regulation, even if (to date) it has rarely been used, some industry representatives noted that if the detergent complies with the Detergents Regulation, then there is no need for the safeguard clause.

1.5 Efficiency

Previous research has shown that the detergents sector bears a relatively high administrative burden, compared to other sub-sectors within the EU chemicals industry (Technopolis Group & VVA, 2016)[8]. Our study has estimated that, since the Detergents Regulation first came into force in October 2005, the detergents industry has incurred costs of between €764 million and €1.8 billion (or approximately €63.7 million to €149.0 million per year) as a direct result of the Detergents Regulation. Note that this excludes the one-off costs associated with changing production processes and the on-going costs associated with testing the biodegradability of surfactants which, unfortunately, it has not been possible to quantify here. The largest costs are calculated to have arisen as a result of the need to use different raw materials in place of phosphorus (estimated at

[7] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[8] Technopolis Group & VVA (2016): Cumulative cost assessment for the EU chemicals industry, Final Report, available at: ec.europa.eu/DocsRoom/documents/17784/attachments/1/translations/en/…/pdf

€480 million), from having to provide ingredient datasheets to poison centres (estimated at €71 million to €454 million) and from the research and development necessary for reformulation (to reduce the total phosphorus content of consumer laundry detergents and CADD) (estimated at €50 million to €252 million). The one-off and on-going costs of labelling are also estimated to have been relatively large.

In terms of benefits, there was general agreement that the Regulation has helped to level the playing field for manufacturers of detergents and surfactant within the EU. About a fifth (21%) of industry stakeholders that responded to the OPC said that the Detergents Regulation had led to market opportunities (compared to 42% that disagreed). It would appear that the Detergents Regulation has had a mixed effect in terms of innovation; while new products have been developed in response to the Detergents Regulation (particularly in response to the phosphorus limits introduced for CADD) resources had to be used to ensure compliance and that this reduced the total resources available for innovation. Most stakeholders (all groups) thought that the Detergents Regulation had improved the corporate image of the sector.

Although the detergents sector did incur some costs as a result of the Detergents Regulation, industry stakeholders indicated that these costs have not been passed on to consumers (as higher prices). Furthermore, our research indicates that the cleaning performance of detergents and the diversity of products available on the market has not significantly changed.

Most of the stakeholders consulted (including the majority of SMEs) have indicated that the costs involved in implementing the Detergents Regulation are justified given the benefits that have been achieved, although industry stakeholders are clearly concerned about the costs that will arise in the longer-term.

1.6 EU added value

The general view of stakeholders (all groups) was the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting on their own. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force. Similarly, stakeholders noted that creating a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation.

While some stakeholders indicated that the Detergents Regulation has delivered added value in terms of human health (particularly the provisions on the labelling of fragrance allergens), it was indicated that multiple other pieces of EU legislation covering detergents (e.g. REACH, CLP and Biocidal Products Regulation) are also important in this regard.

There was consensus among stakeholders (all groups) that the issues addressed by the Detergents Regulation continue to require action at the EU level.

2 Introduction

2.1 Background

The Detergents Regulation (EC) No 648/2004 was published on the 8 April 2004 and entered into force on the 8 October 2005. It establishes common rules designed to achieve the free movement of detergents and surfactants across the EU, while at the same time providing a high degree of protection to the environment and human health. As a regulation, it is directly applicable law in all 28 Member States (MS) of the European Union (EU) and it is also applicable to the other countries of the European Economic Area (i.e. Norway, Iceland and Lichtenstein).

The legislation harmonises testing methods to determine the biodegradability of all surfactants used in detergents and requires that tests be carried out in laboratories that meet internationally recognised standards. As outlined in Article 1(2) of the Regulation, it also harmonises:

- Requirements pertaining to the biodegradability of surfactants in detergents;
- Restrictions or bans on surfactants on grounds of biodegradability;
- The additional labelling of detergents, including fragrance allergens[9];
- The information that manufacturers must hold at the disposal of the MS' competent authorities and medical personnel; and
- Limitations on the content of phosphates and other phosphorus compounds in consumer laundry detergents (from 30 June 2013) and consumer automatic dishwasher detergents (from 1 January 2017)[10].

Under the Detergents Regulation[11]:

- Manufacturers are responsible for ensuring their products satisfy the legislation's requirements;
- Manufacturers must make files on test results available to the relevant authorities and an ingredient datasheet to medical staff, without delay and when requested;
- Information on detergents' packaging must be legible, visible and indelible. This includes contact details for the manufacturer and the datasheet;
- Labels on detergents sold for public use must give details of recommended dosages for different washes in a standard washing machine; and
- National authorities may ban a specific detergent if they consider it is a risk to human or animal health or to the environment. They must inform the European Commission and other EU countries of the decision.

The Detergents Regulation updates and consolidates existing Directives on detergents (as outlined in Recital 1 of the Regulation) and is wider in scope than the pre-existing legislation. For example:

- Pre-existing EU legislation on detergents only covered two categories of surfactant – anionics[12] and non-ionics – which at the time left approximately 10% of the total surfactants

[9] Article 1(2) of Regulation (EC) No 648/2004, as amended by Regulation (EC) No 907/2006

[10] Article 1(2) of Regulation (EC) No 648/2004, as amended by Article 1 of Regulation (EU) No 259/2012

[11] Eur-lex (2016): Safer detergents for European Consumers. Available at: http://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32004R0648&qid=1473753852115

on the EU market outside the scope of the legislation. The scope of the Detergents Regulation is now wider, covering all surfactants, including anionics, non-ionics, cationics and amphoterics[13].

- While previous legislation only covered the "primary biodegradability" of surfactants in detergents, the Detergents Regulation imposes a two-tier testing regime on the biodegradability of surfactants in detergents with the main emphasis on "ultimate biodegradability" (for an explanation of these terms refer to Table A3-3 in Annex 3). Under the Detergents Regulation, surfactants that pass the more stringent "ultimate" biodegradability test can remain on the market. Industrial or institutional surfactants that fail the test for ultimate biodegradability but pass the less stringent test for "primary" biodegradability can remain on the market, if the manufacturer is granted derogation by the European Commission.

Since the Detergents Regulation entered into force, a number of other EU Regulations have been published that amend the Detergents Regulation:

- Regulation (EC) No 907/2006, which adapts Annexes III and VII;
- Regulation (EC) No 1336/2008, which adapts the Detergents Regulation to the CLP Regulation (EC) No 1272/2008;
- Regulation (EC) No 219/2009, to adapt the Detergents Regulation to the regulatory procedure with scrutiny; and
- Commission Regulation (EC) No 551/2009, which adapts Annexes V and VI (surfactant derogation).

In 2012, the Detergents Regulation was amended (by Regulation (EU) No 259/2012) to harmonise rules on limiting the content of phosphates and other phosphorus compounds in detergents for household laundry and automatic dishwashing machines. The new limits outlined by this amendment have been introduced in order to reduce the damage caused by phosphates from detergents to the environment and in particular aquatic ecosystems, through the process of eutrophication. In its Annex VIa, Regulation (EU) No 259/2012 sets a limitation of 0.3 grams of the total phosphorus content in the standard dosage in consumer automatic dishwashing detergents (CADD) as from 1 January 2017. It was anticipated that a limitation on phosphorus use in CADD to 0.3 grams per wash would reduce the total phosphorus load from CADD in wastewater in the EU to ca. 1.6% in 2017.[14] For laundry detergents, Annex VIa outlines a limitation of maximum 0.5 grams of the total phosphorus content, which already applied as of June 2013. The 2012 Revision also lays

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[12] Surfactants are generally classified by their ionic (electrical charge) properties in water and can be categorised as being anionic, non-ionic, cationic or zwitterionic (amphoteric). For a more detailed description of these different categories of surfactant, please refer to Annex 1, Section A1.2.1.

[13] Intertek (2012): Understanding & attaining compliance to the EU Detergent Regulation, available at: www.intertek.com/WorkArea/DownloadAsset.aspx?id=48909

[14] European Commission (2015): Report from the Commission to the European Parliament and the Council, Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphorus in consumer automatic dishwasher detergent, COM(2015) 229 final, available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

down requirements for dosage information to be clearly indicated on the packaging of detergents sold to the general public and intended to be used as automatic dishwasher detergents (note that the 2004 Regulation already included a requirement for dosage information to be labelled for consumer laundry detergents).

The labelling requirements of the Detergents Regulation can be viewed as one of the primary means by which the Detergents Regulation aims to achieve the objective of ensuring the protection of human health. The labelling requirements of the Detergents Regulation include (Article 11(3)):

- Providing information on the content, in accordance with the specifications provided for in Annex VII A (which includes the provision of information on fragrance allergens); and
- Indicating instructions for use and special precautions, if required.

The Detergents Regulation also requires manufacturers to make ingredient datasheets available to medical personnel on request, to help with the treatment of allergies.[15]

It should be noted that the original version of the Detergents Regulation (Regulation (EC) No 648/2004) only required allergenic fragrances to be declared if they were added in the form of pure substances; there was no requirement to declare them if they were added as constituents of more complex ingredients, such as essential oils or perfumes. To ensure better transparency to the consumer, the Regulation was amended by Commission Regulation (EC) No 907/2006 to ensure that allergenic fragrances in detergents are declared irrespective of the way they are added to the detergent.

A summary of amendments to the Regulation is provided in Table 2-1.

[15] This is without prejudice to the right of a MS to request that such a datasheet be made available to a specific public body to which the MS has assigned the task of providing this information to medical personnel (Article 9(3)).

Table 2-1: Overview of amendments made to the Detergents Regulation				
Amendment	**Year amendment was introduced**			
	2006	**2008**	**2009**	**2012**
Annex III – addition of test method for use with surfactants that are poorly-soluble in water (ISO standard 10708:1997)	✓			
Annex VII – addition of a website on detergent packaging so that detergent composition can be easily obtained by the general public	✓			
Annex VII – requirement that allergenic fragrances in detergents should be declared irrespective of the way they are added to the detergent (i.e. they should be declared if they are added as constituents of complex ingredients such as essential oils or perfumes as well as if they are added in pure forms of substances)	✓			
Annex VII – requirement to ensure the use of INCI nomenclature and compatibility between sections C and D of annex	✓			
Annex VII – requirement to eliminate the difference in rules for labelling of detergents (i.e. differences between the definition of 'detergent' and the rules outlined in section D of Annex VII regarding labelling of detergents that contain or do not contain surfactant)	✓			
Amendments to adapt the Detergents Regulation to the CLP Regulation		✓		
Adaptations to the regulatory procedure with scrutiny referred to in the Detergents Regulation			✓[1]	
Annex V – amendment to annex by including 'alcohols, Guerbet, C16-20, ethoxylated, n-butyl ether (7-8EO)' in the list of surfactants that have obtained a derogation			✓[2]	
Annex V & VI – amendment of table headings to reflect use of the new nomenclature ('EC numbers')			✓[2]	
Annex VI – amendment to annex by introducing Annex VIa, which provides limitations on the content of phosphates and of other phosphorus compounds				✓[3]
Addition/clarification of definitions – addition of definitions of 'cleaning', 'consumer laundry detergent', 'consumer automatic dishwasher detergent' and 'making available on the market' to Article 2. Clarification of the definition of 'placing on the market' in Article 2				✓
Modernising the way in which the Commission publishes lists of competent authorities and approved laboratories (replacing the text of Article 8, paragraph 4)				✓
Delegation of power to the Commission to adopt acts to adapt to technical and scientific progress (replacing the text of Articles 13 and 14)				✓
The laying down of penalties by MS applicable to infringements of the Detergents Regulation and ensure that they are implemented (replacing the text of Article 18)				✓
Annex VII – removal of text from section A and amendment of text in section B				✓

Notes:

[1] Introduced by Regulation (EC) No 219/2009.

[2] Introduced by Commission Regulation (EC) No 551/2009.

[3] It should be noted that limitations on the content of phosphates and of other phosphorus compounds apply to consumer laundry detergents and consumer automatic dishwasher detergents as of 30 June 2013 and 1 January 2017 respectively.

2.2 Objectives of the study

Regulation (EC) No 648/2004[16] (Detergents Regulation) has not undergone a full evaluation since its entry into force in October 2005. An ex post evaluation of the Regulation is therefore considered essential in the context of the European Commission's Better Regulation Strategy[17].

This evaluation study has the aim of supporting the Commission in undertaking this evaluation, and was launched in December 2016. The purpose of the study is to assess the **effectiveness, efficiency, relevance, coherence and EU-added value of the Detergents Regulation (and its amendments)[18]**. The evaluation may contribute to the improvement of the Regulation's implementation or may feed into an impact assessment study for a possible amendment or re-cast of the Detergents Regulation.

2.3 Structure of the report

The remainder of this report has been organised as follows:

- **Section 3** summarises our methodological approach to the study;
- **Section 4** provides the results of the study in relation to the evaluation criterion of 'Relevance';
- **Section 5** provides the results of the study in relation to 'Coherence';
- **Section 6** provides the results of the study in relation to 'Effectiveness';
- **Section 7** provides the results of the study in relation to 'Efficiency';
- **Section 8** provides the results of the study in relation to 'EU Added Value';
- **Section 9** summarises the conclusions; and
- **Section 10** provides suggestions for change.

[16] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32004R0648

[17] For further information see: http://ec.europa.eu/info/strategy/better-regulation-why-and-how_en

[18] Commission Regulation (EC) No 907/2006 of 20 June 2006; Regulation (EC) No 1336/2008 of the European Parliament and of the Council of 16 December 2008; Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009; Commission Regulation (EC) No 551/2009 of 25 June 2009; and Regulation (EU) No 259/2012 of the European Parliament and of the Council of 14 March 2012.

3 Approach to the study

3.1 Overview

This section of the Report sets out our approach to the study, including our approach to the consultation (Section 3.2), our methodology for the evaluation (Section 3.3) and main limitations (Section 3.4).

In summary, our approach to this study has comprised the following tasks:

- **Task 0: Project inception**. In order to obtain a clearer understanding of the work to be undertaken and to clarify the main aspects of the proposed methodology, a kick-off meeting was held in Brussels on the 12 January 2017. Following the meeting, an Inception Report was provided to the Commission on 31 January 2017, with the finalised version submitted on the 28 March 2017.

- **Task 1: Establishment of evaluation methodology.** This task involved laying the foundations for the evaluation, including establishing the intervention logic (as shown in Section 3.3.1) and defining the questions and indicators for the evaluation (as shown in Section 3.3.2). This task also involved establishing the baseline for the evaluation, and gathering appropriate data and information to define it.

- **Task 2: Analysis of sector.** To support the evaluation, a comprehensive desk-based review was carried out to gather data and information on the detergents industry in the EU and EEA. This involved analysing the composition of typical detergent products on the market, levels of production and consumption of detergents and surfactants, as well as data on the number of enterprises operating in the sector in the EU/EEA. Information was also gathered on the main sustainability aspects and on recent trends in the detergents sector. The results are available in Annex 2 to this report.

- **Task 3: Stakeholder consultation.** The following consultation methods have been used to elicit information from stakeholders for the purposes of the evaluation: an Open Public Consultation (OPC), a targeted survey of SMEs, telephone interviews, targeted email consultation and a validation workshop. Our approach to the consultation is elaborated in Section 3.2 below and the results are summarised in the Consultation Report, provided in Annex 4.

- **Task 4: Support in evaluation of the Detergents Regulation.** The aim of this task was to set out clearly the answers to the evaluation questions, based on a comprehensive desk-based literature review, and the results from the consultation activities (Task 3). The results are shown in sections four to nine of this report.

- **Task 5: Validation workshop.** To validate the results of the evaluation, a one-day workshop was held in Brussels on the 13 October 2017. The aim of this workshop was to set out the preliminary findings of the study and to obtain feedback from the participating stakeholders. A summary of the workshop findings is provided in the Report on the Validation Workshop, provided in Annex 5.

Figure 3-1, overleaf, shows how the above tasks fit together.

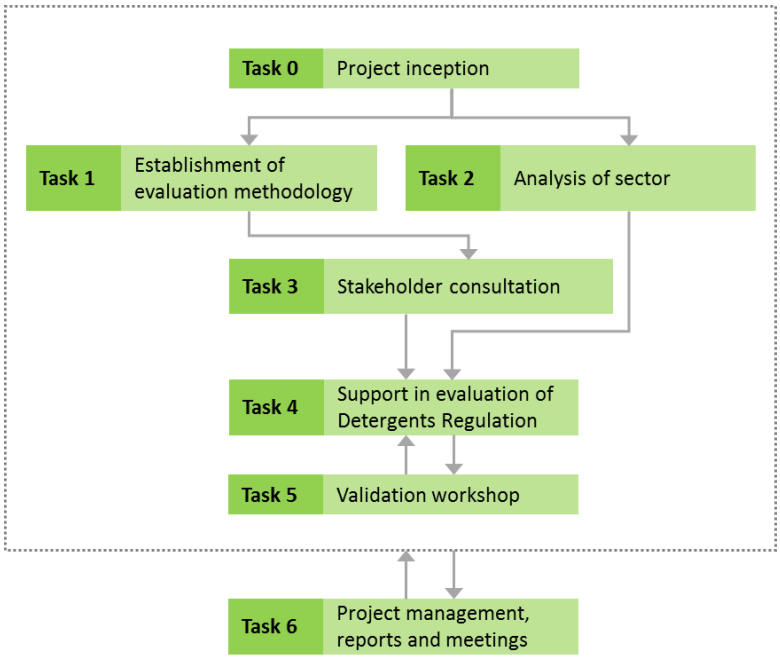

Figure 3-1: Approach

3.2 Stakeholder consultation

3.2.1 Open Public Consultation

Two separate questionnaires were developed for the purposes of the open public consultation (OPC): one for citizens and one for organisations. The latter was targeted at a broad range of stakeholder groups including public authorities and bodies responsible for implementing and/or enforcing the Detergents Regulation; companies (large and small); industry associations and sector groups representing companies in the detergents sector; trade unions; environmental and consumer NGOs, universities and research institutes; and any other organisations interested in responding to the survey.

Both questionnaires were made available in English, German and French and uploaded to the EU Survey tool. The survey was launched on 2 May 2017 and stakeholders were given a period of 12 weeks to respond; the survey closed on 25 July 2017. To maximise the response rate, a link to the surveys was disseminated to a database of relevant stakeholders, and a number of organisations were also contacted directly and asked to help disseminate the link to the surveys.

The OPC generated a total of 102 responses, distributed as shown in Table 3-1 by type of respondent and whether or not they are on the EC transparency register.

Table 3-1: Respondents registered in the EC transparency register, split by type	
Type of respondent	**Number of respondents**
Registered organisations[1]	**16**
Industry association	7
Business	3
Consumer association	3
Non-governmental organisation (NGO)	2
Public authority (government or public body)	1
Unregistered organisations[2]	**25**
Industry association	5
Business	4
Non-governmental organisation (NGO)	1
Public authority (government or public body)	12
Intergovernmental organisation	1
Other	2
Individual citizens	**61**
Total	**102**

[1] Registered organisations are included in the EC transparency register and subscribe to its code of conduct.

[2] Organisations that did not specify whether they are registered or not have been counted as unregistered.

The OPC survey for citizens gathered a total of 61 online replies from citizens from 15 EU Member States (MS), as well as one response from a citizen from outside the Union (Switzerland). Figure 3-2 summarises the geographical distribution of respondents to the citizen's survey. As can be seen from the figure, the largest number of responses to the citizen's questionnaire came from Germany (17 responses), France (10 responses) and the UK (9 responses).

With regard to the OPC survey for organisations, a total of 41 organisations submitted a response, with most responses coming from industry associations (12 responses) and government or public authorities (12 responses). Responses were also received from businesses (7 responses), consumer associations (3 responses), non-governmental organisations (3 responses), intergovernmental organisations (1 response), and other organisations (2 responses). No replies were received from stakeholders representing trade unions or academia/research institutes.

Whilst the proportion of responses from companies was relatively low (17%), it is worth noting that the OPC also elicited consolidated contributions from industry organisations and that these account for a sizeable proportion of the total replies received (29%). Five of the seven companies that responded to the OPC were 'large' enterprises (≥250 employees), while two were SMEs (≤249 employees). For a breakdown of the types of organisations that responded, see Figure 3-3.

Most organisations that responded to the OPC were based in Belgium (10 responses), but responses were also received from 19 other EU MS (Figure 3-3). One organisation responded from outside the Union (Norway). It should be noted that many of the organisations that responded from Belgium have a pan-European remit and therefore represent the views of stakeholders from other EU MS.

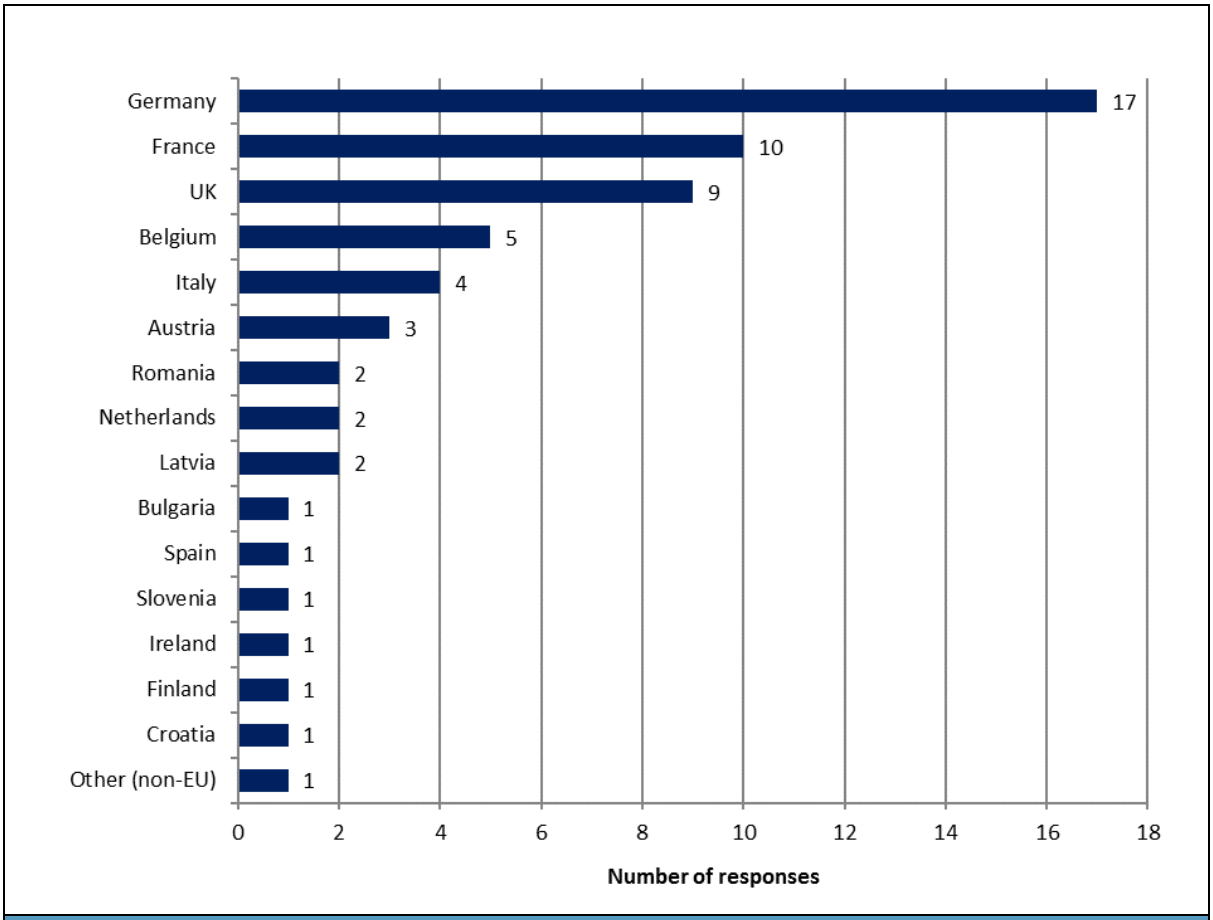

Figure 3-2: Location of respondents to the OPC survey of citizens (*n=61*)

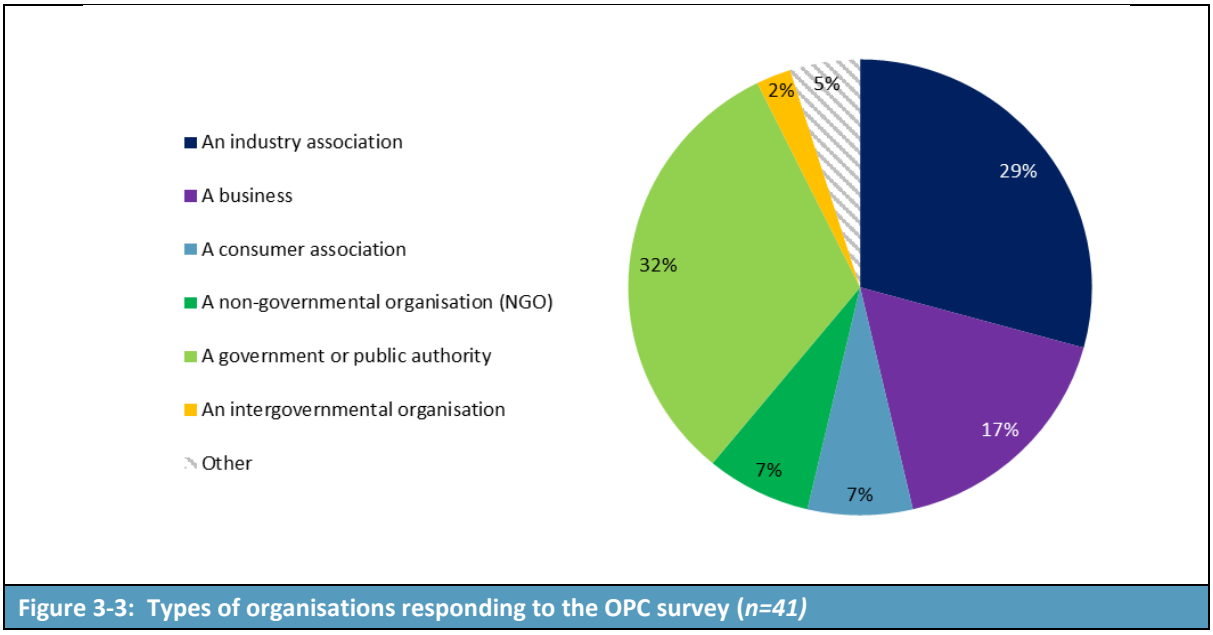

Figure 3-3: Types of organisations responding to the OPC survey (*n=41*)

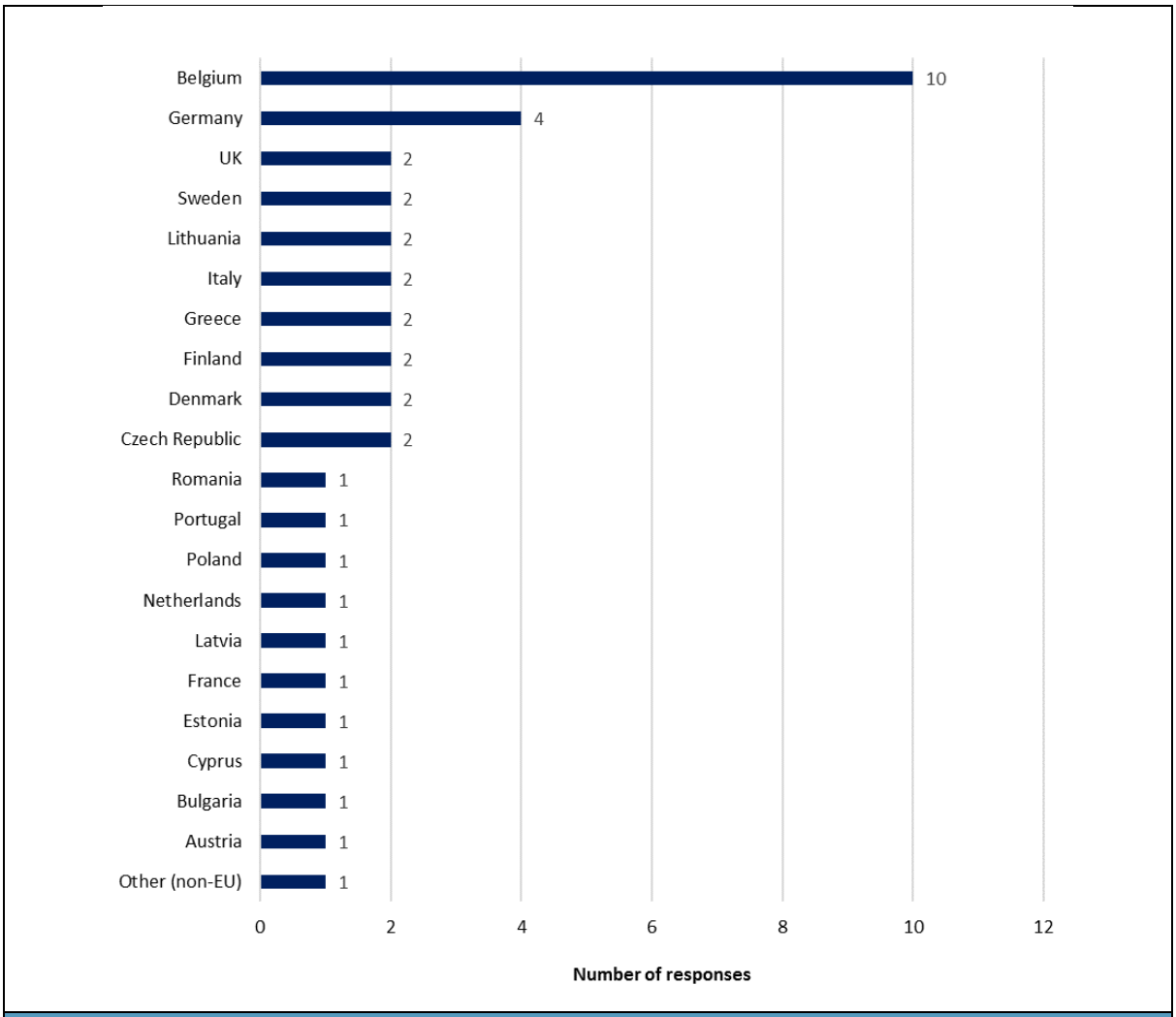

Figure 3-4: Location of respondents to the OPC survey of organisations *(n=41)*

3.2.2 SME survey

In order to maximise the participation of SMEs in the consultation, a simplified questionnaire was developed and distributed to SMEs via the Enterprise Europe Network (EEN). The SME survey was launched at the beginning of May 2017 and ran for 8 weeks – through to the end of June 2017. The survey responses were analysed by the consultants.

As shown in Figure 3-5, the SME survey generated a total of 41 responses, split almost equally between micro-enterprises (<9 employees), small enterprises (10 to 49 employees) and medium-sized enterprises (50 to 249 employees).

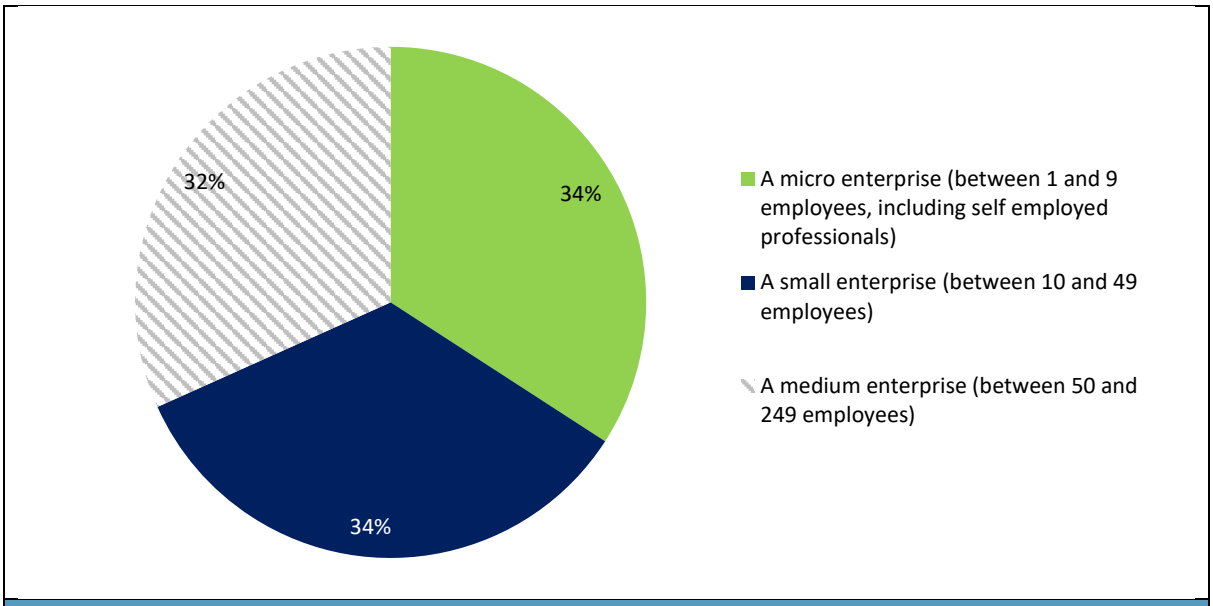

Figure 3-5: Please indicate the size of your company (in line with the definitions provided in EU recommendation 2003/361). Responses to the survey of SMEs conducted by EEN (*n=41*)

The majority of SME respondents indicated that they were distributors (33%), formulators (27%) and/or a manufacturer (22%) (Figure 3-6). Note that respondents could select more than one option for this question and so the total number of responses to this question (61) is larger than the total number of SME respondents (41). Other downstream users that responded to the survey clarified that they were a "retailer", involved in the "building materials trade" and "cleaning".

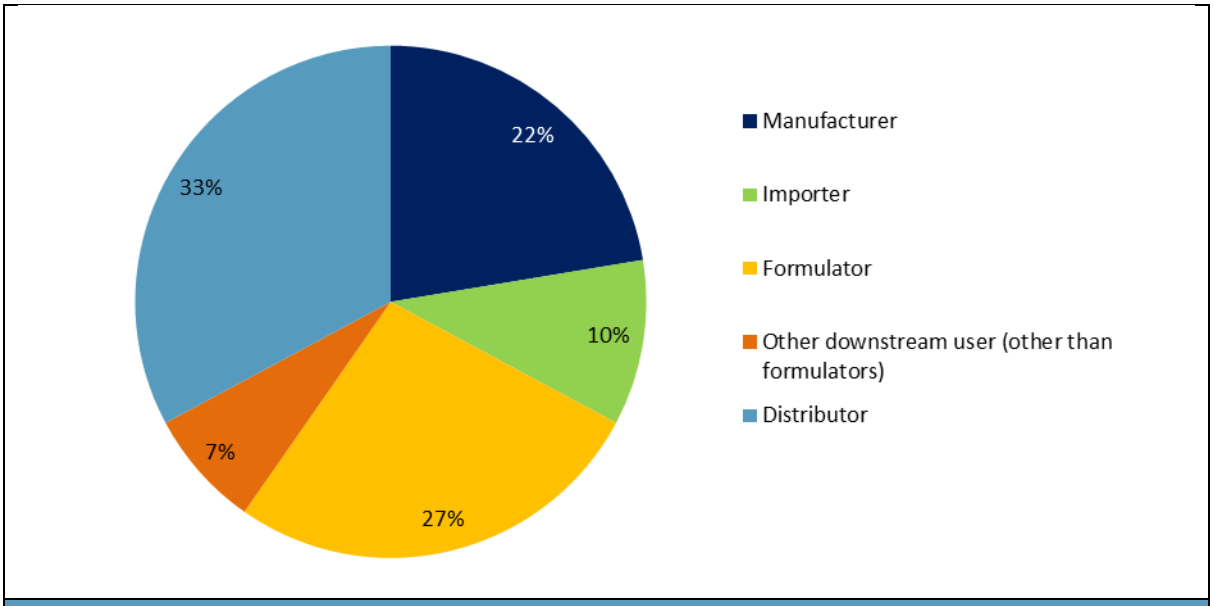

Figure 3-6: Please indicate the term which best describes your company and its activities (please tick all that apply). Responses to the survey of SMEs conducted by EEN (*n=67*)

About a quarter (27%) of the respondents to the SME survey were based in Italy (Figure 3-7). The remainder were based in France (15%), Lithuania (15%), Poland (12%), Romania (12%), Portugal (10%), Denmark (5%) and Greece (5%). There was a good geographical distribution of respondents and representatives from both large, small, old and new EU MS.

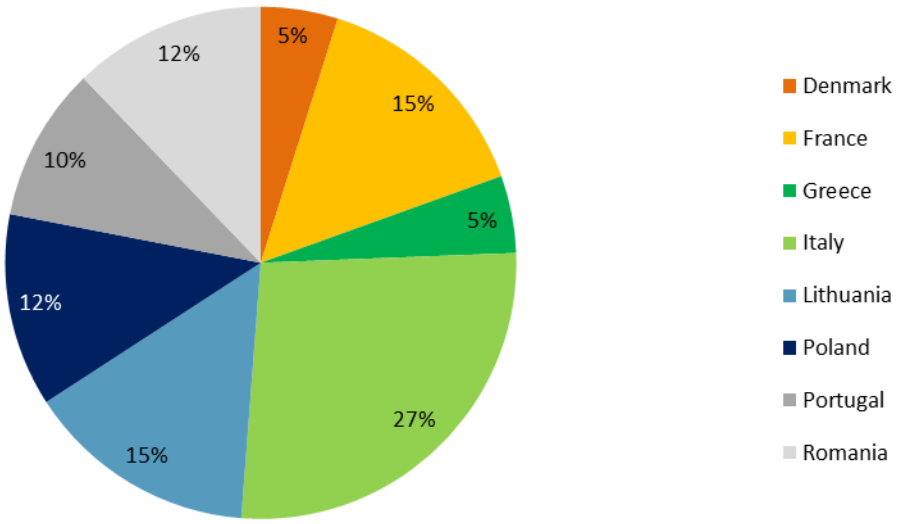

Figure 3-7: Please indicate the primary country of operation of your organisation. Responses to the survey of SMEs conducted by EEN *(n=41)*

3.2.3 Telephone interviews

In order to examine stakeholders' views in greater depth, a series of targeted interviews were held. Table 3-2 shows the number of interviews conducted for each country and stakeholder group.

Initially, it was hoped that it would be possible to conduct interviews with around 50-60 organisations, covering stakeholders from a broad range of countries and stakeholder groups. However, it proved very difficult to engage stakeholders to the degree envisaged. In total, more than 250 organisations received an initial email to ask whether they would be willing to participate in an interview. Most of the organisations received a reminder email and a large proportion were also contacted directly by telephone.

Arranging interviews with companies proved particularly problematic and, as a result, the study team decided to redirect its focus towards industry associations and sector groups that were more willing to participate and could represent the views of their member companies. Environmental and consumer NGOs were also very difficult to engage, with several citing a lack of knowledge of the Detergents Regulation as a reason for not wanting to participate.

To ensure that the interviews stayed 'on track' and to make sure that good quality information was gathered in the time available, a number of strategies were employed:

- Firstly, tailored interview guides were developed for each stakeholder group. The questions to be included in these guides were agreed with the Commission in advance and covered a wide-range of different topics. The questions in the interview guides sought to address the five overarching evaluation questions: relevance, effectiveness, efficiency, coherence and EU added value.
- Each interviewer was briefed to adapt the questions in the guide to the specific person being interviewed, bearing in mind their specific knowledge/experience and perspective. This means that stakeholders were not all asked exactly the same questions.

- To make sure that key information was gathered in each interview, questions in the interview guide were colour-coded according to priority.
- The list of questions to be covered in the interview was emailed to stakeholders in advance, to give them the opportunity to gather the information required.

Table 3-2: Telephone interviews		
Type of stakeholder	**Country**	**Number interviewed**
EU officials	EU	4
Industry associations / sector groups	EU	7*
	Germany	2
	Austria	1
	Italy	1
	France	1
	Belgium	1
	UK	1
	Denmark	1
	Romania	1
	Poland	1
	Netherlands	1
MS authorities	Denmark	1
	Ireland	1
	Sweden	1
	Luxembourg	1
	Germany	1*
	Romania	1*
	Estonia	1*
Companies	Netherlands (SME)	1
	Germany (SME)	1
	Belgium (SME)	1
	Denmark (large)	1
	Austria (large)	1
	Canada (large)	1
Environmental NGOs	Sweden	1
	Netherlands	1
Consumer NGOs	Cyprus	1
	Denmark	1
Trade unions	Romania	1
	UK	1
Other	International (EU)	4
Total		**45***
**four respondents provided a written response to the questions in the targeted interview guide.*		

3.2.4 Targeted email consultation

In addition to interviews, the study team also sent tailored emails to a variety of organisations to try to obtain additional data, information and views. This included emails to market surveillance authorities (e.g. to obtain data on enforcement related to the Detergents Regulation), national Poison Centres (e.g. to obtain information on detergents' related illnesses/incidents) and regional seas conventions (to obtain data in relation to phosphorous loads in EU water bodies).

3.2.5 Validation workshop

A validation workshop was held at the Commission's offices in Brussels on the 13th October 2017. The aim of this workshop was to bring together stakeholders from across the detergents sector in order to validate the preliminary findings and conclusions of the study. In total, 27 participants (representing 20 organisations) participated at the workshop, where this excludes members of the study team. The following table provides a summary of the participants that were present. For further information, the reader is referred to the separate Workshop Report that documents the findings from the day.

Table 3-3: Workshop participants

Type of stakeholder	Number of participating organisations
EU officials, including members of the Steering Group	4
Industry associations / sector groups	7
MS authorities	2
Companies	5
Consumer NGOs	2
Total	**20**
Note: Four members of the study team (three from RPA and one from Mayer Brown) were also present to support the workshop.	

3.3 Ex-post evaluation

3.3.1 Intervention logic

An intervention logic is a description or diagram summarising the rationale for EU intervention. It shows how different inputs/activities/outputs triggered by the EU intervention are expected to interact to deliver the expected changes over time and ultimately achieve the objectives. Figure 3-8 overleaf provides the intervention logic diagram for the Detergents Regulation. It summarises the objectives of the Detergents Regulation, the mechanisms, as well as the anticipated consequences and results/impacts.

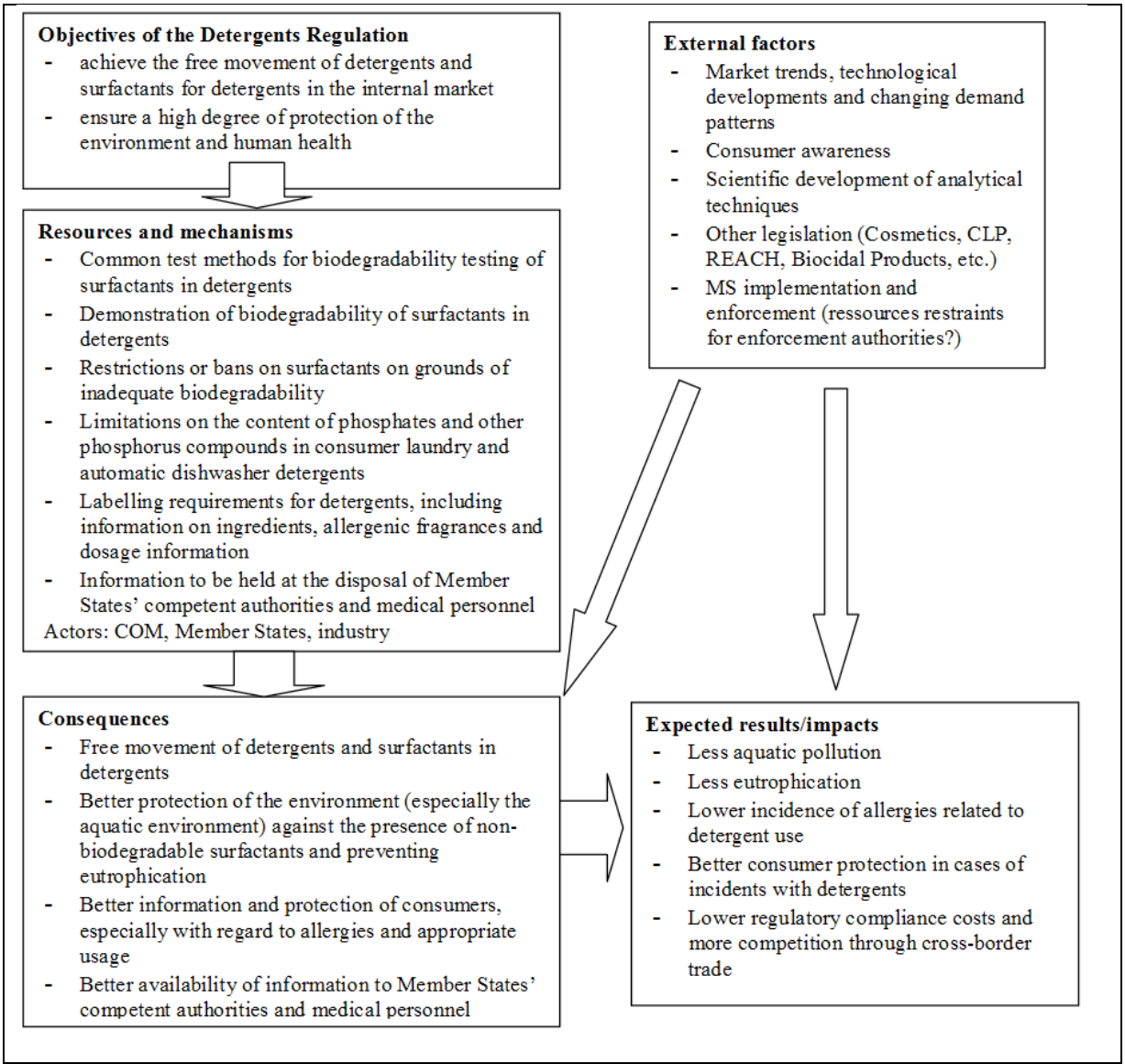

Figure 3-8: Intervention logic for the Detergents Regulation[19]

3.3.2 Evaluation questions and indicators

Building on the intervention logic (shown in Figure 3-8), the list of questions presented in the evaluation roadmap, the technical specifications for the study, the Better Regulation Guidelines and the relevant evaluation questions already addressed as part of the supporting study for the Chemicals Fitness Check[20], the study team developed a list of evaluation questions and indicators for each of the five evaluation criteria (i.e. relevance, coherence, effectiveness, efficiency and EU added

[19] European Commission (2016): Evaluation and Fitness Check Roadmap, Evaluation of regulation (EC) No 648/2004. Available at: http://ec.europa.eu/smart-regulation/roadmaps/docs/plan_2016_305_evaluation_detergents_en.pdf

[20] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

value). These questions and indicators are presented in the evaluation matrix in Table 3-4 overleaf. The matrix also provides details on the methods and data sources used to gather relevant information and the baseline used for the assessment.

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
Effectiveness					
1. To what extent does the Detergents Regulation meet its objectives, i.e. establishment of a true internal market for detergents, while ensuring a high degree of protection of the environment and human health?	Extent to which key stakeholders agree that the labelling/packaging requirements of the Detergents Regulation are clear and sufficient to inform downstream users and consumers about the ingredients and instructions regarding detergent use.	• Question in the OPC questionnaire for organisations and citizens	• Stakeholders asked to compare the situation before the Regulation came into force (in October 2005) with the situation from October 2005 to the present day	• Open Public Consultation • Targeted consultation • Workshop • Supporting study to the Chemicals Fitness Check	• Section 6.1.3 of this document; and • Annex 3, Section A3.2.2
	Extent to which stakeholders (by type) agree that the Regulation has met its objectives in terms of (i) establishment of a true internal market for detergents, (ii) ensuring a high degree of protection of the environment, (iii) ensuring a high degree of protection of human health	• Question in the OPC questionnaire for organisations and citizens • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force (in October 2005) with the situation from October 2005 to the present day	• Open Public Consultation • Targeted consultation • SME survey • Workshop • Supporting study to the Chemicals Fitness Check	• Section 6.1 of this document
	Value and/or volume of detergents and surfactants traded across borders within the EU	• Comparison of data on value/volume of detergents and surfactants traded across borders within the EU before and after the legislation came into force	• The baseline is the situation before October 2005, with impacts measured up to the present day	• Literature review • Targeted consultation (particularly with industry associations) • Market analysis (see Question 15)	• Section 6.1.1 of this document
	Number of cases of detergents-related illness/incidents if possible (note that these data will be sought during the targeted consultation); acute incidents as reported in poison centre data	• Comparison of data on number of detergents-related illnesses (e.g. skin sensitisation) before and after legislation came into force (e.g. number of cases of	• There are two baselines for the analysis – firstly October 2005, when the Detergents Regulation came into force, and secondly June 2006 when amendments were made	• Literature review • Targeted consultation (e.g. with poison centres) • Supporting study to the Chemicals Fitness Check • Publicly available information on consumer	• Section 6.1.3 of this document; and • Annex 3, Section A3.2.2

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
	(although only a subset of countries have had poison centres in place over this time period)	allergic reaction).	concerning the declaration of allergenic fragrances	complaints, court cases and product repeals	
	Number of countries with national legislation or voluntary initiatives in place to limit the content of phosphorus in detergents before the 2012 amendment to the Regulation came into force	• Qualitative analysis	• There are two baselines for the analysis – June 2013 for laundry detergent, and January 2017 for automatic dishwasher detergent	• Supporting study to the Chemicals Fitness Check • Literature review	• Section 6.1.2 of this document; and • Annex 2, Section A2.4
	Average P concentrations in water bodies (e.g. rivers, lakes, seas, etc.)	• Average P concentrations in water bodies *(subject to data being available from 2013 onwards)*	• Limitations on P content have applied to consumer laundry detergents since 30 June 2013. The situation before June 2013 therefore forms the baseline for our assessment.	• DG Environment (WFD country reports and synthesis reporting) • European Environment Agency • Targeted consultation with Regional Seas Conventions	• Annex 2, Section A2.4
	Extent to which key stakeholders agree that consumer laundry detergent products on the market today contain less P than they did in the past as a direct result of the Detergents Regulation and its amendments coming into force	• Question in the OPC questionnaire for organisations	• Stakeholders asked to compare the situation before June 2013 with the situation today	• Open public consultation • Targeted consultation • Workshop	• Section 6.1.2 of this document
	Extent to which key stakeholders agree that automatic dishwasher detergent products on the market today contain less P than they did in the past as a direct result of the Detergents Regulation and its amendments coming into force	• Question in the OPC questionnaire for organisations	• Stakeholders asked to compare the situation before January 2017 with the situation today	• Open public consultation • Targeted consultation • Workshop	• Section 6.1.2 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
	Proportion of manufacturers that have amended the formulation of their laundry and dishwasher detergent products to reduce the total P content as a direct result of the Detergents Regulation and its amendments.	• Quantitative analysis • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• There are two baselines for the analysis – June 2013 for laundry detergent, and January 2017 for automatic dishwasher detergent	• Open public consultation • SME survey • Targeted consultation (with manufacturers of detergent products) • Workshop	• Section 6.1.2 of this document
2. Which provisions or parts of the Detergents Regulation have met their objectives (i) most effectively (ii) least effectively, and which parts have not met their objectives?	Stakeholder assessment of provisions or parts of the Detergents Regulation that have met their objectives (i) most effectively, (ii) least effectively or (iii) not at all.	• Qualitative analysis	• N/A	• Targeted consultation • Workshop • Supporting study to the Chemicals Fitness Check	• Section 6.2 of this document
3. To what extent is the Regulation effectively implemented across EU MS (e.g. enforcement, use of safeguard	Number of MS that have enacted the safeguard clause	• Quantitative analysis	• N/A	• Targeted consultation (with EU officials and MS authorities)	• Section 6.3.7 of this document; and • Annex 3, Section A3.6
	Number of times the safeguard clause has been enacted in the MS	• Quantitative analysis	• N/A	• Targeted consultation (with EU officials and MS authorities)	• Section 6.3.7 of this document; and • Annex 3, Section A3.6
	Extent to which stakeholders (by type) agree that the safeguard clause has a role to be used in the future	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 6.3.7 of this document; and • Annex 3, Section A3.6

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
procedure)? What are the implementation and enforcement measures that have been put in place? Were they adequate?	Number of proactive and reactive inspections undertaken	• Analysis of data on number of inspections	• N/A	• Targeted consultation (with EU officials and MS authorities). *It should be noted that data on inspections may be aggregated at a high-level covering, for instance, both CLP and REACH alongside detergents*	• Section 6.3.4 of this document
	Total budget available to enforcement authorities in the MS	• Analysis of data on budget and resources available to enforcement authorities in the MS	• N/A	• Targeted consultation (with EU officials and MS authorities). *It should be noted that data on resources for enforcement may be aggregated at a high-level covering, for instance, both CLP and REACH alongside detergents*	• Section 6.3.4 of this document
	Total resources (e.g. number of personnel) available to enforcement authorities in the MS		• N/A		• Section 6.3.4 of this document
	Extent to which key stakeholders believe that enforcement carried out by the responsible authorities is effective in their country	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop • Supporting study to the Chemicals Fitness Check	• Section 6.3.4 of this document
	Type and level of sanctions for infringement by country	• Analysis of type and level of sanctions for infringement by country	• N/A	• Targeted consultation (with EU officials and MS authorities) • Literature review	• Section 6.3.3 of this document
	Extent to which key stakeholders agree that existing sanctions are dissuasive, effective and proportionate	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 6.2.4 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
Efficiency					
4. What are the costs for industry associated with the implementation of the Detergents Regulation? What are the key drivers for those costs?	Quantitative analysis – estimation of the total costs for industry of *inter alia* testing, reformulation of products (e.g. to reduce P content) and associated labelling changes, labelling products, preparing ingredient datasheets for medical personnel, publishing a list of ingredients on a website, etc.	• In line with the cost quantification methodology set out in the Better Regulation Toolbox under the following categories: ○ Direct compliance costs ○ Hassle costs ○ Indirect compliance costs ○ Other indirect costs • Identification of the costliest elements of the Regulation for industry – via text analysis of the provisions of the Regulation followed by literature review and consultation on the associated costs for companies • Estimation of the total costs for the detergents sector using the Standard Cost Model, and taking into account the baseline costs	• Costs from October 2005 to the present day	• Supporting study to the Chemicals Fitness Check • Legislative text of the Regulation • Literature review • Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop • Market analysis (see Question 15)	• Section 7.2. of this document
	Qualitative analysis – difficulties faced by companies in implementing the Detergents Regulation	• Qualitative analysis • Question in the OPC questionnaire for organisations • Question in the survey	• N/A	• Literature review • Open Public Consultation • SME survey • Targeted Consultation (with companies and	• Section 7.2.8 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
		for SMEs		industry associations) • Workshop	
5. What are the benefits for industry associated with the implementation of the Detergents Regulation?	Qualitative and, if possible, quantitative analysis – extent to which industry stakeholders agree that the implementation of the Detergents Regulation has reduced costs for the sector (e.g. due to harmonised rules and facilitation of intra-EU trade)	• Qualitative and, if possible, quantitative analysis (using the Standard Cost Model) • Question in the OPC questionnaire for organisations	• Costs from October 2005 to the present day	• Supporting study to the Chemicals Fitness Check • Literature review • Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop • Market analysis (see Question 15)	• Section 7.3.2 of this document
	Extent to which industry stakeholders agree that the implementation of the Detergents Regulation has improved the corporate image of the sector	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Open Public Consultation • SME survey • Targeted consultation (with companies and industry associations) • Workshop	• Section 7.3.2 of this document
	Extent to which industry stakeholders agree that the implementation of the Detergents Regulation has reduced the risk (and associated cost) of litigation for the sector (e.g. due to a reduction in the number of allergic reactions, poisoning incidents)	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop	• Section 7.3.2 of this document
	Extent to which industry stakeholders agree that the implementation of the Detergents Regulation has led to a more level playing field across the EU	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop	• Section 7.3.2 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
	Extent to which industry stakeholders agree that the Detergents Regulation has led to innovation in the sector	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop	• Section 7.3.2 of this document
	Extent to which industry stakeholders agree that the Detergents Regulation has led to market opportunities	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop	• Section 7.3.2 of this document
	Qualitative (and where possible quantitative) analysis – examples of other key benefits of the Detergents Regulation, as identified by industry stakeholders	• Qualitative analysis • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Stakeholders asked to compare the situation before the Regulation came into force in October 2005, with the situation up to the present day	• Literature review • Open Public Consultation • Targeted consultation (with companies and industry associations) • SME survey • Workshop	• Section 7.3.2 of this document
	Qualitative (and where possible quantitative analysis) of the benefits for other industry sectors (e.g. tourist industry, commercial aquaculture/fisheries)	• Qualitative analysis • Benefit transfer method • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• Two key baselines for this assessment - firstly October 2005 when the Regulation first came into force, and secondly June 2013 when new limits were introduced on the P concentration of consumer laundry detergent	• Literature review • Open Public Consultation • Targeted consultation (e.g. with industry associations and NGOs) • SME survey • Workshop	• Section 7.3.3 of this document
6. What are the costs for society associated with the	Extent to which key stakeholders say that the costs of the Detergents Regulation for companies are passed through to consumers	• Question in the survey for SMEs	• N/A	• Targeted consultation (with companies and industry associations) • Workshop	• Section 7.4 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
implementation of the Detergents Regulation?	Qualitative analysis of the changes in product performance	• Question in the OPC questionnaire for citizens • Qualitative analysis *Note that it will be necessary to establish first whether, and how, the formulation of detergent products has changed as a result of the Detergents Regulation and its amendments coming into force (see sub-questions under Question 1)*	• Two baselines for the analysis – June 2013 for consumer laundry detergent, and January 2017 for consumer automatic dishwasher detergent	• Literature review (e.g. publications from industry, MS authorities, etc.) including relevant impact assessments • Targeted consultation with industry associations and companies • Open Public Consultation	• Section 7.4 of this document
7. What are the economic, social and environmental benefits for society associated with the implementation of the Detergents Regulation?	Quantitative analysis – estimation of the costs avoided for phosphates removal at waste water treatment plants	• Estimation of the P emissions avoided as a result of the Detergents Regulation, followed by estimation of the associated costs avoided at water treatment plants	• Costs avoided from June 2013 to the present day.	• Literature review	• Section 7.3.3 of this document (quantitative analysis not possible)
	Quantitative analysis – estimation of the medical/healthcare costs avoided for the treatment of allergic reactions	• Estimation of the number of allergic reactions avoided as a result of the Detergents Regulation, followed by estimation of the associated costs avoided for their treatment	• Costs avoided from June 2006 to the present day	• Literature review	• Section 5.1.2 of this document (quantitative analysis not possible)
	Qualitative (and where possible, quantitative) analysis of the following benefits for society: • Enhanced value of waterside properties	• Qualitative analysis • Benefit transfer method	• Two key baselines for the analysis – October 2005 when the Regulation first came into force, and then June 2013 when new limits	• Literature review	• Section 7.3.4 of this document; and • Annex 2, Section A2.4 • Note that quantitative analysis was not possible

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
	• Reduced clean-up costs for waterways (e.g. weed cutting) • Increased recreational and amenity value of waterbodies (e.g. for water sports, angling, etc.)		were introduced on the concentration of P in consumer laundry detergents		
	Quantitative analysis – value of savings to consumers of using the correct dosage of laundry detergent	• Quantitative analysis	• Costs avoided from October 2005 to the present day	• Literature review • Market analysis (see Qu.15)	• Section 6.1.2 of this document; and • Annex 2, Section A2.5 • Note that quantitative analysis was not possible
	Extent to which key stakeholder groups believe the labelling requirements of the Detergents Regulation are sufficient to inform downstream users and consumers about potential allergenic substances in detergents	• Qualitative analysis • Question in the OPC questionnaire for organisations	• Three key baselines for the analysis – October 2005 when the Regulation first came into force, June 2006 when minor amendments to Annex VII were introduced and March 2012 when additional amendments were made to section B of Annex VII	• Open Public Consultation • Targeted consultation (e.g. with industry associations and NGOs) • Supporting study to the Chemicals Fitness Check	• Section 6.1.3 of this document; and • Annex A3, Section A3.2.2
8. To what extent are the costs involved in implementing the Detergents Regulation justified given the benefits which have	Cost-benefit ratio	• Calculation of cost-benefit ratio based on costs and benefits calculated (covered in previous questions). Note that this will require monetisation of benefits for comparability, which may not be possible in all cases	• Various baselines, depending on the indicator – refer to previous questions.	• Results of cost and benefit calculation	• Not possible to quantify, but covered qualitatively in Section 7.6 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
been achieved?	Extent to which key stakeholders believe the costs involved in implementing the Detergents Regulation are justified given the benefits which have been achieved	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• N/A	• Open Public Consultation • Targeted consultation • SME survey • Workshop	• Section 7.6 of this document
Coherence					
9. To what extent are the Detergents Regulation provisions **internally coherent**? Do provisions overlap or contradict, do they co-act as intended? Are there gaps between the Regulation and other pieces of legislation?	Extent to which key stakeholders (by type) agree that the Detergents Regulation is internally coherent	• Question in the survey for SMEs	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop	• Section 5.1 of this document
	Qualitative analysis – examples of relevant overlaps and contradictions within the provisions of the Detergents Regulation	• Legal analysis and comparison of the provisions of the Regulation • Qualitative analysis • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• N/A	• Legislative text of the Regulation • SME survey • Open Public Consultation • Targeted consultation • Workshop	• Section 5.1 of this document
	Qualitative analysis – examples of gaps within the Detergents Regulation and between the Detergents Regulation and other pieces of legislation	• Legal analysis • Qualitative analysis • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• N/A	• Literature review • Open Public Consultation • Targeted consultation • SME survey • Workshop • Supporting study to the Chemicals Fitness Check	• Section 5.1.2 of this document
	Qualitative analysis – key stakeholders' views on the impacts that have arisen as a result of the identified inconsistencies, gaps or overlaps	• Qualitative analysis • Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• N/A	• Open Public Consultation • Targeted consultation • SME survey • Workshop • Supporting study to the Chemicals Fitness Check -	• Section 5.1 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
				maybe	
10. To what extent is the Detergents Regulation coherent with **other EU legislation**? Do provisions overlap or contradict, do they co-act as intended? What impacts do these overlaps have?	Qualitative analysis – examples of relevant overlaps and contradictions	• Text analysis and comparison of the Detergents Regulation and other relevant EU legislation	• N/A	• Legislative text of the Regulation and other EU legislative texts (e.g. REACH, CLP, Cosmetic Products Regulation, Biocidal Products Regulation, Ecolabel, PEF/OEF, Water Framework Directive, Directives on Good Laboratory Practice, etc.) • Results from study supporting the chemicals fitness check (undertaken by RPA)	• Section 5.2 of this document
	Extent to which key stakeholders agree that the Detergents Regulation is coherent with other key pieces of EU legislation	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop	• Section 5.2 of this document
	Qualitative analysis – examples of overlaps and contradictions as identified by key stakeholders	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs • Qualitative analysis	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop • Supporting study to the Chemicals Fitness Check	• Section 5.2 of this document
	Qualitative analysis – key stakeholders' views on the impacts that have arisen as a result of the identified overlaps and contradictions	• Question in the OPC questionnaire for organisations • Question in the survey for SMEs • Qualitative analysis	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop • Supporting study to the Chemicals Fitness check	• Section 5.2 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
Relevance					
11. To what extent are the concepts and definitions used in the Detergents Regulation in line and coherent with the meaning they have gained over time in practice and do they cover all the commonly accepted detergent products available on the market?	Extent to which key stakeholders agree that the concepts and definitions used in the Detergents Regulation (particularly those in Article 2) are in line and coherent with the meaning they have gained over time in practice	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 4.2 of this document
	Qualitative analysis – examples of where there are inconsistencies between the concepts and definitions used in the Detergents Regulation and associated meanings gained over time in practice	• Question in the OPC questionnaire for organisations • Qualitative analysis	• N/A	• Open Public Consultation • Targeted consultation (with industry associations and companies) • Workshop	• Section 4.2 of this document
	Extent to which key stakeholders agree that the scope of the Detergents Regulation covers all the commonly accepted detergents products available on the market	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation (with industry associations and companies) • Workshop	• Section 4.2 of this document
	Qualitative analysis – examples of key products available on the market (or that may be put on to the market in the coming years) that are not currently covered by the concepts and definitions included within the Detergents Regulation	• Question in the OPC questionnaire for organisations • Qualitative analysis	• N/A	• Literature review • Open Public Consultation • Targeted consultation (with industry associations and companies) • Workshop	• Section 4.2 of this document
	Size of the market for products (e.g. sales volume/value,	• Question in the OPC questionnaire for organisations	• N/A	• Market analysis (see Question 15)	• Section 4.2 of this document; and

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
	production volume/value) that are not currently covered by the concepts and definitions included within the Detergents Regulation	• Quantitative analysis			• Annex 1
12. To what extent are the objectives of the Detergents Regulation still relevant considering the evolution of societal needs and technological developments ?	Extent to which key stakeholders agree that the objectives of the Detergents Regulation are still relevant considering the evolution of societal needs and technological developments	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 4.1 of this document
	Qualitative analysis – examples of where the Detergents Regulation has adapted well / not so well to changing societal needs and technological developments, as identified by stakeholders	• Question in the OPC questionnaire for organisations • Qualitative analysis	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 4.1 of this document
13. Have there been any technical or other developments since the adoption (and further amendments) of the Regulation that were not foreseen in the Regulation	Qualitative analysis – examples of technical or other developments that have occurred since the adoption and further amendment of the Detergents Regulation that have impacted on the relevance of the Regulation	• Qualitative analysis	• N/A	• Literature review • Market analysis • Supporting study to the Chemicals Fitness Check • Targeted consultation • Workshop	• Section 4.3 of this document
	Qualitative analysis – examples of new problems/issues related to	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 4.3 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
that have impacts on the relevance of the Regulation? Have there been any new problems/issues related to detergents, their use and their impact on the environment and human health that are currently not addressed through the Detergents Regulation?	detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation	• Qualitative and, if possible, quantitative analysis		• Supporting study to the Chemicals Fitness Check • Literature review	
EU added value					
14. To what extent has the Regulation permitted achievements which could not be reached at MS level? To what extent	Extent to which key stakeholders agree that the Detergents Regulation has made it easier to trade detergents and surfactants cross-border within the EU	• Question in the OPC questionnaire for organisations • Questions in the survey for SMEs	• Situation before October 2005 compared to the situation from 2005 up to the present day	• Open Public Consultation • Targeted consultation • Workshop • SME survey	• Section 6.1.1 of this document
	Extent to which key stakeholders agree that the Detergents Regulation has delivered better	• Question in the OPC questionnaire for organisations	• N/A	• Open Public Consultation • Targeted consultation • Workshop	• Section 8.1.1 of this document

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
have MS issued national rules on detergents that go beyond the scope of the Detergents Regulation? To what extent is EU level intervention still warranted?	outcomes for the environment and human health than could have been achieved at the MS level alone				
	Qualitative analysis – examples of achievements that could not have been reached at the MS level alone, as identified by key stakeholders	• Question in the OPC questionnaire for organisations • Qualitative analysis	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop	• Section 8.1.1 of this document
	Qualitative analysis – examples of national provisions related to detergents that go beyond the scope of the Detergents Regulation, as identified by key stakeholders	• Qualitative analysis • Literature review	• N/A	• Targeted consultation • Workshop • Policy documents from the MS • Supporting study to the Chemicals Fitness Check	• Section 8.1.2 of this document
	Extent to which key stakeholders agree that the issues addressed by the Detergents Regulation continue to require action at the EU level	• Question in the OPC questionnaire for organisations • Questions in the survey for SMEs	• N/A	• Open Public Consultation • SME survey • Targeted consultation • Workshop	• Section 8.1.3 of this document
	Qualitative analysis – stakeholders' views regarding the most likely outcome if some or all of the provisions of the Detergents Regulation were removed at the EU level	• Qualitative analysis	• N/A	• Targeted consultation • Workshop	• Section 8.1.3 of this document
Analysis of EU market					
15. What is the current state of play of the detergents	Number of enterprises manufacturing detergents and surfactants, by size.	• Diachronic analysis	• Data from before the Regulation came into force in 2004 up to the present day.	• Eurostat • Targeted consultation (with industry associations, particularly AISE)	• Annex 1, Section A1.3.3

Table 3-4: Evaluation questions, indicators, methodology and data sources					
Evaluation questions	**Indicator**	**Methodology**	**Baseline**	**Data sources**	**Relevant sections of this report**
market (main product types and their share in the market; new technologies, products or sales practices)? What are the main sustainability aspects of detergents currently being marketed?	*Note: the term "manufacturer" is specifically defined in Article 2(10) of the Detergents Regulation*				
	Levels of turnover in the sector, by size of enterprise	• Diachronic analysis		• Eurostat	• Annex 1, Section A1.3.3
	Value and volume of detergents and surfactants traded across borders within the EU	• Diachronic analysis		• Comext database	• Section 6.1.1 of this document
	Value and volume of production of detergents and surfactants within the EU	• Diachronic analysis		• Eurostat	• Annex 1, Section A1.3
	Main product types and their share in the market	• Quantitative and, if possible, diachronic analysis		• Literature review • Targeted consultation (with industry associations, particularly AISE)	• Annex 1, Section A1.4
	Total and per capita consumption of detergents and surfactants in the EU	• Diachronic analysis		• Eurostat	• Annex A1, Section A1.4
	Change in the concentration of selected chemicals (particularly phosphates) in detergents	• Analysis of changes to the composition of detergents over time		• Literature review	• Annex 1, Section A1.2

3.4 Main limitations

There are some important factors that ought to be borne in mind when interpreting the study results. The main limitations of the study are as follows:

- Firstly, it has not been possible to quantify with any degree of accuracy the extent to which the restrictions introduced in Regulation (EU) No 259/2012 (on the use of phosphates and other phosphorus compounds in consumer laundry detergents and CADD) have led to a reduction in the phosphorus content of wastewater and the concentration of phosphorus in rivers and lakes. There are numerous reasons why this has not been possible, including the short period of time that has elapsed since the restrictions came into force, pre-existing voluntary arrangements made by MS and companies to reduce the use of phosphorus/phosphate in detergents, and a lack of follow-up monitoring data to enable quantification of impacts. For a more detailed explanation of these limitations, please refer to Annex 2, Section A2.4.6.
- Secondly, a lack of data pertaining to cases of allergic reaction to detergents means that it has not been possible to quantify the extent to which the Detergents Regulation has reduced the incidence of allergic reaction across the EU. Attempts were made to gather this data directly from poison centres (via direct email consultation), but unfortunately to no avail.
- In terms of costs incurred by industry as a result of the Detergents Regulation, it has not been possible to calculate the one-off costs associated with changing production processes and the on-going costs associated with testing the biodegradability of surfactants. This introduces considerable uncertainty into our cost calculations (Section 7.2).

The approach to this study included a legal analysis, collection and review of relevant statistical data, literature review and stakeholder consultation activities. Findings are based on own analysis, as well as contributions from stakeholders.

Stakeholders were an important source of data for the study, with much of the data and information gathered for this study sourced directly through consultation with industry, MS authorities, consumer/environmental NGOs, etc. In this regard, it should be recalled that the consultation is based on a limited sample size and that responses cannot necessarily be taken as being representative overall. Throughout the study, care has been taken to cross-check and verify information from different sources. For example, effort has been taken to identify where multiple independent stakeholders have provided a similar opinion and, where possible, anecdotal information has been triangulated with data and information from secondary sources (e.g. published literature, statistical data, etc.). Cases where the reliability and accuracy of the data provided is questionable have been clearly flagged throughout the report.

As previously outlined, arranging interviews with companies proved especially difficult and, as a result, the research team decided to redirect its focus towards industry associations and sector groups that were more willing to participate in the study and could represent the views of their member companies. Environmental and consumer NGOs were also very difficult to engage, with several citing a lack of knowledge of the Detergents Regulation as a reason for not wanting to participate.

4 Relevance

The Detergents Regulation (EC) No 648/2004 has not undergone a full evaluation since its entry into force in October 2005 and thus, in the context of the Commission's Better Regulation Strategy, an ex-post evaluation of the legislation is now considered vital.

In general, the criteria to be used in evaluations such as this depend on the policy area and the nature of the objectives. Clearly, in any evaluation, the most important criteria are those which are directly related to the objectives of the legislation. Thus, is it crucial to consider the stated purpose of the Detergents Regulation, which is laid down in Article 1(1):

> *"This Regulation establishes rules designed to achieve the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health."*

For this study, the evaluation is to be carried out in relation to the criteria of **relevance, coherence, effectiveness, efficiency and the EU added value**. Within the context of this study, these can be defined as follows:

- **Relevance** – the extent to which the Regulation remains relevant to addressing the needs of EU stakeholders and the problems (for example, in terms of the internal market and the protection of human health and the environment) that the legislation initially sought to address. The remainder of this section outlines the study findings in relation to the relevance criterion, as outlined in Table 4-1 below.

- **Coherence** – the extent to which the provisions of the Regulation are coherent, both within the Regulation itself and with other related pieces of EU legislation. Findings for this criterion are discussed in Section 5;

- **Effectiveness –** the extent to which the provisions of the Regulation achieve the above stated objective, including the degree to which those actors falling under the scope of the Regulation comply with its requirements. Findings for this criterion are discussed in Section 6;

- **Efficiency** – the extent to which the objectives of the Regulation are achieved in a cost-effective and resource efficient manner. Findings are discussed in Section 7;

- **EU added value** – the advantages of implementing the Detergents Regulation at EU level, rather than at a national, regional or local level. In order to analyse the EU added value of the Detergents Regulation, the principles of subsidiarity and proportionality need to be considered. Findings for this criterion are discussed in Section 8.

Table 4-1: Relevance criterion
'Relevance' is ascertained with reference to the needs or identified problems that necessitated the introduction of the Detergents Regulation. It may be the case that the problems that the Regulation initially sought to address are no longer relevant/exist, or that the objectives of the Regulation no longer accord with the wider goals of the European Commission. It could also be the case that technological or scientific advances have made some of the policy goals of the Detergents Regulation defunct.
The following evaluation questions are considered:
To what extent are the concepts and definitions used in the Detergents Regulation in line and coherent with the meaning they have gained over time in practice and do they cover all the commonly accepted detergents products available on the market?
To what extent are the objectives of the Detergents Regulation still relevant considering the evolution of societal needs and technological developments?
Have there been any technical or other developments since the adoption (and further amendments) of the Regulation that were not foreseen in the Regulation that have impacts on the relevance of the Regulation? Have there been any new problems/issues related to detergents, their use and their impact on the environment and human health that are currently not addressed through the Detergents Regulation?

4.1 Relevance of the objectives of the Detergents Regulation

The overarching objectives of the Detergents Regulation are set out in Article 1(1), which states that:

> *"This Regulation establishes rules designed to achieve the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health."*

Our analysis of the available information suggests that **the objectives of the Detergents Regulation are still relevant considering the evolution of societal needs and technological developments.** As shown in Figure 4-1, 87% of organisations that responded to the OPC indicated that they agree, or strongly agree, that the objectives of the Regulation are still relevant; none disagreed.

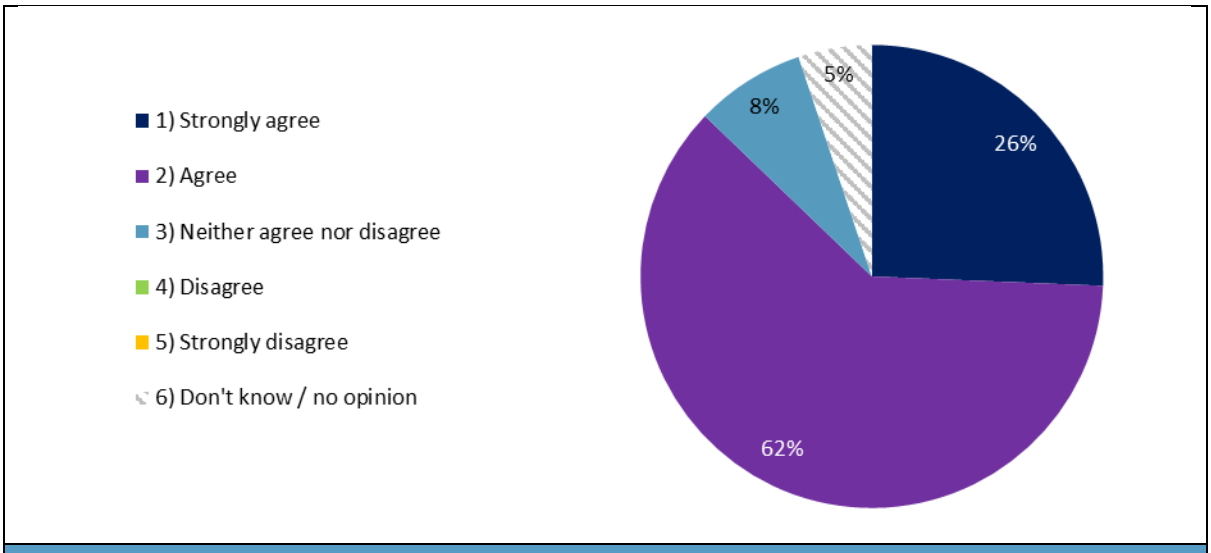

Figure 4-1: To what extent do you agree that the objectives of the Detergents Regulation are still relevant considering the evolution of societal needs and technological developments? Responses to the OPC – Organisations *(n=39)*

During the interviews, stakeholders also agreed that the objectives of the Detergents Regulation are still relevant, considering the evolution of societal needs and technological developments. For example, in the words of one MS authority from Germany, that provided a written response to the questions in our interview guide:

> *"We believe that the aims of article 1 of the regulation are still all relevant, especially given the expected population growth. The ingredients used are still largely similar to those when the regulation was introduced."*

4.2 Relevance of concepts and definitions used in the Detergents Regulation

During the OPC, organisations were split as to whether the concepts and definitions used in the Detergents Regulation are in line with the meaning they have gained over time in practice. As shown in Figure 4-2, 37% of respondents agreed that they are, however, an equal proportion (37%) disagreed with this statement. When asked whether the scope of the Detergents Regulation covers all commonly accepted detergent products available on the market, 66% of organisations agreed.

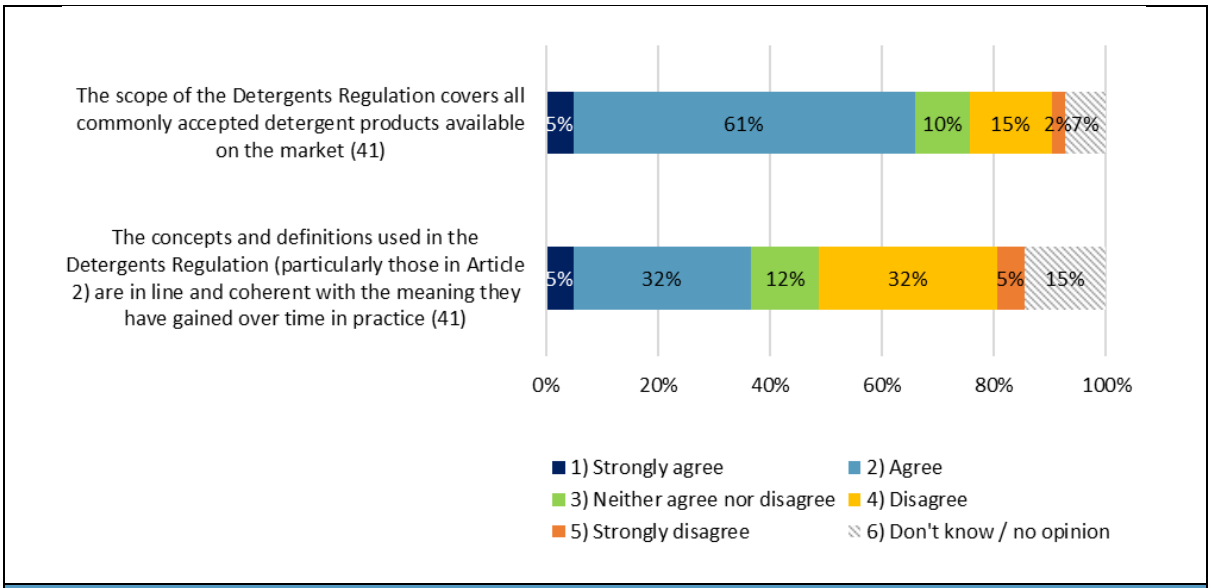

Figure 4-2: To what extent do you agree with the following statements? Responses to the OPC - Organisations (*n=41*)

SMEs play a key role in terms of innovation in the detergents sector and are, perhaps, the most likely to produce innovative/niche products that fall outside of the Regulation's scope. With this in mind, the survey disseminated by the Enterprise Europe Network (EEN) asked SMEs to estimate the share of detergent formulations in their portfolio that fall within the Regulation's scope (see Figures 4-3 and 4-4). As shown in Figure 4-4, 57% of SMEs indicated that all of their consumer laundry detergent products fall within the scope of the Regulation, 60% indicated that all of their CADD products fall within scope, 46% indicated that all of their other consumer detergent products fall within scope and 35% indicated that all of their industrial and institutional detergent products fall within the scope of the Regulation.

The data suggest that a sizable proportion of the 'detergent' formulations being produced by SMEs may not currently fall within the scope of the Detergents Regulation.

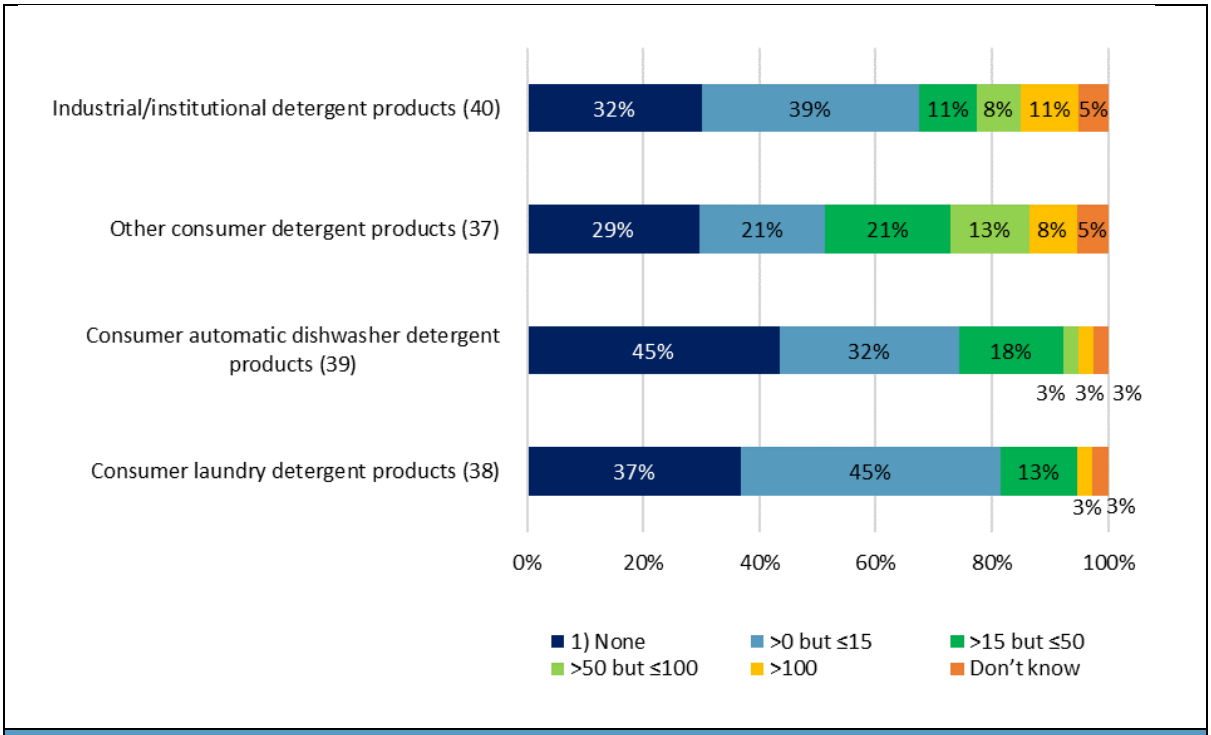

Figure 4-3: How many different detergent formulations does your company have within its portfolio? Responses to the survey of SMEs conducted by EEN (*n=37 to 40, depending on question*).

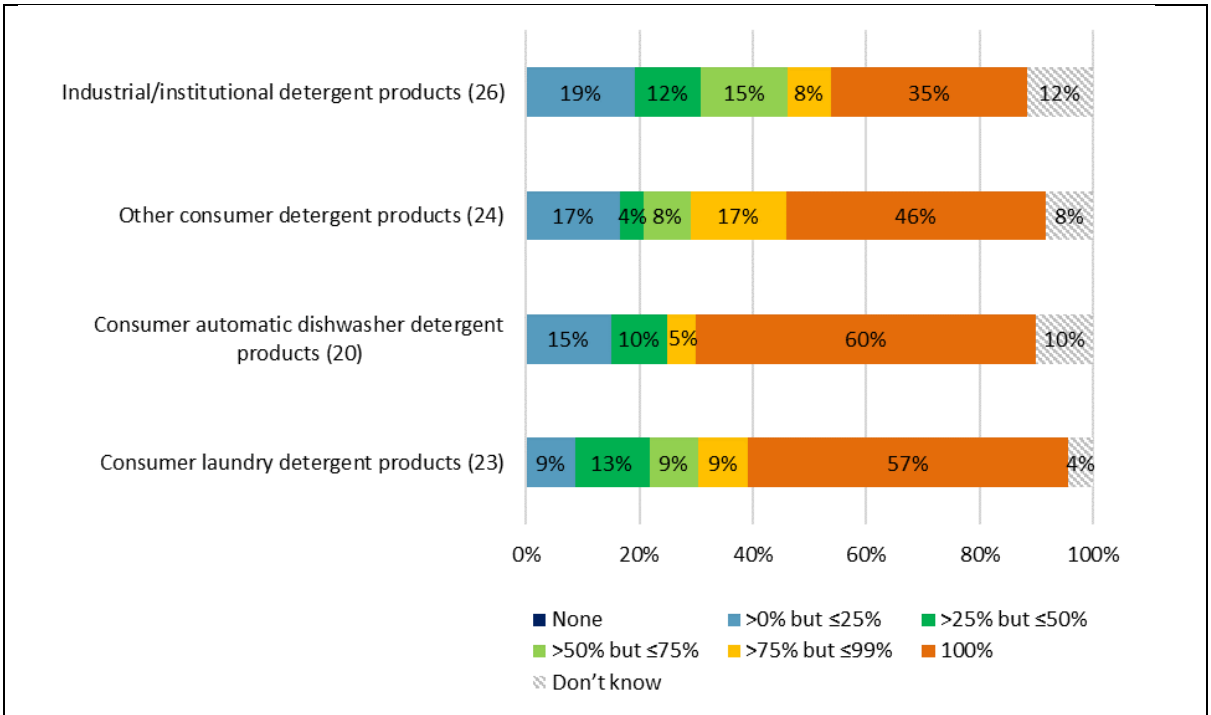

Figure 4-4: What percentage of your formulations fall within the scope of the Detergents Regulation? Responses to the survey of SMEs conducted by EEN *(n=20 to 26 depending on question). Only answers from companies that indicated that they have >0 detergent formulations within their portfolio have been included in this graph.*

While it is quite possible that SMEs may have developed some new formulations or products that do not fall within scope of Article 2 (definitions) of the Detergents Regulation, there are other factors that need to be borne in mind when interpreting the data shown in Figure 4-4:

- Firstly, some SMEs may not realise that the Regulation is applicable to their products; and
- Secondly, the question may have been misinterpreted, e.g. as being the proportion of products that are sold within the geographic area covered by the Detergents Regulation (i.e. the EU28 and other countries of the EEA).

During the consultation, stakeholders noted that **some of the definitions provided in Article 2 are unclear and/or open to interpretation** and that, as a result, **it is not clear whether some products available on the market are included within the Regulation's scope**.

The following definitions were identified by stakeholders as posing a particular issue in this regard:

- Detergent (Article 2(1));
- Cleaning mixture (Article 2(1));
- Other cleaning and washing mixtures (Article 2(1)); and
- Cleaning (Article (2(3)).

One MS authority clarified that the definition of "other cleaning and washing mixtures" and "cleaning" are a source of confusion[21] and may lead to the unnecessary extension of the Detergents Regulation's obligations to many types of chemical products and their mode of action which may be regulated by other pieces of EU legislation. On the other hand, the definitions may exclude some ways of removing undesirable deposits from the scope of the Detergents Regulation.

Another MS authority explained that it would be helpful if these definitions[22] could be clarified in the Regulation. When asked whether a Commission Guidance Document (or official 'Question & Answer' document) would be sufficient to help clarify these terms, the stakeholder explained that because guidance documents are not legally binding, any clarifications should be made within the provisions of the Regulation.

In contrast, AISE has stated that the definition of a detergent is already clear and that industry understands that the Detergents Regulation targets products intended for washing and cleaning processes.

The following products available on the market in the EU have been identified as being particularly difficult to place, and may be perceived by some stakeholders as falling outside the Regulation's scope:

- One environmental NGO from Sweden indicated that it is unclear whether **cleaning wipes and scouring pads impregnated with detergent** fall within the scope of the Detergents Regulation. The stakeholder indicated that some manufacturers of these products seem to adhere to the requirements of the Regulation, while others do not. The Commission[23] has

[21] Unfortunately, the stakeholder did not specify for whom these definitions are confusing.

[22] The MS authority noted that the definition of "cleaning" and of "other cleaning and washing mixtures" is open to interpretation.

[23] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, September 2015 version. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

clarified that foam sponges that are pre-charged with detergent when placed on the market, and that are intended for cleaning and polishing, are considered to be a form of packaging for a carrier for that detergent. While the foam sponge itself is not considered to be one of the ingredients of the detergent formulation, the detergent in the sponge does fall within the scope of the Regulation and, thus, detergent pre-charged foam sponges are considered to fall within the scope of the Detergents Regulation. Similarly, the Commission's Guidance Document explains that foam sponges intended for cleaning, that are not pre-charged with detergent when placed on the market, are considered to be articles and do not fall within the scope of the Detergents Regulation. According to a 2014 report from JRC, the total sales value for household care wipes across Poland, Denmark, the Netherlands, Germany, France, Italy and the UK in 2013 was €600 million.[24] Sales of wipes in Germany were particularly high compared to the other countries listed, which suggests that companies in Germany may be particularly affected; although, it should be noted that it is not known where companies manufacturing this product type are mostly based.

- One consumer NGO from Denmark identified that there are **re-usable washing eggs/balls** available on the EU market that contain pellets of detergent. The stakeholder explained that the producers of these products are not aware that their products fall within the scope of the Detergents Regulation and that these products often do not comply with the labelling provisions of the Regulation. Legal analaysis, carried out for this study, has identified that the Detergents Regulation does not foresee a situation where an article (such as a washing egg/ball) contains a detergent. As explained in the bullet point above, the Commission has considered the situation of foam sponges pre-charged with detergent. The same interpretation could be applied here: the eggs/balls themselves fall outside the scope of the Regulation, but the pellets of detergent they contain would be in the scope of the Regulation and, consequently, the eggs/balls pre-charged with pellets of detergent would be in the scope of the Detergents Regulation. It should be noted that although the European Commission's interpretation seems reasonable, it is not legally binding. One example of such a product available on the EU market is the Ecozone Ecoball[25], which comes pre-charged with tiny pellets of detergent. It is interesting to note that the Ecozone Ecoballs also contain Sodium Alpha Olefin Sulphonate, which is a surfactant. Unfortunately, data do not appear to be available on the overall size of the market for re-usable washing eggs/balls in the EU.
- During the consultation, one MS authority from France noted that some related household products (e.g. **waxes, polishes and textile dyes**) can cause problems in terms of the interpretation of the Regulation. The European Commission has clarified that whether a particular product falls within the scope of the Detergents Regulation depends on its purpose (i.e. whether it has a cleaning function) and not on its composition (i.e. whether it contains a surfactant). The Commission's guidance clarifies that if a polish contains a surfactant but simply applies a wax layer to a surface, then the polish would not fall under the scope of the Detergents Regulation. However, if the polish contains a surfactant and has a combined cleaning plus wax application action, similar to a car shampoo, then the polish would fall within the Regulation's scope.

[24] JRC (2014): Revision of European Ecolabel Criteria for All-Purpose Cleaners and Sanitary Cleaners, Preliminary Report for the Revision of Ecological Criteria for All-Purpose Cleaners and Sanitary Cleaners. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/APC%20Preliminary%20Report.pdf

[25] Ecozone (2017): Laundry sensitive, ecoballs 1000 washes. Available at: http://www.ecozone.com/product/laundry-sensitive-ecoballs-1000-washes

- One Commission official indicated that it is unclear whether certain **'do-it-yourself' cleaning products** fall within the scope of the Detergents Regulation. White vinegar, for example, is sometimes advertised as a cleaning product, but is also a food product, and it is not clear whether this falls within the Regulation's scope. UK vinegar manufacturer Sarson's[26], for example, states on its website that its white vinegar – sold as a food product - can also be used for cleaning. Interestingly, 38% of European participants in a survey conducted by Nielsen Group in 2015 said that they regularly use vinegar for cleaning.[27] Nielsen Group's survey also found that 27% of participants used baking soda for cleaning and 8% used soda water. Our legal analysis shows that the definition of a detergent in the Regulation (Article 2(1)) refers to an "intended" washing and cleaning purpose. It appears however that the product does not need to be marketed for such use but may fall in the scope if used for such uses. The European Commission's interpretation is that it is the purpose (cleaning function or not) and not the composition which matters. As a consequence, according to the Commission, a cleaning product as described could fall in the scope as soon as the product claims to have surface cleaning functions. This is a reasonable interpretation in light of the limited provisions of the Regulation in that regard.

In recent years, novel cleaning products have been developed that contain living microorganisms as active ingredients. These '**microbial cleaning products**' appear to be growing in popularity (NVZ, 2017)[28] and, according to at least one industry association during the consultation, could cause potential issues for human health (e.g. they should not be used in sterile rooms, open air treatment systems or on surfaces intended to come into direct contact with food and should not be used in situations where they can reach an aerosolised form and therefore be easily inhaled).

For some organisations, it is not always clear which pieces of legislation govern the safety and marketing of these products (Spök & Klade, 2009)[29] and, during the consultation, **several stakeholders questioned whether microbial cleaning products fall within the scope of the Detergents Regulation**.

[26] https://www.sarsons.co.uk/vinegar-tips

[27] Nielsen Group (2016): The dirt on cleaning, Home cleaning/laundry attitudes and trends around the world. Available at: http://www.nielsen.com/content/dam/nielsenglobal/eu/docs/pdf/Nielsen%20Global%20Home%20Care%20Report.pdf

[28] NVZ (2017): Microbiologische reinigingsmiddelen. Available at: https://www.nvz.nl/download_file/view/384/334/

[29] Spök A & Klade M (2009): Environmental, health and legal aspects of cleaners containing living microbes as active ingredients, Results and conclusions of a study commissioned by the Austrian Federal Ministry of Agriculture, Forestry, Environments and Water Management, undertaken by IFZ. Available at: www.ifz.at/Media/Dateien/Downloads-IFZ/Publikationen/.../IFZ-EWP-3-2010

Table 4-2: Microbial detergent products

In the detergents industry, the terms 'microbial', 'bacterial', 'biological' and 'probiotic' are generally used to describe cleaning products that utilise bacteria, or bacterial enzymes, to facilitate or assist in the cleaning action that the product is trying to fulfil. True **microbial cleaning products** contain bacteria (either live, or in spore form) and work on the basis that the micro-organisms in the product form enzymes that can break down organic matter in a controlled manner. The organic dirt itself is used as 'nutrition' to produce and secrete enzymes.

According to NVZ[30] (the Dutch association for detergents, maintenance products and disinfectant), microbial cleaning products most often contain spores (a spore is a dormant survival-structure of a bacterial cell which has an inactive cell metabolism and division) of bacteria, for instance of the 'Bacillus' species. Some (professional) microbial cleaning products may also contain certain yeasts or fungi instead of bacterial spores.

Research undertaken by the European Commission Joint Research Council (JRC) for the revision of six EU Ecolabel Criteria for detergents and cleaning products[31] indicates that manufacturers of microbial cleaning products claim two main modes of action for the microorganisms included in these products:

1. Microorganisms are used to produce enzymes that degrade organic matter. This cleaning action can be extended if spore-forming bacteria are used; and

2. Beneficial microorganisms colonise surfaces and it is claimed that these are able to out-compete unwanted microorganisms over food sources therefore 'cleaning' the surface.

Microbial cleaning products can also contain surfactants, which help to clean and dislodge dirt and other organic matter from the surface being cleaned. Research undertaken as part of the JRC study indicates that the microorganisms appear to currently have the greatest use in the all-purpose cleaners and sanitary cleaner categories. During the consultation, one industry association noted that most microbial cleaners are used as drain cleaners and for reducing odours. While our literature review has not identified any data on the size of the market for microbial cleaning products, the JRC report suggests that the market has grown in recent years and that there are now multiple producers present on the European market[32]. Nevertheless, AISE has indicated that they are not aware of any major moves by industry to produce microbial products at the EU level and that microbial cleaning products are still a niche segment.

Following a company request, the European Commission and the MS agreed that microbial cleaners – even if containing surfactants – do not have a cleaning action as defined in Article 2(3) of the Detergents Regulation and therefore do not fall within the scope of the Detergents Regulation (European Commission, 2015). However, this decision was based on an inquiry for one specific product where the cleaning action was claimed to result from bacteria feeding on the excrement of

[30] NVZ (2017): Microbiologische reinigingsmiddelen. Available at: https://www.nvz.nl/download_file/view/384/334/

[31] Boyano A., Kaps R., Medyna G., Wolf O. (2016): JRC Technical Reports – Revision of six EU Ecolabel Criteria for detergents and cleaning products, Final Technical Report, European Commission. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/Technical%20background%20report.pdf

[32] Boyano A., Kaps R., Medyna G., Wolf O. (2016): JRC Technical Reports – Revision of six EU Ecolabel Criteria for detergents and cleaning products, Final Technical Report, European Commission. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/Technical%20background%20report.pdf

dust mites. The Interuniversitäres Forschungszentrum für Technik, Arbeit und Kultur has noted that it is not entirely clear whether the rationale of this decision would also apply to all microbial products, e.g. to a surface cleaner in sanitary facilities (Spök & Klade, 2009).[33]

During the consultation, JRC clarified that there are two types of microbial cleaning products: those that contain surfactants and therefore fall within the scope of the Regulation, and those that do not contain surfactants and therefore fall outside of the Regulation's scope. A Draft Technical Report from JRC (dated November 2016)[34] similarly states that *"following discussions with DG GROW and industry, it has been established that the Detergents Regulation should be interpreted to mean that microbial cleaning products that have the combined action of traditional surfactants and bacteria fulfil the definition of a detergent as set out in the Detergents Regulation and fall, therefore, under its scope…".*

Our legal analysis has shown that the Detergents Regulation's definition of 'detergents' provides no indication on whether or not products with an effect based on the action of bacteria fall within the scope of the Regulation, and JRC (2016) has similarly found that *"the Detergents Regulation and the definitions and requirements set within do not address bacteria or other living organisms except in the FAQ on the implementation of the Regulation".* The definition of detergents in Article 2(1) only refers to "substances" and "mixtures". A substance means "*chemical elements and their compounds in the natural state or obtained by any production process…*" (Article 2(4)), whereas a mixture means "a mixture or solution composed of two or more substances" (Article 2(5)). The Regulation does not differentiate substances depending on their natural origin or not. One could interpret that the concept of substances also encompasses substances obtained by microbial actions. However, it could be argued that microbial cleaning products put on the market may be considered as not containing the substance or mixture containing soaps and other/surfactants but only the microbial material that can produce such substances/mixtures.

On the other hand, one could claim that microbial cleaning products qualify as 'other cleaning and washing mixtures', i.e. intended for any other washing and cleaning process, regardless of it containing (or not) soaps and/or other surfactants. For that, the product would only have to fulfil the definition of a mixture and have an intended cleaning purpose. However, as noted previously, the Commission has clarified (European Commission, 2015) that a product with a claimed cleaning effect depending on the action of bacteria does not have a cleaning action within the meaning of Article 2(3) of the Detergents Regulation and therefore does not fall within the Regulation's scope.

It is the consultants view, therefore, that clarification is needed on whether microbial cleaning products fall within the scope of the Detergents Regulation.

On a tangential note, one MS authority stated during the consultation that it is not clear how microbial ingredients should be declared on a website according to Annex VII D of the Regulation and that microorganisms used in detergents could be included on the product label.

[33] Spök A & Klade M (2009): Environmental, health and legal aspects of cleaners containing living microbes as active ingredients, Results and conclusions of a study commissioned by the Austrian Federal Ministry of Agriculture, Forestry, Environments and Water Management, undertaken by IFZ. Available at: www.ifz.at/Media/Dateien/Downloads-IFZ/Publikationen/.../IFZ-EWP-3-2010

[34] JRC (2016): Revision of six EU Ecolabel criteria for detergents and cleaning products, Technical Report, Draft dated November 2016. Available at: http://susproc.jrc.ec.europa.eu/detergents/stakeholders.html

Our analysis of the available information from literature review and consultation shows that **there are some products that currently fall outside of the Regulation's scope that, perhaps, should be included. For example**:

- An environmental NGO from Sweden noted that **air fresheners** do not currently fall within the scope of the Detergents Regulation. The stakeholder suggested that there could be an improvement from an environmental point of view if they were covered by the Detergents Regulation. In terms of human health, general obligations on the safety of consumer products are set out in Directive 2001/95/EC on general product safety and would be applicable to air fresheners. Many air freshener products will also fall under the scope of CLP. Unfortunately, data do not appear to be available on the size of the market for consumer air fresheners within the EU/EEA. A report from the JRC has, however, estimated that 10,488 tonnes (€31 million) of professional air fresheners are consumed annually in the EU28, Norway and Switzerland (based on 2012 data from the Italian Association of Manufacturers, Afidamp).[35] It should be noted that AISE believes air fresheners perform a different action to detergents and are not, and should not, be within the scope of the Detergents Regulation.

- In a similar vein, "**scent booster**" products (such as Lenor Unstoppables[36]), that are relatively new to the market and used to prolong the fragrance of freshly washed laundry, may also fall outside of the scope of the Detergents Regulation. As for the waxes, polishes and textile dyes described above, if the scent boosters have no intended washing or cleaning function, they may fall outside the scope of the Detergents Regulation. This is potentially important because global sales of scent booster products rose dramatically between 2010 and 2015 (as shown in Figure 4-5). Unfortunately, similar data for the EU/EEA do not appear to be available.

- A MS authority from Germany noted that there is a lack of conformity between Germany and the European Commission regarding the classification of **products for cleaning and washing animals**. The European Commission's Guidance on the Detergents Regulation (European Commission, 2015)[37] clarifies that products for washing the nipples of animals (e.g. cows or goats) fall outside of the scope of the Detergents Regulation. The Commission has also clarified that products for cleaning pets (e.g. shampoo for dogs, horses, etc.) do not fall within the scope of the Detergents Regulation as the cleaning of the hair, fur or skin of live animals is not covered by the definition of washing in Article 2(2). The MS authority from Germany has clarified that "*these products should be named in the definition of "detergents" by analogy with fabric softeners, with the aim of harmonising and protecting the environment*."

- A MS authority from Germany remarked that "*the regulation does not take account of **surfactant-free cleaning enhancers**, since these do not fall under the definition of washing*

[35] JRC (2014): Revision of European Ecolabel Criteria for All-Purpose Cleaners and Sanitary Cleaners, Preliminary Report for the Revision of Ecological Criteria for All-Purpose Cleaners and Sanitary Cleaners. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/APC%20Preliminary%20Report.pdf

[36] Lenor (2017): Unstoppables. Available at: http://www.lenor.com/uk/Product-Overview/Unstoppables

[37] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, September 2015 version. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

aids. From our point of view, there is no factual reason why washing aids are taken into account in the regulation and cleaning aids are not." Unfortunately, data do not appear to be available on the size of the EU/EEA market for surfactant-free cleaning enhancers.

- Tumble dryer balls (such as Ecozone Tumble Drying Cubes[38]), that mechanically soften fabrics and speed up the drying process (thereby saving energy), would also fall outside of the scope of the Detergents Regulation.

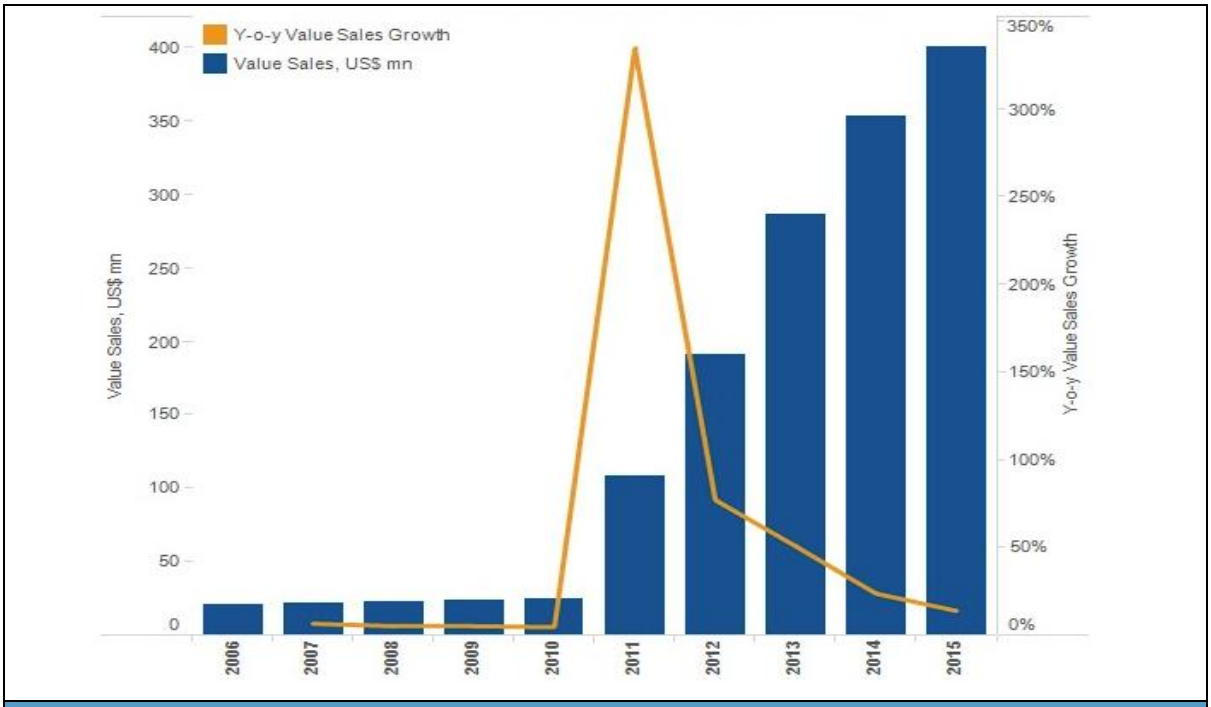

Figure 4-5: Global value of sales for in-wash scent boosters, 2006 to 2015[39]

4.3 Technical or other developments that affect the relevance of the Regulation and new problems/issues related to detergents that are currently not addressed through the Detergents Regulation

Organisations that participated in the OPC were asked whether they are aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation. The results to this question are shown in Figure 4-6 below. As shown in the figure, **about one third (34%) of**

[38] Ecozone (2017): Tumble dryer cubes. Available at: https://www.johnlewis.com/ecozone-tumble-drying-cubes-pack-of-2/p164899

[39] Euromonitor International (2016): In-wash scent boosters: How is it a game changer for laundry care? Available at: http://blog.euromonitor.com/2016/06/in-wash-scent-boosters-how-is-it-a-game-changer-for-laundry-care.html

organisations were aware of new problems/issues related to detergents that are not currently addressed through the Detergents Regulation.

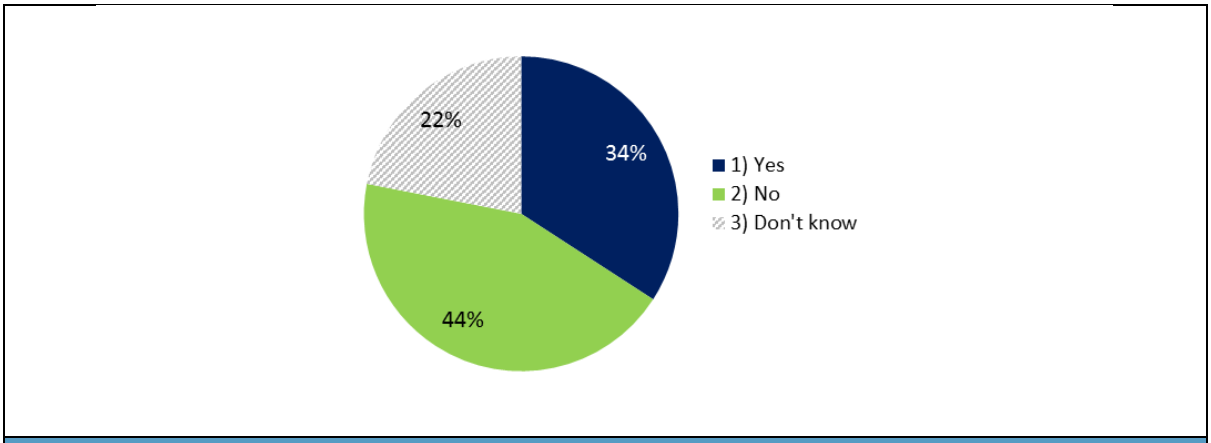

Figure 4-6: Are you aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation? Responses to the OPC - Organisations *(n=41)*

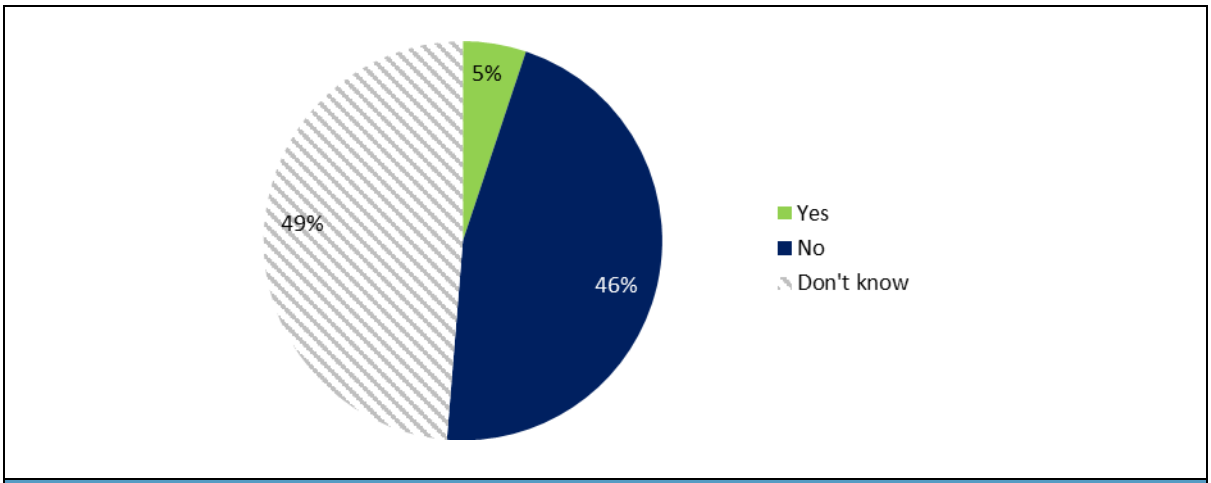

Figure 4-7: Are you aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation? Responses to the survey of SMEs conducted by EEN *(n=39)*

When asked whether they are aware of any new problems or issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Regulation, only 5% of SMEs that participated in the survey disseminated by the EEN said "yes"; 46% said "no" and 49% said "don't know" (see Figure 4-7). Unfortunately, the 5% of SMEs (2 respondents) that said "yes" did not provide any further explanation or examples.

Analysis of the available information from literature and consultation has identified some emerging issues that affect the relevance of the Detergents Regulation:

1. The refill sale of detergents;
2. The use of nano ingredients in detergent products;
3. The use of concentrated detergents and implications for detergent dosing;

4. The emission of microplastics to the environment as a result of detergent use; and
5. The potential for making use of new digital tools.

Points 1-4 are discussed briefly in the sections that follow, while Point 5 is covered in Section 5.1.2. Further information on these topics can be found in Annexes 2 and 3.

4.3.1 Refillable detergents

There appear to be some areas where the Detergents Regulation has not kept pace with innovations in the detergents sector, or where there are misunderstandings or confusion over how the Regulation should be interpreted. For example, some shops – mainly small eco-shops – are providing a container refill service whereby customers fill up their own bottles from a larger container. Based on discussions within the Detergents Working Group, the Commission recognises that there are different types of refill sale taking place in Europe (European Commission, 2016).[40] For instance, some stores are known to have refill distribution machines that recognise specific receptacles (with the correct label) and only allow refill if the correct receptacle is used. Other stores verify at the check-out whether the correct label is applied to the receptacle.

Although the Detergents Regulation specifies that certain information must be legible and visible on the packaging, it does not cover the refill situation (RPA et al., 2017)[41]. This could result in potential issues in terms of protecting human health and the environment if the correct labels are not included with the associated detergent products. Tukes (2013)[42], the Finnish Safety and Chemicals Agency, has therefore expressed some doubts about the legality of this approach with regard to Article 11 of the Detergents Regulation and notes on its website[43] that the refill sale of bulk detergents is prohibited in Finland.

There are also concerns that the practice of refilling detergent containers could present a safety issue for consumers if, for example, unsuitable or dirty containers are used; if a product needs to be recalled; if consumers try to clean/wash containers at home; or if refilling stations are placed within the reach of children.

It should be noted that AISE's Cleanright panel labels actively promote the refilling of detergent packaging, as shown in Figure 4-8. During the consultation, AISE explained that the bulk/refill sale of detergents does not introduce any vulnerability in terms of safety and is a practice that has the potential to contribute to sustainability and the circular economy.

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[40] European Commission (2016): 20th Meeting of Competent Authorities for REACH and CLP (CARACAL) – 8-9 March 2016. Available at: https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:libraryContentList:pager&page=1&FormPrincipal_SUBMIT=1&org.apache.myfaces.trinidad.faces.STATE=DUMMY

[41] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[42] Tukes (2013): Letter to the attention of the members of the Detergents Working Group. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=11241&no=2

[43] Tukes (2014): Kosmetiikan irtomyynti sallittu – pesuaineet myytävä pakattuina ja merkittyinä. Available at: http://www.tukes.fi/fi/Ajankohtaista/Tiedotteet/KemIkaalituotevalvonta/Kosmetiikan-irtomyynti-sallittu--pesuaineet-myytava-pakattuina-ja-merkittyina

Figure 4-8: AISE Cleanright Panel – Trigger spray cleaners[44]

The key issues surrounding this topic are elaborated further in Annex 3 (Section A3.7.2).

4.3.2 Nano ingredients

A recent development in the detergents market is the development of detergents that contain nano ingredients (e.g. nanosilver, which is used as an antibacterial agent in some detergent products). During the consultation, it was indicated that hard surface cleaners, dishwasher tablets and laundry detergents (powders and liquids) are the most likely to contain nano ingredients. In Denmark, the Danish Consumer Council and the Danish Ecological Council have, in cooperation with DTU Environment, developed a database ("The Nanodatabase"[45]) that contains information on consumer products that contain nanomaterials. A search of the database using the term "detergent" brings up several products containing nanosilver (including a liquid laundry detergent, liquid dishwasher detergent and laundry ball), as well as car shampoos containing nano diamond and nano silicon.[46] During the consultation, a consumer organisation indicated that it was aware of products containing nanosilver being imported to the EU from outside the Union. It was also reported that tests were carried out about 10 years ago to develop glass cleaners that contain nanomaterials, although at the time these were not very successful.

Although nanomaterials offer technical and commercial opportunities, they may also pose a risk to the environment and raise health and safety concerns for humans and animals (ECHA, 2017)[47] and some people have therefore argued that consumers have a right to know whether the products they buy contain nanomaterials (Nano&me, 2017).[48] During the consultation, there was generally consensus among MS authorities and companies that **whether nanomaterials should be labelled depends on whether the nanomaterial is hazardous.** One trade union explained that its biggest

[44] AISE (2017): Trigger spray cleaners cleanright panel. Available at: https://www.aise.eu/library/artwork/trigger-spray-cleaners-cleanright-panel.aspx

[45] Available at: http://nanodb.dk/en

[46] Search undertaken on 27 July 2017.

[47] ECHA (2017): Nanomaterials under Biocidal Products Regulation. Article available at: https://echa.europa.eu/regulations/nanomaterials-under-bpr

[48] Nano&me (2017): Household cleaning products. Article available at: http://www.nanoandme.org/regulation/household-cleaning-products

concerns relate to nanotubes, which mimic asbestos; however, it is not clear whether these have been used in detergent products.

For further information on this topic, see Annex 3 (Section A3.2.4).

4.3.3 Concentrated detergent products

As elaborated in Annex 1 (Section A1.4.1 and Section A1.5.3), **modern detergents are far more concentrated than their predecessors** (for example, between 2011 and 2016, the retail value of standard detergents fell 79% in Western Europe and 42% in Eastern Europe, while the retail value of concentrated detergents grew 11% and 1% in Western and Eastern Europe respectively[49]). Indeed, in many EU countries, sales of concentrated detergents now outweigh sales of standard products (Figure 4-9). In Poland, for example, sales of concentrated detergents account for 95% of all detergent sales, while in the UK and Germany the share of concentrated detergents sold are 91% and 90% respectively (Euromonitor, in JRC 2014a).[50] Sales of concentrated detergents make up 73% of detergent sales in Denmark, 46% in France and 26% in Italy.

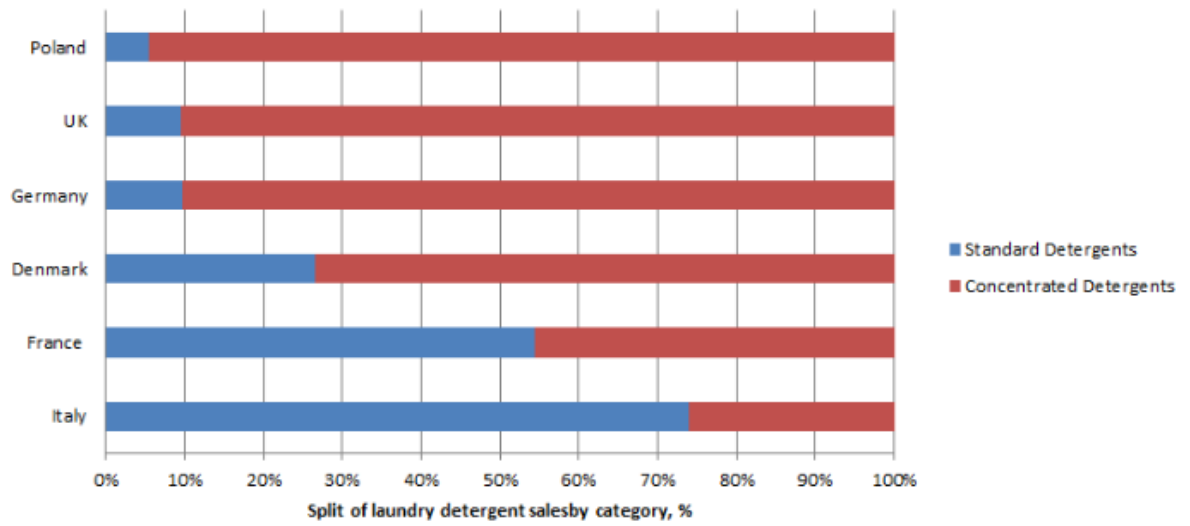

Figure 4-9: Split of laundry detergents, standard versus concentrated, (%) 2012
Source: Euromonitor, as reported by JRC (2014a)

In order for concentrated products to deliver an environmental benefit, users of these products need to use less than they would have done before. Indeed, **the more concentrated the product, the more important correct dosing is for environmental benefits to be achieved**. As elaborated in Section 6.1.2 of this document (and Annex 2, Section A2.5), stakeholders have shown concern that **the dosing information that must be provided according to the Detergents Regulation is now out of date** and that **consumers may not read, understand or correctly follow the dosing instructions.**

[49] Euromonitor International, as cited by AISE, pers. comm.

[50] Euromonitor in JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

Interestingly, the Detergents Regulation does not provide a definition as to what constitutes a concentrated product (e.g. it does not specify whether the product must be concentrated relative to its predecessor product, or to the wider market, for example; nor does it specify a minimum level of concentration). Although this was not identified as a concern by stakeholders during the consultation, the JRC has noted that it encountered difficulties in setting a criterion for the use of concentrated products in the EU Ecolabel for cleaning services because there was not a clear baseline against which "concentrated" should be assessed.

4.3.4 Microplastics

Tiny pellets of plastic – sometimes referred to as **plastic microbeads or microplastics – are reportedly being used in detergents**, for example as an abrasive media or for decoration. **These microplastic particles (in principle items smaller than 5mm) can enter the environment after being washed down the drain and can subsequently be released into the aquatic environment with wastewater outflows**. Repeated studies have shown that plastic microbeads can be ingested by marine and freshwater animals, leading to physical harm to wildlife (such as fish and sea birds) and reproductive and/or toxic effects (see for example Andrady (2011)[51], Cole et al. (2011)[52], McGoran et al. (2016)[53]). In fish, for example, plastic microbeads can lead *inter alia* to gut blockages, gill blockages, abrasion/tissue damage, altered behaviours, hormone disruption and inhibited growth (Horton, 2017)[54]. There is also evidence to suggest that microplastics are entering the human food chain (House of Commons Library, 2017)[55], with microplastic particles found in beer, honey, seafood, salt and even drinking water (Horton, 2017)[56]. Uncertainties remain about the implications of microplastic consumption on human health.

While there is very little publicly available information on the extent of microplastic ingredient use in detergent products, a 2017 review by Flora & Fauna International has found at least one floor cleaning product on the UK market that contains polyethylene.[57] A recent study in the Netherlands

[51] Andrady AL (2011): Microplastics and the marine environment, Marine Pollution Bulletin, 62 (8) pp 1596-1605. Available at: http://www.sciencedirect.com/science/article/pii/S0025326X11003055

[52] Cole M et al. (2011): Microplastics as contaminants in the marine environment: A review, Marine Pollution Bulletin, 62 (12), pp 2588-2597. Available at: http://www.sciencedirect.com/science/article/pii/S0025326X11005133

[53] Mc Goran AR et al. (2016): Presence of microplastic in the digestive tracts of European flounder, Platichthys flesus, and European smelt, Osmerus eperlanus, from the River Thames, Environmental Pollution, available at: www.thames21.org.uk/wp-content/uploads/.../Alex-Environmental-Pollution-paper.pdf

[54] Horton A (2017): Presentation at the Royal Society of Chemistry, on "Microplastic Pollution: Everyone's problem", 16th October 2017

[55] House of Commons Library (2017): Briefing Paper, Microbeads and microplastics in cosmetic and personal care products. Available at: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7510

[56] Horton A (2017): Presentation at the Royal Society of Chemistry, on "Microplastic Pollution: Everyone's problem", 16th October 2017

[57] Flora & Fauna International (2017): Appendix 3: Summary of microplastic ingredient (MPI) data from UK product database. Report available at: www.fauna-flora.org/wp.../FFI-Microbeads-Guidance-Document-January-2017.pdf

has also found suspected plastic ingredients in 10 out of more than 400 tested abrasive floor cleaners on the Dutch market (Verschoor et al., 2016).[58] For instance, polypropylene terephthalate was found as an ingredient in several laundry detergents on the market in the Netherlands. This is important because research undertaken for the Mermaids Life+ Project has found that detergents sold in Southern Europe are more likely to contain microplastics than those in Northern European countries (as explained by one environmental NGO during the consultation). The European Commission has launched two dedicated studies to be executed in 2017 which will examine the origin pathways and impacts of intentionally added microplastics in products and microplastics generated during the life cycle of products (European Commission, 2017).[59]

During the consultation, multiple stakeholders indicated their support for a ban on the use of microplastics in detergents (including MS authorities, environmental and consumer NGOs and representatives from the watertreatment industry).

Plastic microfibres from synthetic textiles (such as polyester, acrylic and nylon) have also been recognised as an important source of microplastic pollution in the world's oceans and seas. Researchers have been investigating how some of the ingredients used in laundry detergent products increase or decrease the release of microfibres into the water after several washes. It has been noted that polyester, which is the main synthetic fibre used in the textile industry, is sensitive to alkaline hydrolysis, with temperature accelerating the chemical damage (Coranado Rombles, 2016).[60] However, most commercial detergents contain alkaline agents such as sodium carbonate and bicarbonate, sodium hydroxide, or sodium silicate to remove soil, oils and fats. Research suggests that the use of alkaline detergents can release on average nine times more microplastic fibres from polyamide and polyester yarns when compared to distilled water (Coranado Rombles, 2016). In addition to alkalinity, powder laundry detergents usually contain sodium percarbonate, a granulated bleaching agent that, in combination with alkalinity, is currently being targeted as a potential contributor to microfibre release.

For more information on microplastics and detergents see Section 6.1.2 of this report and Annex 2 (Section A2.6.2).

[58] Verschoor et al (2016), as reported by ELUK (2017): Environment Links UK response to Defra, Scottish Government, Welsh Government and Department of Agriculture, Environment and Rural Affairs in Northern Ireland's Consultation: Proposals to ban the use of plastic microbeads in cosmetics and personal care products in the UK and call for evidence on other sources of microplastics entering the marine environment. Available at: http://www.wcl.org.uk

[59] European Commission (2017): Our Oceans, Seas and Coasts – Marine Litter. Available at: http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm

[60] Coronado Robles M (2016): Plastic micro-fibres – Problem or opportunity? Available at: http://blog.euromonitor.com/2016/03/plastic-microfibres-problem-or-opportunity.html

Summary of findings - Relevance

- Most stakeholders agreed that the objectives of the Detergents Regulation are still relevant considering the evolution of societal needs and technological developments.
- There was a mixed view among respondents on whether the concepts and definitions used in the Detergents Regulation are in line and coherent with the meaning they have gained over time in practice. One key issue is that it is not always clear to industry whether certain products available on the market are included within the Regulation's scope (e.g. microbial cleaning products).
- There are some areas where the Regulation has not kept pace with technical and other developments. For example, the labelling requirements of the Regulation are not well adapted to the refill sale of detergents and the dosing instructions required under Annex VII B need to be updated. Various stakeholder groups were also concerned about some of the new ingredients being used in detergents (e.g. microplastics and nanomaterials) and their impacts on the environment and/or human health. Finally, as will be discussed in Section 5.1.2, multiple industry representatives have also indicated that the use of innovative communication methods (e.g. QR codes) could help to reduce the amount of information presented on product labels.

5 Coherence

Table 5-1: Coherence criterion
This section looks at whether the Detergents Regulation is internally coherent (i.e. whether the various provisions and components of the Regulation and its amendments are consistent and operate to achieve its objectives) and whether the Regulation is coherent with other pieces of EU legislation. It identifies whether there are any overlaps, gaps or contradictions, and whether the provisions of the Regulation co-act as intended.
The following evaluation questions are considered:
To what extent are the Detergents Regulation provisions internally coherent? Do provisions overlap or contradict, do they co-act as intended? Are there gaps between the Regulation and other pieces of legislation?
To what extent is the Detergents Regulation coherent with other EU legislation? Do provisions overlap or contradict, do they co-act as intended? What impacts do these overlaps have?

5.1 Internal coherence of the Detergents Regulation's provisions and gaps between the Regulation and other pieces of legislation

5.1.1 Coherence within the provisions of the Detergents Regulation

Organisations that participated in the OPC were asked to indicate whether they are aware of any gaps, overlaps or inconsistences/contradictions ***within*** the provisions of the Detergents Regulation. As indicated in Figure 5-1 below, **approximately half of the organisations that responded to the OPC indicated that they either "agree" or "strongly agree" that there are gaps, overlaps and inconsistences/contradictions within the provisions of the Detergents Regulation.**

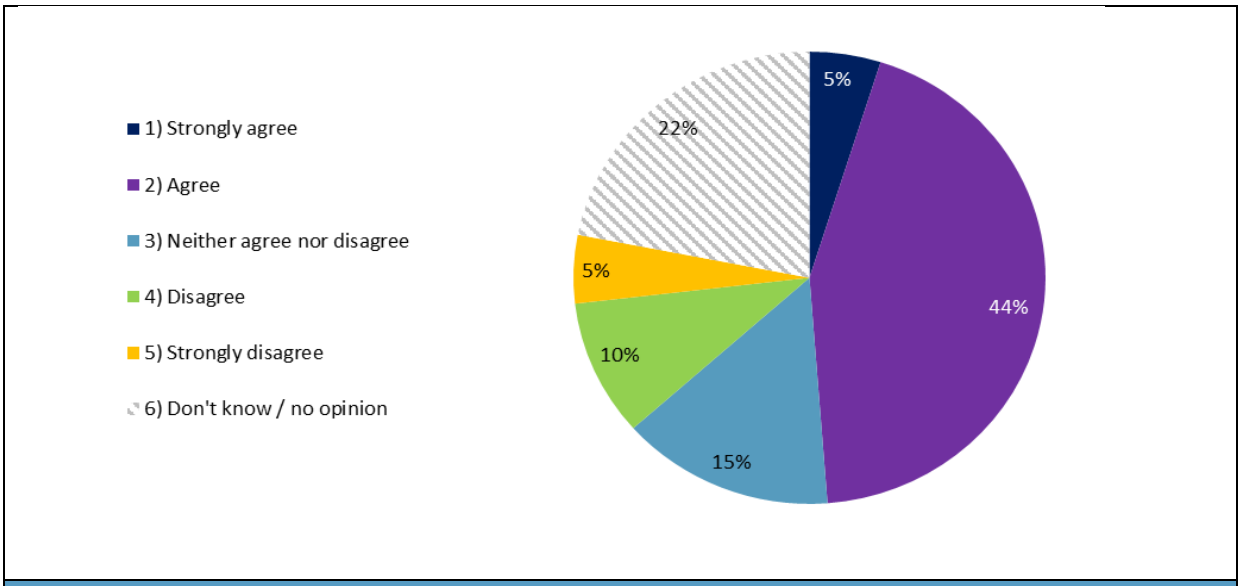

Figure 5-1: Are there gaps, overlaps and inconsistencies/contradictions within the provisions of the Detergents Regulation. Responses to the OPC - Organisations (*n=41*)

In contrast, most SMEs that participated in the survey conducted by the EEN did not know whether there are any overlaps, gaps or inconsistencies within the provisions of the Detergents Regulation and/or between the Detergents Regulation and other pieces of legislation (Figure 5-2). Only a relatively small proportion indicated that there are gaps, overlaps or inconsistencies.

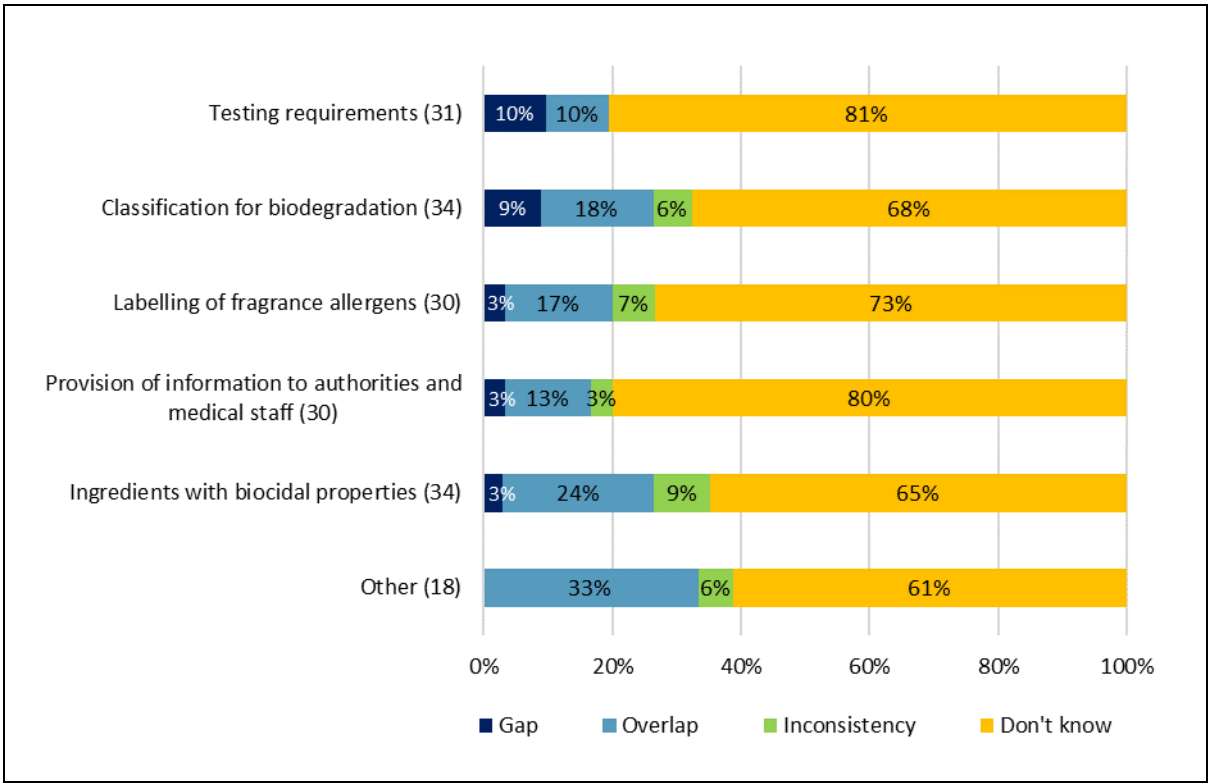

Figure 5-2: Are you aware of any gaps, overlaps or inconsistencies within the provisions of the Detergents Regulation and/or between the Detergents Regulation and other pieces of legislation? Responses to the survey of SMEs conducted by EEN (*n=18 to 34 depending on response*)

During the interviews, stakeholders generally indicated that the provisions of the Detergents Regulation are internally coherent and that there are no major overlaps or inconsistences. This conflicts somewhat with the results shown in Figure 5-1.

During the OPC, two MS authorities picked up on an inconsistency in the information that must be provided according to Annex VII (concerning labelling and ingredient datasheets). One noted that there is an overlap between Annex VII C (ingredient datasheet) and Annex VII D (publication of the list of ingredients). The other explained that according to Annex VII D, the manufacturer must give INCI names of ingredients, whereas on the label of the product (Annex VII A) those names are not required.

During the OPC, several stakeholders mentioned that there are overlaps or inconsistencies in terms of labelling, but did not clarify their response.

5.1.2 Gaps between the Detergents Regulation and other legislation

As discussed in Section 4.2, there appear to be some products that are currently on the market in the EU/EEA that fall outside the scope of the Detergents Regulation (e.g. products for washing and cleaning animals, air fresheners and scent boosters, and surfactant-free cleaning enhancers), or for

which the scope of the Detergents Regulation is not entirely clear (e.g. microbial cleaning products; re-usable washing eggs/balls; cleaning wipes impregnated with detergent; related household products such as waxes, polishes and dyes; and do-it yourself cleaning products).

During the consultation, stakeholders also picked up on a broad range of other potential gaps in the provisions of the Detergents Regulation. These are summarised in the sections below.

Labelling of allergens

Allergy is the most common chronic disease in Europe. Today, more than 150 million Europeans suffer from chronic allergic disease, and it is estimated that, by 2040, around 40% of the EU's population will have an allergic predisposition (EAACI, 2016).[61] As well as impacting individuals' productivity and quality of life, dealing with allergic reactions imposes a significant cost burden on national health systems (EAACI, 2015).[62]

Under the Detergents Regulation (Annex VII A), allergenic fragrances listed of in Annex III to the Cosmetic Products Regulation that are added to detergents at concentrations exceeding 0.01% by weight shall be listed on the product using the nomenclature provided in the Cosmetic Products Regulation. The Scientific Committee on Consumer Safety (SCCS) is responsible for identifying the fragrance allergens that must be labelled under the Cosmetic Products Regulation and, as a consequence, also under the Detergents Regulation. There are currently 26 allergens listed in Annex III to the Cosmetic Products Regulation that must therefore be labelled if present in a detergent in a concentration >100 ppm (0.01% by weight). However, this list of allergens is currently under consideration by the Commission, as a result of an opinion of the SCCS, which recommended that the presence of any of 127 fragrance allergens should be indicated on cosmetic product labels. A potential expansion of the list of fragrance allergens included on the labels of cosmetic products (and detergent products), would result in more allergens being listed on the pack (RPA et al., 2017).[63]

During the consultation, there was general agreement among consultees that the labelling of allergens is useful for consumers and that it helps to ensure a high degree of protection of human health. However, results from the supporting study for the Chemicals Fitness Check (RPA et al., 2017)[64], and feedback from consumer organisations during the OPC, interviews and workshop, suggest that **a lack of detailed ingredient lists on detergents restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain substances**. While several consumer organisations suggested that detergents should be labelled

[61] EAACI (2016): European Union Activities. The European Academy of Allergy and Clinical Immunology (EAACI). Available at: http://www.eaaci.org/outreach/eu-activities/eu-activities.html

[62] EAACI (2015): Advocacy manifesto, Tackling the allergy crisis in Europe – Concerted policy action needed. Available at: http://www.eaaci.org/documents/EAACI_Advocacy_Manifesto.pdf

[63] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[64] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

with full ingredient lists; one consumer organisation from Denmark explained that **simply listing the ingredients is not sufficient because most people will not know which substances are allergens**. This organisation suggested that **it would be helpful if the allergens could be highlighted (e.g. in bold or italic font)**, as is already the case for food products.

For further information on this issue, see Annex 2 (Section A3.2.2).

Substances used in detergents

Some citizens and organisations that participated in the consultation were concerned about some of the ingredients being used in detergent products.

From the perspective of human health, allergens, sensitisers, CMRs and SVHCs were all raised as a particular concern and several consumer organisations commented that **CMRs and SVHC[65] should not be permitted for use in detergents.** It should be noted that CMRs are restricted in detergents for consumer use under Annex XVII to REACH. While there was a derogation for some listed substances such as sodium perborate and for perboric acid for use in detergents, this derogation ceased to apply from 1 June 2013 (as outlined in appendix 11 of Annex XVII to REACH). This suggests that if CMRs are still being used in detergents for consumer use, there is an issue of non-compliance with REACH. The restriction on the use of CMRs as per Annex XVII Endpoint 28 covers the supply to the general public. Another possibility is therefore that consumers are purchasing detergents intended for professional use that contain CMRs.

Consumer organisations have argued that because the potential for skin contact for some detergents, such as hand dishwashing detergents, is comparable to rinse-off cosmetics, a mechanism to restrict use in detergents of substances classified as CMR category 2 is needed to close this gap and to ensure coherence with the Cosmetic Products Regulation.

When asked about this issue, one industry association explained that:

> *"For our industry, these kind of substances are strongly regulated by REACH, which studies and restricts its utilization for consumer uses.*
>
> *The inclusion of rules on CMR and SVHC substances in the Detergents Regulation when already they are regulated by REACH, would not help improve human health protection, but would create overlap between regulations, contrary to the current objectives of the REFIT program."*

Unlike the Detergents Regulation (which does not include any requirements for nanomaterials), both the Biocidal Products Regulation and Cosmetic Products Regulation include specific provisions on nanomaterials and require the name of each nanomaterial included in the product to be stated on the label, followed by the word "nano" in brackets.[66,67] MS authorities and companies agreed that

[65] Note that SVHC include CMRs, but that some SVHC are not CMRs. For example, as per Article 57 of REACH, a substance may be proposed for identification as a SVHC if it is persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) according to the criteria set out in Annex XIII to the REACH Regulation; and/or if there is "scientific evidence of probable serious effects to human health or the environment which give rise to an equivalent level of concern".

[66] ECHA (2017): Nanomaterials under Biocidal Products Regulation, Article available at: https://echa.europa.eu/regulations/nanomaterials-under-bpr

whether nanomaterials should be labelled on detergents depends on whether the nanomaterial is hazardous. The consensus was that **if nanomaterials are hazardous to human health and/or the environment, then they should be labelled or removed from the product altogether**; if they are not hazardous, then they should not be labelled.

For further information on gaps in the Regulation related to the ingredients used in detergents and their impacts on human health, see Annex 3 (Section A3.2.4).

From the perspective of the environment, **the use of microplastics[68] in detergents was seen as a particularly important issue that remains to be addressed -** either by the Detergents Regulation or by other means, such as REACH. **Plastic microfibres from synthetic textiles (such as polyester, acrylic and nylon) are also an important source of microplastic pollution to the Europe's rivers, lakes and seas,** and research undertaken for the Life+ MERMAIDS project has shown that **some detergent formulations have the effect of enhancing the release of plastic microfibres from manmade textiles** (liquid formulations, for example, release fewer fibres than detergent powders because they cause less friction). The issue of microplastics and detergents is discussed further in Annex 2 (Section A2.6.2).

Further analysis of the available information has identified a range of other substances that are of concern for the environment:

- One MS authority was concerned that **persistent, bioaccumulative and toxic substances (PBTs) and hormone disruptors** are not currently addressed in the Detergents Regulation.
- A consumer organisation highlighted that **brighteners, colourants and perfumes** (e.g. limonene) can have a negative effect on the environment. The stakeholder noted that because colourants are not essential to the product, they should be eliminated from detergents unless they are shown to have no hazardous effects on the environment or human health.
- Reports from the International Commission for the Protection of the Rhine have shown that **odoriferous substances** (i.e. perfumes) (ICPR, 2010)[69] **and complexing agents** (ICPR, 2012)[70] used in detergents and cleaning agents are a concern for the environment and are present at high concentrations in the Rhine.

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[67] European Commission (2012): Public health, Nano guidance for cosmetic products now available, Article available at: http://ec.europa.eu/dgs/health_consumer/dyna/enews/enews.cfm?al_id=1276

[68] Microplastics may be used as an abrasive media or for decoration in detergent products. These microplastic particles can enter the environment after being washed down the drain and can subsequently be released into the aquatic environment with wastewater outflows. Repeated studies have shown that plastic microbeads can be ingested by marine animals, leading to physical harm and reproductive and/or toxic effects.

[69] International Commission for the Protection of the Rhine (2010): Evaluation report for odoriferous substances, available at: http://www.iksr.org/en/topics/pollution/micropollutants/index.html?tx_queofontresizer_pi1[fontresize]=0

[70] International Commission for the Protection of the Rhine (2012): Evaluation report for complexing agents, available at: http://www.iksr.org/en/topics/pollution/micropollutants/index.html?tx_queofontresizer_pi1[fontresize]=0

For further information on gaps in the Detergents Regulation related to ingredients and their impacts on the environment, see Annex 2 (Section A2.6).

Biodegradability

The Detergents Regulation only regulates the biodegradability of surfactants and only covers aerobic biodegradation. In recognition of the potential gaps in the Regulation's scope, Article 16(2) of the original (2004) Detergents Regulation stated that, by April 2009, the Commission shall:

> *"carry out a review of the application of this Regulation, paying particular regard to the biodegradability of surfactants, and shall evaluate, submit a report on, and, where justified, present legislative proposals relating to:*
>
> *(a) Anaerobic biodegradation,*
>
> *(b) The biodegradation of main non-surfactant organic detergent ingredients"*

In 2009, the European Commission published two communications pursuant to Article 16 of the Detergents Regulation.

The first - COM/2009/0208 - published on the 4 May 2009 concluded that:

> *"No risk to the environment has been identified for any of the non-surfactant organic detergent ingredients … It is, therefore, not considered appropriate to propose legislation to impose a requirement of ultimate biodegradability on the non-surfactant organic ingredients… The concept of using biodegradability as an acceptance criterion for detergent ingredients has become redundant in light of comprehensive risk assessment data on the environmental toxicity of the substances."*

The second - COM/2009/230 - published on 26 May 2009 concluded that:

> *"Following a systematic evaluation of the risks from the presence of non-biodegradable surfactants in various anaerobic compartments, it was concluded that, in contrast to the adverse effects observed in the absence of aerobic degradation, the lack of anaerobic degradation does not seem to be correlated with any apparent risk for these environmental compartments. It can therefore be concluded that anaerobic biodegradability should not be used as an additional pass/fail criterion for the environmental acceptability of surfactants such as LAS [linear alkylbenzene sulphonate] which are readily biodegradable under aerobic conditions".*

The Commission has, therefore, concluded that the biodegradability of non-surfactant organic ingredients and the anaerobic biodegradability of surfactants do not represent gaps in the Detergents Regulation.

During the OPC, one national authority stated that:

> *"According to Article 16 (2) of the Detergents Regulation in the version of 31 March 2004 the Commission's task was to carry out an evaluation and where justified, present proposals for legislative measures regarding the anaerobic biodegradation of surfactants and the biodegradation of main non-surfactant organic ingredients. From our point of view, this evaluation has not been carried out intensively enough. In particular, the Commission should reconsider to include the biodegradation of non-*

surfactant organic ingredients into the regulation to reduce the emission of persistent micro pollutants into water bodies."

During the consultation, one environmental NGO similarly suggested that, in order to enhance the protection of the environment, **the biodegradability criteria for surfactants should be applicable to all organic compounds included in detergents** and not just surfactants, and that **the anaerobic biodegradability of detergents should also be considered** within the Detergents Regulation. Although similar arguments were iterated by MS authorities and NGOs present at the validation workshop, this view was not unanimous. For example, when asked whether the biodegradability requirements should be extended to other non-surfactant organic ingredients used in detergents, one industry association explained that biodegradability is not necessarily a good measure of how harmful or not a substance is to the environment because in some (rare) cases, the toxicity of a degradation product might be much higher than the toxicity of the starting material. Another industry association explained that extending the requirements is not necessary because REACH already covers the environmental suitability of chemicals for their use in detergents (and other products) and Human and Environmental Risk Assessments (HERA) have been provided to the Commission and MS on specific substances. Similar views were expressed by other industry stakeholders during the consultation.

For further information on this gap, see Annex 2 (Section A2.3).

Phosphorus content of detergents for industrial and institutional use

The Detergents Regulation (as amended in 2012) only introduced a limit for the total phosphorus/phosphate content of consumer laundry and dishwashing detergents for use in a domestic machine. It did not introduce a limit on the total phosphorus/phosphate content of industrial or institutional detergent products. The rationale is outlined in the fourth recital of Regulation (EU) No 259/2012, which states that:

"It is currently not appropriate to extend limitations on the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents to industrial and institutional detergents at the Union level because suitable technically and economically feasible alternatives to the use of phosphates in those detergents are not yet available."

At the workshop, one MS authority indicated that the use of phosphorus in industrial and institutional laundry and dishwashing detergents should be revisited and that the phosphorus concentration limits provided in Annex VIa of the Regulation should potentially be extended to cover these detergent types. The authority indicated that for laundry detergents designed for industrial and institutional use, suitable alternatives to phosphorus/phosphate are now available; however, for industrial/institutional dishwasher detergents, phosphorus is still required. It should be noted a similar view had also been expressed by other organisations (including environmental and consumer NGOs) earlier in the consultation, as outlined in Annex 2, Section A2.4.7). For example, one NGO explained that there is a false assumption that all professional users are connected to a wastewater treatment works that removes phosphate/phosphorus before it enters the environment.

In response, an industry association explained that the Commission should look at whether emissions of phosphorus from industrial/institutional detergents are a large source of phosphorus to the environment when compared to other potential sources in order to determine the impact and potential benefit of extending the phosphate restrictions in a broader context. A company indicated that introducing restrictions on the use of phosphorus/phosphate in detergents for the professional sector would result in increased costs.

Refill sale of detergents

As previously outlined in Section 4.3.1 and elaborated in Annex 3 (Section A3.7.2), **there are concerns that the practice of refilling detergent containers could present a safety issue for consumers if, for example, the correct labels are not provided, or if unsuitable or dirty containers are used**. Although the Detergents Regulation specifies that certain information must be legible and visible on the packaging, it does not cover the refill situation (RPA et al., 2017)[71] and the majority view of stakeholders (notably MS authorities and consumer organisations) during the consultation was that this represents a gap in the Detergents Regulation.

Importantly, **the definition of a manufacturer in the Detergents Regulation could lead to a situation whereby the retailer that offers a refill product, becomes a manufacturer within the meaning of the Regulation**. This issue has been raised at the Detergents Working Group[72] but was also highlighted by MS authorities during the consultation. One MS authority, for example, noted that:

> *"The Detergents Regulation should better consider this form of sale. We are for example not sure who is responsible for the correct labelling of products which have been re-filled by consumers and whether the retailer can be held liable on the basis of the detergent regulation. We believe the wording "…on the packaging in which the detergents are put up for sale to the consumer…." in Article 11 (2) should be adopted to ensure that not only the bulk container is properly labelled but also the product that the customer leaves the store with."*

Stakeholders explained that the refill sale of detergents could present a safety issue for consumers if unsuitable or dirty containers are used, or if refill stations are located (e.g. in a shop) within the reach of children. During the OPC, one MS authority noted, for example, that:

> *"It should also be mentioned that there are no requirements for packagings in the Detergents Regulation (as there are for packagings containing hazardous chemicals in the CLP Regulation, Article 35). Such a requirement should be considered especially in the case of refill-sale of detergents."*

There are also concerns that **the use of refillable detergent bottles would make it impossible for producers to claim back products/batches that are found out to be defective** (e.g. contamination, formulation error, etc.) after they have been distributed to the market (European Commission, 2014)[73].

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[71] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[72] European Commission (2015): Meeting of the Detergents Working Group – 5th December 2014. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=24959&no=2

[73] European Commission (2014): Meeting of the Detergents Working Group – 14th November 2013. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=19715&no=5

Although not an issue raised explicitly by stakeholders, we believe that there could potentially be risks associated with consumers cleaning containers at home; for example, an increased risk of splashing detergent into eyes or onto skin and/or risks associated with the safety fastening or catches (e.g. child-proof catches) on the packaging wearing out due to repeated use. In view of the potential risks, one MS authority suggested that the refill sale of detergents should be restricted to products that do not have corrosive or irritating properties.

For further information on issues pertaining to the retail sale of detergent, see Annex 3 (Section A3.7.2).

Labelling of content for professional detergent products

Annex VII A of the Detergents Regulation lists the information – in terms of the content of detergents – that must be provided on the labels and packaging of detergents sold to the general public. The final paragraph of Annex VII A states that:

> *"For detergents intended to be used in the industrial and institutional sector, and not made available to members of the general public, the abovementioned requirements do not have to be fulfilled if the equivalent information is provided by means of technical data sheet, safety data sheets, or in a similar appropriate manner."*

During the OPC, one MS authority explained that:

> *"There is no requirement for professional products on a specific place or document where to find the labelling of contents. This affects the enforcement and prevents an effective enforcement when you have to search for that information in different documents and then compare to the actual formulation of the product. It would be good to include a requirement in the regulation that the information where to find the labelling of contents should be stated in the SDS. For example, in the SDS "The labelling content may be found in the xxx". The xxx could for example be a technical information sheet."*

Thus, this response indicates that, in the case of professional products, the Detergents Regulation does not stipulate specifically where the content of detergents should be presented (e.g. a specific place or document). The respondent indicated that this prevents effective enforcement as authorities have to search through the documents to locate the content information and then compare this with the actual formulation of the product. The authority suggested that it would be helpful if a requirement was included in the Regulation specifying where the labelling of the contents of a detergent should be stated in the relevant documentation. Although this point was only raised by one MS authority, specifying where specifically the content information should be presented in the accompanying documentation could help to ensure a standardised approach across industry and increase the efficiency of the enforcement process.

Additional information that should appear on product labels

During the consultation, stakeholders suggested a range of other information that should potentially be included on detergent product labels. For example:

- A MS authority from Germany suggested that it would be beneficial if the detergent packaging could be labelled with **information on the scope of application or intended use for the product, as well as the compatibility with the materials cleaned**. This authority also

suggested that the Regulation should require the labelling of **security advice, e.g. "keep out of reach of children"** in order to better protect human health.

- A consumer organisation from Cyprus suggested that products could be labelled with an **environmental footprint**. In a similar vein, a consumer organisation from Denmark suggested labelling products with a **biodegradability score/index** (e.g. how many days it takes the product to biodegrade, or a score between 1 and 100 points). It was noted that providing consumers with this information would enable them to compare the biodegradability of detergent products and allow them to make a more informed choice. In contrast, one industry association explained that, based on current biodegradation tests, a biodegradability index/score would be meaningless from a scientific and regulatory point of view and lead to erroneous conclusions and misunderstandings by consumers. It is worth noting that a plethora of ecolabels, such as the EU Ecolabel, are already available in the EU. These ecolabels seek to enable consumers to differentiate products on the basis of their environmental performance. For more information, see Annex 2 (Section A2.4.5).

- An EU official explained that the energy used with heating water in preparation for cleaning is one of the most significant environmental impacts associated with detergent use. It was therefore suggested that the detergent label should indicate to use **the lowest recommended temperature**. One environmental NGO noted that washing laundry at a lower temperature can also help to reduce the release of plastic microfibres from manmade textiles.

Provision of information via new digital tools

Throughout the consultation, stakeholders expressed their concern about the amount of information appearing on detergent labels. Several industry associations, for example, explained that **because labels are overloaded with information, consumers find it difficult to identify and understand the most pertinent information**. This is reflected in research undertaken by AISE (Vandecasteele et al., 2014)[74] that has shown that an increasing share of consumers believe that there is too much information provided to consumers on how to use detergent products safely. It should be noted that, during the OPC, only 16% of citizens stated that "there is too much information" provided on how to use detergent products safely. This compares to 41% that indicated "there is about the right amount of information" and 39% that indicated "there is not enough information". For further information, see Annex 3, Section A3.5.

A recent assessment of the cumulative costs faced by the EU chemicals industry (Technopolis Group & VVA, 2016)[75] has found that the detergents sector bears a relatively high administrative burden, compared to other sub-sectors within the EU chemicals industry. During the OPC, it was noted by AISE and other stakeholders from the detergents industry that **labelling requirements are an important component of the administrative burden faced by the detergents industry**.

Many companies and industry associations indicated that some of the information currently provided on product labels would be better provided online and linked to the product using, for example, a QR code. As noted by AISE during the OPC:

[74] Vandecasteele B et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016

[75] Technopolis Group & VVA (2016): Cumulative cost assessment for the EU chemicals industry, Final Report. Available at: ec.europa.eu/DocsRoom/documents/17784/attachments/1/translations/en/.../pdf

"A potential way of reducing the level of information included on product labels while ensuring it remains available is through the use of innovative communication technologies, such as Q-R codes and bar codes."

Several industry stakeholders suggested that digital tools could be used to reduce the on-pack labelling of ingredient lists and their related concentration ranges so that the packaging focuses on the elements that are most relevant to consumers. It was noted, for example, that QR codes are already used on some detergent products available on the EU market.

Nevertheless, there are some potential issues with providing key consumer information online, not least that there already appear to be compliance issues with the obligation to provide ingredient datasheets online (as outlined fully in Annex 3, Section A3.4). In the EuroDeter study (CLEEN, 2014)[76], for example, almost 30% of inspected detergents, for use by the general public, did not provide a website address related to the list of ingredients on the label or packaging. Furthermore, the list of ingredients was not available at the website address mentioned on the label for 46% of the inspected products. Compliance checks carried out by the Danish Consumer Council 'THINK Chemicals'[77] similarly found missing ingredient lists (datasheets), lists that were extremely difficult to find and lists that were outdated. One MS authority noted during the consultation that easy accessibility to online information is not currently a requirement of the Detergents Regulation.[78] **By requiring information to be provided online, there is the potential to exacerbate existing compliance issues.**

A second problem is that results from the supporting study for the Chemicals Fitness Check (RPA et al., 2017)[79] show that some consumers believe **a lack of detailed ingredient lists restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain substances.** During the consultation for the present study, several consumer organisations similarly suggested that detergents should carry full ingredient lists on the packaging to enable consumers to make an informed choice. For further information, see Annex 3, Section A3.2.2.

Other factors that we believe need to be borne in mind are the level of internet-enabled portable device (e.g. mobile phone, tablet computer, etc.) penetration in the EU/EEA and whether consumers would have access to the internet (free of charge) at the point of purchase.

AISE (and some other stakeholders consulted) also suggested that innovative communication technologies could be used to convey other relevant information, such as sustainable consumption tips. It is the Consultants view that while some non-essential information could be provided to consumers via digital means (e.g. advice on using detergents sustainably), essential information (e.g. on any allergens present) should remain on the detergent label.

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[76] CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu/

[77] KEMI (2017): Check your dishwashing soap for allergenic preservatives, available at: http://kemi.taenk.dk/bliv-groennere/check-your-dishwashing-soap-allergenic-preservatives

[78] Although it should be noted that this is specified in the Commission's guidance on the Regulation.

[79] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes 1 to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

During the consultation, it was noted that authorities charged with protecting the environment require information on the ingredients used in products in order to do their job. One MS authority explained that it would be helpful if the ingredient datasheet outlined in Annex VII C of the Detergents Regulation was made available to environmental protection agencies so that they are able to establish more targeted water monitoring programmes. It was also suggested that a Europe-wide product database of ingredients used in all 'down the drain' products could be established in order to identify potentially problematic ingredients. The US Department of Health and Human Services already provides a similar database[80], while the EU Ecolabel provides a Detergent Ingredient Database[81] containing the ingredients that are most widely used in detergent formulations. This position was supported by a consumer organisation at the workshop, which highlighted that a central database of ingredients used in detergents would be beneficial in terms of identifying ingredients that may be of concern from an environmental or human health perspective. For further information on this topic see Annex 2, Section A2.6.4.

5.2 Coherence between the Detergents Regulation and other EU legislation

Detergents are subject to a range of EU legislation. The labelling of detergents is subject to both the Detergents Regulation and the CLP Regulation. Some detergents may also be subject to the Biocidal Products Regulation, including so-called "treated articles" if they contain a biocidal active substance and the detergent product has a biocidal claim. In addition, the Detergents Regulation refers to the Cosmetics Products Regulation for the labelling of allergenic fragrances. All detergents are also subject to transport legislation for transport packaging, the General Product Safety Directive (Directive 2001/95/EC) as well as the Market Surveillance Regulation (Regulation (EC) No 765/2008. The REACH Regulation is also relevant to detergents with respect, e.g. to obligations applying to substances of very high concern (SVHC) in articles.

Organisations that participated in the OPC were asked whether they are aware of any overlaps, inconsistencies or contradictions between the Detergents Regulation and other pieces of EU legislation. Their responses are summarised in Figure 5-3. As shown in the graph, almost two thirds (64%) of the organisations that responded to the OPC said that they "agree" or "strongly agree" that there are overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation; in comparison 12% said that they "disagree" or "strongly disagree".

[80] US Department of Health and Human Services (2017): Household Products Database, available at: https://hpd.nlm.nih.gov/cgi-bin/household/list?tbl=TblBrands&alpha=A

[81] http://ec.europa.eu/environment/archives/ecolabel/product/pg_did_list_en.htm

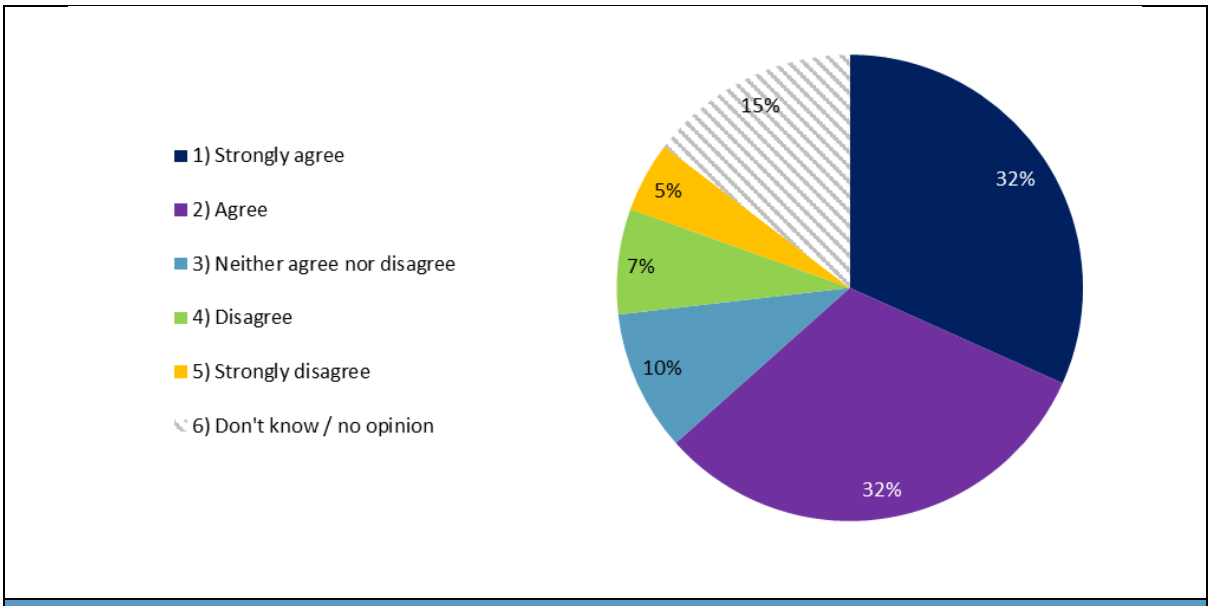


Figure 5-3: Are there overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation. Responses to the OPC - Organisations (*n=41*)

The main coherence issues identified during the literature review, legal analysis and consultation are elaborated in the sections that follow.

5.2.1 Inconsistent definitions

One issue that was raised by several stakeholders during the consultation is that **some of the definitions used in the Detergents Regulation are inconsistent with the definitions provided in other pieces of EU chemicals legislation that are applicable to the detergents industry**. These issues are outlined in the sections that follow.

'Placing on the market' and 'making available on the market'

Both industry associations and MS authorities noted that **there are inconsistencies between the Detergents Regulation, CLP and REACH with regard to the terms 'placing on the market' and 'making available on the market'.** Industry stakeholders explained that this can make it difficult for companies to understand the requirements, particularly in situations where more than one piece of legislation applies. One MS authority remarked that the concept of making available on the market is confusing because such a notion is not used as an autonomous concept under REACH and CLP (as shown in Tables 5-2 and 5-3).

Table 5-2: Definition of 'placing on the market'	
Legislation	**Definition**
Detergents Regulation	'placing on the market' means the first making available on the Union market. Import into the Union customs territory shall be deemed to be placing on the market.
REACH Regulation	'placing on the market' means supplying or making available, whether in return for payment or free of charge, to a third party. Import shall be deemed to be placing on the market.
CLP Regulation	'placing on the market' means supplying or making available, whether in return for payment or free of charge, to a third party. Import shall be deemed to be placing on the market.
Biocidal Products Regulation	'placing on the market' means the first making available on the market of a biocidal product or of a treated article.
Cosmetic Products Regulation	'placing on the market' means the first making available of a cosmetic product on the Community market.

Table 5-3: Definition of 'making available on the market'	
Legislation	**Definition**
Detergents Regulation	'making available on the market' means any supply for distribution, consumption or use on the Union market in the course of a commercial activity, whether in return for payment or free of charge.
REACH Regulation	No definition provided
CLP Regulation	No definition provided
Biocidal Products Regulation	'making available on the market' means any supply of a biocidal product or of a treated article for distribution or use in the course of a commercial activity, whether in return for payment or free of charge.
Cosmetic Products Regulation	'making available on the market' means any supply of a cosmetic product for distribution, consumption or use on the Community market in the course of a commercial activity, whether in return for payment or free of charge.

Legal analysis shows that the REACH and CLP regulations do not refer to the "first" placing on the market, whereas for the three product specific regulations shown in Table 5-2 (Detergents Regulation, Cosmetic Products Regulation and Biocidal Products Regulation) the concept of placing on the market refers to the "first" placing on the market. Most of the time, those obligations condition the placing on the market. As a consequence, for REACH and CLP, obligations may apply anytime the product is placed on the market. By contrast, the obligations of the Detergents Regulation apply upon placing the product for the first time on the EU market. Import in the EU is considered as placing on the market.

The definitions of placing on the market of the three product specific regulations are rather similar and can therefore be considered as coherent. The definitions of REACH and CLP are identical.

As noted in the European Commission's Blue Guide[82] on EU products rules, the New Legislative Framework (NLF) changed the emphasis of EU legislation in relation to market access:

[82] European Commission (2016): The 'Blue Guide' on implementation of EU product rules 2016. Available at: http://ec.europa.eu/DocsRoom/documents/18027

> *"Formerly the language of Union harmonisation legislation concentrated on the notion of 'placing on the market' which is traditional free movement of goods language, i.e. it focuses on the first making available of a product on the EU market. The NLF, recognising the existence of a single internal market, puts the emphasis on making a product available thus giving more importance to what happens after a product is first made available. This also corresponds to the logic of the putting into place of EU market surveillance provisions. The introduction of the concept of making available facilitates the tracing back of a non-compliant product to the manufacturer. It is important to note that compliance is assessed with regard to the legal requirements applicable at the time of the first making available."*

One Commission official noted that it should be checked whether these definitions are aligned with the ones now taken at a horizonal level in the European Commission's Blue Guide.[83] Our legal analysis has not identified any discrepancies between the texts of the definitions provided in the Detergents Regulation, as amended, and the Blue Guide in its version dated July 2016.

During the supporting study to the Chemicals Fitness Check, stakeholders explained that different MS have interpreted the term 'placing on the market' differently with regard to detergents. The issue was raised by MS and industry in the run up to the 2015 deadline for meeting the CLP Regulation's requirements. Although the issue has now been addressed, both MS authorities and industry stakeholders noted that this gave rise to uncertainty for industry and led to extensive discussions at the MS level between authorities and industry, resulting in considerable effort which could have been avoided if the difference in definition had been dealt with more efficiently from a process perspective (RPA et al., 2017).[84]

'Manufacturers'

Differences have also been identified with regard to the definition of "manufacturers" between the Detergents Regulation and REACH/CLP, corroborating earlier findings from the supporting study to the Chemicals Fitness Check (RPA et al., 2017).[85] Under both REACH and CLP, a manufacturer is defined as:

> *"any natural or legal person established within the Community who manufactures a substance within the Community"*

However, under the Detergents Regulation a manufacturer is defined as:

> *"the natural or legal person responsible for placing a detergent or a surfactant for a detergent on the market; in particular, a producer, an importer, a packager working for*

[83] European Commission (2016): The 'Blue Guide' on implementation of EU product rules 2016. Available at: http://ec.europa.eu/DocsRoom/documents/18027

[84] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[85] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

his own account, or any person changing the characteristics of a detergent or of a surfactant for a detergent, or creating or changing the labelling thereof, shall be deemed to be a manufacturer. A distributor who does not change the characteristics, labelling or packaging of a detergent, or of a surfactant for a detergent, shall not be deemed to be a manufacturer, except where he acts as an importer."

Therefore, under the Detergents Regulation, the definition of a manufacturer is much broader (and more inclusive) compared to the definition included in REACH and CLP because manufacturers, importers and packagers are all classified as manufacturers (and subject to the relevant requirements) under the Detergents Regulation, whereas manufacturers and importers are considered separately under REACH and CLP. This difference could be considered an inconsistency.

During the consultation, it was noted that this definition is confusing for companies and authorities. Particular concerns were raised in relation to how the definition of a manufacturer affects the labelling requirements under the Detergents Regulation and CLP. One MS authority explained that under the Detergents Regulation, the manufacturer is the only person responsible for providing the correct labelling, whereas under CLP, labelling is the responsibility of every actor from the supply chain placing the mixture or substance on the market.[86] This means that different actors in the supply chain have different responsibilities in terms of labelling. Stakeholders have also suggested that there is potentially an issue with the definition of a manufacturer in the context of refill detergent sales; i.e. under the current definition, the consumer refilling the detergent package would become a manufacturer and, as such, would be responsible for labelling.

The European Commission's Guidance Document on the Detergents Regulation[87] clarifies that the definition of a manufacturer is different to the definition of a manufacturer under REACH and CLP and that, for a better understanding of internal market legislation on industrial products (covering detergents), stakeholders should refer to the Commission's Blue Guide. Section 3.1. of the Blue Guide provides a detailed explanation of who should be considered a manufacturer in the context of EU legislation that goes beyond the simple definition of a manufacturer as set out in Article 2(10) of the Detergents Regulation.

5.2.2 Overlaps and inconsistencies between the Detergents Regulation and REACH (Regulation (EC) 1907/2006)

The European Commission has clarified that the criteria in Annex VII A of the Detergents Regulation for listing detergent ingredients differ in three important respects from the corresponding criteria

[86] As detailed above, whereas the Detergents Regulation applies to the 'first' making available of a product, the obligations stemming from the CLP Regulation apply anytime a product is made available and not only the first time. Detergents must comply with the labelling requirements specified in Article 11 of the Detergents Regulation upon being placed on the market. This obligation therefore applies to the actor making the product available for the first time on the EU market. The Detergents Regulation further details that 'manufacturers' and 'importers' are responsible for placing a detergent on the market (Article 2(10)). As a consequence, the labelling obligations of Article 11 apply on them (i.e. not only on manufacturers stricto sensu). In the context of CLP, obligations apply to suppliers (see e.g. CLP Article 4(4)).

[87] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, September 2015 version. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

for Section 3 of the Safety Data Sheet (SDS) as given in Annex II of REACH (European Commission, 2011).[88]

- Annex VII A does not distinguish between hazardous and non-hazardous ingredients but provides a list of selected substances to be listed, whereas the SDS requires only hazardous substances to be listed;
- The concentration thresholds for listing ingredients are, generally speaking, higher in the SDS (as substances in a mixture) than in Annex VII A; and
- The SDS requires listing of individual hazardous substances, whereas Annex VII A requires listing of classes of substances.

Therefore, a single ingredient list cannot be expected to successfully meet the requirements of both pieces of legislation.

According to the Commission[89], both lists (i.e. the list of hazardous substances according to the CLP Regulation, and list of detergents ingredients according to the Detergents Regulation) can, however, be displayed under Section 3 of the SDS, so long as they are clearly distinguished from each other by means of suitable (sub) headings indicating to which piece of legislation they apply.

Article 9(3) and Annex VII C of the Detergents Regulation require the use of an ingredient datasheet to communicate information on the composition of detergents; however, other regulations (such as CLP and REACH) use Safety Data Sheets (SDS). During the consultation for the supporting study to the Chemicals Fitness Check (RPA et al., 2017) and during the consultation for the present study, stakeholders indicated that it is unclear why there should be this difference and that the same SDS should work for detergents too.

One industry association explained that the labelling criteria for enzymes are confusing because it is not clear whether enzymes should be listed as 'enzymes' (as per the Detergents Regulation) or by 'enzyme class' (as per REACH). The stakeholder suggested that further guidance is needed to clarify whether enzymes should be labelled as 'enzymes' or by 'enzyme class'. The stakeholder also noted that, in the case of professional products, ingredient information is provided in a SDS, rather than on the product label (as is the case for consumer products). The stakeholder explained that there is a cut-off limit for the classification of enzymes of 0.1% under REACH and that enzymes used in professional detergent products do not need to be listed in the SDS if they are included in concentrations below 0.1%. This therefore results in a discrepancy between the listing of enzymes on the labels of consumer products and the listing of enzymes in the SDS accompanying professional products.

A similar point was raised by a MS authority, as presented in Table 5-4 below.

[88] European Commission (2011): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version September, available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

[89] European Commission (2011): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version September, available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

Table 5-4: Inconsistencies in labelling requirements between the Detergents Regulation, REACH and CLP

There are 18 constituents listed in Annex VII A of the Detergents Regulation which must be indicated along with their relevant percentage range (>30%, 15-30%, 5-15% < 5%) on the packaging of a detergent product supplied to the general public where they are present at a concentration >0.2% by weight. In addition, it is required that enzymes, disinfectants, optical brighteners and perfumes must be listed on the packaging irrespective of their concentration. Similarly, preservation agents must be listed regardless of concentration and allergenic fragrances present at greater than 0.01% by weight must also be named on the packaging. For Industrial and Institutional (I&I) detergents, these requirements are not required to be listed on the packaging provided the equivalent information is provided in a Safety Data Sheet or a Technical Data Sheet or in a similar manner.

When we look at the information requirements for SDSs under the REACH Regulation, specifically section 3, the provisions relate to providing information on hazardous substances classified for human health and/or environmental endpoints which are present in the mixture greater than or equal to the generic concentration limit set out in the DPD or CLP or the specific concentration limit assigned. The concentrations of these substances must be provided as either:

(a) exact percentages in descending order by mass or volume or
(b) ranges of percentages in descending order by mass or volume.

Therefore, within the SDS, the requirements for listing ingredients in detergent products under the Detergents Regulation for I&I products and the requirements for providing information on hazardous ingredients under REACH differ for the following reasons:

(a) Where a mixture contains both substances which are classified and substances which are not classified, there is no requirement to list the non-classified ingredients or those classified but present in the mixture below the relevant concentration limit (if they have no OELV) in section 3 of the SDS under REACH. However, if an ingredient within an &I detergent product is not classified as hazardous, it may still be required to be listed in a SDS (if it falls within the scope of Annex VII A Detergent Regulation requirements), for example a non-classified polycarboxylate if present above 0.2%.

(b) Under Annex II of REACH, there are no set weight ranges specified for indicating the content of hazardous ingredients of a mixture in a SDS. Section 3.2 of Annex II of REACH requires that either the exact percentages are provided for ingredients present or **percentages ranges** in descending order. Annex VIIA of the Detergent Regulations sets out specific percentage **weight ranges** for the 18 constituents listed therein (> 30%, 15-30%, 5-15% < 5%). There is discrepancy therefore in how information on ingredients may be communicated in the SDS.

(c) If naming the 18 constituents as listed in Annex VII A of the Detergents Regulation in section 3 of a SDS for an I&I detergent, the naming is not consistent with the naming requirements for ingredients substances as required by Annex II of REACH. Under REACH, in the SDS, the chemical name and CAS or EC number is required (or equivalent) whereas in the Detergents Regulation, the generic name only is required e.g. bleaching agent, anionic/cationic/non-ionic/amphoteric surfactant. There is no requirement under the Detergents Regulation to list the chemical name of such a constituent.

    If such a constituent is to be listed, as per the Detergent Regulation rules, in the SDS for an I&I detergent when that constituent is not classified, it then becomes confusing to the reader of the SDS who expects to see substances that are classified listed with their associated chemical name, CAS number, classification etc. Consistency in naming between the REACH SDS requirements and Detergent Regulations requirements should be reviewed and clarified.

(d) Annex VI IA of the Detergents Regulation requires that "equivalent" information (to the Annex VII A requirements) must be provided for I&I detergents on a SDS or technical data sheet or similar manner. The ECHA SDS Guidance refers to detergents only as follows: *Sub-section 3.2 of the SDS may also be used to provide certain information on the composition of detergents intended to be used in the industrial and*

institutional sector, and not made available to members of the general public and again in section 15.1: *for detergents, the ingredient declaration according to the Detergent Regulation 648/2004/EC (if not already given in subsection 3.2).* A cross reference to the REACH legal text is missing here for SDSs. The legal text of Annex II of REACH does not require that information on detergents (as per the Detergent Regulation provisions) is provided in any section of the SDS.

Similarly, the requirements for the ingredient datasheet are not in line with those of the SDS nor with the requirements for listing the named 18 constituents in Annex VIIA of the Detergents Regulation. This is an extra requirement for manufacturers to deal with and one which is not well known and, therefore, often not complied with. The percentage ranges as set out in Annex VIIC which must be provided on the IDS differ from those which must be provided for any of the 18 constituents as per Annex VII A and differ from how the manufacturer will list the ranges in a SDS.

Consistency between the requirements of the Detergents Regulation and between the parallel pieces of legislation, particularly REACH, is welcomed as it will ensure that information for workers and consumers is clear and understandable and that the burden is reduced on micro and small sized manufacturers dealing with multiple pieces of legislation with differing requirements.

The information in this table was provided by a MS authority during the consultation.

5.2.3 Overlaps and inconsistencies between Detergents Regulation and CLP Regulation (Regulation (EC) 1272/2008)

Labelling of allergens

Information received from AISE and other stakeholders during the consultation for the supporting study to the Chemicals Fitness Check (RPA et al., 2017)[90] suggests that **there are legislative overlaps between the Detergents Regulation and the CLP Regulation with regard to the labelling of allergens** and similar views were also expressed by stakeholders during the consultation for the present study.

The Detergents Regulation requires economic operators to include allergens within the list of ingredients when they are included above certain thresholds and allows the listing using INCI names on consumer products (i.e. names according to the International Nomenclature of Cosmetic Ingredients). The CLP Regulation requires the inclusion of skin sensitisers in the list of ingredients when they occur above certain thresholds, however, the use of INCI names is challenged by some authorities (RPA et al., 2017).[91] This can create problems, as most allergens are also skin sensitisers.

[90] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

[91] INCI names derive from the U.S. system which is 95% the same as in the EU but with one difference. In the U.S. certain ingredients (e.g. milk, honey, and eggs) can be listed in their English names, whereas in the EU it is not permitted to use only one EU language. As a result, to avoid translating these names into all EU languages, the Latin name is used. However, stakeholders indicate that the use of Latin words is not necessarily understood in all EU languages, which means that only a proportion of consumers will be able to determine the ingredients used in these products (RPA et al., 2017).

At the 18th Meeting of CARACAL (Competent Authorities for REACH and CLP), the discussion group acknowledged that there can be duplication between – on the one hand – the product identifier of the mixture or EUH statement and – on the other hand – the supplemental information mandated by the Detergents Regulation (i.e. the Iist of allergens and preservatives, which may be referred to by an INCI name also included in the Classification and Labelling Inventory).

Labelling of ingredients that present a chemical hazard

Another MS authority explained that, under CLP, ingredients that present a chemical hazard should be included on the product label using the chemical name, whereas under the Detergents Regulation ingredients can be listed under a generic name (e.g. anionic surfactant). It was noted that this can result in the labelling of the same ingredient twice, using different names (note this point is also made in Table 5-4).

Labelling of "instructions for use and special precautions"

As explained for more fully in Annex 3 (Section A3.5), complying with the labelling provisions of CLP (hazard pictograms, hazard statements, precautionary statements, etc.) enables companies, in part, to fulfil the requirements of the Detergents Regulation Article 11(3), although this is not explicitly stated in the legal text of the Regulation. During the consultation, one large company noted that CLP and the Detergents Regulation complement each other somewhat, in the sense that CLP aims to protect (detergent and other substance) users. The stakeholder elaborated that, if a substance is regulated or presents a hazard, then there are standard phrases under CLP that can be used to warn users.

Biodegradability

The Detergents Regulation (Annex III) requires surfactants to be biodegradable, but detergents may be classified (and must therefore be labelled) as "may be harmful to aquatic environment" under CLP. The supporting study to the Chemicals Fitness Check noted that this may potentially be confusing communication from a consumer perspective (RPA et al., 2017).[92] As the labelling rules of CLP cover a growing number of substances, this could be expected to be an increasingly frequent situation.

Terminology

As outlined earlier in Section 5.2.1, there are some differences between the definitions used in CLP and the definitions used in the Detergents Regulation (e.g. "manufacturer" and "placing on the market"). During the interviews, one MS authority explained that the Detergents Regulation refers to placing information "on the packaging" of the detergent product (e.g. Article 11(2)), while CLP refers to placing information "on the label". The stakeholder elaborated that, in this regard, the two pieces of legislation are inconsistent.

[92] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

5.2.4 Overlaps and inconsistencies between Detergents Regulation and Poison Centres Regulation (Regulation (EU) No 2017/542)

The Detergents Regulation specifies that detailed information on the composition of detergents must be provided to medical professionals, upon request, via the "*ingredient data sheet*" and states that "*this is without prejudice to the right of a Member State to request that such a datasheet be made available to a specific public body to which the Member State has assigned the task of providing this information to medical personnel"* (Article 9(3)(2)).

In parallel, Article 45(1) of CLP creates a framework for the submission (by importers and formulators of hazardous mixtures) of information relevant *"for formulating preventative and curative measures, in particular in the event of emergency health response"* to the appointed bodies across the EU. This information should include *"the chemical composition of the mixtures"* and *"the chemical identity of substances in mixtures for which a request for use of an alternative chemical name has been accepted by the Agency."*[93]

Article 45(4) of CLP gives mandate to the Commission to adopt a harmonized EU *"format for the submission of [such] information by importers and downstream"* if, based a comprehensive review and consultations with the stakeholders, it considers that the different notification systems in place in the EU MS lead to inconsistencies in the information available to medical personnel and the general public, detrimental in cases of poisoning incidents. Article 45(4) specifies that in such a case *"the Commission may adopt a Regulation adding an Annex to this Regulation",* including such harmonized format.

Regulation (EU) 2017/542 was adopted by the Commission in March 2017. It amended the CLP Regulation by adding an Annex VIII on the harmonised information relating to emergency health response, i.e. that harmonises the information to be provided to the national appointed bodies in the EU MS.

Pursuant to the new Annex VIII (Part B, Section 3), the information contained in a submission must cover the chemical identity and concentration of components classified as hazardous on the basis of their health or physical effects, which:

- are present in concentrations equal to or greater than 0.1 %;
- are identified, even if in concentrations lower than 0.1 %, unless the submitter can demonstrate that those components are irrelevant for the purposes of emergency health response and preventative measures.

Mixture components that are not classified as hazardous on the basis of their health or physical effects, must be notified as well, if they are identified and present in concentrations equal to or greater than 1%.

Finally, mixture components of major concern must be notified with their exact percentage or specific concentration ranges. The hazard classes identified as being of '*major concern'* are the (i)

[93] It is important to clarify that Article 45 and Annex VIII apply to *mixtures*. Substances, either classified or not, are excluded by the obligation. Also, mixtures classified for environmental hazards only are outside the scope of Article 45 and information according to Annex VIII does not need to be submitted. Finally, mixtures which are subject to supplemental labelling requirements according to Part 2 of Annex II to CLP but are not themselves classified for health or physical hazards are not subject to notification requirements.

acute toxicity, Cat. 1, 2 or 3; (ii) specific target organ toxicity -single exposure, Cat.1 or 2; (iii) specific target organ toxicity - repeated exposure, Cat. 1 or 2; (iv) skin corrosion, Cat. 1, 1A, 1B or 1C; (v) serious eye damage, Cat.1

Annex VIII requirements establishes different deadlines for submitting information depending on the intended use of the hazardous mixtures at stake. Indeed, if a hazardous detergent is supplied for consumer use, the information must be submitted by 1 January 2020. Detergents used in professional or industrial settings will need to comply by 2021 and 2024, respectively.

During the consultation for the present study, **one large company estimated that about 95% of all detergent products on the market would be classified as hazardous under CLP.** Several industry associations also explained that as Regulation 542/2017 comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete and that the Detergents Regulation should, therefore, foresee the gradual abolishment of these provisions. One stakeholder from Greece noted that Article 45 of CLP:

> *"has brought duplication of work to detergent enterprises and unjustified increase of administrative costs. Poison Control centre already has the necessary hazard and safety data provided according to Art 45 of CLP and any other medical personnel calling a company for urgent help (rarely having immediate access to an e-mail or a fax!) needs basic info on the formulation of the product in question, on the phone."*

During the consultation, AISE and others similarly indicated that **requiring manufacturers of detergent products to provide a list of ingredients to medical personnel on request causes an unnecessary additional burden for industry**[94] and that it would be more logical and efficient for medical personnel to obtain this information from poison centres, which not only have information on product ingredients, but also on the actions that should be taken following a poisoning incident. Several industry stakeholders (including AISE) noted that **it is unusual for medical professionals to seek ingredient lists from product manufacturers**.

For further information on this overlap see Annex 3 (Section A3.3).

5.2.5 Overlaps and inconsistencies between Detergents Regulation and Biocidal Products Regulation (Regulation (EU) 528/2012)

According to the European Commission, detergent products that claim to be antibacterial are required to comply with the provisions of both the Detergents Regulation and the Biocidal Products Regulation. The same is true of detergents that are disinfectants, or that contain surfactants that are disinfectants. The rules apply to both laundry and dishwasher detergents as well as other detergent types, covering detergents for consumer, professional and industrial use. Little data appear to be available on the size of the market for anti-bacterial detergent products and disinfectants that fall within the scope of both the Detergents Regulation and Biocidal Products Regulation. A Survey by Nielsen Group from 2015 has shown that 44% of European consumers seek 'disinfectant' properties when purchasing all-purpose cleaners and that when purchasing laundry

[94] Note that one stakeholder stated that a similar requirement (i.e. to send an information sheet to medical personnel) already existed in Romania before the introduction of the Detergents Regulation. This means that, in Romania at least, the administrative burden of the Detergents Regulation should not be counted as additional.

detergent, 19% of European consumers seek products with disinfectant properties.[95] This would suggest that such products may make up a sizeable market share, at least in the consumer detergent segment. Table 5-5 presents data from the UK on the size and breakdown of the market for hand dishwashing detergents. It shows that, by value, antibacterial detergents had a significant market share (19%) in 2005.

Table 5-5: Hand dishwashing detergent categories by sales and market share, UK

	2005		2003		2003-2005 % change
	£ million (€ million)	%	£ million (€ million)	%	
Concentrated	£115 (€168)	71	£120 (€175)	77	-4.2
Antibacterial	£30 (€44)	19	£26 (€38)	17	+15.4
Pre-spray	£10 (€15)	6	£3 (€4)	2	+333.3
Standard	£6 (€9)	4	£6 (€9)	4	0.0
Total	£162 (€237)	100	£155 (€226)	100	+4.5

Source: Mintel, as reported by Campaign (2006)[96]
Converted from GBP (£) to EUR (€) using 2005 exchange rate of: 1 GBP to 1.4612 EUR

Upon the conditions listed in Article 3(1) of the Detergents Regulation, surfactants that are also active substances within the meaning of the Biocidal Products Regulation and that are used as disinfectants are exempt from the biodegradability criteria of the Detergents Regulation. Such surfactants are deemed to be disinfectants and subject to the labelling provisions applicable to disinfectants as per Annex VII A to the Detergents Regulation, i.e. listing irrespective of their concentration. Other surfactants that are active substances within the meaning of the Biocidal Products Regulation are still subject to the normal labelling provisions of Annex VII A of the Detergents Regulation.

During the consultation, several stakeholders noted that there is an overlap between the Detergents Regulation and Biocidal Products Regulation in the sense that some products would need to comply with the provisions (notably the labelling provisions) of both pieces of legislation. This was highlighted as important for several reasons:

- Firstly, a couple of industry associations noted that the boundary between the two pieces of legislation is not entirely clear. For example, industry associations from Italy and Belgium both explained that **it can be difficult to identify ingredients as disinfectants.** It was noted, for example, that some bacteria can be removed by cleaning with water, but that it is not possible to claim that this is a disinfectant. An industry association from Belgium explained

[95] Nielsen Group (2016): The dirt on cleaning, Home cleaning/laundry attitudes and trends around the world. Available at: www.nielsen.com/content/.../Nielsen%20Global%20Home%20Care%20Report.pdf

[96] Mintel, as reported by Campaign (2006): Sector insight: Dishwashing detergents – Dishwashers drive market shift. Article available at: http://www.campaignlive.co.uk/article/575421/sector-insight-dishwashing-detergents---dishwashers-drive-market-shift

that there can be problems with MS authorities' interpretation of the regulations. The stakeholder noted that **in some cases, MS authorities interpret the legislation and consider that a product should fall under the scope of the Detergents Regulation; however, industry has interpreted the legislation differently and disputes the conclusion** drawn by MS authorities. It was reported that in Belgium, the authorities are concerned that disinfectants may be included in a product to make it more effective but without claiming to be a biocide. In contrast to this view, an industry association from Germany stated that it is clear when a product falls under the scope of the Detergents Regulation and when it falls under the Biocidal Products Regulation.

- Secondly, several stakeholders noted that the **overlaps between the Detergents Regulation and the Biocidal Products Regulation lead to duplicated labelling**. For example, it was noted that **some surfactants are disinfectants** and that, in this case, **it is not clear in the legislation whether these should be labelled as surfactants or disinfectants**. An industry association from Italy noted that both regulations require manufacturers to include active substances and preservatives on products labels, which results in duplicate labelling when products fall under both the Detergents Regulation and Biocidal Products Regulation. An industry association from Germany noted that the labelling and declaration requirements of the two pieces of legislation are not aligned, but did not elaborate any further about where the discrepancies arise. A MS authority from Germany, however, noted that "*…the label "disinfectant" according to Annex VII A is also no issue, but rather helps to legally classify the product also regarding the special rules in article 3(1)…*"

5.2.6 Overlaps and inconsistencies between Detergents Regulation and Cosmetic Products Regulation (Regulation (EC) 1223/2009)

As previously explained, allergenic fragrances that appear on the list of substances included in Annex III of the Cosmetic Products Regulation, and that are added to detergents at concentrations exceeding 0.01% by weight, are required (according to the Detergents Regulation Annex VII A) to be listed on the product using the nomenclature provided in the Cosmetic Products Regulation.

During the consultation, it was noted that **detergents and cosmetics are closely related** in that many of the ingredients are the same. For example, one company noted that most of the cosmetic soaps that it manufactures are also used in detergents. Interestingly, there also appear to be some products available on the market in the EU – such as Lifeventure Multi Purpose soap[97] - that can be used both as a cosmetic (e.g. for washing skin and hair) and as a detergent (e.g. for washing laundry, and even fruit and vegetables). The Lifeventure Multi Purpose Soap is also advertised as being antibacterial and would therefore fall under the scope of the Detergents Regulation, the Cosmetic Products Regulation and the Biocidal Products Regulation.

During the consultation, several stakeholders (including consumer organisations, environmental NGOs, companies and MS authorities) noted that **it would be beneficial to have a closer alignment between the requirements of the Detergents Regulation and the Cosmetic Products Regulation**. For example:

- Several consumer organisations were concerned that **some carcinogenic, mutagenic, reprotoxic (CMR) substances are still permitted for use in detergents** and noted that it would be beneficial for human health if CMRs 1A, 1B and 2 could be banned from use in

[97] http://www.gapyeartravelstore.com/multi-purpose-soap.html

detergents as is already the case under the Cosmetic Products Regulation (unless they fall under one of the exemptions). For further information, see Annex 3 (Section A3.2.4);

- Several stakeholders noted that **there is an inconsistency between the labelling of nanomaterials under the Detergents Regulation and Cosmetic Products Regulation** (i.e. they must be labelled under the Cosmetic Products Regulation, but this is not the case under the Detergents Regulation). As explained in Annex 3 (Section A3.2.4), MS authorities and companies agreed that whether nanomaterials should be labelled depends on whether the nanomaterial is hazardous (i.e. if nanomaterials are hazardous, then they should be labelled or removed from the product altogether; if they are not hazardous, then they should not be labelled);
- A consumer organisation from Denmark noted that there is a difference between the Cosmetic Products Regulation and the Detergents Regulation in that **cosmetics must be labelled with a full ingredient list**; and
- A MS authority from Germany noted that it would be beneficial if the labelling of ingredients under the Detergents Regulation could be harmonised with the labelling of cosmetic ingredients using the **INCI nomenclature** according to the Cosmetic Products Regulation.

Finally, **there would appear to be a difference between the Detergents Regulation and Cosmetic Products Regulation in terms of the labelling of preservatives**. Under the Cosmetic Products Regulation, carry-over preservatives to the extent that they constitute 'impurities in the raw materials used' (Article 19(1)(g)) do not need to be labelled. In contrast, under the Detergents Regulation Annex VII Part A "*if added, preservation agents shall be listed irrespective of their concentration*". For further information on the issues pertaining to the labelling of carry-over preservatives, see Annex 3, Section A3.2.3.

5.2.7 Overlaps and inconsistencies between Detergents Regulation and other EU legislation

During the consultation, one industry association highlighted that there are inconsistencies in labelling between detergents and textiles. The organisation noted that consumers need to look at three different labels when washing clothes and textiles: firstly, labels on the clothing/textiles; secondly, labels on detergents; and thirdly, labels and instructions related to washing machines. The stakeholder explained that there is a lack of consistency in the information provided via these means (e.g. the recommended temperature on the clothing and the detergent may be different; and the machine may not be equipped to wash at the recommended temperature) and that it would be beneficial to investigate ways to improve the consistency of information.

5.2.8 Labelling requirements

As outlined in the previous sections, there are clear overlaps between the labelling provisions of the Detergents Regulation and other chemicals legislation (CLP, REACH, Biocidal Products Regulation, Cosmetic Products Regulation). During the consultation, there was widespread concern among stakeholders that multiple regulations dealing with the labelling of detergents leads to labels that are long and complicated and that include unnecessary and/or duplicate information (e.g. on ingredients).

This leads to two main problems:

- On the one hand, it results in **too much information being provided to consumers**, which reduces the effectiveness of the detergent labels in communicating essential information (e.g. on safe use, allergens, etc.);
- On the other hand, multiple regulations dealing with the labelling of detergents creates an **unnecessary regulatory burden for the detergents industry.**

Thus, stakeholders consider there to be a clear opportunity for streamlining labelling requirements between the different pieces of legislation.

It should be noted that these findings are supported by the results of the supporting study to the chemicals fitness check (RPA et al., 2017).[98]

As explained by AISE during the OPC:

> *"Due to detergents labelling being subject to multiple pieces of legislation (Detergents Regulation, CLP, Biocidal Products Regulation, Cosmetic Products Regulation, transport), and because these are not coherent in terms of labelling requirements, there is an increased administrative burden on the sector, as well as the potential for inconsistent consumer communication. Labels can become overloaded with information, making it difficult for downstream users to focus on the essential hazard information, thus reducing the effectiveness of hazard communication. In particular, the long hazard (H) and precautionary (P) statements on multi-lingual labels can result in a significant amount of information that can become difficult to read and understand for downstream users and consumers. The space required to present such hazard information is greater under CLP. It is therefore proposed to:*
>
> - *remove or significantly reduce the on-pack labelling list of ingredients and their related concentration ranges (they are not understood and of no use for consumers apart from allergenic fragrance substances that can be sensitising and bleaching agents). A potential way of reducing the level of information included on product labels while ensuring it remains available is through the use of innovative communication technologies, such as Q-R codes, websites, bar codes, etc.*
> - *Modify labelling requirements on allergenic fragrance substances in order to eliminate overlaps with CLP (e.g. via alternative digital disclosure)*
> - *Modify labelling requirements on Preservatives in order to eliminate overlaps with CLP and Biocidal Products Regulations*
> - *Modify requirement on the medical datasheet in consideration of the new Annex VIII of CLP (information to be provide to Poison centres)."*

As outlined fully in Annex 3, Section A3.2.2, MS authorities and consumer organisations both suggested that detergents should be labelled with a full list of ingredients (using the INCI nomenclature, or a similar standardised format) in order to provide consumers with an informed

[98] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes I to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

choice. It was noted that this is particularly important because consumers are exposed to a cocktail of chemicals from different products (cosmetics, detergents, etc.) and so there is an issue of aggregate exposure to allergens.

It was noted that because the INCI nomenclature is universal, it would not be necessary to translate ingredient lists into several languages (thereby reducing the burden of labelling for industry and saving space on the label) and would also potentially negate the need to provide a full list of ingredients online.

On the other hand, industry stakeholders questioned whether consumers understand the INCI names and whether all detergent ingredients have an INCI code. It was also noted that if the INCI nomenclature is used to label all ingredients (e.g. surfactants) in a product, then product labels would need to be updated each time the product is reformulated.

More information on this topic is provided in Annex 3, Section A3.2.2.

Summary of findings - Coherence

- While most stakeholders indicated that Detergents Regulation's provisions are internally coherent, some gaps in the legislative framework were identified. For example, some stakeholders indicated that there is a lack of clarity regarding the definitions and scope of the Detergents Regulation (e.g. in relation to the refill sale of detergents), and some suggested additional information that should potentially be included on product labels (e.g. advice such as "keep out of reach of children"). Some stakeholders were also concerned at some of the ingredients that are still permitted for use in detergents that need to be addressed either by the Detergents Regulation or by other means, such as REACH.
- Nearly two thirds of organisations that responded to the OPC identified overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation. The principal areas of overlap/inconsistency were identified as being between:
    - The Detergents Regulation and the Biocidal Products Regulation
    - The Detergents Regulation and the Cosmetic Products Regulation
    - The Detergents Regulation and REACH
    - The Detergents Regulation and CLP, including the new Poison Centres Regulation (Regulation (EU) No 2017/542) pursuant to Article 45 of CLP

6 Effectiveness

Table 6-1: Effectiveness criterion
This section looks at how effective the Detergents Regulation has been in terms of fulfilling, or progressing towards its objectives, i.e. achieving "the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health." It analyses the progress made to date and the role of EU action in delivering the observed changes.
The following evaluation questions are considered:
To what extent does the Detergents Regulation meet its objectives, i.e. establishment of a true internal market for detergents, while ensuring a high degree of protection of the environment and human health?
Which provisions or parts of the Detergents Regulation have met their objectives (i) most effectively (ii) least effectively, and which parts have not met their objectives?
To what extent is the Regulation effectively implemented across EU MS (e.g. enforcement, use of safeguard procedure)? What are the implementation and enforcement measures that have been put in place? Were they adequate?

6.1 Extent to which the Detergents Regulation has met its objectives in terms of the internal market, environment and human health

6.1.1 Impacts in terms of the internal market

One of the primary goals of the Detergents Regulation is to ensure the free movement of detergents and surfactants for detergents in the internal market. To this end, the Detergents Regulation harmonises the rules for placing detergents and surfactants on the market throughout the EU and EEA (i.e. Norway, Iceland and Lichtenstein).

Data from Eurostat can be used to analyse changes to intra-EU trade in detergents and surfactants over the period from 2002 to 2015. The data are presented according to the United Nations' Standard International Trade Classification (SITC) codes. The following table presents the SITC codes that most closely match the products covered by the Detergents Regulation. Relevant SITC codes have been highlighted in grey.

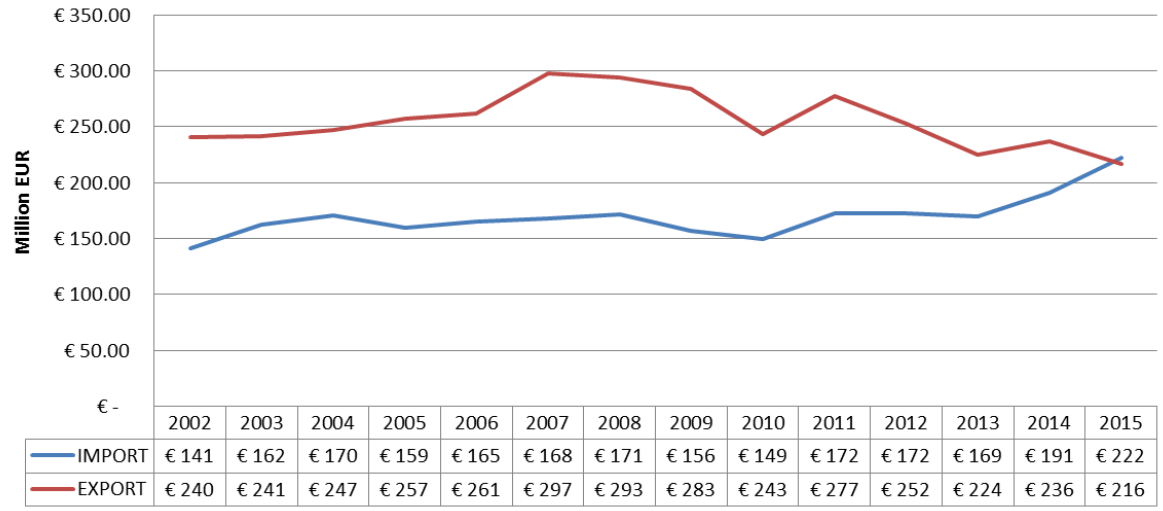
Table 6-2: SITC code descriptions			
SITC Code			**SITC Code Description**
554			Soap, cleansing and polishing preparations
	5541		Soap; organic surface-active products used as soap in bars, cakes, or shapes; paper, wadding, etc. impregnated or coated with soap or detergent
		55411	Soap and organic surface-active products in bars, cakes or shapes and paper, etc. impregnated or coated with soap or detergent, for toilet use
		55415	Soap and organic surface-active products in bars, cakes or shapes and paper, etc. impregnated or coated with soap or detergent, not for toilet use
		55419	Soap, n.e.s.
	5542		Organic surface-active agents other than soap; surface-active, washing and cleaning preparations, whether or not containing soap, n.e.s.
		55421	Organic surface-active agents, put up for retail sale or not
		55422	Surface-active washing or cleaning preparations, n.e.s, put up for retail sale
		55423	Surface-active washing or cleaning preparations, n.e.s, not put up for retail sale
	5543		Polishes and creams (except artificial and prepared waxes), for footwear, furniture, floors, glass, metal, etc.; scouring pastes and preparations
		55431	Polishes, creams and similar preparations (except artificial and prepared waxes), for footwear and leather
		55432	Polishes, creams and similar preparations (except artificial and prepared waxes), for the maintenance of wooden furniture, floors and other woodwork
		55433	Polishes and similar preparations (except metal polishes, artificial and prepared waxes), for coachwork
		55434	Scouring pastes, powders and other scouring preparations
		55435	Polishes, creams and similar preparations (except artificial and prepared waxes), for glass or metal
SITC codes that are relevant to the Detergents Regulation have been highlighted in grey.			

In reviewing these data, it should be recalled that some polishes do not fall within the scope of the Detergents Regulation; only those that claim to have a cleaning action are covered. If a polish contains a surfactant but only applies a wax layer to a surface without any cleaning action, then it is not covered by the Detergents Regulation. Note that 'scouring' refers to the removal of dirt from a hard surface and thus implies a cleaning action. Thus, scouring pastes fall within the scope of the Regulation.

The following figures illustrate changes in intra-EU trade of detergents and surfactants since 2002 for the ten statistical classifications highlighted in Table 6-2. Data are available for both imports and exports. While, in theory, the international trade balance between countries of the EU28 should be zero (i.e. the total value of imports and exports should be the same), it would appear that there are some discrepancies, particularly for SITC Code 55415 (Figure 6-1). Potential reasons for this may include thresholds, non-response and related adjustments; statistical confidentiality; triangular trade; time lags in the registration of the transactions; misclassification of goods; or other methodological differences (Eurostat, no date)[99] (European Commission, Eurostat, Unit G5, no

[99] Eurostat (no date): International trade in goods, Reference Metada, available at: http://ec.europa.eu/eurostat/cache/metadata/en/ext_go_esms.htm

date)[100]. It is worth noting that Eurostat considers intra-EU exports of goods as the more reliable measure of total intra-EU trade in goods at aggregated levels (Eurostat, 2016).[101]



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 141	€ 162	€ 170	€ 159	€ 165	€ 168	€ 171	€ 156	€ 149	€ 172	€ 172	€ 169	€ 191	€ 222
EXPORT	€ 240	€ 241	€ 247	€ 257	€ 261	€ 297	€ 293	€ 283	€ 243	€ 277	€ 252	€ 224	€ 236	€ 216

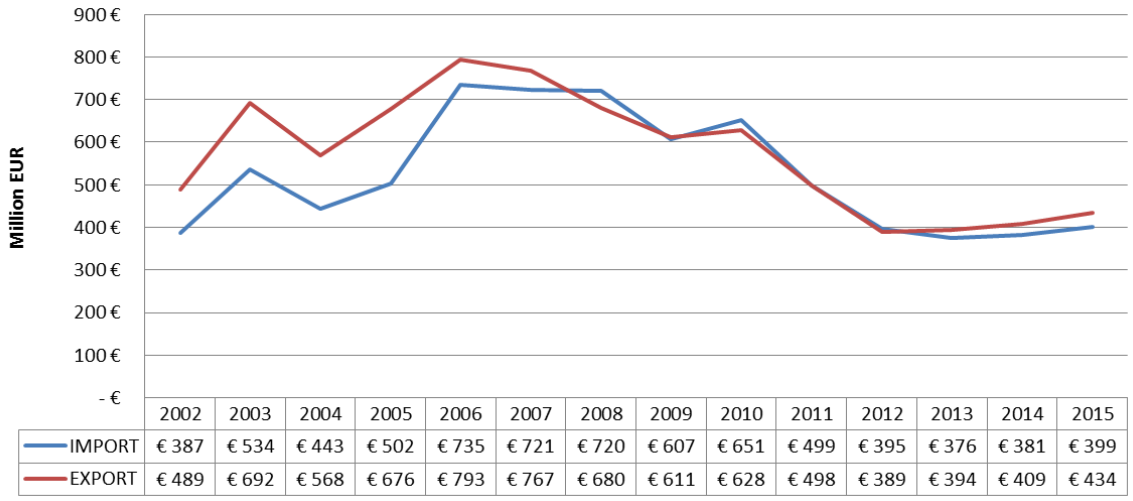
Figure 6-1: Intra-EU trade, SITC 3 Code 55415, soap and organic surface-active products and preparations, in the form of bars, cakes, moulded pieces or shapes, and paper, wadding, felt and non-wovens, impregnated, coated or covered with soap or detergent, for other uses

Source: Eurostat (DS-018995)

Figure 6-2 shows intra-EU trade in soap, in forms other than those shown in Figure 6-1 (SITC 3 Code 55419) from 2002 to 2015. It shows that there was a sharp increase in intra-EU trade in soap between 2004 and 2006, followed by a steady decline between 2006 and 2012.

[100] European Commission, Eurostat, Unit G5 (no date): International trade – productions, Frequently asked questions, available at: http://ec.europa.eu/eurostat/documents/64445/4439642/FAQ-XT-WEB-EN-final-January2012.pdf/2c387c03-5064-45bc-a949-2d3c75567973

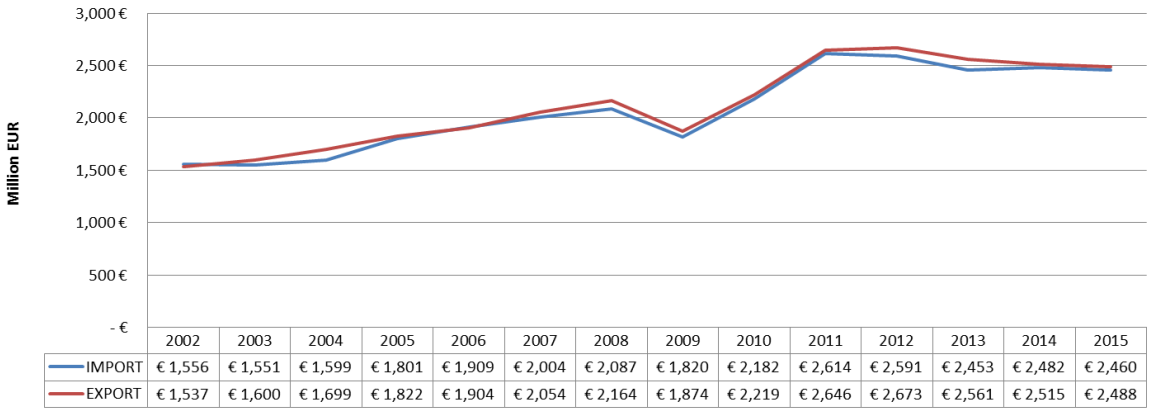
[101] Eurostat (2016): Statistics explained, Intra-EU trade in goods – recent trends, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Intra-EU_trade_in_goods_-_recent_trends



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 387	€ 534	€ 443	€ 502	€ 735	€ 721	€ 720	€ 607	€ 651	€ 499	€ 395	€ 376	€ 381	€ 399
EXPORT	€ 489	€ 692	€ 568	€ 676	€ 793	€ 767	€ 680	€ 611	€ 628	€ 498	€ 389	€ 394	€ 409	€ 434

Figure 6-2: Intra-EU trade, SITC 3 Code 55419, soap in other forms
Source: Eurostat (DS-018995)

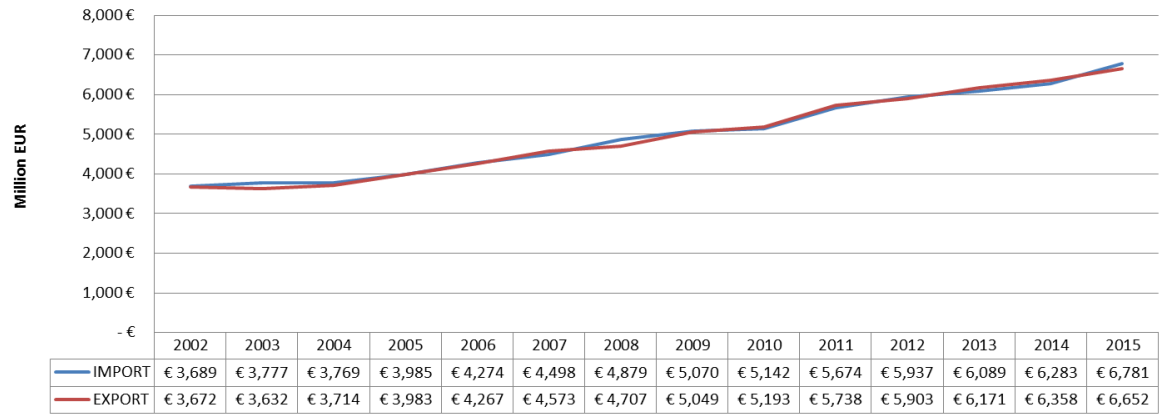
Figure 6-3 shows that since the Detergents Regulation came into force in 2005, the value of intra-EU trade in (SITC Code 55421) organic surfactants, whether or not put up for retail sale, has increased. Nevertheless, it is important to note that the Regulation may not be the only factor driving this increase, and that other exogenous factors may be at play. A clear dip can be observed in 2009, which it is possible to speculate may be linked to the financial crisis.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 1,556	€ 1,551	€ 1,599	€ 1,801	€ 1,909	€ 2,004	€ 2,087	€ 1,820	€ 2,182	€ 2,614	€ 2,591	€ 2,453	€ 2,482	€ 2,460
EXPORT	€ 1,537	€ 1,600	€ 1,699	€ 1,822	€ 1,904	€ 2,054	€ 2,164	€ 1,874	€ 2,219	€ 2,646	€ 2,673	€ 2,561	€ 2,515	€ 2,488

Figure 6-3: Intra-EU trade, SITC 3 Code 55421, organic surface-active agents, whether or not put up for retail sale
Source: Eurostat (DS-018995)

The value of intra-EU trade in (SITC Code 55422) surface-active washing or cleaning preparations, N.E.S put up for retail sale has also increased throughout this period (Figure 6-4).

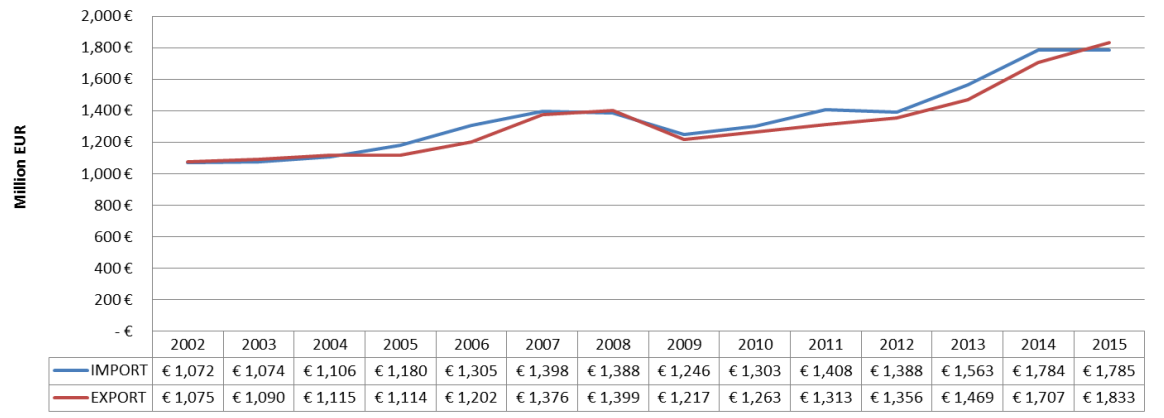


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 3,689	€ 3,777	€ 3,769	€ 3,985	€ 4,274	€ 4,498	€ 4,879	€ 5,070	€ 5,142	€ 5,674	€ 5,937	€ 6,089	€ 6,283	€ 6,781
EXPORT	€ 3,672	€ 3,632	€ 3,714	€ 3,983	€ 4,267	€ 4,573	€ 4,707	€ 5,049	€ 5,193	€ 5,738	€ 5,903	€ 6,171	€ 6,358	€ 6,652

Figure 6-4: Intra-EU trade, SITC 3 Code 55422, surface-active washing or cleaning preparations, N.E.S. put up for retail sale

Source: Eurostat (DS-018995)

Intra-EU trade in (SITC Code 55423) surface-active washing or cleaning preparations, N.E.S. not put up for retail sale increased up until 2007, before falling slightly between 2008 and 2009. Intra-EU trade in surface-active washing or cleaning preparations, N.E.S. not put up for retail sale has increased steadily since 2009 (see Figure 6-5).

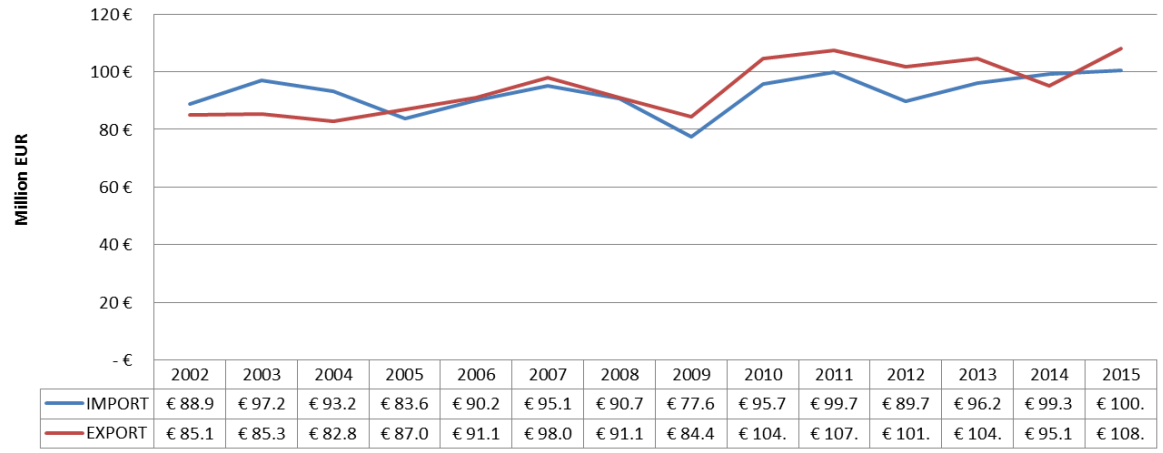


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 1,072	€ 1,074	€ 1,106	€ 1,180	€ 1,305	€ 1,398	€ 1,388	€ 1,246	€ 1,303	€ 1,408	€ 1,388	€ 1,563	€ 1,784	€ 1,785
EXPORT	€ 1,075	€ 1,090	€ 1,115	€ 1,114	€ 1,202	€ 1,376	€ 1,399	€ 1,217	€ 1,263	€ 1,313	€ 1,356	€ 1,469	€ 1,707	€ 1,833

Figure 6-5: Intra-EU trade, SITC 3 Code 55423, surface-active washing or cleaning preparations, N.E.S. not put up for retail sale

Source: Eurostat (DS-018995)

The value of intra-EU trade in polishes, creams, scouring pastes and preparations is smaller than the value of trade in soaps and surfactants. Figure 6-6 shows the value of intra-EU trade in polishes, creams and similar preparations (except artificial and prepared waxes), for footwear and leather.

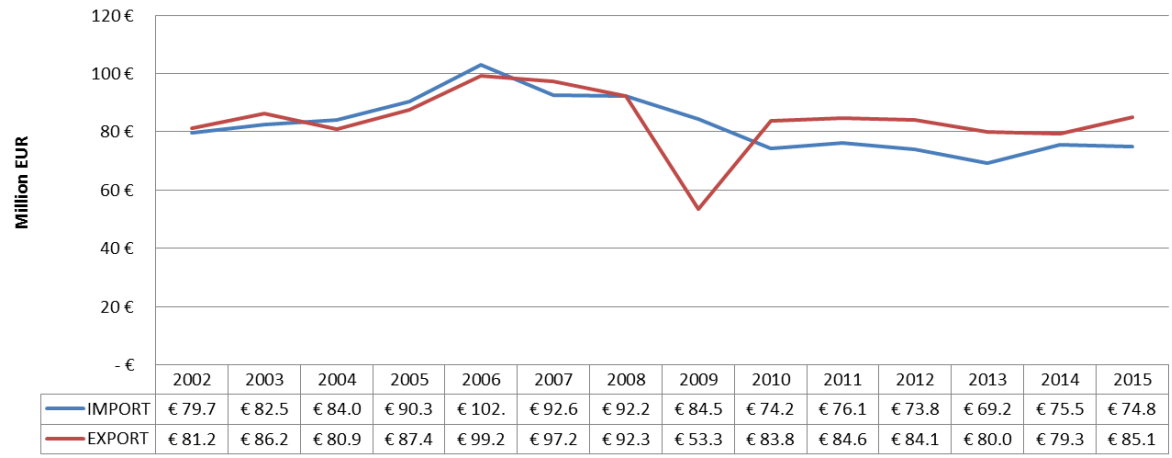


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 88.9	€ 97.2	€ 93.2	€ 83.6	€ 90.2	€ 95.1	€ 90.7	€ 77.6	€ 95.7	€ 99.7	€ 89.7	€ 96.2	€ 99.3	€ 100.
EXPORT	€ 85.1	€ 85.3	€ 82.8	€ 87.0	€ 91.1	€ 98.0	€ 91.1	€ 84.4	€ 104.	€ 107.	€ 101.	€ 104.	€ 95.1	€ 108.

Figure 6-6: Intra-EU trade, SITC 3 Code 55431, polishes, creams and similar preparations (except artificial and prepared waxes), for footwear and leather

Source: Eurostat (DS-018995)

Exports of (SITC Code 55432) polishes, creams and similar preparations (except artificial and prepared waxes) for the maintenance of wooden furniture, floors and other woodwork dipped in 2009, as shown in Figure 6-7. Intra-EU trade in 2014 and 2015 was at a similar level to that in 2002 and 2003.

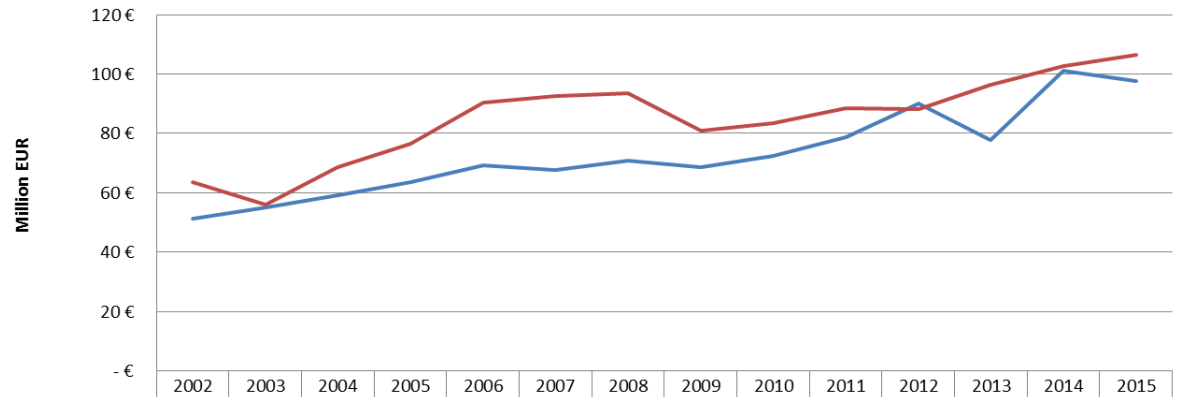


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 79.7	€ 82.5	€ 84.0	€ 90.3	€ 102.	€ 92.6	€ 92.2	€ 84.5	€ 74.2	€ 76.1	€ 73.8	€ 69.2	€ 75.5	€ 74.8
EXPORT	€ 81.2	€ 86.2	€ 80.9	€ 87.4	€ 99.2	€ 97.2	€ 92.3	€ 53.3	€ 83.8	€ 84.6	€ 84.1	€ 80.0	€ 79.3	€ 85.1

Figure 6-7: Intra-EU trade, SITC 3 Code 55432, polishes, creams and similar preparations (except artificial and prepared waxes), for the maintenance of wooden furniture, floors and other woodwork

Source: Eurostat (DS-018995)

Intra-EU trade in (SITC Code 55433) polishes and similar preparations (except metal polishes, artificial and prepared waxes) for coachwork has increased since 2004 (Figure 6-8).

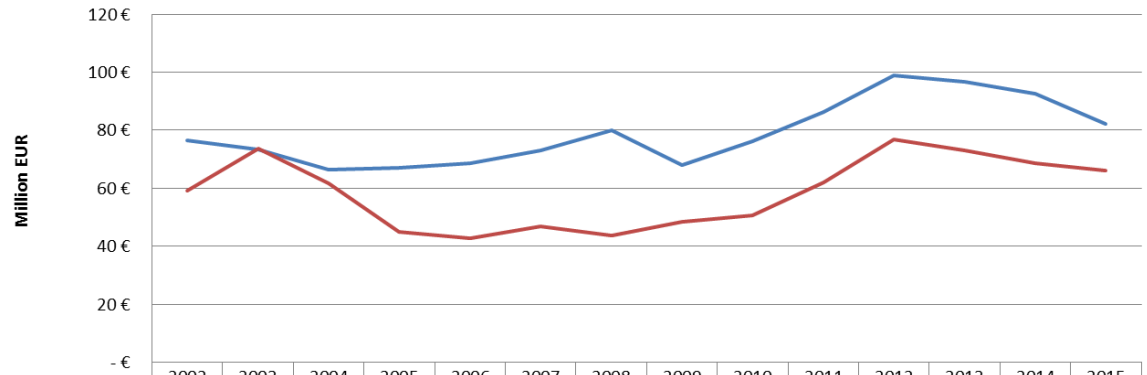


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 51.4	€ 55.1	€ 59.2	€ 63.6	€ 69.3	€ 67.8	€ 71.0	€ 68.5	€ 72.3	€ 78.6	€ 90.0	€ 77.9	€ 101.	€ 97.6
EXPORT	€ 63.5	€ 55.9	€ 68.5	€ 76.4	€ 90.4	€ 92.6	€ 93.7	€ 81.0	€ 83.6	€ 88.5	€ 88.2	€ 96.3	€ 102.	€ 106.

Figure 6-8: Intra-EU trade, SITC 3 Code 55433, polishes and similar preparations (except metal polishes, artificial and prepared waxes), for coachwork

Source: Eurostat (DS-018995)

Data on the value of intra-EU trade in (SITC Code 55434) scouring pastes, powders and other scouring preparations is shown in Figure 6-9 below.

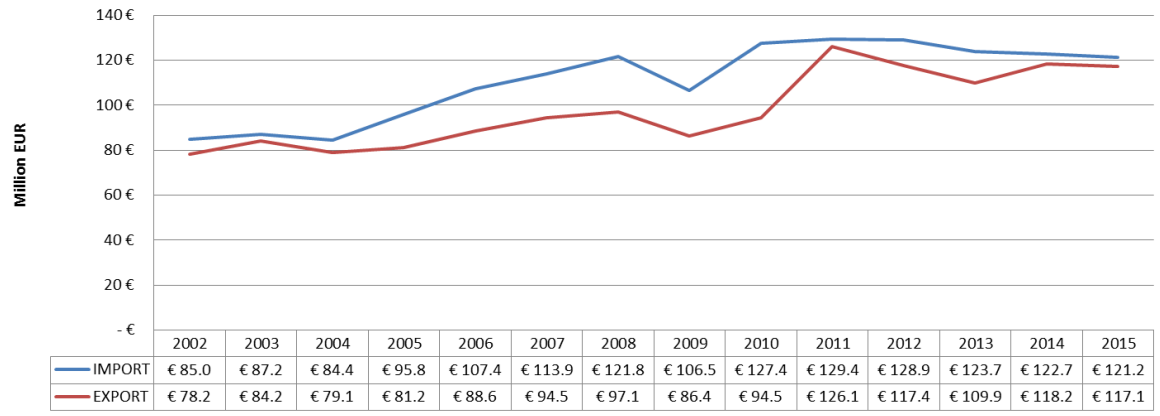


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 76.6	€ 73.5	€ 66.3	€ 66.9	€ 68.5	€ 72.9	€ 80.0	€ 68.0	€ 76.1	€ 86.3	€ 98.8	€ 96.6	€ 92.5	€ 82.1
EXPORT	€ 59.3	€ 73.6	€ 61.6	€ 44.9	€ 42.8	€ 46.8	€ 43.6	€ 48.5	€ 50.7	€ 62.0	€ 76.9	€ 73.0	€ 68.6	€ 66.0

Figure 6-9: Intra-EU trade, SITC 3 Code 55434, scouring pastes, powders and other scouring preparations

Source: Eurostat (DS-018995)

Figure 6-10 provides data on the value of intra-EU trade in (SITC Code 55435) polishes, creams and similar preparations (except artificial and prepared waxes) for glass or metal. It shows that intra-EU trade in this product group has increased since 2004.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
IMPORT	€ 85.0	€ 87.2	€ 84.4	€ 95.8	€ 107.4	€ 113.9	€ 121.8	€ 106.5	€ 127.4	€ 129.4	€ 128.9	€ 123.7	€ 122.7	€ 121.2
EXPORT	€ 78.2	€ 84.2	€ 79.1	€ 81.2	€ 88.6	€ 94.5	€ 97.1	€ 86.4	€ 94.5	€ 126.1	€ 117.4	€ 109.9	€ 118.2	€ 117.1

Figure 6-10: Intra-EU trade, SITC 3 Code 55435, polishes, creams and similar preparations (except artificial and prepared waxes), for glass or metal

Source: Eurostat (DS-018995)

Overall, it would appear that intra-EU trade in detergents and surfactants has increased since 2002, particularly for the following statistical groups:

- 55421: Organic surface-active agents, put up for retail sale or not;
- 55422: Surface-active washing or cleaning preparations, n.e.s, put up for retail sale;
- 55423: Surface-active washing or cleaning preparations, n.e.s, not put up for retail sale;
- 55431: Polishes, creams and similar preparations (except artificial and prepared waxes), for footwear and leather;
- 55433: Polishes and similar preparations (except metal polishes, artificial and prepared waxes), for coachwork; and
- 55435: Polishes, creams and similar preparations (except artificial and prepared waxes), for glass or metal.

However, for the remaining four statistical groups, the changes in terms of intra-EU trade are less certain:

- 55415: Soap and organic surface-active products in bars, cakes or shapes and paper, etc. impregnated or coated with soap or detergent, not for toilet use;
- 55419: Soap, n.e.s.;
- 55432: Polishes, creams and similar preparations (except artificial and prepared waxes), for the maintenance of wooden furniture, floors and other woodwork; and
- 55434: Scouring pastes, powders and other scouring preparations.

The extent to which any of the observed changes can be attributed to the Detergents Regulation is, however, unclear.

Organisations that participated in the OPC were asked about the extent to which the Detergents Regulation has made it easier to trade detergents and surfactants cross-border within the EU. As

shown in Figure 6-11, 40% of respondents indicated that they "strongly agree" that the Detergents Regulation has made cross-border trade easier, and a further 35% stated that they "agree". In contrast, only 3% of respondents indicated that they "disagree" with the statement that the Regulation has made it easier to trade detergents and surfactants cross-border within the EU. This strongly supports the view that the Detergents Regulation has made it easier for companies to participate in cross-border trade and this was confirmed by participants at the validation workshop.

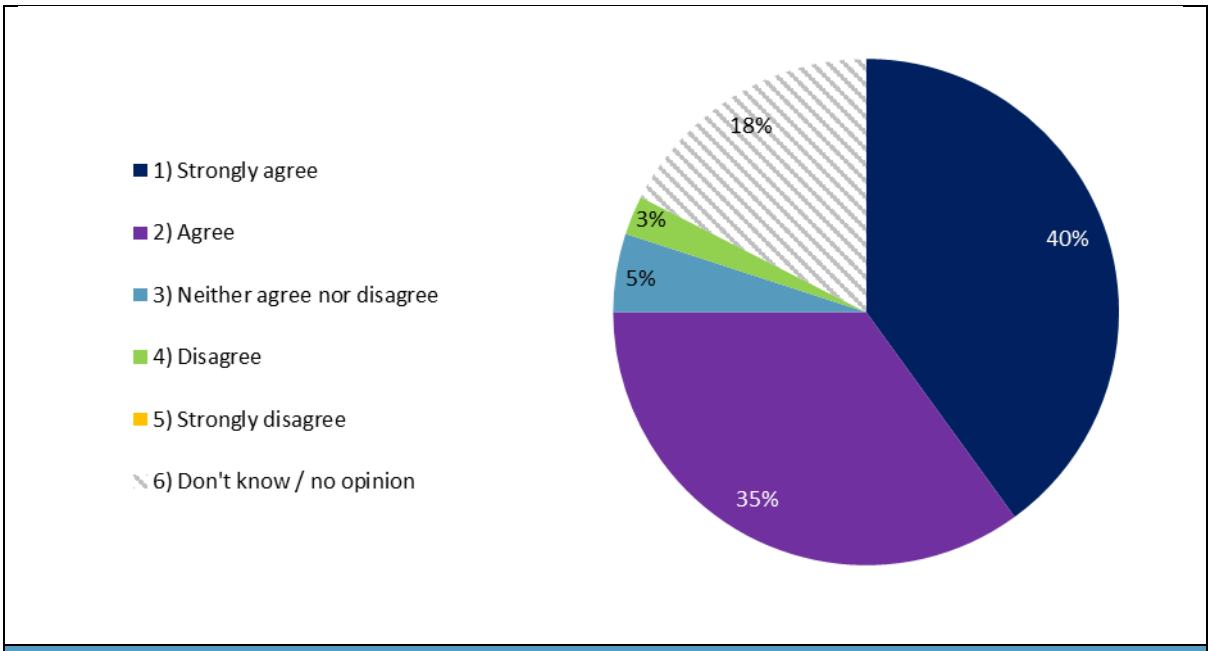


Figure 6-11: To what extent do you agree that the Detergents Regulation has made it easier to trade detergents and surfactants cross-border within the EU? Responses to the OPC - organisations (*n=40*)

When asked whether the Detergents Regulation has levelled the playing field for manufacturers of detergents and surfactants within the EU, 53% of SMEs indicated that is has (Figure 6-12). In comparison, only 6% of SMEs indicated that the Regulation has not levelled the playing field within the EU.

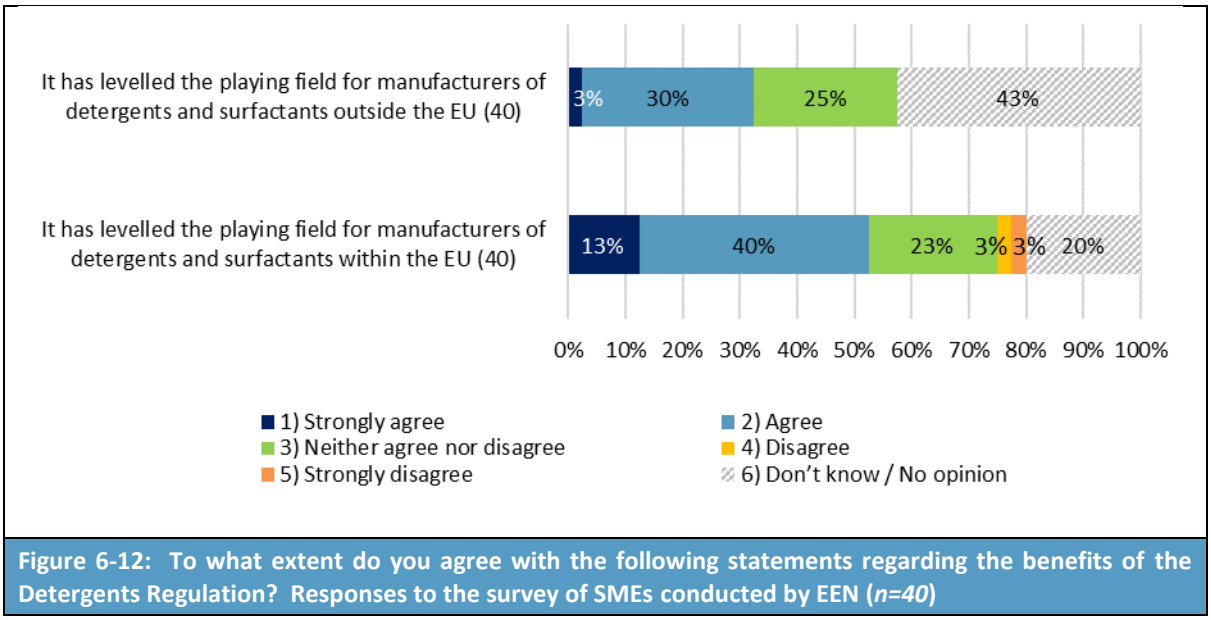


Figure 6-12: To what extent do you agree with the following statements regarding the benefits of the Detergents Regulation? Responses to the survey of SMEs conducted by EEN (*n=40*)

SMEs that participated in the survey were also asked whether the Detergents Regulation has had any impacts on their business in terms of intra- and extra-EU trade. As shown in Figure 6-13, about a quarter of SMEs (27%) have indicated that greater harmonisation across the single market, as a result of the Detergents Regulation, has resulted in an increase to their customer base within the EU. A similar, although slightly lower proportion (22%) indicated that the Regulation has led to an increase in sales within the EU. Overall, most SMEs have indicated that the Detergents Regulation has had no effect on their customer base or sales within the EU.

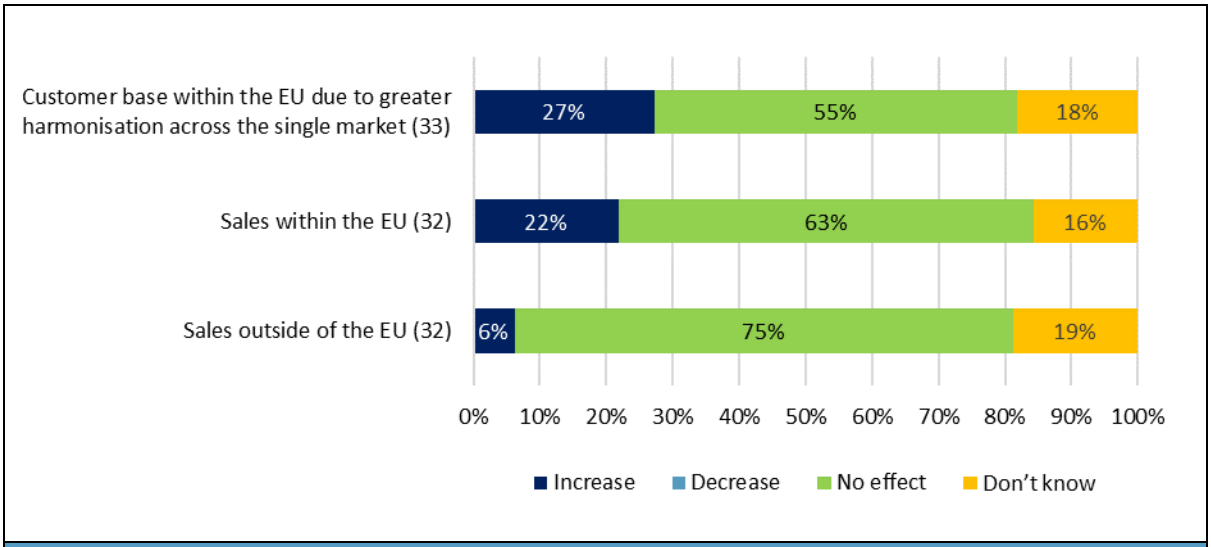


Figure 6-13: What effect did the Detergents Regulation have on your business? Responses to the survey of SMEs conducted by EEN. ***(n=32 to 33, depending on response)***

During the interviews, **the prevailing view of stakeholders was that the Detergents Regulation has helped to harmonize the rules in place in different EU MS and that this has made it easier for companies to trade cross-border**. For example, industry associations from Romania and Poland both stated that the Regulation has made it easier for their member companies to trade throughout the EU. This is despite respondents indicating that some countries apply their own rules in relation to detergents that go beyond the scope of the Detergents Regulation, that may hinder cross-border trade (for further information see Section 8.1.2).

6.1.2 Protection of the environment

The Detergents Regulation contains various provisions that aim to ensure a high degree of protection of the environment. As explained fully in Annex 2 (Section A2.1), these include:

- Harmonised rules for the biodegradability of surfactants in detergents, including restrictions or bans on the use of surfactants on the grounds of biodegradability;
- Limitations on the content of phosphates and other phosphorus compounds in consumer laundry detergents and CADD (put in place by Regulation (EU) No 259/2012); and
- Rules concerning the dosage information that must be provided on the packaging of consumer laundry detergent products and CADD products that are sold to the general public.

During the OPC, organisations were asked to indicate the extent to which they consider the Detergents Regulation to have been effective in protecting the environment. Of the 41

organisations that responded to this question, 35 (85%) indicated that the Regulation has been very effective or somewhat effective in protecting the environment. This is compared to two (5%) respondents (one citizen and one SME) that considered the Regulation to have been very ineffective in protecting the environment. Interestingly, industry stakeholders had a particularly positive view, with 68% saying that the Detergents Regulation has been "very effective" in protecting the environment, as shown in Figure 6-14. The prevailing view of government and public bodies was also positive (although muted compared to industry representatives), with 69% indicating that the Detergents Regulation has been "somewhat effective" in protecting the environment.

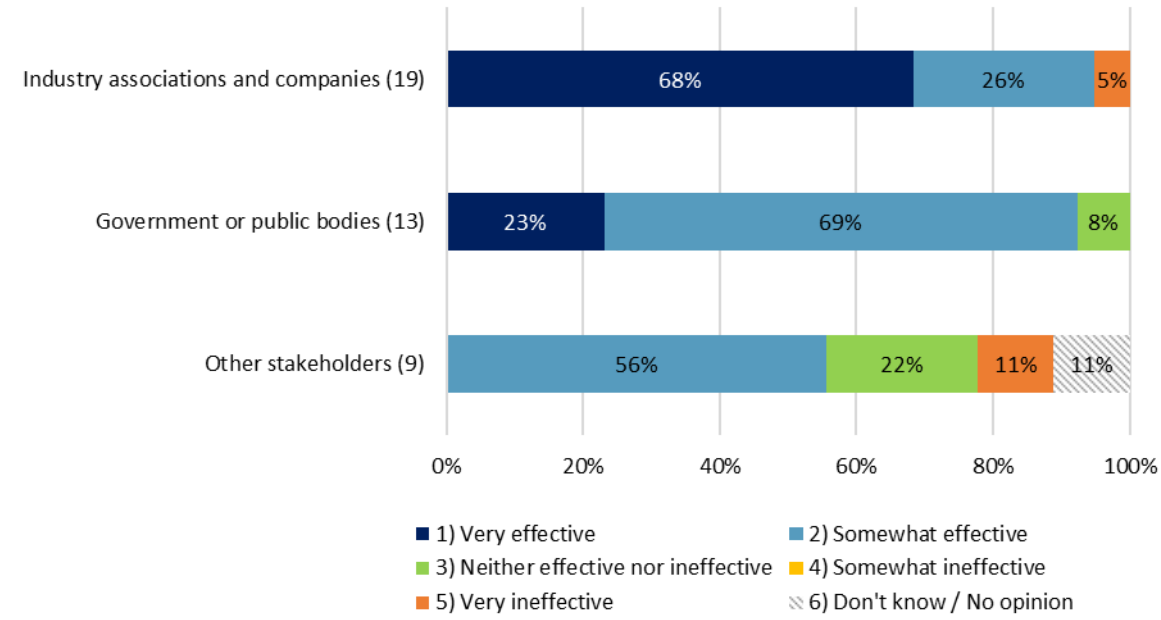


Figure 6-14: To what extent has the Detergents Regulation been effective in 'protecting the environment'? Responses to the OPC – Organisations. *(n=41)*

During the SME survey, a similarly large proportion of respondents (72%) indicated that they agree that the Regulation has helped to protect the environment (Figure 6-15). In comparison, only 3% of SMEs disagreed.

The results from the OPC and SME survey clearly indicate that **stakeholders perceive the Regulation as being effective in achieving its objective of ensuring a high degree of protection to the environment**.

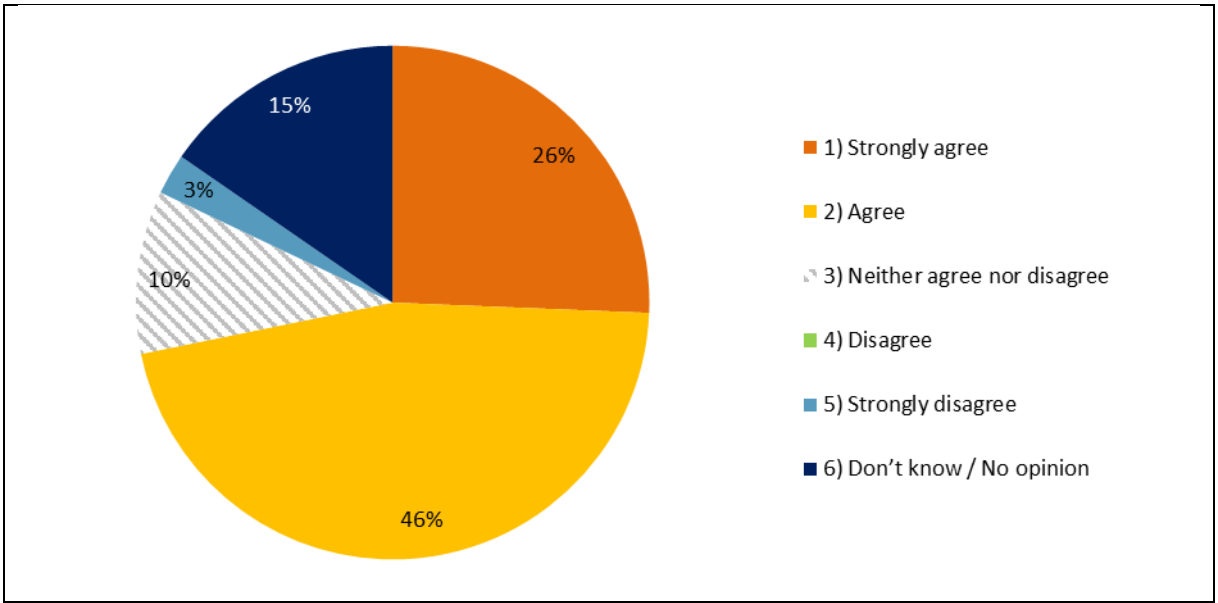


Figure 6-15: To what extent do you agree that the Detergents Regulation has helped protect the environment? Responses to the SME survey. *(n=39)*

Biodegradability of surfactants

One of the main environmental protection requirements of the Detergents Regulation deals with the concept of biodegradability, which is applicable to surfactants and detergents containing surfactants. As outlined fully in Annex 2 (Section A2.3.1), the Regulation was more stringent than the pre-existing legislation in that:

- Pre-existing EU legislation on detergents only covered two categories of surfactant – anionics and non-ionics – which at the time left approximately 10% of the total surfactants on the EU market outside the scope of the legislation. The scope of the Detergents Regulation is now wider, covering all surfactants, including anionics, non-ionics, cationics and amphoterics[102]; and
- While previous legislation only covered the "primary biodegradability" of surfactants in detergents, the Detergents Regulation imposes a two-tier testing regime on the biodegradability of surfactants in detergents with the main emphasis on "ultimate biodegradability".

During the consultation, stakeholders from across all groups indicated that extending the scope of the legislation to cover all types of surfactant and changing the focus to ultimate biodegradability were positive steps in terms of protecting the environment. Information from consultation and literature review (Annex 2, Section A2.3) shows that **there is a high level of compliance with the biodegradability requirements** of the Detergents Regulation and that the biodegradability **requirements have been effective in directing companies towards more environmentally friendly formulations**.[103] Industry stakeholders noted that while most surfactants available on the EU market probably already met the ultimate biodegradability criteria of the Regulation, there were some

[102] Intertek (2012): Understanding & attaining compliance to the EU Detergent Regulation. Available at: www.intertek.com/WorkArea/DownloadAsset.aspx?id=48909

[103] This was reaffirmed at the workshop by both MS authorities and stakeholders from industry.

products that fell short of the new requirements and that had to be reformulated[104] or removed from the market. During the consultation, several industry associations and companies remarked that **the Regulation is often seen internationally as the "golden standard" for the biodegradability of surfactants**.

Nevertheless, some stakeholders (including MS authorities and environmental NGOs) have indicated that **the biodegradability requirements should be extended to other non-surfactants organic ingredients** used in detergent products. It should be noted that some industry associations opposed this view, as discussed further in Section 5.1.2 of this document and Annex 2, Section A2.3.

Phosphorus emissions

In 2012, the Detergents Regulation was amended by Regulation (EU) No 259/2012 to harmonise rules on limiting the content of phosphates and other phosphorus compounds in detergents for household laundry and automatic dishwashing machines. The new limits outlined by this amendment were introduced to reduce the damage caused by phosphates from detergents to the environment and particularly aquatic ecosystems through the process of eutrophication (see Table 6-3 below).

Table 6-3: Eutrophication, causes and environmental impacts

Phosphorus is one of the main limiting factors for biomass production in nature and phosphorus emissions, along with emissions of nitrogen, have been recognised as a major contributor to eutrophication in the aquatic environment.

Increasing the phosphorus concentration in water bodies can increase the growth rate and biomass of algae, in the form of slime, mats and blooms, as well as certain rooted aquatic plants and weeds. This can affect a receiving ecosystem in a number of ways, especially with respect to the quality of water and the uses to which that water can be put.[105] Eutrophication can result in visible algal blooms which cause an increase in the turbidity of water and can create taste and odour problems. During a bloom, algae can also produce noxious toxins that can render water unsafe and cause fish mortality.

In its Annex VIa, Regulation (EU) No 259/2012 sets a limitation of 0.3 grams of the total phosphorus content in the standard dosage in CADD from 1 January 2017. It was anticipated that a limitation on phosphorus use in CADD to 0.3 grams per wash would reduce the total phosphorus load from CADD in wastewater in the EU to ca. 1.6% in 2017.[106] For laundry detergents, Annex VIa outlines a limitation of maximum 0.5 grams of the total phosphorus content from 30 June 2013.

The Detergents Regulation, as amended, does not specifically provide a limitation on the content of phosphorus in detergents for washing laundry and dishes by hand. This aspect was discussed during

[104] In which case, the Detergents Regulation can be considered to have stimulated innovation.

[105] Bateman I et al (2006): Does the phosphate treatment prevention of eutrophication pass the benefit-cost test? CSERGE Working Paper EDM 06-13. Available at: https://s3-eu-west-1.amazonaws.com/esrc-files/.../mY3kqLIpuEeVWVXVGuxE9Q.pdf

[106] European Commission (2015): Report from the Commission to the European Parliament and the Council, Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphorous in consumer automatic dishwasher detergent, COM(2015) 229 final. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

the meeting of the Detergents Working Group on the 8 November 2012 where it was confirmed that the restriction on the use of phosphates and other phosphorus compounds does also apply to hand-washing laundry detergents (even though it was recognised that the wording of the restriction does not clearly set out how to calculate phosphorus content in the case of laundry detergents solely used for hand washing). In the case of dishwasher detergents, it was noted during the meeting that the restriction only applies to detergents used in automatic dishwashers with hand-dishwashing detergents not covered by the restriction.[107] In light of the Working Group discussion, AISE updated its guidelines on the implementation of the Detergents Regulation to clarify the situation.[108] As outlined in Annex 2, Section A2.4.1, discussions with AISE and other industry associations during the consultation suggest that the market for hand washing detergents is much smaller than for products used in washing machines or dishwashers, and that many companies have voluntarily removed phosphates/phosphorus from hand washing detergents. Thus, today, the sector is considered to be virtually phosphate free. Nevertheless, 2015 data from AISE also shows that in the dishwashing detergents market, hand dishwashing accounts for a significant market share (41% of the total household dishwashing detergents market, as shown in Annex 1, Table A1-25). The Detergents Regulation does not set any limitations on the content of phosphorus in industrial and institutional detergent products. For further information, see Annex 2 Section A2.4.

During the literature review and consultation for this study, repeated attempts were made to identify data that could be used to measure the impacts of the new limits set by Regulation (EU) No 259/2012. These include, for example, data on phosphorus concentrations in raw sewage, phosphorus concentrations in EU waterbodies and corresponding levels of eutrophication. Unfortunately, however, a range of factors make it difficult to quantify the impacts of Regulation (EU) No 259/2012:

- Firstly, **our research has not identified any sources of data on phosphorus emissions/concentrations that postdate the restrictions coming into force** (i.e. from 2013 onwards). In any event, and as noted by one MS authority during the targeted consultation, the restrictions on phosphorus have only come into force relatively recently (2013 for laundry detergents and 2017 for CADD) meaning that **it may still be too early to be seeing the full effects;**

- Secondly, as explained more fully in Annex 2 (Section A2.4.5), **many EU countries already had restrictions on the content of phosphorus in detergents in place before the 2012 amendment came into force**, or were planning similar restrictions**.** According to AISE, as of 2009 about 11 EU countries had in place measures to restrict phosphorous mostly in laundry detergents; four countries had in place phosphates restrictions for CADD. A 2011 report by WWF (2011)[109] has indicated that in 2011 the following 12 countries had regulation in place to limit the phosphorus/phosphate content of laundry detergents: Austria, Belgium, Czech

[107] European Commission (2012): Draft Summary Record of the Meeting of the Detergents Working Group – 8th November 2012. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1321

[108] AISE (2013): Guidelines on the implementation of the Detergents Regulation, International Association for Soaps, Detergents and Maintenance Products. Available at: https://www.aise.eu/documents/document/aise_detergentsguidelines2013.pdf

[109] WWF (2011): Washing our Dishes and Clothes without Polluting our Rivers and Seas – The importance of an EU restriction of phosphate detergents for laundry and dishwashers. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/web_phosphate_brochure_1.pdf

Republic, Denmark, Finland, France, Germany, Italy, Latvia, Netherlands, Sweden and the UK; and that the following three countries had regulatory limits in place for CADD: France, Germany and Sweden. Furthermore, many countries had also already signed up to regional commitments to limit detergent phosphorus use. For example, in 2010, parties to the International Convention for the Protection of the Danube River committed themselves to "*initiate the introduction of a maximum limit for the content of total phosphorus of 0.2 to 0.5% P weight/weight, in laundry detergents for consumer use, if possible by 2012 and to work towards a market launch of polyphosphate-free dishwasher detergents for consumer use until 2015*"[110]. **In countries where phosphorus use in detergents was already low before 2012, there is unlikely to have been a noticeable impact on phosphate loadings**. Furthermore, as noted by one MS authority during the consultation *"the detergent companies saw long ago that restrictions were coming and many moved to P-free or low-P products well before the Regulation came into force. So there will not be a clear effect from particular dates.";*

- Another challenge is that **the contribution of detergents to phosphorus concentrations in river and lakes was relatively small** (e.g. compared to agriculture), **even before the restrictions put in place by Regulation (EU) No 259/2012**. As noted by one MS authority, this makes it extremely difficult to detect the signal from detergents and changes in their phosphorus content. For further discussion on the sources of phosphorus to the aquatic and marine environment, please refer to Annex 2 (Section A2.4);

- **The amount of phosphorus in sewage effluent is also a poor measure of detergent phosphorus loadings, as many treatment works are equipped for 'tertiary' treatment.** Indeed, the removal of phosphorus using tertiary water treatment forms a key requirement of the Urban Waste Water Directive (Council Directive 91/271/EEC).[111] As shown in Annex 2 (Section A2.4), the overall share of the population connected to tertiary urban wastewater collection and treatment systems varies quite considerably between countries, but there appears to be a generally increasing trend in the share of the population connected over time. This could mask any impacts from Regulation (EU) No 259/2012;

- **The impact of phosphorus on eutrophication is not uniform.** A small amount of detergent phosphorus in one location could have a devastating effect on a waterbody and its biodiversity, while in another location, a much larger quantity of phosphorus could have a negligible impact;

- **Some waterbodies (e.g. the Baltic Sea) receive inflows from non-EU territories that are not party to the Detergents Regulation.**

During the OPC, organisations were asked whether they agree that consumer laundry detergents and CADD on the market today contain less phosphorus than they did in the past as a direct result of the Detergents Regulation and its amendments. As shown in Figure 6-16, most organisations that responded to this question **(85%) agreed that this is the case and that the impact can be attributed to the Detergents Regulation**. Furthermore, around **a third of SMEs that responded to the survey**

[110] ICPDR (2010): Danube Declaration – Adopted at the Ministerial Meeting, February 16, 2010. International Convention for the Protection of the Danube River. Available at: https://www.icpdr.org/flowpaper/viewer/default/files/Ministerial%20Declaration%20FINAL.pdf

[111] The Urban Waste Water Directive requires a tertiary phosphorus elimination step for all municipal sewage treatment plants of agglomerations of >10,000 population equivalents in areas sensitive to eutrophication.

conducted by EEN stated that they had reformulated products to reduce the total phosphorus/phosphate content as a direct result of the Regulation and its amendments (Figure 6-17).

AISE has estimated that, across the EU, about 70% of laundry detergent formulations and 5% of CADD were already phosphorus-free as a result of voluntary actions and national restrictions by 2012. This means that about 30% of laundry detergent formulations and 95% of CADD were reformulated as a result of Regulation (EU) No 259/2012. AISE has noted that this is equivalent to a reduction of about 55,000 tonnes of phosphorus per year. Data from the German industry association IKW similarly shows that there has been a reduction in the phosphate content of detergents. As indicated in Annex 1, Table A1-13, IKW data shows that, in 2012, 29,910 tonnes of phosphate were used in detergents, but that this had dropped to 19,444 tonnes by 2015.

Based on the available information, it would appear that **the Detergents Regulation has been effective in reducing the amount of phosphorus/phosphate used in consumer laundry and dishwashing detergents**. For a more detailed discussion on this topic, see Annex 2 (Section A2.4).

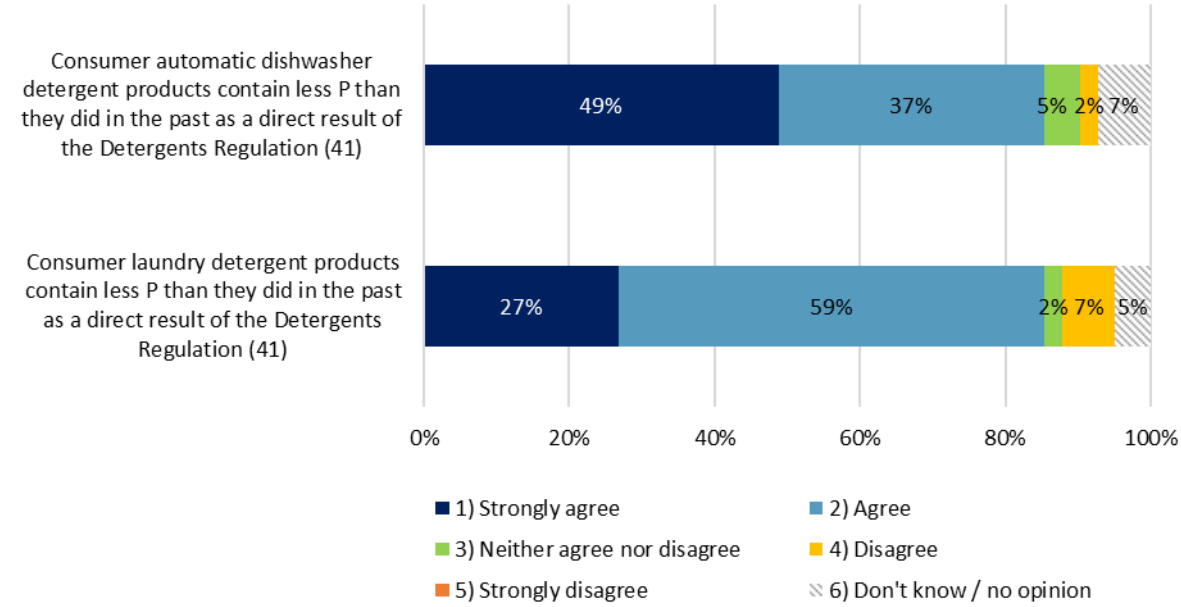


Figure 6-16: To what extent do you agree that consumer laundry detergent products and consumer automatic dishwasher detergent products on the market today contain less phosphates and phosphorus containing compounds than they did in the past as a direct result of the Detergents Regulation and its amendments? Responses to the OPC – Organisations *(n=41)*

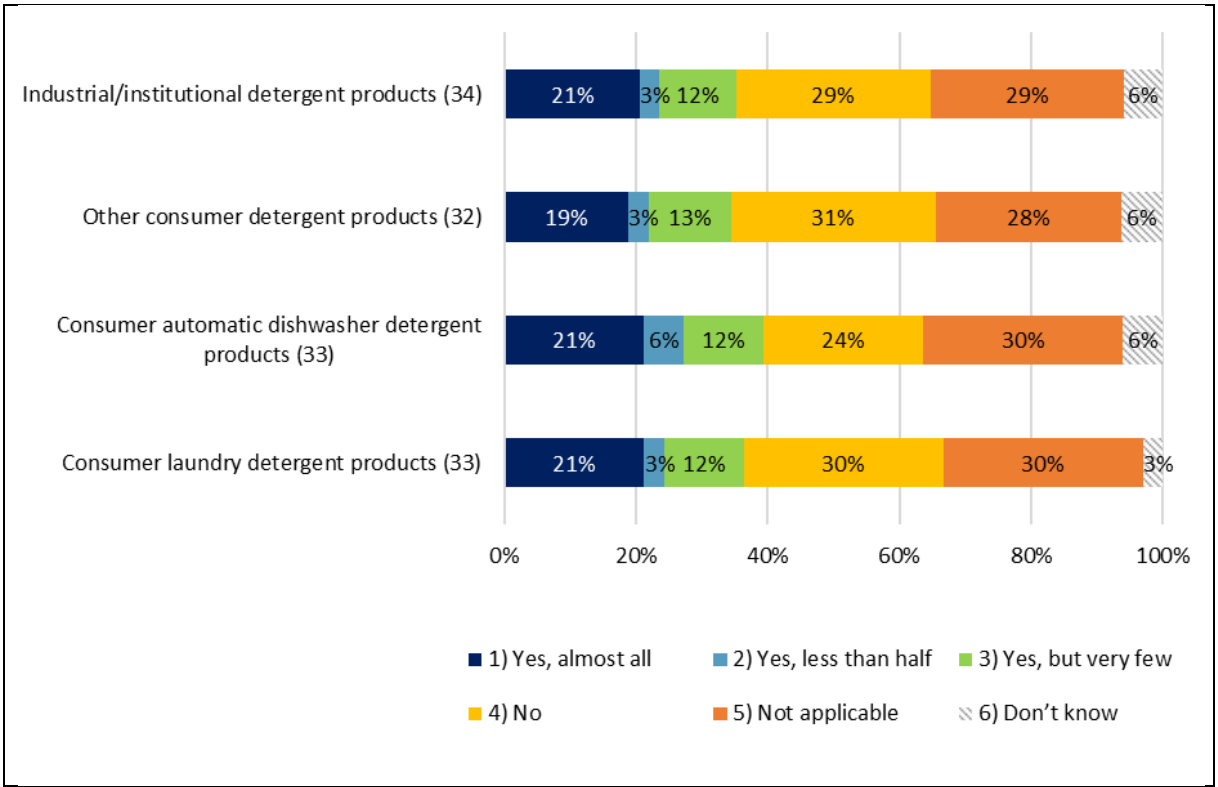


Figure 6-17: Did you have to reformulate some (or all) of your detergent formulations to reduce the total phosphorus/phosphate content as a direct result of the Detergents Regulation and its amendments? Responses to the SME survey *(n=32 to 34)*

Dosing information

As prescribed in Article 11(4) and Annex VII B of the Detergents Regulation, the packaging of detergents sold to the general public and intended to be used as laundry detergents must bear information on:

- The recommended quantities and/or dosage instructions; and
- The number of standard washing machine loads[112] (for heavy duty detergents).

The capacity of any measuring cup provided must also be indicated in millilitres or grams, and markings must be provided to indicate the dose of detergent appropriate for a standard washing machine load for soft, medium and hard water hardness levels.

From 2012, the packaging of consumer automatic dishwasher detergents (to be sold to the general public) must also bear specific information on the standard dosage (according to Regulation (EU) No 259/2012).

In 2014, the Chemical Legislation European Enforcement Network (CLEEN)[113] published the results of its enforcement project (EuroDeter). The study analysed the compliance of 907 detergents (319

[112] The standard washing machine loads are defined as 4.5 kg dry fabric for heavy-duty detergents and 2.5 kg dry fabric for light-duty detergents, in line with the definitions of Commission Decision 1999/476/EC of 10 June 1999 establishing the Ecological Criteria for the award of the Community Eco-label to Laundry Detergents.

companies) with the legal obligations of the Detergents Regulation, the Dangerous Preparations Directive (Directive 1999/45/EC) and the Biocidal Products Directive (Directive 98/8/EC).[114] The report provides some useful insights into the compliance of companies with the provisions of the Detergents Regulation.

During the EuroDeter study, 90% of the inspected consumer laundry detergent products were labelled with information on recommended quantities and/or dosage instructions, but less than 70% provided information on standard washing machine loads (Figure 6-18).

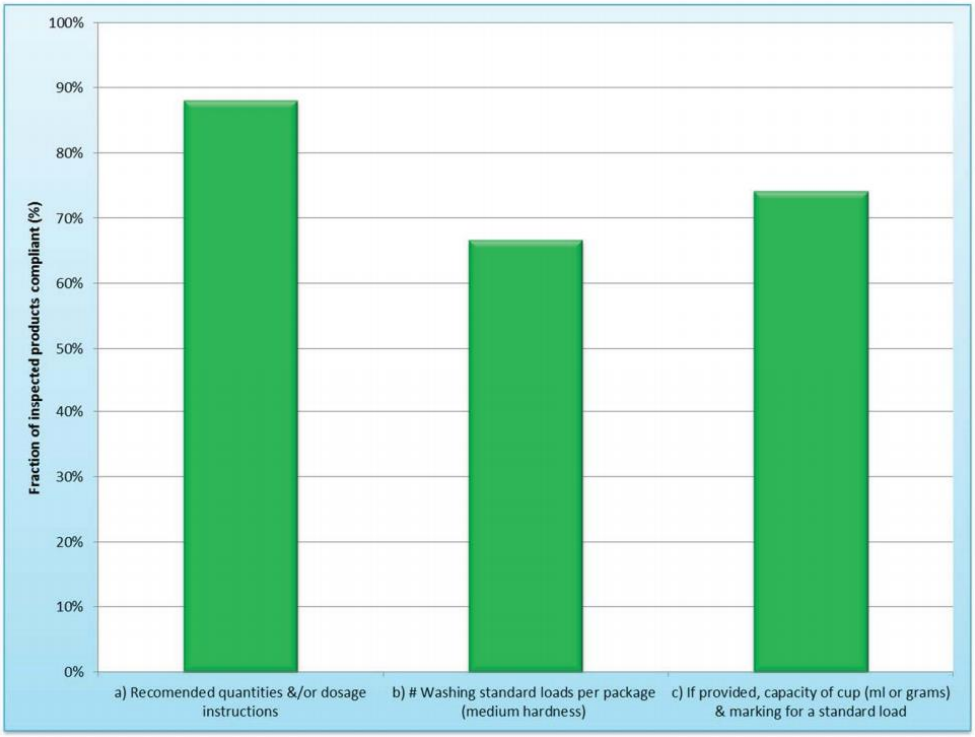


Figure 6-18: Compliance rate of the specific requirements for laundry detergents sold to the general public (according to Annex VII B of the Detergents Regulation)

Source: CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu

Although insufficient data are available to quantify whether consumers are, in reality, using less detergent as a result of the Detergents Regulation, the literature review and consultation activities undertaken as part of this study indicate that the **dosing requirements of the Regulation are generally perceived as an effective means of reducing the over-consumption of detergents.** Further analysis of the available information suggests that there are some limitations and areas where the Regulation could potentially be improved:

[113] CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu/

[114] Note that the Dangerous Preparations Directive has been repealed and replaced by the CLP Regulation. The Biocidal Products Directive has been repealed and replaced by the Biocidal Products Regulation.

- Firstly, the size of washing machine loads has changed over time and **there are concerns that the dosing information that must be provided according to the Regulation is now out of date**. For example, studies have shown that the average washing machine capacity has increased over the last decade[115] but that consumers do not use the full capacity of their machine for every wash.[116] As a result, some industry stakeholders noted that the standard washing machine loads (defined by the Regulation as 4.5 kg dry fabric for heavy-duty detergents and 2.5 kg dry fabric for light-duty detergents) need to be updated to take account of these trends. The weight limits used in the Detergents Regulation (4.5 kg and 2.5 kg) come from the Ecodesign requirements for washing machines. JRC has noted that the Ecodesign requirements for washing machines are currently being revised and that the weight limits of 4.5 kg and 2.5 kg may change. JRC also suggested that the Detergents Regulation should remain aligned with the Ecodesign and energy label requirements for washing machines.
- **Consumers may not read, understand or correctly follow the dosing instructions.** During the consultation, there was an interesting contradiction between the views of citizens and the consumer organisations that represent them. During the OPC, citizens mostly indicated that they read, understand and follow the dosing information provided on detergent packaging. In direct contrast, several consumer organisations indicated that most consumers do not read, understand or correctly follow the instructions. In addition, two consumer organisations noted that the dosing provisions of the Detergents Regulation should be revised so that the information is easier for consumers to understand. There are a variety of reasons why this contradiction in views might have arisen – e.g. consumers might not realise that they are not correctly following the instructions (e.g. they may not realise that they live in a soft water area, or know what is meant by "lightly soiled"), or consumer organisations may have underestimated the willingness and ability of consumers to understand and follow the instructions. It should also be reiterated that the respondents to the OPC survey of citizens cannot be taken as being representative of society overall. In addition, it was also noted that it is unclear how detergent users are interpreting the classification of "lightly soiled" and "normally soiled". During the consultation, one MS authority explained that "lightly soiled" fabrics are actually the normal case, and this is potentially resulting in the excessive use (overdosing) of detergents.
- A recent study by Vandecasteele B *et al*. (2014)[117] found that the number of consumers measuring their detergent dose has decreased. They concluded that this may, at least in part, be because consumers are using more pre-dosed detergents such as liquid tablets or pouches. During the consultation, one citizen noted that pre-measured detergent products do not necessarily correspond to the quantity of linen/dishes to be washed, which suggests that **the dosing provisions of the Regulation may not be well adapted to detergent products that come in pre-measured forms**. This issue may be particularly relevant to dishwasher detergents because, as shown in Annex 1 (Section A1.4.1) tablets account for the majority of all dishwasher detergent sales (ranging from 92% of all dishwasher detergent

[115] Michel A et al (2014): Monitoring the washing machines market in Europe. Available at: http://www.topten.eu/uploads/File/EEDAL15_Anette_Michel_Monitoring_washing_machines_market.pdf

[116] AISE (2015): Pan-European consumer survey on sustainability and washing habits [Summary of findings, 2014]. Available at: https://www.aise.eu/our-activities/information-to-end-users/consumer-activities.aspx

[117] Vandecasteele B et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016.

sales in the UK to 52% in Denmark, based on 2012 data). As outlined in Annex 1, Section A1.5.2, unit dose detergents, sold in tablet or capsule form, are also growing in popularity in the laundry care sub-sector and research has shown that they remove the scope for human error and considerably reduce detergent consumption.[118,119]

- In recent years, some detergent manufacturers have produced detergent packaging with an auto-dosing function but it is not clear that these would adequately take account of factors such as the water hardness, the size of the load, or level of soiling. In the case of commercial washing machines, self-dosing (automatic-dosing) has been available for some time and is in full commercial use. **New self-dosing washing machines have also been developed** for use in a domestic setting, although they are not (yet) widely used. **However, a number of issues have been raised in terms of their ability to deliver the correct detergent dose**. For example, the machine will only dose according to the programme that has been selected, and the user will need to ensure that they have selected the correct programme. If the wrong programme is selected on the machine, then the machine will wash the laundry with the incorrect dose.

For further information on the dosing provisions of the Detergents Regulation see Annex 2 (Section A2.5).

6.1.3 Protection of human health

When asked to indicate the extent to which the Detergents Regulation has been effective in protecting human health, 63% of organisations that responded to the OPC indicated that it had been "somewhat" or "very" effective, while 24% of organisations indicated that it had been "somewhat" or "very" ineffective in terms of protecting human health. When split by respondent type, it is interesting to note that industry stakeholders had a more mixed view, with 47% of industry associations and companies noting that the Regulation has been "somewhat" or "very" ineffective in protecting human health (see Figure 6-19). In contrast, 85% of government or public bodies indicated that the Regulation has been at least somewhat effective in this regard.

[118] SGS (2015): Sustainable Detergent Consumption. Available at: http://www.sgs.com/en/news/2015/03/sustainable-detergent-consumption

[119] Uniliver (2000): Tablet Detergents – Towards and More Sustainable Future. Available at: https://www.unilever.com/Images/2000-tablet-detergents-towards-a-more-sustainable-future_tcm244-409697_1_en.pdf

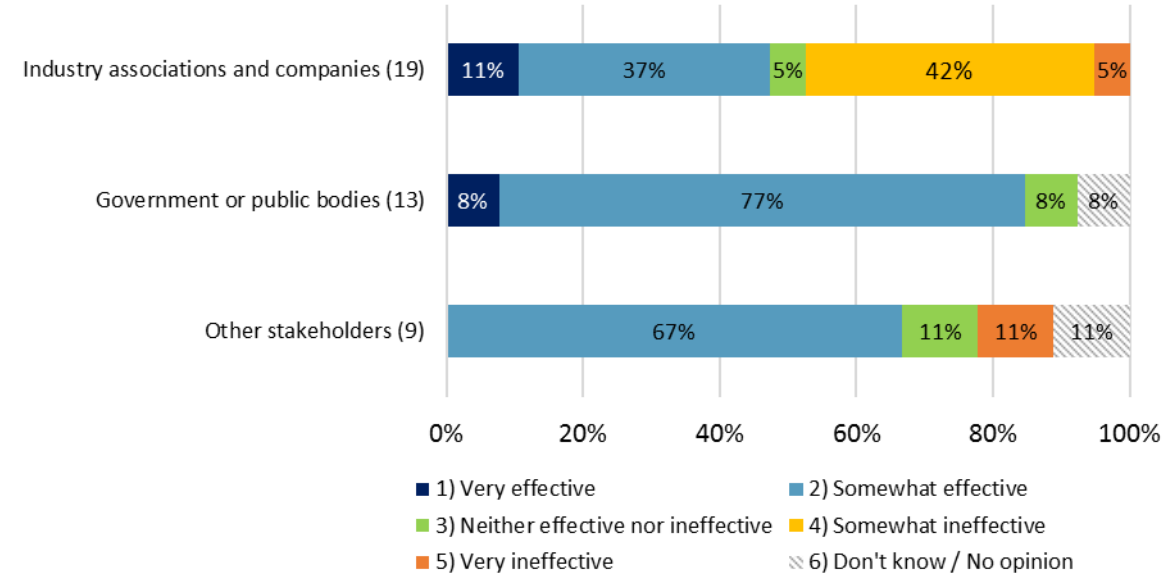


Figure 6-19: To what extent has the Detergents Regulation been effective in achieving the following objective - Protecting human health? Responses to the OPC – Organisations. *(n=41)*

Most SMEs (74%) also agreed that the Detergents Regulation has helped to protect human health (Figure 6-20). Only 3% of SMEs disagreed with this statement.

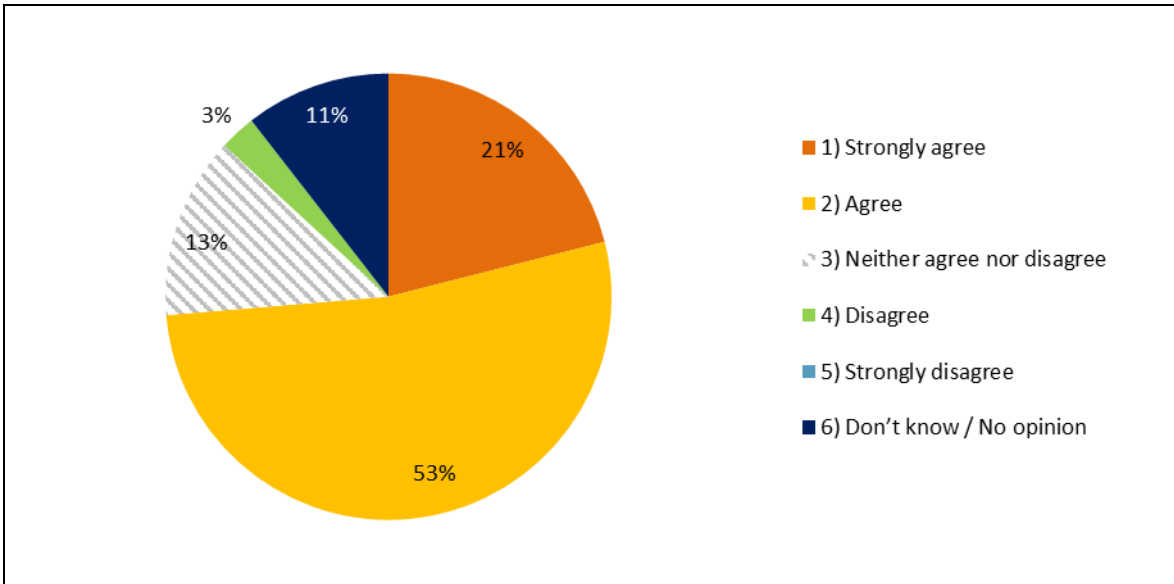


Figure 6-20: To what extent do you agree with the following statements regarding the benefits of the Detergents Regulation? - It has helped to protect human health. Responses to the survey of SMEs conducted by EEN. *(n=38)*

As outlined fully in Annex 3, Section A3.1., the Detergents Regulation puts in place a number of provisions that aim to ensure the protection of human health. These include:

- Providing information on the content of the detergent product, in accordance with the specifications provided for in Annex VII A (which includes the provision of information on fragrance allergens) (Article 11(3));
- Indicating instructions for use and special precautions, if required (Article 11(3));
- Ensuring that allergenic fragrances in detergents are declared irrespective of the way they are added to the detergent (Commission Regulation (EC) No 907/2006);
- Requiring certain information on the content of detergents to be made available by manufacturers to MS competent authorities and medical personnel (Article 9(3));
- Providing ingredient datasheets online (Commission Regulation (EC) No 907/2006; Annex VII D); and
- The safeguard clause (Article 15).

Annex 3 provides a detailed review of the extent to which the Detergents Regulation has been effective in terms of protecting human health. While the key findings are summarised in the sections that follow, the reader is referred to Annex 3 for a more comprehensive overview of the results.

Labelling of contents

During the consultation, there was general agreement among stakeholders (all types) that **the labelling of allergens is useful for consumers** and that, in this regard, the Detergents Regulation has been effective in terms of ensuring a high degree of protection of human health. During the OPC, organisations generally agreed that **the labelling requirements are sufficient to inform consumers and downstream users about potential allergenic substances in detergents** (Figure 6-21):

- 71% of respondents agreed or strongly agreed that the labelling requirements outlined in the Regulation are sufficient to inform consumers about potential allergenic substances in detergents; 13% of respondents disagreed or strongly disagreed; and
- 71% of respondents agreed or strongly agreed that the labelling requirements outlined in the Regulation are sufficient to inform downstream users about potential allergenic substances in detergents; 13% of respondents disagreed or strongly disagreed.

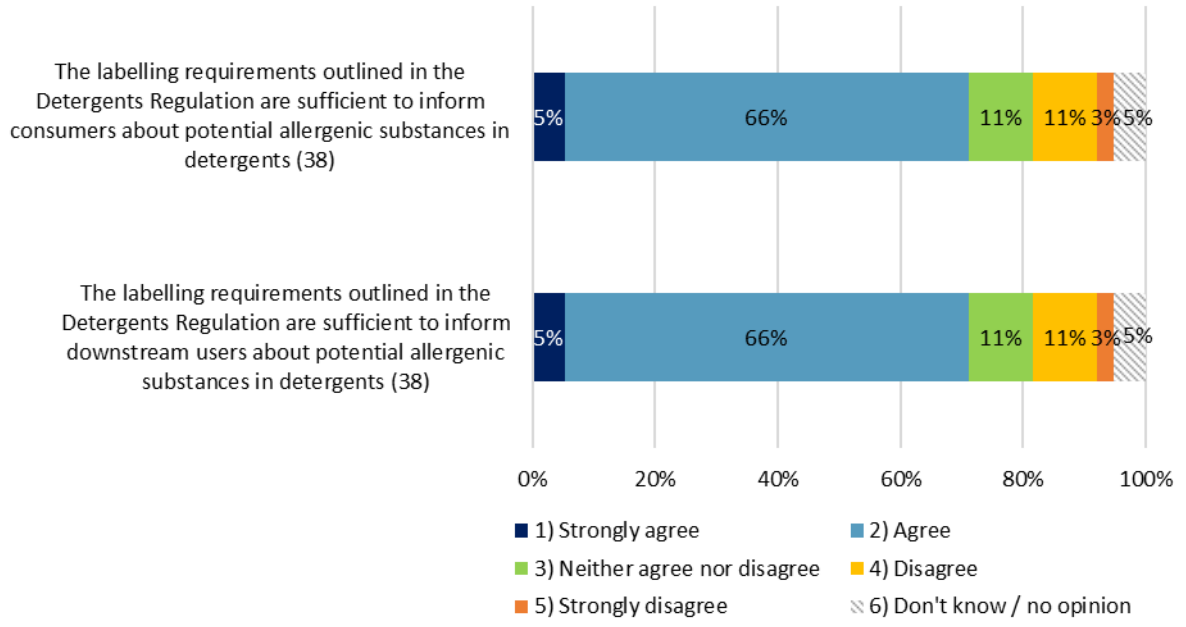


Figure 6-21: To what extent do you agree with the following statements regarding the labelling/packaging requirements outlined in the Detergents Regulation? Responses to the OPC – Organisations. *(n=38)*

During the consultation, industry stakeholders noted that there are no indications that detergents are causing a disproportionate number of allergic reactions/skin irritations when compared to other chemical products. In support of this claim, one industry association referred to a recent report by IKW[120] which indicates that there have been relatively few medically confirmed cases of allergies or skin irritations linked to detergent products.

The key findings, elaborated in Annex 3, can be summarised as follows.

- During the EuroDeter study (CLEEN, 2014)[121], **the highest rate of non-compliance was found to relate to the obligation to list the allergenic fragrances on the label**. More than 40% of the inspected products did not include, where applicable, all mandatory allergenic fragrances on the label or packaging.
- Results from the supporting study for the Chemicals Fitness Check (RPA et al., 2017)[122] show that some consumers believe **a lack of detailed ingredient lists restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain substances.** It should be noted that the Commission is currently looking at expanding the list of allergens that need to be listed on product labels and that industry is

[120] IKW (2017): Annual Report, 2016-2017. Available at: http://www.ikw.org/fileadmin/content/z-IKW-ENGLISCH/IKW_Annual_Report_2016_2017_final.pdf

[121] CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu

[122] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

concerned that this could result in too much information having to be provided on labels, which may be detrimental to consumer understanding (RPA et al., 2017).[123]

- Some stakeholders were concerned that **some irrelevant information is being presented to consumers on product labels**, and that this distracts consumers from more pertinent information (e.g. allergens, instructions for use). For example, one consumer organisation noted that, at the moment, the surfactant content of the product must be listed in terms of percentages.[124] The stakeholder explained that consumers would not know what to do with this information and that removing this unnecessary information would provide more space on the label for information that is important and of greater value to the consumer (e.g. on the ingredients). Overloading the label of detergent products may reduce the effectiveness of the regulation in terms of achieving its objectives in relation to human health.
- Citizens and consumer organisations have expressed **concern at some of the ingredients that are currently being used in detergent formulas**. The Danish Consumer Council 'THINK Chemicals', for example, found sensitising preservatives in detergents designed for washing dishes by hand**.** THINK Chemicals also found laundry detergent products containing sodium borate, which is suspected to have an adverse effect on fertility and is also on the EU's candidate list of Substances of Very High Concern (SVHC). It should be noted that, during the workshop, one industry stakeholder remarked that sodium borate can be found in vegetables, certain alcohols and dietary supplements as well as being used in detergents. It was indicated that sodium borate does not pose a risk when used in detergent products. The German Cosmetic, Toiletry, Perfumery and Detergent Association (IKW) has also issued a statement[125] which says that "*safety assessments prove that use of boric acids and borates in detergents is safe in terms of health*". IKW reports that "*boric acid and/or borate-containing detergents can be safely used. Laundry which has been washed with boric acid or borate-containing detergents can be worn and/or used safely*".
- As noted earlier, there is a consensus that **nanomaterials should only be included on a label if they are hazardous** (and, in such cases, they should be removed from the product altogether).

Provision of ingredient datasheets to MS competent authorities and medical personnel

The Detergents Regulation specifies that detailed information on the composition of detergents must be provided to medical professionals, upon request, via the "*ingredient datasheet*". The ingredient datasheet must be provided "*without delay and free of charge*" (Article 9(3)(1)). The

[123] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations

[124] Note that this requirement was originally introduced by Commission Recommendation of 13 September 1989 for the labelling of detergents and cleaning products, which proposed to introduce a more detailed labelling to make it possible for "*products to be used with greater discernment, which will have a direct impact on water quality and on the environment in general*".

[125] IKW (2017): IKW Fact Sheet: Safe use of boric acid and borates in liquid detergents, available at: http://www.ikw.org/ikw-english/home-care-topics/safety-substances/ikw-fact-sheet-safe-use-of-boric-acid-and-borates-in-liquid-detergents

content of the ingredient datasheet must be prepared according to Annex VIII C. In addition, the Detergents Regulation foresees in Article 9(3)(2) that "*this is without prejudice to the right of a MS to request that such a datasheet be made available to a specific public body to which the MS has assigned the task of providing this information to medical personnel*".

A couple of important points can be drawn out of the analysis presented in Annex 3 (Section A3.3):

- Firstly, industry representatives noted that **it is unusual for medical professionals to seek ingredient lists from product manufacturers**. This would suggest that even if the Detergents Regulation were working exactly as intended, the benefits of this provision would probably be minimal;
- **There appear to be some compliance issues related to the Regulation's requirements on ingredient datasheets.** For example, the CLEEN Report found that for 23% of inspected detergent products, contact details (which would be required by medical personnel seeking the ingredient datasheet) were missing. Furthermore, for 23% of inspected products, an ingredient datasheet was not available at all; while for 14% of inspected products, the ingredient datasheet was not made available for inspectors. A quarter (26%) of the ingredient datasheets were not in conformity with the requirements listed in Annex VII C. In addition, during the consultation for the present study, the study team experienced difficulties when trying to contact some manufacturers of detergent products, i.e. the email addresses and telephone numbers provided on company websites did not always work. This is important because medical professionals might look online for company contact details.
- Several industry associations explained that **as Regulation 542/2017 comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete.** Commission Regulation (EU) 2017/542 amends CLP by adding an Annex that harmonises the information that must be provided to appointed bodies relating to emergency health response. To comply with this regulation, any company selling mixtures classified as hazardous under CLP (including detergents) to consumers in the EU will have to submit information electronically to the appointed bodies by 2020. Detergents classified as hazardous mixtures under CLP and used in a professional or industrial setting will need to comply by 2021 and 2024, respectively. As previously outlined, one large company estimated that about 95% of all detergent products on the market would be classified as hazardous under CLP.

Publication of ingredient lists online

Information from literature review and consultation indicates that there are compliance issues with the obligation to provide the ingredient datasheet online. The EuroDeter study, for example, found that almost 30% of the inspected detergents, for use by the general public, did not provide a website address related to the list of ingredients on the label or packaging. Furthermore, the list of ingredients was not available at the website address mentioned on the label for 46% of the inspected products. Compliance checks carried out by THINK Chemicals[126] similarly found missing ingredient lists (datasheets), lists that were extremely difficult to find and lists that were outdated.

During the consultation, it was noted that the website addresses given on detergent packaging do not always link directly to the list of ingredients and that it is not always possible to find the list of ingredients on manufacturers' websites. MS authorities remarked that easy accessibility is not

[126] KEMI (2017): Check your dishwashing soap for allergenic preservatives. Available at: http://KemI.taenk.dk/bliv-groennere/check-your-dishwashing-soap-allergenic-preservatives

currently a requirement of the Detergents Regulation (although it should be noted that this is specified in the Commission's guidance on the Regulation)[127].

One consumer organisation proposed that it would make more sense to have the full list of ingredients on the product itself – as is already the case for food products. This would ensure that consumers' always have access to the right information, without having to go to the trouble of finding out. The consumer organisation clarified that there would not be any issues in terms of space on the packaging, as some products (e.g. Danish Blue Label products) are already required to list all of the ingredients on the packaging. It should be noted that this comment is in contrast to the prevailing view of industry.

During the consultation, many companies and industry associations indicated that there is too much information provided on detergent packaging and that this is confusing for consumers and costly to industry. These stakeholders repeatedly advocated that some of the ingredient information currently provided on product labels would be better provided online, and linked to the product using a QR code. As commented by AISE during the OPC:

> *"A potential way of reducing the level of information included on product labels while ensuring it remains available is through the use of innovative communication technologies, such as Q-R codes and bar codes."*

Stakeholders pointed out that QR codes are already used on some detergent products available on the EU market.

Instructions for use and special precautions

Article 11(3) of the Detergents Regulation specifies that "*the packaging of detergents shall indicate … instructions for use and special precautions, if required*". The Regulation does not provide any guidance on what indications of use or measures should be mentioned and how they could be included on the label, although it would appear that some industry associations have issued guidance on this issue.

Information from literature review and consultation suggests that companies are generally compliant with this provision and, during the consultation, industry associations and companies were predominantly of the view that this aspect of the Detergents Regulation is working well, although a couple stated that further guidance would be welcomed.

A couple of themes were, however, recurrent during the consultation and raised by stakeholders from various different groups:

1. Consumers generally do not read the instructions and precautions provided on product labels;
2. Too much, and too complex, information is presented on detergent labels and packaging; and
3. Consumers cannot be assumed to protect themselves with personal protective equipment (PPE).

[127] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522

Safeguard clause

For a detailed discussion on the safeguard clause, please see Section 6.3.7 of this report and Annex 3 (Section A3.6).

6.2 Provisions or parts of the Detergents Regulation that have met their objectives most effectively, least effectively, or not at all

Based on the available information (from literature review and consultation), and further analysis, we conclude that there are two key areas where the Detergents Regulation has met its objectives particularly well; namely:

- The requirements introduced in the original version of the Detergents Regulation (Regulation (EC) No. 648/2004) on the **biodegradability of surfactants**. As explained in Section 6.1.2 (and more fully in Annex 2, Section A2.3), the biodegradability requirements of the Regulation are seen internationally as the "golden standard" and have successfully directed companies towards more biodegradable formulations.

- The new **restrictions on the phosphorus content of consumer laundry detergents and CADD** introduced by Regulation (EU) No 259/2012. As explained in Section 6.1.2 (and more fully in Annex 2, Section A2.4), information from consultation strongly supports the view that consumer laundry detergents and - even more so - consumer dishwashing detergents contain less phosphorus today as a direct result of the Detergents Regulation.

In both instances, the Detergents Regulation has provided a level of harmonisation that would not have been achievable in the absence of the Regulation (for more information, see Section 8.1.1).

The Detergents Regulation (EC) No. 648/2004 was adopted before the introduction of REACH (in 2006), CLP (in 2008) and the Biocidal Products Regulation (in 2012). It was also adopted before the Cosmetic Products Regulation (in 2009) and the new Regulation on poison centres (Commission Regulation (EU) No. 2017/542) in March 2017. Over the years, various overlaps have therefore emerged as new pieces of chemicals legislation have been introduced (for more on this topic, see Section 5.2).

As outlined previously, one of the key issues that has arisen from these overlaps is a **duplication in the labelling requirements** for some products that fall within the scope of multiple pieces of legislation. As explained more fully in Section 5.2.8 (and Annex 3), industry is concerned that this could result in too much information being provided on product labels, which may be detrimental to consumer understanding and, in turn, reduce the effectiveness of the Regulation in terms of ensuring a high degree of protection of human health. Multiple regulations dealing with the labelling of detergents also creates an unnecessary regulatory burden for the detergents industry. Thus, stakeholders consider there to be a clear opportunity for streamlining labelling requirements between the different pieces of legislation.

6.3 Implementation and enforcement of the Regulation

6.3.1 Background

Unlike a Directive, the Detergents Regulation is directly applicable law in all 28 EU MS and is also applicable to the other countries of the European Economic Area (i.e. Norway, Iceland and Lichtenstein). However, the Regulation does require MS to introduce "effective, dissuasive and proportionate" sanctions (Article 18) and allows (in Article 10) MS to introduce control measures for the purpose of enforcing the Regulation. It also provides several other provisions that leave some margin of discretion to the MS, including Article 8 (which outlines the duties of the MS including appointment of Competent Authorities as well as notification/designation of approved laboratories), Article 14(2) (which states that MS may maintain or lay down national rules concerning restrictions on the content of phosphates and other phosphorus compounds in detergents for which no harmonised restrictions apply) and Article 15 (the safeguard clause). Thus, there may be some differences between countries in how the Regulation is implemented and enforced.

6.3.2 Judgements from the European Court of Justice and EFTA Court

The following case concerning the implementation of the Detergents Regulation has resulted in a judgment from the European Court of Justice[128]:

- C-184/08 of 24/03/2009. Article 18 of the Regulation requires that by 8 October 2005, MSs had to ensure there was a sanction system to deal with an infringement of the Regulation. The ECJ ruled that Luxembourg had failed to comply with that requirement.

The following case has resulted in a judgement from the European Free Trade Association (EFTA) Court:

- E-03/08 of 29/10/2008. The Court ruled in favour of the EFTA Surveillance Authority in a case against Iceland for failure to adopt national legislation to allow for the implementation of the Regulation.

6.3.3 Sanctions

A variety of sanctions have been implemented in the MS, as elaborated in Table 6-4 below. The sanctions range from administrative options (such as verbal or written advice) to more stringent penalties such as fines, bans (e.g. forcing products to be withdrawn from the market), and in some cases, imprisonment.

Table 6-4: Sanctions available in the MS

The following paragraphs describe the sanctions available in some of the MS. Unless otherwise indicated, the information presented below is drawn from consultation.

Austria

The Austrian Chemicals Act lays down provisions for fines as well as for product withdrawals and bans.

[128] Farmer AM (2012): Manual of European Environmental Policy, Routledge, London; extract from IEPP (2014). Available at: www.ieep.eu/assets/1509/5.8_Detergents_-_final.pdf

Table 6-4: Sanctions available in the MS

Denmark

As supervising authority, the Chemical Inspection Service must cause an illegal act to be made legal, unless the illegal act is considered to be of minor importance, cf. section 48 in the Danish Chemicals Act. There are various administrative options available to the supervising authorities in case of violations: enjoining of the rules, imposing a sales ban or enforcement notices on e.g. withdrawal of illegal products from the market or disposal of the products. The punishment may increase to imprisonment up to 2 years, in case the violation is committed intentionally or in the case of gross negligence and if the violation has inflicted injury on humans, animals or the environment or if financial gain or cost savings have been obtained. Still, it will depend upon a specific assessment from case to case whether administrative sanctions are sufficient or if it is necessary to report the company to the police.

Finland

According to the national Chemicals Act, if the operator does not comply with the provisions of the Detergents Regulation (or other chemicals legislation of the European Union), the national enforcement authority may ban the operator from continuing operations or repeating procedures in violation of the provisions or it may order the operator to otherwise fulfil the obligations laid down by law. The Finnish Safety and Chemicals Agency may issue orders concerning a chemical with respect to banning them from being placed on the market or from being made available on the market, the return procedure or notification of the hazard inflicted, or it may order that the chemical be made harmless by taking appropriate measures. Fines and other criminal sanctions may only be issued by the court after taking the case to court by the prosecutor after a police investigation.

Ireland

The Detergents Regulation is enforced under the Chemicals Act of 2008 as amended in 2010 which gives effect to Detergents and other EU chemicals legislation. This Act nominates the relevant competent authorities, provides for powers of inspectors, enforcement tools, and other legal provisions, as well as a number of administrative provisions.

Sanctions available to enforcement authorities range from verbal or written advice, to enforcement notices (contravention and prohibition), to criminal prosecution as provided for in The Chemicals Act 2008. Part 4 of the Chemicals Act 2008 outlines the sanctions that can be used. It states, for example:

- Appointment of inspectors with extensive powers that include the power to enter, inspect, examine and search any place to which the inspector has reasonable grounds for believing that the relevant chemicals statutory provisions apply; the power to remove and detain records; and the power to require the removal from the market of a chemical by the person who has placed that chemical on the market, where it appears to the inspector that, in relation to that chemical, the relevant chemicals statutory provisions have been contravened.
- An inspector may direct the person in control of an activity to submit an improvement plan in situations where the inspector considers that an activity is occurring or is likely to occur that involves or is likely to involve a risk to human health and the environment. The inspector confirms whether he or she is satisfied that the plan is adequate or may direct that the plan be revised and re-submitted.
- An inspector has the power to issue a contravention notice on the person who has control of the activity concerned. This arises where an inspector is of the opinion that the person has contravened any of the provisions of the relevant chemicals statutory provisions, or has failed to comply with a direction from the inspector to submit an improvement plan or a revised improvement plan or has failed to implement the plan or revised plan. The inspector may direct the person to remedy the contravention or remove a chemical from the market, among others.
- An inspector has the power to issue a prohibition notice which prohibits the carrying on of an activity until the matters that give rise to a serious risk to health or the environment identified by

Table 6-4: Sanctions available in the MS

the inspector are remedied. Where a prohibition notice is contravened, the inspector may apply to the High Court for an order prohibiting the continued contravention of the notice.

- A national authority can apply to the High Court for an order restricting or prohibiting an activity which involves or is likely to involve a contravention of the relevant chemicals statutory provisions and a serious risk to health or to the environment.

The Chemicals Act 2008 (as amended) allows for the issuing of fines on summary conviction of up to €5,000 and/or imprisonment for up to 12 months and for conviction on indictment up to €3,000,000 and/or imprisonment for up to 24 months for contraventions of the relevant legislation, including requirements of Article 4 of Regulation (EC) 648/2004. Additionally, inspectors who have reasonable grounds for believing a person has committed an offence, including one relating to Article 4 of Regulation (EC) 648/2004, and is liable to summary prosecution, may serve the person with a fine, referred to as a "fixed payment notice", for an amount up to €2,000. A person on whom such a fine is served is not obliged to pay the fine and can contest the notice in the courts. Additionally, the legislation allows for directions to be made to economic operators who have placed non-compliant detergents on the market for the withdrawal of those materials from the market and their appropriate management at the expense of the operator.

Latvia

Administrative penalties are provided in the case of violation of the Detergents Regulation. Products that do not comply with the requirements of the Regulation can be temporarily banned or be withdrawn from the market until they are brought into conformity. An administrative act is issued on administrative penalties.

Slovakia

If deficiencies are identified, companies can be called upon to remove these deficiencies on a voluntary basis. If the controlled products could harm human health or the environment, the Slovak Trade Inspection can impose a ban on the sale of such products. Companies that repeatedly violate the terms of placing detergents on the market or that fail to comply with the measures taken to remedy the identified deficiency, can be fined in administrative proceedings.

Sweden

The most stringent sanction available is a ban, but fines also exist.

United Kingdom

Under the Detergents Regulations 2010, enforcement officers from the constituent councils in the UK can issue enforcement notices if there is a breach of the Detergents Regulation, setting out the action that needs to be taken and the time period in which the problem should be rectified.[129] Due to the potential environmental or public health consequences that could result from a breach of the Detergents Regulation, criminal sanctions are also available under the Detergents Regulations 2010. The most serious offences will be triable either way and punishable by up to two years imprisonment and/or an unlimited fine.

Norway

Sanctions laid down in national legislation include the possibility to give verbal and written advice, administrative orders, impose coercive fines and product withdrawals.

[129] HSE (no date): Detergents Guidance Document, available at: http://www.hse.gov.uk/detergents/detergents-guidance-document.htm

Organisations that participated in the OPC were asked to indicate the extent to which they agree that the existing sanctions for infringements of the Detergents Regulation are dissuasive, effective and proportionate. As shown in Figure 6-22, about a third of organisations that participated in the OPC indicated that they are. This compares to about 15% of stakeholders that have indicated that the existing sanctions are not dissuasive, effective and proportionate.

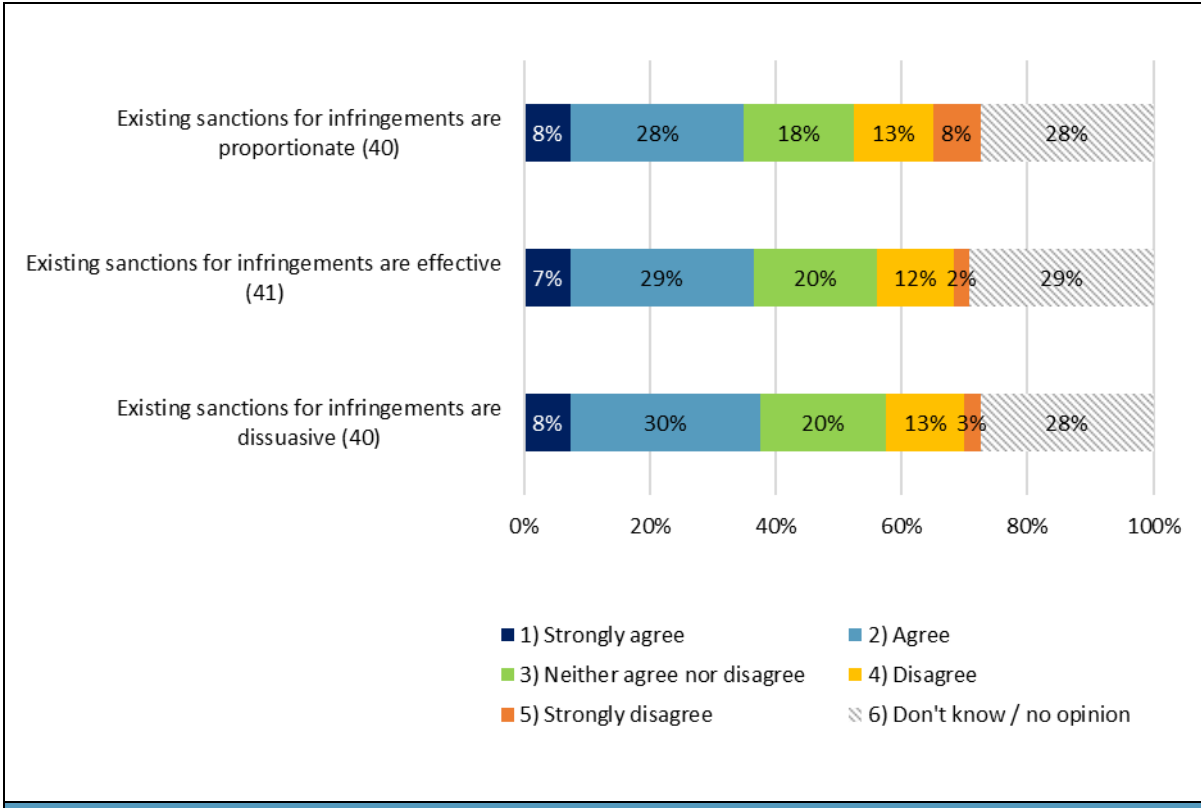


Figure 6-22: To what extent do you agree that existing sanctions for infringements of the Detergents Regulation are dissuasive, effective and proportionate? Responses to the OPC – Organisations

During the targeted consultation (emails and interviews), market surveillance authorities were also asked whether they agree that the existing sanctions for infringements are dissuasive, effective and proportionate. While most of these authorities indicated that the sanctions in their country are effective, proportionate and dissuasive, one indicated that the sanctions in their country are not effective as they do not encourage companies to act and that the most stringent sanction available is a ban. The stakeholder clarified that the sanctions are relatively unknown to companies, which means that they are not dissuasive. Furthermore, the sanctions may not differ according to the seriousness of the offence. As a result of such shortcomings, this MS is in the process of revising the existing sanctions.

6.3.4 Enforcement of the Detergents Regulation

During the consultation, market surveillance authorities confirmed that, in most cases, inspections on detergents tend not to be carried out for the Detergents Regulation in isolation, rather they are coordinated with inspections for other chemicals legislation, such as CLP and REACH.

Only two countries reported data separately in relation to the Detergents Regulation as part of official MS reporting on market surveillance activities in the chemicals sector. Table 6-5 presents information on market surveillance activities related to the Regulation in Estonia, while Table 6-6

provides data on market surveillance activities carried out in Greece. It should be recognised that both countries are relatively small players in the market for detergents and cannot, therefore, be taken as representative of the sector overall; for example, Estonia has less than 1% of the total enterprises in the sector (defined as NACE Code 2041), while Greece has less than 5% (for data on enterprise numbers see Annex 1, Table A1-19). Together, these two countries account for less than 2% of all detergents (by value) produced in the EU (for data see Annex 1, Table A1-15).

In addition to Greece and Estonia, the following countries provided data for the purposes of this evaluation, and are reported on below: Ireland, Romania, Austria, Latvia, Denmark, Slovakia, Finland and Norway. Again, these countries account for a relatively small share of the overall detergents market.

Enforcement in Estonia

As shown in Table 6-5, there were 264 inspections carried out in Estonia in 2013 in relation to the Detergents Regulation, with 510 products inspected overall. Out of these, 167 products (about a third of the total inspected) were found to be non-compliant. The table shows that 28 memos were issued as a result. No fines were imposed, and no products were withdrawn from the market.

Table 6-5: Market surveillance activities in Estonia related to the Detergents Regulation

	2010	2011	2012	2013
Total number of inspections	173	178	145	264
Total number of products inspected	364	527	365	510
Number of products tested	0	0	2	15
Number of non-compliant products	194	162	53	167
Number of products presenting a serious risk	0	0	0	0
Number of memos	81	44	14	28
Number of orders	12	0	0	0
Number of penalty payments and total amount	0	0	0	0
Number of substitutive enforcements	0	0	0	0
Number of misdemeanour procedures	0	0	0	0
Fines imposed as part of a misdemeanour procedure	0	0	0	0
Total number of products withdrawn from the market	0	0	0	0
Number of products recalled from consumers	0	0	0	0
Number of voluntary measures taken by economic operators	0	0	0	0

Source: European Commission (2015): Sector 22 Chemicals (Detergents, Paints, Persistent organic pollutants), Report on the Member States reviews and assessment of the functioning of market surveillance activities for the 2010-2013 period pursuant to Article 18(6) of Regulation (EC) No 765/2008. Available at: http://ec.europa.eu/DocsRoom/documents/13923/attachments/1/translations

Enforcement in Greece

Table 6-6 shows that in 2013, there were 65 inspectors employed full-time and available to market surveillance authorities in Greece for the purposes of enforcing the Regulation. During the consultation, the Greek competent authority (the General Chemical State Laboratory) reported that there are now only 40 inspectors (public employees) available to the market surveillance authorities in Greece.

As shown in Table 6-6, in 2013, 375 inspections were carried out in Greece in relation to the Detergents Regulation. In total, 78 instances of non-compliance were found, which resulted in 73 restrictive measures being taken by the market surveillance authorities and 32 sanctions/penalties

being issued. During the consultation, the General Chemical State Laboratory stated that in 2016, it carried out 147 inspections and checked the compliance of 576 products.

Table 6-6: Market surveillance activities in Greece related to the Detergents Regulation				
	2010	2011	2012	2013
Total number of inspections	272	438	341	375
Number of inspections based on:				
- tests performed in laboratories	132	220	200	208
- physical checks of products	803	782	583	587
Number of inspections resulting in:				
- finding of non-compliance	36	107	39	78
- restrictive measures taken by market surveillance authorities	23	63	67	73
- application of sanctions/penalties	11	19	30	32
Number of inspectors available to market surveillance authorities (full-time equivalent units)	65	65	65	65
Source: European Commission (2015): Sector 22 Chemicals (Detergents, Paints, Persistent organic pollutants), Report on the Member States reviews and assessment of the functioning of market surveillance activities for the 2010-2013 period pursuant to Article 18(6) of Regulation (EC) No 765/2008, available at: http://ec.europa.eu/DocsRoom/documents/13923/attachments/1/translations				

Enforcement in Ireland

In Ireland, detergent products may be inspected during REACH and CLP inspections. Table 6-7 provides data from the Irish Health and Safety Authority on the number of inspections carried out in the last few years in Ireland, where detergent products were the focus of inspection activities. Note that, in Ireland, the Health and Safety Authority is responsible for monitoring compliance with the health and safety provisions of the Detergents Regulation (e.g. provisions pertaining to the provision of information), while the Irish Environmental Protection Agency is responsible for monitoring compliance with the biodegradation requirements.

Table 6-7: Market surveillance activities in Ireland - detergents					
	2012	2013	2014	2015	2016
Total number of inspections	26	19	36	22	71
Source: Irish Health and Safety Authority, pers. comm. (2017)					

During the consultation, it was indicated that there are generally no resources (financial or labour) available to the Environmental Protection Agency of Ireland exclusively dedicated to surveillance activities relating to requirements under Article 4 of the Detergents Regulation (which covers limitations based on the biodegradability of surfactants). As a result, the resources available are not considered adequate for the effective enforcement of requirements stipulated under Article 4 of Regulation (EC) 648/2004.

Enforcement in Romania

Table 6-8 shows data provided by the National Authority for Consumer Protection of Romania on enforcement activities related to detergent products in Romania. The data cover inspections related solely to the Detergents Regulation and show that the number of proactive inspections has increased over the last few years.

Table 6-8: Market surveillance activities in Romania - detergents				
	2014	2015	2016	2017 (to 22/06/2017)
Number of proactive inspections	59	139	147	63
Number of reactive inspections	12	25	16	5
Source: National Authority for Consumer Protection of Romania, pers. comm. (2017)				

Enforcement in Austria

During the consultation, the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) of Austria noted that enforcement of chemicals legislation (including detergents) in Austria is coordinated by means of a national "enforcement platform" and that enforcement priorities are defined on a regular basis. The stakeholder explained that, as regards detergent products, there has been no specific enforcement of the Detergents Regulation during the last two years (2015-2016); however, horizontal enforcement activities in the area of REACH and CLP have been of some relevance. It was noted that there are about 18 persons ("Chemical Inspectors") in Austria, who deal (part of the time) with the enforcement of chemicals legislation including the Detergents Regulation. The annual budget varies to a large extent depending on defined (proactive) priorities and also on the extent of necessary reactive inspections.

Enforcement in Latvia

In Latvia, the Health Inspectorate is responsible for control of chemical substances, chemical mixtures (detergents, mixtures containing volatile organic compounds (VOC)), biocides, cosmetic products, tobacco products, electronic cigarettes. During the consultation, the Health Inspectorate explained that there are between three and eight inspectors performing inspections at companies in Latvia. Usually inspections are combined – covering different legal acts: REACH, CLP, other chemicals legislation, e.g. VOC, detergents, biocides, and cosmetics legislation.

According to the Health Inspectorate, in the last five years, 58 proactive controls were made on average each year, as shown in Table 6-9 below. There have not been any reactive controls in the last three years. On average, 236 detergent products are controlled each year.

Table 6-9: Market surveillance activities in Latvia - detergents					
	2012	2013	2014	2015	2016
Number of proactive inspections	47	46	72	66	60
Source: Health Inspectorate of Latvia, pers. comm. (2017)					

Enforcement in Denmark

According to the Danish Environmental Protection Agency, in 2016, the Chemical Inspection Service (at the Danish Environmental Protection Agency) did not run any proactive inspection projects but did receive three reactive cases about detergents (compared to 47 reactive cases about CLP). In Denmark, the Detergents Regulation is enforced as part of the enforcement of CLP, when it is relevant. There are three inspectors at the Chemical Inspection Service charged with inspections for CLP and the Detergents Regulation.

Enforcement in Slovakia

According to the Central Inspectorate of the Slovak Trade Inspection,e in Slovakia, 1,377 detergents have been tested over the period 2006 to 2016 (which equates on average to about 138 products

per year). Furthermore, 24 samples have been taken for analysis of the product composition, its biodegradability and washing efficiency. Only one sample did not meet with the mentioned requirements. In 2016, no fines were imposed.

Enforcement in Finland

Tukes, the Finnish Safety and Chemicals Agency has noted that, in Finland there are roughly around 100 inspections annually in relation to detergent products (also covering CLP/REACH). Of those concerning also (in practice the provisions of Article 11 of) the Detergents Regulation, the recorded number of inspections is around 20 inspections per year; however, these data are not exact and the inspections may have concerned several products at a time. All of the inspections were reactive, since Finland does not conduct any proactive enforcement of the Detergents Regulation.

For detergents, sanctions (typically bans) are issued annually a few times (in practice subjected to between one and thirty detergents annually) depending on random factors, the case/product specific risk factors (CLP-classification, sales volume, use) and how the company reacts during the administrative proceeding.

In terms of personnel, the enforcement authorities in Finland have 0.5 people per year

Enforcement in Norway

In Norway, the Detergents Regulation is controlled in conjunction with other chemical inspections. During the consultation, the Norwegian Environment Agency noted that enforcement of the Detergents Regulation in Norway has a low priority based on the country's risk-based approach to enforcement of chemicals.

Discussion

During the supporting study for the chemicals fitness check, concerns were raised in relation to a lack of consistency in enforcement between MS, which potentially results in inconsistent implementation of the Detergents Regulation. It is possible that this could have reduced the overall effectiveness of the Regulation.[130]

Organisations that participated in the OPC were asked about the extent to which they agree that there is effective enforcement of the Detergents Regulation and its amendments by the responsible authorities in their country. Their responses, as shown in Figure 6-23, indicate that most stakeholders view national enforcement as being at least "somewhat effective".

[130] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

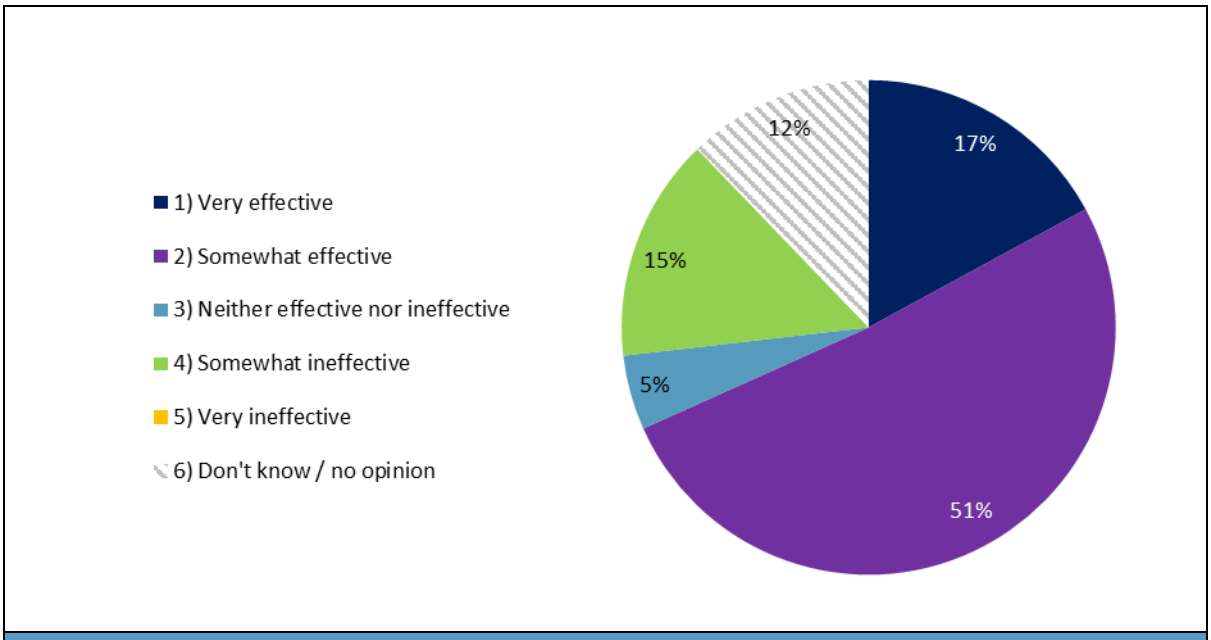


Figure 6-23: To what extent do you agree that there is effective enforcement of the Detergents Regulation and its amendments by the responsible authorities in your country? Responses to the OPC - Organisations *(n=41)*

6.3.5 Companies' knowledge of the Detergents Regulation

During the EuroDeter study, inspectors were asked to report on companies' knowledge of the Detergents Regulation. Results shown in Figure 6-24 indicate that approximately one third of inspected companies' knowledge was at least incomplete. While all of the non-SME companies inspected did have a sufficient knowledge of the Regulation, this was not the case for smaller companies. Indeed, 49% of micro-enterprises had either incomplete or no available knowledge of the Regulation's provisions. Companies affiliated with a professional association were, in general, found to have a better knowledge of the provisions of the Detergents Regulation than companies that are not affiliated to a professional association.

The CLEEN Report states the legal framework may be too complex to be correctly understood and interpreted by SMEs and micro-enterprises. The CLEEN Report concluded that part of the challenge may arise from having to comply with three different pieces of legislation (Detergents Regulation, Biocidal Products Directive and then Dangerous Preparations Directive (now CLP)). It should be noted that the Biocidal Products Directive and Dangerous Preparations Directive have both subsequently been repealed and replaced with new legislation (Biocidal Products Regulation and CLP Regulation respectively) and so this conclusion may no longer apply.

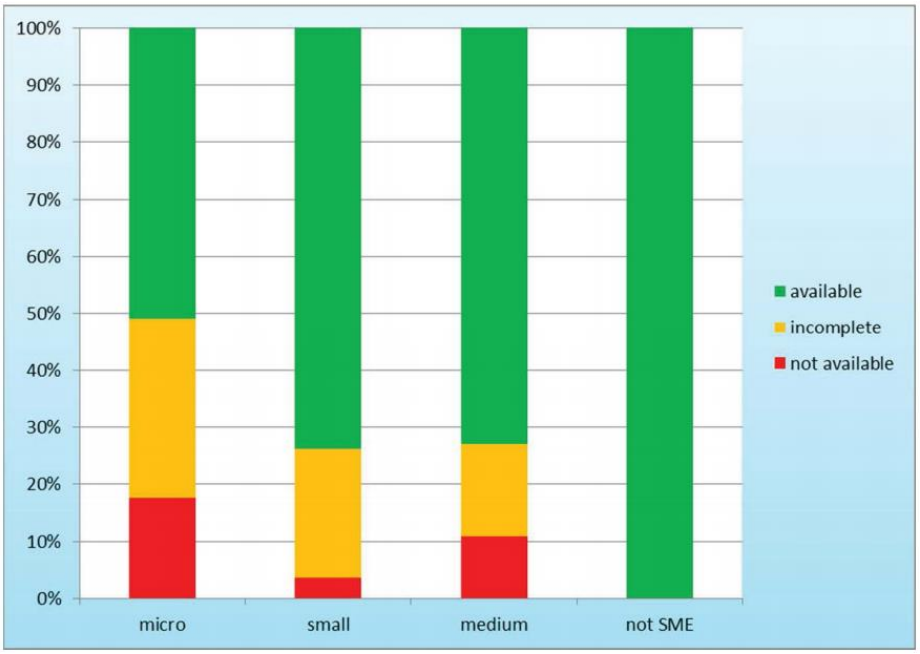


Figure 6-24: Knowledge of the Detergents Regulation in relation to company size.
Source: CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu

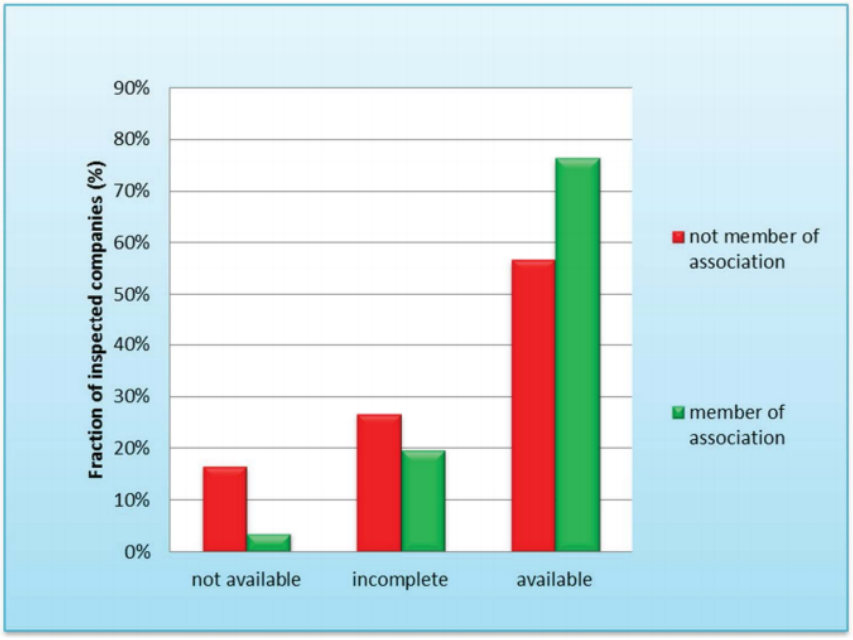


Figure 6-25: Knowledge of the Detergents Regulation in relation to membership of an association
Source: CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu

6.3.6 Compliance with the Detergents Regulation

The Rapid Alert System for non-food dangerous products (RAPEX) facilitates the rapid exchange of information between the national authorities of 31 countries and the European Commission on dangerous products that pose a risk to the health and safety of consumers.[131]

The study team has carried out a search on the RAPEX database using the terms 'detergent', 'surfactant', 'disinfectant' and '648/2004'. The results show that 22 notifications have been made by MS authorities between January 2005 and March 2017. However, a closer inspection of the types of products covered by these notifications indicates that some do not fall within the scope of the Detergents Regulation (e.g. body lotions, body washes and other cosmetics that contain surfactants but that would fall under the remit of the Cosmetic Products Regulation). Many of the notifications appear to relate to detergent products that are imitating food items/products, and therefore pose a choking or chemical risk (especially for children, and other vulnerable populations). Thus, whilst these products are considered to pose a danger for the health and safety of consumers according to Council Directive 87/357/EEC[132] (through incorrect use resulting from the way the product is packaged and presented), they have not been notified on the RAPEX database specifically because they do not comply with the Detergents Regulation.

A second search of the RAPEX database using only the term '648/2004' identifies seven cases of non-compliance with the Detergents Regulation. Table 6-10 provides further details of the reasons identified for non-compliance, the country in which these products were produced and the actions taken. It indicates that, in most cases, the reason for the RAPEX notification was a lack of appropriate labelling to ensure that consumers are aware of the hazards associated with the use of the product and the measures to take to ensure safe use. In all cases, actions taken by the notifying countries involved a sales ban and withdrawal of the products from the market (including recalls from consumers) or facilitation of a voluntary withdrawal together with a recall from consumers.

Table 6-10: Reasons for detergent products not complying with the Detergents Regulation notified under RAPEX (January 2005 to March 2017)

Type of product	Country of origin	Reason for non-compliance	Actions taken
Disinfectant cleaner	Hungary	In certain bottles, the child-resistant cap can be too easily opened	Voluntary withdrawal from the market and recall from consumers by the manufacturer
Cycle cleaning product	Belgium	Missing labelling (the risk phrases and relevant safety advice are not present on the product packaging)	Voluntary withdrawal from the market, recall from consumers and destruction by the distributor
Washing-up liquid	Switzerland	Missing labelling (presence of limonene implies obligation of warning on the label[1])	Sales ban and withdrawal from the market by the authorities
Cleaning gel	Spain	Missing labelling (a tactile warning of danger, the names of the substances	Withdrawal from the market

[131] European Commission (2017): Rapid Alert System for dangerous non-food products. Available at: http://ec.europa.eu/consumers/consumers_safety/safety_products/rapex/alerts/repository/content/pages/rapex/index_en.htm (accessed on 9th March 2017)

[132] Council Directive 87/357/EEC of 25 June 1987 on the approximation of the laws of the Member States concerning products which, appearing to be other than they are, endanger the health or safety of consumers.

Table 6-10: Reasons for detergent products not complying with the Detergents Regulation notified under RAPEX (January 2005 to March 2017)			
Type of product	**Country of origin**	**Reason for non-compliance**	**Actions taken**
		used and the precautionary statements are not presented on the product packaging - consumer has no information on safe use)	
Descaling solution	Austria	Missing labelling (important safety information and warnings are not present on the product packaging)	Recall of the product from end users. Withdrawal of the product from the market by the distributor
Detergent / cleaning product	Republic of Korea	Missing labelling (appropriate pictograms, warnings and precautionary statements are not present on the product packaging)	Withdrawal from the market by the importer
Dissolvent	Turkey	Poses a chemical risk because it contains 20-30% nitric acid, thus is highly corrosive and emits fumes that can be dangerous indoors. The product does not comply with the Detergents Regulation	Sales ban ordered by the authorities
Note: [1] The packaging used also makes the product appear to be a toy or doll, therefore leading to potential exposure to children.			

A search of the internet-supported information and communication system for the pan-European market surveillance (ICSMS) using the search terms 'detergent', 'surfactant', 'disinfectant' and '648/2004' has also been undertaken. This has not revealed any detergent products that have been identified as raising concerns in relation to non-compliance with the Detergents Regulation.

As previously outlined, a key area of non-compliance identified in the EuroDeter study was the obligation to list allergenic fragrances on the label. This was associated with the **highest rate of non-compliance, with more than 40% of the inspected products not including, where applicable, all mandatory allergenic fragrances on the label or packaging**. **The second highest non-compliance rate was found in the obligation to "list the preservation agents" contained in the mixture.** More than 30% of the inspected products failed, where applicable, to provide this on the label or packaging of the detergent.

Information from literature review and consultation indicates that there are also compliance issues with the obligation to provide the ingredient datasheet online. The EuroDeter study, for example, found that almost 30% of the inspected detergents, for use by the general public, did not provide a website address related to the list of ingredients on the label or packaging. Furthermore, the list of ingredients was not available at the website address mentioned on the label for 46% of the inspected products. Compliance checks carried out by THINK Chemicals (KEMI, 2017)[133] identified similar issues, including missing lists, extremely difficult to find lists and outdated lists.

[133] KEMI (2017): Check your dishwashing soap for allergenic preservatives, available at: http://KemI.taenk.dk/bliv-groennere/check-your-dishwashing-soap-allergenic-preservatives

While the EuroDeter study showed that there is a **high level of compliance with the biodegradability requirements** of the Detergents Regulation, there would appear to be some issues with the labelling of dosage information on consumer laundry detergents. For example, the study found that, **less than 70% of labels provided information on standard washing machine loads**.

6.3.7 Safeguard clause

Like many pieces of EU legislation[134] (see Annex 3, Section A3.6 for further details), the Detergents Regulation also includes a 'safeguard clause'. Safeguard clauses are particularly important in European public health and environmental legislation since, in the words of the Court of Justice, "*they give expression to the precautionary principle*".[135]

In the Detergents Regulation (Article 15(1)), the safeguard clause states that:

> *"Where a Member State has justifiable grounds for believing that a specific detergent, although complying with the requirements of this Regulation, constitutes a risk to the safety or health of humans or of animals or a risk to the environment, it may take all appropriate provisional measures, commensurate with the nature of the risk, in order to ensure that the detergent concerned no longer presents that risk, is withdrawn from the market or recalled within a reasonable period or its availability is otherwise restricted.*
>
> *The Member State shall immediately inform the other Member States and the Commission thereof, giving the reasons for its decision."*

The safeguard clause may only be used on a case-by-case basis for a specific product, not for a class of product (European Commission, 2015).[136] The safeguard clause cannot, therefore, be used to introduce risk management measures of a general nature.

During the research undertaken for this study, **one instance has been identified of the safeguard clause being used** (for the product POR-ÇÖZ, placed on the market in Germany) and at least one MS had also considered using the safeguard clause to address the risk (of unintentional poisoning) posed by liquid laundry detergent capsules. In the latter case, however, it was concluded that the safeguard clause was not adequate to deal with this issue, because the problem covered a whole category of laundry detergent, and not a specific brand or product within this type (for further information, the reader is referred to Section A3.6 in Annex 3).

As outlined in Annex 3, there was generally consensus among MS authorities and consumer associations that the safeguard clause is an important, and beneficial, element of the Detergents Regulation, even if (to date) it has rarely been used. In contrast, some industry representatives noted that if the detergent complies with the Detergents Regulation, then there is no need for the safeguard clause and that, furthermore, the Rapid Exchange Information System (RAPEX), the CLP

[134] Including REACH, CLP, the Cosmetic Products Regulation and Biocidal Products Regulation

[135] Case C-6/99 Greenpeace France and others (2000), ECR 1-1651, para 44; as quoted in Matthews P (2004): European Union Law for the Twenty-First Century, Volume 2, Rethinking the New legal Order, Hart Publishing, USA.

[136] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents. Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

Regulation and the General Product Safety Directive are working well in the case of products that have entered the market but have been identified as unsafe.

Organisations that participated in the OPC were provided with a short description of the safeguard clause and asked whether they believe there is a role for the provision to be used in the future. Their responses are shown in Figure 6-26 below. Out of the 40 organisations that responded to this question, 43% (17 respondents) indicated that they do believe there is a role for the safeguard clause to be used in the future, while 35% (14 respondents) indicated there is not. **There would appear to be a split in views across the different types of respondent**: industry associations and companies on the one hand were mostly of the view that there is not a role for the safeguard clause to be used in the future. In contrast, most other organisations that responded (government and public authorities; NGOs; consumer associations; intergovernmental organisations; and other organisations) indicated that the safeguard clause does have a future role.

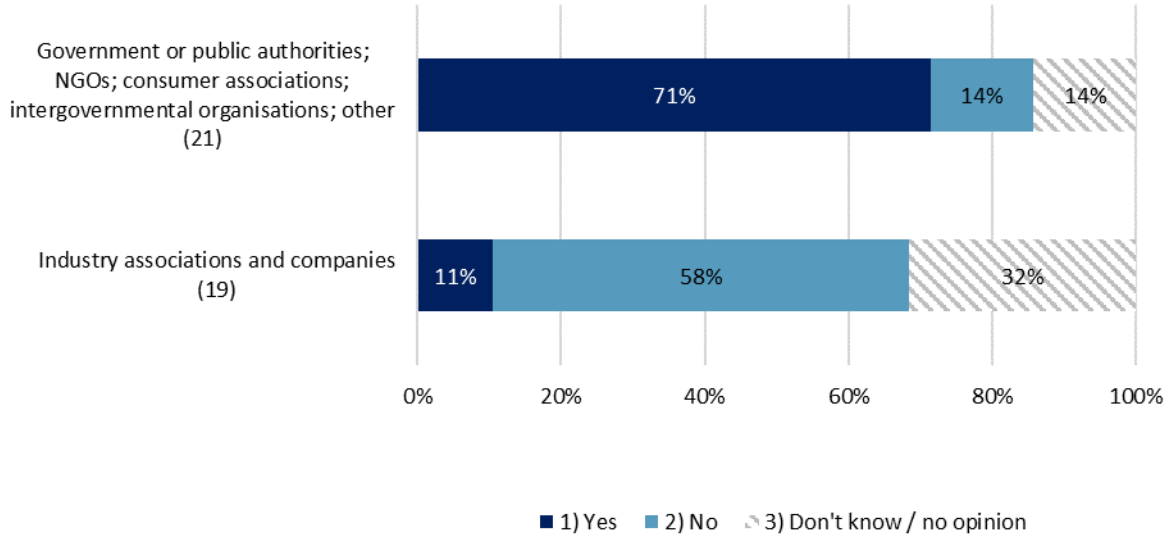


Figure 6-26: Do you believe there is a role for the safeguard clause to be used in the future? Responses to the OPC - Organisations *(n=40)*

Several limitations have been identified by stakeholders with regard to the safeguard clause:

- Firstly, as noted by one EU official, **the safeguard clause is very broad and it is not clear to stakeholders when it can be used**. For example, the term "justifiable grounds" is perceived as ambiguous;

- A MS authority from Germany noted that **a disadvantage of the safeguard clause is that it can only be used to withdraw one specific detergent from a national market** and not all products with the identified harmful ingredient across the whole EU internal market;

- A MS authority from Germany explained that **the Commission's Decision on the prohibition of placing a product on the market is too short (one year)** and that the Commission should consider the temporal demand for risk management procedures (i.e. in some cases, the safeguard clause could be used to put in place a longer prohibition); and

- A MS authority from Romania was concerned that **inadequate resources (e.g. for testing) are available to use the safeguard clause**.

For further details see Annex 3, Section A3.6.

Summary of findings - Effectiveness
• Most stakeholders agreed that the Detergents Regulation has helped to harmonise the rules in place in different EU MS and that this has levelled the playing field and made it easier for companies to trade cross-border. There was also a strong view that the Detergents Regulation has been effective in terms of ensuring a high degree of protection to the environment. Although most stakeholders agreed that the Detergents Regulation has been effective in protecting human health, it was also noted that compared to other chemicals legislation (e.g. REACH, CLP and Biocides), the Detergents Regulation has had a lesser impact in this regard. • There are two key areas where the Detergents Regulation has met its objectives particularly well: i) the requirements introduced on the biodegradability of surfactants; and ii) the restrictions introduced on the phosphorus content of consumer laundry detergents and CADD. In both instances, the Detergents Regulation has provided a level of harmonisation that could not have been achieved in the absence of the Regulation. • A key issue that has arisen is a duplication in the labelling requirements for some detergent products that fall within the scope of multiple pieces of EU legislation. Industry is concerned that this could result in too much information being provided on product labels, which may be detrimental to consumer understanding and create an unnecessary burden for industry. Thus, stakeholders consider there to be a clear opportunity for streamlining labelling requirements between the different pieces of legislation. • In general, the sanctions put in place by MS for infringements of the Detergents Regulation are perceived as dissuasive, effective and proportionate. However, many authorities appear to lack the resources necessary to carry out proactive enforcement of the Regulation. To date, the safeguard clause has only been used once, for a product placed on the market in Germany.

7 Efficiency

Table 7-1: Efficiency criterion
Efficiency considers the relationship between the resources used by an intervention and the changes generated by it (which may be positive or negative). It describes the administrative and regulatory burdens associated with the legislative provisions, taking into account whether there are any simplified procedures designed to alleviate these burdens. Where there is an excessive burden or gross inefficiency, its root or cause is identified. Equal attention must also be given to those measures which significantly alleviate the burden of compliance with a view to the potential value of adopting such procedures in other horizontal legislation.
The following evaluation questions are considered:
What are the costs for industry associated with the implementation of the Detergents Regulation? What are the key drivers for those costs?
What are the benefits for industry associated with the implementation of the Detergents Regulation?
What are the costs for society associated with the implementation of the Detergents Regulation?
What are the economic, social and environmental benefits for society associated with the implementation of the Detergents Regulation?
To what extent are the costs involved in implementing the Detergents Regulation justified given the benefits which have been achieved?

7.1 Overview

As shown in Table 7-2, there are certain provisions of the Detergents Regulation that have been identified as potentially driving significant costs for the detergents industry, for consumers and for public administrations. The costs associated with the implementation of the Detergents Regulation can be categorised according to the typology of costs set out in the Better Regulation Toolbox (Tool 58), as shown in Table 7-2.

The costs that should be attributed to a new legal obligation are only those that are incremental, i.e. additional with respect to the existing situation, as well as additional to the costs that would have emerged in the absence of the intervention. This means that all costs considered for the purposes of this evaluation should exclude any 'business as usual' costs that would have materialised even in the absence of the Detergents Regulation, and its amendments. This is particularly important, for example, in relation to the labelling provisions of the Detergents Regulation, where labelling costs will also have been driven by other pieces of legislation (e.g. CLP and the Biocidal Products Regulation that also require certain information to be labelled on detergents).

Table 7-2: Screening of cost categories based on key provisions of the Detergents Regulation				
Key provisions of the Detergents Regulation	**Type of cost***	**Direct or indirect impact**	**One-off or recurring?**	**Stakeholders affected**
Amendment regarding the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents (Regulation (EU) No 259/2012)	Substantive compliance cost	Direct	• One-off costs of research and development for reformulation (consumer laundry detergents and CADD)	Detergent manufacturers/formulators
			• One-off costs of changing production processes • On-going costs of using different raw materials in place of phosphorus	Detergent manufacturers/formulators
		Indirect	• On-going costs of purchasing detergent (cost pass-through from detergent manufacturers) • Reduced selection of detergent products available on the market • Reduced cleaning performance of detergents	Consumers
Limitations based on the biodegradability of surfactants (Article 4, Regulation (EC) No 648/2004) and testing of surfactants (Article 7, Regulation (EC) No 648/2004)	Substantive compliance cost	Direct	• One-off costs associated with testing the biodegradability of surfactants • On-going costs associated with testing the biodegradability of surfactants	Surfactant manufacturers/formulators
Labelling (Article 11, Regulation (EC) No 648/2004)	Substantive compliance cost	Direct	• One-off costs of producing new labels for consumer detergents • On-going costs of keeping consumer detergent labels up-to-date • One-off cost of providing information on the content of industrial and institutional detergents by means of a technical datasheet / safety datasheet • On-going costs of keeping information on the content of industrial and institutional detergents up-to-date	Detergent manufacturers/formulators
		Indirect	• On-going costs of purchasing detergent (cost pass-through from detergent	Consumers

Table 7-2: Screening of cost categories based on key provisions of the Detergents Regulation				
Key provisions of the Detergents Regulation	**Type of cost***	**Direct or indirect impact**	**One-off or recurring?**	**Stakeholders affected**
			manufacturers)	
Information to be provided by manufacturers (Article 9, Regulation (EC) No 648/2004)	Administrative burden	Direct	• One-off costs of compiling an ingredient datasheet • On-going costs of keeping ingredient datasheets up to date • One-off costs of providing ingredient datasheets online • On-going costs of providing ingredient datasheets online • One-off costs of providing ingredient datasheets to poison centres • On-going costs of providing ingredient datasheets to poison centres • On-going costs of providing ingredient datasheets to medical personnel	Detergent manufacturers/formulators
Granting of derogation (Article 5, Regulation (EC) No 648/2004)	Regulatory charge	Direct	• One-off costs of applying for a derogation	Detergent manufacturers/formulators
All provisions of the Detergents Regulation and its amendments	Hassle cost	Direct	• One-off costs of familiarisation with the provisions of the Detergents Regulation • On-going costs of keeping up to date with changes to the requirements	Detergent and surfactant manufacturers/formulators
All provisions of the Detergents Regulation and its amendments	Enforcement cost	Direct	• On-going costs of information and monitoring, inspections and sanctions, complaint handling and adjudication/litigation	Public administrations
*as outlined in the Better Regulation Guidelines, Tool #58				

The remainder of this section considers the costs and benefits for industry and society of the Detergents Regulation and whether the costs involved in implementing the Regulation are justified given the benefits that have been achieved. **Quantification has been carried out to the extent possible and all costs are presented in current prices**.

The costs involved in enforcing the Detergents Regulation do not fall within the remit of the present study, however, the total budget available to enforcement authorities is covered in Section 6.3.4 which looks at whether the Regulation is effectively implemented across the EU.

7.2 Costs for industry associated with the implementation of the Detergents Regulation

As noted previously, a recent assessment of the cumulative costs faced by the EU chemicals industry (Technopolis Group & VVA, 2016)[137] has found that the detergents sector bears a relatively high administrative burden, compared to other sub-sectors within the EU chemicals industry. The overall legislative cost for the detergents and maintenance products industry has been estimated to amount to approximately €670 million, corresponding to 11.3% of the sector's added value (AISE, 2016).[138] Of this, it is estimated that 28% of the total cost relates to administrative burden, 37% to OPEX, 25% to CAPEX and 11% to monetary obligations (Technopolis Group & VVA, 2016).[139] The most significant costs for the detergents industry were found to result from CLP, the Biocidal Products Regulation and REACH, however, rather than the Detergents Regulation.

Companies and industry associations that participated in the OPC were asked whether there are any specific requirements in the Detergents Regulation that lead to particularly significant costs for the industry. As shown in Figure 7-1, 63% of companies and industry associations that responded to this question indicated that there are.

The following costs to industry are analysed in the sections below:

- The CAPEX and OPEX costs associated with reformulation to reduce the total phosphorus content of consumer laundry detergents and CADD, including the costs associated with research and development, investing in new production processes, and using different raw materials in place of phosphorus (Section 7.2.1)
- The one-off CAPEX costs associated with testing the biodegradability of surfactants (Section 7.2.2);
- The administrative costs associated with the labelling provisions of the Detergents Regulation, including producing new labels, keeping labels up to date, providing information on the content of industrial and institutional detergents by means of a technical datasheet

[137] Technopolis Group & VVA (2016): Cumulative Cost Assessment for the EU Chemical Industry. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/17784/attachments/1/translations/

[138] AISE (2016): European Commission cumulative cost assessment for the EU chemical industry, AISE fact sheet, available at: https://www.aise.eu/documents/document/20161024164027-cumulative_cost_assessment_aise_factsheet_oct_2016_final.pdf

[139] Technopolis Group & VVA (2016): Cumulative Cost Assessment for the EU Chemical Industry. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/17784/attachments/1/translations/

or safety datasheet, and keeping information on the content of industrial and institutional detergents up to date (Section 7.2.3);
- The administrative costs associated with providing ingredient datasheets, including the costs of compiling ingredient datasheets, keeping the ingredient datasheets up to date, providing the datasheets online and to poison centres and medical personnel (Section 7.2.4);
- The monetary (fee) costs associated with the granting of derogation (Section 7.2.5); and
- The 'hassle costs' related to becoming familiar with the requirements of the Detergents Regulation and keeping up to date with amendments to the legislation (Section 7.2.6).

During the consultation, stakeholders clarified that **the costliest elements of the Detergents Regulation for industry have been:**

- **the costs associated with reformulation**;
- the **one-off and ongoing costs associated with labelling changes**; and
- the administrative costs of **keeping information for websites and medical personnel up to date**.

Several stakeholders (including AISE) noted that the costs of the Regulation will have varied between large companies and SMEs and that, to some extent, the costs of the Detergents Regulation will have been offset by increased harmonisation across the EU which should have led to savings in the longer term (and it is assumed that this is savings in administrative costs).

While a third (33%) of the SMEs indicated that the Detergents Regulation had led only to the short-term employment of new staff, more than half (52%) indicated that it had led to the long-term employment of new staff in order to maintain compliance. Unsurprisingly, given this need to employ more staff, nearly half (47%) of the SMEs responding to the survey indicated that the Regulation led to a short-term impact on costs, with a similar proportion (41%) indicating that it had led to a long-term impact on costs, as shown in Figure 7-2.

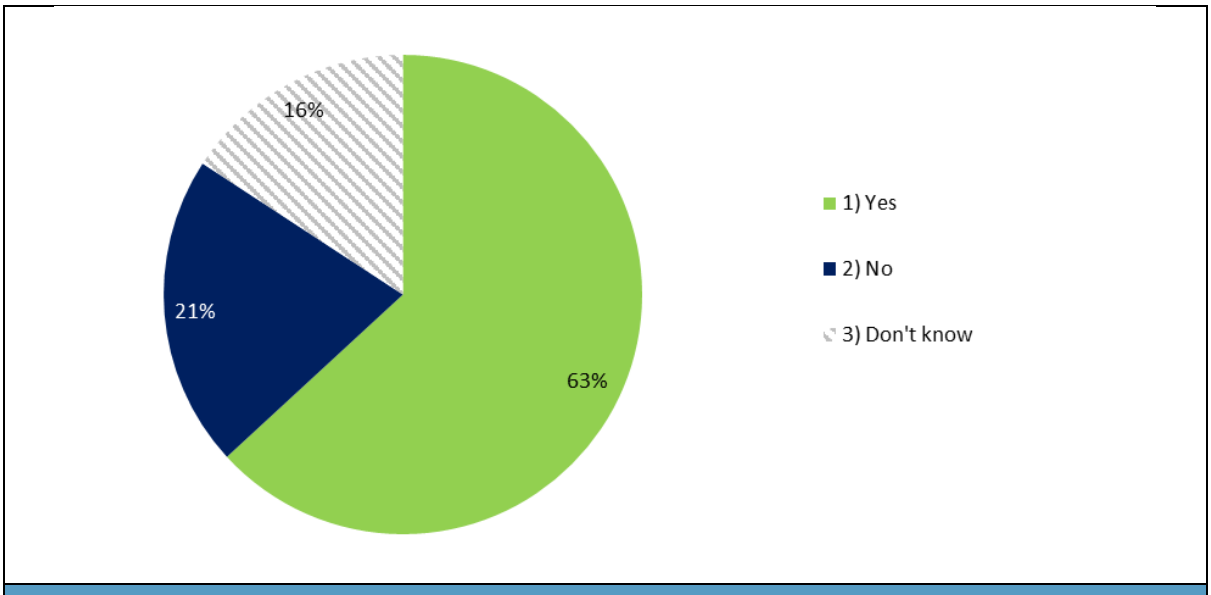


Figure 7-1: Are there any specific requirements in the Detergents Regulation that lead to particularly significant costs for you/your organisation? Please consider both monetary and non-monetary (e.g. administrative) costs. Responses to the OPC - Organisations. Responses from companies and industry associations. *(n=19)*

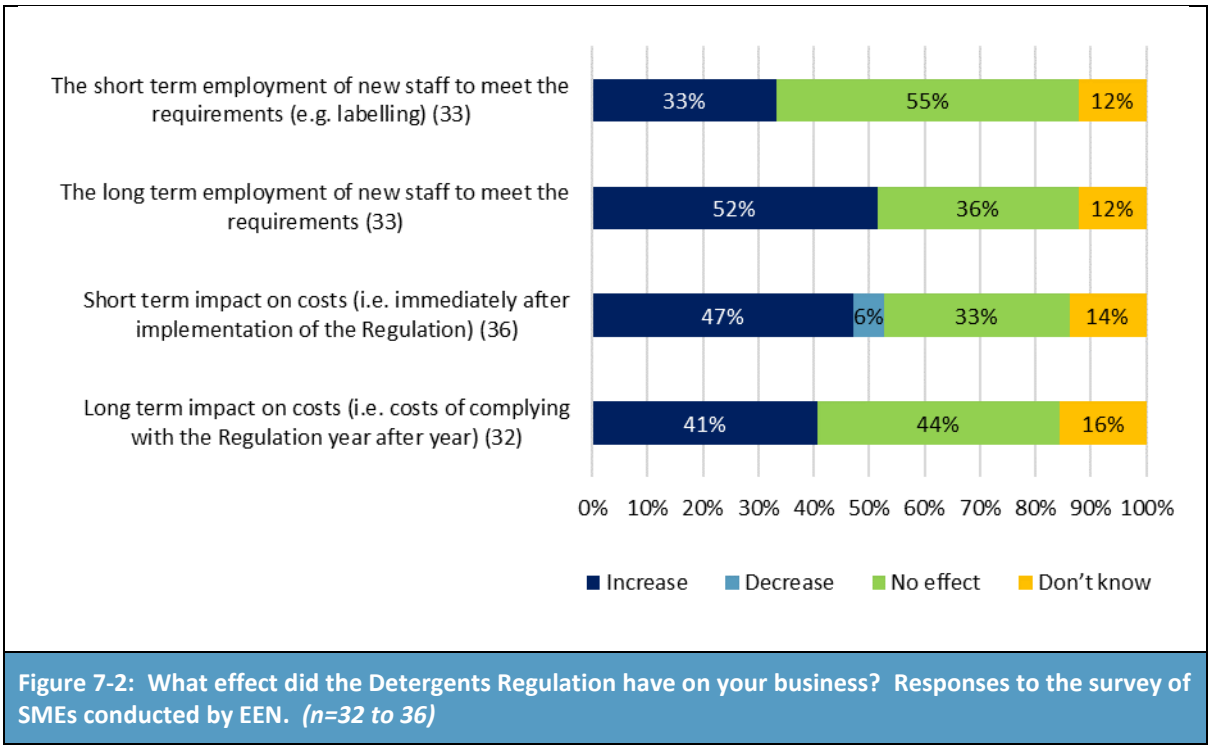


Figure 7-2: What effect did the Detergents Regulation have on your business? Responses to the survey of SMEs conducted by EEN. *(n=32 to 36)*

7.2.1 CAPEX and OPEX costs associated with reformulation to reduce the phosphorus content of consumer laundry detergents and CADD

One-off cost (CAPEX) of research and development for reformulation

Cost of reformulating a single product

As previously elaborated, the 2012 amendment to the Detergents Regulation (Regulation (EU) No 259/2012) introduced new limits on the content of phosphates and other phosphorus compounds in detergents designed for washing laundry and dishes, by machine, in the home. In Annex VIa, Regulation (EU) No 259/2012 sets a limit of 0.5 grams of phosphorus for laundry detergents (for use in a machine), with this coming into force in June 2013. Annex VIa also sets a limit of 0.3 grams of phosphorus for CADD, with this coming into force in January 2017. It would therefore be anticipated that the detergents industry may have incurred a substantive compliance cost[140] as a result of this requirement.

The European Commission's 2010 impact assessment accompanying the proposal for Regulation (EU) No 259/2012[141] predicted that larger detergent formulators, operating across several MS, would find it relatively easy to substitute detergents containing phosphorus with comparable alternative formulations, as most were already offering phosphate-free products in the MS where

[140] Substantive compliance costs are the costs that businesses incur as a result of having to adapt their activities in order to comply with a legal obligation.

[141] European Commission (2010): Commission Staff Working Document accompanying document to the Proposal for a Regulation (EU) No … of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in household laundry detergents, SEC(2010) 1277 Final, available at: available at: http://www.ipex.eu/IPEXL-WEB/dossier/document/SEC20101277FIN.do

phosphates had already been phased out. The impact assessment stated, however, that smaller formulators serving only their domestic markets with detergents based on phosphates might find the situation more complicated. The Report estimated that one-off reformulation costs for replacing phosphates would be, on average, around €10,800 per product reformulated. Based on the number of SME formulators across the EU27 in 2007 (i.e. 600) and assuming that each of these would have to reformulate on average between four and 22 products, the report predicted that **the total one-off (CAPEX) reformulation costs across the EU would be between €26 million and €142 million.**

SMEs that participated in the survey disseminated by EEN were asked to estimate the one-off costs of research and development for the purposes of reformulation. As shown in Figure 7-3 overleaf, most of the SMEs (18%) that provided a response to this question indicated that the **one-off cost of reformulating a detergent was in the region of €10,000 to €20,000**. A substantial proportion (12%) of SMEs that responded to this question indicated that reformulating a detergent to reduce the total phosphorus/phosphate content cost more than €20,000, but an equal percentage indicated that it cost less than €10,000.

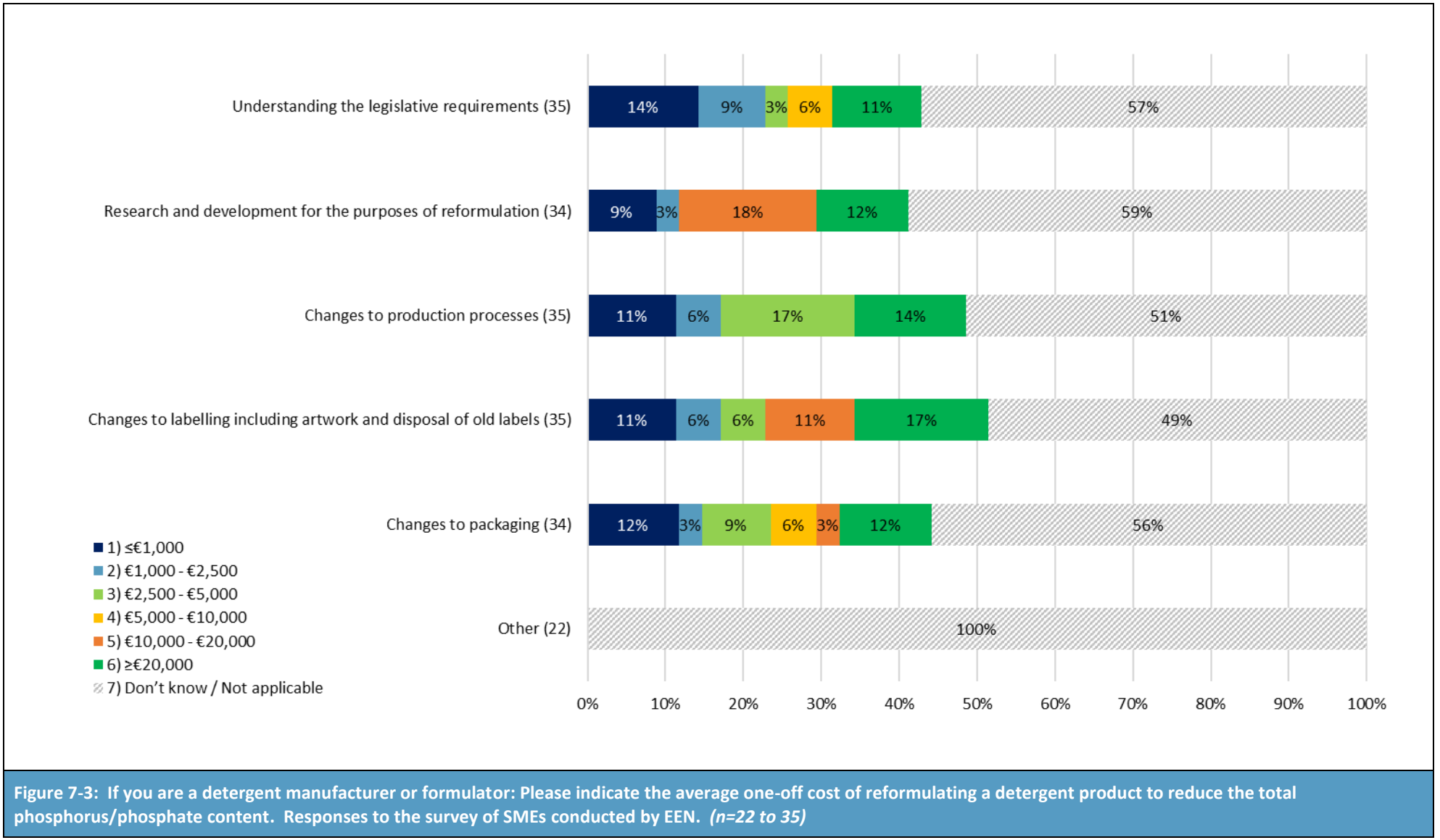


Figure 7-3: If you are a detergent manufacturer or formulator: Please indicate the average one-off cost of reformulating a detergent product to reduce the total phosphorus/phosphate content. Responses to the survey of SMEs conducted by EEN. *(n=22 to 35)*

As a comparison, the following information on the cost of reformulation was provided during the interviews:

1. One industry association, quoting figures from one of its member companies, noted that for 50 CADD formulae to be reformulated to reduce the total phosphorus content to meet the new restrictions, it took one company 49,500 person-days (or around **1,000 person-days per CADD formula**). This includes the days required for research and development and manufacturing, but does not include efforts in marketing and distribution, which for ease of calculation were assumed not to have been increased by the move. These figures seem unrealistically high compared to both those quoted in the Commission's 2010 impact assessment and responses by SMEs to the EEN survey.
2. One company (a SME from Germany) noted that **to change one product, it would require two people to work for three years**. If it is assumed that the average working year comprises 240 working days, it can be estimated that this equates to **1,400 person-days per product**. Again, this figure seems unrealistically high.
3. A large company from Austria estimated that it costs around **€5,000 to €10,000 to reformulate a detergent**, where this includes the cost for the employees.
4. A large company from Denmark noted that one of its departments spent almost the whole of 2016 dealing with the new phosphate limits for CADD and that, as a result, almost all of the costs of that department (estimated at €200,000) can be attributed to the phosphorus requirements of the Detergents Regulation. The company explained that this includes the cost of reformulation but also other associated activities, such as spending time searching for new raw materials, looking for new sources and relabelling. About 20-30 products were reformulated, within this total cost of €200,000. The **cost per product can therefore be estimated at €6,500 to €10,000**. The company noted that a significant amount of work was also done before the new phosphorus limits for consumer laundry detergents came into force, but the company was unable to estimate the costs associated with this.

5. A large company from the Netherlands noted that it works on the basis of 'framework formulations' from which it develops several individual products ('Stock Keeping Units' or SKUs[142]). The company noted that it would cost several hundred thousand Euros to reformulate a framework formulation to reduce the phosphorus/phosphate content and that **it would cost in the region of €30,000 to €40,000 to reformulate an SKU.**

The reformulation costs provided by SMEs during the consultation (as shown in Figure 7-3 above) are broadly consistent with those of the Commission's 2010 impact assessment, as well as the figures provided in bullet points 2 and 3 above. However, the person-day estimates provided in the first two bullet points suggest that these could be a significant underestimate for some companies (for further explanation, see Table 7-3 below). One possible interpretation is that the person-day estimates (shown in the first two bullet points above) refer to the costs involved in reformulating a framework formulation (as explained in bullet 5) and that the cost of reformulating a single product would be much lower.

A range of €10,000 to €20,000 per product is therefore considered to reflect the average cost of reformulation across the SMEs and their product portfolios. During the consultation, one large company noted that the cost of reformulating a single CADD product would be about the same as

[142] Each SKU would be a slight variation of the framework formulation, e.g. with a different colour or smell.

the cost of reformulating a single laundry detergent product. Thus a cost range of €10,000 to €20,000 per product is assumed across both product groups.

Table 7-3: Cost estimates based on person-days

Eurostat data[143] shows that the average annual personnel cost[144] for a worker employed in 'scientific research and development' in the EU was €54,000 in 2012. Assuming that it takes three workers two whole years to reformulate a single product (as suggested in the second bullet point above), the total cost for that product would be €324,000 in personnel costs alone. If it takes 1,000 person-days (or 4.17 person-years[145]) to reformulate a single product (as suggested in the first bullet point above), the total cost would be €225,180 per product, based on an average personnel cost of €54,000.

It should be noted that the average annual personnel cost for workers varies enormously between EU MS; ranging from €9,700 in Latvia to €93,600 in Belgium for a worker employed in scientific research and development.

The European Commission's 2010 impact assessment[146] predicted that SME formulators would need to reformulate on average between 4 and 22 products. During the survey, SMEs were asked how many different formulations they have in their portfolio. As shown in Figure 4-3, most SMEs have indicated that they have up to 15 formulations in their portfolio for laundry detergents and up to 15 formulations in their portfolio for CADD. This suggests that the original figure of between 4 and 22 products is likely to be broadly accurate.

If it cost companies, on average, between €225,000 and €325,000 to reformulate each detergent product, as the person-day estimates would suggest, and if each company had to reformulate between 4 and 22 products, the average cost per company would have been between €900,000 and €7,150,000.

Data from Eurostat shows that the total turnover for the EU28 detergents sector (defined as NACE Code 2041) was €26.9 million in 2014.[147] It also shows that there were approximately 4,000 enterprises in the detergents sector (NACE Code 2041) in 2014. This means that the average turnover per enterprise was €6.7 million in 2014, covering both SMEs and larger enterprises. The person-day figures (€900,000 to €7,150,000) would therefore appear to be a significant overestimate, as such costs would have driven many companies (especially SMEs) out of business. These numbers have not, therefore, been taken further in the analysis. As noted previously, a cost range of €10,000 to €20,000 per product is considered to better reflect the average costs of reformulation.

In using the above data and developing estimates of the costs of reformulation, there are several factors that must be borne in mind when attributing costs for reformulation to the Detergents Regulation:

[143] Eurostat (sbs_na_sca_r2)

[144] Made up of wages, salaries and employers' social security costs.

[145] Based on a working year comprising 240 working days.

[146] European Commission (2010): Commission Staff Working Document accompanying document to the Proposal for a Regulation (EU) No … of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in household laundry detergents, SEC(2010) 1277 Final, available at: http://www.ipex.eu/IPEXL-WEB/dossier/document/SEC20101277FIN.do

[147] Eurostat (sbs_na_ind_r2)

- Firstly, during the consultation, several companies and industry associations noted that the reformulation of products started some years before the 2012 amendment to the Detergents Regulation came into force, in part because **national limits on the phosphorus content of detergents were already in place in some countries** (this is discussed further in Section 6.1.2);
- Secondly, it was noted by at least two companies during the consultation that **a peak in phosphorus prices in the late 2000's was a key driver for reformulation** – as illustrated by Figure 7-3 below - at least in their company; and
- Finally, it is also important to note that **detergent manufacturers reformulate their products regularly to maintain** competitiveness (see Table 7-4 below). As such, the cost of the limits for CADD could – to some extent - be considered a business as usual cost, given that companies were given around five years to comply (2012-2017).

Table 7-4: Frequency of reformulation

The following information has been gathered from literature review and consultation on the frequency of reformulation:

- According to Bio by Deloitte (2014)[148], detergent manufacturers reformulate their products regularly to maintain competitiveness, averaging every three and a half years.
- One large company noted that it reformulates 35% of its consumer detergent products every year and the remaining 65% of its consumer detergent products every two years.
- One company noted that in the fast-moving CADD market, products may need to be reformulated every year (even in the absence of the Detergents Regulation), while for other products, reformulation might occur once every five years.
- AISE has suggested that it can be assumed that 50% of consumer detergent products are reformulated every two years, and 50% are reformulated every five years. In the industrial and institutional detergent sector, AISE has suggested that it can be assumed that 50% are reformulated every year and 50% every two and a half years.

Based on the available information, the figures quotes by AISE can therefore be taken a broadly representative of the sector.

[148] Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

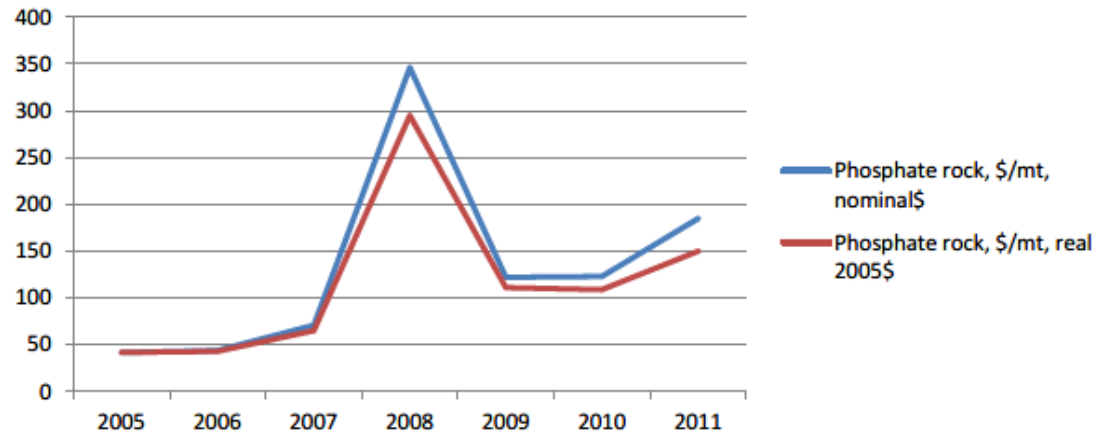


Figure 7-4: Price of phosphate rock, US$/mt

WTO, as reported by The Hague Centre for Strategic Studies (2012): Risks and opportunities in the global phosphate rock market, Robust strategies in times of uncertainty. Available at: www.phosphorusplatform.eu/images/download/HCSS_17_12_12_Phosphate.pdf

Number of companies and products affected

A recent (2016) socio-economic analysis undertaken by The Huggard Consulting Group for AISE[149] notes that manufacturing activity within the household care and professional cleaning and hygiene products industry involves between 650 and 700 separate facilities throughout the EU, Norway and Switzerland, more than 85% of which are operated by SMEs. Output is, however, concentrated in 80-90 large-scale plants operated by multi-national companies. The report notes that these large sites are concentrated in Germany, the UK, France, Italy, Spain, the Benelux countries and Poland.

During the consultation for the supporting study to the chemicals fitness check, detergent manufacturers were asked how many formulations they currently have in their portfolio (covering all product types; and including both consumer and industrial/institutional detergents). As shown in the Table below, most SMEs indicated that they have between 50 and 250 formulations in their portfolio, while most non-SMEs indicated that they have in excess of 250. It should be noted that data from Eurostat show that around 98% of all companies in the detergents sector (defined as NACE Code 204[150]) are SMEs, and that 73% are micro-enterprises (with between one and nine employees). Care must therefore be taken in using the data in Table 7-5, as these are likely to overestimate the number of formulations in most detergent manufacturers' portfolios.

[149] The Huggard Consulting Group (2016): The household care and professional cleaning and hygiene products industry, A socio-economic analysis. Available at: https://www.aise.eu/documents/document/20160628174212-aise_sea_final_report_jan2016.pdf

[150] sbs_sc_sca_r2

Table 7-5: How many mixtures (formulations) do you currently have in your portfolio?		
	Non-SME (n=10)	SME (n=23)
<50	0.0%	8.7%
50 to100	10.0%	26.1%
100 to 250	10.0%	26.1%
250 to 500	40.0%	17.4%
500 to 1500	20.0%	17.4%
>1500	20.0%	4.3%
Source: RPA et al. (2017)		

During the survey for the present study, SMEs were asked how many different formulations they have in their portfolio. As shown in Figure 4-3, most SMEs indicated that they have up to 15 formulations in their portfolio for laundry detergents and up to 15 formulations in their portfolio for CADD. These figures are more closely aliged with the European Commission's 2010 impact assessment[151] that predicted that SME formulators would need to reformulate on average between 4 and 22 detergent products.

When presented with these figures, AISE suggested that these are too low and instead proposed the following split covering the manufacture of consumer detergent formulations across the EU/EEA:

- 50 large manufacturers, with on average 150 to 250 consumer detergent formulations each;
- 600 to 650 SME manufacturers, with on average 40 to 60 consumer detergent formulations each.

This equates to **31,500 to 51,500 consumer detergent formulations (covering laundry detergents, dishwashing detergents, and other types) across the EU/EEA**. This figure has, therefore, been taken forward in the analysis.

Accoring to AISE (2016)[152], laundry care products account for approximately 47% of the total household care market, by value. This figure will, of course, this figure will change from year to year. It can therefore be assumed that about 40% to 50% of consumer detergent formulations available on the market are designed for washing laundry at home. This assumption was verified by a large company during the consultation. Based on this assumption, we estimate that **there are, across the EU/EEA, between 12,600 and 25,750 consumer detergent formulas designed for washing laundry at home (by hand and in a machine)**.

[151] European Commission (2010): Commission Staff Working Document accompanying document to the Proposal for a Regulation (EU) No … of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in household laundry detergents, SEC(2010) 1277 Final, available at: http://www.ipex.eu/IPEXL-WEB/dossier/document/SEC20101277FIN.do

[152] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society. Available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

AISE (2016)[153] data shows that dishwashing products account for approximately 15% of the total household care market, by value. It can therefore be assumed that around 10% to 20% of consumer detergent formulations are used for washing dishes across the EU/EEA. Based on this assumption, we estimate that, **across the EU/EEA, there are between 3,150 and 10,300 detergent formulations designed for washing dishes at home (by hand and in a machine).**

As previously remarked, national limits on the phosphorus content of detergents were already in place in some countries before the 2012 amendment to the Detergents Regulation came into force; and it is likely that some manufacturers in the other countries (without national limits) would have voluntarily switched to producing phosphate-free products before 2012 (e.g. to meet consumer demand, or due to an increase in the price of phosphorus).

A 2011 position paper by WWF[154] lists 12 countries (Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Italy, Latvia, Netherlands, Sweden and the UK) with pre-existing regulations in place to limit the amount of phosphate in laundry detergents to a maximum of 0.5% (for more information see Annex 2, Table A2-11). In 2011, half of the companies in the detergents sector (defined as NACE Code 2041) were located in these 12 countries (for the raw data see Annex 1, Table A1-18).

The WWF paper shows that there were three countries in the EU (France, Germany and Sweden) with pre-existing legislation in place to limit the amount of phosphate in CADD to a maximum of 0.5%. In 2011, only 20% of companies in the detergents sector (defined as NACE Code 2041) were located in these three countries (see Annex 1, Table A1-18). It should be noted that the Detergents Regulation limits the phosphorus content of CADD to 0.3% and is therefore more stringent than the cut off (of 0.5%) used in the analysis by WWF. This means that it is possible that some companies in France, Germany and Sweden were still producing detergents with a phosphorus concentration of between 0.3% and 0.5%. These companies would have been required to reformulate their products in order to comply with the new, and stricter, 0.3% limit introduced by Regulation (EU) No 259/2012.

A proportion of companies selling products outside those countries with pre-existing legislation may also have voluntarily reduced the phosphorus content of their products. The analysis by WWF shows that in 2011 there were four countries (Hungary, Ireland, Poland and Slovakia) with regulation or voluntary initiatives in preparation or in place with a threshold for phosphate >0.5%. In 2011, 10% of companies in the detergents sector (defined as NACE Code 2041) were located in Hungary, Ireland, Poland and Slovakia. For CADD, there were six countries (Austria, Denmark, Finland, Italy, Latvia and UK) with regulation or voluntary initiatives in preparation or in place with a threshold for phosphate >0.5%. In 2011, 26% of companies in the detergents sector (NACE Code 2041) were located in these six countries.

AISE has noted that **30% of consumer laundry detergent products were reformulated as a direct result of the 2012 amendment to the Detergents Regulation** (Regulation (EU) No 259/2012). Assuming that there are between 12,600 and 25,750 consumer detergent formulas designed for

[153] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society. Available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

[154] WWF (2011): Washing our Dishes and Clothes without Polluting our Rivers and Seas – The importance of an EU restriction of phosphate detergents for laundry and dishwashers. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/web_phosphate_brochure_1.pdf

washing laundry at home (as previously estimated), this would equate to **3,780 to 7,725 products in total across the EU/EEA.**

AISE has also noted that 95% of CADD were reformulated as a direct result of Regulation (EU) No 259/2012. For the purposes of this analysis, it can be assumed that between 40% and 50% of all consumer dishwashing detergents are designed for use in a machine and, hence, that **1,197 to 4,893 CADD formulae were reformulated as a direct result of Regulation (EU) No 259/2012**.

Estimate of the total one-off cost

Given the above, the total one-off cost to the detergents industry of research and development for the purposes of reformulating laundry detergents to reduce the total phosphorus content can be estimated at between €37.8 million and €154.5 million, based on the following assumptions:

- There were 31,500 to 51,500 consumer detergent formulations available on the market across the EU/EEA;
- Between 40% and 50% of all consumer detergent products were designed for washing laundry at home (i.e. 12,600 to 25,750 products in total);
- That 30% of consumer laundry detergents were reformulated as a direct result of the Detergents Regulation (i.e. 3,780 to 7,725 products in total);
- That it cost each manufacturer/formulator between €10,000 and €20,000 per laundry detergent product to carry out the research and development necessary for reformulation.

As previously outlined, the cost to the detergents industry of research and development for the purposes of reformulating CADD can, at least in part, be considered a business as usual cost. However, it should be recognised that replacing phosphorus in CADD with other ingredients constitutes a more fundamental level of reformulation than, for example, simply tweaking the fragrance or colour and that, as a result, some companies formulating CADD may have incurred substantial costs. With this in mind, **the total one-off cost to the detergents industry of research and development for the purposes of reformulating CADD (to reduce the total phosphorus content) can be estimated at between €12.0 million and €98.0 million** based on the following assumptions:

- There were 31,500 to 51,500 consumer detergent formulations available on the market across the EU/EEA (as previously assumed);
- That 10% to 20% of all consumer detergents were designed for washing dishes (i.e. 3,150 to 10,300 products in total);
- That 40% to 50% of all consumer dishwashing detergents were designed for use in a machine (i.e. 1,260 to 5,150 products in total);
- That 95% of CADD were reformulated as a direct result of the Detergents Regulation (i.e. 1,197 to 4,893 products in total);
- That it cost each manufacturer/formulator between €10,000 and €20,000 per CADD product to carry out the research and development necessary for reformulation.

One-off costs (CAPEX) of changing production processes

The EEN survey asked SMEs to indicate the average one-off costs associated with changes to production processes related to reformulating a detergent product to reduce the total phosphorus content. As shown in Figure 7-3, 17% of SMEs indicated one-off costs in the region of €2,500 to €5,000; 14% indicated costs greater than €20,000, and 17% indicated costs below €2,500.

During the consultation, one large company explained that, in some cases, it is possible to reformulate a product without having to change the production line. For example, the company was able to replace phosphorus with alternative ingredients that were also powders and so there was no need to change the production process. If, however, the company had switched to using liquid ingredients instead of powders, then it is likely that they would have incurred a (substantial) cost. If the formula changes then there may also be knock-on implications for the packaging; for instance, if a more water resistant packaging type is required (e.g. plastic lined container instead of cardboard box). The company explained that if the detergent packaging has to change then this can result in a large cost.

Given this disparity in costs, it has unfortunately not been possible for us to provide a reliable estimate of the total one-off costs of changing production processes. It should be noted, however, that there were costs incurred by some detergent manufacturers and that, in some cases, these may have been significant.

On-going costs (OPEX) of using different raw materials in place of phosphorus

As well as the one-off costs associated with reformulation, detergent **manufacturers have also faced substantive on-going compliance costs associated with using different raw materials in place of phosphorus**.

During the interviews, companies explained that there is no simple one-for-one alternative to phosphorus and that, to reduce the amount of phosphorus/phosphate used in detergents, multiple ingredients need to change.

One large company from Austria estimated that the raw materials needed to replace phosphate cost around 5% to 10% more than phosphate. When asked about the costs associated with producing phosphate-free CADD, one industry association noted (based on information from one of its member companies) that the additional cost for ingredients and manufacturing is €113 per tonne (or €0.11 per kilogram) on average. The stakeholder noted that 1kg of phosphate-containing CADD normally costs €1, meaning that switching to phosphate-free CADD has led to an 11% increase in raw material costs on average. This is comparable to the 5% to 10% increase in costs estimated by the company, as noted above. An SME from Germany and an SME from the Netherlands both agreed that **the cost of producing a phosphorus free detergent is about 10% higher than the cost of producing one containing phosphorus and likewise, AISE confirmed that an additional cost of €113 per tonne is broadly accurate**. Neverthless, when presented with this figure, one large company cautioned that phosphate has become more expensive over time and so it is difficult to say how the ongoing cost of using different raw materials in place of phosphorus has changed. The company also explained that, in France, companies were required to pay a phosphorus tax before the 2012 amendment to the Detergents Regulation came into force (the tax was higher if the product contained for phosphorus) and so by reducing the amount of phosphorus in their detergent products, some companies may have benefitted from a tax saving.

A 2002 report from the European Commission[155] provides baseline data on detergent consumption in the EU. It shows that in 1998, 3,088 kilotonnes of laundry detergent and 568 kilotonnes of CADD detergent were consumed across the EU. Assuming that 30% of consumer laundry detergents and 95% of CADD were reformulated as a direct result of the Detergents Regulation, at an additional cost to manufacturers of €113 per tonne, the detergents industry would incur an annual cost of €104.7

[155] European Commission (2002): Phosphates and alternative detergent builders. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

million for laundry detergents and €61.0 million for CADD. Over the four years that have elapsed since the new limits for consumer laundry detergents came into force, the detergents industry would have incurred costs in the region of €419 million. The new limits for CADD only came into force on the 1 January 2017 and thus CADD manufacturers will have incurred costs of €61.0 million to date. **Thus, it is estimated that costs of the order of €479.7 million have been incurred by the detergents industry so far.**

7.2.2 One-off costs (CAPEX) associated with testing the biodegradability of surfactants

According to JRC (2014a)[156], there are between 40 and 50 companies in the home and fabric care speciality ingredients market[157], with the dominant players mainly being speciality surfactants companies. CESIO – the EU industry association for surfactants – has membership covering approximately 75% of European surfactant manufacturers and includes among its members nine individual companies, eight national associations (representing a number of SMEs in addition to the larger companies), and two associate member companies.[158] Information received from CESIO during the consultation shows that its eight national member associations represent 23 companies (excluding direct member companies and only counting subsidiaries once). This means that, in total, there are 34 separate companies represented by CESIO. Although it has not been possible to determine whether all of these companies supply surfactants to the detergents market, the detergents market accounts for around 50% of the downstream uses of surfactants; as a result, CESIO suggests that it is reasonable to assume that all of its members do supply the detergents industry. If these 34 companies make up 75% of the market, as CESIO's website shows, this suggests that there may be in the region of **40 to 50 companies in the EU/EEA producing surfactants for use in detergent products**. This figure is consistent with the estimate from JRC.

BASF lists on its website[159] 67 surfactant products, including one amphoteric surfactant product, one anionic surfactant product and 65 non-ionic surfactant products; although, presumably, not all are suitable for use in detergents. Dow's product portfolio[160] includes 45 surfactant products that are designed for use in detergents, cleaners, pre-wash spot removers and washing processes. As large companies, BASF and Dow probably have more surfactants in their portfolio than the industry average overall.

Assuming that each of the 40 to 50 companies producing surfactants in the EU/EEA have between 20 and 60 surfactants in their portfolio, **the total number of surfactant formulations that would have**

[156] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

[157] Which includes fabric washing and care; hard surface cleaners; car interior and upholstery cleaners; furniture, shoe and leather polishes; and dishwashing products.

[158] CESIO (2017): Our members. Available at: http://www.cesio.eu/index.php/about-cesio/our-members

[159] BASF (2017): Surfactants. Available at: https://worldaccount.basf.com/wa/NAFTA~en_US/Catalog/ChemicalsNAFTA/pi/BASF/Productgroup/surfactants/productgroup_top/

[160] Dow (2014): Dow Surfactants, Reference Chart. Available at: http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0949/0901b80380949ccd.pdf?filepath=surfactants/pdfs/noreg/119-01491.pdf&fromPage=GetDoc

required testing would be between 800 and 3,000. Although the total number of different surfactant formulations may be lower than this, given that several companies may have access to the same formulation; for the purposes of estimating the total cost of testing, it is assumed that companies do not share their testing data.

During the consultation, **CESIO clarified that the cost of testing a surfactant is between €3,000 and €6,000 per test.** While this is somewhat higher than the average testing cost reported by detergent manufacturers and formulators in the survey of SMEs (as shown in Figure 7-3, 13% of SMEs indicated that the average one-off cost per formulation of testing the ultimate biodegradability of a surfactant is between €501 and €1,000; 12% of SMEs indicated that the cost is higher than this and 15% indicated that it is lower), CESIO's estimate has been taken to be more reliable on the basis that surfactant manufacturers (rather than detergent manufacturers/formulators) will have been responsible for carrying out these tests.

Assuming that 800 to 3,000 surfactants each had to be tested to ensure they meet the requirements on ultimate biodegradability introduced by the Detergents Regulation, and that the cost of testing for each surfactant was between €3,000 and €6,000 per test, **the total cost across the industry would have been between €2.4 million and €18.0 million**. Given the large range of cost estimates provided by SMEs during the consultation, it would seem prudent to carry out a sensitivity analysis on this figure. If 800 to 3,000 surfactants were each tested to ensure they meet the requirements on ultimate biodegradability at a cost per surfactant of between €501 and €1,000, the total cost across the industry would have been between €400,800 and €3 million.

It is important to recognise that pre-existing legislation in the EU already required certain surfactants (anionic and non-ionic; which before the Detergents Regulation came into force accounted for about 90% of the total surfactants on the EU market[161]) to be tested for their (primary) biodegradability and so, to some extent, these costs can be considered business as usual costs. Unfortunately, consultees were not able to confirm whether there is a difference in cost between testing for primary and ultimate biodegradability and so it has not been possible to subtract the costs that would have arisen even in the absence of the Detergents Regulation.

[161] Intertek (2012): Understanding & attaining compliance to the EU Detergent Regulation, available at: www.intertek.com/WorkArea/DownloadAsset.aspx?id=48909

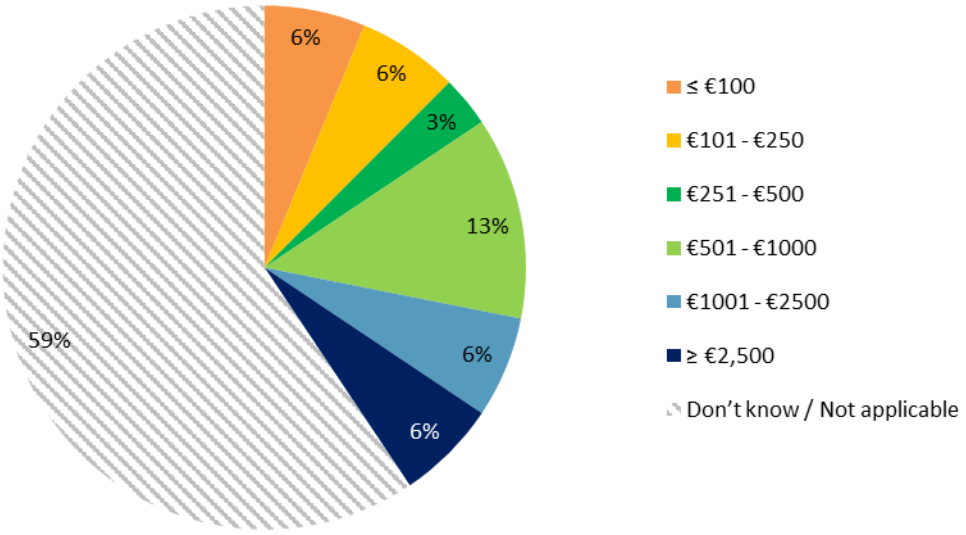


Figure 7-5: If you are a detergent manufacturer or formulator: Please indicate the average one-off cost per formulation associated with testing a formulation to meet ultimate biodegradability criteria. Responses to the survey of SMEs conducted by EEN. *(n=32)*

7.2.3 Administrative costs associated with the labelling provisions of the Detergents Regulation

Overview

In order to quantify the costs driven by the Detergents Regulation's labelling provisions, it is critical to consider not only the pre-existing legislative context, but also the labelling requirements of other legislation applicable to (some) detergent products. It is also important to consider the frequency at which manufacturers would voluntarily relabel their products (e.g. to update the artwork) in the absence of the Detergents Regulation.

As shown in Table 7-6, pre-existing legislation on detergents (Council Directive 73/404/EEC) only required the name of the product and name and address of the party responsible for placing the product on the market. Unlike the Detergents Regulation, it did not require, for example, the content of the detergent to be labelled, an indication of the dosage to use, or specific languages to be used.

When CLP came into force, it introduced new requirements, some of which overlap with those of the Detergents Regulation (as shown in Table 7-7). In addition to that, the Detergents Regulation is clear on the fact that its labelling provisions are "without prejudice" to the provisions of the CLP, i.e. may come in addition to CLP obligations. For example, where applicable, CLP requires the use of hazard pictograms, signal words, hazard statements and precautionary statements that, to some extent, overlap with Article 11(3) of the Detergents Regulation (i.e. "instructions for use and special precautions"). Similar to Article 11(5) of the Detergents Regulation, Article 17(2) of CLP also requires the label to be written in the official language(s) of the MS where the mixture (detergent) is sold.

Detergents that contain a biocidal active substance and that make a biocidal claim may, in addition to Detergents and CLP obligations, be subject to the labelling provisions of the Biocidal Products

Regulation. Unfortunately, it has not been possible to ascertain what proportion of detergents fall within the scope of both pieces of legislation, although it is expected to be a relatively small proportion overall. This is important because it means that, for most detergent products, the labelling requirements (and associated costs) are driven by the Detergents Regulation rather than the Biocidal Products Regulation.

It should be noted that the labelling of dosage information is exclusively a provision of the Detergents Regulation and did not exist as a requirement of EU legislation before the Detergents Regulation came into force. Nor is it a requirement of the Biocidal Products Regulation or CLP.

Based on the information shown in Tables 7-6 to 7-8, it is possible to conclude that additional labelling requirements are driven by the Detergents Regulation representing additional labelling costs which can, therefore, be attributed to the Detergents Regulation.

In estimating the total costs attributable to the labelling provision of the Detergents Regulation it is important to remember that some of the labelling requirements only apply to consumer detergent products. For example, Annex VII A of the Regulation requires information on the content of detergents to be provided on the packaging of detergents sold to the general public. For detergents intended to be used in the industrial and institutional sector, and not made available to members of the general public, content information can be provided by means of a technical datasheet, safety datasheet, or in a similar appropriate manner.

Table 7-6: Labelling requirements of the Detergents Regulation versus the baseline			
Detergents Regulation, Article 11 (as amended)		**Council Directive 73/404/EEC, Article 7**	
Article 11(2)	The following information must appear in legible, visible and indelible characters on the packaging in which the detergents are put up to sale to the consumer • The name **and trade name** of the product • The name or trade name or trademark and full address **and telephone number** of the party responsible for placing the product on the market • The **address, email address, where available, and telephone number from which the datasheet referred to in Article 9(3) can be obtained** The same information must appear on all documents accompanying detergents transported in bulk	Article 7(1)	The following information must appear in legible, visible and indelible characters on the packaging in which the detergents are put up for sale to the consumer: • The name of the product • The name or trade name and address or trademark of the party responsible for placing the product on the market The same information must appear on all documents accompanying detergents transported in bulk
Article 11(3)	**The packaging of detergents shall indicate the content, in accordance with the specifications provided for in Annex VIIA. It shall also indicate instructions for use and special precautions, if required**		
Article 11(4)	**Additionally, the packaging of consumer laundry detergents and consumer automatic dishwasher detergents shall bear the information provided for in section B of Annex VII**		
Article 11(5)	**In cases where a Member State has a national requirement to label in the national language(s), the manufacturer and distributor shall comply with that requirement**		
Article 11(6)	**Paragraphs 1 to 5 are without prejudice to existing national rules according to which graphic representations of fruits which may lead the user into error as to the use of liquid products, shall not appear on the packaging in which the detergents are put up for sale to the consumer.**		
Note: Additional information requirements under the Detergents Regulation are shown in bold			

Table 7-7: Labelling requirements of the Detergents Regulation versus CLP			
Detergents Regulation, Article 11 (as amended)		**Regulation (EC) No 1272/2008, CLP, Article 17**	
Article 11(1)	Paragraphs 2 to 6 are without prejudice to the provisions relating to the classification, labelling and packaging of substances and mixtures in Regulation (EC) No 1272/2008		
Article 11(2)	The following information must appear in legible, visible and indelible characters on the packaging in which the detergents are put up to sale to the consumer: • **The name and trade name of the product** • The name or trade name or trademark and full address and telephone number of the party responsible for placing the product on the market • **The address, email address, where available, and telephone number from which the datasheet referred to in Article 9(3) can be obtained** The same information must appear on all documents accompanying detergents transported in bulk	Article 17(1)	A substance or mixture classified as hazardous and contained in packaging shall bear a label including the following elements: • the name, address and telephone number of the supplier(s) • the nominal quantity of the substance or mixture in the package made available to the general public, unless this quantity is specified elsewhere on the package • product identifiers as specified in Article 18
Article 11(3)	**The packaging of detergents shall indicate the content, in accordance with the specifications provided for in Annex VIIA** It shall also indicate instructions for use and special precautions, if required		• where applicable, hazard pictograms in accordance with Article 19 • where applicable, signal words in accordance with Article 20 • where applicable, hazard statements in accordance with Article 21 • where applicable, the appropriate precautionary statements in accordance with Article 22 • where applicable, a section for supplemental information in accordance with Article 25
Article 11(4)	**Additionally, the packaging of consumer laundry detergents and consumer automatic dishwasher detergents shall bear the information provided for in section B of Annex VII**		
Article 11(5)	In cases where a Member State has a national requirement to label in the national language(s), the manufacturer and	Article 17(2)	The label shall be written in the official language(s) of the Member State(s) where the substance or mixture is placed on the

	distributor shall comply with that requirement		market, unless the Member State(s) concerned provide(s) otherwise. Suppliers may use more languages on their labels than those required by the Member States, provided that the same details appear in all languages used.
Article 11(6)	**Paragraphs 1 to 5 are without prejudice to existing national rules according to which graphic representations of fruits which may lead the user into error as to the use of liquid products, shall not appear on the packaging in which the detergents are put up for sale to the consumer.**		
Note: Additional information requirements under the Detergents Regulation are shown in bold			

Table 7-8: Labelling requirements of the Detergents Regulation versus Biocidal Products Regulation

Detergents Regulation, Article 11 (as amended)		Regulation (EC) No 528/2012, Biocidal Products Regulation	
Article 11(2)	The following information must appear in legible, visible and indelible characters on the packaging in which the detergents are put up to sale to the consumer: • The **name and trade name of the product** • The name or trade name or trademark and full address and **telephone number** of the party responsible for placing the product on the market • The **address, email address, where available, and telephone number from which the datasheet referred to in Article 9(3) can be obtained** The same information must appear on all documents accompanying detergents transported in bulk	Article 69(2)	…In addition, the label must show clearly and indelibly the following information: • the name and address of the authorisation holder
Article 11(3)	The packaging of detergents shall indicate the content, in accordance with the specifications provided for in Annex VIIA.	Article 69(2)	…In addition, the label must show clearly and indelibly the following information: • the identity of every active substance and its concentration in metric units;

			• the nanomaterials contained in the product, if any, and any specific related risks, and, following each reference to nano-materials, the word 'nano' in brackets
	It shall also indicate instructions for use and special precautions, if required	Article 58(3)	The label referred to in the first subparagraph shall provide the following information: • any relevant instructions for use, including any precautions to be taken because of the biocidal products with which a treated article was treated or which it incorporates.
		Article 69(2)	…In addition, the label must show clearly and indelibly the following information: • the uses for which the biocidal product is authorised
Article 11(4)	**Additionally, the packaging of consumer laundry detergents and consumer automatic dishwasher detergents shall bear the information provided for in section B of Annex VII**		
Article 11(5)	In cases where a Member State has a national requirement to label in the national language(s), the manufacturer and distributor shall comply with that requirement	Article 27(1)	A biocidal product authorised in accordance with Article 26 … shall use the official language or languages of that Member State in the product's labelling, unless that Member State provides otherwise.
Article 11(6)	Paragraphs 1 to 5 are without prejudice to existing national rules according to which graphic representations of fruits which may lead the user into error as to the use of liquid products, shall not appear on the packaging in which the detergents are put up for sale to the consumer.	Article 69(1)(2)	In addition, products which may be mistaken for food, including drink, or feed shall be packaged to minimise the likelihood of such a mistake being made. If they are available to the general public, they shall contain components to discourage their consumption and, in particular, shall not be attractive to children.
Note: Additional information requirements under the Detergents Regulation are shown in bold			

As previously outlined, AISE has suggested that, in the consumer detergent subsector, there are approximately 50 large manufacturers in the EU, with on average 300 to 500 consumer detergent formulations each; and 600 to 650 SME manufacturers, with on average 80 to 120 consumer detergent formulations each. In the industrial/institutional subsector, AISE has suggested that there are approximately 50 large manufacturers, with an average portfolio containing 150 to 300 industrial/institutional detergent products; and 600 to 650 SME manufacturers, with 40 to 60 industrial/institutional detergent products each. In other words, **there are an estimated 63,000 to 103,000 detergent products in total covering both consumer and industrial/institutional subsectors across the EU/EEA** (31,500 to 49,000 consumer detergent products and 31,500 to 49,000 detergent products in the industrial/institutional subsector).

One-off cost of producing new labels for consumer detergents

Stakeholders noted that **the labelling provisions in the Detergents Regulation have been particularly costly for companies** and that **SMEs may have been disproportionately affected** by the changes because they tend to buy-in labels, rather than produce them in-house. This is important because **companies that do not produce their own detergent labels may have been required to throw some (non-compliant) stock away when the new rules came into force**. During consultation, several companies (both large and small) noted that they incurred costs because labels and packaging had to be thrown away.

SMEs responding to the EEN survey were asked to indicate the one-off costs associated with "changes to labelling including the disposal of old labels". As shown in Figure 7-3, 17% of SMEs indicated that the one-off costs were greater than €20,000. Around one quarter of SMEs that participated in the survey indicated that the average one-off cost per formulation of fulfilling the labelling requirements specific to the Detergents Regulation was less than €250 (Figure 7-3). It is not clear why the responses to these two questions vary so significantly, other than that the question in Figure 7-3 explicitly includes disposal of old packaging within a description of part of the costs (rather than just re-design of artwork and reprinting of labels).

During the interviews, stakeholders were asked about the costs associated with labelling changes:

- An SME from the Netherlands noted that the cost of relabelling a detergent is around €200 to €300 per product;
- An SME from Germany noted that for each labelling and packaging change, the associated cost is between €2,000 and €3,000;
- An SME from Belgium explained that new labels have a one-off cost of approximately €500 per product, where this includes the cost of producing the new label but also the cost of throwing away the stock of old labels that can no longer be used. The company noted that for all labelling requirements to be met (including Detergents Regulation but also CLP), it costs the company approximately €50,000 per year for the 80-100 products in its portfolio;
- A large company from Austria noted that it incurs costs of €500/month (€6,000/year) as a result of the labelling requirements under the Detergents Regulation. The company noted that this is, in part, because old labels are thrown away;
- A large company from the Netherlands confirmed that it tries to keep the cost to €2,000 per product for updating the artwork on its detergent labels. The company noted that it buys in labels and typically has €10 million worth of labels available in stock at any one time. The company noted that for the introduction of CLP, the company had to throw €100,000 worth of labels away, but that the company had managed its stock of labels carefully in advance of

the changes to ensure that this cost was kept to a minimum. The company noted that with CLP they were given 18 months to comply and so they were able to plan ahead and keep costs to a minimum. Unfortunately, the company was not able to confirm the level of costs it incurred as a result of the Detergents Regulation.

The information in this last bullet point is important because it shows that some large companies will also have incurred costs as a result of having to throw non-compliant labelling stock away.

Although AISE additionally noted that the overall cost for one large company alone had been of the order of a couple of million Euros, we have assumed that this is not typical for all large companies given that this implies a 100-fold increase in such costs relative to SMEs (although it is recognised that large companies will have a larger number of units for each product and a larger product portfolio overall).

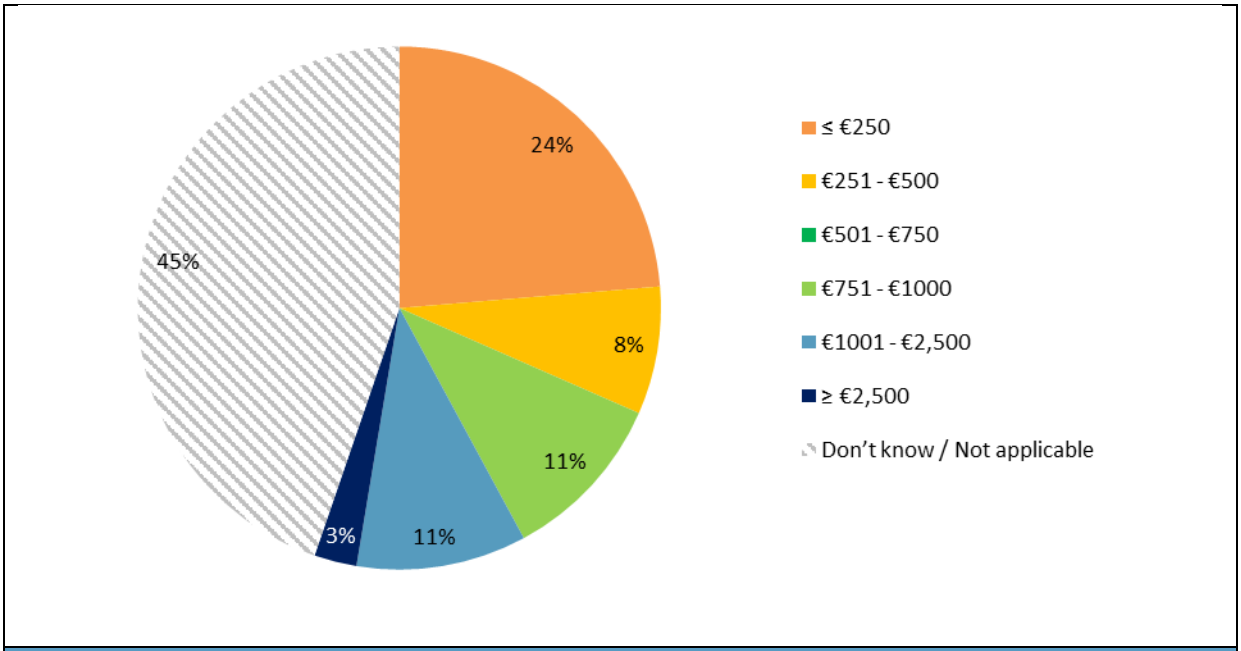


Figure 7-6: Please indicate the average one-off cost per formulation associated with fulfilling labelling requirements specific to the Detergents Regulation (constituents, preservation agents, allergenic fragrances). Responses to the survey of SMEs conducted by EEN. *(n=38)*

The total one-off cost of labelling changes (covering the revision of labels and artwork) to the detergents industry can be estimated at €6.3 million to €154.5 million, based on the following assumptions:

- Firstly, that there were between 31,500 and 51,500 consumer detergent products that had to be relabelled as a result of the Detergents Regulation; and
- That the one-off cost, per product, of producing new labels (labelling and artwork) was between €200 and €3,000;

The total one-off cost of throwing label stock away can be estimated at €3.2 million to €9.0 million, based on the following assumptions:

- That there are 50 large manufacturers and 600 to 650 SMEs manufacturing consumer detergent products in the EU/EEA;

- That 30% of large companies and 80% of SMEs had to throw some of their label stock away; and

- That each large company that threw some of its labelling stock away incurred a one-off cost of between €50,000 and €250,000 and that each SME that threw some of its labelling stock away incurred a one-off cost of €5,000 to €10,000.

This gives a total one-off cost of producing new labels for consumer detergents of €9.5 million to €163.5 million across the EU/EEA.

On-going administrative costs of keeping consumer detergent labels up to date

Consultation undertaken for the supporting study for the chemicals fitness check[162] found that, in the absence of REACH and CLP, almost 70% of products would retain the same labels for over 24 months (and up to much longer periods, e.g. 5-10 years in some cases) with only 30% normally changing their labels within this time frame (for reasons of marketing, changes in consumer demand, reformulation, etc.).[163] With CLP in force, it is likely that detergent manufacturers would update their labels more often. For example, if a product is reformulated and a new ingredient is used, the detergent might fall within a different hazard class under CLP and require new hazard pictograms, and therefore new labels. However, new labels may not be required under CLP every time a product is reformulated (e.g. if the hazard class remains the same). Thus, there are some costs stemming from the labelling provisions of the Detergents Regulation that go beyond those that would arise in the Regulation's absence.

In the absence of other legislation (namely CLP and the Biocidal Products Regulation), under the Detergents Regulation, labels would probably be updated (in most cases) when a product is reformulated. However, the label would not necessarily be updated every time reformulation occurs. For most ingredients in consumer detergent products, Annex VII A of the Detergents Regulation requires the manufacturer to label the content using the nomenclature provided in Annex VII A which includes general terms such as "anionic surfactant", "cationic surfactant", "enzmes", etc. This means that, even if a product is reformulated, it may not always be necessary to update the content list and label (e.g. if a different anionic surfactant is used at a similar weight percentage range).

During the consultation, one large company noted that it updates the labels on its products about 60% to 70% of the time when its products are reformulated. AISE, quoting information from one of its member companies, suggested that product labels would be updated approximately 80% of the time.

The total on-going cost of updating consumer detergent product labels can be estimated at €0.8 million to €1.5 million per year, based on the following assumptions:

[162] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex II. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[163] As part of targeted data collection, industry was asked "On average, how often would you expect to modify or redesign the labels on the products that you place on the market for reasons other than CLP and REACH (i.e. for marketing reasons or to respond to changes in consumer demand)".

- Firstly, that as a result of the Detergents Regulation, half of all consumer detergent products are reformulated every two years, while the other half are reformulated every five years;
- That the product label is updated 60% to 70% of the time when consumer detergent products are reformulated;
- That there are between 31,500 and 51,500 consumer detergent products in the EU/EEA (as previously assumed);
- That is costs between €120 and €200 to update the label for a single detergent product.

Over the 12 years that have elapsed since the Detergents Regulation first came into force, the total cost to the detergents industry can be estimated at €9.5 million to €18.5 million.

During the consultation, one large company noted that it normally allows a cost of €2,000 per product to update labels but that, to some extent, this can be considered a business as usual cost because the company's marketing team would take the opportunity to update other aspects of the label at the same time. AISE similarly commented that one of its member companies had indicated a one-off cost of about €1,000 to update a product label. It would therefore seem prudent to carry out a sensitivity analysis on the above cost estimates. Assuming that each company incurred a cost of €1,000 to update the label for each detergent product (and based on the same assumption as before), the total cost over the 12 years that have elapsed since the Detergents Regulation came into force would be of the order of €79.4 million to €92.6 million.

One-off cost of providing information on the content of industrial and institutional detergents via a technical datasheet or safety datasheet

As previously outlined, information on the content of industrial and institutional detergents can be provided by means of a technical datasheet, safety datasheet, or by other appropriate means. Assuming that there are between 31,500 and 51,500 industrial and institutional detergent products in the EU/EEA (as previously assumed) and that, for each product, a one-off cost of €100 to €200 would be incurred to provide the relevant information by means of a technical datasheet or safety datasheet, the **total one-off cost of providing information on the content of industrial and institutional detergents would be between €3.2 million and €10.3 million.**

On-going cost of keeping technical datasheets and safety datasheets up-to-date

The on-going cost of keeping technical datasheets and safety datasheets up-to-date can be estimated at **€0.7 million to 2.5 million per year**, based on the following assumptions:

- Firstly, that as a result of the Detergents Regulation, half of all industrial and institutional detergent products are reformulated every year, while the other half are reformulated every two and a half years;
- That the datasheet is updated 60% to 70% of the time when industrial and institutional detergent products are reformulated;
- That there are between 31,500 and 51,500 industrial and institutional detergent products in the EU/EEA (as previously assumed);
- That is costs between €50 and €100 to update the datasheet for a single detergent product.

Over the 12 years that have elapsed since the Detergents Regulation first came into force, the cost can be estimated at €7.9 million to €30.3 million.

7.2.4 Administrative costs associated with ingredient datasheets

One-off (CAPEX) costs of compiling ingredient datasheets

The Detergents Regulation requires manufacturers placing detergent products (all types within the Regulation's scope) on the market to compile ingredient datasheets.

During the consultation, SMEs were asked to indicate the one-off costs per formulation of compiling an ingredient datasheet. As shown in Figure 7-3, 24% of SMEs indicated that it costs less than €100 to compile an ingredient datasheet, while 16% of SMEs indicated that it costs between €100 and €200. During the interviews, one small company from Belgium noted that it prepares ingredient datasheets using a computer programme but that concentrations have to be added manually meaning that additional time is required. The company noted that to prepare an ingredient datasheet for a single product takes about half a day, although the exact amount of time will depend on how much information needs to be gathered. Based on an hourly personnel cost of €29.94 for a worker employed in office administrative/support activities (as previously estimated and based on Eurostat data[164]), the cost can be estimated at approximately €120 based on it taking around four hours to complete this task. This is broadly consistent with the results from the survey of SMEs. During the consultation, one large company noted that it would probably cost about €250 to compile an ingredient datasheet for a single product. The one-off costs of compiling an ingredient datasheet can therefore be seen as relatively small compared to the one-off costs of reformulation and labelling.

Across the industry, **the total one-off cost of compiling ingredient datasheets can be estimated at €9.5 million to €25.8 million**, based on the following assumptions:

- Firstly, that 63,000 to 103,000 detergent products required an ingredient data sheet (as previously assumed);
- That the average cost of producing a single ingredient datasheet was between €150 and €250.

On-going (OPEX) costs of keeping ingredient datasheets up to date

During the interviews, stakeholders clarified that, although the one-off cost of compiling an ingredient datasheet is relatively small, the on-going costs add up because the datasheet needs to be updated even for a very small change in the formulation[165].

For consumer detergent products, **the total annual cost of keeping ingredient datasheets up-to-date can be calculated at €1.7 million to €4.5 million per annum, or €19.8 million to €54.1 million over the 12 years since the Detergents Regulation first came into force**, based on the following assumptions:

- Firstly, that there are 31,500 to 51,500 consumer detergent products in the EU/EEA
    - 50% of which are reformulated (and therefore require a new ingredient datasheet) every two years; and

[164] Eurostat (sbs_na_sca_r2)

[165] In the ingredient datasheet, ingredients must be listed by their common chemical name or IUPAC name and, where available, the INCI name, the CAS number, and the European Pharmacopoeia name, rather than the broader nomenclature used for labelling in Annex VII A.

- 50% of which are reformulated (and require a new ingredient datasheet) every 5 years; and
- Secondly, that it costs €150 to €250 per product to update the ingredient datasheet.

For industrial and institutional detergent products, **the total annual cost of keeping ingredient datasheets up-to-date can be calculated at €3.3 million to €9.0 million, or €39.7 to €108.1 million over the 12 years since the Detergents Regulation came into force**, assuming that:

- Between 31,500 and 51,500 industrial and institutional detergent products are available on the market in the EU/EEA
  - 50% of which require a new ingredient datasheet every two and a half years; and
  - 50% of which require a new ingredient datasheet every year.
- That it costs between €150 and €250 per product to update the ingredient datasheet.

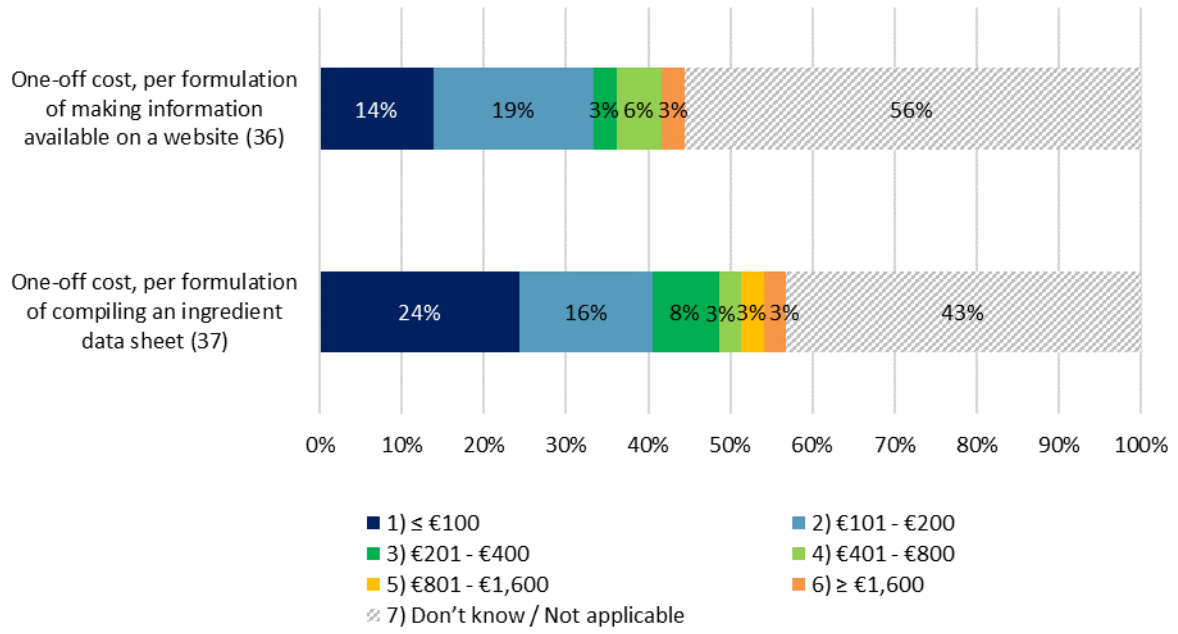


Figure 7-7: Please indicate the average one-off cost per formulation associated with compiling an ingredient datasheet (for medical personnel) and making it available on a website so that information on the composition of detergents can be obtained by the general public. Responses to the survey of SMEs conducted by EEN. *(n=36 to 37)*

One-off costs of providing ingredient datasheets online

The 2006 amendment to the Detergents Regulation (Annex VII D) requires manufacturers to make available, on a website, a simplified ingredient data sheet. The Detergents Regulation does not prescribe how the website should be hosted, but the edited version of the datasheet must be made available somewhere on the internet. AISE suggests that, if a manufacturer does not have its own website, it "*can also consider making joint arrangements with other manufacturers, e.g. via their trade association, with a view to producing a general detergent product ingredient database*

website".[166] It should be noted that this provision is only applicable to consumer detergent products. The obligation does not apply to industrial or institutional detergent products, or to surfactants for industrial or institutional detergents, for which a technical datasheet or safety datasheet should be available.

As shown in Figure 7-3, most SMEs have indicated that it costs up to €200 per formulation to make information available on a website (14% of respondents indicated that it costs up to €100, while 19% indicated that it costs between €101 and €200). It should be noted that a portion of the costs associated with providing ingredient datasheets online can be considered to be business-as-usual costs, seeing as most companies would have a website even in the absence of the Detergents Regulation. Manufacturers would, however, need to upload a new ingredient datasheet to the website each time the formulation of a product is changed, and this can be considered an additional cost that is attributable to the Detergents Regulation.

The total one-off cost of providing ingredient datasheets online can be estimated at €0.9 million to €1.5 million, based on the following assumptions:

- Firstly, that 31,500 to 51,500 consumer detergent products required an ingredient datasheet; and
- That it cost manufacturers, on average, €29.94 to produce each ingredient datasheet (based on it taking one hour to prepare and upload a simplified ingredient datasheet to a website, at an hourly personnel cost of €29.94).

It should be noted that during the consultation, one large company suggested that for some companies, the online provision of ingredient datasheets may be automated. Thus, the true figure may be nearer to the bottom end of our estimated cost range.

On-going costs of providing updated ingredient datasheets online

The total on-going cost of updating simplified ingredient datasheets for consumer detergent products and providing these updated datasheets online can be estimated at €0.3 million to €0.4 million per annum, or €3.3 million to €5.4 million over the 10 years since this requirement of the Detergents Regulation came into force, based on the following assumptions:

- Firstly, that 31,500 to 51,500 consumer detergent products required an ingredient datasheet; and
- That it cost manufacturers, on average, €29.94 to update each ingredient datasheet (based on it taking one hour to update and upload a simplified ingredient datasheet to a website, at an hourly personnel cost of €29.94); and
- That 50% of consumer detergent products required an updated ingredient datasheet every two years; while 50% required an updated ingredient datasheet every five years.

One-off cost of providing ingredient datasheets to poison centres

Article 9(3)(2) of the Detergents Regulation gives MS the right to request that ingredient datasheets (as stipulated in Annex VII C) are made available to a specific public body (poison centre), to which the MS has assigned the task of providing this information to medical personnel; the idea being that medical professionals could obtain this information directly from a poison centre in the case of a

[166] AISE (2013): Guidelines on the implementation of the Detergents Regulation v2, available at: https://www.aise.eu/our-activities/product-safety-and-innovation/detergents.aspx

medical emergency. This provision is applicable to all mixtures that fall within the scope of the Detergents Regulation, including consumer, industrial and institutional detergent products.

When CLP came into force in 2009, it introduced a formal requirement (Article 45) for EU countries to set up an appointed body (poison centre) for receiving data (from importers and downstream users placing mixtures on the EU market) on the composition of hazardous mixtures (including detergents). Commission Regulation (EU) 2017/542 amends CLP by adding an Annex that harmonises the information that must be provided to appointed bodies relating to emergency health response. To comply with this regulation, any company selling hazardous mixtures (i.e. mixtures classified as hazardous under CLP) to consumers in the EU will have to submit harmonized information electronically to the appointed bodies by 2020. Hazardous mixtures used in professional or industrial settings will need to comply by 2021 and 2024, respectively. Because most detergent products will be classified as hazardous mixtures under CLP, there are potentially overlaps between Article 9(3)(2) of the Detergents Regulation and the new Poison Centres Regulation (2017/542) under Article 45 of CLP.

During the consultation, several industry stakeholders noted this overlap may give rise to some unnecessary administrative burden for the detergents industry. Indeed, **one large company estimated that about 95% of all detergent products on the market would be classified as hazardous under CLP.** This means that going forward (from 2020 onwards for consumer detergent products, 2021 for professional products and 2024 for industrial products) a large proportion of detergent products may be affected by this overlap and, if the Detergents Regulation is not amended/recast, an administrative burden may arise. However, it is worth noting that, by harmonising the rules for providing information to poison centres, the new Poison Centres Regulation is anticipated to lead to significant cost savings for industry (as cited in Recital 3 of Commission Regulation (EU) 2017/542).

The following table shows the submission fees that must be paid to poison centres in the EU/EEA. Data are not available for all countries. The highest fees appear to be in Belgium, where companies must pay €200.

Table 7-9: Submission fees payable to poison centres

Country	Submission fee
Austria	€0.00
Belgium	€200.00
Bulgaria	No information
Croatia	No information
Cyprus	€0.00
Czech Republic	No information
Denmark	€0.00
Estonia	€0.00
Finland	€38.00
France	€0.00
Germany	€0.00
Greece	No information
Ireland	Yes, there is a fee, but unspecified
Italy	No information
Latvia	No information
Lithuania	€0.00

Table 7-9: Submission fees payable to poison centres	
Country	**Submission fee**
Luxembourg	No information
Malta	No information
Netherlands	€0.00
Norway	€0.00
Poland	€0.00
Portugal	€0.00
Romania	€0.00
Slovakia	€0.00
Slovenia	Fee for written submissions; no fee for online submissions and amendments
Spain	€30.00
Sweden	€0.00
UK	€0.00
Source: Amec Foster Wheeler & Ricardo-AEA (2015): Study on the harmonisation of the information to be submitted to Poison Centres, according to article 45 (4) of the regulation (EC) No. 1272/2008 (CLP Regulation), Available at: http://ec.europa.eu/DocsRoom/documents/14006/attachments/1/translations	

The total one-off cost of providing ingredient datasheets to poison centres can be estimated at €11.3 million to €72.0 million, based on the following assumptions:

- Firstly, that there are 63,000 to 103,000 products that require an ingredient datasheet (as previously assumed);
- That one hour is required to provide an ingredient datasheet to a poison centre, at a cost of €29.94;
- That, on average, each detergent product is sold in five to ten different countries[167], and that an ingredient datasheet must be provided to the national poison centre in each of the countries where products are sold;
- That 20% of products are sold in countries where a fee is payable to poison centres;
- That the average fee payable to poison centres per product (in countries where a fee is payable) is between €30 and €200.

On-going costs of providing ingredient datasheets to poison centres

The on-going costs of providing ingredient datasheets to poison centres can be estimated at €71.3 million to €453.8 million over the 12 years since the Detergents Regulation came into force, based on the following assumptions:

- Firstly, that it takes one hour (per product) to provide an ingredient datasheet to a poison centre, at a personnel cost of €29.94;
- That 50% of consumer detergents need new ingredient datasheets to be provided to poison centres every two years, and 50% need new ingredient datasheets to be provided every 5 years (as before);

[167] This assumption was verified by one large company which stated that while it sells products to a larger number of countries, an average figure of five to ten countries would seem reasonable overall.

- That 50% of industrial/institutional detergents need new ingredient datasheets to be provided to poison centres every year, and 50% need new ingredient datasheets to be provided every two and a half years (as before);
- That each product is sold, on average, in five to ten different countries (as before);
- That 20% of products are sold in countries where a fee is payable to poison centres (as before);
- That the average fee per product in countries where a fee is payable to poison centres is €30 to €200 (as before).

On-going costs of providing ingredient datasheets to medical personnel

During the consultation, industry noted that it is a relatively infrequent occurrence for medical professionals to seek ingredient lists directly from manufacturers.

Assuming that it takes a manufacturer one hour to deal with a request for an ingredient datasheet, at an hourly cost to the company of €29.94 (as previously assumed), and that each of the 650 to 700 manufacturers in the EU and EEA receive on average three requests per year, **the total annual cost to the detergents industry would be €58,400 to €62,900, or €0.70 million to €0.75 million in total over the 12 year period since the Regulation came into force**.

7.2.5 Monetary (fee) costs associated with the granting of derogation

In accordance with Article 4(2) of the Detergents Regulation, if a surfactant passes the primary biodegradability test but fails the ultimate biodegradability test, and is used for industrial or institutional detergents, the manufacturer of that surfactant can apply for a derogation.

The Detergents Regulation (Article 5) gives MS the power to charge a one-off fee for processing and evaluating an application for derogation. Fees must not be levied in a discriminatory way and must not exceed the cost of processing the application. Article 5 of the Regulation sets out what manufacturers need to include in support of their derogation application. The application must include test results from both ultimate and primary biodegradability testing, and a risk assessment on the environmental dangers of any persistent metabolites, in accordance with Annex IV of the Regulation.

Only one surfactant has so far obtained a derogation[168] - as shown in Annex V of the Regulation. The recitals of Regulation (EC) No 551/2009 clarify that the request for this derogation was evaluated by the competent authorities in Germany. The fees for application for a derogation in Germany are shown in Table 7-10 below.

Table 7-10: Fees for applications for derogation (Germany)

Toll number	Chargeable event	Fee (Euro)
	Examination and assessment of the following information and test results in the context of an application for the granting of a derogation under Article 5 (3), also in conjunction with paragraph 5 of Regulation (EC) No 648/2004	
1	Information and test results as set out in Annexes II, III and IV (1) to	€4,050 to €17,000

[168] IUPAC name: alcohols, Guerbet, C16-20, ethoxylated, n-butyl ether (7-8EU), also known by the trade name 'Dehypon G 2084', with CAS number 147993-59-7, for use in three industrial applications: namely, bottle washing, cleaning-in-place and metal cleaning.

Table 7-10: Fees for applications for derogation (Germany)		
Toll number	**Chargeable event**	**Fee (Euro)**
	(3) of Regulation (EC) No 648/2004	
2	Test results according to Annex IV point 4.1 of Regulation (EC) No 648/2004	€240 to €1,910
3	Test results according to Annex IV No. 4.2 of Regulation (EC) No 648/2004	€310 to €3,340
Source: Bundesministerium der Justiz und fur Verbraucherschutz (2007): Verordnung über Kosten für Amtshandlungen des Umweltbundesamtes nach der Verordnung (EG) Nr. 648/2004 vom 31. März 2004 über Detergenzien (Detergenzien-Kostenverordnung - DetergKostV). Available at: https://www.gesetze-im-internet.de/detergkostv/BJNR065600007.html		

The costs for manufacturers associated with testing are described in the section on testing costs above.

7.2.6 Hassle costs

One-off cost of familiarisation with the provisions of the Detergents Regulation

SMEs that participated in the survey conducted by the EEN were asked to estimate the one-off costs associated with understanding the legislative requirements. As shown in Figure 7-3, 14% of SMEs indicated that it cost less than €1,000; 9% indicated that it cost between €1,000 and €2,500; 3% indicated it cost between €2,500 and €5,000; 6% indicated it cost between €5,000 and €10,000, while 11% indicated it cost more than €20,000.

During the interviews, companies clarified that they are faced with an increasing burden of regulation and that this makes it more difficult for them to use resources in developing new products. One large company – with around 400 staff – noted that there is now a lot of paperwork that needs to be completed if a company wants to develop a new product and that this costs the company time in human resource terms (man-power). As an illustration, the company noted that its research and development team comprises eight staff and that, out of these eight staff, two deal with regulatory affairs and one is involved in quality assurance.

A detergent manufacturers industry association noted that the costs of regulation are cumulative and particularly burdensome for SMEs that typically do not have large research and development departments to deal with the required changes.

A large company suggested it incurred a hassle cost of approximately €20,000 to €30,000 when the Detergents Regulation first came into force.

It should be noted that the hassle costs of the Detergents Regulation are likely to have affected a broad range of enterprises in the sector, including manufacturers and formulators of detergents and surfactants for detergents across the EU and EEA. It is assumed that 690 to 750 enterprises will have been directly affected by the Detergents Regulation, including:

- 600 to 650 SME detergent manufacturers/formulators;
- 50 large detergent manufacturers/formulators;
- 25 to 30 SME surfactant manufacturer/formulators;
- 15 to 20 large surfactant manufacturers/formulators.

While a large enterprise may have a regulatory affairs manager and associated team of staff (maybe three or four in total), in a small company there may be only one nominated person (most likely the managing director) responsible for becoming familiar with the requirements of EU law.

Based on a one-off hassle cost of €10,000 to €20,000 for an SME and €20,000 to €30,000 for a larger enterprise, **the one-off cost of familiarisation with the Detergents Regulation (as enacted in 2004) can be estimated at €7.6 million to €15.7 million**.

On-going cost of keeping up-to-date with changes to the requirements

As outlined in Section 1, the Detergents Regulation has been amended five times since it first came into force and so it can be assumed that companies will have had to familiarise themselves with the new requirements on five occasions. Although the hassle cost for each amendment may have varied (as some amending Regulations will have been easier/harder to implement), it can be assumed that overall the hassle cost per amendment was similar to the hassle cost for the original Regulation (i.e. €10,000 to €20,000 for an SME and €20,000 to €30,000 for a large enterprise). Based on this assumption, **the total on-going cost for the five amendments can be estimated at €37.8 million to €78.5 million.**

7.2.7 Summary of costs for industry

The following table summarises the costs for industry associated with the implementation of the Detergents Regulation. It shows that, **in total, the sector has incurred an estimated cost of between €764 million and €1.8 billion over the 12 years since the Detergents Regulation first came into force (or approximately €63.7 million to €149.0 million per year).** The largest costs are estimated to have arisen as a result of the need to use different raw materials in place of phosphorus, from having to provide ingredient datasheets to poison centres and from the research and development necessary for reformulation (to reduce the total phosphorus content of consumer laundry detergents and CADD). The costs of labelling are also estimated to have been relatively large.

Recall that all costs shown in Table 7-11 are presented as current prices.

As previously outlined, Technopolis Group & VVA (2016)[169] estimated that the detergents sector incurs an overall legislative cost of approximately €670 million per year. However, they found that the most significant costs for the detergents industry result from CLP, the Biocidal Products Regulation and REACH, rather than the Detergents Regulation.

Based on an annual cost of €63.7 million to €149.0 million, **the Detergents Regulation is estimated to contribute between 9% and 22% of the total legislative burden faced by the detergents industry.**

[169] Technopolis Group & VVA (2016): Cumulative Cost Assessment for the EU Chemical Industry. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/17784/attachments/1/translations/

Table 7-11: Costs for industry associated with the implementation of the Detergents Regulation				
Type of cost	**Key provisions of the Detergents Regulation**	**One-off or recurring?**	**Stakeholders affected**	**Estimated cost**
Substantive compliance costs	Amendment regarding the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents (Regulation (EU) No 259/2012)	One-off costs of research and development for reformulation (consumer laundry detergents and CADD)	Detergent manufacturers /formulators	€49.8 million to €252.4 million
		One-off costs of changing production processes		Not calculated
		On-going costs of using different raw materials in place of phosphorus		€479.7 million
	Limitations based on the biodegradability of surfactants (Article 4, Regulation (EC) No 648/2004) and testing of surfactants (Article 7, Regulation (EC) No 648/2004)	One-off costs associated with testing the biodegradability of surfactants	Surfactant manufacturers /formulators	€2.4 million to €18.0 million
		On-going costs associated with testing the biodegradability of surfactants		Not calculated
	Labelling (Article 11, Regulation (EC) No 648/2004)	One-off costs of producing new labels for consumer detergents	Detergent manufacturers /formulators	€9.5 million to €163.5 million
		On-going costs of keeping consumer detergent labels up-to-date		€9.5 million to €18.5 million
		One-off cost of providing information on the content of industrial and institutional detergents by means of a technical datasheet / safety datasheet		€3.2 million to €10.3 million
		On-going costs of keeping information on the content of industrial and institutional detergents up-to-date		€7.9 million to €30.3 million
Total substantive compliance costs				**€561.9 million to €972.6 million**
Administrative costs	Information to be provided by manufacturers (Article 9, Regulation (EC) No 648/2004)	One-off costs of compiling an ingredient datasheet	Detergent manufacturers /formulators	€9.5 million to €25.8 million
		On-going costs of keeping ingredient datasheets up to date		€59.5 million to €162.2 million
		One-off costs of providing ingredient datasheets online		€0.9 million to €1.5 million
		On-going costs of providing ingredient datasheets online		€3.3 million to €5.4 million

Table 7-11: Costs for industry associated with the implementation of the Detergents Regulation				
Type of cost	**Key provisions of the Detergents Regulation**	**One-off or recurring?**	**Stakeholders affected**	**Estimated cost**
		One-off costs of providing ingredient datasheets to poison centres		€11.3 million to €72.2 million
		On-going costs of providing ingredient datasheets to poison centres		€71.3 million to €453.8 million
		On-going costs of providing ingredient datasheets to medical personnel		€0.7 million to €0.8 million
Total administrative costs				**€156.6 million to €721.5 million**
Regulatory charges	Granting of derogation (Article 5, Regulation (EC) No 648/2004)	One-off costs of applying for a derogation	Detergent manufacturers /formulators	€4,600 to €22,250
Total regulatory charges				**€4,600 to €22,250**
Hassle costs	All provisions of the Detergents Regulation and its amendments	One-off costs of familiarisation with the provisions of the Detergents Regulation	Detergent and surfactant manufacturers /formulators	€7.6 million to €15.7 million
		On-going costs of keeping up to date with changes to the requirements		€37.8 million to €78.5 million
Total hassle costs				**€45.3 million to €94.2 million**
Total				**€763.8 million to €1,788.4 million**

7.2.8 Difficulties faced by companies in implementing the Detergents Regulation

In response to the OPC, companies were asked whether they have experienced any difficulties in implementing the requirements of the Detergents Regulation. As shown in Figure 7-8, 43% of the companies that answered this question said "yes". It should be noted, however, that this is based on a small sample size of just seven respondents.

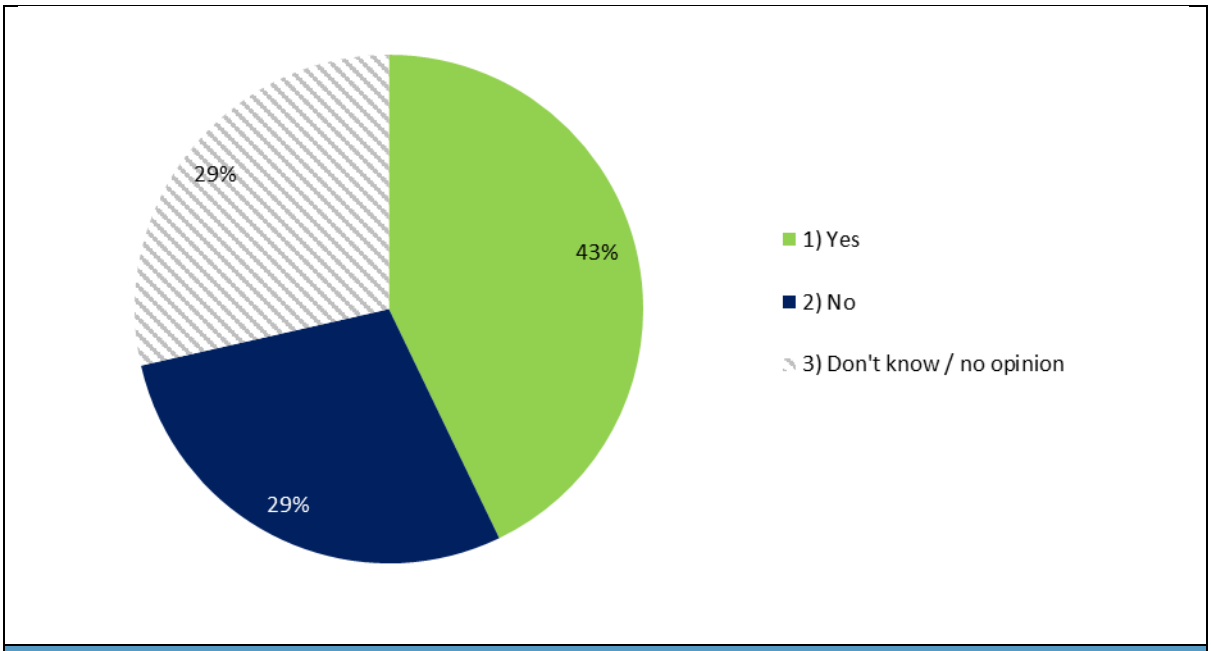


Figure 7-8: If you are responding on behalf of a company, has your organisation experienced any difficulties in implementing the Detergents Regulation and its amendments? Responses to the OPC - Organisations. Responses from companies *(n=7)*

In contrast to the OPC responses, more than half of the SMEs that participated in the EEN survey indicated that they have not experienced any difficulties in implementing the Detergents Regulation and its amendments, as shown in Figure 7-9. Nearly half (45%), however, indicated that they had experienced difficulties in understanding and keeping up-to-date with changes in legal requirements and a similarly large proportion (42%) indicated that they had experienced difficulties related to the labelling requirements of the Regulation. Around one third of SMEs (34%) indicated that they had experienced difficulties in training staff to ensure compliance with the legal requirements, while about a quarter indicated that they had experienced difficulties in terms of complying with testing requirements (26%), complying with packaging requirements (26%), compiling and making available ingredient datasheets online (26%) and meeting administrative requirements (24%).

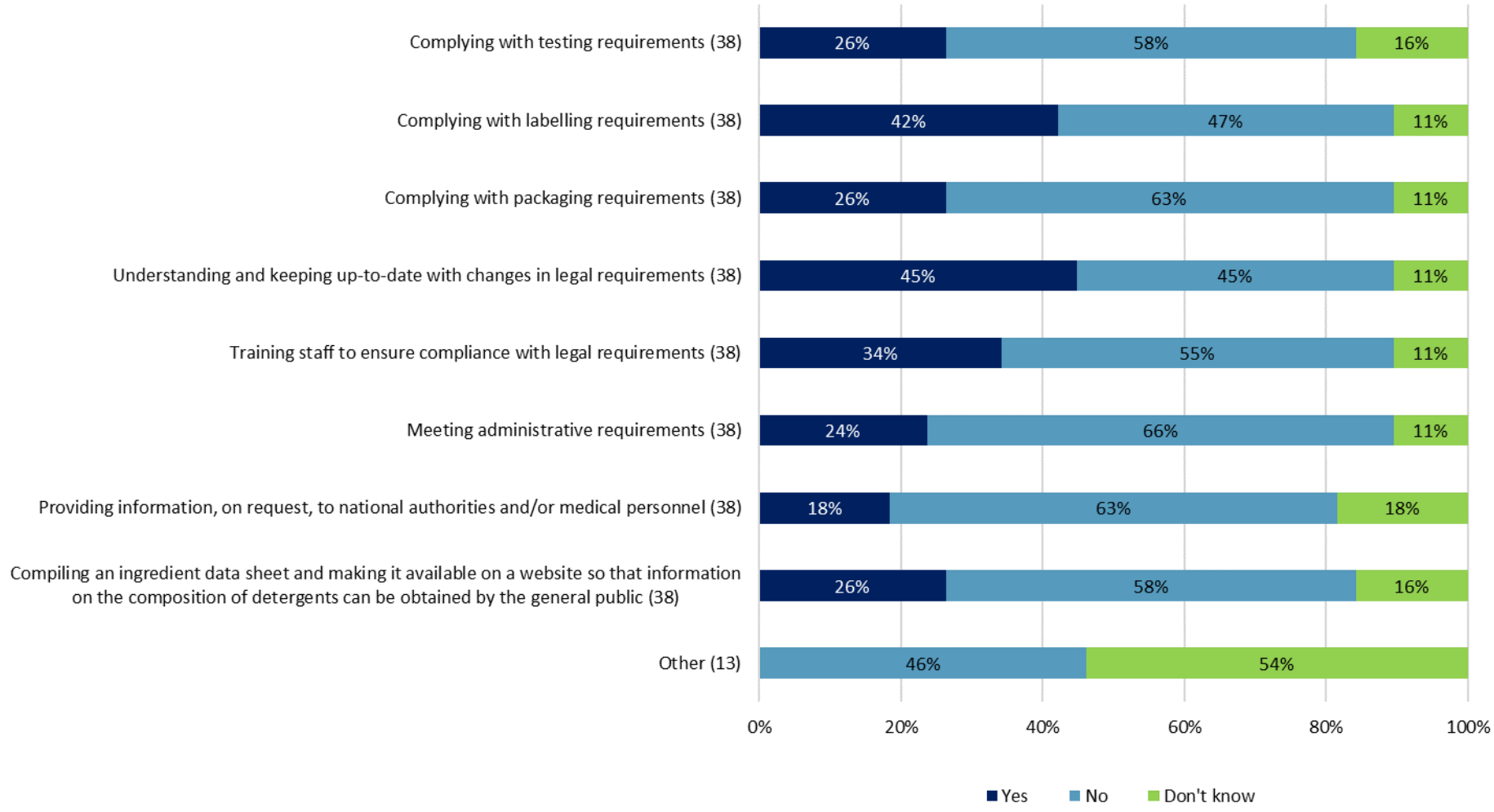


Figure 7-9: Has your organisation experienced any difficulties in implementing the Detergents Regulation and its amendments? Responses to the survey of SMEs conducted by EEN. *(n=13 to 38)*

It would appear that SMEs have turned to a variety of sources for help when faced with difficulties in implementing the Detergents Regulation. More than half (61%) indicated that they have used consultants, while 48% indicated that they have sought help from national authorities. Industry associations were also a popular source of assistance among SMEs, with 41% of respondents indicating that they have turned to them for help. It is worth noting that using lawyers and consultants is likely to have imposed an additional cost burden on SMEs (as opposed to national authorities and ECHA that would give advice for free).

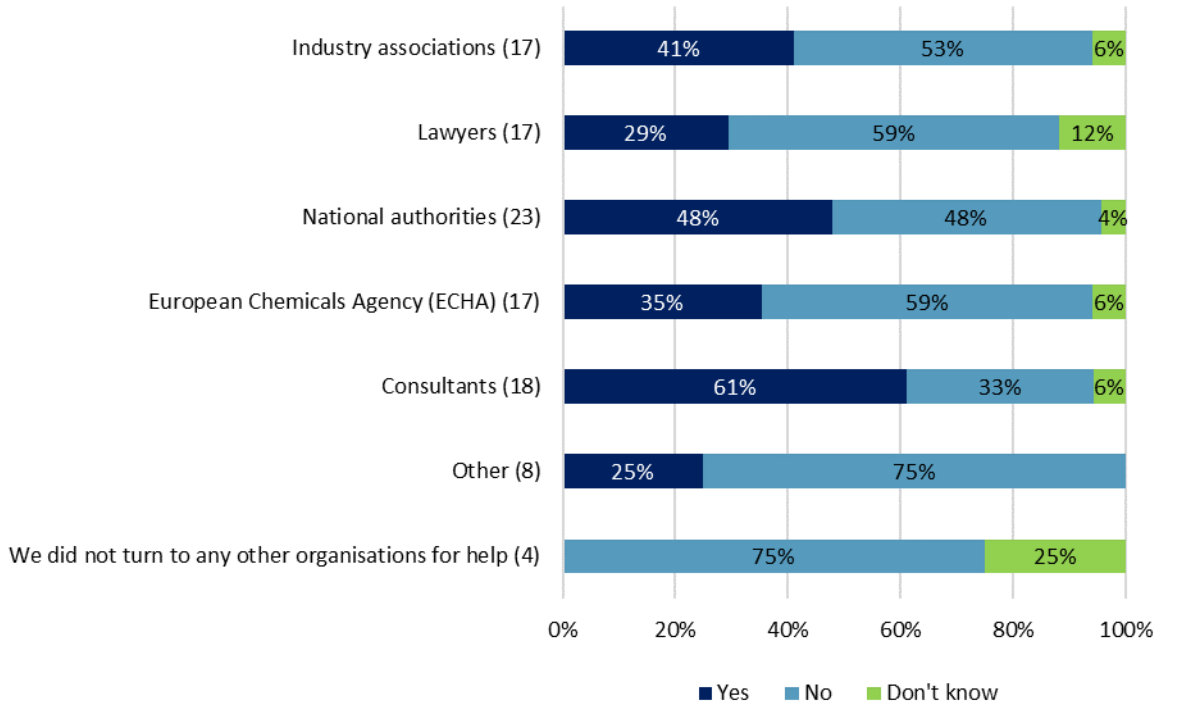


Figure 7-10: If respondents answered yes to the question 'Has your organisation experienced any difficulties in implementing the Detergents Regulation and its amendments?', they were asked which organisations did you turn to for help? Responses to the survey of SMEs conducted by EEN. *(n=4 to 23)*

SMEs that participated in the survey were asked to indicate how clear and operable they find the definitions provided in the Detergents Regulation. Out of the 40 SMEs that responded to this question, 38% indicated "very clear and operable", while a further 45% indicated "somewhat clear and operable". Only 8% thought that the definitions provided in the Detergents Regulation are not very clear or operable (see Figure 7-11).

SMEs were also asked to indicate how understandable they find the scope of the obligations provided in the Detergents Regulation. Of the 40 respondents, 30% indicated "very understandable" and 40% indicated "somewhat understandable". Only 13% of respondents consider the scope of the obligations provided in the Detergents Regulation are not very understandable (see Figure 7-12).

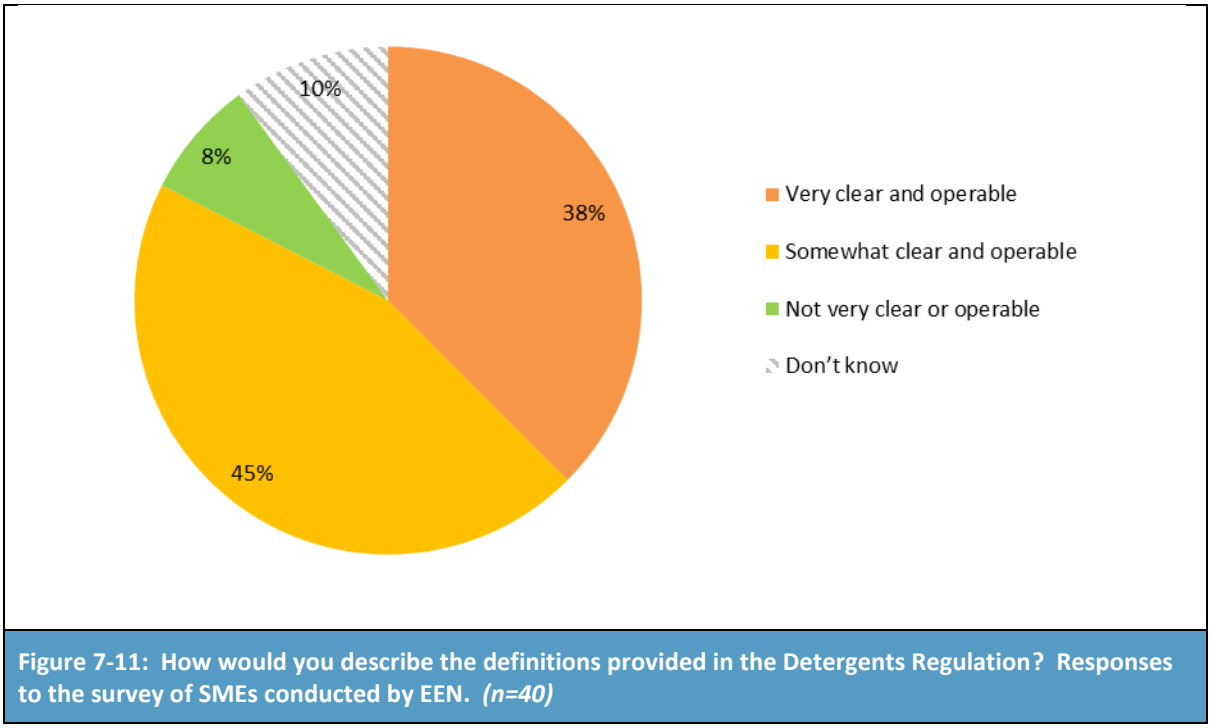


Figure 7-11: How would you describe the definitions provided in the Detergents Regulation? Responses to the survey of SMEs conducted by EEN. *(n=40)*

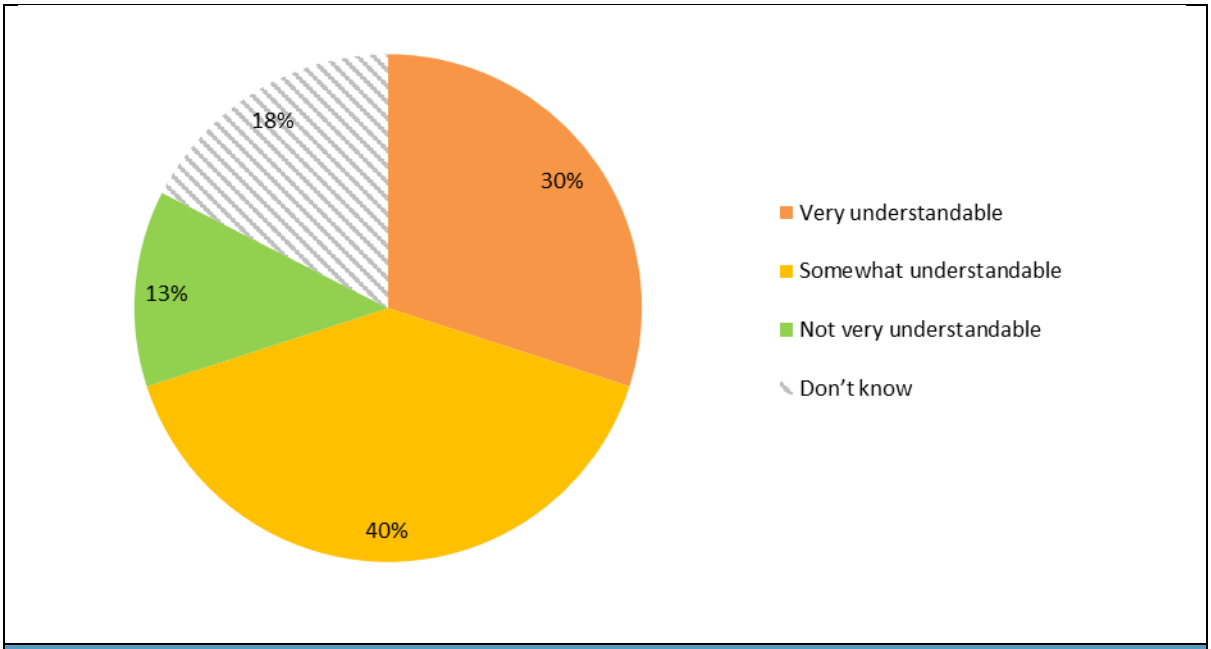


Figure 7-12: How would you describe the scope of the obligations under the Detergents Regulation? Responses to the survey of SMEs conducted by EEN. *(n=40)*

7.3 Benefits for industry associated with the implementation of the Detergents Regulation

7.3.1 Overview

The benefits of the Detergents Regulation for industry can be broadly split into:

- **Benefits for the detergents industry**, including manufacturers, formulators, importers and distributers of detergents and surfactants for detergents. Benefits include market opportunities, increased innovation and reduced costs, in part resulting from harmonisation and a more level playing field for manufacturers of detergents and surfactants in the EU;
- **Benefits for the water treatment industry** in terms of reduced costs for water treatment; and
- **Benefits for other sectors**, including other water users (e.g. companies that treat their own water and/or effluent, aquaculture, fisheries and tourism) and the commercial laundry sector (e.g. through improved labelling).

These are elaborated further in the sections below.

7.3.2 Benefits for the detergents industry

During the consultation, stakeholders were asked about the benefits of the Detergents Regulation for the detergents industry. While the views of all stakeholders have been considered in the following sections, the views of companies and industry associations are particularly important and have therefore been separated for the purposes of the analysis.

Levelled the playing field

As indicated in Figure 7-13, most organisations (76%) that participated in the OPC were of the view that the Detergents Regulation has helped to level the playing field for manufacturers of detergents and surfactants within the EU, although it is worth noting that this proportion is even higher when considering the responses from companies and industry associations alone (79%). A large proportion (53%) of the SMEs that responded to the survey was of a similar view (see Figure 7-13).

During the interviews, **industry associations and companies largely agreed that the Regulation has been a success in terms of levelling the playing field between MS**. For example, many stakeholders cited the harmonisation of requirements concerning the biodegradability of surfactants and the phosphorus content of consumer laundry and dishwasher products as being beneficial in this regard. Furthermore, it would appear that levelling the playing field has had some benefits in terms of cross-border trade (see Section 6.1.1) and generated cost savings for some enterprises in the sector.

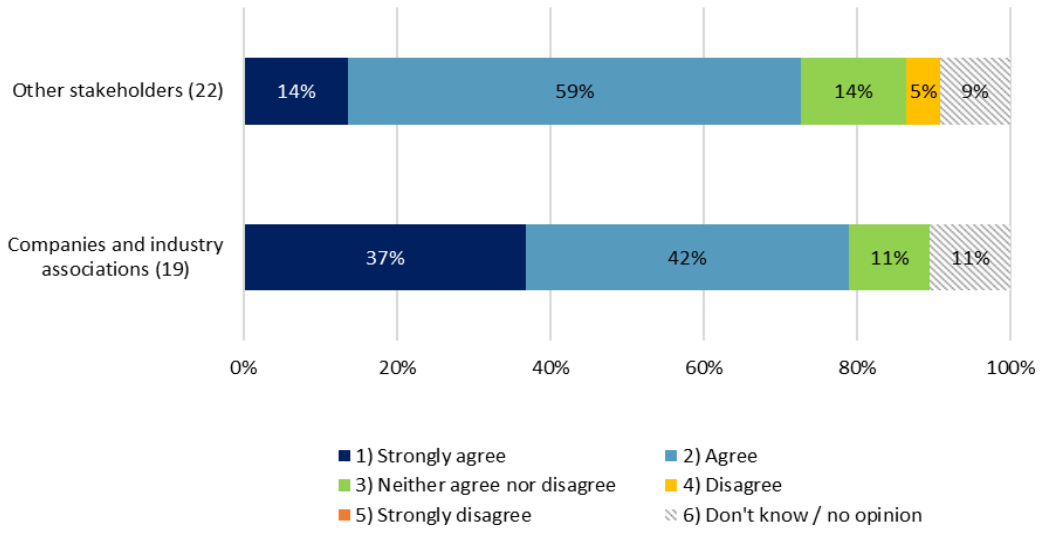


Figure 7-13: Has the Detergents Regulation levelled the playing field for manufacturers of detergents and surfactants within the EU? Responses to the OPC - Organisations *(n=41)*

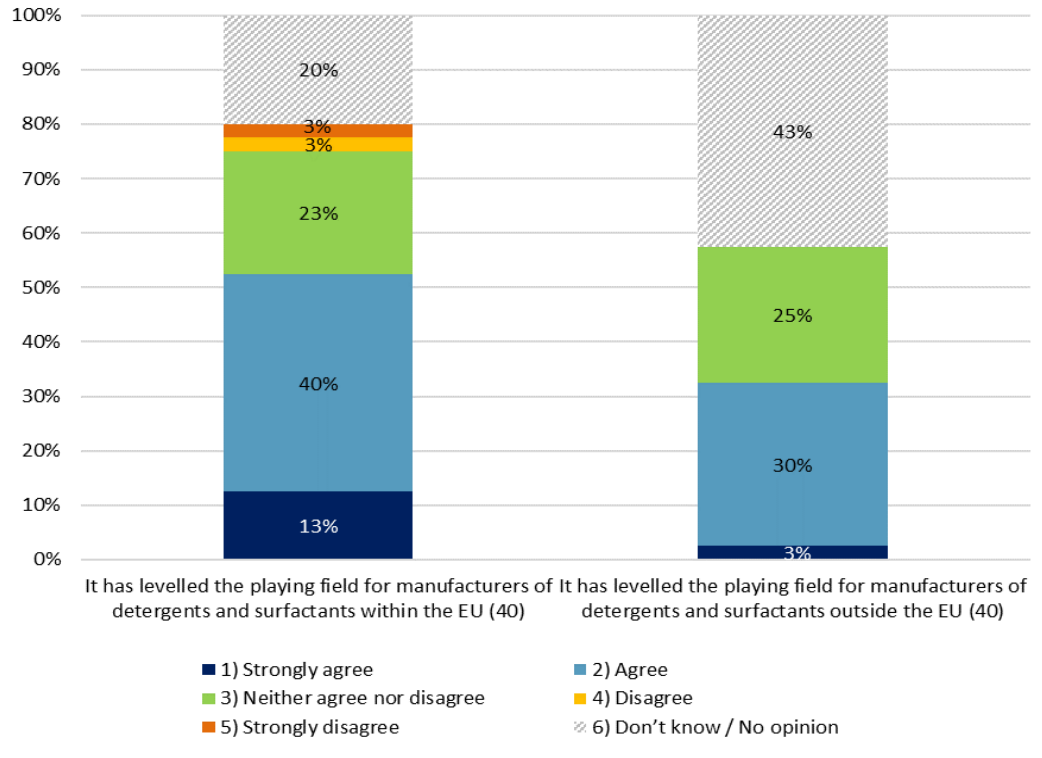


Figure 7-14: Has the Detergents Regulation levelled the playing field for manufacturers of detergents and surfactants within the EU. Responses to the survey of SMEs conducted by EEN (*n=40*)

The views of stakeholders can be illustrated by the following quotes, taken from the responses to the OPC, SME survey and targeted email consultation:

> *"A level playing field for all detergent manufacturers in terms of surfactants biodegradability and phosphorous content would not have been achievable* [in the absence of the Detergents Regulation]*: as of 2009 about 11 EU countries had in place measures to restrict phosphorous mostly on laundry detergents. It can be assumed that in these countries reformulation on laundry detergents was already achieved/under implementation. Only a limited number of EU countries (4) had in place phosphates restrictions for CADD (Consumer Automatic Dishwasher Detergents). Existing national rules were proposing country specific rules; therefore, the Detergents regulation has provided a level playing field."*
>
> *"…harmonisation has led to some cost savings for the surfactant industry."*
>
> *"harmonised rules for all EU countries support competitiveness within the EU for the surfactant industry."*
>
> *"The best benefit is the harmonisation in the EU that allows us to sell easily through Europe."*

Based on further analysis of the available information, we have identified two main counter-arguments to the view that the Detergents Regulation has levelled the playing field across the EU:

- Firstly, stakeholders noted that **some MS have put in place national provisions that go beyond the scope of the Detergents Regulation**. These are discussed at length in Section 8.1.2. In contrast to this view, one industry association from the Netherlands noted that the Regulation has helped to prevent the introduction of national rules concerning detergents that would have impacted on the trade in detergents between MS.

- Secondly, **some stakeholders (including AISE) noted that the Detergents Regulation (and the wider regulatory framework for chemicals) has imposed a disproportionately higher cost on SMEs** (as discussed in Section 7.2). Stakeholders explained that, in this regard, the Regulation cannot be viewed as having levelled the playing field for companies in the detergents sector.

Market opportunities

Nearly half (42%) of the industry stakeholders (companies and industry associations) that participated in the OPC disagreed that the Regulation has led to market opportunities. This is twice the number of industry stakeholders that agreed (21%) (see Figure 7-15).

It should be noted that before the 2012 amendment to the Detergents Regulation came into force, **it was expected that a restriction on the use of phosphorus in CADD would create new opportunities for EU producers, as phosphorus containing CADD had also been restricted or banned elsewhere in the world** (e.g. in the USA[170] and Canada[171]) (Bio by Deloitte, 2014).[172] During the interviews, one

[170] As of 2010, seventeen States in the US restricted phosphate-containing domestic dishwashing detergents and in 2010, CADD manufacturers that are members of the American Cleaning Council agreed to a voluntary ban on phosphates in CADD.

large company noted that it uses the Detergents Regulation when selling a product outside of the EU (e.g. to Russia). The stakeholder explained that it is easier for a Russian consumer if the company can say that its products comply with the Detergents Regulation.

Within the EU, it would appear – based on the information gathered during the consultation - that **the Detergents Regulation has made it easier for companies to participate in cross-border trade**. Several industry associations and companies remarked that it is easier to sell products in other countries when those countries have the same rules in place. One large company, for example, noted that it sells about 80% of its products to other EU MS and that it would be "a nightmare" if there were different rules in place in different countries. For further information on the impacts of the Detergents Regulation on intra-EU trade, see Section 6.1.1.

Of course, making it easier for companies to sell their products in different countries was not viewed as positive by all. One small company from Germany, for instance, pointed out that there is now more competition on the German market for detergents as a result of the Detergents Regulation, making it harder for the company to compete.

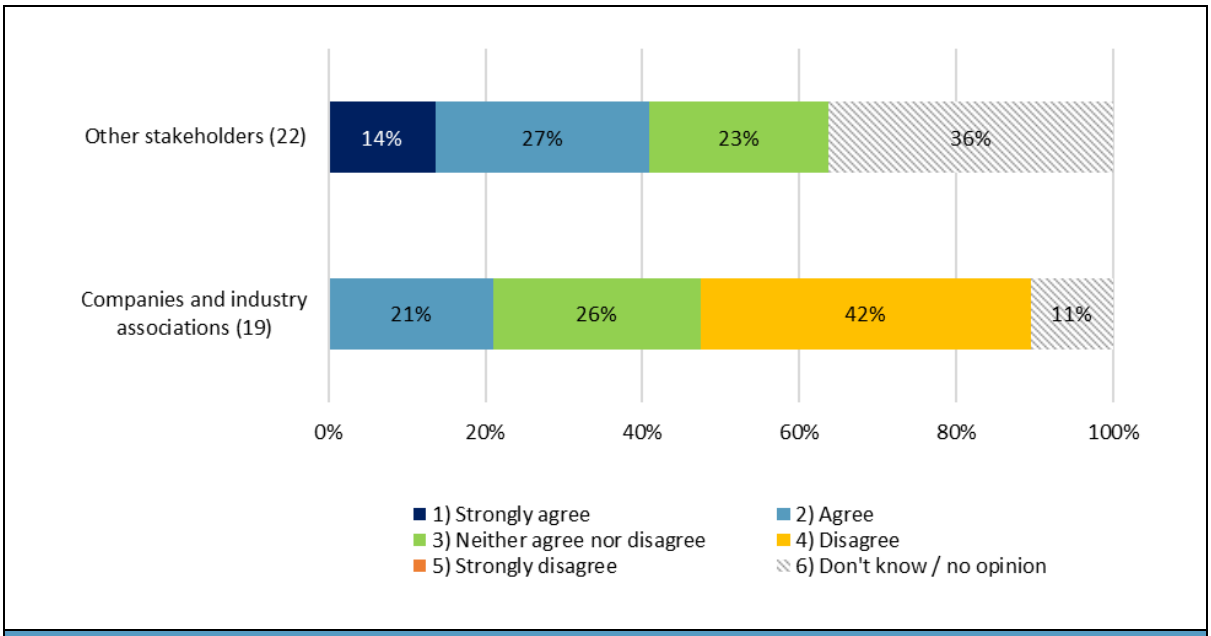


Figure 7-15: Has the Detergents Regulation has led to market opportunities? Responses to the OPC - Organisations *(n=41)*

[171] Canada imposed a limitation on phosphorus content of 0.5% for phosphorus and 1.1% for phosphorus pentoxide in household dishwashing detergents from 2010.

[172] Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

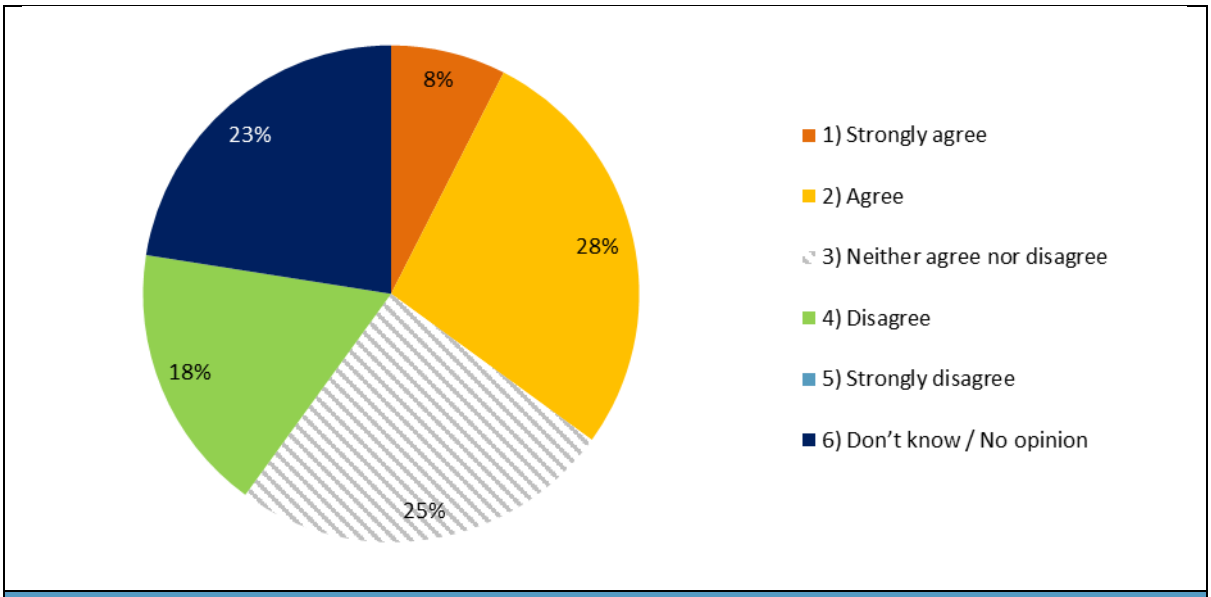


Figure 7-16: Has the Detergents Regulation led to market opportunities for my company? Responses to the survey of SMEs conducted by EEN *(n=40)*

Innovation

It would appear that **the Detergents Regulation has had a mixed effect in terms of innovation**.

On the one hand, industry has noted that **new products have been developed in response to the Detergents Regulation**, particularly in response to the phosphorus limits introduced for CADD. While the introduction of concentration limits for phosphorus in consumer laundry detergents was also viewed as a stimulant for innovation by some stakeholders, the effects were identified as being less strong (mainly because many MS already had restrictions in place before Regulation (EU) No 259/2012 came into force and alternative formulations were already available). The biodegradability requirements of the Detergents Regulation were also viewed as a driver for innovation. For example, one large company that sells products in multiple MS noted that an increasing number of manufacturers are proposing to use ecological, environmentally friendly and biodegradable surfactants. The stakeholder explained that ten years ago there were not many biodegradable surfactants available which compares to practically all manufacturers now offering biodegradable surfactants. The company also noted that the sector has changed its attitude in this regard, and that the Detergents Regulation has been a driver for this change.

On the other hand, several industry representatives noted that **resources had to be used to ensure compliance and that this reduced the total resources available for innovation.** As commented by AISE:

> *"… with budget limitations, many companies and particularly SMEs have had to focus on chemicals compliance (CLP, REACH, Biocides, Detergents) rather than research and innovation. This suggests that the new regulatory framework for chemicals and detergents may have set innovation back, perhaps for a number of years, and especially for SMEs, the section of the sector that generally makes a significant contribution to innovation."*

The Detergents Regulation may also have posed a barrier to innovation in other ways, for instance:

- **The labelling provisions of the Detergents Regulation may prevent some companies from changing their formulations.** Even slight changes to product formulas would require product labels to be updated, and this may be relatively costly for companies. One small company from Belgium, for example, noted that the Regulation prevents it from changing formulations because labels would need to be adjusted and, in this regard, the Regulation can be considered to have hindered innovation.
- **The requirement to publish ingredient lists on a public website could hinder innovation because confidential business information cannot be protected.** When asked about the main benefits of the Regulation, one large company commented that they can develop formulations based on the information available on the ingredients used in competitors' products (something they viewed as a minor benefit of the Regulation). AISE has remarked that companies could be reluctant to innovate in a sector where research and development investments cannot be protected for a sufficient period of time.
- During the survey one small enterprise (a formulator) noted that "**new solutions are harder to find because the regulatory Framework is stricter and less surfactants can be used**".

The view of SMEs is particularly important when considering the impacts of the Detergents Regulation in terms of innovation. The survey asked SMEs whether the Detergents Regulation has had any effect on their business in terms of the development of new products. As shown in the chart below, **38% of SMEs indicated that the Regulation has led to an increase in the development of new products**, while 50% indicated that the Regulation has had no effect (see Figure 7-17).

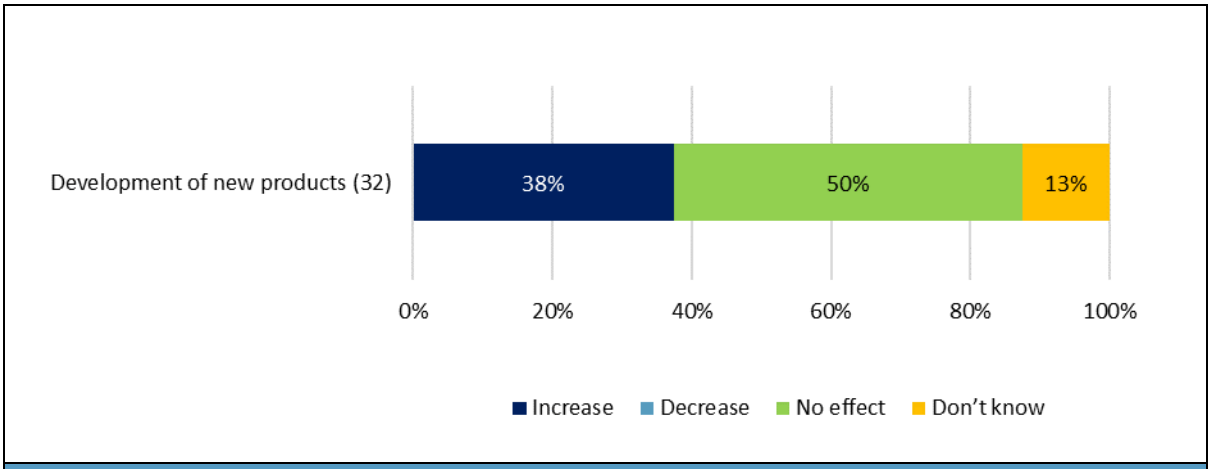


Figure 7-17: What effect did the Detergents Regulation have on your business? Responses to the survey of SMEs conducted by EEN *(n=32)*

During the OPC, 79% of companies and industry associations indicated that the Detergents Regulation has led to innovation in the detergents sector (Figure 7-18).

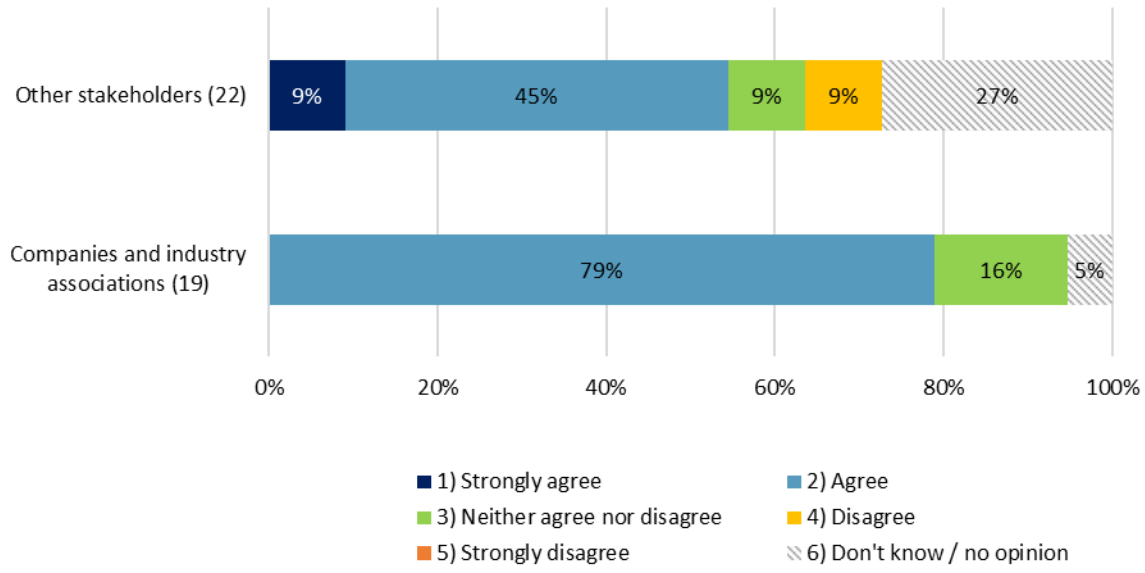


Figure 7-18: Did the Detergents Regulation lead to innovation in the sector? Responses to the OPC - Organisations (*n= 41*)

Nearly half the SMEs that participated in the survey conducted by EEN indicated that the Detergents Regulation has led to innovation in the detergents section (Figure 7-19). Only 11% disagreed.

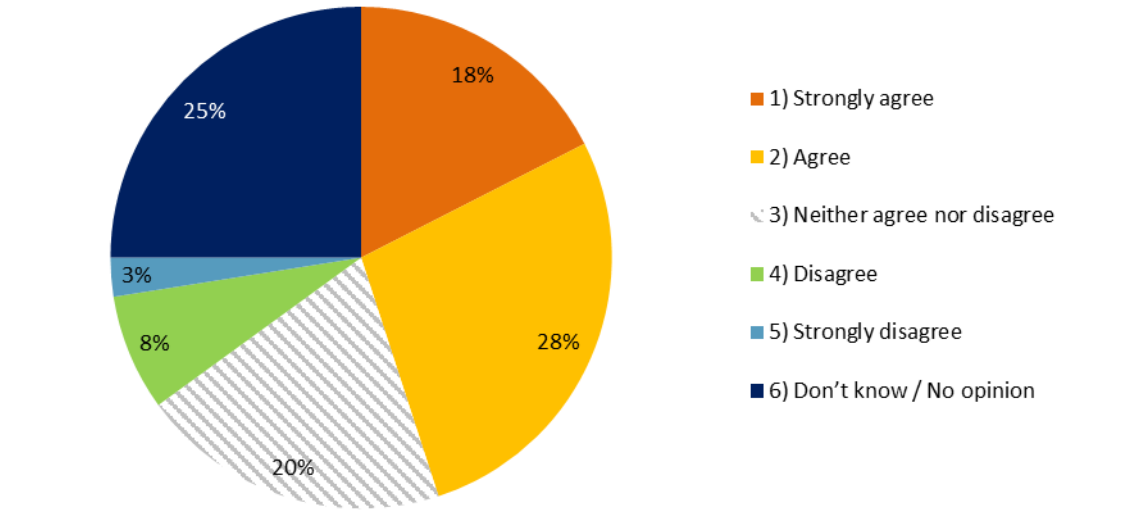


Figure 7-19: Did the Detergents Regulation lead to innovation in the sector? Responses to the survey of SMEs conducted by EEN (*n=40*)

Several stakeholders pointed out that the Detergents Regulation is by no means the only driver for innovation in the Detergents Sector. Customer demand was clearly highlighted as a major driver of innovation by several stakeholders; and one industry association also noted that ecolabels are a strong driver for innovation, at least in Denmark. As summarised by one industry association:

> *"YES, it has contributed but difficult to allocate which part of the innovations have been triggered by the Detergent Regulation."*

Corporate image

As shown in Figure 7-20, most (74%) companies and industry associations participating in the OPC thought that the Regulation has improved the corporate image of the sector. A similarly high proportion of SMEs (48%) also indicated this in the survey conducted by the EEN (Figure 7-21).

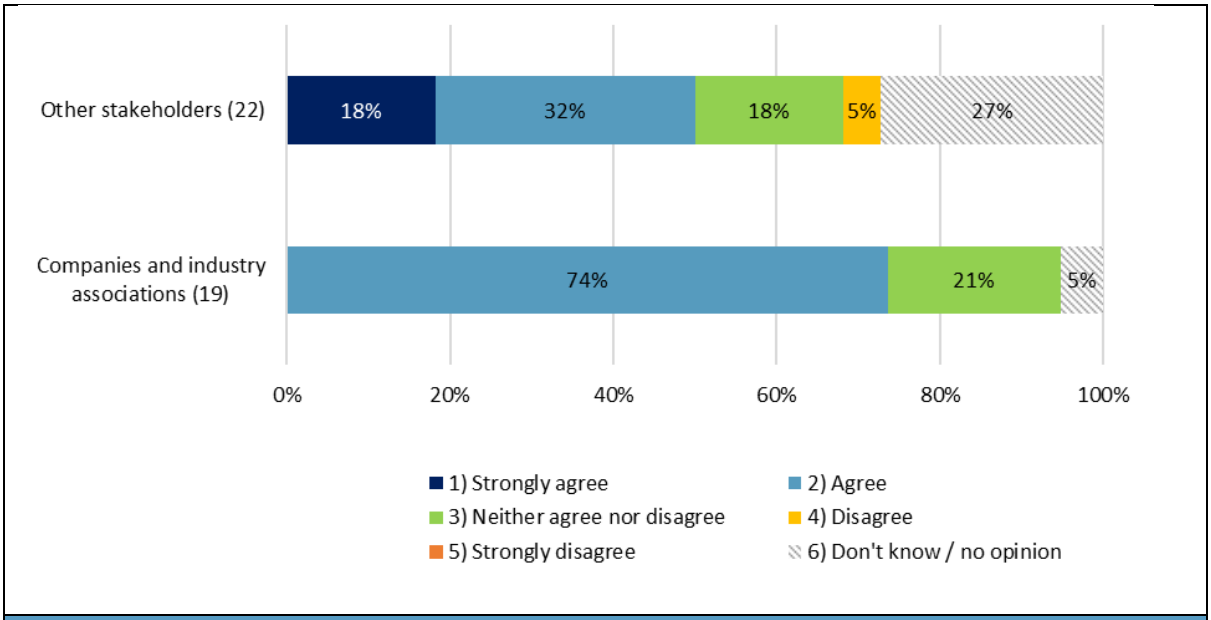


Figure 7-20: Has the Detergents Regulation improved the corporate image of the sector? Responses to the OPC - Organisations *(n=41)*

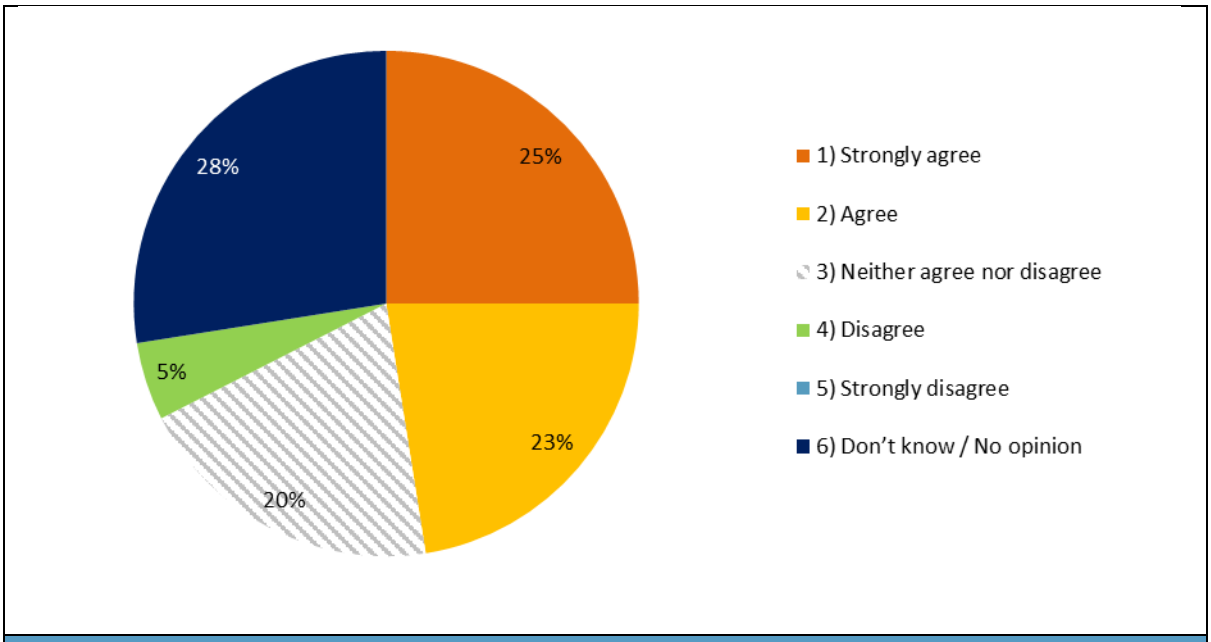


Figure 7-21: Has the Detergents Regulation improved the corporate image of the sector? Responses to the survey of SMEs conducted by EEN *(n=40)*

Stakeholders that participated in the telephone interviews had a more mixed view, with most stating that while the Regulation may have been beneficial in terms of improving the corporate image of the sector, it is not possible to determine this with any certainty.

It was noted that consumers' perceptions of the industry are heavily influenced by advertising from the major brands, and one SME also explained that:

> *"… consumer associations keep on accusing our sector and putting us at fault. Hence, even though the regulation allowed the sector to be elevated thanks to an efficient regulatory Framework, the consumers are not aware of the efforts that are made."*

Reduced risk of litigation

As shown in Figure 7-22, most companies and industry associations responding to the OPC did not think that the Regulation has helped to reduce the risk and associated cost of litigation for the detergents sector. In the interviews, industry stakeholders clarified that it is in the sectors' own interest to make products that are safe and that allergic reactions linked to detergents are relatively rare.

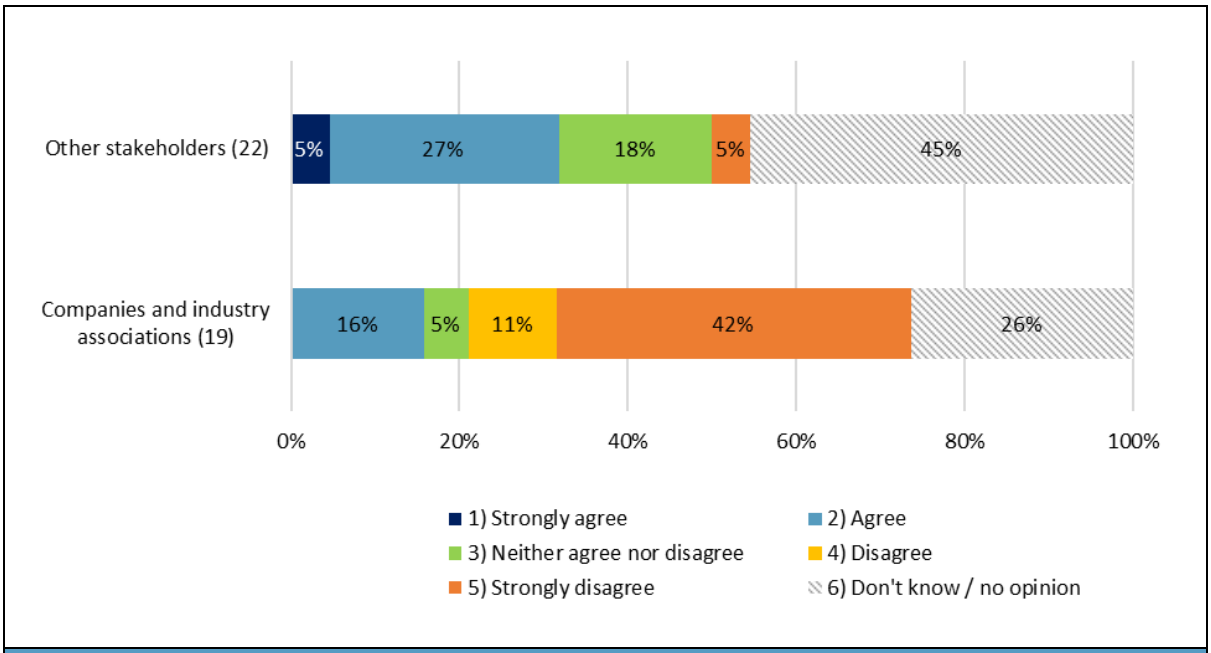


Figure 4-22: Has the Detergents Regulation reduced the risk (and associated cost) of litigation for the sector (e.g. due to a reduction in the number of allergic reactions, poisoning incidents). Responses to the OPC - Organisations *(n=41)*

It is interesting to note that, in contrast to the data shown in Figure 7-23, most SMEs thought that the Detergents Regulation had helped to reduce the risk and associated cost of litigation (Figure 4-59). One possible interpretation is that SMEs find the Detergents Regulation easier to comply with than the legislation that was previously in force. However, this was not remarked upon by stakeholders during the consultation.

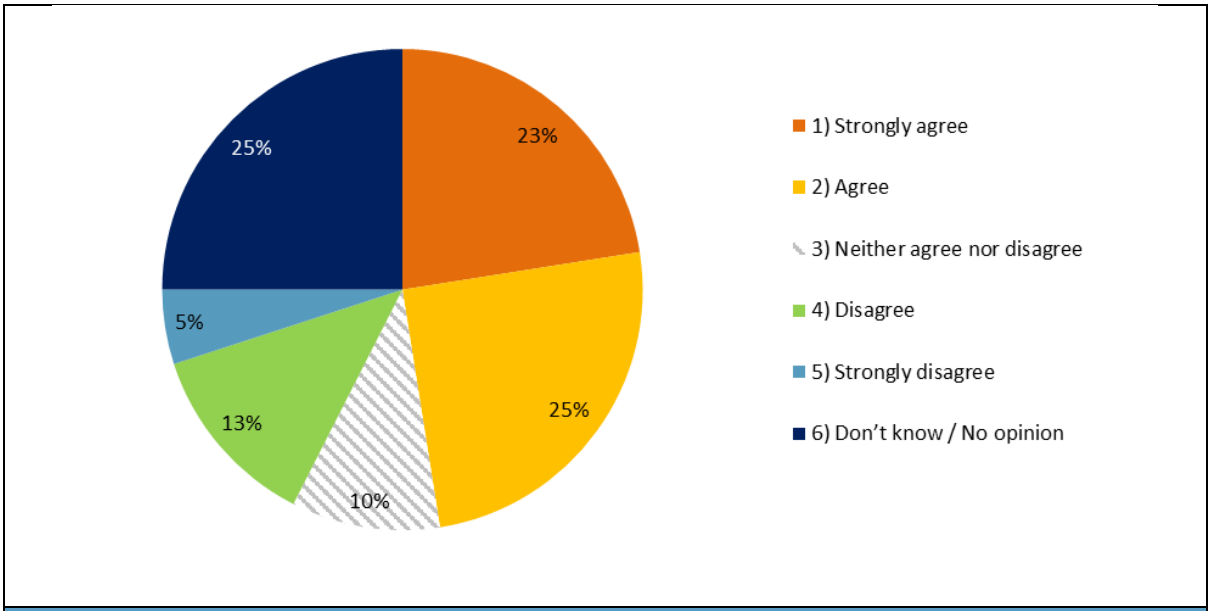


Figure 7-23: Has the Detergents Regulation reduced the risk (and associated cost) of litigation for the sector (e.g. due to a reduction in the number of allergic reactions, poisoning incidents). Responses to the survey of SMEs conducted by EEN *(n=40)*

Other benefits

As shown in Figure 7-4, the price of phosphorus can be prone to sudden increases (e.g. as occurred in 2008). To some extent, companies may have benefitted from a reduced risk to sudden price shocks.

7.3.3 Benefits for the water industry

The water industry - including both drinking water suppliers and waste water treatment works - is one of the main beneficiaries of the environmental provisions of the Detergents Regulation.

In line with Article 16 of the Detergents Regulation, in 2014 the Commission concluded a study[173] evaluating whether the phosphorus limits in CADD (as stipulated in Annex VIa to the Regulation) should be modified. This report included, in Section 5.1.4, consideration of the economic impacts of the limits on waste water treatment facilities in the EU. It found that:

- For the whole EU, it would cost somewhere between €10 million and €86 million (in terms of operating costs) to remove all the phosphorus from detergents (approximately 110,000 tonnes) using tertiary water treatment. This assumes a tertiary water treatment connectivity rate of between 20% and 90%;
- In the UK, phosphorus removal costs in the region of €30/kg of phosphorus, where this includes both capital and operating costs;
- The cost for phosphate removal ranges from €0.0469 to €5.31 per m^3 of wastewater, with costs depending on economies of scale for treatment;
- Reducing the phosphorus load would mean that less chemicals are needed to perform chemical tertiary treatment, which is estimated to cost €0.47/kg of phosphorus for buying the ferric salts alone (excluding capital costs); and
- Banning the use of phosphorus in household laundry and dishwasher detergents would reduce the need for chemical treatment, meaning that treatment could be conducted using biological processes instead. This would eliminate the operational costs associated with chemical treatment in wastewater treatment facilities.

In Belgium, phosphates have been prohibited in household detergents since 2003.[174] During the consultation, one actor from the water sector confirmed that before this ban, it was taken that Belgian inhabitants emitted on average 4g of phosphate per day. After the ban on phosphate in household detergents was introduced, this fell to an average of 2g of phosphate per inhabitant per day. The stakeholder however noted that it would be very difficult to determine how this change in phosphorus emissions translated into a change in the costs faced by waste water treatment plants. It was noted that if chemicals (such as ferric chloride, which is used to precipitate phosphorus) are not used to remove phosphate, then it is difficult to determine the cost of treatment. This is because alternative methods for removing phosphorus also remove other chemicals from the waste

[173] Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT, available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

[174] Federal Public Service (2016): Effect of detergents on the environment. Available at: http://www.health.belgium.be/en/effect-detergents-environment

water, making it difficult to attribute the cost savings specifically to phosphorus. For example, a 50% reduction in phosphorus levels in wastewater could result in more than a 50% cost saving.

Furthermore, the treatment of phosphorus in wastewater depends on the quality of the water in the receiving waterbody and downstream watercourse. If the downstream or receiving waterbody is sensitive to further inputs (e.g. because it is already impacted by other pollutants or pressures), then a greater level of treatment is required to remove phosphorus from the wastewater.

An Explanatory Memorandum prepared by the UK Department for Environment, Food and Rural Affairs (Defra, 2010)[175] to accompany the Detergents Regulations 2010 notes that surfactants reduce the oxygen transfer efficiency of sewage treatment works and that an increase in biodegradability might result in a reduction in running costs. The Memorandum also states, however, that "*no evidence is available to quantify this potential benefit, although opinion is that it is likely to be marginal*".

Similarly, during the consultation, one actor from the water sector indicated that the length of time it takes for a surfactant to biodegrade is important. This is because if a surfactant biodegrades quite quickly (within a few days), then it may biodegrade within the waste water treatment system and would not therefore require treatment at the waste water treatment plant.

7.3.4 Benefits for other sectors

In addition to water utilities and waste water treatment works, a broad range of other water users may have benefitted from the environmental provisions of the Detergents Regulation.

During the OPC, organisations were asked whether the Detergents Regulation has led to benefits for other industry sectors (for example, tourism and commercial fisheries due to reduce phosphorus emissions to the aquatic environment). Unfortunately, most stakeholders (41%) were not able to provide an opinion. Out of the 41 stakeholders that responded to this question, 17% said that the Detergents Regulation has benefitted other industry sectors, while 29% said that they disagree.

By reducing phosphorus emissions from detergents, and associated eutrophication, the risk of excessive algal growth should have been reduced, with this having important economic implications for **power companies**, due to filter blockages at abstraction points (Environment Agency, 2016).[176] Eutrophication is also a concern for **aquaculture and fisheries** as algae can produce toxins that contaminate fish and seafood, making it unfit for human consumption.

When toxins are released during an algal bloom, they can make waterbodies unsafe for recreational use. Toxic algae may be ingested accidentally during direct water contact (e.g. while windsurfing, canoeing, swimming, etc.) or dry particles of algae may be inhaled (e.g. by picnickers, dog walkers, runners, etc.).[177] Eutrophication can also cause waterbodies to look unsightly and have an

[175] Defra (2010): Explanatory Memorandum to the Detergents Regulation 2010, No. 740. Available at: http://www.opsi.gov.uk/si/sis16-03

[176] Environment Agency (2016): Climate change and eutrophication risk in English rivers. Available at: https://www.gov.uk/government/publications/climate-change-and-eutrophication-risk-in-english-rivers

[177] Anderson DM et al. (2002): Harmful algal blooms and eutrophication: Nutrient sources, composition and consequences, Estuaries Vol 25, No. 4b, pp 704-726. Available at: www.whoi.edu/cms/files/Anderson_etal_2002_Estuaries_29903.pdf

unpleasant smell. It is therefore likely that the Detergents Regulation has led to benefits for the **recreation and tourism industry**.

The **agriculture sector** is another key water user that may have benefitted indirectly. Many farms abstract water directly from waterbodies (lakes, rivers, groundwater, etc.) to supplement, or fully substitute, water from a treated municipal source. Eutrophication can make water unsafe for livestock watering and irrigation, leading to additional costs for farms. The Detergents Regulation may therefore have marginally reduced costs to the agriculture sector.

Other damage costs related to eutrophication that may have been reduced due to the Detergents Regulation include health costs to pets, clean-up costs of waterways (e.g. dredging, weed-cutting) and a reduced value of waterside properties (Pretty et al., 2013).[178] For more information, see Section A2.4 of Annex 2.

In the EEN survey, SMEs were asked whether the Detergents Regulation has resulted in benefits to other industry sectors, with the example of the commercial laundry sector given (which it was anticipated may have benefitted from the labelling provisions). As shown in Figure 7-25 below, 41% of organisations that responded to the survey agreed that the Regulation has resulted in benefits to other industry sectors, while only 3% of respondents disagreed.

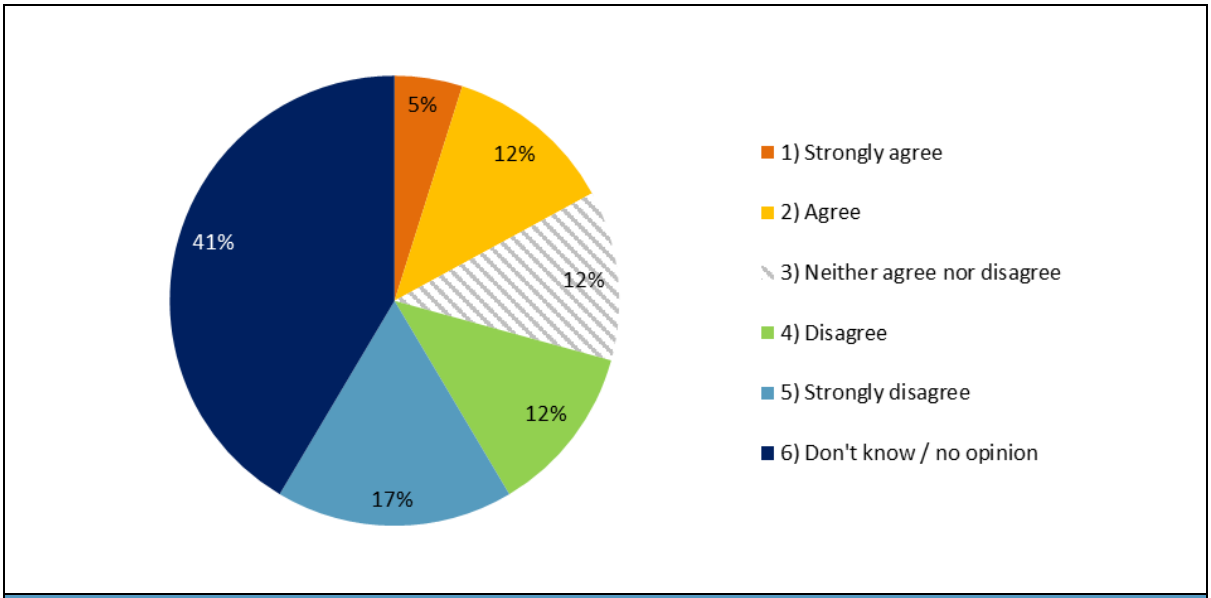


Figure 7-24: To what extent do you agree with the following statement regarding the benefits of the Detergents Regulation: The Detergents Regulation has resulted in benefits to other industry sectors (e.g. tourism and commercial fisheries due to reduced phosphorus emissions to the aquatic environment). Responses to the OPC - Organisations. *Number of responses, n=41*

[178] Pretty JN et al. (2003): Environmental costs of freshwater eutrophication in England and Wales, Environmental Science and Technology, Vol 37 (2), pp 201-208, available at: http://pubs.acs.org/doi/pdf/10.1021/es020793k

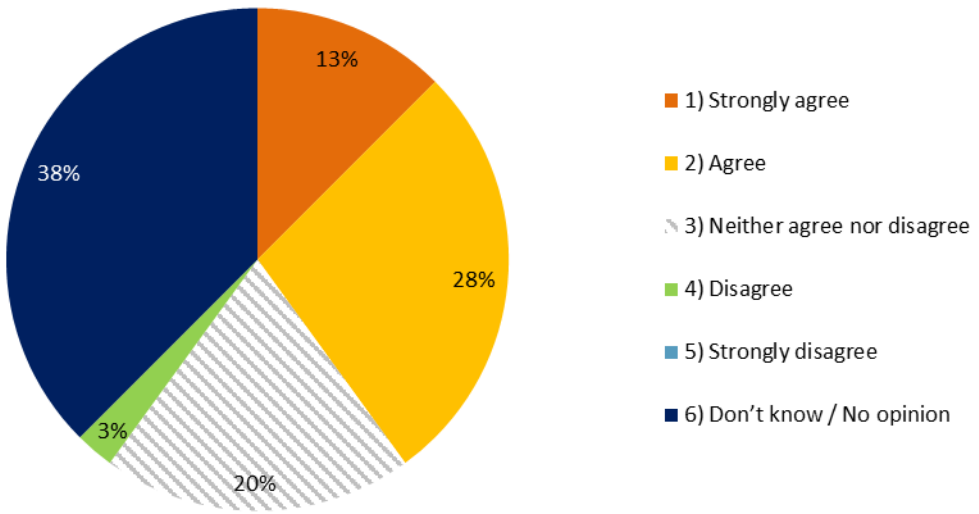


Figure 7-25: Has the Detergents Regulation resulted in benefits to other industry sectors (e.g. to the commercial laundry sector through improved labelling of ingredients)? Responses to the survey of SMEs conducted by EEN (*n=40*)

7.4 Costs for society associated with the implementation of the Detergents Regulation

7.4.1 Impacts of Regulation (EU) No 259/2012 (phosphate limits)

Availability of alternatives to phosphorus in consumer laundry detergents

Technically feasible alternatives to phosphorus in consumer laundry detergents were available, and already on the market in the EU, before Regulation (EU) No 259/2012 came into force. As shown in Table 7-12, in many EU countries a large share of the consumer laundry detergent market was already phosphate-free by the early 2000s; and presumably an even larger proportion of the EU market was phosphate-free a decade later (i.e. by 2012), when the new limits on the content of phosphorus in consumer laundry detergents were enacted in Regulation (EU) No 259/2012.

Table 7-12: Degree to which EU25 countries were phosphate-free (laundry detergents) in the early 2000's

Country	Population	% Phosphate-Free
Belgium	10.4	100%
Czech Republic	10.2	35%
Denmark	5.4	80%
Germany	82.5	100%
Estonia	1.3	20%
Greece	11.0	50%
Spain	42.2	40%
France	59.9	50%

Table 7-12: Degree to which EU25 countries were phosphate-free (laundry detergents) in the early 2000's		
Country	**Population**	**% Phosphate-Free**
Ireland	4.0	100%
Italy	57.8	100%
Cyprus	0.7	20%
Latvia	2.3	20%
Lithuania	3.4	20%
Luxembourg	0.4	100%
Hungary	10.1	30%
Malta	0.4	20%
Netherlands	16.2	100%
Austria	8.1	100%
Poland	38.2	15%
Portugal	10.4	30%
Slovenia	2.0	95%
Slovakia	5.4	20%
Finland	5.2	90%
Sweden	9.0	85%
United Kingdom	59.5	55%
EU-25	**456.0**	**66%**
Source: RPA (2006): Non-surfactant organic ingredients and zeolite-based detergents, Final Report for the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/14124/attachments/1/translations *Note: Countries which were 100% phosphate-free in the early 2000's have been highlighted in dark grey. Countries >80% phosphate-free are highlighted light grey.*		

Availability of alternatives to phosphorus in CADD

Article 16 of Regulation (EU) No 259/2012 required the Commission to undertake - by 31 December 2014 - a "*thorough assessment*" considering "*any existing or new scientific information available … regarding substances employed in phosphates-containing and alternative formulations*", in order to decide whether the restriction set out in Annex VIa point 2 of the Regulation (which sets the limit of 0.3 grams in the standard dosage for CADD as from 1 January 2017) should be modified. One of the supporting studies to this assessment, undertaken by Bio by Deloitte in 2014[179], observed that technically feasible alternatives for phosphate in CADD were available on the EU market and that:

- In 2011, only 38% of CADD on the French market contained phosphates;
- In 2013, 5% to 10% of CADD on the Italian market were phosphate-free;
- In 2014, over 90% of the CADD sold in Europe by one of the region's leading manufacturers were phosphate-free; and

[179] Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

- By 2014, most major companies had already developed (and were offering for sale in some EU MS) some phosphate-free CADD products.

Nevertheless, one "important European manufacturer" that provided information to Bio by Deloitte (2014) noted that only 5% to 10% of the "phosphate-free" CADD on the European market complied with the limit of 0.3 grams per wash, as set out in Regulation (EU) No 259/2012. This would suggest that some "phosphate-free" products on the market still contained phosphate, albeit at a lower concentration compared to a standard product.

Stakeholders that participated in the 2014 consultation conducted by Bio by Deloitte were asked about the possibility and desirability of the new limits on the phosphorus content of CADD from 2017 onwards. Their responses, shown in Figure 7-26 below, suggest that most stakeholders (78%) believed that it would be possible to meet the new limit of 0.3 grams phosphorus content in CADD and that most (69%) also found the new limits desirable. None of the stakeholders that participated in the consultation said that the new limits were impossible to achieve. The study also found that this high rate of acceptance was shared among MS, industry, and NGOs, and that water management companies also expressed their desire for limiting phosphorus at the source.

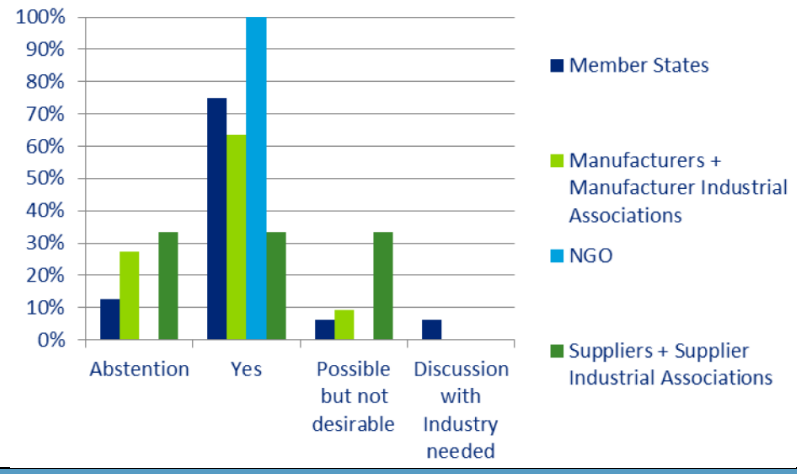


Figure 7-26: What is the possibility / desirability of the limit of 0.3 grams phosphorus content in CADD from 2017 onwards?
Source: Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report for the European Commission, Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

Impacts on price

The consultation undertaken by Bio by Deloitte (2014) found that the price of CADD seemed to be based mainly on performance and was not dependent on the presence of phosphate - seeing as both types of CADD were sold within approximately the same price range. Furthermore, most stakeholders (75%) that participated in Bio by Deloitte's survey did not expect costs to increase in a phosphate-free CADD market. With a complete switch to phosphate-free CADD, the majority of stakeholders expected prices for alternative substances to further decline.

During the interviews, industry stakeholders were asked whether any of the costs incurred by industry as a result of the Detergents Regulation had been passed on to consumers in higher prices. In response to this question, most organisations indicated that **although the industry faced some**

costs as a result of the Detergents Regulation, these have not been passed on to consumers. An SME from Belgium and an SME from Germany both noted that retailers are looking for lower prices and that, as a result, it is generally not possible for manufacturers to pass costs on. A large company from the Netherlands similarly explained that the supermarkets are responsible for setting prices, although detergent manufacturers also have to make sure their margins are not under too much pressure.

Impacts on cleaning performance

It is possible that by introducing new rules on the biodegradability of surfactants and by putting in place limits on the phosphorus content of detergents, the Detergents Regulation may have impacted the cleaning performance of detergent products.

Phosphates perform several tasks in detergents. They effectively dissolve dirt and keep it in suspension during washing, and make the water soft and slightly alkaline. This increases the performance of the detergent.[180] Tests on the cleaning efficiency of laundry detergents carried out around the year 2000 (i.e. before the Regulation came into force) found that phosphate-based detergents were generally preferred to those based on zeolite, although both types performed acceptably (WRc, 2002).[181] In CADD, the use of alternative builders reportedly led to some problems initially (for example, staining on glass in areas with hard water) (KemI, 2011).[182] However, even before the 2012 amendment came into force, phosphate-free CADD had a similar cleaning performance to the phosphate-containing CADD (Bio by Deloitte, 2014).

During the consultation, AISE confirmed that companies invested in alternative ingredients in order to comply with the biodegradability requirements and phosphorus restrictions, but that in so doing companies have been able to maintain, if not improve the cleaning performance of their products. One large company explained it had produced CADD that were as effective or more effective without phosphate than those containing phosphate. The company explained, however, that for laundry detergents the performance profile will have shifted (i.e. phosphate-free formulas may be better at removing some stains, but worse at removing others compared to formulas that contain phosphate).

Citizens that responded to the OPC were asked whether they have noticed any changes in the cleaning performance of detergent products over the course of the last decade. As shown in Figure 7-27, most citizens (39%) that responded to this question indicated that "the cleaning performance of detergent products has not changed". It would, therefore, seem that reducing the phosphorus content of detergents has not led to any discernible impacts for consumers, in terms of product performance. It should be noted, however, that most of the citizens that responded to the questionnaire were based in countries where phosphate-free laundry detergent products were already exclusively (or almost exclusively) in use before the 2004 Detergents Regulation, and its 2012 amendment, came into force. This may, at least in part, explain why no impacts were observed.

[180] Köhler J (2006): Detergent Phosphates: an EU Policy Assessment, Journal of Business Chemistry, 3(2), pp 15-30.

[181] WRc (2002): Phosphates and alternative detergent builders, final report for EU Environment Directorate. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/index_en.htm

[182] KEMI (2011): Phosphates in detergents, Questions and agreed answers. Available at: www.KemI.se/global/.../facts-phosphates-in-detergents-questions-and-answers.pdf

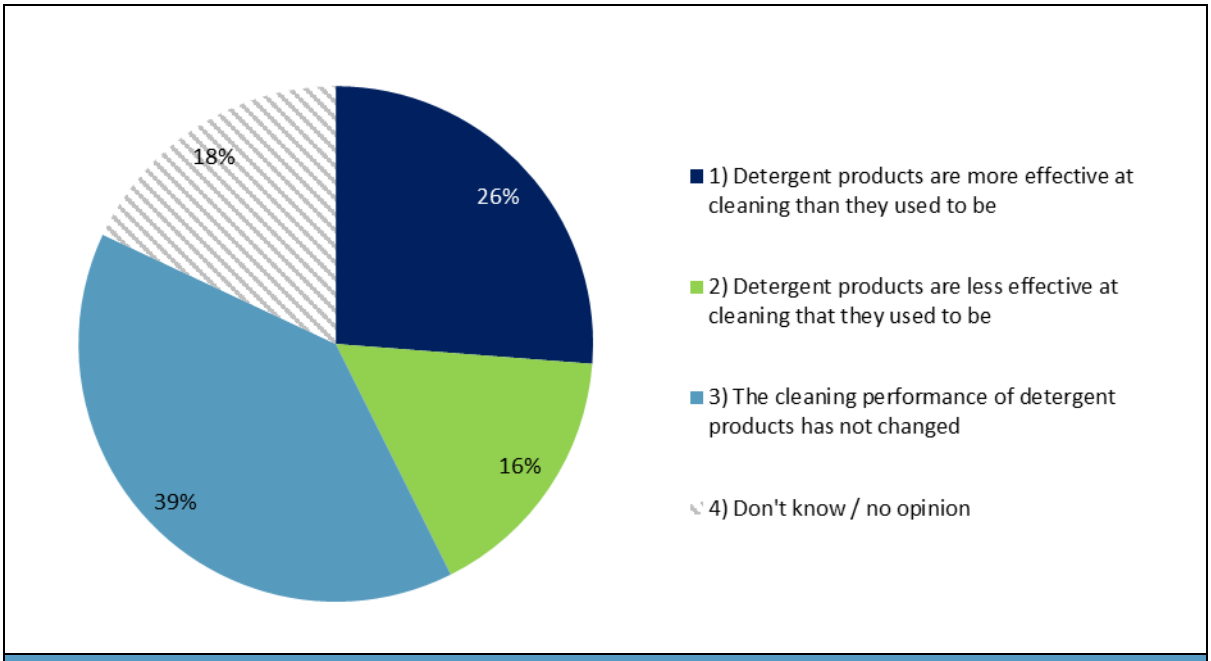


Figure 7-27: Do you think that the cleaning performance of detergent products (e.g. to wash clothes, to clean kitchenware, etc.) has changed over the course of the last decade? Responses to the OPC - Citizens. *(n=61)*

Impacts on consumer choice

During the survey, SMEs were asked whether they had to withdraw any detergent products from their portfolio as a result of the Detergents Regulation and its amendments coming into force. As shown in Figure 7-28, most SMEs have indicated that they did not withdraw any products from their portfolio, which suggests that the diversity of products on the market may not have significantly changed.

As outlined previously, stakeholders generally agreed during the consultation that the Detergents Regulation has stimulated innovation in the detergents sector. During the interviews, one company noted that there are more and more products appearing on the market that do not contain phosphorus, and that greener products are now available. A MS authority from Estonia similarly remarked that the selection of products available to consumers has increased.

At the workshop, one industry association explained that the Detergents Regulation has not had any adverse impacts on consumer choice.

Tale 7-13 overleaf provides an overview of the impacts of the Detergents Regulation in Sweden.

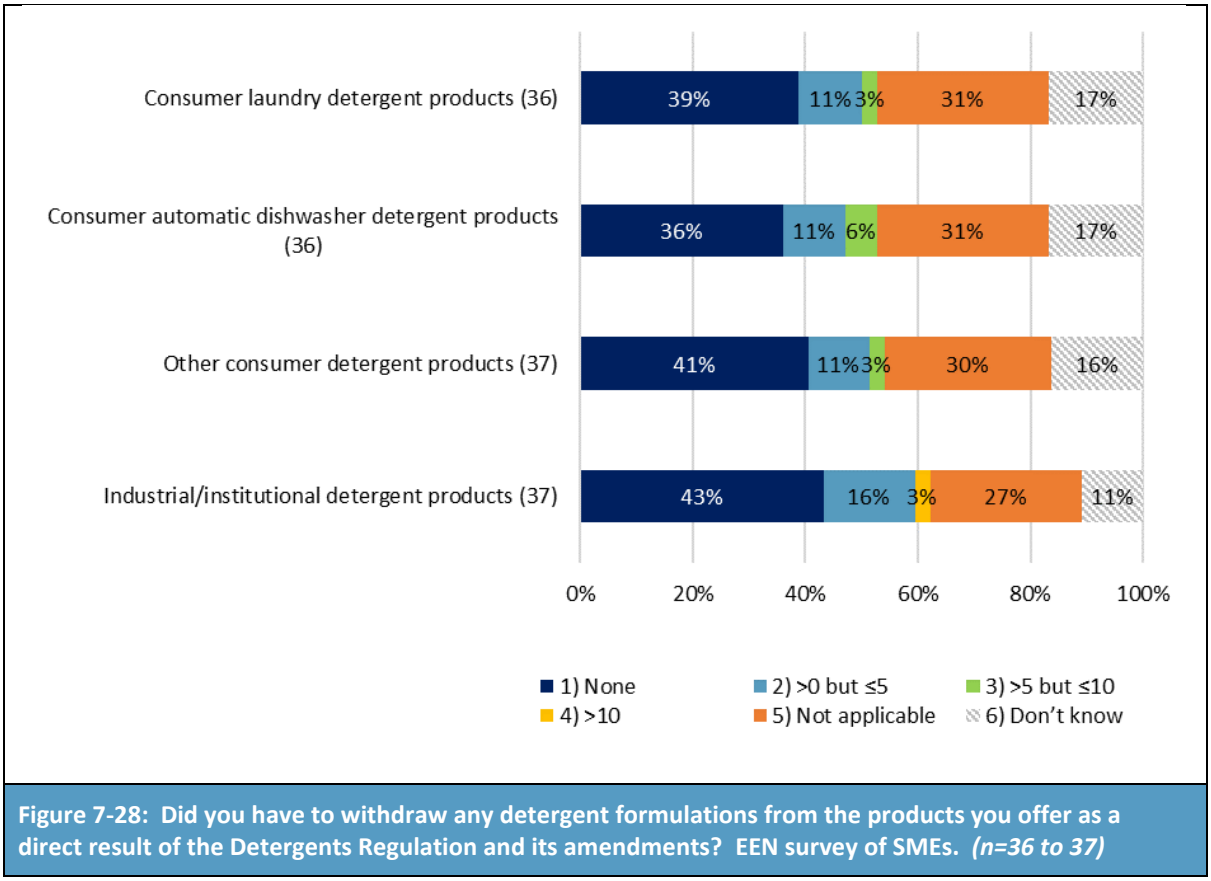


Figure 7-28: Did you have to withdraw any detergent formulations from the products you offer as a direct result of the Detergents Regulation and its amendments? EEN survey of SMEs. *(n=36 to 37)*

Table 7-13: Impacts of the Detergents Regulation in Sweden

Between 2005 and 2007, the phosphate-free CADD market in Sweden grew from 10% to 27%. By 2009, 69% of CADD sold in Sweden were phosphate-free. In March 2010, the Swedish Government decided to regulate the marketing and supply of dishwasher detergents containing phosphates and, in July 2011, introduced legislation restricting the use of phosphates in CADD.

When the restriction plans were announced, concerns were raised that the restriction would pose an obstacle to market entry for smaller domestic producers. In 2007, 74% of CADD produced in Sweden were phosphate-free. By 2009, 96% of CADD produced in Sweden were phosphate-free. Bio by Deloitte (2014) notes that this suggests that the small Swedish producers adapted to the ban more easily than producers of imported products.

Prior to the restriction, in 2006-2007, manufacturers raised concerns about raw material cost increases to replace STPP and the risk of poorer performance, such as filming on glassware for phosphate-free formulations (Bio by Deloitte, 2014). Bio by Deloitte (2014) report that the price of CADD in Sweden has not increased due to the phase out of phosphates and that consumers have not complained about any decrease in performance – something that Sweden supposedly attributes to the transitional period it set up for moving to a phosphate-free market.

Sources: KemI (2010)[183], Bio by Deloitte (2014)[184]

7.5 Economic, social and environmental benefits for society associated with the implementation of the Detergents Regulation

It was widely agreed during the consultation that new (greener) detergent products have been developed in response to the Detergents Regulation. It was also agreed that the Regulation has made it easier for companies to trade detergents cross-border within the EU. With these two factors in mind, it may be deduced that **the Regulation has probably increased consumer choice**.

As outlined in Annex 3, and summarised in Section 6.1.3 above, **the Detergents Regulation and its amendments are generally perceived as providing an enhanced level of protection to human health** (relative to the pre-existing situation); although, as noted by AISE and others during the consultation, the overall role of the Detergents Regulation in protecting human health can be considered negligible when compared to other applicable chemicals legislation (such as REACH, CLP and the Biocidal Products Regulation).

Although national poison centres were asked whether they have (or are aware of) any data on the number of cases of detergent related illness/incidents during the targeted consultation, no data were provided to the consultants. One national poison centre noted that:

[183] KemI (2010): Nationell reglering av fosfor i tvättmedel noch maskindiskmedel för enskilt bruk Förutsättningar och konsekvenser – rapport från ett regeringsuppdrag. Available at: www.KemI.se/global/rapporter/2010/rapport-4-10.pdf

[184] Bio by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

> *"We have an increasing number of detergent incidents. There are many factors that can affect the number of consultations to the poison centre, for instance the labelling on the products, warnings and campaigns from the agency or poisons centre. However, it is not possible to relate the number of incidents to the regulation."*

Since 2007, the German Cosmetic, Toiletry, Perfumery and Detergent Association (IKW)[185] has been conducting surveys asking its member companies about registered intolerances pertaining to detergents sold in Germany. The results, as outlined fully in Annex 3 (Section A3.2.2), indicate that there have been relatively few medically confirmed cases of allergies and skin irritations caused by detergents between 2006 and 2015[186]. Recall that the original Detergents Regulation only required labelling of allergenic fragrances if they were added in the form of pure substances; there was no requirement to declare them if they were added as constituents of more complex ingredients, such as essential oils or perfumes. In 2006, the Detergents Regulation was amended by Commission Regulation (EC) No 907/2006. The amendment required allergenic fragrances in detergents to be declared irrespective of the way they are added to the detergent should, in theory, have increased the effectiveness of the Regulation by making it easier for consumers to identify the presence of allergenic fragrances. Unfortunately, comparable data (pre-2006) on the prevalence of allergies and skin irritation related to detergents are not available in IKW's report.

While a theoretical reduction in the incidence of allergic reactions should have led to social and economic benefits for society (in terms of reduced discomfort for allergy sufferers, increased economic productivity (e.g. due to reduced time off work), reduced medical/healthcare costs, etc.), insufficient data are available on the relationship between the Detergents Regulation and incidence of allergic reaction to be able to quantify these impacts.

Nevertheless, as stated by one consumer organisation during the consultation:

> *"By protecting human health and environmental integrity, the Detergents Regulation has led to reduced public and private spending on health care services as well as on environmental remediation. These are clear benefits that could be further increased through more ambitious implementation of the core provisions of the Detergents Regulation."*

One of the anticipated benefits of the Detergents Regulation was that it would lead to improved information on product ingredients for consumers, enabling them to make more informed choices as to their preferred products.[187] During the consultation, one MS authority noted that:

> *"…the main benefits resulting from implementation of the Detergent Regulation is a correct information of consumers and a real protection of them."*

[185] IKW (2017): Annual Report, 2016-2017. Available at: http://www.ikw.org/fileadmin/content/z-IKW-ENGLISCH/IKW_Annual_Report_2016_2017_final.pdf

[186] only 28 medically confirmed cases of skin allergy, which equates to 2 cases per 1 billion packages sold; and only 121 medically confirmed cases of skin irritation, which equates to 7 cases per 1 billion packages sold.

[187] HM Government (2010): Explanatory memorandum to the Detergents Regulations 2010, 2010 No. 740. Available at: http://www.legislation.gov.uk/uksi/2010/740/memorandum/contents

Furthermore, one MS authority from Germany explained that the publication of the list of ingredients as set out in Annex VII D leads to transparency in product composition among consumers and authorities.

As elaborated in Annex 2 and summarised in Section 6.1.2 above, the Detergents Regulation and its amendments are generally perceived as having been effective in enhancing the biodegradability of surfactants and reducing the phosphorus content of consumer laundry detergents and CADD. As a result, it may be concluded that the Detergents Regulation has positively contributed towards the protection of the environment, and particularly aquatic ecosystems.

As discussed earlier, however, it is difficult to attribute any particular benefits associated with reduced eutrophication to the Regulation due *inter alia* to difficulties in source apportionment of phosphate emissions across the range of human and agricultural sources. However, it is expected that there will have been marginal benefits in relation to improvements in the quality of aquatic ecosystems, fisheries, water quality for abstraction purposes, and the aesthetic value of rivers and estuaries due to reduced algal blooms. Although its impacts cannot be quantified, the Regulation will have contributed alongside other EU water quality legislation (such as the Water Framework Directive and the Urban Wastewater Treatment Directive) to improving the quality of European waters. For further information on the economic consequences of eutrophication, see Annex 2 (Section A2.4).

7.6 Extent to which costs involved in implementing the Detergents Regulation are justified

The following table summarises the costs and benefits identified during the evaluation.

Table 7-14: Overview of costs – benefits identified in the evaluation									
		Citizens/consumers		Businesses		Administrations*		Other	
		Qualitative	Quantitative /monetary	Qualitative	Quantitative /monetary	Qualitative	Quantitative /monetary	Qualitative	Quantitative /monetary
One-off costs of research and development for reformulation (consumer laundry detergents and CADD)	Substantive compliance cost	N/A	N/A		€49.8 million to €252.4 million	N/A	N/A	N/A	N/A
One-off costs of changing production processes	Substantive compliance cost	N/A	N/A	Potentially substantial	Not calculated	N/A	N/A	N/A	N/A
On-going costs of using different raw materials in place of phosphorus	Substantive compliance cost	N/A	N/A		€479.7 million	N/A	N/A	N/A	N/A
One-off costs associated with testing the biodegradability of surfactants	Substantive compliance cost	N/A	N/A		€2.4 million to €18.0 million	N/A	N/A	N/A	N/A
On-going costs associated with testing the biodegradability of surfactants	Substantive compliance cost	N/A	N/A	Likely to be low	Not calculated	N/A	N/A	N/A	N/A

Table 7-14: Overview of costs – benefits identified in the evaluation									
		Citizens/consumers		Businesses		Administrations*		Other	
One-off costs of producing new labels for consumer detergents	Substantive compliance cost	N/A	N/A		€9.5 million to €163.5 million	N/A	N/A	N/A	N/A
On-going costs of keeping consumer detergent labels up-to-date	Substantive compliance cost	N/A	N/A		€9.5 million to €18.5 million	N/A	N/A	N/A	N/A
One-off cost of providing information on the content of industrial and institutional detergents by means of a technical datasheet / safety datasheet	Substantive compliance cost	N/A	N/A		€3.2 million to €10.3 million	N/A	N/A	N/A	N/A
On-going costs of keeping information on the content of industrial and institutional detergents up-to-date	Substantive compliance cost	N/A	N/A		€7.9 million to €30.3 million	N/A	N/A	N/A	N/A

Table 7-14: Overview of costs – benefits identified in the evaluation									
		Citizens/consumers		Businesses		Administrations*		Other	
One-off costs of compiling an ingredient datasheet	Administrative cost	N/A	N/A		€9.5 million to €25.8 million	N/A	N/A	N/A	N/A
On-going costs of keeping ingredient datasheets up to date	Administrative cost	N/A	N/A		€59.5 million to €162.2 million	N/A	N/A	N/A	N/A
One-off costs of providing ingredient datasheets online	Administrative cost	N/A	N/A		€0.9 million to €1.5 million	N/A	N/A	N/A	N/A
On-going costs of providing ingredient datasheets online	Administrative cost	N/A	N/A		€3.3 million to €5.4 million	N/A	N/A	N/A	N/A
One-off costs of providing ingredient datasheets to poison centres	Administrative cost	N/A	N/A		€11.3 million to €72.2 million	N/A	N/A	N/A	N/A
On-going costs of providing ingredient datasheets to poison centres	Administrative cost	N/A	N/A		€71.3 million to €453.8 million	N/A	N/A	N/A	N/A
On-going costs of providing	Administrative cost	N/A	N/A		€0.7 million to €0.8 million	N/A	N/A	N/A	N/A

Table 7-14: Overview of costs – benefits identified in the evaluation									
		Citizens/consumers		Businesses		Administrations*		Other	
ingredient datasheets to medical personnel									
One-off costs of applying for a derogation	Regulatory charge	N/A	N/A		€4,600 to €22,250	Some costs will have been incurred in processing derogation	Not estimated	N/A	N/A
One-off costs of familiarisation with the provisions of the Detergents Regulation	Hassle cost	N/A	N/A		€7.6 million to €15.7 million	N/A	N/A	N/A	N/A
On-going costs of keeping up to date with changes to the requirements	Hassle cost	N/A	N/A		€37.8 million to €78.5 million	Some costs may be incurred in informing national industry	Not estimated	N/A	N/A
Improved water quality	Benefit	Citizens stand to benefit from improved water quality (e.g. aesthetic value of water environment, increased opportunities for water-based recreation, etc.)	Not estimated	Benefit to water treatment industry (reduced costs for treating water) Benefit to other water users from	Not estimated	Reduced costs associated with remediation	Not estimated	Benefit to the environment from reduced detergent phosphorus emissions to waterbodies	Estimated reduction of about 55,000 tonnes of phosphorus per year (Source: AISE, pers. comm.)

Table 7-14: Overview of costs – benefits identified in the evaluation									
		Citizens/consumers		Businesses		Administrations*		Other	
				improved water quality (e.g. power companies, aquaculture, fisheries, agriculture, recreation, etc.)					
Reduced number of allergic reactions	Benefit	Benefit to human health from fewer incidence of allergic reaction to detergents	Not calculated	Improved corporate image of the sector	Not calculated	N/A	N/A	N/A	N/A
Increased consumer choice	Benefit	Benefit to consumers as a result of there being a wider range of 'environmentally friendly' detergent products available on the market	Not calculated	N/A	N/A	N/A	N/A	N/A	N/A
*note that costs and benefits for administrations have not been evaluated as part of this study									

As presented fully in Section 7.2.7, the detergents sector has incurred an estimated cost of between €764 million and €1.8 billion as a result of the Detergents Regulation over the 12 years since the Detergents Regulation first came into force. This equates to an annual cost of approximately €63.7 million to €149.0 million.

Organisations that participated in the OPC were asked whether they agree or disagree that the costs involved in implementing the Detergents Regulation are justified given the benefits that have, or that will, be achieved. The results are shown in Figures 7-29 and 7-30.

Out of the 40 organisation that responded to this question, 70% indicated that the costs are justified given the benefits that have already been achieved; 50% of organisations indicated that the costs are justified given the benefits that will be achieved in the longer term. In both instances, this is higher than the proportion that disagreed (5% and 23% respectively). It is interesting to note that these results are perhaps not as expected (in most cases, the benefits of a Regulation would be expected to accrue for a long time after stakeholders have faced the initial compliance cost). This may suggest that stakeholders are concerned about the ongoing cost of the Detergents Regulation (e.g. the costs associated with keeping labels and websites up to date), and/or that the main benefits of the Regulation (in terms of the environment, human health and the internal market) have already been achieved, and that stakeholders do not expect further benefits to accrue in the longer term. It is notable that 42% of industry stakeholders indicated that the costs involved in implementing the Detergents Regulation are not justified given the benefits that will be achieved in the longer-term, while 76% of other stakeholders believed that the benefits would be worth the costs in the longer-term (as shown in Figure 7-30).

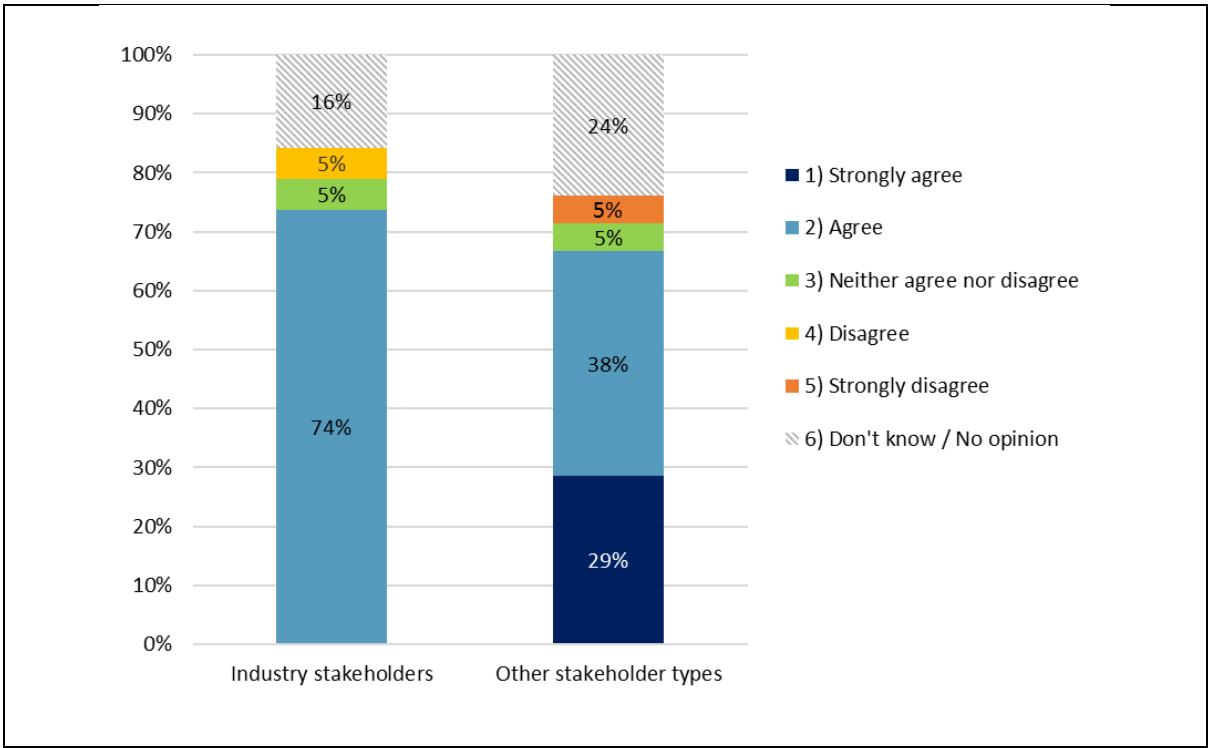


Figure 7-29: To what extent do you agree that the costs involved in implementing the Detergents Regulation are justified given the benefits that have been achieved? Responses to the OPC – Organisations *(n=40)*

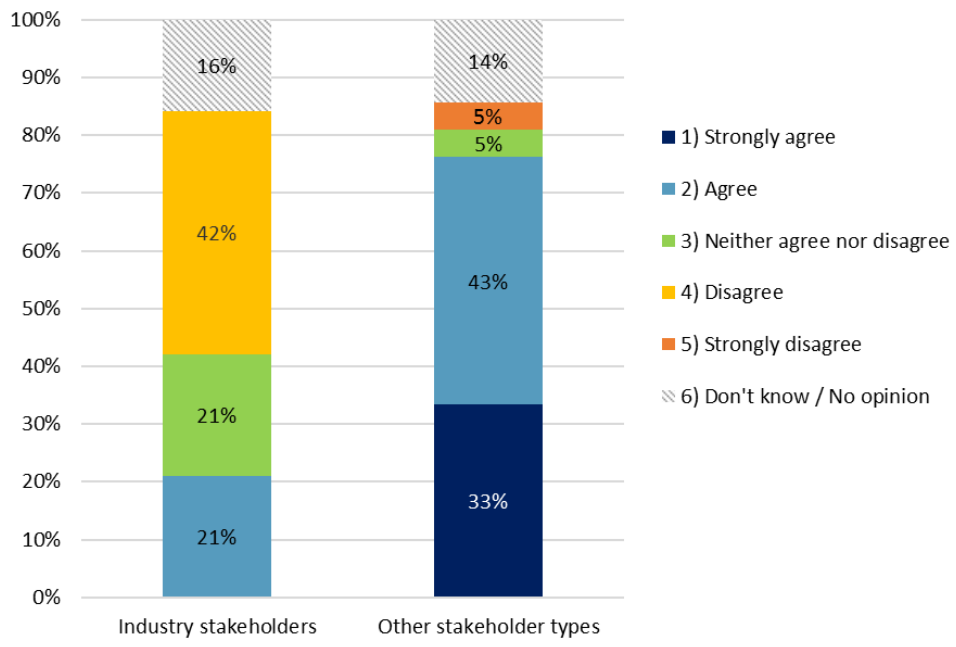


Figure 7-30: To what extent do you agree that the costs involved in implementing the Detergents Regulation are justified given the benefits that will be achieved in the longer-term? Responses to the OPC – Organisations *(n=40)*

In comparison, 26% of SMEs agreed that the costs involved in implementing the Detergents Regulation are justified given the benefits that they have already received; while 38% of SMEs agreed that the costs involved are justified given the overall benefits to the economy, environment and society. A fifth of SMEs (21%) did not think that the costs involved in implementing the Regulation are justified given the benefits that they have received, while 16% thought that they were not justified given the benefits to the economy, environment and society. This is important because it is SMEs that are likely to have been burdened with the highest costs (see Figure 7-31).

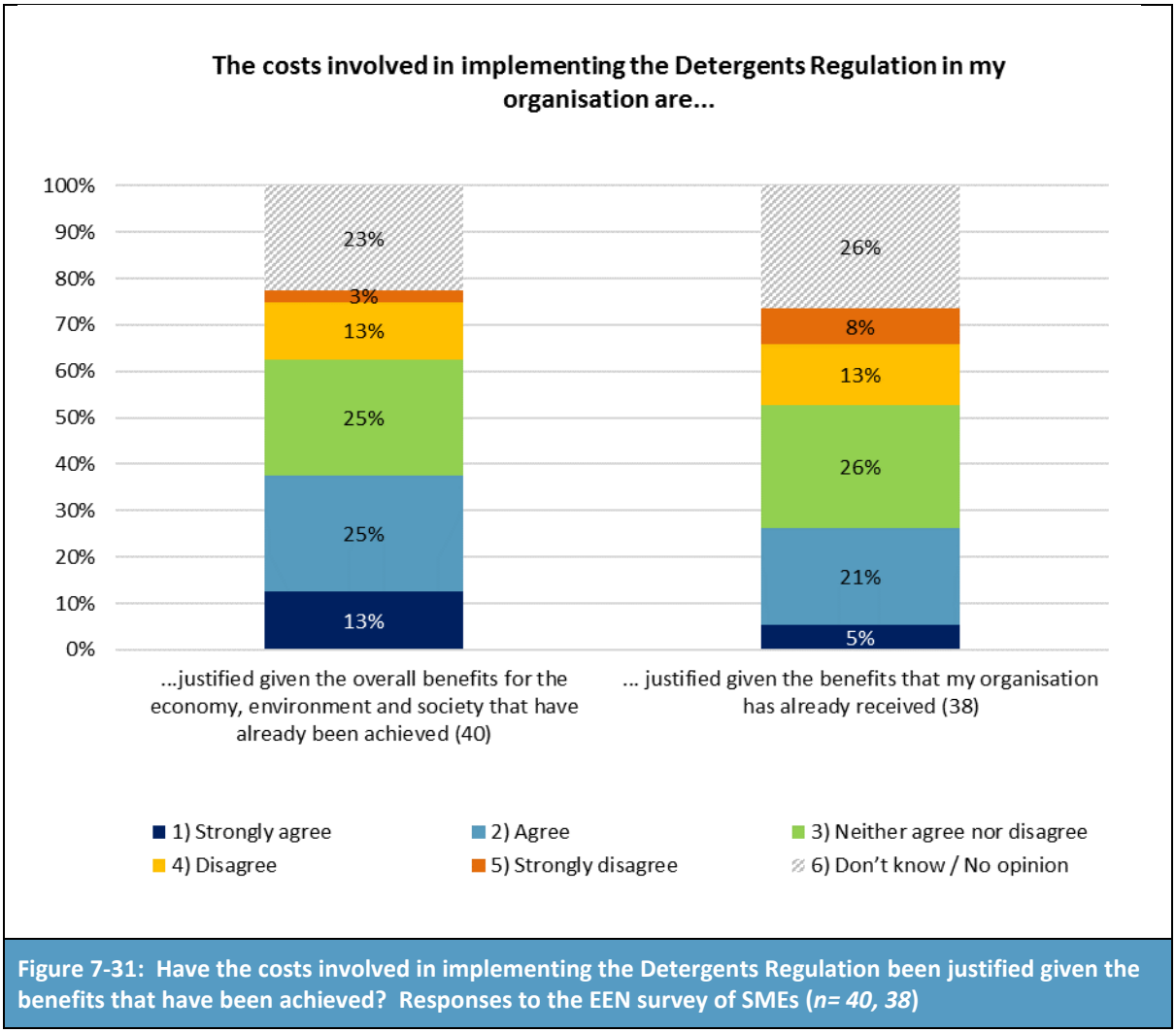


Figure 7-31: Have the costs involved in implementing the Detergents Regulation been justified given the benefits that have been achieved? Responses to the EEN survey of SMEs (*n= 40, 38*)

During the interviews, one MS authority from Ireland noted that small companies find the Detergents Regulation (together with other chemicals legislation) particularly burdensome and that for SMEs the benefits do not outweigh the costs. An SME from Germany similarly remarked that, for the company, the costs are not justified given the benefits achieved.

As noted in Section 7.2, the Regulation did impose some initial costs on the detergents industry, related primarily to the reformulation of consumer products. Recurring costs mainly relate to labelling provisions, with these also linked to CLP. During the OPC, AISE stated that:

> *"Reformulation costs due to the restriction have been estimated by the COM Impact Assessment in 2010 between 26-142 M EURO (one-off cost). When compared to the overall EU turnover of 17-18 Billion, it can be assumed that these costs were justified."*

As outlined in Section 6.1, the majority view of stakeholders is that the Regulation has been successful in terms of protecting the environment and, to some extent, human health. KEMI (2011) notes that the costs of reformulating detergents to reduce the total phosphorus content also need

to be weighed against the overall costs of achieving the goals of, for example, the Baltic Sea Action Plan or Water Framework Directive (KEMI, 2011).[188]

Summary of findings - Efficiency

- The total cost to the detergents industry of the Detergents Regulation has been estimated at €764 million to €1.8 billion over the 12 years since the Detergents Regulation first came into force. This equates to an annual cost of approximately €63.7 million to €149.0 million.
- In terms of benefits, there was general agreement that the Detergents Regulation has helped to level the playing field for manufacturers of detergents and surfactant within the EU. The Detergents Regulation has had a mixed effect in terms of innovation: while new products have been developed in response to the Regulation, resources had to be used to ensure compliance and this reduced the resources available for innovation. Most stakeholders thought that the Regulation had improved the corporate image of the sector.
- The water industry - including both drinking water suppliers and waste water treatment works – should have benefited from the environmental provisions of the Detergents Regulation; although insufficient data are available to quantify these impacts. Other sectors, such as agriculture, aquaculture, fisheries and recreation, should also – in theory – have benefitted.
- Although the detergents sector did incur some costs as a result of the Detergents Regulation, industry stakeholders indicated that these costs have not been passed on to consumers (as higher prices). Furthermore, our research indicates that the cleaning performance of detergents and the diversity of products available on the market does not appear to have significantly changed.
- Most stakeholders have indicated that the costs involved in implementing the Detergents Regulation are justified given the benefits that have been achieved, although industry stakeholders are clearly concerned about the costs that will arise in the longer-term.

[188] KEMI (2011): Phosphates in detergents, Questions and Answers. Available at: www.KemI.se/global/.../facts-phosphates-in-detergents-questions-and-answers.pdf

8 EU added value

Table 8-1: EU added value criterion
EU added value refers to changes which it can reasonably be argued are due to EU intervention, rather than any other factors. It may result from different factors, e.g. harmonisation of rules across the EU, coordination gains, legal certainty, greater effectiveness, economies of scale, etc.
The following evaluation questions are considered:
To what extent has the Regulation permitted achievements which could not be reached at MS level? To what extent have MS issued national rules on detergents that go beyond the scope of the Detergents Regulation? To what extent is EU level intervention still warranted?

8.1 Extent to which the Regulation has permitted achievements which could not be reached at MS level; Extent to which MS issued national rules on detergents that go beyond the scope of the Detergents Regulation; and Extent to which EU level intervention is still warranted

8.1.1 To what extent has the Regulation permitted achievements which could not be reached at the MS level?

Environment

Before Regulation 259/2012, the EU detergent market (especially for laundry detergents) was fragmented by various national restrictions on the use of phosphate in detergents (European Commission, 2010).[189] While voluntary action (e.g. via ecolabels) had been efficient in some countries at reducing use of phosphates in detergents, most producers did not conform to the criteria before Regulation 259/2012 (KEMI, 2011).[190] Consequently, many EU countries, as well as NGOs and industry declared that they would prefer the issue of phosphorus in detergents to be analysed on an EU level (KEMI, 2011).[191]

In response to the consultation, **most organisations indicated that the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting on their own**. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force.[192] The benefits for the

[189] European Commission (2010): Regulation (EU) No … / … of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in household laundry detergents, COM (2010) 997 final. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52010PC0597

[190] KEMI (2011): Phosphates in detergents, Questions and agreed answers. Available at: www.KemI.se/global/.../facts-phosphates-in-detergents-questions-and-answers.pdf

[191] KEMI (2011): Phosphates in detergents, Questions and agreed answers. Available at: www.KemI.se/global/.../facts-phosphates-in-detergents-questions-and-answers.pdf

[192] On the other hand, it was noted that some MS already had limits on the phosphorus content of detergents, and that some (e.g. the UK) may have introduced stricter requirements, had the Regulation not been

environment are likely to have been particularly prominent in countries and areas with poorer waste water treatment facilities (i.e. areas without tertiary waste water treatment in place). During the consultation, it was noted that, in Sweden and Norway, isolated dwellings are not always connected to municipal wastewater treatment plants and that these properties may, therefore, discharge their wastewater directly into the environment. As shown in Annex 2, Table A2-11, this problem looks to be widespread. For example, only 18% of the population of Ireland and Romania are estimated to be connected to tertiary urban wastewater collecting and treatment services. Compared to many countries, Germany has a relatively high proportion of its population connected to tertiary wastewater treatment services, but still only 93% (estimated, based on 2013 data) of Germany's population is connected. Thus, the restriction on the content of phosphates and other phosphorus compounds in consumer laundry detergents and CADD is likely to have benefited the local environment in these situations.

Stakeholders also pointed out that achieving a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation. As illustrated by AISE's response to the OPC:

> *"A level playing field for all detergent manufacturers in terms of surfactants biodegradability and Phosphorous content would not have been achievable: as of 2009 about 11 EU Countries had in place measures to restrict Phosphorous mostly on laundry detergents. It can be assumed that in these countries reformulation on laundry detergents was already achieved/under implementation. Only a limited number of EU countries (4) had in place Phosphates restrictions for ADW. Existing national rules were proposing country specific rules; therefore, the Detergents regulation has provided a level playing field."*

Before Regulation 259/2012, it was hoped that introducing harmonised rules on the use of phosphorus in detergents would help to speed up progress on strategies to tackle transboundary pollution in regions such as the Baltic Sea and Danube River Basin, where MS had repeatedly called for harmonised EU measures.[193] One international NGO noted that having such EU legislation helps to bring other countries on board and is a good way of convincing them to act.

Human health

While **some stakeholders indicated that the Detergents Regulation has delivered added value in terms of human health** (particularly the provisions on the labelling of fragrance allergens), a theme that was repeated by stakeholders throughout the consultation was that **multiple other pieces of EU legislation covering detergents are also important in terms of protecting human health**. As summarised by AISE:

> *"…The Detergents Regulation (648/2004) has been adopted before the introduction of REACH, CLP and Biocidal Regulation. Furthermore, with the recent adoption of*

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amended in 2012. For these countries, the added value of the Regulation may be less pronounced. For further information see Annex 1.

[193] European Commission (2010): Regulation (EU) No … / … of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in household laundry detergents, COM (2010) 997 final. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52010PC0597

Regulation 2017/542 on Poison Centres, appointed bodies and medical personnel will receive an extensive set of information on the composition of chemicals mixtures that goes well beyond the requirements under the Detergents Regulation. Overall, the role of Detergents Regulation in protecting human health can at best be considered negligible when compared to the applicable chemical legislation…"

Internal market, competition and competitiveness

As previously outlined, the Detergents Regulation is generally perceived as having delivered added value in terms of harmonising the rules in place in different MS and levelling the playing field across the EU. The majority of organisations that participated in the consultation have therefore indicated that the Regulation has made it easier for companies to trade detergents and surfactants cross-border within the EU (for further information see Section 6.1.1).

Around a quarter of SMEs have indicated that the Regulation has led to an increase in their customer base within the EU due to greater harmonisation across the single market, and to an increase in sales within the EU (see Figure 6-13).

Overall views

Overall, it would appear that the Detergents Regulation has delivered added value across the EU.

As shown in Figure 8-1 below, more than half of the organisations that responded to the OPC thought that the Detergents Regulation has provided significant added value above what could have been achieved through action at a national level alone, with a further 35% stating that the Detergents Regulation has provided some added value. In contrast, only 3% indicated that the Detergents Regulation has not provided any added value.

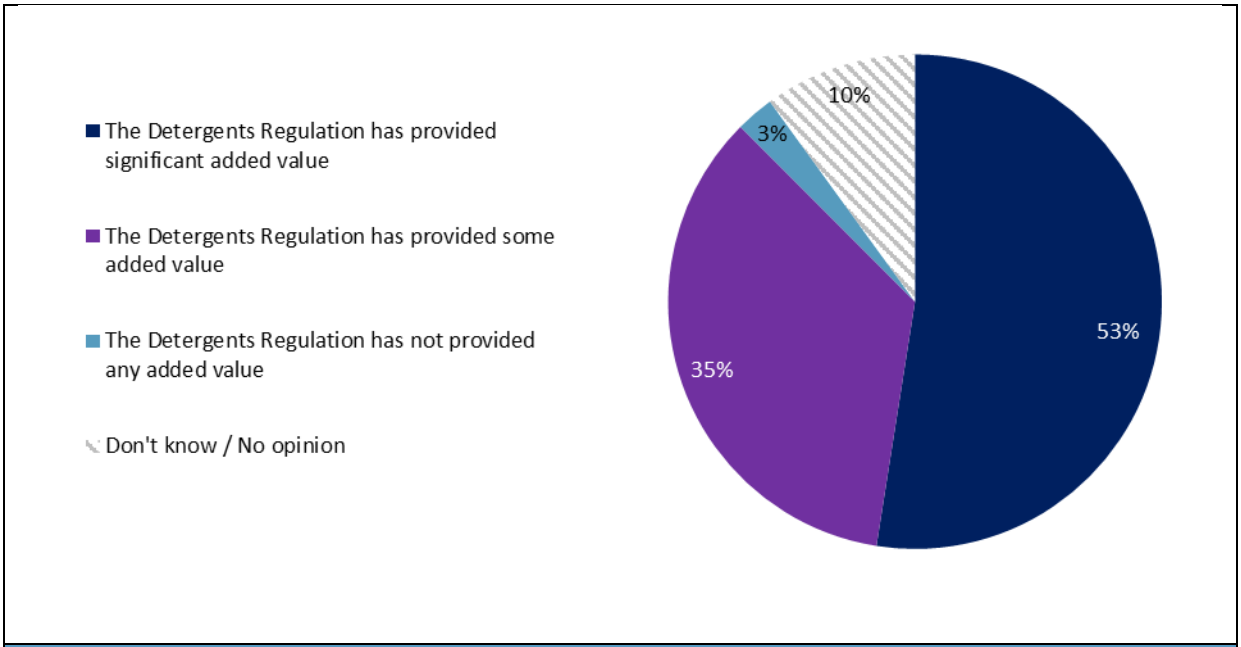

Figure 8-1: To what extent has the Detergents Regulation added value above what could have been achieved through action at a national level (e.g. better outcomes for the environment and human health and in relation to levelling the playing field, innovation and competitiveness)? Responses to the OPC – Organisations *(n=40)*

8.1.2 To what extent have MS issued national rules on detergents that go beyond the scope of the Detergents Regulation?

Based on the information gathered through literature review and consultation, we have identified a range of national provisions put in place by countries that go beyond the scope of the Detergents Regulation. For instance:

- AISE noted that, **in Romania, detergent products must be labelled with a "use by" date.** A company from Austria (that sells products in Austria and Italy) similarly stated that for laundry products it must put a "use by" date on the packaging.
- An industry association explained that, **in Romania**, **the national authorities interpret the national law as saying that detergents should include on their label the number of washes** that the product is expected to provide.
- **In France, Decree of 8 September 2009 (8/09/1999) provides a list of substances authorised in cleaning products for industrial use that are used to clean materials coming into contact with food products**. In addition to listing the authorised substances, it also sets limits for their use (purity criteria, maximum and minimum concentrations in cleaning products, and conditions of use).
- **In Germany, it was noted by one industry association that there are lists of ingredients that cannot be used in professional cleaning products used in the food industry**.
- **In Germany, Slovenia and the Czech Republic, companies have to notify the authorities before placing a detergent product on the market. In Denmark, manufacturers of professional detergent products must notify the Danish Occupational and Environmental Services before placing these products on the market**.
- **In Italy, one industry association explained that all chemical companies are required to declare and submit formulations of all detergents to a central database**; this information can then be accessed by poison centres as and when required.
- **Various countries require the registration of nanomaterials.** For example, in Belgium (according to Royal Decree of 27 May 2014) substances containing nanoparticles with volume >100g per calendar year must be registered; in Denmark Statutory Order no. 644 of 13/06/2014 requires mixtures and articles that contain nanomaterials to be registered, and in Norway hazardous chemical products that contain nanomaterials must be registered.[194] The Swedish Chemicals Agency is also drafting a regulation for companies to provide information on nanomaterials in chemical products and articles to the Swedish products register, by 28 February 2019.[195]
- **Some countries have limits or bans on the use of some ingredients with recognised environmental impacts**.

[194] ChemSafety Pro (2016): Regulations on nanomaterials in EU and Nano Register 2016, available at: http://www.chemsafetypro.com/Topics/EU/Regulations_on_Nanomaterials_in_EU_and_Nano_Register.html

[195] KEMI (2015): The Swedish Chemicals Agency proposes reporting requirements for nanomaterials, available at: http://www.KemI.se/en/news-from-the-swedish-chemicals-agency/2015/the-swedish-chemicals-agency-proposes-reporting-requirements-for-nanomaterials

8.1.3 To what extent is EU action still warranted?

During the consultation, there was consensus among stakeholders that **the issues addressed by the Detergents Regulation continue to require action at the EU level**, with this reflected in the views of most stakeholders interviewed, as well as SMEs (Figure 8-3) and those that participated in the OPC (Figure 8-2). Some stakeholders suggested that the provisions of the Regulation could be strengthened in some areas to ensure a greater degree of protection to the environment and to human health; while others suggested that certain provisions of the Regulation are no longer required (e.g. as they are now covered by REACH and CLP).

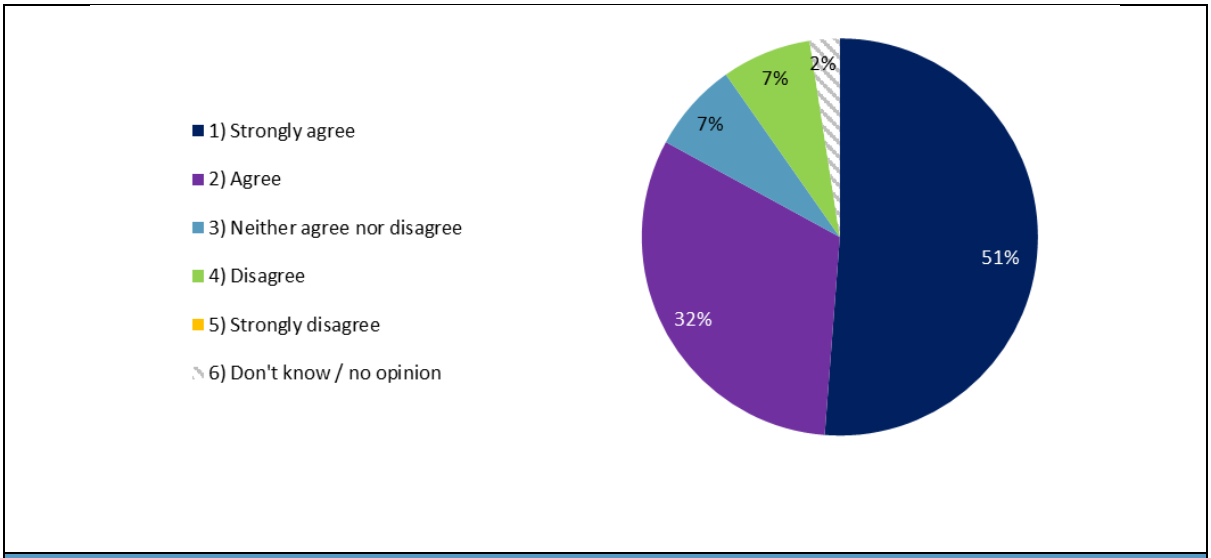

Figure 8-2: To what extent do you agree that the issues addressed by the Detergents Regulation continue to require action at the EU level? Responses to the OPC – Organisations *(n=41)*

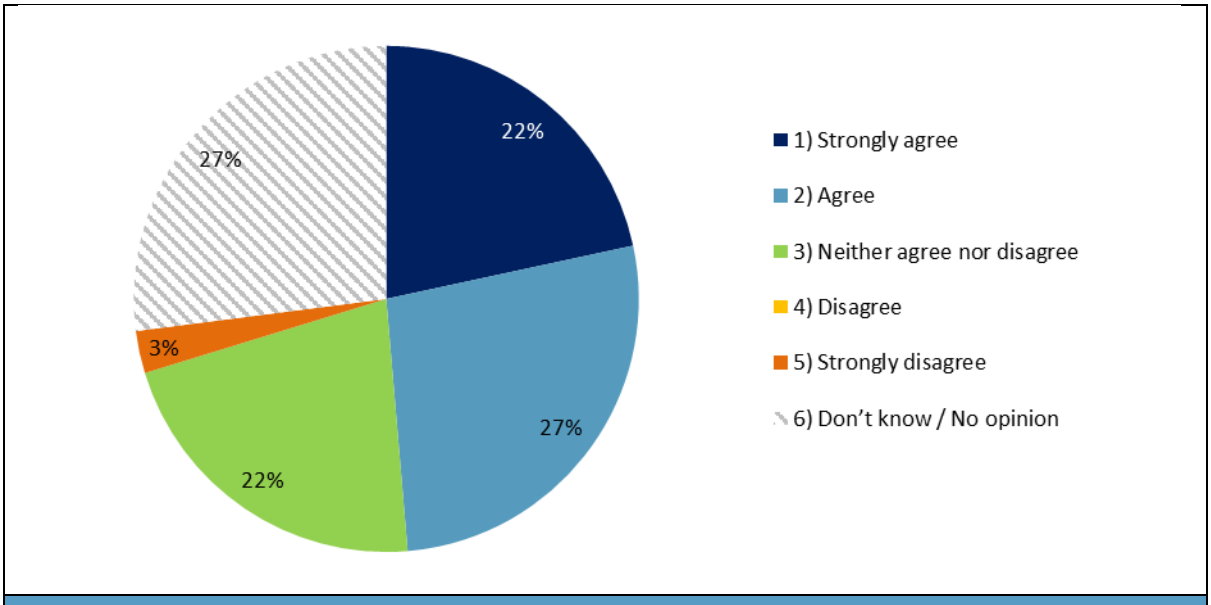

Figure 8-3: To what extent do you agree that the issues addressed by the Detergents Regulation continue to require action at the EU level? Responses to the survey of SMEs conducted by EEN (*n=37)*

When asked what would be the most likely outcome if some or all of the provisions of the Detergents Regulation were removed at EU level, several stakeholders remarked that **over time, MS would introduce different rules and that this would lead to reduced harmonisation and a more uneven playing field across the EU**. One consumer organisation explained that companies would need to produce different products for sale in different EU MS and that, as a result, fewer products would be available to consumers in small markets such as Cyprus.

A Commission official indicated that the market leaders in the detergents industry would still follow the approach of the Detergents Regulation, even if some, or all, of the provisions were removed, but that companies producing cheaper products might not, with this potentially resulting in products of lower quality which are less well labelled. A similar view was expressed by a consumer organisation that noted that the withdrawal of the Regulation could result in consumers not having access to information on the chemicals in detergent products and that there is a risk that more problematic chemicals would be used. The stakeholders did, however, point out that the hazard labelling would remain due to CLP.

Summary of findings – EU added value

- Most stakeholders indicated that the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting on their own. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force. Stakeholders noted that creating a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation.
- While some stakeholders indicated that the Detergents Regulation has delivered added value in terms of human health (particularly the provisions on the labelling of fragrance allergens), it was indicated that multiple other pieces of EU legislation covering detergents (e.g. REACH, CLP and Biocidal Products Regulation) are also important in this regard.
- Most stakeholders agreed that the issues addressed by the Detergents Regulation continue to require action at the EU level.

9 Conclusions

9.1 Relevance

There was strong agreement across stakeholder groups that the objectives of the Detergents Regulation (i.e. to achieve the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health) are still relevant considering the evolution of societal needs and technological developments. The new limits introduced by Regulation (EC) No. 259/2012 on the phosphorus content of consumer laundry detergents and CADD, for example, were seen as a positive adaptation to changing needs.

Stakeholders did, however, identify some areas where the Regulation has not kept pace. For instance, multiple industry representatives indicated that innovative communication methods (e.g. QR codes) are now available and could help to reduce the amount of information presented on product labels. Not only could this help to improve the clarity of information provided to consumers (particularly as some of the information that is currently presented, e.g. % surfactant content, is not information that most consumers need or understand[196]), industry associations and companies noted that it may also help to alleviate the administrative burden for the detergents industry.

A key issue that was identified during the research is that it is not always clear to industry whether certain products available on the market are included within the Regulation's scope. For example, there is some confusion as to whether products (microbial cleaning products) with a claimed cleaning effect based on the action of bacteria fall within the scope of the Detergents Regulation. Questions were also raised about washing eggs/balls, cleaning wipes/scouring pads impregnated with detergents, scent booster products, related household products (e.g. waxes, polishes and textile dyes), and some 'do-it-yourself' cleaning products.

Stakeholders also identified a range of new issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Regulation. For example, it was noted that the Regulation is not well adapted to the refill sale of detergents and that the dosing instructions required under Annex VII B need to be updated (e.g. to take account of modern load sizes and new concentrated/pre-measured detergent products). Various stakeholder groups (including MS authorities, NGOs, citizens and industry) were also concerned about some of the new ingredients being used in detergents and their impacts on the environment and/or human health. Microplastics and nanomaterials, for example, were highlighted as a particular concern.

9.2 Coherence

Although approximately half (49%) of the organisations that responded to the OPC indicated that there are gaps, overlaps and inconsistences/contradictions within the provisions of the Detergents Regulation, it would appear from looking at stakeholders' discursive responses that these relate mainly to perceived gaps in the legislative framework or to areas where the Regulation is unclear. For example, one of the issues raised during the consultation was a lack of clarity surrounding the definitions and scope of the Regulation (e.g. a lack of clarity regarding the definition of a

[196] As noted by both MS authorities and consumer organisation.

"manufacturer" in the context of refill detergent sales[197]; and gaps in the Detergents Regulation pertaining to air fresheners[198] and surfactant-free cleaning enhancers[199]). Some MS authorities and consumer organisations were also concerned that a lack of detailed ingredient lists restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain ingredients.

Consumer organisations, environmental NGOs and citizens were concerned at some of the ingredients that are still permitted for use in detergents. From the perspective of human health, consumer organisations commented that CMRs and SVHCs should not be permitted for use in detergents and that any nanomaterials (if present) that are hazardous should be labelled or removed from detergent products. From the perspective of the environment, the use of microplastics in detergents was seen as a particularly important issue that remains to be addressed - either by the Detergents Regulation or by other means (such as REACH). Other substances identified as a concern for the environment included PBTs and hormone disruptors[200]; perfumes[201]; complexing agents[202]; and brighteners and colourants[203].

Some MS authorities and environmental NGOs suggested that the biodegradability criteria for surfactants should be applicable to all organic compounds included in detergents and not just surfactants, and that the anaerobic biodegradability of detergents should also be considered within the Detergents Regulation. However, the Commission has made it clear that it does not view these as gaps in the legislation. Furthermore, industry associations have noted that non-surfactant ingredients are already adequately regulated through REACH and that biodegradability is not necessarily a good measure of how harmful (or not) a substance is to the environment.

Stakeholders also suggested a range of other information that should potentially be included on product labels, including the scope of application/intended use for the product[204], the environmental footprint/biodegradability score[205], security advice[206] (e.g. "keep out of reach of children") and a suggestion to use the lowest recommended washing temperature[207].

Nearly two thirds (64%) of organisations that responded to the OPC have identified overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation. The principal areas of overlap/inconsistency were identified as being between:

- **the Detergents Regulation and Biocidal Products Regulation.** Several stakeholders noted that there is an overlap between the Detergents Regulation and Biocidal Products Regulation

[197] As noted by at least two MS authorities

[198] As noted by one environmental NGO

[199] As noted by one MS authority

[200] Identified by one MS authority

[201] Identified by one consumer organisation and one 'other' organisation

[202] Identified by one 'other' organisation

[203] Identified by one consumer organisation

[204] As noted by one MS authority

[205] As noted by consumer organisations from Cyprus and Denmark respectively

[206] As noted by one MS authority

[207] As noted by one environmental NGO

in the sense that some products would need to comply with the provisions (notably the labelling provisions) of both. Stakeholders explained that, in some cases, MS authorities and companies differ in their interpretation of the scope of the two Regulations, and that overlaps between these two pieces of legislation can result in duplicate labelling.

- **the Detergents Regulation and Cosmetic Products Regulation.** Stakeholders highlighted that there is a difference between the Cosmetic Products Regulation and the Detergents Regulation in the treatment of CMRs; i.e. CMRs 1A, 1B and 2, unless exempted, are not permitted for use in cosmetics, however, CMR 2 can still be used in detergents for consumer use[208] and CMRs 1A, 1B and 2 could still be used in detergents for industrial/institutional purposes). Stakeholders also pointed out that there is an inconsistency between the labelling of nanomaterials under the Detergents Regulation and Cosmetic Products Regulation (i.e. nanomaterials must be indicated on the label for cosmetics but there are no requirements for detergents). Furthermore, some stakeholders indicated that cosmetics must be labelled with a full ingredient list, unlike the Detergents Regulation that only requires some ingredients to be labelled. One MS authority noted that it would be beneficial if the labelling of ingredients under the Detergents Regulation could be harmonised with the labelling of cosmetic ingredients using the INCI nomenclature according to the Cosmetic Products Regulation.
- **the Detergents Regulation and REACH and CLP**. During the consultation, stakeholders identified some inconsistent definitions (e.g. "placing on the market", "manufacturer") between the Detergents Regulation, REACH and CLP. Inconsistencies were identified between the information that must be presented in the SDS under REACH and the information that must be provided for industrial and institutional detergents under the Detergents Regulation. There are also legislative overlaps between the Detergents Regulation and the CLP Regulation with regard to the labelling of allergens. During the consultation, several industry associations noted that as Regulation 542/2017 (Annex VIII of CLP) comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete.

9.3 Effectiveness

The majority view of stakeholders (across all stakeholder groups) was that the Detergents Regulation has helped to harmonise the rules in place in different EU MS and that this has levelled the playing field and made it easier for companies to trade cross-border.

There was also a strong view that the Detergents Regulation has been effective in achieving its objective of ensuring a high degree of protection to the environment, with some industry stakeholders even noting that the Detergents Regulation is seen internationally as the "golden standard" for the biodegradability of surfactants. Furthermore, the new limits on the phosphorus content of consumer laundry detergents and CADD introduced by Regulation (EU) No. 259/2012 were seen, by both MS authorities and industry, as having successfully directed the market to producing more environmentally friendly products. AISE has estimated that, across the EU, about 30% of laundry detergent formulations and 95% of CADD were reformulated as a direct result of Regulation (EU) No 259/2012. AISE has noted that this is equivalent to a reduction of about 55,000 tonnes of phosphorus per year.

[208] CMR categories 1A and 1B are prohibited in consumer products under REACH.

While dosing instructions were generally perceived as an effective means of reducing the over consumption of detergents, some stakeholders were concerned that the dosing information that must be provided according to the Regulation is now out of date (as noted by at least one company during the consultation) and that consumers may not read, understand or correctly follow the instructions (as explained by at least one consumer association).

Most stakeholders agreed that the Detergents Regulation has been effective in achieving its objective of ensuring a high degree of protection of human health, although it was also indicated (particularly by industry stakeholders) that compared to other chemicals legislation (e.g. REACH, CLP and Biocides), the Detergents Regulation has had a lesser impact. There was general agreement across all stakeholder groups that the labelling requirements of the Regulation are sufficient to inform consumers and downstream users about potential allergenic substances in detergents. Some stakeholders, however, were concerned about some of the substances/ingredients that are still being used in detergent products and that a lack of detailed ingredient lists on product labels restricts the ability of consumers and other downstream users to make informed decisions and avoid products containing certain substances. Note that during the EuroDeter study, the highest rate of non-compliance was found to relate to the obligation to list the allergenic fragrances on the label.

In general, the sanctions put in place by the MS for infringements of the Detergents Regulation are perceived by MS authorities as dissuasive, effective and proportionate. However, many authorities appear to lack the resources to carry out proactive enforcement of the Regulation. Furthermore, inspections tend not to be carried out for the Detergents Regulation in isolation, rather they are coordinated with inspections for other chemicals legislation, such as CLP and REACH. During the supporting study for the chemicals fitness check[209], concerns were raised in relation to a lack of consistency in enforcement between MS, which potentially results in inconsistent implementation of the Detergents Regulation. It is possible that this could have reduced the overall effectiveness of the Regulation.

Finally, one instance has been identified of the safeguard clause being used (for the product POR-ÇÖZ, placed on the market in Germany). There was a split in view across respondents regarding the safeguard clause. While MS authorities and consumer associations generally agreed that the safeguard clause is an important, and beneficial, element of the Detergents Regulation, even if (to date) it has rarely been used, some industry representatives remarked that if the detergent complies with the Detergents Regulation, then there is no need for the safeguard clause.

9.4 Efficiency

The total cost to the detergents industry of the Detergents Regulation has been estimated at €764 million to €1.8 billion over the 12 years since the Detergents Regulation first came into force (or approximately €63.7 million to €149.0 million per year). Note that this excludes the one-off costs associated with changing production processes and the on-going costs associated with testing the biodegradability of surfactants which, unfortunately, it has not been possible to quantify. The largest costs are calculated to have arisen as a result of the need to use different raw materials in place of phosphorus, from having to provide ingredient datasheets to poison centres and from the research and development necessary for reformulation (to reduce the total phosphorus content of

[209] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

consumer laundry detergents and CADD). The costs of labelling are also estimated to have been relatively large.

In terms of benefits, there was general agreement that the Detergents Regulation has helped to level the playing field for manufacturers of detergents and surfactant within the EU. A fifth (21%) of industry stakeholders that responded to the OPC said that the Detergents Regulation has led to market opportunities (compared to 42% that disagreed). It would appear that the Detergents Regulation has had a mixed effect in terms of innovation. On the one hand, stakeholders (including industry) explained that new products have been developed in response to the Detergents Regulation, particularly in response to the phosphorus limits introduced for CADD. On the other hand, several industry associations and companies noted that resources had to be used to ensure compliance and that this reduced the total resources available for innovation. Most stakeholders (all groups) thought that the Detergents Regulation has improved the corporate image of the sector.

The water industry - including both drinking water suppliers and waste water treatment works – should have benefited from the environmental provisions of the Detergents Regulation; although insufficient data are available to quantify these impacts. Other sectors, such as agriculture, aquaculture, fisheries and recreation, should also – in theory – have benefitted.

Although the detergents sector did incur some costs as a result of the Detergents Regulation, industry stakeholders indicated that these costs have not been passed on to consumers (as higher prices). Furthermore, our research indicates that the cleaning performance of detergents and the diversity of products available on the market does not appear to have significantly changed.

While a theoretical reduction in the incidence of allergic reactions should have led to social and economic benefits for society (in terms of reduced discomfort for allergy sufferers, increased economic productivity (e.g. due to reduced time off work), reduced medical/healthcare costs, etc.), insufficient data are available on the relationship between the Detergents Regulation and incidence of allergic reaction to be able to quantify these impacts.

Most of the stakeholders consulted (including most SMEs) have indicated that the costs involved in implementing the Detergents Regulation are justified given the benefits that have been achieved, although industry stakeholders are clearly concerned about the costs that will arise in the longer-term.

9.5 EU added value

The general view of stakeholders (all groups) was the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting on their own. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force. Similarly, stakeholders noted that creating a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation.

While some stakeholders indicated that the Detergents Regulation has delivered added value in terms of human health (particularly the provisions on the labelling of fragrance allergens), it was indicated that multiple other pieces of EU legislation covering detergents (e.g. REACH, CLP and Biocidal Products Regulation) are also important in this regard.

There was consensus among stakeholders (all groups) that the issues addressed by the Detergents Regulation continue to require action at the EU level.

10 Suggestions for change

During the consultation, there was consensus among stakeholders that the objectives of the Detergents Regulation are still relevant and that the issues addressed by the Regulation continue to require action at the EU level. On this basis, the evaluation finds that the Detergents Regulation should remain in force, although there are some areas where the Regulation could potentially be improved:

1. **The scope of the Regulation could be clarified so that it is clear exactly which products fall within/outside of its scope**. It has been noted that some of the definitions provided in Article 2 are unclear and/or open to interpretation and that, as a result, some stakeholders are not clear whether certain products available on the market (e.g. microbial cleaning products) fall within/outside the Regulation's scope. It has been suggested that clarification could be provided in the legal text of the Regulation (rather than in an official guidance document) to ensure that the requirements are legally binding.
2. **The rules pertaining to the refill sale of detergents could be clarified to ensure a high degree of protection of human health.** Although consistent with the European Commission's action plan for the circular economy, the refilling of detergent containers poses several potential safety issues (e.g. if correct labels are not provided and/or if unsuitable/dirty containers are used). Furthermore, the definition of a manufacturer in the Detergents Regulation could lead to a situation whereby a retailer becomes a manufacturer within the meaning of the Regulation. While it may not be necessary to amend the Regulation to take into account this refill approach, especially considering the overall scale of this market is presently quite small; some official guidance (such as a 'good practice guide') could be provided on how the Detergents Regulation (and other relevant legislation) should be interpreted in the context of detergent refills to ensure the protection of human health.
3. **Prohibiting the use of some substances in detergents could be considered.** This is important because evidence suggests that consumers generally may not read the precautions provided on product labels, or adequately protect themselves with PPE. Consumer organisations commented that CMRs[210] and SVHC should not be permitted for use in detergents, and that if nanomaterials are hazardous to human health then they should also be removed. From the perspective of the environment, the use of microplastics in detergents was seen as a particularly important issue that remains to be addressed. Other substances identified as a concern for the environment included PBTs, hormone disruptors; perfumes, complexing agents; brighteners and colourants. In order to ensure coherence across the legislative framework, consideration should be given to whether these issues are best addressed by the Detergents Regulation or by other means, such as REACH. In terms of identifying substances that should potentially be prohibited in detergents, inspiration could potentially be taken from the EU Ecolabel criteria for detergents.
4. **The rules pertaining to the labelling of dosage information could be revisited to ensure that they are up-to-date and that information is conveyed to consumers in a way that is easy for them to understand.** While dosing instructions are generally perceived as an effective means of reducing the over-consumption of detergents, some stakeholders were

[210] While CMRs 1A and 1B are restricted in detergents for consumer use under Annex XVII of REACH, a CMR 2 could still be used in detergents for consumer use and CMRs 1A, 1B and 2 could still be used in detergents for industrial/institutional purposes.

concerned that the dosing information that must be provided according to the Regulation is now out of date (e.g. because average load sizes have changed and because pre-measured, concentrated and auto-dosing products are now available) and that consumers may not correctly follow the instructions.

5. **The information presented to consumers on detergent labels and packaging could be streamlined.** During the consultation, there was widespread concern among stakeholders that multiple regulations dealing with the labelling of detergents leads to labels that are long and complicated and that include unnecessary and/or duplicate information. Not only does this reduce the effectiveness of the detergent labels in communicating essential information (e.g. on safe use, allergens, etc.) to consumers, it also creates an unnecessary regulatory burden for the detergents industry. Industry stakeholders have also noted that the labelling provisions of the Detergents Regulation may prevent some companies from changing their formulations (thereby hindering innovation) because even slight changes to product formulas would require product labels to be updated, which may be costly.

    a. **Some of the information provided to consumers on detergent labels may be unnecessary and could potentially be removed**. For example, consumer organisations and industry representatives both agreed that information on the percentage surfactant content is not useful for consumers. Furthermore, under CLP, ingredients that present a chemical hazard should be included on the product label using the chemical name, whereas under the Detergents Regulation ingredients they can be listed under a generic name (e.g. anionic surfactant). It was noted that this can result in the labelling of the same ingredient twice, using different names. Also, the use of generic ingredient names is considered not to provide any added benefit for consumers (e.g. as many do not understand what an "anionic surfactant" is).

    b. Simply listing the ingredients may not be sufficient because most people will not know which substances are allergens. One consumer organisation suggested that it would be helpful if the **allergens could be clearly indicated**, as is already the case for food products.

    c. **Some of the information currently provided on product labels could be provided online and linked to the product using a QR code (or similar approach).** For example, several industry stakeholders suggested that detailed ingredient lists could be provided online, rather than on product labels. This would reduce the amount of information included on the label and allow consumers to focus on the elements that are most important/relevant to them, thus enhancing consumer understanding. It should be noted, however, that there are potential issues with this approach: firstly, consumer organisations have noted that a lack of detailed ingredient lists on detergents restricts the ability of downstream users and consumers to make informed decisions and thus avoid products containing certain substances. Secondly, our research indicates that there are already compliance issues with the obligation to provide ingredient data sheets online, and a lack of resources available for proactive enforcement. Finally, consumers would need access to an internet-enabled device (e.g. mobile phone) and (free) access to the internet at the point of purchase to access the information provided via the QR code.

    d. **Some additional information could be included on product labels, or communicated to consumers via digital means, for example:**

        i. a recommendation to wash laundry at the lowest temperature necessary. This could have multiple benefits for the environment and for the consumer,

e.g. reduced release of plastic microfibres from manmade textiles, reduced energy consumption, reduced energy bills;

ii. information on the scope of application or intended use for the product, as well as the compatibility with the materials cleaned;

iii. security advice, e.g. "keep out of reach of children";

iv. information that would enable consumers to compare products on the basis of their environmental impact (e.g. by means of the EU Ecolabel).

e. As changing the labelling provisions of the Regulation is likely to result in some costs for industry (e.g. because old labels may need to be discarded, and new labels designed and manufactured), **sufficient notice could be given to companies to enable them to adjust to any new labelling requirements** within the normal innovation cycle. Detergent manufacturers reformulate their products regularly (averaging every 3.5 years)[211] to maintain competitiveness and so the impacts could be minimized by giving companies sufficient time to comply.

6. **With the recent adoption of Regulation (EU) No 2017/542 on poison centres, appointed bodies will receive information on mixture components that are classified as hazardous under CLP[212], and it has been argued by industry that this will make Article 9(3)(2) of the Detergents Regulation obsolete.** Furthermore, industry has indicated that it is a relatively infrequent occurrence for medical professionals to seek ingredient lists directly from manufacturers (as per Article 9(3)(1) of the Detergents Regulation) and that it would be more logical and efficient for medical personnel to obtain this information from poison centres.

7. **To the extent possible, greater consistency could be ensured between the Detergents Regulation and other pieces of EU legislation that are applicable to detergents:**

   a. Article 9(3) and Annex VII C of the Detergents Regulation require the use of an ingredient datasheet to communicate information on the composition of detergents; however, other regulations (such as CLP and REACH) use Safety Data Sheets (SDS). Stakeholders have indicated that it is unclear why there should be this difference and that **the same SDS could work for detergents as well**, to ensure that information for workers and consumers is clear and understandable and to reduce the burden on SMEs.

   b. Many of the substances used in detergents are used in cosmetics too and there are some products available on the market in the EU/EEA that can be used as both a detergent (e.g. for washing laundry) and a cosmetic (e.g. a body wash). Thus, **where possible, the rules in place under the Detergents Regulation and Cosmetic Products Regulation could be aligned**. For example:

      i. some CMR substances are still permitted for use in detergents but are not permitted for use under the Cosmetic Products Regulation. It has been suggested that **it would be beneficial for human health if CMRs prohibited under the Cosmetic Products Regulation were also prohibited under the Detergents Regulation**. *See also point 3 above.*

[211] Bio by Deloitte (2014)

[212] One large company estimated that about 95% of all detergent products on the market would be classified as hazardous under CLP.

ii. Under the Cosmetic Products Regulation, nanomaterials must be identified on the product label; this is not the case under the Detergents Regulation. Some stakeholders would like to see greater consistency between the Detergents Regulation and the Cosmetic Products Regulation, although most also agree that whether nanomaterials should be labelled depends on whether the nanomaterial is hazardous (i.e. **if nanomaterials are hazardous, then they should be labelled or removed from the product altogether; if they are not hazardous, then they should not be labelled**).

iii. There is a difference between the Cosmetic Products Regulation and the Detergents Regulation in that cosmetics must be labelled with a full ingredient list. MS authorities and consumer organisations have therefore suggested that, to protect consumers, a **full ingredient list** could be provided on detergent products. It has also been suggested that it would be beneficial if the labelling of ingredients (and particularly allergens) under the Detergents Regulation could be harmonised with the labelling of cosmetic ingredients (e.g. using the **INCI nomenclature**[213] according to the Cosmetic Products Regulation, or a similar standardised format). Industry stakeholders were, however, concerned that if full ingredient lists need to be provided, then product labels would need to be updated each time the product is reformulated.

iv. Under the Cosmetic Products Regulation, carry-over preservatives that constitute 'impurities in the raw materials used' (Article 19(1)(g)) do not need to be labelled. In contrast, under the Detergents Regulation Annex VII Part A "*if added, preservation agents shall be listed irrespective of their concentration*". For greater coherence, **the rules in place for the labelling of ingredients on cosmetics and detergents could be aligned**.

8. **The rules for the labelling of products governed by both the Detergents Regulation and Biocidal products Regulation should be clarified.** It has been noted that the labelling rules for surfactants that are also disinfectants are unclear and that the rules pertaining to the labelling of carry-over preservatives can also be interpreted differently by companies and MS authorities in different countries. To minimise such uncertainties, the Commission could provide official guidance on the labelling of products that fall within the scope of both the Detergents Regulation and Biocidal Products Regulation.

9. **Guidance could be provided to MS authorities to assist them in enforcing the Regulation.** Many MS authorities have noted that limited resources are available for enforcing the Detergents Regulation. Guidance could therefore be provided to authorities to help them target their resources in the most efficient way. Furthermore, it would appear that it is not always clear to MS authorities when the safeguard clause can be used. A guidance document could highlight key areas of non-compliance (to help authorities target their compliance checks) and clarification on how and when to use the safeguard clause. Encouragement could also be given to ECHA's Enforcement Forum to launch a detergents focused initiative.

[213] Because the INCI nomenclature is universal, it would not be necessary to translate ingredient lists into several languages (thereby reducing the burden on industry). On the other hand, industry stakeholders questioned whether consumers understand the INCI names and whether all detergent ingredients have an INCI code.

10. **A central database of detergent ingredients could be developed to assist MS authorities in identifying ingredients that may be a concern from a human health and/or environmental perspective.** One MS authority explained that it would be helpful if the ingredient datasheet outlined in Annex VII C of the Detergents Regulation was made available to environmental protection agencies so that they are able to establish more targeted water monitoring programmes. It was also suggested that a Europe-wide product database of ingredients used in all 'down the drain' products could be established in order to identify ingredients that are potentially problematic for the environment and/or human health. This position was supported by a consumer organisation. Inspiration could potentially be taken from the database provided by the US Department of Health and Human Services and/or the EU Ecolabel's Detergent Ingredients Database.

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Annex 1 – Detergents market

A1.1 Overview

This section analyses the state of play of the EU detergents market and the main sustainability aspects of detergents currently being marketed. The analysis has been broken down as follows:

- Section A1.2: Composition of detergents
- Section A1.3: Production of detergents and surfactants
- Section A1.4: Consumption of detergents and surfactants
- Section A1.5: Main sustainability aspects
- Section A1.6: Other trends in the detergents sector

It should be noted that the information presented in these sections has been gathered primarily through literature review.

A1.2 Composition of detergents

Broadly speaking, all detergents comprise a range of chemicals which may be grouped according to their function. The key groups of substances are surfactants, builders, enzymes, bleaching agents, fillers, and other minor additives - such as dispersing agents, fragrances, preservatives, dye-transfer inhibiting ingredients, and optical brighteners.[1,2] Although modern detergents may contain 30 or more ingredients, surfactants and builders are generally considered to be the two most important.

Three of the main groups of detergents are those based on fatty acids (such as washing up liquids), phosphate-based detergents (especially for laundry and dishwashers) and phosphate-free detergents based on zeolites[3]. Typical compositions for these three groups are shown in Table A1-1. It should be noted that the data in this table should be considered as representing 'the baseline' and that the typical composition of detergents may not be the same today.

[1] CleanRight (2016): What does each chemical ingredient really do? Website available at: http://uk.cleanright.eu/index.php?option=com_content&task=pdf&Itemid=168

[2] Yangxin YU et al. (2008): Development of surfactants and builders in detergent formulations, Chinese Journal of Chemical Engineering, 16 (4) pp 517-527. Available at: http://www.chemeng.tsinghua.edu.cn/scholars/yuyx/papers/Yu%20Detergent%20Review1.pdf

[3] Zeolites are microporous crystalline solids which typically consist of aluminium, silicon and oxygen. They can function as ion exchangers and soften water by exchanging extra-framework metal ions such as potassium and sodium for calcium and magnesium in aqueous solutions.

Table A1-1: Indicative composition of detergent types (%)			
Group	**Fatty acid**	**Phosphate**	**Zeolite**
Surfactants	35%	15%	20%
Builders	12%	50%	47%
Solvents	12%	n/a	n/a
Bleaches	n/a	20%	20%
Performance additives	1%	5%	8%
Water	40%	10%	5%
Source: RPA (2006)[4]			

A1.2.1 Surfactants

All detergents contain surface active agents (generally shortened to 'surfactants') that help to break down the interface between water and oils and/or dirt. Surfactants decrease the surface tension of water through adsorbing the water/air interface and by also disrupting the hydrogen bonds (which causes the relatively high surface tension of water). By lowering the surface tension of water, surfactants enable the cleaning solution to wet a surface (e.g. clothes, dishes, etc.) more quickly, so soil (e.g. dirt, dust, oil, grease, particles, etc.) can be readily loosened and removed - usually with the aid of mechanical action.[5] Surfactants also emulsify oily soils and keep them dispersed and suspended so they do not settle back onto the surface. To improve their effectiveness, many detergents include two or more surfactants.

Surfactants are generally classified by their ionic (electrical charge) properties in water:[6,7]

- **Anionic surfactants** are used in laundry and hand dishwashing detergents; household cleaners; and personal cleansing products. They ionize (are converted to charged particles) in solution, carry a negative charge, have excellent cleaning properties and are generally high sudsing.
- **Nonionic surfactants** are low sudsing and are typically used in laundry and automatic dishwasher detergents and rinse aids. Because they do not ionize in solution, and thus have no electrical charge, they are resistant to water hardness and clean well on most soils.
- **Cationic surfactants** are used in fabric softeners and in fabric-softening laundry detergents. Cationics can also be used as a disinfecting/sanitising ingredient in some household cleaners. They ionize in solution and have a positive charge.

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[4] RPA (2006): Non-surfactant organic ingredients and zeolite-based detergents, Final Report prepared for the European Commission. Available at: ec.europa.eu/DocsRoom/documents/14124/attachments/1/translations/en/.../native

[5] American Cleaning Institute (no date): Soaps & Detergents: Surfactants & Builders. Webpage available at: http://www.cleaninginstitute.org/clean_living/soaps__detergents_products__ingredients_2.aspx

[6] American Cleaning Institute (no date): Soaps & Detergents: Surfactants & Builders. Webpage available at: http://www.cleaninginstitute.org/clean_living/soaps__detergents_products__ingredients_2.aspx

[7] Yangxin YU et al. (2008): Development of surfactants and builders in detergent formulations, Chinese Journal of Chemical Engineering, 16 (4) pp 517-527. Available at: http://www.chemeng.tsinghua.edu.cn/scholars/yuyx/papers/Yu%20Detergent%20Review1.pdf

- **Zwitterionic** surfactants contain two charged groups of different signs under normal conditions. One of the main types of Zwitterionic surfactants is the **amphoteric surfactant,** which can be anionic (negatively charged), cationic (positively charged) or nonionic (no charge) in solution, depending on the pH (acidity or alkalinity) of the water. Amphoteric surfactants are used in personal cleansing and household cleaning products for their mildness, sudsing and stability.

A brief overview of the composition of these classes of surfactants is shown in Table A1-2.

Table A1-2: Classes of surfactant - composition and examples

Type	Composition	Example
Anionic	Sulfonated alcohols (C_{12}-C_{18}). Detergency is vested in anion part.	Sodium lauryl sulfate Sodium alkyl benzene sulfonate Linear alkylbenzene sulfonate (LAS)
Cationic	Quaternary ammonium salt. Detergency is due to cation.	Hexadecyltrimethyl ammonium bromide. Generally used as germicides and fabric softners
Non-ionic	Condensation product of long chain alcohol and 7-8 ethylene oxide units.	n-dodecyloctaethylene glycomonoether ethoxylate
Zwitterionic/ Amphoteric	Contain both acidic and basic groups. Most common amphoterics are N-alkyl betaines.	Laurylamido propyl dimethyl betaine (used in shampoos, skin cleaners)

Source: Sekhon BS & Sangha MK (2004)[8]

In household detergents and industrial cleaning products, liquid products may comprise approximately 50% surfactants, while powder products usually contain less than 25%.[9] In many other uses, the proportion of surfactant is often considerably lower, although the total use may still be extensive.

It should be noted that besides the Detergents Regulation, some surfactants are also regulated in the EU/EEA under other pieces of legislation, for example:

- Nonylphenol and nonylphenol ethoxylates are listed in Annex XVII in REACH and restricted to use in mixtures at concentrations equal to or exceeding 0.1% by weight in industrial and institutional cleaning (except closed dry cleaning where washing liquid is recycled or incinerated, cleaning systems where the liquid is recycled or incinerated) and for domestic cleaning;
- Perfluorooctane sulfonic acid and its derivatives (PFOS) were also listed in Annex XVII of REACH but were removed in 2010 and are now subject to EU Persistent Organic Pollutants (POPs) Regulation;
- Consumer detergents are also subject to the ban on Category 1A and 1B CMRs (Entry 28, 29 and 30 of REACH Annex XVII).

[8] Sekhon BS & Sangha MK (2004): Detergents – Zeolites and enzymes excel cleaning power, Resonance, 9 (8), pp 35-45. Available at: http://link.springer.com/article/10.1007/BF02837576

[9] Johansson O (2012): Literature survey of surfactants in the Nordic Countries, Goodpoint AB. Available at: http://nordicscreening.org/index.php?module=Pagesetter&func=viewpub&tid=5&pid=18

Exogenous influences, such as other EU or national legislation, need to be borne in mind when looking at market changes.

A1.2.2 Builders

Builders are the second major component in detergents and are added to protect and upgrade surfactant efficiency.[10] They develop optimum water conditions for operation of the surfactants, by deactivating hard water minerals, such as calcium and magnesium ions by sequestration or precipitation.[11] Phosphates, primarily sodium tripolyphosphate (STPP), dominated the builders used from 1947 to the late 1980s.[12] Since then, STPP has been partially replaced by a combination of zeolite (mainly Zeolite A which, like STPP, is readily available and relatively inexpensive) with polycarboxylic acid and sodium carbonate.[13] A third system, based on citrates, is used for automatic dishwasher detergents and liquid detergents[14].

Table A1-3 provides some baseline information on the chronological development of detergent builders up until the time (approximately) that the Detergents Regulation came into force.

[10] Essential Industries (2014): General Cleaners. Webpage available at: http://www.essind.com/general-cleaners/the-chemistry-of-cleaning/#Builders

[11] Bajpai D and Tyagi VK (2007): Laundry Detergents: An Overview. Journal of Oleo Science, 56(7), pp 324-340.

[12] Glennie EB et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

[13] Watson RA (2006): Chapter 3, Laundry detergent formulations, in Showell M (2006): Handbook of detergents, Part D: Formulation, Surfactant science series volume 128.

[14] Glennie EB et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

Table A1-3: Chronological development of detergent builders (pre-2004)	
Builder (all builders as sodium salts)	**Year**
Silicate + Carbonate	1907
Phosphate containing detergents	
Diphosphate	1933
Triphosphate	1946
Zeolite A + triphosphate	1976
Phosphate free detergents	
Zeolite A + Carbonate + Polycarboxylates	1983
Zeolite A + Amorphous or Crystalline disilicates + Polycarboxylates	1994
Zeolite P + Carbonate + Citrate or Polycarboxylate	1994
Zeolite X + Carbonate + Citrate or Polycarboxylate	1997
Zeolite AX (Zeolite X (80%) + Zeolite A (20%)	Recent development*
**between 1997 and 2004* *Source: Sekhon BS & Sangha MK (2004)*[15]	

A1.2.3 Other ingredients

Besides surfactants and builders, detergents may also include (among other ingredients):

- **Bleaches and optical brighteners**: Bleaches are strong, oxidising chemicals that react with oxidisable stains and render them colourless. Optical brighteners absorb ultraviolet (UV) light in the electromagnetic spectrum and emit the light in the blue visible region of the electromagnetic spectrum, which enhances the perceived whiteness of clean fabrics.
- **Alkalis:** these raise the pH of the water, which helps to break up oily and acidic soil.
- **Enzymes:** these break down large, insoluble molecules such as proteins, carbohydrates and fats into smaller, more soluble segments. Enzymes may be added to effect stain removal or to provide colour and fabric care.
- **Antimicrobial agents:** These agents are added to help prevent the spread of disease and to reduce odour-causing microorganisms. They may be microbiocidal (i.e. kill microorganisms) or microbiostatic (i.e. inhibit the growth of microorganisms). Some examples of antimicrobial agents used in cleaners and sanitisers are shown in Table A1-4. It is not yet clear which antimicrobial agents are the most commonly used in detergent products today.
- **Fragrances:** These neutralise the inherent odour of the detergent chemicals and of the soils.

[15] Sekhon BS & Sangha MK (2004): Detergents – Zeolites and enzymes excel cleaning power, Resonance, 9 (8), pp 35-45. Available at: http://link.springer.com/article/10.1007/BF02837576

Table A1-4: Some examples of antimicrobial agents used in cleaners and sanitisers	
Type	**Examples**
Quaternary ammonium compounds (quats)	Benzyl dimethyl alkyl ammonium chloride, dialkyl dimethyl ammonium chloride lauryl pyridinium chloride, cetyl pyridinium chloride, benzalkonium chloride
Biguanides	Polyhexamethylene biguanide
Organic acids	Lactic acid, alkyl fatty acids ($<C_{12}$), dodecylbenzene sulfonic acid, salicylic acid, glycolic acid, benzoic acid
Chlorhexidine	Chlorhexidine gluconate/acetate
Organic amines	Faty alkyl 1,3-diaminopropane
Amphoterics	*N*-Fatty alkyl β-aminopropionate, *N*-hydroxyethyl-*N*-carboxymethyl fatty acid sodium salt of amidoethylamine
Alcohols	Ethyl alcohol, propyl alcohol, benzyl alcohol, pine oil
Oxidizing agents	Sodium hypochlorite (liquid chlorine bleach), chlorine dioxide, hypochlorous acid, trichloro- and dichloroisocyanuric acids and their salts, sodium perborate and activator, peroxy acid (per acid), magnesium salt of peroxy phthalic acid, oxygen bleach generated from ozone
Aldehydes	Formaldehyde, glyoxal, glutaraldehyde, polyaldehyde (polyacrolein), aldehyde-amine condensation products, aldehyde-glycol condensation products, bronopol
Phenols, chlorophenols, and their derivatives	*o*-Phenyl phenol, *o*-benzyl-*p*-chlorophenol, *p*-chloro-*m*-xylenol, *o*, *p*, *p'*-trichloro-*o'*-hydroxydiphenyl ether (Triclosan)
Iodophors concentrate	Nonylphenoxypoly(ethyleneoxy) ethanol-iodine complex, ethoxylated nonyl phenol-iodine complex, polyvinyl pyrrolidone-iodine complex
Isothiazolones	5-Chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one (Kathon)
Source: Zoller (2009)[16]	

A1.2.4 Typical formulations and changes arising from the Detergents Regulation

The precise constituents of detergents vary between application (e.g. laundry, dishwashing, industrial, etc.), between types (conventional/compact, etc.), between form (e.g. powder, liquid, bar, pod, etc.) and also between brands. Some typical examples of detergent formulations are shown in the following sub-sections. While the Detergents Regulation and its amendments may have led to some changes to the formulation of detergents (and especially Regulation (EU) No 259/2012 on the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents (CADD)), limited information is available to analyse these changes.

Laundry detergent

The following two tables present a comparison of typical phosphorus-based and phosphorus-free laundry detergent formulations for conventional (Table A1-5) and compact (Table A1-6) powders from before the Detergents Regulation came into force.

[16] Zoller U (2009): Handbook of Detergents, Part E: Applications, Surfactant science series volume 141

Table A1-5: Comparison of typical phosphorus-based and phosphorus-free laundry detergent formulations (Conventional Powders) - % concentration		
Ingredient	**Phosphorus-based (%)**	**Phosphorus-free (%)**
Sodium tripolyphosphate (STPP)	20-25	0
Zeolite	0	25
Polycarboxylates (PCAs)	0	4
Organic phosphonates	0 to 0.2	0.4
Sodium silicate	6	4
Sodium carbonate	5	15
Surfactants	12	15
Sodium perborate	14	18
Activator	0 to 2	2.5
Sodium sulphate	1 to 24	9
Enzymes	1	0.5
Antiredeposition agents	0.2	1
Optical brightening agents	0.2	0.2
Perfume*	10	0.2
Water	0	5
**perfumes are not essential to the effectiveness of detergents. Their content is variable.* *Source: Glennie et al. (2002)* [17]		

[17] Glennie EB et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

Table A1-6: Comparison of typical phosphorus based and phosphorus free laundry detergent formulations (Compact Powders) - % concentration		
Ingredient	**Phosphorus-based (%)**	**Phosphorus-free (%)**
Sodium tripolyphosphate (STPP)	50	0
Zeolite	0	20-30
Polycarboxylates (PCAs)	0	5
Organic phosphonates	0	0.2
Sodium silicate	5	4
Sodium carbonate	4	15-20
Surfactants	14	15
Sodium perborate	10	13
Activator	3	5
Sodium sulphate	4	5
Enzymes	0.8	0.8
Anti-redeposition agents	1	1
Optical brightening agents	0.3	0.3
Perfume	0.2	0.2
Water	8	5
**Monohydrated perborate is used in compacts. This is significantly more powerful bleach than the tetrahydrated perborate used in conventionals* *Source: Glennie et al. (2002)* [18]		

Earlier data on the composition of laundry detergents (from 1997) in Europe is provided in Table A1-7 for both powder and compact formations.

Laundry detergents can either be 'general purpose' or 'light duty'. General purpose detergents are suitable for all washable fabrics, while light duty detergents are used for washing lightly soiled items and delicate fabrics, like wool, silk, and synthetics. Some typical examples of light duty liquid detergent compositions are shown in Table A1-8, based on data from before the Detergents Regulation came into force.

[18] Glennie EB et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

Table A1-7: Composition of powdered laundry detergents in Europe in 1997		
Ingredient	**Weight (%) for traditional**	**Weight (%) for compact**
Surfactants	10-15	10-25
Builders	28-55	28-48
Bleach	10-25	10-20
Bleach activator	1-3	3-8
Fillers	5-30	None
Corrosion inhibitors	2-6	2-6
Enzymes	0.3-0.8	0.5-2.0
Optical whitening agents	0.1-0.3	0.1-0.3
Anti-foaming agents	0.1-4.0	0.1-2.0
Water	to 100%	to 100%
Source: Kevelam J (1997)[19]		

Table A1-8: Some typical examples of light duty liquid detergent compositions			
Ingredient	**%**	**%**	**%**
LABS	17.6	10	
SLES	6.5		
Lauryl alcohol ethoxylate	1.5		22
Fluorescent Whitening Agents	0.1	0.1	0.1
Sodium Chloride	0.3		
AOS (Alpha Olefin Sulphonate)		2.2	
Fatty Alcohol Ether sulphate			1.7
Lauric soap			2.2
Tri Ethanol Amine		2	
Caustic Alkali 45%		1.8	
Ethanol	7		
Preservatives	0.2	0.2	0.2
Cocodiethanolamide		11	
Polymer Antistatic additives/Polyquart*			2.2
Colour	As required	As required	As required
Fragrance	0.3	0.3	0.3
Water	To 100	To 100	To 100
Source: Dixit (2003)[20] ** Polydiallyl dimethyl ammonium chloride*			

[19] Kevelam J (1997): Polymer-surface interactions: Aqueous chemistry of laundry detergents. PhD thesis. University of Groningen

[20] Dixit S (2003): Laundry detergents – Moving from solid to liquid. Available at: http://sitaramdixit.synthasite.com/resources/Laundry%20detergents%20-%20Moving%20from%20solid%20to%20liquid.pdf

Automatic dishwasher detergent

Table A1-9 presents information on the typical composition of an automatic dishwasher detergent from before the Detergents Regulation came into force (1997).

Table A1-9: Typical automatic dishwashing compositions	
Ingredient	**Amount (wt%)**
Sodium tripolyphosphate (STPP)	25-45
Sodium silicate	15-60
Sodium carbonate	0-25
Chlorinated compounds	0-25
Surfactant	0-6
Sodium sulfate	0-40
Other additives	0-3
Water	Balance
Source: Gorlin PA et al (1997)[21]	

Washing up liquid detergent

Washing up liquids are used mainly to wash soiled dishes and cooking utensils in the kitchen. A typical washing up liquid composition (pre-Detergents Regulation) is shown in Table A1-10.

Table A1-10: Typical washing up liquid composition	
Ingredient	**Composition**
LABS (Linear alkyl benzene sulphonate)	18 to 20%
SLES (Sodium laureth sulphate)	5 to 8%
Cocodiethanol amide	1.5 to 3%
Ethanol	3 to 4%
Preservative	0.2%
Sodium Chloride	0.2% to 0.5%
Colour	as required
Fragrance	0.2 to 0.3%
Water	to 100%
Source: Dixit (2003)[22]	

[21] Gorlin PA et al (1997) in Zoller U (2009): Handbook of Detergents, Part E: Applications, Surfactant science series volume 141

[22] Dixit S (2003): Laundry detergents – Moving from solid to liquid. Available at: http://sitaramdixit.synthasite.com/resources/Laundry%20detergents%20-%20Moving%20from%20solid%20to%20liquid.pdf

Surface care products

Surface care products include a range of all-purpose cleaners (multi-purpose, floor, household disinfectants, etc.), window cleaners, sanitary cleaners (e.g. kitchen, bathroom and toilet) and other products (e.g. oven cleaners, drain cleaners, etc.). Given the range of products covered by this group, it is more difficult to set out the typical composition for such products.

However, as noted by JRC, they make an important contribution to a household's total chemical load to wastewater. In addition, they may contain some of the "problematic" substances listed above, including for example phosphates.

Changes arising from the Detergents Regulation

In 2012, the Detergents Regulation was amended (by Regulation (EU) No 259/2012) to harmonise rules on limiting the content of phosphates and other phosphorus compounds in consumer laundry detergents and CADD. The new limits outlined by this amendment were introduced to reduce the environmental damage caused by phosphates from detergents, particularly to aquatic ecosystems, through the process of eutrophication. In its Annex VIa, Regulation (EU) No 259/2012 sets a limitation of 0.3 grams of the total phosphorus content in the standard dosage in CADD from the 1st January 2017. For laundry detergents, Annex VIa outlines a limitation of a maximum of 0.5 grams of the total phosphorus content from the 30th June 2013. For further information on these provisions of the Detergents Regulation, see Annex 3, Section 1.4.1.

It should be noted that the Regulation does not limit the quantity of phosphorus/phosphate used in detergents for washing laundry and dishes by hand. A 2002 study from EU Environment Directorate notes that:[23]

> *"Laundry and dishwasher detergents may contain phosphorus, present as sodium tripolyphosphate (STPP). Fabric conditioners and washing up liquids used in Europe do not."*

Technically feasible alternatives to phosphorus in laundry detergents and CADD were available on the EU market before the Detergents Regulation came into force. For example, by 2002, Amway had already been awarded a patent for a phosphate-free CADD and, in 2012, BASF Aktiengesellschaft placed a patent on a phosphate-free CADD. [24]

However, as phosphates perform a variety of functions within detergents, a number of different alternative substances are often needed to achieve the same results.[25] For example, during the consultation, one MS authority noted that there is no single alternative technology to phosphates in

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[23] EU Environment Directorate (2002) Phosphates and alternative detergent builders – final report. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

[24] Bio by Deloitte (2014) : Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

[25] European Commission (2015): Report from the Commission on the European Parliament and the Council - Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 21 March 2004 on detergents, concerning the use of phosphorus in consumer automatic dishwasher detergents. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

detergents with the same cost performance ratio which can themselves deliver all the functionality that phosphates bring in consumer detergents. A common feature of phosphate-free powder laundry detergents is that they contain a combination of zeolites and carboxylic acids instead of phosphates. Both types of substances have a low toxicity and mainly end up in the sludge in wastewater treatment plants. A study undertaken by the Swedish Chemicals Agency concluded that an increase in the use of polycarboxylic acids in consumer detergent products is not associated with appreciable environmental risks. It is also noted that experience of national restrictions on the use of phosphates in detergents for consumer use in Italy, Norway and Switzerland is reported to have had favourable environmental impacts.[26] [27]

Other well-established alternatives to phosphate in consumer detergents include sodium carbonate, citric acid and cobuilders such as polycarboxylates and polyphosphonates. Doubts regarding the ecological advantages of combinations of these builders have also led to the development of other substances, such as aminocarboxylates methylglycinediacetic acid (MGDA) and glutaminic acid diacetic acid.[28]

Although zeolites are now used as a builder in almost all EU countries where STPP is no longer used in laundry detergent, zeolites are not suitable for CADD because they are insoluble in water and would lead to pump damage, residues and blocked filters as well as leave unacceptable deposits on all washed tableware.[29] Possible alternatives to phosphate as a builder in CADD are provided in the Table A1-11.

[26] The Swedish Chemicals Agency (2011): Phosphates in detergents. KemI. Available at: http://www.kemi.se/global/faktablad/facts-phosphates-in-detergents-questions-and-answers.pdf

[27] KemI (2010): Nationell reglering av fosfor i tvättmedel och maskindiskmedel för enskilt bruk. Förutsättningar och konsekvenser. Available at: http://www.kemi.se/global/rapporter/2010/rapport-4-10.pdf?_t_id=1B2M2Y8AsgTpgAmY7PhCfg%3d%3d&_t_q=fosfat&_t_tags=language%3asv%2csiteid%3a007c9c4c-b88f-48f7-bbdc-5e78eb262090&_t_ip=172.17.0.79&_t_hit.id=KemI_Web_Models_Media_SiteMediaData/_feb62106-18f9-4275-a29d-52f9dcb86e9f&_t_hit.pos=3

[28] Milmo S (2009): Detergents shift to greener builders. ICIS Chemical Business. Available at: https://www.icis.com/resources/news/2009/01/12/9182061/detergents-shift-to-greener-builders/

[29] Bio by Deloitte (2014) : Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

Table A1-11: Possible alternatives to be used as builders	
Name	**Scientific name**
MGDA	Methyl glycine di-acetic acid
B-ADA	B-alaninediacetic acid
GLDA	L-glutamic acid
IDS(A)	Iminodissuccinic acid
ASDA	L-aspartic-N,N-diacetic acid
Sodium gluconate	Sodium pentahydroxyhexanoate
Sodium salts of citric acid	Sodium citrate
Source: Bio by Deloitte (2014)[30]	

A report from the European Commission concerning the use of phosphates in CADD[31] confirms the technical feasibility of substituting phosphate with a range of alternative substances/compounds. It also concluded that phosphate-free detergent products provide similar cleaning performance as those containing phosphates.

Table A1-12 provides a summary of some of the ingredients that can be used as alternatives to phosphate in detergents, based on information drawn from the consultation.

Table A1-12: Alternative ingredients to phosphates in consumer detergents
Sodium citrate Sodium gluconate Sodium carbonate MGDA (Methylglycin diacetic acid, sodium salts) HEIDA (2-hydroxyethyliminodiacetic acid, sodium salts) ASDA (L-aspartic-N,N-diacetic acid, sodium salts) GLDA (L-glutamic acid, N,N-diacetic acid, sodium salts) IDS(A) (Iminodissuccinic acid, sodium salts) Phosphonates Polycarboxylates **Ingredients that can be added at low concentrations to help improve performance of phosphate replacers include:** Sodium phosphonate Polycarboxylates Enzymes Polymers
Source: Consultation with a Member State authority

[30] Bio by Deloitte (2014) : Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD), Report prepared for the European Commission – DG ENT. Available at: http://ec.europa.eu/DocsRoom/documents/7245/attachments/1/translations/en/renditions/native

[31] European Commission (2015): Report from the Commission on the European Parliament and the Council - Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 21 March 2004 on detergents, concerning the use of phosphorus in consumer automatic dishwasher detergents. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

Discussions with an industry association indicated that there are three alternative substances to phosphorus/phosphate that are being used in detergent products. These are citric acid, some enzymes and methyglycinediacetate. However, it was noted that the environmental effects of these alternatives are only known for citric acid, which the stakeholder noted is a concern. The Commission report concerning the use of phosphates in CADD[32] confirmed that there are some data gaps in relation to certain alternatives to phosphorus in CADD that prevent a comprehensive assessment of the environmental impacts to be undertaken. Data gaps were identified for three alternatives to STPP (sodium gluconate, L-aspartic-N, N-diacetic acid, sodium salts and B-alanineediacetic acid). The Commission has encouraged suppliers of alternatives to phosphorus/phosphate compounds to generate more data in the context of REACH Registration. All other assessed alternatives do not pose an unacceptable risk to human health and/or the environment based on current scientific knowledge. Thus, the study concludes that the substitution of phosphates with alternatives would not add further risk to human health or the environment.

Since 1990, the German Cosmetic, Toiletry, Perfumery and Detergent Association (IKW) has regularly asked its members about the quantities of certain ingredients[33] used in detergents, softeners and household cleaners. As shown in Table A1-13, in 2015, there was an additional demand for complexing agents that are rapidly biodegradable (e.g. GLDA, MGDA). The IKW notes that the reason for this was the restriction on the phosphorus content of CADD (introduced by Regulation (EU) No 259/2012) which came into force on 1 January 2017, which led to the replacement of phosphates and other ingredients with these complexing agents. When analysing the information shown in Table A1-13, care must be taken when comparing the total quantities of ingredients or product groups between years, due to the addition of new product groups or ingredients, especially in the reporting years 1994 and 2005.[34]

[32] European Commission (2015): Report from the Commission on the European Parliament and the Council - Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 21 March 2004 on detergents, concerning the use of phosphorus in consumer automatic dishwasher detergents. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

[33] The water content is not captured by the IKW Ingredients Survey

[34] In 1994, additional ingredients and product groups (e.g. floor, automotive, leather, furniture, shoe care, window, stove and special cleaning products) were added to the list because IKW merged with another industry association called Care and Cleaning Products association (IPP). In addition, product groups such as room fragrances and certain care products were added in 2002 and quantities of ingredients such as colorants, dye transfer inhibitors, paraffins, phosphoric acid, dirt deflectors, and silicones have been reported since 2005.

Table A1-13: Quantities of key ingredients and product groups in tonnes							
Ingredient/product group	**1989**	**1994**	**2005**	**2007**	**2010**	**2012**	**2015**
Alcoholic solvents (Ethanol, isopropyl alcohol)	n/a	17,000	29,300	31,562	30,594	21,167	13,636
Carboxymethylcellulose	n/a	2,700	1,866	3,737	3,062	3,152	3,548
Citric acid and its salts (e.g. sodium citrate)	n/a	22,700	14,267	16,268	21,047	21,588	19,854
Enzymes (including formulants)	n/a	3,600	3,960	4,405	5,974	6,488	5,513
Colorants (dyes and pigments)	n/a	n/a	76	118	319	100	109
Color transfer inhibitors	n/a	n/a	459	669	499	537	548
Complexing agent, biodegradable (e.g. GLDA, MGDA)	n/a	n/a	n/a	n/a	n/a	n/a	314
Sodium carbonate (soda)	75,000	91,800	79,499	92,235	102,754	95,613	80,355
Sodium perborate	100,000	103,000	2,606	322	66	*	*
Sodium percarbonate	n/a	8,000	41,257	46,580	42,554	32,590	35,822
Sodium sulfate	91,000	62,600	65,902	89,325	80,579	77,107	76,088
Nitrilotriacetic acid	n/a	n/a	184	149	157	*	*
Optical brighteners (fluorescent whiteners)	n/a	710	348	446	414	389	434
Paraffins [aliphatic hydrocarbons, liquid, viscous, including hard paraffins (synthetic waxes)]	n/a	n/a	1,385	2,375	3,108	4,157	2,747
Perfume oils/fragrances (including solvents and formulants)	n/a	4,000	5,930	8,020	7,202	8,394	9,027
Phosphates	20,000	5,100	27,396	31,445	30,226	29,910	19,444
Phosphonates	2,000	1,900	3,207	4,043	4,115	4,326	4,673
Phosphoric acid	n/a	n/a	507	516	326	173	195
Polycarboxylates	21,000	23,700	11,576	14,356	14,080	13,904	12,488
Soil Deterrent / Dirt Removal Polymers (Non-ionic Terephthalate Polymers)	n/a	n/a	1,233	1,421	1,276	1,643	2,100
Silicates	35,000	20,200	10,077	13,869	14,231	12,720	12,813
Silicones (all organic silicon-oxygen compounds)	n/a	n/a	343	386	552	946	507
Surfactants (including soaps)	172,000	169,000	192,889	193,741	182,752	179,554	184,419
Tetraacetylethylenediamine (TAED)	n/a	14,000	10,257	10,990	9,091	8,774	8,315
Zeolites	131,000	153,000	91,622	90,727	50,805	32,472	37,519
Total	**647,000**	**703,010**	**596,146**	**657,705**	**605,782**	**555,679**	**530,470**

Notes: in italics are ingredients or groups that are partially considered to be persistent organic substances / groups of substances: Poorly Biodegradable Organics - PBO (n/a: not recorded; * The sum cannot be reported for competitive reasons, since less than four companies use this substance)

Source: IKW (2017): Bericht Nachhaltigkeit in der Wasch-, Pflege- und Reinigungsmittelbranche in Deutschland, 2015-2016. Availale at: http://www.ikw.org

As shown in Table A1-13, the quantities of alcoholic solvents, sodium carbonate, paraffins and phosphates have fallen sharply since 2012. The quantities of the following ingredients/groups of substances also decreased: citric acid and its salts, enzymes, sodium sulphate, polycarboxylates, silicones and tetraacetylethylenediamine (TAED). The quantities of the following ingredients/groups of substances have increased slightly: carboxymethylcellulose, sodium percarbonate, perfume oils, phosphonates, soil removal polymers, surfactants and zeolites.

IKW notes that the reason for the general decrease in total reported quantities since 1989 and 1994, respectively, is that some high-volume ingredients in detergents, care and cleaning products are used at a lower concentration than before or have been replaced by more efficient substances or groups of substances. For example, sodium perborate has been largely replaced by more efficient sodium percarbonate. IKW also notes that zeolites play a lesser role nowadays than in the past 20 years due to the decreasing market importance of powdered detergents as well as formulation changes with zeolite substitutes. Zeolites are used as water softeners exclusively in powdered detergents. Nevertheless, higher volumes of zeolites were reported for the 2015 reporting year compared to the 2012 reporting year.

IKW has noted that the sharp decline in the use of phosphates in 2015 can be explained by the reformulation of formulas among manufacturers of CADD in response to Regulation (EU) No 259/2012. In Germany, phosphates in household laundry detergents have been virtually eliminated since the mid-1980s as a result of voluntary action by detergent manufacturers. They have gradually been replaced by softener systems based on citrates, polycarboxylates, disilicates, sodium carbonate (soda) and/or soaps.

A1.3 Production of detergents and surfactants

A1.3.1 Production of detergents

Article 2 of the Detergents Regulation, as amended, defines a detergent as:

> *"any substance or mixture containing soaps and/or other surfactants intended for washing and cleaning processes. Detergents may be in any form (liquid, powder, paste, bar, cake, moulded piece, shape, etc.) and marketed for or used in household, or institutional or industrial purposes.*
>
> *Other products to be considered as detergents are:*
>
> - *'Auxiliary washing mixture', intended for soaking (pre-washing), rinsing or bleaching clothes, household linen, etc.;*
> - *'Laundry fabric-softener', intended to modify the feel of fabrics in processes which are to complement the washing of fabrics;*
> - *'Cleaning mixture', intended for domestic all purposes cleaners and/or other cleaning of surfaces (e.g. materials, products, machinery, mechanical appliances, means of transport and associated equipment, instruments, apparatus, etc.);*
> - *'Other cleaning and washing mixtures', intended for any other washing and cleaning processes."*

Different types of detergent products can be categorised in line with the NACE codes system of statistical classification of economic activities. NACE Rev 2 Code 2041 represents "*Manufacture of soap and*

detergents, cleaning and polishing preparations" and covers the product types given in Table A1-14. It should be noted that the product types included within NACE Rev 2 Code 2041 do not exactly align with the products included under the scope of the Detergents Regulation. For example, dog soap would not fall under the scope of the Detergents Regulation, nor would some types of polish[35]. Likewise, soaps and shampoos intended for personal care are also outside the scope of the Detergents Regulation (these are covered by the Cosmetic Products Regulation (EU) N°1223/2009).

Table A1-14: Product types categorised under NACE Rev 2 Code 2041 – Manufacture of soap and detergents, cleaning and polishing preparations[36]

Abrasive soap	Impregnated cleaning and polishing cloth	Shoe dye
Artificial waxes	Industrial soap	Shoe polish
Car polish	Liquid soap	Soap (except cosmetic soap)
Carpet soap	Metal polish	Soap chips
Cleaning and polishing preparations	Organic surface-active agents	Soap flakes
Cleaning powder (other than detergents and scouring powder)	Paper, wadding, felt etc. coated or covered with soap or detergent	Soap less detergent (formulated)
Crude glycerol	Plate polish	Soap powder
Deodoriser for household use	Polish for glass	Surface-active preparations
Detergent (soap less, formulated)	Polish	Textile soap
Detergent (synthetic)	Polishes and creams for wood and leather	Textile softeners
Dish-washing preparations	Preparations for perfuming or deodorising rooms	Toilet soap
Dog soap	Prepared waxes	Washing powders in solid or liquid form
Floor cleanser	Sanitary cleanser	Wax
Floor polish	Scouring pastes	Deodorisers (household)
Floor seal	Scouring powder	Household deodoriser
Furniture polish	Shaving Soap	Polishing paste and powder
Glycerol		Ski wax
Hard soap		Synthetic detergent

Based on the available data from Eurostat, the following six Member States (in order) are the most prominent producers of the products falling under NACE Code 2041: Germany, Italy, Spain, France, the United Kingdom and Poland[37]. This is supported by data presented in the AISE Activity and Sustainability Report 2015-2016[38], which indicates that the largest manufacturing facilities producing household care and professional cleaning and hygiene detergent products are concentrated in France, Germany, Italy, Poland and the United Kingdom. Table A1-15 provides data from Eurostat on the production value for NACE Code 2041. Figures A1-1 and A1-2 illustrate how the production value for the top six producers

[35] European Commission (2011): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, available at: ec.europa.eu/DocsRoom/documents/14129/attachments/1/translations/en/.../native

[36] Based on information from Central Statistics Office of Republic of Ireland 2014

[37] However, this does not account for the fact that data are not available for some countries, and so the top six countries may, in reality, be different.

[38] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society, available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

(Germany, Italy, Spain, France, United Kingdom and Poland) has changed over time (covering the period for which data are available, i.e. 2008-2014).

Table A1-15: Production value (million EUR) - NACE Rev 2 Code 2041							
Country	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Austria	567.4	564.0	621.4	620.6	665.6	619.6	570.5
Belgium	:	1,347.0	1,215.5	947.0	835.4	836.6	839.3
Bulgaria	93.3	102.5	116.8	122.8	144.3	176.8	187.2
Croatia	114.4	110.6	109.2	121.1	118.4	121.2	128.0
Cyprus	15.3	15.2	20.2	18.6	16.8	13.1	13.1
Czech Republic	:	:	:	:	:	:	:
Denmark	251.1	251.5	252.7	226.4	215.1	215.9	234.9
Estonia	:	:	6.8	:	:	14.2	15.7
Finland	:	:	:	53.5	63.6	72.9	83.2
France	2,733.8	1,905.9	1,934.0	1,821.2	1,765.4	1,755.6	2,114.4
Germany	5,945.4	6,952.7	6,793.0	5,451.6	5,613.5	7,093.2	7,767.2
Greece	743.8	408.8	292.3	262.6	252.7	248.1	263.2
Hungary	342.9	285.4	285.8	290.5	310.6	360.8	436.6
Ireland	111.3	218.7	68.1	:	:	:	:
Italy	6,780.2	4,324.6	4,391.4	4,205.8	4,354.6	4,027.0	3,644.7
Latvia	9.0	5.9	8.8	6.8	:	:	:
Lithuania	10.5	9.5	9.4	10.1	13.5	15.6	17.3
Luxembourg	:	:	:	:	:	:	:
Malta	5.0	:	:	:	:	:	:
Netherlands	:	:	:	:	:	:	:
Poland	1,209.1	1,058.5	1,117.5	1,146.2	1,249.2	1,278.4	1,438.6
Portugal	327.6	284.2	219.9	204.9	228.3	158.2	149.1
Romania	207.1	152.3	86.4	95.5	:	111.3	112.0
Slovakia	59.8	44.8	41.0	46.2	:	:	:
Slovenia	40.7	27.9	28.2	34.4	41.7	116.8	46.5
Spain	4,245.4	3,110.3	3,209.0	3,199.6	2,990.3	2,833.6	3,110.6
Sweden	305.8	258.9	292.9	300.3	249.5	287.3	258.0
UK	2,658.9	1,951.1	1,626.4	1,529.3	1,857.9	1,562.1	1,786.9
Norway	291.4	267.4	304.8	326.4	329.0	347.6	315.3
Iceland	:	:	:	:	:	:	:
Liechtenstein	:	:	:	:	:	:	:
EU28 + Norway, Iceland and Liechtenstein	**30,405.8**	**≥23,657.7***	**24,367.5**	**≥21,041.4***	**22,465**	**23,177**	**24,533**

**sum of available data*

Source: Eurostat (sbs_na_ind_r2)

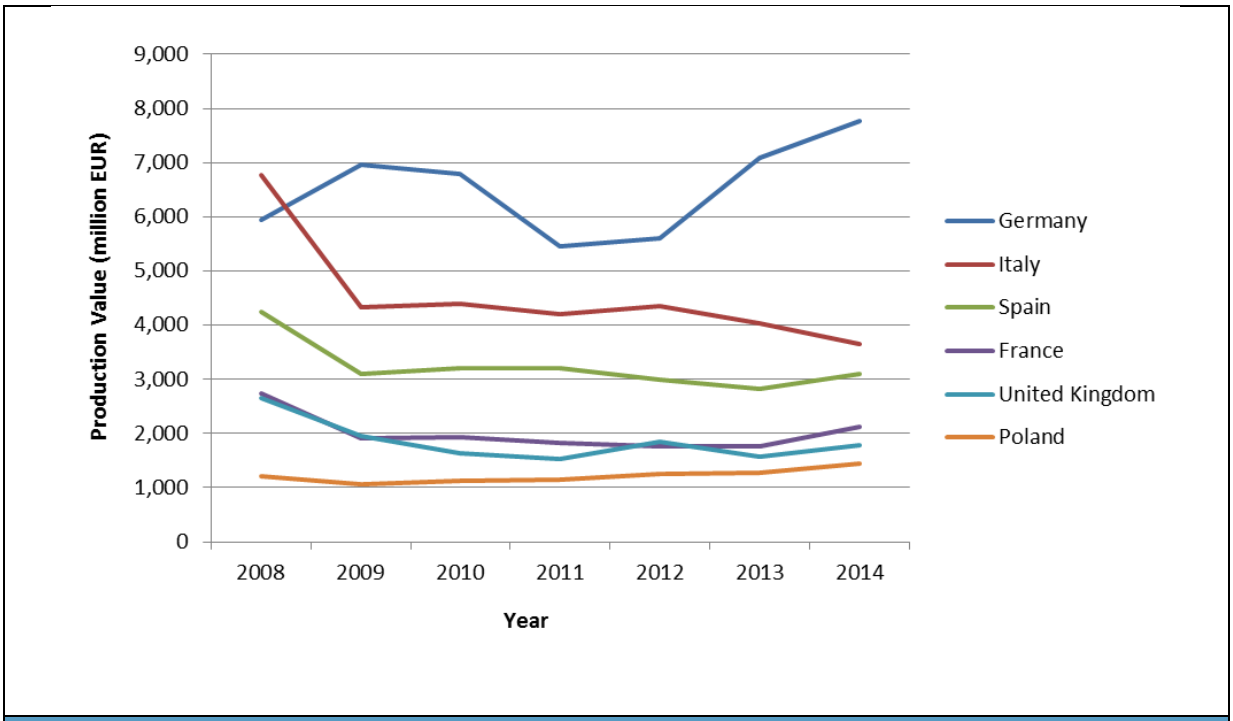

Figure A1-1: Production value, (million EUR) - NACE Rev 2 Code 2041
Source: **Eurostat *(sbs_na_ind_r2)***

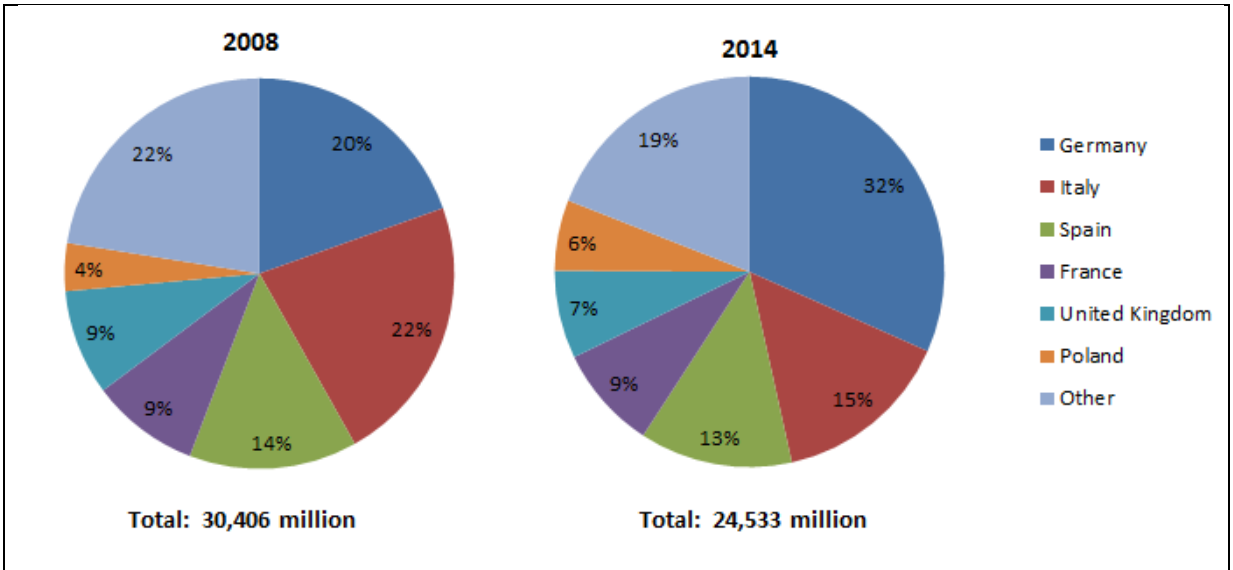

Figure A1-2: Production value, Percentage share by country, NACE Code 2041
Source: Eurostat (sbs_na_ind_r2)

For most of the period, Germany has been the top manufacturer of soaps and detergents, cleaning and polishing preparations (NACE Code 2041) in terms of production value, having surpassed Italy in 2009. Most countries experienced a decline after 2008 which may be linked to the global economic recession, with Germany being the only exception. However, from 2009 to 2011, whilst production value steadied in other countries after the initial decline, Germany saw an overall reduction in this sector, with recovery steady initially but rebounding after 2012.

A1.3.2 Production of surfactants

The NACE Rev 2 classification corresponds well to the four main groups of surfactants outlined previously, with the specific NACE codes being as follows:

- NACE Code 20412020 - Anionic organic surface-active agents (excluding soap)
- NACE Code 20412030 - Cationic organic surface-active agents (excluding soap)
- NACE Code 20412050 - Non-ionic organic surface-active agents (excluding soap)
- NACE Code 20412090 - Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)

The following table presents data on the total volume of surfactants produced in the EEA between 2003 and 2015. Data were not available for Liechtenstein. For ease of interpretation, these data are presented graphically in Figure A1-3. It must be noted when looking at these data that, although the surfactants market is largely driven by the demand for detergents and cleaners[39], surfactants also find use in a wide range of other applications, including in industries such as textile and leather, healthcare, vehicle care, food processing, and the oil and gas industry. The personal care sector is also a key user of surfactants, with surfactants being used for example in face washes, baby care products, shampoos and conditioners, etc. Thus, the data shown in Table A1-16 and Figure A1-3 overestimate the total volume of surfactants used in detergents in the EEA. It has been estimated that, in terms of volume, household detergents accounted for more than 50% of the global surfactants market in 2014.[40]

Table A1-17 and Figure A1-4 provide Eurostat (Comext) data on the value of surfactants produced in the EU-28 between 2006 and 2015 (unfortunately data were not available for Norway, Iceland or Liechtenstein). Anionic surfactants are produced and used in greater volume than any other groups due to their ease and low cost of manufacture.[41] The data show a clear peak in the total value of cationic organic surfactants produced in 2008. The reasons for this peak are not clear.

[39] Transparency Market Research (2015): Surfactants (Anionic, Cationic, Non-ionic, Amphoteric, and Others) Market for Household Detergents, Personal Care, Industrial & Institutional Care, Food Processing, Oilfield Chemicals, Textile & Leather and Other Applications – Global Industry Analysis, Size, Share, Growth, Trends and Forecast 2015-2023. Report Preview available at: http://www.transparencymarketresearch.com/surfactants-market.html

[40] Transparency Market Research (2015): Surfactants (Anionic, Cationic, Non-ionic, Amphoteric, and Others) Market for Household Detergents, Personal Care, Industrial & Institutional Care, Food Processing, Oilfield Chemicals, Textile & Leather and Other Applications – Global Industry Analysis, Size, Share, Growth, Trends and Forecast 2015-2023. Report Preview available at: http://www.transparencymarketresearch.com/surfactants-market.html

[41] Yangxin YU et al. (2008): Development of surfactants and builders in detergent formulations, Chinese Journal of Chemical Engineering, 16 (4) pp 517-527. Available at: http://www.chemeng.tsinghua.edu.cn/scholars/yuyx/papers/Yu%20Detergent%20Review1.pdf

Table A1-16: Surfactants - Total production volume in the EEA, million kg													
NACE Code	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
20412020 - Anionic organic surface-active agents (excluding soap)	1366	1522	1710	1768	1771	1539	1432	1613	1558	1614	1777	1660	1620
20412030 - Cationic organic surface-active agents (excluding soap)	468	520	572	602	546	901	675	819	669	592	627	717	579
20412050 - Non-ionic organic surface-active agents (excluding soap)	1144	1245	1184	1285	1258	1182	1105	1381	1278	1339	1497	1470	1507
20412090 - Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)	338	326	401	357	359	360	360	366	351	403	425	402	417
Source: Eurostat (DS-066342). Data for Liechtenstein not available													

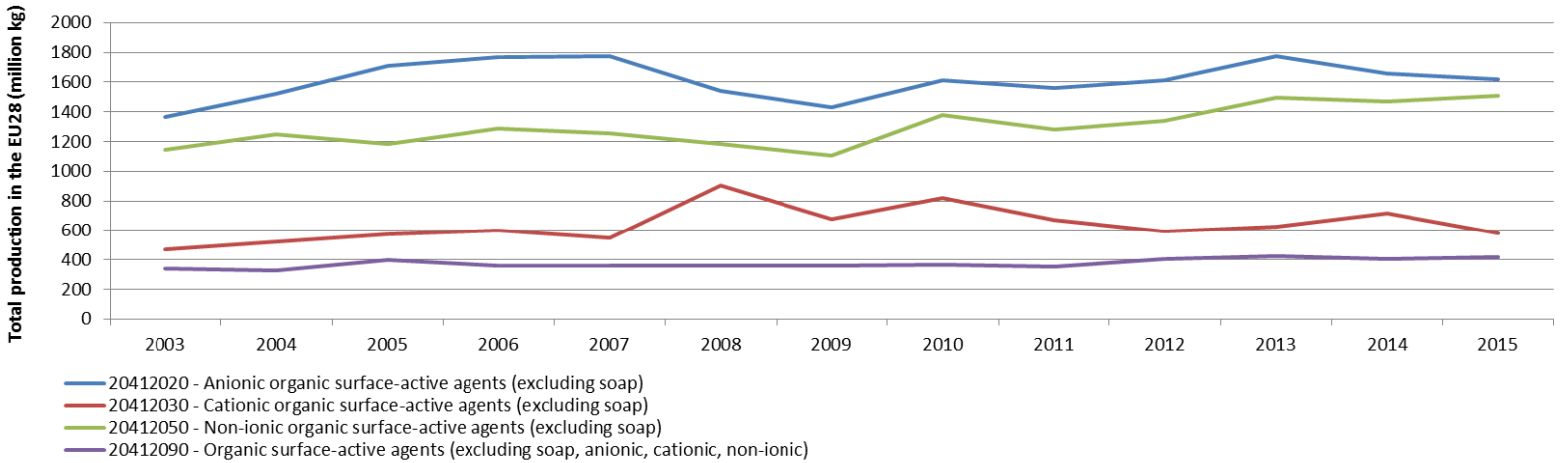

Figure A1-3: Surfactants - Total production volume in the EEA, million kg

Source: Eurostat (DS-066342). Data for Liechtenstein not available.

Table A1-17: Surfactants - Total production value in the EU28, million EUR											
NACE Code	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
20412020 - Anionic organic surface-active agents (excluding soap)	1194.2	1208.4	1410.2	1139.2	1349.6	1521.2	1559.5	1773.9	1707.1	1581.5	14444.9
20412030 - Cationic organic surface-active agents (excluding soap)	539.3	567.7	2491.2	1294.6	703.9	724.6	657.4	634.1	612.4	721.8	8946.9
20412050 - Non-ionic organic surface-active agents (excluding soap)	1513.0	1683.2	2339.8	1990.8	1867.5	2127.6	2322.2	2398.4	2380.5	2450.8	21073.9
20412090 - Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)	331.9	364.4	402.1	340.8	379.5	389.6	485.4	460.9	418.6	444.7	4017.9
Source: COMEXT. Data not available for Norway, Iceland and Liechtenstein											

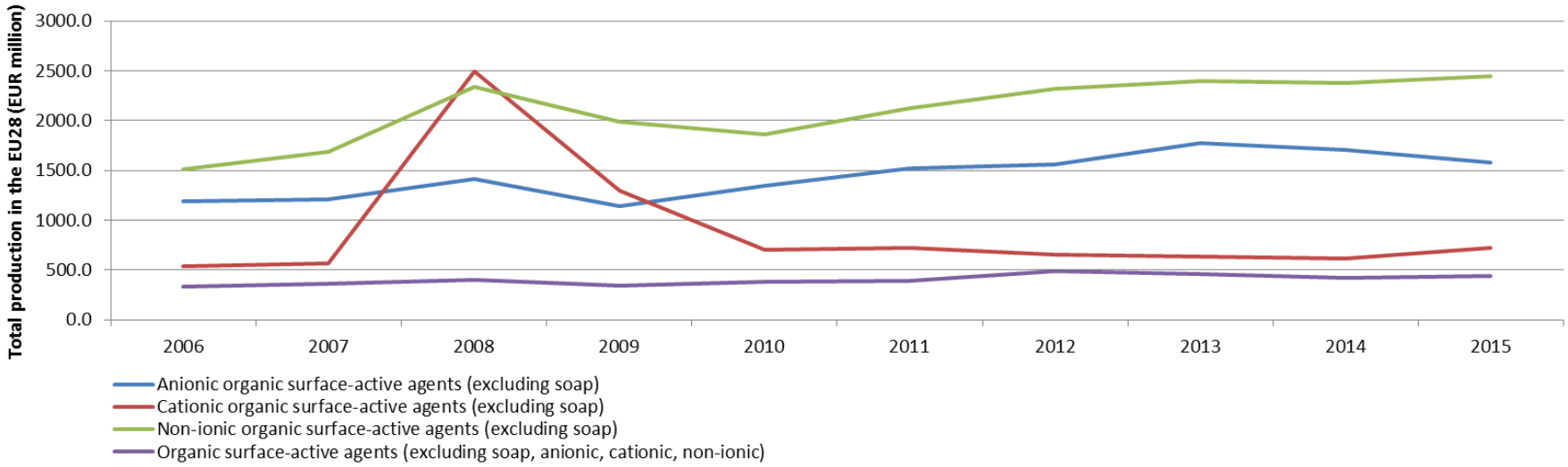

Figure A1-4: Surfactants - Total production value in the EU28, million EUR

Source: COMEXT. Data not available for Norway, Iceland and Liechtenstein

The most widely used surfactant is currently the anionic surfactant linear alkyl benzene sulfonate (LAS), which is estimated to account for nearly 40% of the global anionic surfactants market.[42] In the early 2000s, European LAS production was estimated at 400,000 metric tonnes.[43]

A1.3.3 Number of enterprises and associated turnover

Eurostat provides a breakdown of the number of enterprises by size (i.e. SME or non-SME) across NACE Rev 2 Code 204 which covers the manufacture of soap and detergents, cleaning and polishing preparations, perfume and toilet preparations (again, it should be noted that this category is much broader than the range of products included under the scope of the Detergents Regulation, but provides a useful proxy in the absence of better data).

Eurostat also provides data on turnover for NACE Rev 2 Code 204 by company size in terms of number of employees. Total turnover for the sector was around €70,500 million for 2014, with around 38% of this accounted for by SMEs and 62% by large (non-SME) companies. Of the total, micro enterprises account for around 4.1% of turnover, small enterprises 8.5% of turnover and medium sized enterprises around 25% of turnover. The sector is therefore dominated by medium and larger sized enterprises.

Table A1-18: Number of companies in the sector by enterprise size (NACE Rev 2 Code 204), data for 2014

Country	Number of enterprises by size in terms of number of employees					
	0 – 9	10 – 19	20 – 49	50 – 249	250 +	Total
Austria	103	18	14	7	2	144
Belgium	112	19	13	9	4	157
Bulgaria	128	23	20	18	5	194
Croatia	87	7	7	6	1	108
Cyprus	21	4	3	0	0	28
Czech Republic	:	:	:	:	:	186
Denmark	54	10	8	9	0	81
Estonia	32	2	4	0	0	38
Finland	54	8	2	3	1	68
France	967	67	91	79	24	1228
Germany	457	118	72	130	36	813
Greece	192	:	11	16	:	234
Hungary	200	:	13	9	:	241
Ireland	:	:	:	:	:	:
Italy	980	177	112	91	13	1373
Latvia	54	6	4	5	1	70
Lithuania	42	8	5	3	0	58
Luxembourg	2	1	1	3	0	7
Malta	:	:	:	:	:	:

[42] Transparency market research (2014): Global industry analysis, size, share, growth, trends and forecast. Abstract available at: http://www.mrrse.com/sodium-lauryl-sulfate-market

[43] HERA (2004), in OECD (2005): http://webnet.oecd.org/hpv/ui/handler.axd?id=5b837fb0-350c-4742-914e-5f6513df120a

Table A1-18: Number of companies in the sector by enterprise size (NACE Rev 2 Code 204), data for 2014						
Country	Number of enterprises by size in terms of number of employees					
	0 – 9	10 – 19	20 – 49	50 – 249	250 +	Total
Netherlands	174	15	18	15	2	224
Poland	491	52	46	63	25	677
Portugal	171	24	16	9	0	220
Romania	205	15	17	6	3	246
Slovakia	79	:	:	:	:	86
Slovenia	62	0	2	4	1	69
Spain	699	109	103	75	14	999
Sweden	231	13	9	12	0	265
UK	522	87	75	56	19	759
Norway	54	2	0	2	1	59
Iceland	:	:	:	:	:	:
Liechtenstein	:	:	:	:	:	:
EU28 + Norway	**6173**	**785**	**666**	**630**	**152**	**8632***

Source: Eurostat (sbs_sc_sca_r2)
: indicates missing data
**Note that totals do not add up due to missing data*

As shown in Table A1-18, the sector is dominated by micro-enterprises with less than 10 employees, with 71% of firms falling into this category. Only a very small proportion of companies (2%) have more than 250 employees. Italy has the largest number of enterprises with less than 10 employees (980), while Germany has the largest number of non-SMEs (36). A breakdown of enterprises by size is provided in Figure A1-5.

Figure A1-5 shows the proportion of enterprises in the sector across the top six countries. In 2014, the largest number of enterprises could be found in Italy, followed by France and then Spain.

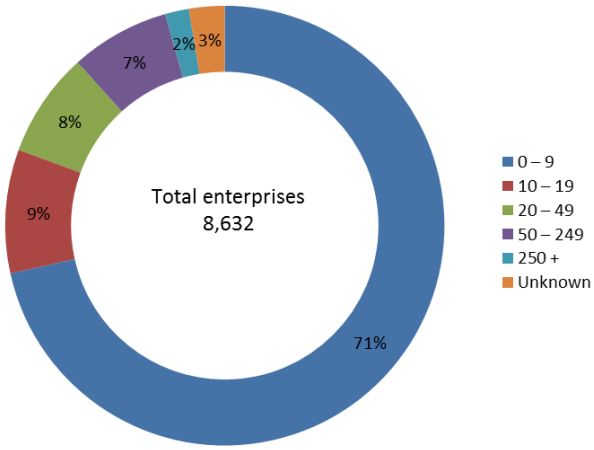

Figure A1-5: Number of enterprises by size (NACE Rev 2 Code 204), data for 2014, EU28 + Norway
Source: Eurostat (sbs_sc_sca_r2)

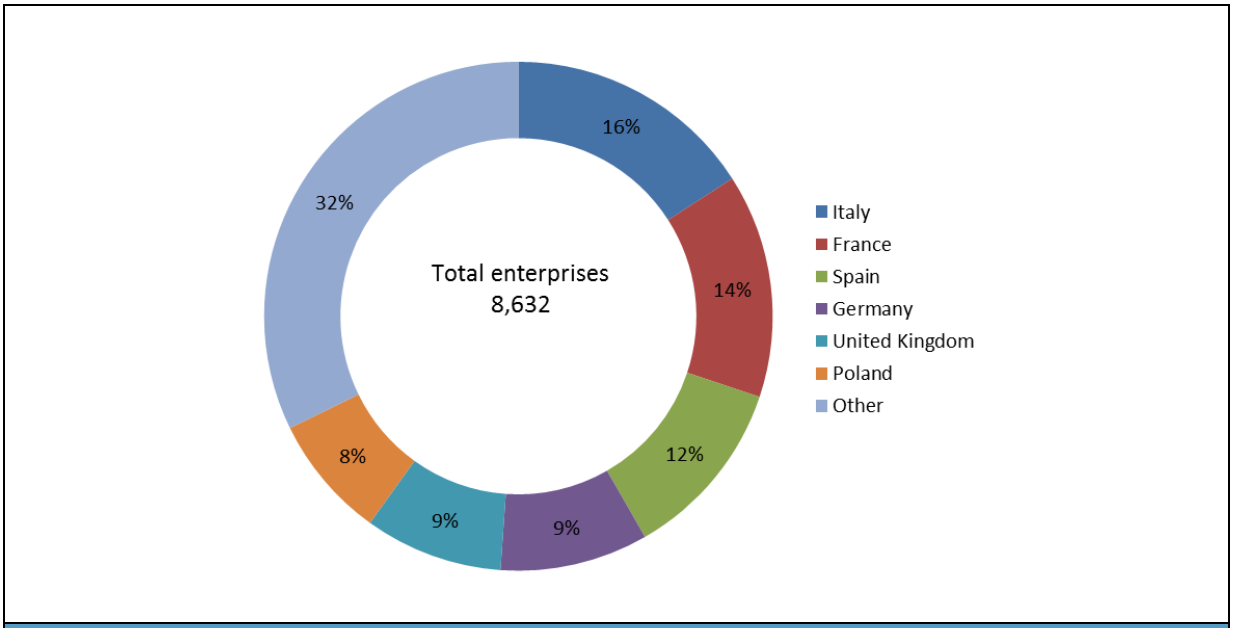

Figure A1-6: Number of enterprises by country (NACE Rev 2 Code 204), data for 2014, EU28 + Norway
Source: Eurostat (sbs_sc_sca_r2)

Table A1-19 and Figure A1-7 provide data on the number of companies for NACE Code 2041, which covers the manufacture of soap and detergents, cleaning and polishing preparations. These data therefore correspond more closely to the Regulation's definition of a "detergent" than the data shown in Table A1-18 and Figures A1-5 and A1-6. Despite not being the main producer of detergent products, Spain is home to the largest number of enterprises involved in this sub-sector grouping (668 out of 3,640), approximately a fifth of all enterprises. Italy has the second highest number of enterprises (444) and France is third with 379 enterprises.

Table A1-19: Number of companies in the sector (NACE Rev 2 Code 2041), data for 2014

Country	2008	2009	2010	2011	2012	2013	2014
Austria	50	46	50	45	45	43	45
Belgium	:	78	58	57	86	77	79
Bulgaria	100	103	99	105	96	94	102
Croatia	43	43	32	33	34	39	42
Cyprus	16	17	21	20	19	21	20
Czech Republic	:	:	:	:	:	:	:
Denmark	44	43	39	39	41	38	39
Estonia	12	8	14	17	19	19	20
Finland	50	50	49	47	45	43	48
France	349	278	271	317	354	325	379
Germany	335	313	309	355	351	390	365
Greece	225	219	214	212	200	164	164
Hungary	66	62	58	68	71	78	77
Ireland	12	15	12	:	:	:	:
Italy	516	491	482	483	451	449	444
Latvia	21	17	20	21	29	26	27
Lithuania	14	12	12	15	19	17	18

Table A1-19: Number of companies in the sector (NACE Rev 2 Code 2041), data for 2014							
Country	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Luxembourg	4	4	4	3	3	4	3
Malta	11	11	12	:	:	:	:
Netherlands	82	84	81	77	82	92	84
Poland	353	342	313	282	293	306	310
Portugal	127	124	112	112	115	121	124
Romania	164	148	134	135	142	154	158
Slovakia	22	11	38	42	:	:	:
Slovenia	24	22	23	26	28	32	33
Spain	885	751	703	678	641	575	668
Sweden	92	86	90	92	88	79	75
UK	342	347	334	337	333	329	329
Iceland	:	:	:	:	:	:	:
Liechtenstein	:	:	:	:	:	:	:
Norway	33	28	29	31	29	28	27
Total	**4,153**	**3,827**	**3,715**	**3,744**	**3,754**	**3,668**	**4,027**

Source: Eurostat (sbs_na_ind_r2)
: indicates missing data

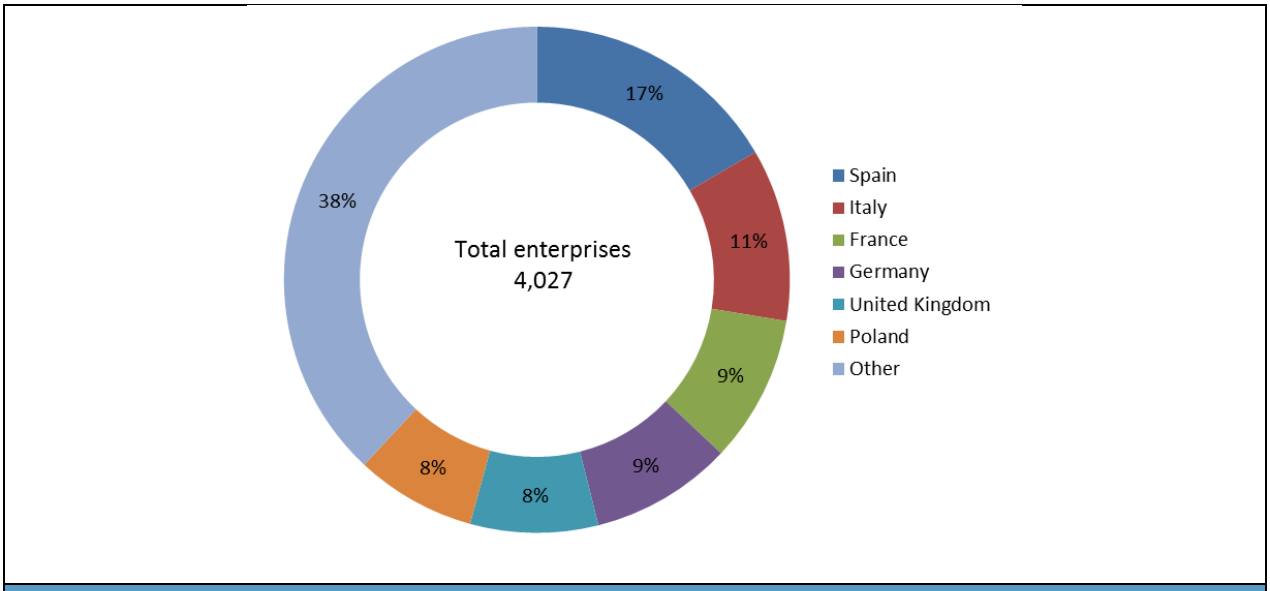

Figure A1-7: Number of enterprises by country (NACE Rev 2 Code 2041), data for 2014
Source: Eurostat (sbs_na_ind_r2)

A recent (2016) socio-economic analysis undertaken by The Huggard Consulting Group for AISE[44] notes that manufacturing activity within the household care and professional cleaning and hygiene products industry involves between 650 and 700 separate facilities throughout the EU, Norway and Switzerland, more than 85% of which are operated by SMEs. Output is, however, concentrated in 80-90 large-scale plants operated by multi-national companies. The report notes that these large sites are concentrated in Germany, the UK, France, Italy, Spain, the Benelux countries and Poland. In the professional cleaning and hygiene sector, Ecolab, Diversey and Procter & Gamble are the largest companies, but it has been reported that there are also hundreds of SMEs, mostly operating in national markets or focusing on serving particular niches[45].

In terms of raw materials, it has been reported that there are around 40 to 50 companies in the home and fabric care speciality ingredient market (which includes fabric washing and care; hard surface cleaners; car interior and upholstery cleaners; furniture, shoe and leather polishes; and dishwashing products), with the dominant players mainly being specialty surfactants companies.[46]

A1.4 Consumption of detergents and surfactants

A1.4.1 Detergents

The detergents sector is one of the few chemical sectors whereby the products are sold directly to consumers (retail) and to professionals (maintenance products). In 2015, the total market value of the household care and professional cleaning and hygiene sector in Europe (EU28 plus Norway and Switzerland)[47] was estimated at €35.7 billion, with €28.8 billion (81%) attributed to the household care products and €6.9 billion (19%) to professional cleaning and hygiene products[48].

As indicated in Table A1-20, the **household care sector** is grouped into five main product areas, namely: laundry care, surface care, dishwashing (which includes washing up by hand or by means of an automatic dishwasher), maintenance products and bleaches with laundry care products (e.g. powder detergents, liquid detergents, fabric conditioners, etc.) accounting for almost 50% of the 2015 market value. All five

[44] The Huggard Consulting Group (2016): The household care and professional cleaning and hygiene products industry, A socio-economic analysis, available at: https://www.aise.eu/documents/document/20160628174212-aise_sea_final_report_jan2016.pdf

[45] The Huggard Consulting Group (2016): The household care and professional cleaning and hygiene products industry, A socio-economic analysis, available at: https://www.aise.eu/documents/document/20160628174212-aise_sea_final_report_jan2016.pdf

[46] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

[47] While these data do not correspond exactly to the geographic scope of the present study (i.e. EEA), they provide a useful proxy in the absence of better information.

[48] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society, available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

product group areas have experienced growth in market value compared to 2014, with an overall increase of 0.8% for the household care sector.

The **professional cleaning and hygiene sector** supplies detergent products that are used in a wide range of professional applications, which can be grouped as follows: healthcare, food, beverage and agriculture, kitchen and catering, technical cleaning, building care and laundry. As indicated in Table A1-20, the healthcare sector accounted for almost a quarter (24%) of the 2015 market value, followed by the food, beverage and agricultural sector and the kitchen and catering sector (with approximately 20% of the 2015 market in both cases). The data also indicate that the healthcare, kitchen and catering, food, beverage and agriculture and laundry product group areas experienced growth in market value in 2015 compared to 2014. However, there was a decline in market value in the technical cleaning and building care product areas.

Table A1-20: Market data for the European household care and professional cleaning and hygiene industry (2015), EU28 + Norway and Switzerland

Sector	Market share	Market value (€ billion)	Growth 2015 vs. 2014
Household care	**81%[1] (100%)[2]**	**28.8**	**+0.8%**
Laundry care	47.2%	13.6	+0.3%
Surface care	21.5%	6.2	+1.5%
Dishwashing	15.4%	4.4	+1.2%
Maintenance products	13.5%	3.9	+0.7%
Bleaches	2.4%	0.7	+0.2%
Professional cleaning and hygiene	**19%[1] (100%)[2]**	**6.9**	**-3.0%**
Healthcare	23.7%	1.6	+6.0%
Food, beverage and agriculture	20.2%	1.4	+5.0%
Kitchen and catering	19.6%	1.4	+6.0%
Technical cleaning	16.0%	1.1	-3.0%
Building care	11.5%	0.8	-2.0%
Laundry	9.0%	0.6	+3.5%
Grand total	**100%**	**35.7**	**+1.1%**

Source: AISE (2016)[49]

[1] Total market share of the household care and professional cleaning and hygiene sector in Europe.

[2] Market share of household care sector/professional cleaning and hygiene sector.

Laundry detergents

As shown in Table A1-20, laundry care accounts for the largest share of the European detergents market, accounting for approximately 56% of the total market value in 2015.

[49] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society. Available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

Laundry detergent products on the European market can be broadly categorised as follows[50]:

- Powder detergents;
- Liquid detergents;
- Detergent tablets (powder or liquid/gels); and
- Other detergents (such as hand wash or fine fabric detergents).

There are also several laundry products that are used in conjunction with these detergents, including:

- Fabric conditioners;
- Stain removers and other additives; and
- Fabric fresheners.

It should be noted that while fabric conditioners clearly fall within the remit of the Detergents Regulation, fabric fresheners probably do not. Stain removers and other additives may fall within the scope of the Detergents Regulation.

The laundry detergents market can be broken down into two main segments: household laundry detergents and industrial and institutional laundry detergents. Table A1-21 provides an overview of some of the main types of products used in these two applications.

Table A1-21: Laundry care products by market segment

Household laundry care products include:	Industrial and institutional laundry care products include:
• laundry detergents (in powder or liquid) • fabric conditioner and fresheners • laundry aids including stain removers • on-premises laundry detergents • powder/liquid detergents • pre-wash additives • boosters	• pH-adjustment • water hardness regulators • bleach additives • disinfectant detergents/additives for hygienic laundry (hospital, food industry) • fabric softeners • ironing aid • fragrance rinse

Source: JRC (2014a) [51]

In 2015, the total value of the laundry care market across Europe (EU-28 plus Norway and Switzerland) was €14.2 billion (see Table A1-22). Of this, household laundry care represented 96%, or €13.6 billion. Of the household products, liquid detergents and powder detergents account for the highest market value, followed by laundry aids and fabric conditioners. When the data for 2015 are compared to similar data from 2012[52], it would appear that the markets for laundry aids and for detergent tablets have

[50] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

[51] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

[52] Note that data for Croatia are not available for 2012.

experienced the most growth, while the market for powder detergents has contracted. The market for industrial and institutional detergents was the same in 2015 as it was in 2012.

Figure A1-8 presents data on the value and volume of laundry care products sold in Western Europe in 2012. By value, laundry detergents represent the largest share of the total market for laundry care in Western Europe (69%), while other laundry products (fabric conditioners, stain removers and other additives, fabric fresheners) account for the remaining 31%. Of the laundry detergents, powder detergents are the most popular form, accounting for 38% of the total market value. Liquid detergents are the second most popular form of detergent, accounting for 23% of the market value. In comparison, detergent tablets make up a relatively small proportion of the overall market for laundry care products in Western Europe (5% in 2012), while other forms of detergent account for just 3%.

Table A1-22: Laundry care market value (€ billion)

		2015 (EU28 + CH + NO)		2012 (EU27 + CH + NO)		% change 2012-2015
		Market value (€ billion)	% market	Market value (€ billion)	% market	
Household	Powder detergents	3.0	21%	3.5	25%	-14.3
	Liquid detergents	4.2	30%	4.1	28%	+2.4%
	Detergent tablets	1.1	8%	0.9	7%	+22.2%
	Fabric conditioners	2.5	18%	2.3	16%	+8.7%
	Laundry aids, others	2.8	20%	2.0	20%	+40%
	Sub-total	*13.6*	*96%*	*13.8*	*96%*	*0*
Industrial and institutional (I&I)		0.6	4%	0.6	4%	0
Total (household and I&I)		**14.2**	**100%**	**14.4**	**100%**	**-1.4%**

Sources: AISE (2016)[53] and AISE (2012)[54]

[53] AISE (2016): Market and economic data. Available at: https://www.aise.eu/our-industry/market-and-economic-data.aspx

[54] AISE (2012): Activity and Sustainability Report. Available at: https://www.aise.eu/cust/documentrequest.aspx?DocID=233

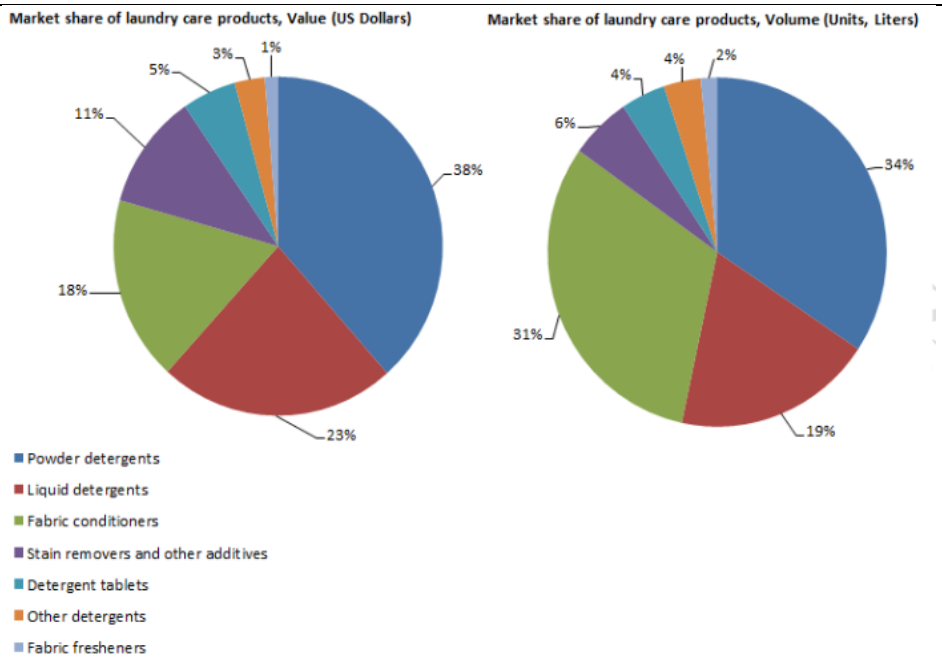

Figure A1-8: Value and volume of Western European laundry care products (2012)
Source: JRC (2014a)

Poland, Italy, Germany, the UK and Denmark are estimated to represent approximately 50% of the total EU market for laundry detergents.[55] As shown in Figure A1-9, powder detergents represent a high proportion of sales by value in each of these countries, ranging from 92% of total sales in Poland to 27% in Italy.

[55] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

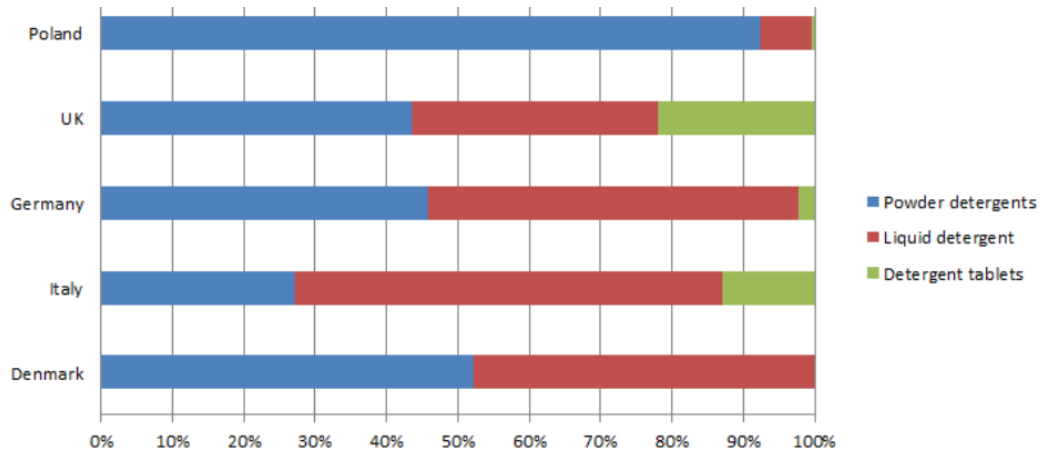

Figure A1-9: Split of laundry detergent by category, (%) 2012
Source: Euromonitor in JRC (2014a)[56]

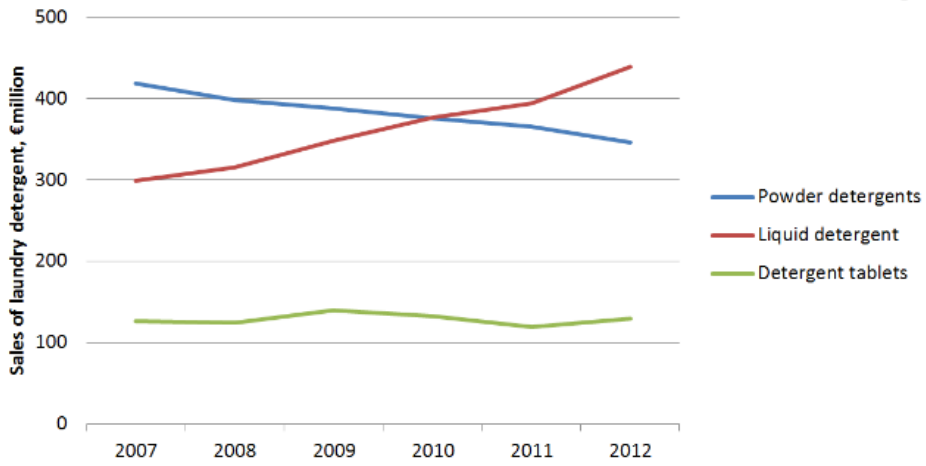

Figure A1-10: Sales of laundry detergent by category, EU average*, 2007-2012
**EU average calculated from data from Denmark, Italy, Germany, UK and Poland*
Source: Euromonitor in JRC (2014a)

As shown in Figure A1-10, across the EU, sales of liquid detergent overtook sales of powder detergent in 2010, while sales of detergent tablets have remained broadly stable since 2007. It is not clear,

[56] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

however, whether these data include sales of detergent pods (or capsules), that have been growing in market share over the last few years.[57] If so, this may help to explain this trend.

The laundry detergent market can be split into 'standard' and 'concentrated' products, each of which can be either liquid or powder. As shown in Figure A1-11, Italy and France are the only two countries (out of the six analysed in detail) where sales of standard detergents outweigh sales of concentrated products.

In Poland, sales of concentrated detergents account for 95% of all sales, while in the UK and Germany the share of concentrated detergents sold are 91% and 90% respectively[58]. Sales of concentrated detergents make up 73% of detergent sales in Denmark, 46% in France and 26% in Italy.

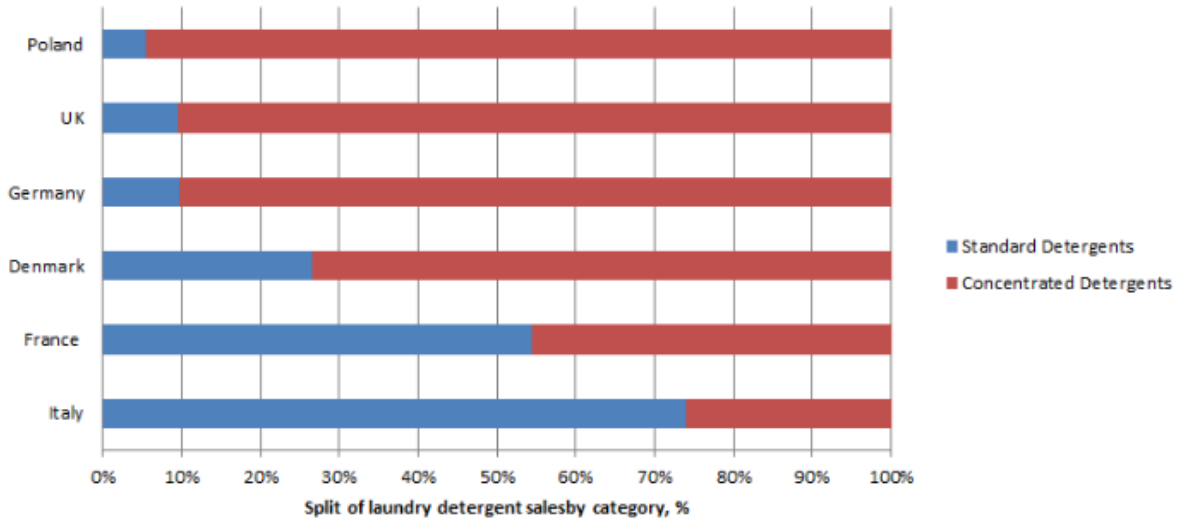

Figure A1-11: Split of laundry detergents, standard versus concentrated, (%) 2012
Source: Euromonitor, as reported by JRC (2014a)

The European laundry care market (like the detergents market more generally) is heavily dominated by a few well-known and globally recognised organisations and brands (see Table A1-23). It has been estimated that the top five organisations in the European market for laundry care account for 69% of the total market value. The market leader – Procter & Gamble Co. - accounted for more than a quarter of the total retail value in 2013. Alongside these companies, an estimated 120 other organisations also

[57] UMC Utrect (2014): Exposures to liquid capsules containing laundry detergents vs exposures to liquid laundry detergents from bottles, Reports to the Dutch Poisons Information Center from 2010-2013. Available at: https://www.umcutrecht.nl/nl/Subsites/Nationaal-Vergiftigingen-Informatie-Centrum-(NVIC)/Acute-vergiftigingen/Liquid-caps-met-textielwasmiddelen-2010-2013

[58] Euromonitor in JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

operate within the laundry care market, each accounting for less than 1% of the total market. McBride and Dalli Group are reportedly the largest EU suppliers of own label products.[59]

Table A1-23: Largest organisations in laundry care market, % breakdown by retail value, Europe*, 2013	
Manufacturers name	**% share of European laundry care market, by retail value**
Procter & Gamble Co	26%
Henkel AG & Co KGaA	19%
Unilever Group	14%
Reckitt Benckiser Plc	8%
Colgate-Palmolive Co	2%
Other organisations (estimated 120 in total)	17%
Private labels	14%
**EU-28 excluding Malta, Luxembourg and Cyprus* *Source: Euromonitor, as reported by JRC (2014a)[60]*	

Table A1-24 shows the breakdown of each of the largest organisations, by common brands. It shows that Tide/Ariel, which is owned by Procter & Gamble Co., accounted for 11 % of the total retail market for laundry care across Europe in 2013.

Table A1-24: Common brand name laundry care products, Europe, 2013							
Company/ Brand	**Share of EU retail market (%)***	**Company/ Brand**	**Share of EU retail market (%)***	**Company/ Brand**	**Share of EU retail market (%)***	**Company/ Brand**	**Share of EU retail market (%)***
Procter & Gamble Co	**26%**	**Henkel AG**	**18%**	**Unilever Group**	**14%**	**Reckitt Benckiser Plc**	**8%**
Tide/Ariel	11%	Persil	5%	Skip	3%	Vanish	3%
Dash/Daz	5%	Dixan	3%	Persil	3%	Calgon	2%
Lenor	4%	Vernel	1%	Comfort	2%	Sole	1%
Bold	2%	Le Chat	1%	Surf	2%	*Others*	2%
Fairy	1%	*Others*	8%	Omo	1%		
Others	4%			*Others*	3%		
*figure rounded to the nearest 1% *Source: JRC (2014a)[61]*							

[59] The Huggard Consulting Group (2016): The household care and professional cleaning and hygiene products industry, A socio-economic analysis. Available at: https://www.aise.eu/documents/document/20160628174212-aise_sea_final_report_jan2016.pdf

[60] Euromonitor in JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

[61] JRC (2014a): Revision of European Ecolabel Criteria for Laundry Detergent, Preliminary Report. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/LD%20Preliminary%20Report.pdf

Figure A1-12 provides an overview of recent trends and projections for the laundry detergents market in the EU. It shows that the average retail value of laundry detergents is forecast to increase to €590 million by 2018, which equates to a total market value across Europe of €14.7 billion by 2018. The dip that can be seen in 2009 has been attributed to the European financial crisis.

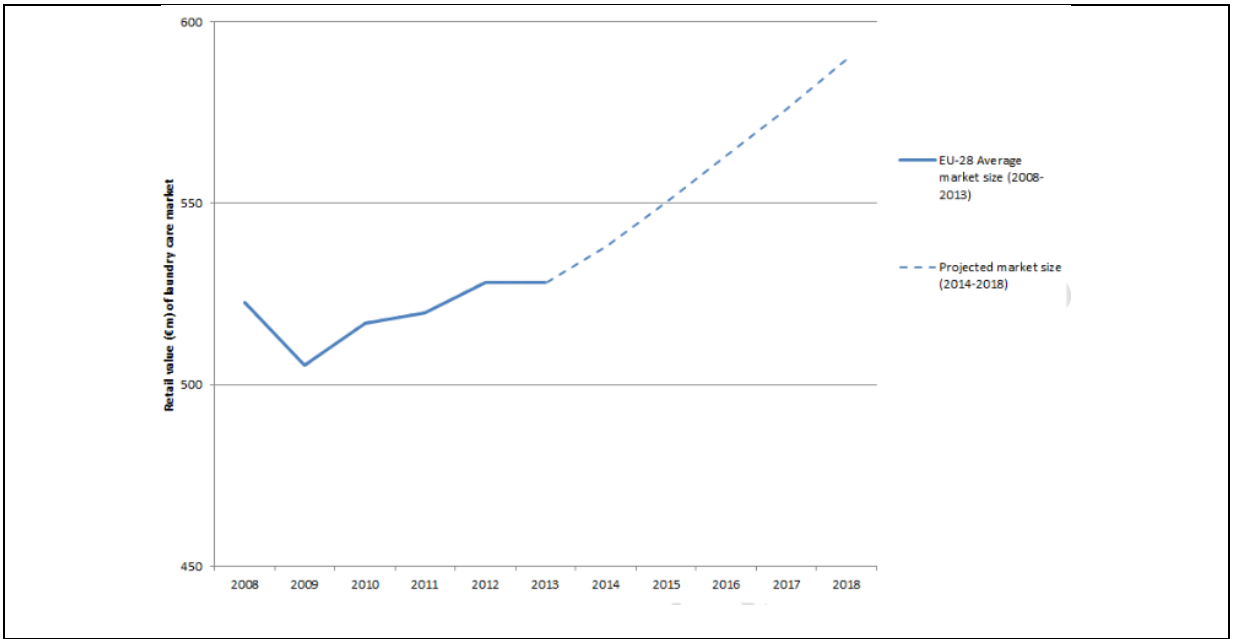

Figure A1-12: Trends in the laundry detergents market, actual and projected retail value (€ million), EU-28 average, 2008-2018

Source: Euromonitor, in JRC (2014a)

Figure A1-13 shows the "normal" detergent dosage (120 grams) of washing machines in Europe in 2014. It is followed by a graph on the average number of washing machine cycles in households in England in 2011 (Figure A1-14).

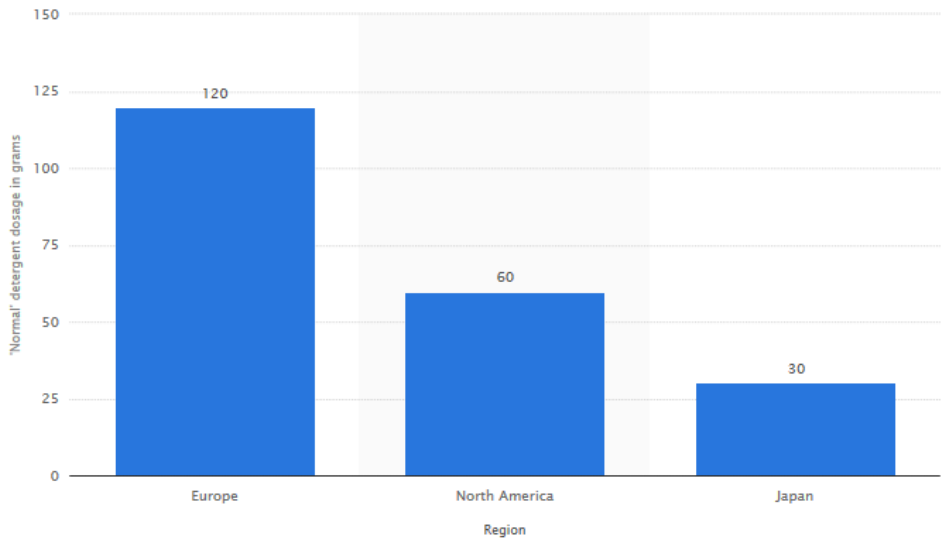

Figure A1-13: "Normal" detergent dosage of washing machines in 2014, by region (in grams)

Source: PLMA, as reported by Statista (2017)[62]

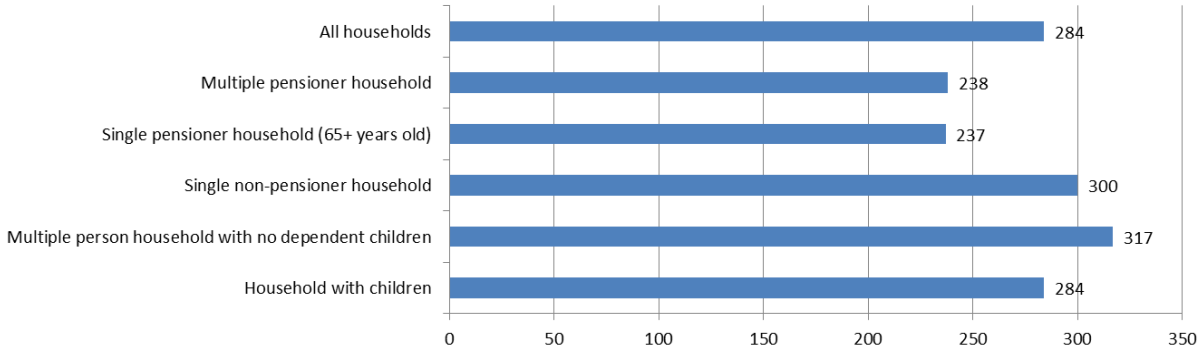

Figure A1-14: Average number of washing machine cycles in households in England in 2011

Source: Defra; Intertek; Energy Saving Trust; UK Department of Energy & Climate Change, as reported by Statista (2017)[63]

[62] PLMA, as reported by Statista (2017): https://www.statista.com/statistics/306810/-normal--detergent-dosage-of-washing-machines-by-region

[63] Defra; Intertek; Energy Saving Trust; UK Department of Energy & Climate Change, as reported by Statista (2017): https://www.statista.com/statistics/319026/average-number-of-annual-washing-machine-cycles-in-households-in-england-uk

For further information on the laundry care market in the EEA, the reader is referred to the following working document from the JRC: "Revision of European Ecolabel Criteria for Laundry Detergents".[64]

Dishwashing detergents

i) Market segmentation and main product types

The dishwashing detergents market can be broken down into two main segments:

1. Domestic (household) dishwashing detergents;
2. Industrial and institutional dishwashing detergents.

Each of these two groups can be further disaggregated into the following two sub-categories:

1. Detergents for washing up by hand (hand dishwashing detergents);
2. Detergents for washing up using an automatic dishwashing machine (dishwashing machine detergents).

While detergent products designed for washing up by hand primarily come in liquid form, detergent products designed for use in automatic dishwashing machines come in a variety of different forms. The latter can be broadly categorised according to the following product types[65]:

- **Dishwasher detergents**, consisting of:
  - Powdered detergents – made up of granules which are poured into the dishwasher dispenser,
  - Gel/liquid detergents – which are poured into the dishwasher dispenser,
  - Tablet detergents – a compact amount of detergent in a premeasured tablet. These are most commonly in powdered form, but gel tablets are becoming more widely seen;
- **Other dishwasher additives** – including water hardness regulators;
- **Rinse aids** – used to improve cleaning (particularly for reducing smearing on glasses) and to aid dry cleaning;
- **Combined products** – for example, dishwasher detergents combined with rinse aids or other dishwasher additives. Often these products come in tablet form.

ii) Market size and shape

Data on the European market for dishwashing detergents are presented in Table A1-25, based on information provided by AISE. In terms of geography, the data cover the EU28 plus Norway and Switzerland and therefore do not exactly correspond to the area covered by the Detergents Regulation (i.e. the EEA). Unfortunately, it has not been possible to determine what proportion of the market for industrial and institutional detergents relates to handwashing versus washing up using an automated dishwashing machine. As shown in the table, the European market for dishwashing detergents is

[64] JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

[65] JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

estimated to have been worth €5.8 billion in 2015, with household dishwasher detergents accounting for the largest market share (45%).

Table A1-25: Market data for the European dishwashing detergents market (2015), EU28 + Norway and Switzerland		
Sector	**Market value (€ billion)**	**Market share (%)**
Household hand dishwashing detergents	1.8	31%
Household dishwasher detergents	2.6	45%
Industrial and institutional detergents (all kitchen and catering detergents)*	1.4	24%
Total	**5.8**	**100%**
**includes dishwasher detergents, hand dishwashing detergents, kitchen surface disinfectants, hand hygiene and care* *Source: AISE (2016)*[66]		

Figure A1-15 shows the retail value of detergents for use in an automatic dishwashing machine. The data are disaggregated by product type (tablet, powder and liquid) across the following six EEA Member States: Denmark, Poland, Italy, France, Germany and the UK. Across these countries, sales of dishwasher detergents are highest in Germany (€386 million), followed by France (€357 million), Italy (€263 million), the UK (€261 million), Poland (€36 million) and then Denmark (€26 million).

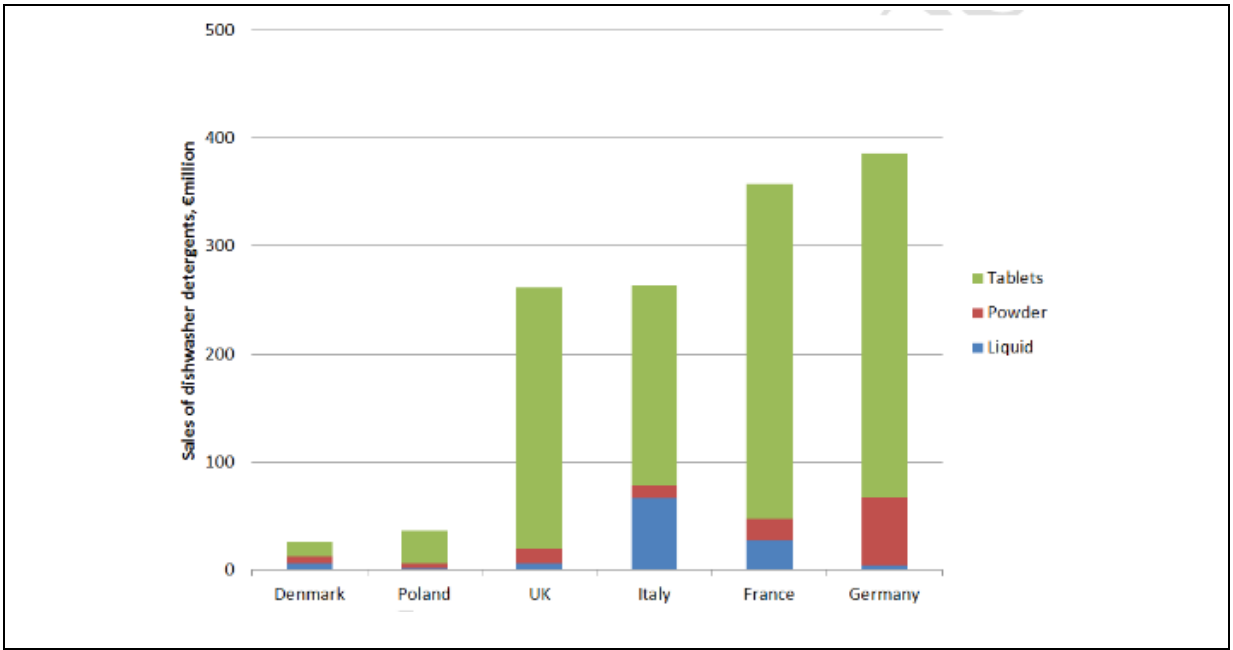

Figure A1-15: Sales of dishwasher detergent products* by category, value (€ million), 2012
**for use in an automatic dishwashing machine*
Source: Euromonitor, as reported by JRC (2014b)

[66] AISE (2016): Activity & Sustainability Report 2015-16 – Cleanliness & Hygiene at Home and in Society. Available at: http://www.sustainable-cleaning.com/content_attachments/documents/AISE_AR15_16_FINAL.pdf

Figure A1-16 provides data on the percentage of dishwasher detergent sales by product category.

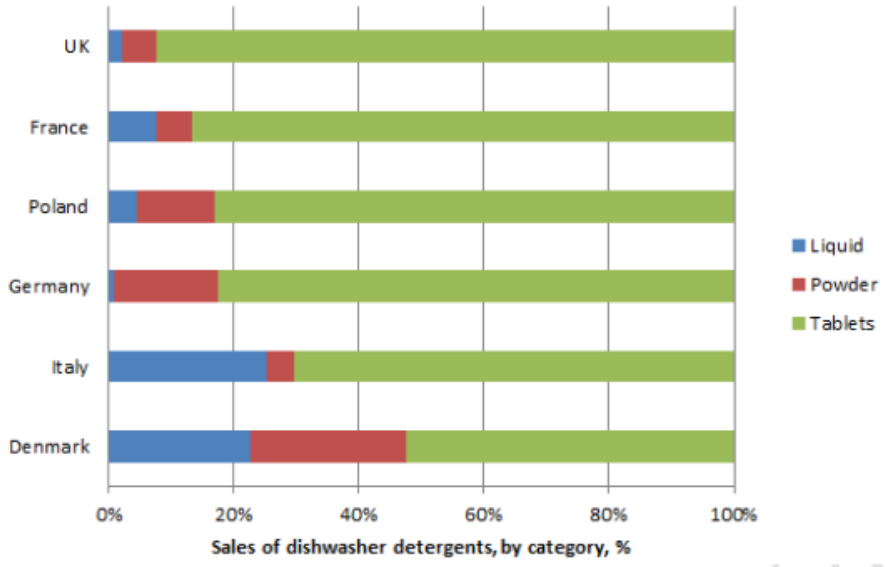

Figure A1-16: Sales of dishwasher detergent products* by category, %, 2012
**for use in an automatic dishwashing machine*
Source: Euromonitor, as reported by JRC (2014b)

As shown in Figures A1-15 and A1-16, dishwasher tablets account for the majority of all dishwasher detergent sales; ranging from 92% of all sales in the UK to 52% of sales in Denmark (2012 data). Assuming these countries are representative of the EEA, tablet sales account for, on average, 78% of all dishwasher detergent sales across the EEA. In terms of sales value, powder detergents are the second most popular detergent type across the six countries analysed, ranging from 25% of all sales in Denmark to only 4% of total sales in Italy in 2012. On average, powder detergent sales account for 12% of the detergent market across the six countries analysed. In 2012, liquid detergents accounted for the lowest overall proportion of sales, accounting for (on average across the six countries analysed) 10% of the total sales value. Sales of liquid detergent ranged from 25% of total sales value in Italy to 1% in Germany. It is not clear, however, whether these data include sales of dishwasher detergent pods (or capsules), that have been growing in market share over the last few years.

Figure A1-17 provides a summary of trends in the sale of various dishwasher detergent types from 2007 to 2012 for the EU as a whole (based on the data for six countries). These data are also captured in Table A1-26. The data show that sales of detergent tablets have been consistently higher than other detergent types throughout the period being analysed (2007 to 2012). The data also indicate that sales of liquid detergents are likely to overtake sales of powder detergents (and may already have done so since 2012).

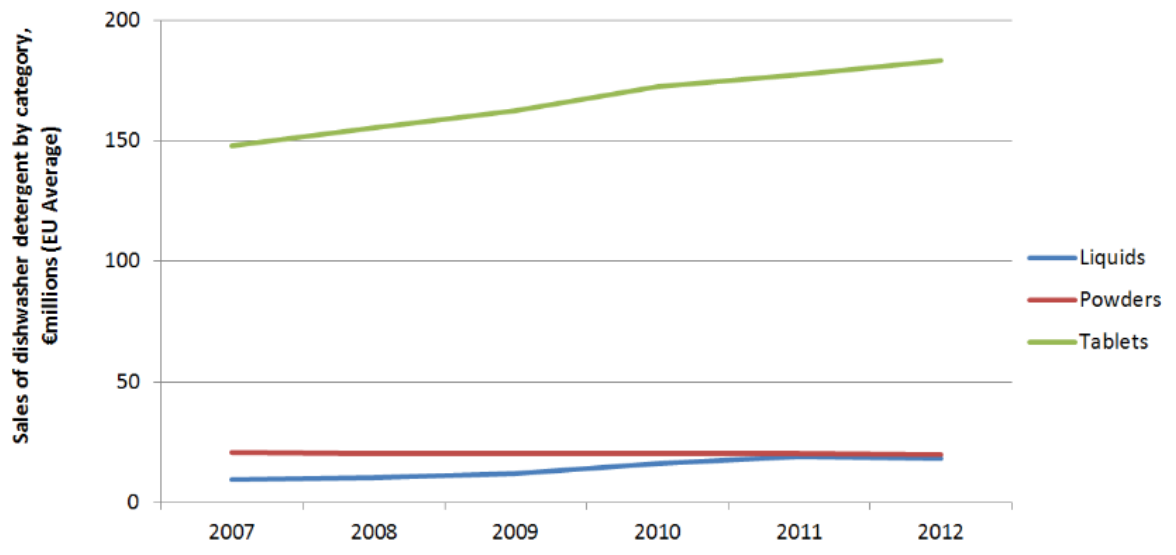

Figure A1-17: Sales of dishwasher detergents* by category, EU average, 2012**

**detergents for use in an automatic dishwasher*

***based on data for Denmark, Italy, Germany, UK, Poland and France*

Source: Euromonitor, as reported by JRC (2014b)

Table A1-26: Sales of dishwasher detergents* by category, EU average, € million**

Detergent type	Sales value (€ million)		% change (2007-2012)	CAGR (%)
	2007	2012		
Detergent tablets	148	183	+24%	+3.6%
Powder detergents	20.6	20.1	-2%	-0.41%
Liquid detergents	10	18	+96%	+11.84%

**detergents for use in an automatic dishwasher*

***based on data for Denmark, Italy, Germany, UK, Poland and France*

Source: Euromonitor, as reported by JRC (2014b)

Figure A1-18 provides information on the sale of dishwasher detergents and dishwasher additives (e.g. water hardness regulator, machine cleaning chemicals, etc.) across the six EEA Member States. It shows that sales of dishwasher detergents (for use in an automatic dishwasher) vary quite considerably between countries. Larger countries with a bigger population and higher GDP would be expected to have higher sales than small countries with a lower population and GDP; it is not surprising therefore that Germany tops the chart. The sale of dishwasher additives is reasonably significant, totalling over €300 million across the six countries shown.

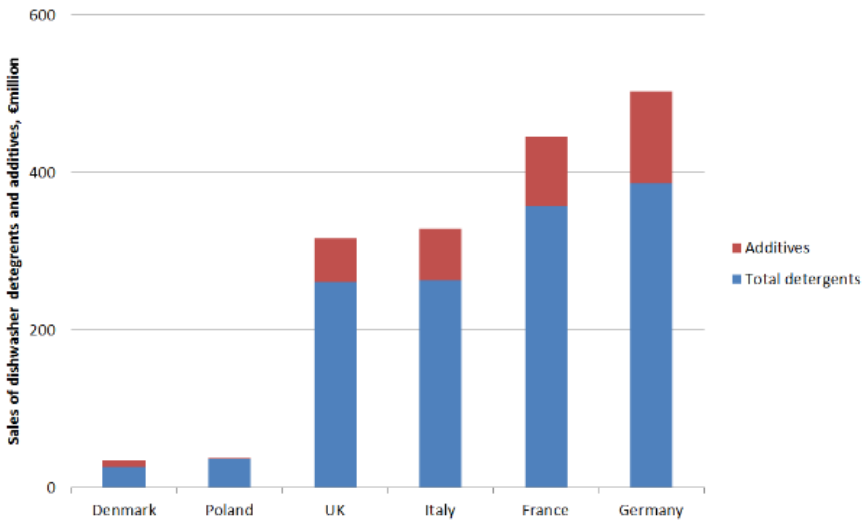

Figure A1-18: Sales of dishwasher detergent and dishwasher additives, value (€ million), 2012
Source: Euromonitor, as reported by JRC (2014b)

Figure A1-19 shows the value of sales of hand dishwashing detergents across the six countries analysed. Combined, these countries are estimated to account for 60% of the total hand dishwashing detergent market in Europe (assuming a total market size of €1,808 million). The data show that across these six countries, sales of hand dishwashing detergents are highest in Italy, followed by the UK and then France.

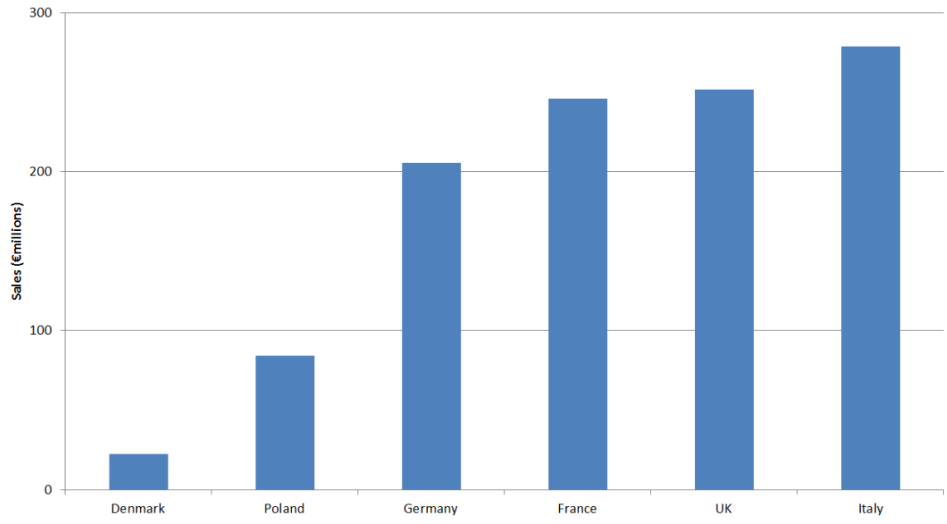

Figure A1-19: Sales value of hand dishwashing detergent (€ million), 2012
Source: JRC (2014c)[67]

[67] JRC (2014): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

Table A1-27 presents data on recent changes to the market for hand dishwashing detergents. It shows that France was expected to experience the largest increase in sales value between 2007 and 2016 with an increase of 38%. This represents a CAGR of 3.7%.

Table A1-27: Percentage change in the EU market (sales value) for hand dishwashing detergents		
Country	**% change 2007 - 2016**	**CAGR 2008 - 2016**
France	38%	3.7%
Poland	30%	3.0%
Italy	-13%	-1.5%
Denmark	18%	1.5%
UK	10%	1.0%
Germany	16%	1.6%
Source: *JRC (2014c)*		

Table A1-28 presents data from the UK on the size and breakdown of the market for hand dishwashing detergents. It shows that, by value, concentrated detergents account for a large share of the market (71% in 2005). Antibacterial detergents are also shown as having a significant market share (19% in 2005). This latter point is important given the potential for these products to fall under both the Detergents Regulation and the Biocidal Products Regulation (EU) No 528/2012.

Table A1-28: Hand dishwashing detergent categories by sales and market share, UK					
	2005		**2003**		**2003-2005 % change**
	£ million	**%**	**£ million**	**%**	
Concentrated	115	71	120	77	-4.2
Antibacterial	30	19	26	17	+15.4
Pre-spray	10	6	3	2	+333.3
Standard	6	4	6	4	0.0
Total	162	100	155	100	+4.5
Source: Mintel, as reported by Campaign (2006)[68]					

iii) Leading manufacturers and brands

The market for dishwashing detergents (hand and automatic dishwashing) is dominated by a small number of well-known and globally recognised companies. The top five manufacturers by retail value are shown in Table A1-29. In 2013, these five companies are estimated to have accounted for 66% of the total value of the dishwashing detergents market in the EU-28 (excluding Cyprus, Estonia and Malta). Alongside these five companies there are an estimated 92 other organisations, in addition to private

[68] Mintel, as reported by Campaign (2006): Sector insight: Dishwashing detergents – Dishwashers drive market shift. Article available at: http://www.campaignlive.co.uk/article/575421/sector-insight-dishwashing-detergents---dishwashers-drive-market-shift

labels, that operate in the European dishwashing detergent market, each with a market share of less than 1%.

Table A1-29: Largest manufacturers in the European* dishwashing detergent** market, % breakdown by retail value in 2013	
Manufacturers name	**% share of dishwashing detergent market, by retail value**
Reckitt Benckiser Plc	24%
Procter & Gamble Co	13%
Henkel AG & Co KGaA	13%
Unilever Group	12%
Colgate-Palmolive Co	4%
Private labels	22%
Other (around 92 organisations)	12%
**Europe includes EU-28, except Cyprus, Estonia and Malta due to lack of data* ***Dishwashing detergent includes both hand dishwashing and machine dishwashing detergents* *Source: Euromonitor International, as reported by JRC (2014c)*	

Table A1-30 provides information on the top ten dishwashing detergent brands by market share. The data cover both hand and automated dishwashing detergents. The table clearly shows that there are a relatively small number of brands that dominate the dishwashing detergents market. In terms of automated dishwasher detergents, Reckitt Benckiser Plc - with its product line 'Finish' - is generally considered to be the market leader; while for hand dishwashing detergents, the product line 'Fairy' manufactured by Procter & Gamble Co.' is recognised as the brand with the largest market share.[69] Ecover is the largest 'green' manufacturer of dishwashing detergents, with an estimated 8% of the market.

The proportion of private label manufacturers in the dishwashing detergent market is relatively high (accounting for 22% of the market by value). Private label manufacturers typically produce for supermarkets that sell own brand products.

[69] JRC (2014): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

Table A1-30: Dishwashing detergents*, top 10 brands (brand, share %), Europe**, 2013		
Brand	**Manufacturer**	**Brand share (%)**
Finish	Reckitt Benckiser Plc	22%
Fairy	Procter and Gamble Co	11%
Sun	Unilever Group	8%
Somat	Henkel AG & Co KGaA	6%
Pril	Henkel AG & Co KGaA	2%
Svelto	Unilever Group	2%
Pur	Henkel AG & Co KGaA	2%
Paic	Colgate-Palmolive Co	2%
Palmolive	Colgate-Palmolive Co	1%
Delft	Procter and Gamble Co	1%
Private label	-	22%
Ecover	Ecover Belgium NV	0.8%
Dishwashing detergent includes both hand dishwashing and machine dishwashing detergents* * EU-28 excluding Cyprus, Estonia and Malta due to lack of data* *Source: Euromonitor International, as reported by JRC (2014c)*		

The most popular brands among the largest manufacturers of automatic dishwashing detergents in Europe are shown in Table A1-30. Tables A1-31 and A3-32 provide data on the market share of the top five brands (based on retail sales value) in the automatic dishwashing detergent market.

Table A1-31: Common brand name dishwasher detergent products* in Europe, 2013					
	Reckitt Benckiser Plc	**Procter & Gamble Co**	**Unilever Group**	**Henkel AG**	**Colgate-Palmolive Co**
% of the EU retail market	23%	14%	11%	13%	4%
Top five most common brands	Finish Sole Coral Neophas Down to Earth	Fairy Dreft Jar Ava	Sun Svelto Yes Persil Cif/ Jif	Somat Pril Pur Nelsen Mistol	Palc Palmolive Vel Ajaz Axion
**for use in an automatic dishwashing machine* *Source: Euromonitor, as reported by JRC (2014b)*					

Table A1-32: Common brand name dishwasher detergent products in Europe, % market share (based on retail value)							
Brand	**Manufacturer**	**Retail value, % market share of EU market**					
		2008	**2009**	**2010**	**2011**	**2012**	**2013**
Pril	Henkel AG & Co KGaA	2.4	2.4	2.4	2.4	2.4	2.4
Somat	Henkel AG & Co KGaA	4.5	4.5	4.8	5.2	5.3	5.5
Sun	Unilever Group	7.5	7.7	7.9	8.1	8.2	8.4
Fairy	Procter & Gamble Co	10.7	11.0	11.0	10.9	10.8	10.7
Finish	Reckitt Benckiser Plc	22.6	22.2	22.3	22.0	21.9	21.6
Source: Euromonitor, as reported by JRC (2014b)							

iv) Dishwasher ownership and use

Figure A1-20 shows data on the proportion of EU households that owned dishwashers in 2013. In recent years, there has been growth in the number of households with a dishwasher and this number is expected to keep increasing. Countries with the highest rates of dishwasher ownership include:

- Austria 82%
- Sweden 75%
- Germany 69%
- Ireland 67%
- Denmark 67%

Countries with the lowest rates of dishwasher ownership include:

- Latvia 4%
- Lithuania 5%
- Bulgaria 6%
- Romania 6%
- Slovakia 13%

Although the rate of ownership of dishwashers varies across the EU as a whole, the proportion of households that own a dishwasher has increased over the last few years (as indicated in Figure A1-20). This trend, combined with the low rate of ownership of dishwashers in a number of European countries, suggests that dishwasher possession is likely to continue to rise, driving an increase in dishwasher detergent sales in the coming years. It has been noted that although dishwasher ownership rates grew steadily between 2008 and 2013, the rate of increase between 2012 and 2013 (0.7%) was lower than year-on-year changes in the preceding years (which ranged between 1% and 1.4%).[70] This may suggest there is a slowing down of dishwasher acquisitions.

[70] JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

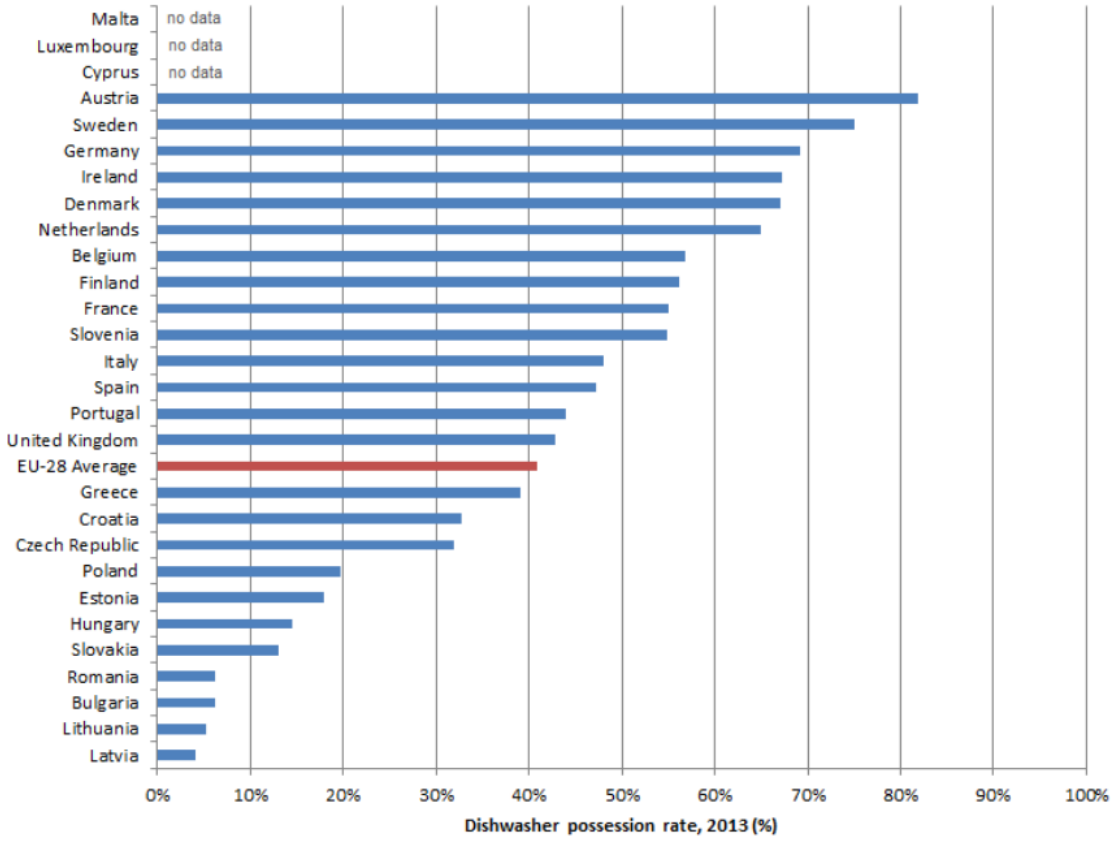

Figure A1-20: Dishwasher possession rates in 2013 (%), EU28

Source: Euromonitor International, as reported by JRC (2014c)

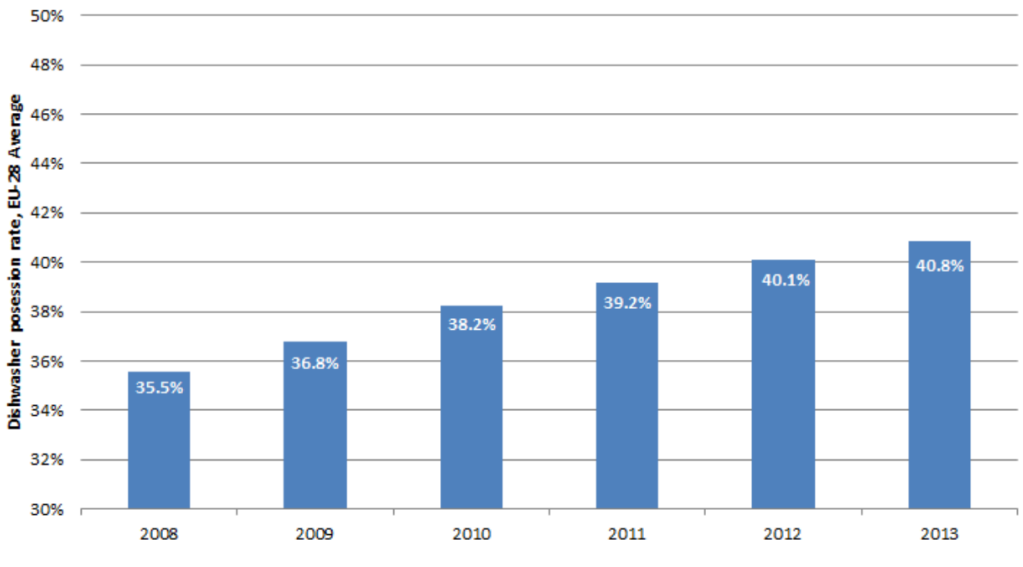

Figure A1-21: Dishwasher possession rates (%), EU28 average, 2008-2013

Source: Euromonitor, as reported by JRC (2014b)

Although there has been growth in the number of households with a dishwasher, and this growth is likely to continue, this does not necessarily mean that use of hand dishwashing detergents will decline. It is estimated that in 2020, more than 90 million households in Western Europe will still wash up by hand.[71] Detergents for use in an automated dishwasher are often seen as a direct competitor to handwashing detergents, however, many households that own a dishwasher will also purchase hand dishwashing detergents. For example, it is estimated than in Italy, 95% of households still do some hand washing (2012 data).[72]

Figure A1-22 presents data on the average number of dishwashing machine cycles in England in 2011, by type of household. It shows that, on average, households in England used their dishwasher 254 times per year.

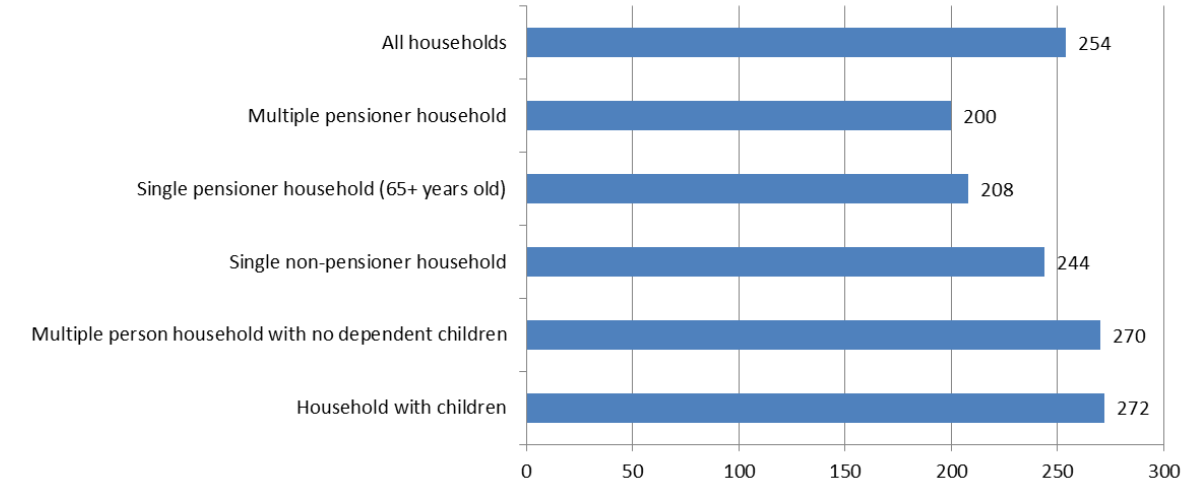

Figure A1-22: Average number of dishwashing machine cycles in households in England in 2011

Sources: Defra, Intertek, Energy Saving Trust, UK Department of Energy & Climate Change as reported by Statista (2017)[73]

[71] Novozymes (n.d.) as reported by JRC (2014): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

[72] Passport (2012) as reported by JRC (2014c): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

[73] Sources: Defra, Intertek, Energy Saving Trust, UK Department of Energy & Climate Change as reported by Statista (2017): https://www.statista.com/statistics/319032/average-number-of-annual-dishwasher-cycles-in-households-in-england-uk

v) Future trends

In Western Europe, consumption of dishwasher detergents is linked to standard of living, and lower quality detergents see higher demand in areas with a lower standard of living. The state of the dishwasher detergent market generally correlates positively with the health of the economy.[74] Growth in the Eastern European market is linked to gradually increasing consumer income and sales of consumer automatic dishwashers in Eastern European are growing slowly, from a comparatively low base.[75]

Figure A1-23 shows trends in the retail value of the European dishwashing detergents market, covering both hand and automatic dishwashing detergents. As shown in the graph, the retail value for dishwashing detergents is anticipated to grow from €3,800 million in 2008 to €4,732 million by 2018, at a CAGR of 2.01%.

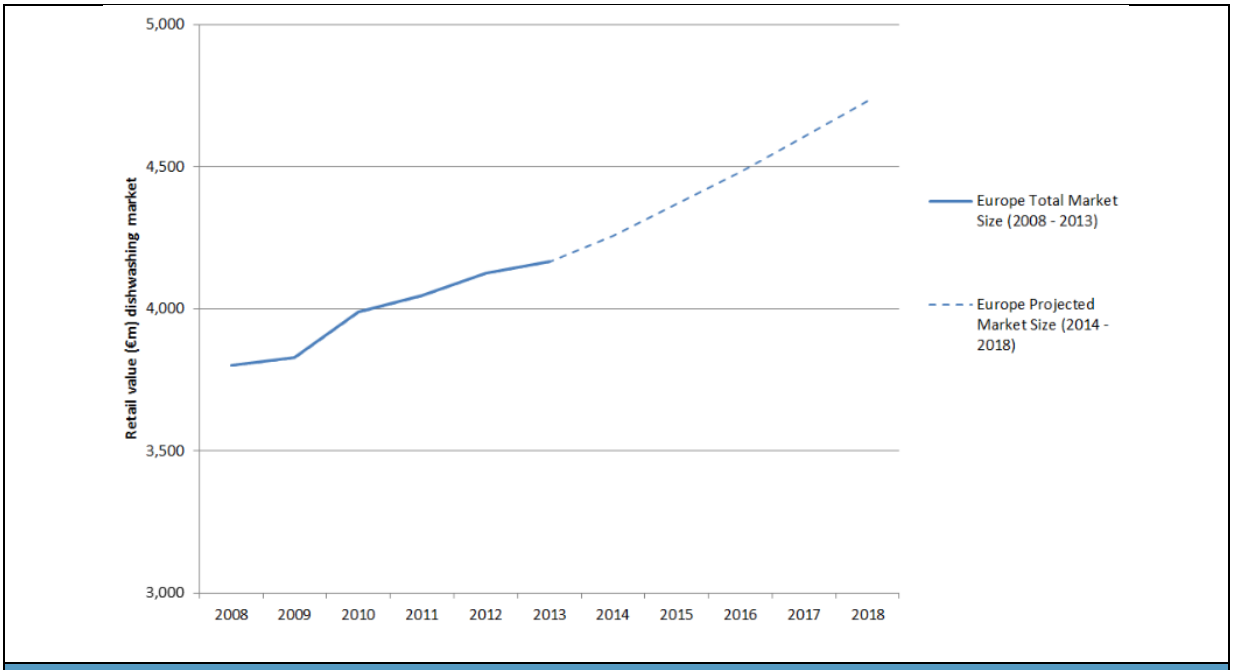

Figure A1-23: Actual and projected total retail value (€ million) of dishwashing detergents* in Europe, 2008-2018**

**includes both hand dishwashing detergents and detergents for use in automated dishwashers*

***EU28, excluding Cyprus, Estonia and Malta*

Source: JRC (2014c)

[74] JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

[75] JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

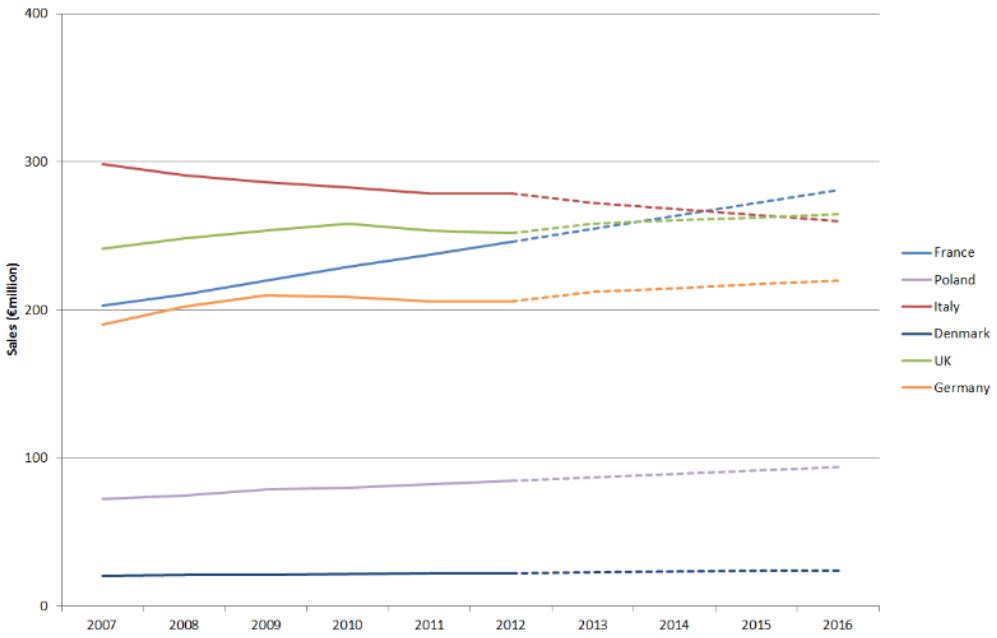

Figure A1-24: Actual and projected sales value (€ million) in the dishwashing detergent market*, 2008-2018
**includes both hand dishwashing detergents and detergents for use in automated dishwashers*
Source: JRC (2014c)

Table A1-33: Percentage change in the EU market (sales value) for hand dishwashing detergents		
Country	**% change 2007-2016**	**CAGR 2008-2016**
France	38%	3.7%
Poland	30%	3.0%
Italy	-13%	-1.5%
Denmark	18%	1.5%
UK	10%	1.0%
Germany	16%	1.6%
Source: JRC (2014c)		

The retail value for dishwashing detergents is forecast to grow to 2018 across the five countries analysed (see Figure A1-25 and Table A1-34). As shown in the figure, France is anticipated to overtake Germany as the country with the highest retail value for dishwasher detergents by 2018.

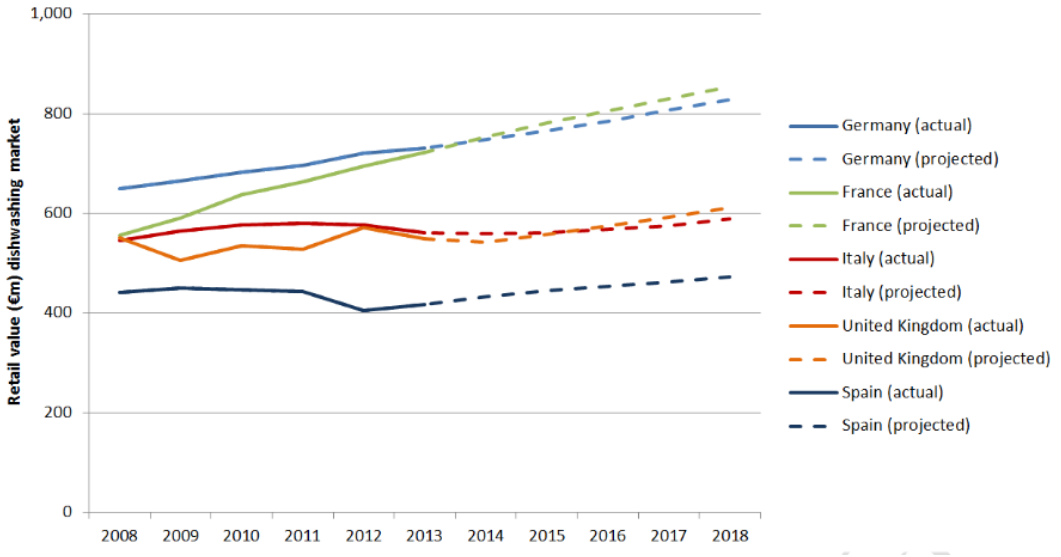

Figure A1-25: Actual and projected retail value (€ million) for dishwashing detergents, 2008-2018
**includes both hand dishwashing detergents and detergents for use in automated dishwashers*
Source: JRC (2014c)

Table A1-34: Anticipated retail value for dishwashing detergents* by 2018

Country	2008-2018			2014-2018
	% change	Value change (€ million)	CAGR %	% change
Germany	+27%	€180 million	2.2%	+11%
France	+53%	€300 million	4.0%	+13%
Italy	+8%	€40 million	0.7%	+5%
UK	+11%	€60 million	1.0%	+13%
Spain	+7%	€30 million	0.6%	+9%

** includes both hand dishwashing detergents and detergents for use in automated dishwashers*
Source: JRC (2014c)

Figure A1-26 shows projected trends in the total sales of both hand and automatic dishwasher detergents across six selected EU Member States (France, Poland, Italy, UK, Germany and Denmark). As shown in the figure, it is anticipated that sales of both hand dishwashing and automated dishwashing detergents will continue to grow, although sales of detergents for use in automatic dishwashers will grow at a faster rate.

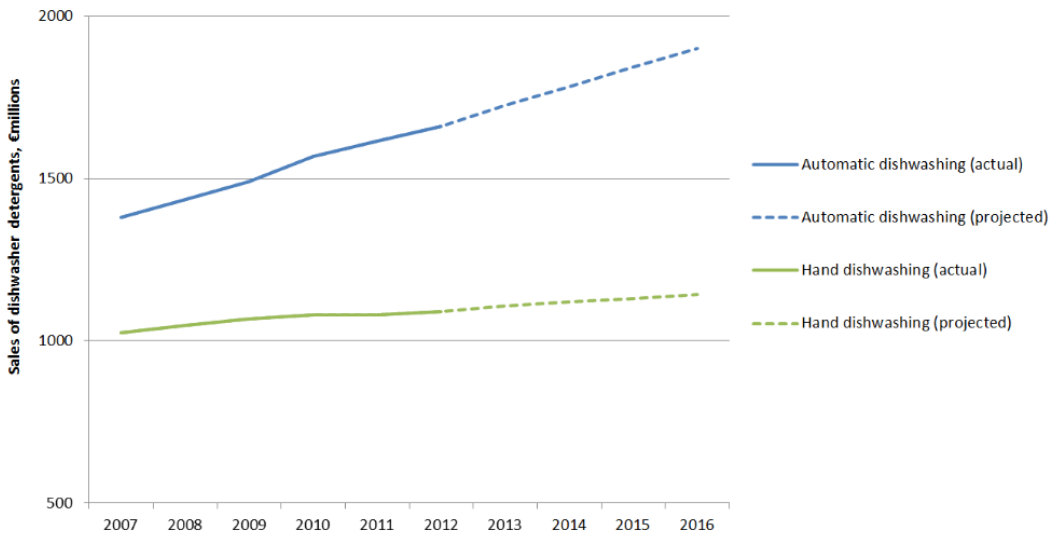

Figure A1-26: Total actual and projected sales (€ million) of dishwashing detergents*, 2007-2016, (FR, PL, IT, UK, DE, DK).

**includes both hand dishwashing detergents and detergents for use in automated dishwashers*

Source: JRC (2014c)

vi) Industrial and institutional detergents

Information on the market for industrial and institutional detergents is more limited than on detergents for household use. On a global scale, the market for industrial and institutional cleaning products is dominated by two major players, both of which are based in the USA. These organisations are[76]:

1. Ecolab – which provides hygiene and food safety services and products to industrial and hospitality markets; and
2. Diversey – which provides cleaning and hygiene products to a variety of markets, including food service and food and beverage companies.

The remainder of the market comprises a large number of small local and national companies, each with no more than $50 million in annual industrial and institutional cleaner sales – in many cases much less.[77]

[76] IHS(2010), as reported by JRC (2014c): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

[77] JRC (2014c): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

Some of the well-known household brands also produce industrial and institutional detergent products – e.g. Procter & Gamble Professional's Deepio washing up liquid, launched in 2013, which is designed for use on heavily soiled items[78].

vi) Sustainability

It has been noted that consumers of household and industrial cleaning products place a high emphasis on sustainability when purchasing detergents. Brands that pitch to this market include Ecover and Method, whose products are now commonly found in supermarkets across Western Europe. Figure A1-27 indicates the increasing market share (as a percentage of total household care products) in the UK between 2004 and 2008. Private label manufacturers are also increasingly developing products with green credentials.[79]

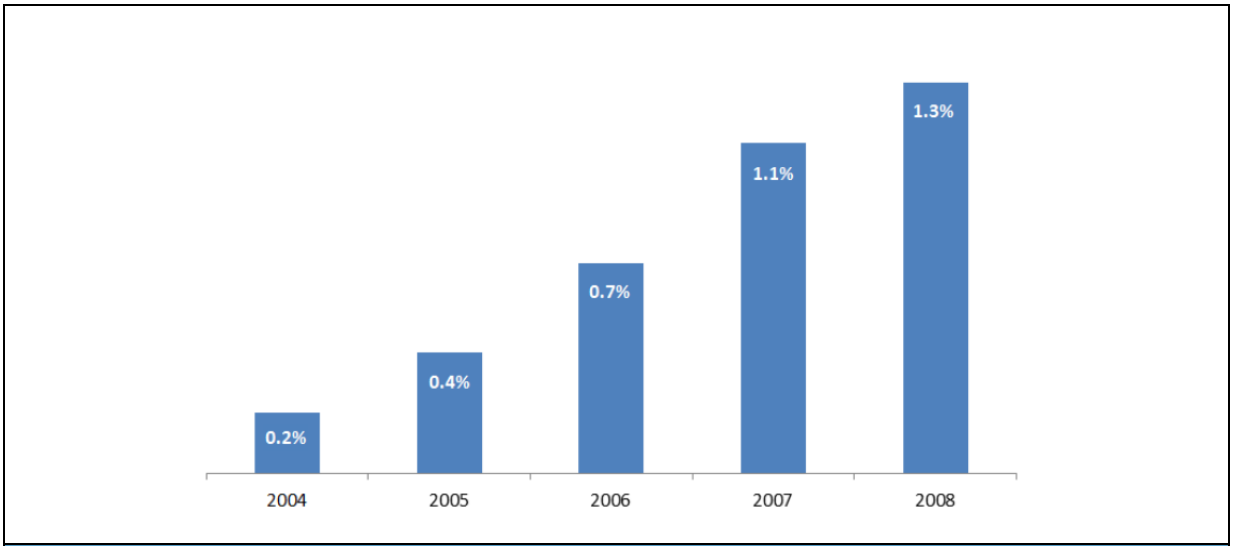

Figure A1-27: Ecover's share increase (% of total household care) in the UK, 2004 to 2008
Source: Euromonitor International (2009) as reported by JRC (2014c)

For further information on the dishwashing detergent market in the EEA, the reader is referred to the following two working documents from the JRC:

- by JRC (2014b): Revision of European EU Ecolabel Criteria for Detergents for Dishwashers, Preliminary Report for the Revision of European Ecological Criteria for Dishwashers Domestic and Industrial and Institutional. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/DD%20Preliminary%20Report.pdf

- JRC (2014c): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing

[78] Big Hospitality (2013): P&G Professional launches Deepio washing-up liquid. Article available at: http://www.bighospitality.co.uk/New-Products/P-G-Professional-launches-Deepio-washing-up-liquid

[79] Euromonitor International (2009), as reported by JRC (2014c): Revision of European EU Ecolabel Criteria for Hand Dishwashing Detergents, Preliminary Report for the Revision of European Ecological Criteria for Hand Dishwashing Detergents, available at: http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

Detergents. Available at:
http://susproc.jrc.ec.europa.eu/detergents/docs/HDD%20Preliminary%20Report.pdf

Surface care

A recent report from the JRC[80] provides some very useful background information on the market for surface care detergents in the EEA. The main sources of data used for analysing the market in the JRC's report are the Euromonitor reports for surface care and toilet care. Table A1-35 provides a summary of the categories of products included within their analysis and shows how the data have been aggregated. It is worth noting that the data include some categories of product that may not fall within the scope of the Detergents Regulation, for example, household antiseptics/disinfectants.

The JRC report describes the total of all these categories (i.e. surface care + toilet care OR all-purpose cleaners + window cleaners + sanitary cleaners + other surface cleaners) as 'hard surface cleaning' products.

Table A1-35: Market segmentation, breakdown of data sources used in JRC (2014)

Euromonitor (Passport) Surface Care – data available at EU level	Euromonitor (Passport) Toilet care – data available at EU level	Euromonitor (Passport) re-categorisation of data into 'hard surface cleaning' – data available for 7 countries*
Includes: • Household care wipes (including floor cleaning systems) • Bathroom cleaners • Descalers • Drain openers • Floor cleaners • Household antiseptics/disinfectants • Kitchen cleaners • Multi-purpose cleaners • Oven cleaners • Scouring agents • Window/glass cleaners	Includes: • In-cistern devices • Rim blocks • Rim liquids • Toilet care mousse/foam • Toilet care tablets/powder • Toilet cleaning systems • Toilet liquids	1. All-purpose cleaners, includes: • Household care wipes (including floor cleaning systems) • Multi-purpose cleaners • Floor cleaners • Household antiseptics/disinfectants 2. Window cleaners, includes • Window/glass cleaners 3. Sanitary cleaners, includes: • Kitchen cleaners • Bathroom cleaners • All toilet care 4. Other surface cleaners, includes • Descalers • Drain openers • Oven cleaners • Scouring agents

** France, UK, Italy, Germany, Netherlands, Denmark and Poland*
Source: JRC (2014d)

[80] JRC (2014d): Revision of European Ecolabel Criteria for All-Purpose Cleaners and Sanitary Cleaners, Preliminary Report for the Revision of Ecological Criteria for All-Purpose Cleaners and Sanitary Cleaners. Available at: http://susproc.jrc.ec.europa.eu/detergents/docs/APC%20Preliminary%20Report.pdf

Table A1-36: EU-25 market size (retail value)		
	Total retail value (€)	Percentage
Surface care	€4,232,000,000	74%
Toilet care	€1,506,100,000	26%
Total (hard surface cleaning)	€5,738,100,000	100%
Source: Euromonitor, as reported by JRC (2014d)		

As stated in the JRC report, in 2013, the total retail value of all hard surface cleaning products across the EU-25 was €5,738 million. Of this, €4,232 million was attributable to surface care products and €1,506 million to toilet care products. These data are shown in Table A1-36. It is important to note that the data in this table do not distinguish between the household and the industrial and institutional cleaning product markets, even though many well-known household brands are also available as industrial cleaners.

As shown in Table A1-37, the top 5 countries in the hard surface cleaning market are:

- Germany (€1,151 million or 20% of the total market)
- UK (€996 million or 17% of the total market)
- France (€737 million or 13% of the total market)
- Italy (€737 million or 13% of the total market)
- Spain (€467 million or 8% of the total market)

These five countries represent 71% of the total market for hard surface cleaning products across the EU-25.

Table A1-37: Retail value of hard surface cleaning market (€ million), 2013	
Country	Retail value 2013 (€ million) Hard surface cleaning (surface + toilet care)
Austria	115.2
Belgium	145.8
Bulgaria	30.6
Croatia	40.7
Czech Republic	76.3
Denmark	66.3
Estonia	4.9
Finland	51.1
France	737.3
Germany	1150.9
Greece	104.3
Hungary	55.1
Ireland	42.2
Italy	737.0
Latvia	7.5
Lithuania	8.4
Netherlands	203.9
Poland	344.6

Table A1-37: Retail value of hard surface cleaning market (€ million), 2013	
Country	**Retail value 2013 (€ million) Hard surface cleaning (surface + toilet care)**
Portugal	130.3
Romania	86.7
Slovakia	43.7
Slovenia	15.9
Spain	466.5
Sweden	77.5
United Kingdom	995.4
Total EU	5738.1
Source: Euromonitor, as reported by JRC (2014d)	

Figure A1-28 illustrates the breakdown of retail sales between surface and toilet care.

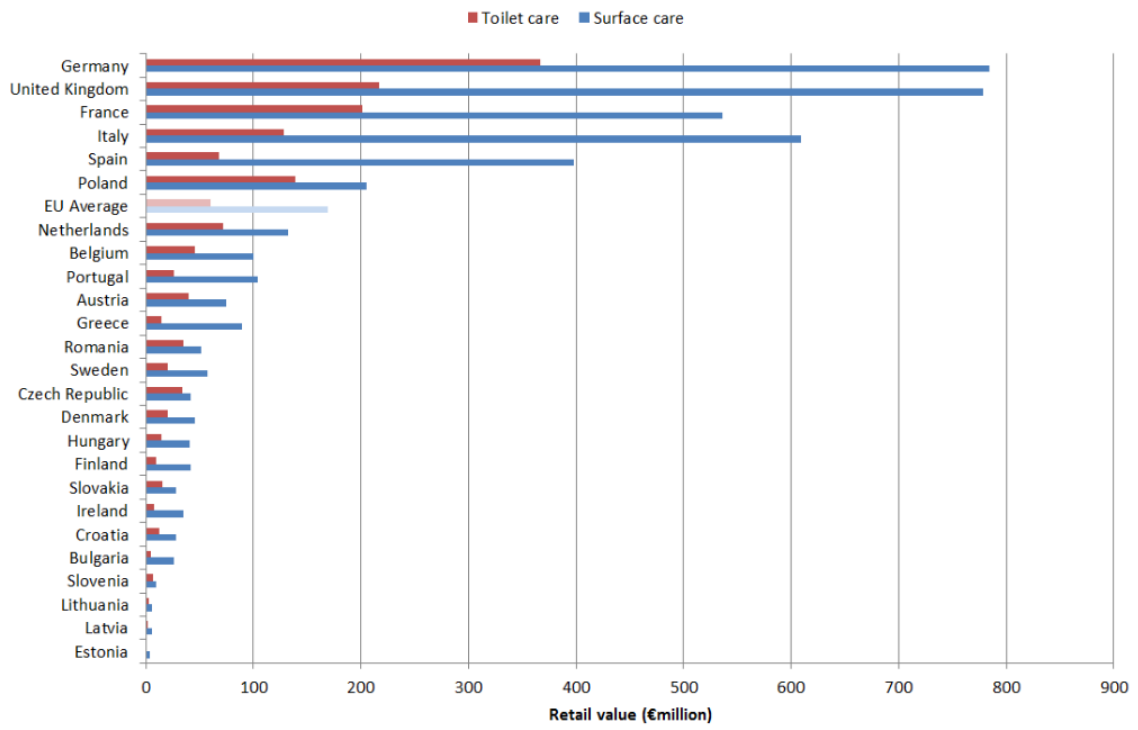

Figure A1-28: Retail value (€ million) for surface care and toilet care, 2013
Source: Euromonitor, as reported by JRC (2014d)

Across the seven countries analysed in detail by the JRC (France, UK, Italy, Germany, Netherlands, Denmark and Poland), overall sales for all hard surface cleaning products totalled €4,287 million in 2013.[81] This included:

- sales of surface care cleaning products: €3,122 million; and
- sales of toilet care products: €1,165 million.

These data have also been disaggregated as follows:

- Total sales value of all-purpose cleaners - €1,954 million;
- Total sales value of window cleaners - €187 million;
- Total sales value of sanitary cleaners - €1,557 million; and
- Total sales value of other surface care cleaners - €589 million.

The market for manufacturing surface care detergents is heavily dominated by a small number of well-known companies (see Table A1-38). In 2013, the top six organisations in the European market for surface care achieved 59% of total retail sales (by value). Procter & Gamble (P&G) held the largest market share (14%) followed by Unilever Group (11%) and Reckitt Benckiser Plc (11%). The JRC study reports that there are two other companies which have a market share higher than 1%; Bolton Group (1.9 %) and Werner & Mertz (1.7 %). All other companies have a market share below 1 %.

Table A1-38: Largest manufacturers in surface care market, % breakdown by retail value, Europe, 2013

Manufacturers name	Share of European surface care market, by retail value (%)
Procter & Gamble Co	14.1
Unilever Group	10.8
Reckitt Benckiser Plc	10.6
Colgate-Palmolive Co	8.9
Henkel AG	7.2
SC Johnson	7.2
Source: Euromonitor, as reported by JRC (2014d)	

In 2013, the top six organisations in the European market for toilet care represented 52% of the market (by retail value). SC Johnson was the company with the largest market share (16%). Only two other organisations in the toilet care market had a market share above 1% - Werner & Mertz GmbH (1.7%) and Colgate-Palmolive Co (1%). The remaining companies each had a market share below 1%. Data are provided in Table A1-39.

[81] This is primarily household/domestic cleaning, but will likely include some non-domestic products which have been purchased through the same channels, such as supermarkets. It is not possible to determine what proportion relates solely to domestic use.

Table A1-39: Largest manufacturers in toilet care market, % breakdown by retail value, Europe, 2013	
Manufacturers name	**Share of the European toilet care market, by retail value (%)**
SC Johnson	15.6
Henkel AG & Co KGaA	15.4
Reckitt Benckiser Plc	11.1
Bolton Group	7.2
Procter & Gamble Co	3.7
IWP International Plc	2.0
Source: Euromonitor, as reported by JRC (2014d)	

A relatively small number of brands dominate the market for surface and toilet care. These are shown in Table A1-40 and Table A1-41 below. Private labels represent a large portion of available cleaning products, with a brand share of 18% in surface care and 17% in toilet care. Ecover is recognised as the most prominent 'green cleaning' brand and has an estimated brand share of 0.1 % in both the surface care and toilet care markets. It has been noted that, between 2008 and 2013, the brand shares have typically remained the same in the surface and toilet care markets and that private labels have maintained a strong presence in the market.

Table A1-40: Surface care, top 10 brands (brand share, %), 2013		
Brand	**Manufacturer**	**Brand share (%)**
Ajax	Colgate-Palmolive Co	8.2
Cif/ Jif	Unilever	8.0
Swiffer	Procter & Gamble Co	4.9
Mr Clean/ Mr Propper	Procter & Gamble Co	4.9
Mr Muscle	SC Johnson	3.7
Cilit Bang	Reckitt Benckiser Plc	3.1
Flash	Procter & Gamble Co	2.3
Domestos	Unilever	2.3
Dettol	Reckitt Benckiser Plc	1.8
Pledge/ Pronto	SC Johnson	1.5
Private label	-	18.3
Ecover	Ecover (private)	0.1
Source: Euromonitor, as reported by JRC (2014d)		

Table A1-41: Toilet care, top 10 brands (brand share, %), 2013		
Brand	**Manufacturer**	**Brand share (%)**
Duck	SC Johnson	11.1
Domestos	Unilever	9.8
WC Frisch	Henkel	8.4
Harpic	Reckitt Benckiser Plc	8
WC Net	Bolton Group	5.8
Bref	Henkel	5.1
Ambi Pur	Procter & Gamble Co	3.5

Table A1-41: Toilet care, top 10 brands (brand share, %), 2013		
Brand	**Manufacturer**	**Brand share (%)**
Null Null	SC Johnson	2.6
WC Ente	SC Johnson	1.8
WC Eend	SC Johnson	1.5
Bloo	Jeyes (private)	1.5
Private label	-	16.8
Ecover	Ecover (private)	0.1
Source: Euromonitor, as reported by JRC (2014d)		

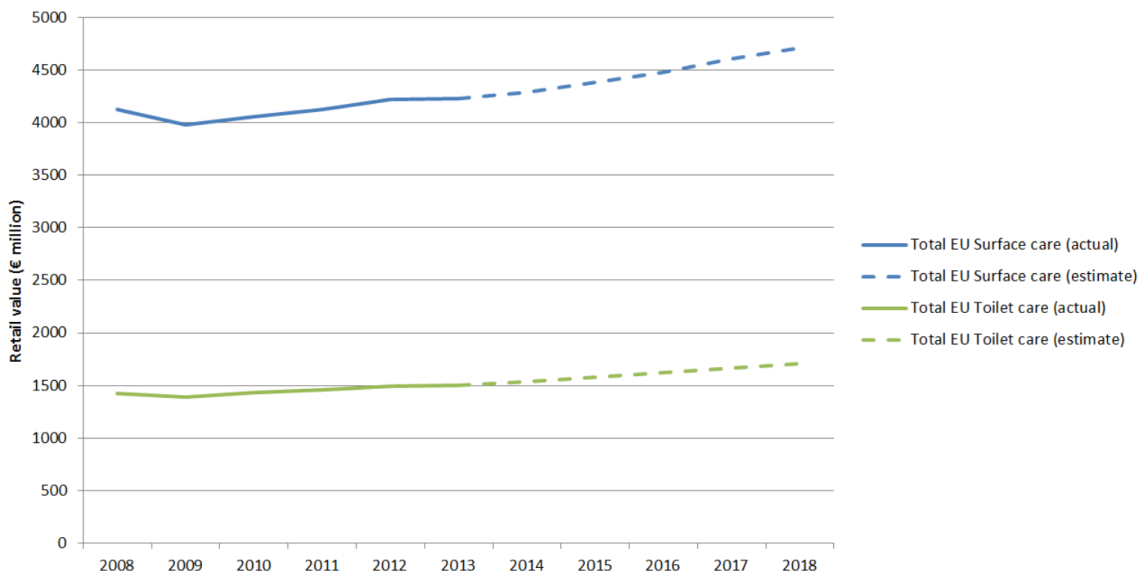

Figure A1-29: Trends in the surface care and toilet care market, EU-25 retail value (€ million), 2008-2018

Based on an analysis of Denmark, Poland, Spain, Italy, France, UK and Germany – representative of over 70% of the market for all household cleaning products in Europe.

Source: Euromonitor, as reported by JRC (2014d)

The following figure provides an overview of the total sales values for each category of product in the hard surface care market (all-purpose cleaners, window cleaners, sanitary cleaners and other surface care) across the seven countries analysed in detail by the JRC (Denmark, Poland, Spain, Italy, France, UK and Germany). It shows that sales values have remained relatively steady between 2008 and 2013 for each of these product groups.

Table A1-42 provides a more detailed breakdown of changes in the sales value of hard surface cleaning products between 2008 and 2013. Between 2008 and 2013 there was an estimated total increase of 7% across all hard surface cleaners (representing a CAGR of 1.3%). It is worth noting that a number of products have seen a decrease in sales value across this period, notably toilet cleaning systems which have seen a 42% decrease since 2008 and toilet care mousse/foam which has seen a 29% decrease. In contrast, the sales value of household antiseptics/disinfectants has increased significantly between 2008 and 2013 (a change of 31%, CAGR of 5.4%).

A1.4.2 Surfactants

Data from Eurostat (Comext) can be used to calculate the apparent consumption of surfactants in the EU over the period from 2006 to 2015 (unfortunately data are not available for Norway, Iceland or Liechtenstein). Again, it must be noted that although detergents are a key driver of surfactant demand, they are by no means the only end-use application and therefore changes to the amount of surfactants consumed in the EU each year cannot be attributed solely to the use of detergents.

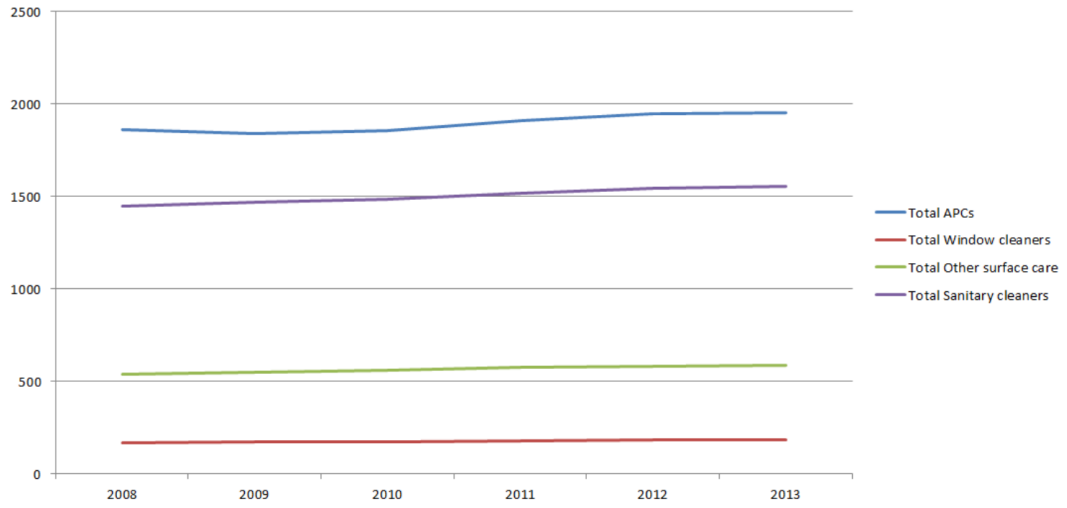

Figure A1-30: Sales value trend (€ million), 2008-2013

Based on an analysis of Denmark, Poland, Spain, Italy, France, UK and Germany – representative of over 70% of the market for all household cleaning products in Europe.

Source: Euromonitor, as reported by JRC (2014d)

Table A1-42: Percentage change in EU market (sales value) for hard surface cleaners, based on total of DK, FR, DE, IT, NL, PL, UK

	% change between 2008-2013	% compound annual growth rate (CAGR)
Household care wipes (inc. floor cleaning systems)	-7%	-1.5%
Multi-purpose cleaners	13%	2.4%
Floor cleaners	-4%	-0.8%
Household antiseptic/ disinfectants	31%	4.5%
All-purpose cleaner total	**5%**	**1%**
Window/ glass cleaners	11%	2.0%
Window cleaners total	**11%**	**2.0%**
Bathroom cleaners	5%	0.09%
Kitchen cleaners	-1%	-0.1%
In-cistern devices	-19%	-4.0%
Toilet blocks *Of which (rim blocks)* *Of which (rim liquids)*	14% *20%* *9%*	2.6% *3.6%* *1.9%*
Toilet care mousse/ foam	-29%	-6.7%
Toilet care tablet/ powders	7%	2.0%
Toilet cleaning systems	-42%	-10.2%

Table A1-42: Percentage change in EU market (sales value) for hard surface cleaners, based on total of DK, FR, DE, IT, NL, PL, UK		
	% change between 2008-2013	% compound annual growth rate (CAGR)
Toilet liquids	9%	1.8%
Sanitary cleaners total	**7%**	**1.4%**
Descalers	11%	2.1%
Drain openers	14%	2.7%
Oven cleaners	7%	1.3%
Scouring agents	3%	0.5%
Other surface care	**9%**	**1.7%**
Source: Euromonitor, as reported by JRC (2014d)		

As shown above in Table A1-43 (and presented graphically in Figure A1-31), apparent consumption of anionic organic surfactants (excluding soap), non-ionic organic surfactants (excluding soap) and organic surfactants (excluding soap, anionic, cationic and non-ionic surfactants) has increased over the period 2006 to 2016. There was a peak in apparent consumption of cationic organic surfactants (excluding soap) in 2008, followed by a second smaller peak in 2010. After this, apparent consumption of cationic organic surfactants (excluding soap) tailed off to levels comparable to 2006 (the earliest date for which data are available).

Data on per capita consumption of surfactants are shown in Figure A1-32, based on apparent consumption of surfactants in the EU28 (Table A1-43) and changes to the EU's population year-on-year (Table A1-44). By comparing the graphs in Figures A1-31 and A1-32 it is clear to see that trends in per capita consumption of surfactants match very closely the overall trends in apparent consumption.

It has been noted that the surfactants market is largely dominated by several types such as alkylbenzene sulfonates, alcohol ethoxylates, sulfates, and ethersulfates.[82] The most widely used surfactant is currently the anionic surfactant linear alkylbenzene sulfonate (LAS), which is estimated to account for nearly 40% of the global anionic surfactants market.[83] On a global scale, about 83% to 87% of LAS is used in household detergents, including laundry powders, laundry liquids, dishwashing liquids, and other household cleaners.[84] Industrial institutional, and commercial cleaners account for most of the other applications, but LAS is also used as an emulsifier (e.g., for agricultural herbicides and in emulsion polymerization) and as a wetting agent. Very small volumes are also used in personal care applications. LAS competes with several other major surfactants for use in household detergents but has often been lower in cost and has had other favourable properties compared with competing surfactants. It has

[82] Transparency Market Research (2015): Surfactants, (Anionic, Cationic, Non-ionic, Amphoteric, and Others) Market for Household Detergents, Personal Care, Industrial & Institutional Care, Food Processing, Oilfield Chemicals, Textile & Leather, and Other Applications - Global Industry Analysis, Size, Share, Growth, Trends and Forecast 2015 – 2023. Available at: http://www.transparencymarketresearch.com/surfactants-market.html

[83] Transparency Market Research (2014): Global industry analysis, size, share, growth, trends and forecast. Abstract available at: http://www.mrrse.com/sodium-lauryl-sulfate-market

[84] IHS Markit (2015): Linear alkylbenzene sulfonic acid (LABSA) / Linear alkylate sulfonate (LAS). Abstract available at: https://www.ihs.com/products/linear-alkylate-chemical-economics-handbook.html

been reported that between 2002 and 2006, very high crude oil prices made LAS far less competitive than had been the case in most years since its introduction.[85] Between 2007 and 2011, LAS prices tracked more closely those of the competitive surfactants, which led to a more stable pattern of consumption (even as prices for all surfactants continued to be very volatile). In late 2014 and early 2015, low crude oil prices helped LAS become more competitive. The global LAS market is anticipated to grow at a CAGR of 4.87%, in terms of revenue, over the period 2014-2019.[86]

[85] IHS Markit (2015): Linear alkylbenzene sulfonic acid (LABSA) / Linear alkylate sulfonate (LAS). Abstract available at: https://www.ihs.com/products/linear-alkylate-chemical-economics-handbook.html

[86] Infiniti Research Ltd (2015): Global linear alkylbenzene sulfonate (LAS) market 2015-2019. Abstract available at: http://www.prnewswire.com/news-releases/global-linear-alkylbenzene-sulfonate-las-market-2015-2019-300084960.html

Table A1-43: Apparent consumption of surfactants in the EU28 (million kg)*										
NACE Code	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
20412020 - Anionic organic surface-active agents (excluding soap)	1155.8	1079.8	1249.6	1094.1	1235.2	1227.8	1231.6	1420.2	1406.4	1466.3
20412030 - Cationic organic surface-active agents (excluding soap)	490.5	472.9	830.3	598.6	718.5	583.9	535.5	557.8	526.3	520.6
20412050 - Non-ionic organic surface-active agents (excluding soap)	115.1	134.7	293.7	322.8	401.8	419.1	473.0	407.6	481.3	423.8
20412090 - Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)	800.0	838.6	916.2	803.9	1077.7	989.8	1044.4	1191.3	1132.5	1174.8
Total	**2561.4**	**2526.0**	**3289.8**	**2819.3**	**3433.2**	**3220.6**	**3284.5**	**3577.0**	**3546.5**	**3585.5**
Source: COMEXT * calculated as: (Production + Imports) – Exports Data not available for Norway, Iceland and Liechtenstein										

Table A1-44: Population of the EU28										
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Population (million)	496.4	498.3	500.3	502.1	503.2	503.0	504.1	505.2	506.9	508.4
Source: Eurostat										

Table A1-45: Per capita consumption of surfactants in the EU28 (kg per person per year)										
NACE Code	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
20412020 - Anionic organic surface-active agents (excluding soap)	2.3	2.2	2.5	2.2	2.5	2.4	2.4	2.8	2.8	2.9
20412030 - Cationic organic surface-active agents (excluding soap)	1.0	0.9	1.7	1.2	1.4	1.2	1.1	1.1	1.0	1.0
20412050 - Non-ionic organic surface-active agents (excluding soap)	0.2	0.3	0.6	0.6	0.8	0.8	0.9	0.8	0.9	0.8
20412090 - Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)	1.6	1.7	1.8	1.6	2.1	2.0	2.1	2.4	2.2	2.3
Total	**5.2**	**5.1**	**6.6**	**5.6**	**6.8**	**6.4**	**6.5**	**7.1**	**7.0**	**7.1**
Source: RPA analysis based on data from Comext and Eurostat										

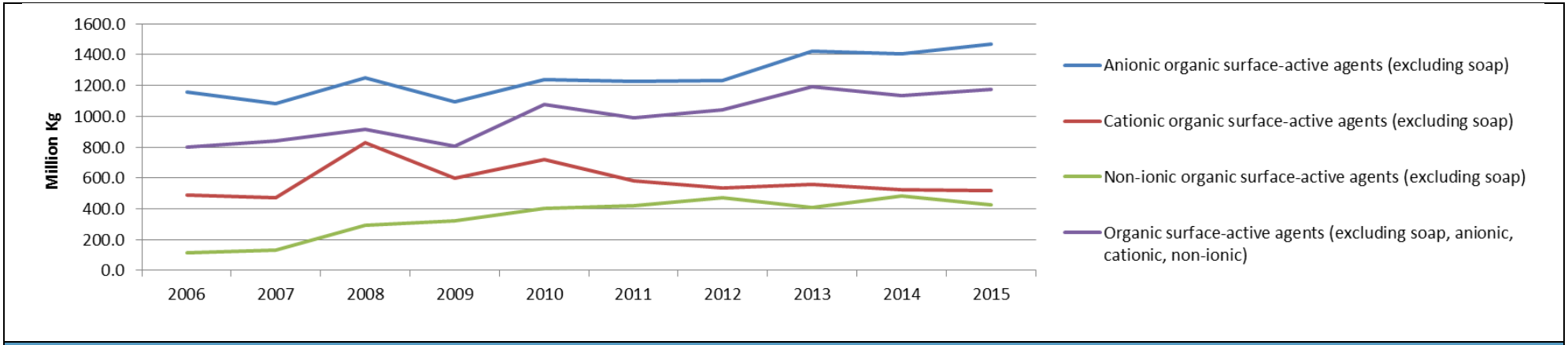

Figure A1-31: Apparent consumption of surfactants in the EU28 (million kg)

Source: COMEXT

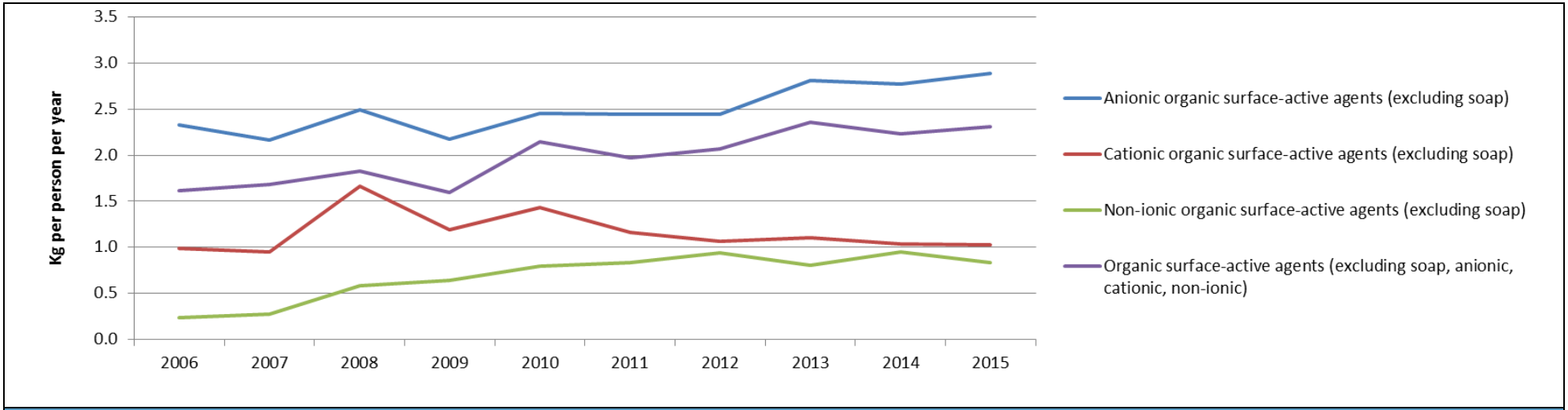

Figure A1-32: Per capita consumption of surfactants in the EU28 (kg per person per year)

Source: RPA analysis based on data from Comext and Eurostat

A1.5 Main sustainability aspects

The detergents sector is characterised by a history of innovation, particularly in the laundry detergents sub-sector. As technological advances have been made in terms of washing machines and washing technologies, the sector has kept pace. Novel packaging and modes of delivery have been developed, such as detergent capsules/pods, and the formulation of detergent products has also changed.

Concern about the environmental impact of detergent use has been an important driver of innovation in the detergents industry. Current buzzwords across the industry are "green" and "eco-friendly", though the interpretation of these terms appears to differ for different product groups. For example, for home and personal care, the terms "green" and "eco-friendly" tend to mean encouraging the use of renewable or less harmful ingredients; whereas for laundry detergents, these terms tend to refer to reducing the size of the packaging and reducing use of energy and water.

Some of the key sustainability aspects of detergents that are currently being marketed are outlined in the sections that follow.

A1.5.1 Changing formulations

Replacing ingredients based on fossil fuels

As noted in a study by Ecolabelling Denmark[87], during recent years, there has been an increased focus on replacing fossil fuel based ingredients with ingredients based on vegetable oils. In detergent products, it is mostly surfactants and various polymers that are derived from fossil fuel based ingredients. One example of a (partly) renewable ingredient is Methyl ester sulfonates (MES). MES have been on the market for some years but, according to Ecolabelling Denmark (2011), have not so far been price competitive to, e.g. LAS, which is one of the most widely used surfactants in laundry detergents. However, with increasing petro-chemical prices and improvements in the MES production process, MES may become a realistic alternative to petro-chemical based surfactants such as LAS. MES, which are obtained from plant and tallow resources, have been highlighted for their high biodegradability, low aquatic toxicity and good environmental profile (Ecolabelling Denmark, 2011).

Although there may be environmental benefits of moving away from petro-chemical based ingredients, replacement with renewable resources are associated with some (ecological, economic and social) concerns. These concerns include the loss of natural habitat and increased food costs combined with reduced food supplies if areas previously used for crop production or of high biological value are replaced by resources needed by the detergents sector. Thus, consideration of the whole life impacts of using renewable ingredients (and potentially the use of other innovative technologies) is needed to ensure that developments within the sector take appropriate account of short and long-term impacts.

In addition, JRC notes that there are other changes in formulation that should be considered with these including the move towards more fragrance-free products or fragrances which are less harmful, changes in the preservatives that are used in the formulations, and changes in the temperatures at

[87] Ecolabelling Denmark (2011): Revisions of Ecolabel Criteria for Laundry Detergents 2008-2010 – Background Report, available at: http://ec.europa.eu/environment/ecolabel/documents/Laundry%20Detergents%20technical%20report.pdf

which the formulation is effective (i.e. allowing use at lower water temperatures, thus leading to energy savings).

A1.5.2 Unit dosing

Traditional powder and liquid detergents rely on the user to measure doses – more often than not leading to overuse and the temptation to add 'just a little more' to be sure of good results. Unit dose detergents, sold in tablet or capsule form, are growing in popularity and have been shown to remove the scope for human error and considerably reduce detergent consumption.[88,89]

A recent unit dose development is that of water soluble pouches, which are typically produced using polyvinyl alcohol (PVOH) film[90]. In Europe, the first launch of this form was for liquid fabric cleaning detergents; but detergents for use in automatic dishwashing machines are also now available in this form.

Table A4-46 shows that use of unit dose detergents for laundry care has increased (in terms of value) between 2011-12 and 2014-15.

Table A1-46: Laundry care, Total market value (EU 28 + CH + NO)				
	2011-12		2014-15	
	million Euro	%	million Euro	%
Powder detergent	3,671	28%	3,216	24%
Liquid detergent	3,731	28%	4,181	31%
Unit doses	781	6%	1,083	8%
Fabric conditioners	2,196	16%	2,405	18%
Laundry aids, others	2,933	22%	2,735	20%
Total	**13,313**	**100%**	**13,620**	**100%**
Source: Euromonitor International, as reported by AISE (2015)[91]				

[88] SGS (2015): Sustainable Detergent Consumption. Available at: http://www.sgs.com/en/news/2015/03/sustainable-detergent-consumption

[89] Unilever (2000): Tablet Detergents – Towards a More Sustainable Future. Available at: https://www.unilever.com/Images/2000-tablet-detergents-towards-a-more-sustainable-future_tcm244-409697_1_en.pdf

[90] Zoller U & Sosis P (2009): Handbook of detergents, Part F: Production. CRC Press, Taylor & Francis Group, LLC.

[91] AISE (2015): Activity & sustainability report 2014-15. Available at: https://www.aise.eu/documents/document/20150616162532-aise_ar14-15_def2-low.pdf

A study by Vandecasteele B *et al*. (2014)[92] found that the number of consumers measuring their detergent dose has decreased. They concluded that this may, at least in part, be because consumers are using more pre-dosed detergents such as liquid tablets or pouches.

A1.5.3 Concentrated products

Product development has not only focused on dosing and packaging, but also on delivering better results from less product and modern detergents are far more concentrated than their predecessors. For example, between 2011 and 2016, the retail value of standard detergents fell 79% in Western Europe and 42% in Eastern Europe, while the retail value of concentrated detergents grew 11% and 1% in Western and Eastern Europe respectively.[93]

Concentrated detergent formulations offer a range of benefits to the consumer and the environment, including:

- less packaging to recycle or dispose of;
- less water in the formulation (and therefore reduced use of this precious resource);
- Smaller/fewer containers, meaning less fuel is needed for transport (and therefore reduced greenhouse gas emissions); and
- Smaller, lighter containers which are easier for people to carry and store at home.

However, for concentrated products to deliver an environmental benefit, users of these products need to use less than they would have done before. Indeed, the more concentrated the product, the more important correct dosing is for environmental benefits to be achieved and, hence, the more important it is that manufacturers address the ease of ensuring that the correct dose is being used.

The Laundry Sustainability Programme 2 (LSP 2) was introduced in 2009 with the aim of optimising the concentration of washing powders in order to reduce their environmental impact. Participating companies committed to lowering the volume and weight of washing powders by 10-15% without any loss of performance. One of the targets of the LSP 2 was to save 200,000 tonnes of powder, 5,000 tonnes of packaging and 10,000 road transports[94]. The concentration of detergent products has resulted in a reduction of the washing dose by almost 50% over the last 10 years. There have been 5 LSPs, each with a reduction recommended for dosage requirements. AISE also implemented two Product Resource Efficiency Projects, one for powder detergents for household laundry and one for liquid fabric conditioners for household laundry[95].

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[92] Vandecasteele B et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016.

[93] Euromonitor International, as cited by AISE, pers. comm.

[94] Prevent pack. Detergent products become increasingly concentrated: sector aims for sustainable and cost-effective washing. Available at: http://www.preventpack.be/sites/default/files/publications/detergent_products.pdf

[95] AISE (2012): A.I.S.E Activity and Sustainability Report. Available at: https://www.aise.eu/cust/documentrequest.aspx?DocID=227

A1.5.4 Voluntary initiatives

The EU Ecolabel, established in 1992, is a voluntary scheme to encourage businesses to market products and services that are kinder to the environment. A variety of products and services are covered by the scheme, but only those that meet the specified criteria can carry the flower logo. Today, around 5,200 different detergent products can be found on the shelves across the EU bearing the EU Ecolabel logo.[96] Besides the EU Ecolabel, there are a plethora of other ecolabels available on the market today that can be used on the packaging of detergent products[97]; however, there are very few ISO Type I ecolabels (3rd party certified, with criteria based on LCA), with most instead being Type II or III (based on self-claims and/or only on a single life-stage and/or not 3rd party certified).

The detergents sector also has a number of voluntary initiatives that seek to advance the sustainability of the industry. A list of AISE's sustainability-related voluntary initiatives is provided in Table A4-47.

Table A1-47: AISE's voluntary initiatives

Year	Initiative	Sustainable production	Sustainable use
Sustainability Progress: Initiatives of the Sector			
1997-2002	**Code of Good Environmental Practice** The "Code of Good Environmental Practice" (the "Code") was the first major voluntary initiative by AISE specifically designed for household laundry detergents	✓	X
2004→	**Charter for Sustainable Cleaning** Promoting a life-cycle approach to sustainability through independent assessment, with annual reporting. Updated in 2020 with additional product specific requirements.	✓	✓
2006→	**Product Resource Efficiency Projects** Educating consumers to dose concentrated laundry detergents correctly.	✓	✓
2013-2016	**Pilot Project with EU Commission on Product Environment Footprint (PEF) of Liquid Laundry Detergents**	✓	✓
Sustainable Consumption: Consumer Education			
1997→	**Washright©/Best Use Panels** Initially developed in the context of the Code, Washright is a pan-European awareness-raising campaign to promote good washing practices to consumers when doing the laundry. Since then, AISE has released a number of best use panels for on pack use to promote sustainable use of cleaning products.	X	✓
2008→	www.cleanright.eu A joint Cefic and AISE website providing consumers across Europe with information and advice on the safe and sustainable use of soaps, detergents and maintenance products.	X	✓
2013→	**I Prefer 30°**	✓	✓

[96] http://www.eeb.org/index.cfm/library/eu-ecolabel-criteria-for-detergents

[97] For an extensive list, the reader is referred to the Ecolabel Index: http://www.ecolabelindex.com/ecolabels/?st=category,cleaning

Table A1-47: AISE's voluntary initiatives			
Year	**Initiative**	**Sustainable production**	**Sustainable use**
	A unique multi-stakeholder campaign by the detergent industry to drive low temperature washing, in partnership with retailers, appliance manufacturers and fashion sector.		
Safety: Industry Collaboration			
1997→	**ERASM (Environmental Risk Assessment Management)** A research partnership of the detergents and surfactants industries in Europe.	✓	X
1999-2004	**HERA (Human and Environmental Risk Assessment on Ingredients of Household Cleaning Products)** A joint AISE/Cefic initiative, five years ahead of REACH.	✓	X
2001→	**DUCC (Downstream Users of Chemical Co-ordination group)** A platform to address downstream users' needs, rights, duties and specificities under REACH and CLP.	✓	X
2013→	**DETNET** The "Detergent Industry Network for CLP classification", a novel tool to secure adequate implementation of CLP and relevant consumer information.	✓	X
Safe Use: Stewardship & End-User Campaigns			
2005→	**Safe Use Icons** A harmonised set of icons and messages for voluntary, proactive use by companies to help consumers use products in a safe way.	X	✓
2007→	**Product Stewardship Programmes** Air Fresheners 2007 & update 2016: An initiative to promote responsible manufacturing, communication and use Gel Capsules 2012 & update 2015: An initiative to secure safe use and storage by users of liquid detergent capsules.	✓	✓
2014→	**Professional Application Pictograms** A set of professional application pictograms (kitchen & catering, food & beverage, building care) designed to optimise the correct and efficient use of professional cleaning and care products.	X	✓
2014→	**Keep Caps from Kids** A consumer education campaign that aims at securing the safe use and storage of liquid laundry detergent capsules to reduce significantly the incidents involving small children due to accidental exposure to these products.	X	✓
2016→	**BRE&S (Better Regulation & Safe Use Project)** An initiative by A.I.S.E., in the context of the EU Better Regulation Agenda, to improve the effectiveness of safe use communication to consumers via labels and other means (e.g. digital) to make sure that consumers notice the safety information, understand it and act upon it.	X	✓
Source: *AISE (2016)*[98]			

[98] AISE (2016): AISE's voluntary initiatives. Flyer available at: https://www.aise.eu/documents/document/20170126171248-voluntary_initiatives_2016_flyer_a4_final.pdf

A1.6 Other trends in the detergents sector

A report by Transparency Market Research[99] indicates several factors which are driving growth in the detergents sector world-wide; these include increased demand for industrial detergents due to increased industrialisation of developing economies, particularly China and India; technological advancements; and increased demand by consumers due to improved awareness of hygiene and hygiene practices. The report also predicts instability on the supply side due to the expectation of volatility of the prices of raw materials such as oil and natural gas. It is also anticipated in the report that there will be changes to the formulation of products in the sector as the demand for "green" products continues to grow. This refers to both products which contain ingredients that do not harm human health or the environment and practices which are intended to reduce energy or natural resource consumption.

In terms of market share, the report anticipates that the US will lose market share whereas the EU will gain. The US, Brazil and Russia are all predicted to experience sluggish growth in this sector. The Chemicals Economic Handbook published by IHS Markit[100] also supports these predictions. It anticipates that growing demand for sustainable products and practices will determine the direction of innovation within the sector and will also be used as a marketing tool by companies in this sector. The report predicts that household consumption of detergent products will grow at annual rates of between 1% and 5% between 2015 and 2020, with lower rates in regions like North America, Europe and Japan, and higher rates in China, Other Asia, and Africa.

[99] Transparency Market Research: Detergent Chemicals Market – Global Industry Analysis, Market Size, Share, Trends, Analysis, Growth and Forecast 2015 – 2023. Available at: http://www.transparencymarketresearch.com/detergent-chemicals-market.html

[100] HIS Markit (2016): Chemicals Economics Handbook: Surfactants, Household Detergents & Their Raw Materials. Available at: https://www.ihs.com/products/surfactants-household-detergents-chemical-economics-handbook.html

Annex 2 Environment

A2.1 Key provisions of the Detergents Regulation

One of the main objectives of the Detergents Regulation ((EC) No 648/2004) is to establish rules to achieve the free movement of detergents and surfactants for detergents in the internal market whilst ensuring a high degree of protection of the environment. The Regulation provides key provisions and harmonised rules which aim to reduce the environmental impact of detergents.

The Detergents Regulation provides **harmonised rules for the biodegradability** of surfactants in detergents as well as restrictions or bans on the use of surfactants on the grounds of biodegradability. Article 4(1) of the Regulation indicates that surfactants and detergents containing surfactants can be placed on the market without further limitations if they meet the criteria for ultimate biodegradability outlined in Annex III. However, as stipulated in Article 4(2), detergents that contain surfactants for which the level of ultimate aerobic biodegradation is lower than that specified in Annex III can receive a derogation (if applied for by manufacturers of industrial or institutional detergents containing surfactants and/or of surfactants for industrial or institutional detergents). Requests for a derogation are made and decided in accordance with Articles 5, 6 and 9 of the Regulation. Annex V of the Detergents Regulation outlines the surfactants that have received a derogation, with this having been updated in 2009 through implementation of Commission Regulation (EC) No 551/2009.[1]

In addition, the Detergents Regulation also provides **limitations on the content of phosphates and other phosphorus compounds** in consumer laundry detergents and consumer automatic dishwasher detergents (CADD), which are outlined in Annex VIa.[2] These harmonised rules were introduced through an amendment to the Detergents Regulation (Regulation (EU) No 259/2012), which introduced new limits to reduce the damage caused by phosphates from detergents on water quality and ecosystems more generally (i.e. reducing eutrophication risks and reducing the cost of phosphates removal in wastewater treatment plants).[3]

To ensure that the **correct quantity of detergent is used** when undertaking cleaning activities (and thus limiting the potential for over-use of detergent products), the Detergents Regulation requires dosage information to be included on the packaging of consumer laundry detergent products and CADD sold to the general public (in line with Article 11(4) and Annex VII B of the Regulation).

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[1] Commission Regulation (EC) No 551/2009 of 25 June 2009 amending Regulation (EC) No 648/2004 of the European Parliament and of the Council of detergents, in order to Adapt Annexes V and VI thereto (surfactant derogation). Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009R0551

[2] It is worth noting that the EU Ecolabel criteria for detergents go beyond those of the Detergents Regulation. The EU Ecolabel covers six detergent groups: Hard surface cleaning products, detergents for dishwashers, hand dishwashing detergents, laundry detergents, industrial and institutional dishwasher detergents and industrial and institutional laundry detergents. In order to qualify for the EU Ecolabel, detergent products must be phosphate-free, with the exception of laundry detergents and dishwasher detergents designed for industrial or institutional use, for which there are limits on the total phosphorus content.

[3] Eur-Lex (2016): Safer detergents for European consumers. Available at: http://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32004R0648&qid=1485248658546

Table A2-1 outlines the legislation in force before the Detergents Regulation (i.e. the baseline).

The following sections consider the key environmental provisions of the Detergents Regulation and provide further information on the requirements, assess whether they have contributed to achieving the objectives of the Regulation and identify whether any issues have been experienced/identified.

Table A2-1: EU legislation preceding the Detergents Regulation

Legislation	Description
Council Directive of 22 November 1973 (**73/404/EEC**) on the approximation of the laws of the Member States relating to detergents	This can effectively be considered a 'Framework Directive', covering many types of detergent (anionic, cationic, non-ionic and ampholytic). It prohibited the marketing of any these detergents where the average level of biodegradability of the surfactants was less than 90%. The Directive was not concerned with other constituents such as phosphates. Moreover, the use of those surfactants with an average level of biodegradability of not less than 90% could not be harmful to human or animal health. However, the Directive by itself was largely unenforceable since it specified no methods by which testing was to be carried out. Testing methods for anionic and non-ionic surfactants were outlined in subsequent daughter Directive 73/405/EEC, amended by Directive 82/243/EEC and Directive 82/242/EEC. Daughter Directives in relation to cationic and ampholytic surfactants were never agreed.
Council Directive **73/405/EEC** of 22 November 1973 on the approximation of the laws of the Member States relating to methods of testing the biodegradability of anionic surfactants	This was the first of the Daughter Directives to Directive 73/404/EEC. It was concerned only with anionic surfactants. It originally laid down three methods of testing: a French method, a German method and an OECD method but an amendment made by Directive 82/243/EEC added a British method called the 'porous pot test'. The Directive required biodegradability to be no less than 80%, the assumption apparently being that if this level were obtained on every test, then the average level of 90% required by Directive 73/404/EEC would also be obtained.
Council Directive of 31 March 1982 (**82/242/EEC**) on the approximation of the laws of the Member States relating to methods of testing the biodegradability of non-ionic surfactants and amending Directive 73/404/EEC	This Directive was concerned with non-ionic surfactants and laid down four methods of testing: an OECD method, a German method, a French method and a British method. The biodegradability had to be no less than 80%. The Directive also amended Directive 73/404/EEC by establishing a committee for adapting the detergent Directives to technical progress.
Council **Directive 82/243/EEC** of 31 March 1982 amending Directive 73/405/EEC on the approximation of the laws of the Member States relating to methods of testing the biodegradability of anionic surfactants	Directive 82/243/EEC amended Directive 73/405/EEC by updating the approved testing methods and – as described above – by including the British 'porous pot test' as one of the methods. It also amended Directive 73/405/EEC by laying down in an Annex a reference testing method which is to be used during the procedure set out in Directive 73/404/EEC in the event of a dispute between Member States.
Council Directive **86/94/EEC** of 10 March 1986 amending for the second time Directive 73/404/EEC on the approximation of the laws of the Member States relating to detergents	This Directive only deferred the period of exemption for certain detergents.

Source: Farmer A M (2012): Manual of European Environmental Policy, Routledge, London; extract from IEPP (2014), available at: www.ieep.eu/assets/1509/5.8_Detergents_-_final.pdf

A2.2 Environmental impacts of the Detergents Regulation

A2.2.1 Stakeholder consultation

An open public consultation (OPC) was launched as part of this evaluation study to obtain views from all types of stakeholder on the functioning of and outcomes achieved by the Detergents Regulation. Two separate surveys were developed: one for organisations and one for citizens. The former was targeted at a broad range of stakeholder groups including public authorities and bodies responsible for implementing and/or enforcing the Detergents Regulation, companies (large and small), industry associations and sector groups representing companies in the detergents sector, trade unions, environmental and consumer NGOs, universities and research institutes and any other organisations interested in responding to the survey. In order to maximise the participation of small and medium sized enterprises (SMEs) in the consultation, a separate survey was developed and distributed to SMEs via the Enterprise Europe Network (EEN). To examine stakeholders' views in greater depth, a series of targeted interviews were held (45 in total). These were complemented by targeted email consultation. For further detail on the approach to the consultation, please see the separate Consultation Report.

Protecting the environment

During the OPC, organisations were asked whether they consider the Detergents Regulation to have been effective in protecting the environment. Overall, **most respondents (85%) indicated that they consider the Detergents Regulation to have been (very or somewhat) effective in protecting the environment.** Only two (5%) respondents, out of the 41 that responded, considered the Detergents Regulation to have been (very or somewhat) ineffective (as presented in Figure A2-1).

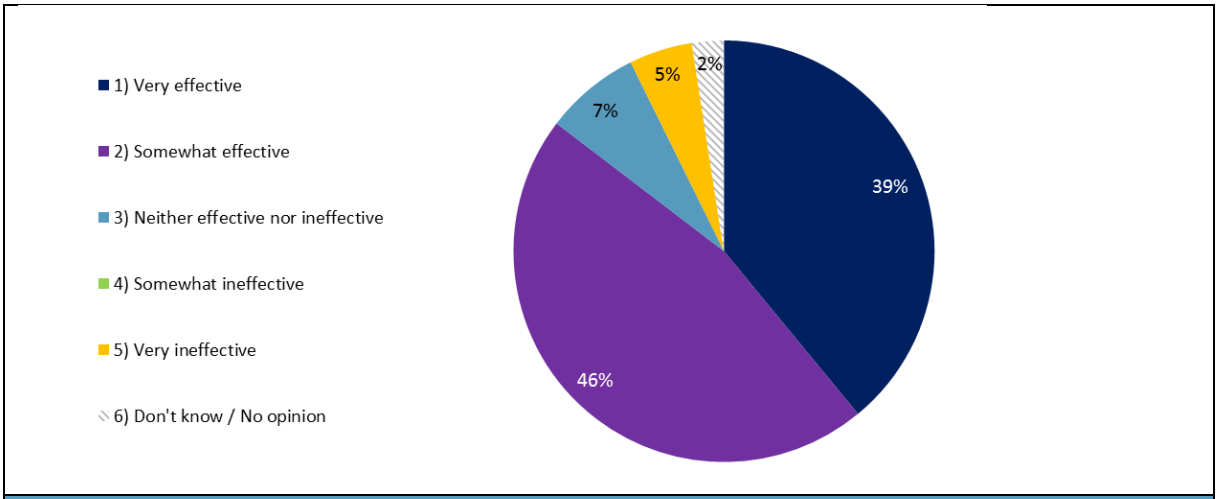

Figure A2-1: To what extent has the Detergents Regulation been effective in protecting the environment? Responses to the OPC – Organisations. *(n=41)*

SMEs (as part of the SME survey) were also asked to indicate the extent to which they agree that the Detergents Regulation has helped to protect the environment. The results are presented in Figure A2-2. The responses received indicate that **almost three quarters (28 of 39 or 72%) of SMEs agree that the Detergents Regulation has helped to protect the environment**. Only one respondent (3%) out of

the 39 that responded indicated that the Regulation has not benefitted the environment. Thus, the views of SMEs mirror those received from organisations responding to the OPC.

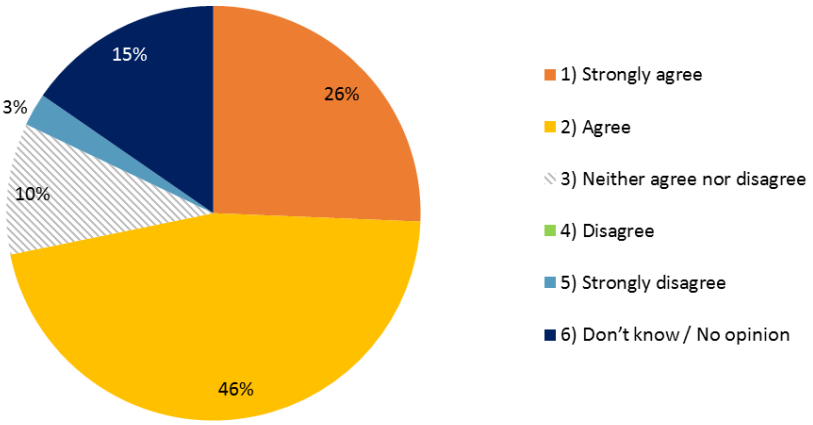

Figure A2-2: To what extent do you agree that the Detergents Regulation has helped protect the environment? Responses to the SME survey. *(n=39)*

The discursive responses received from stakeholders (during the OPC, SME survey and interviews) similarly indicate that the Detergents Regulation has been effective in terms of ensuring the protection of the environment. MS authorities, industry associations, companies, and NGOs all agreed that the impact of detergents on the environment has reduced as a direct result of the Regulation.

As outlined by one industry association during the OPC:

> *"The implementation of Regulation 648/2004 by the companies active in the area of detergents and maintenance products has been a success especially in terms of environmental protection via enhanced biodegradability of surfactants, promotion of the concept of standard washing machine load and development of Phosphates free products for consumer laundry and automatic dishwasher detergents (though the environmental impact of this sector in terms of contributor to the eutrophication issue was considered minimal)."*

It is worth noting, however, that several industry representatives (associations and companies) remarked that relative to other sectors (e.g. agriculture) the impact of detergent phosphorus on the environment is minimal (this is discussed further in Section A2.4).

Furthermore, as noted by one EU official during the consultation, the biodegradability requirements and the restrictions on the use of phosphorus in consumer laundry detergents and CADD only address two aspects (impacts) that all detergents have on the environment. It was noted, inter alia, that fragrances and microplastics used in detergents are also impacting the environment (further information is provided in Sections A2.6.3 and A2.6.2 respectively). In addition, energy used to heat water for cleaning is one of the most significant environmental impacts associated with detergent use. It was therefore suggested that detergent packaging should indicate to consumers that they should use the lowest temperature necessary when using detergents to reduce the environmental impact.

Organisations that participated in the OPC were asked whether they are aware of any new environmental problems/issues related to detergents, their use and impacts on the environment and human health that are not currently addressed through the Detergents Regulation. Of the 41

responses received, 14 (34%) indicated that there are new problems/issues that remain to be addressed, while 18 respondents (44%) had an opposing view (as presented in Figure A2-3).

During the survey conducted by EEN, SMEs were also asked whether they are aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation. As shown in Figure A2-4, only a very small proportion of SMEs (2 respondents, or 5% of the total) stated that they are aware of new problems/issues (46% stated "no" and 49% stated "don't know"). Unfortunately, the two respondents that selected "yes" did not provide further details of what these issues are.

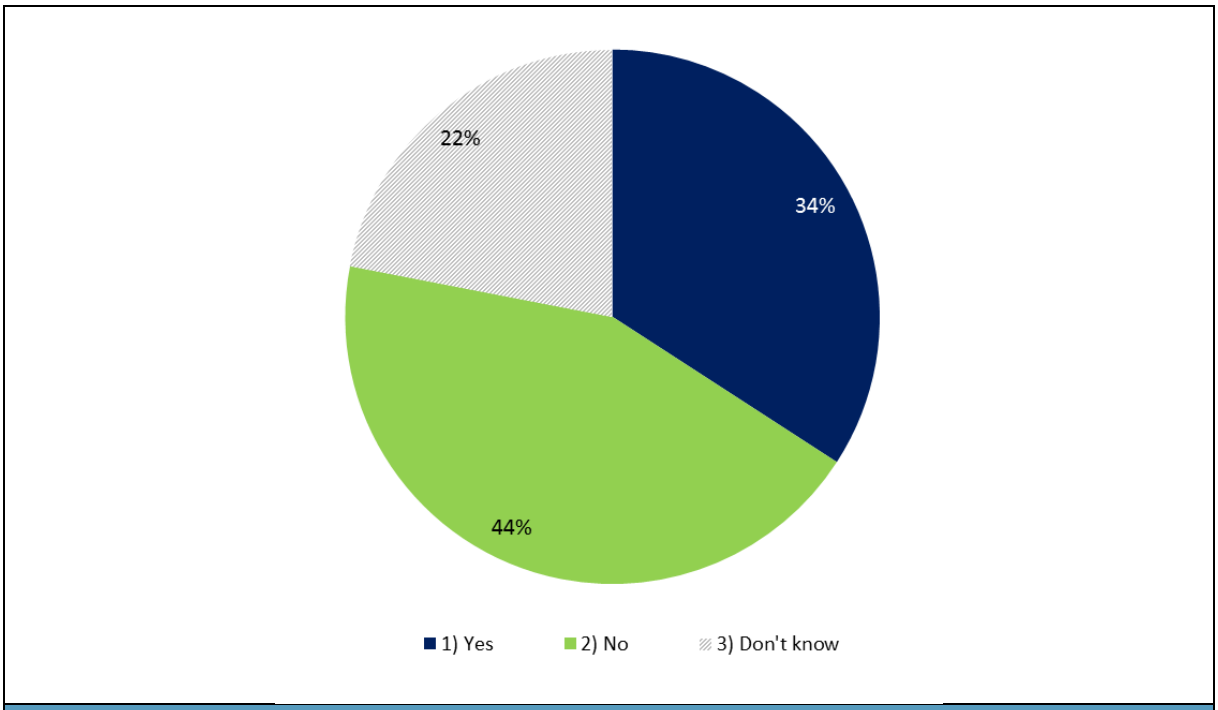

Figure A2-3: Are you aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation? Responses to the OPC – Organisations. *(n=41)*

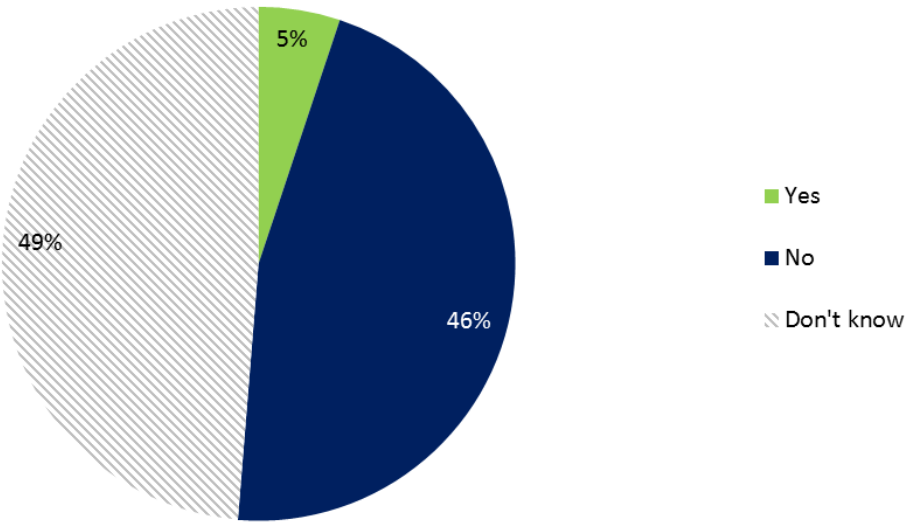

Figure A2-4: Are you aware of any new problems/issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Detergents Regulation? Responses to the SME survey. *(n=39)*

Added value of the Detergents Regulation

The general view of stakeholders (all groups) was that the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting alone. During the OPC, for example, 88% of respondents indicated that the Detergents Regulation has provided added value above what could have been achieved through action at a national level, as shown in Figure A2-5. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force. Similarly, stakeholders noted that creating a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation.

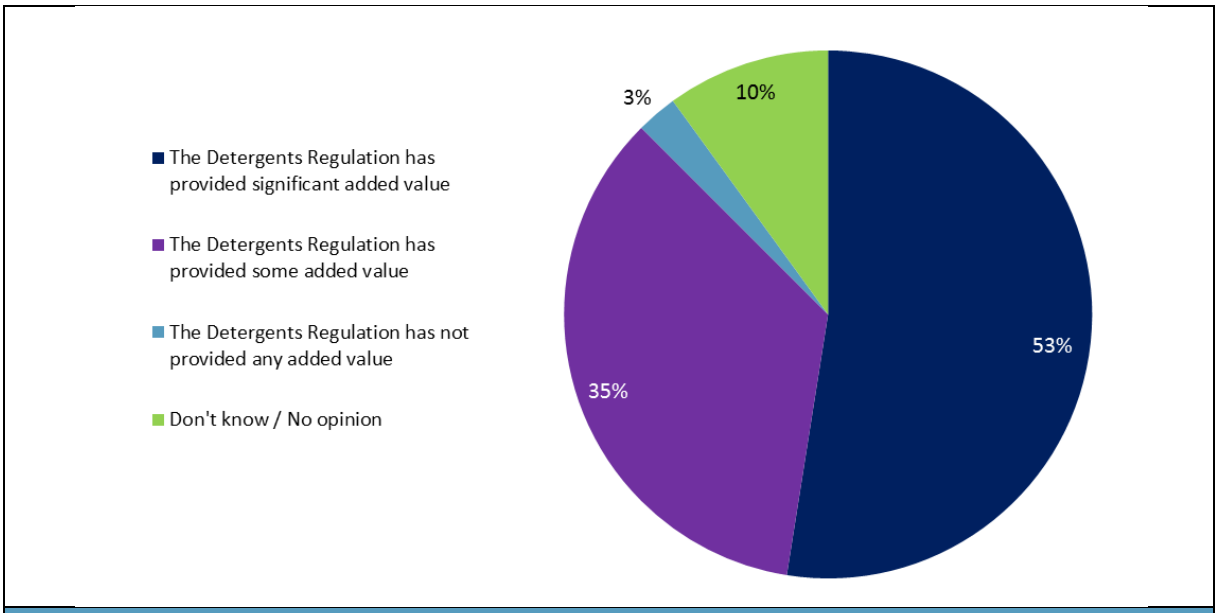

Figure A2-5: To what extent has the Detergents Regulation added value above what could have been achieved through action at a national level (e.g. better outcomes for the environment and human health and in relation to levelling the playing field, innovation and competitiveness)? Responses to the OPC – Organisations. *(n=40)*

In the OPC, organisations were asked about the extent to which the issues addressed by the Detergents Regulation continue to require action at the EU level. As shown in Figure A2-6 **most organisations (83%) agreed that the issues addressed by the Regulation continue to require action at the EU level.** Only three respondents (7%) disagreed that EU level action continues to be required.

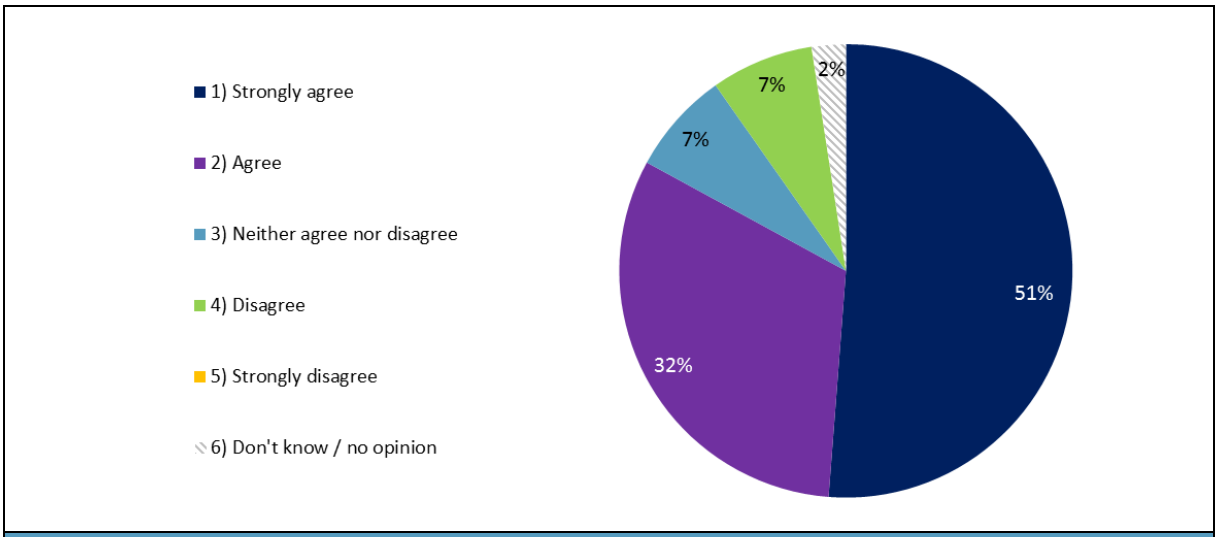

Figure A2-6: To what extent do you agree that the issues addressed by the Detergents Regulation continue to require action at the EU level. Responses to the OPC – Organisations. *(n-41)*

Multiple respondents (including representatives from industry as well as MS authorities) indicated that the biodegradability requirements for surfactants and the restrictions on the use of phosphates/phosphorus compounds in consumer laundry and CADD continue to require action at the EU level.

As shown in Figure A2-7, approximately half the SMEs that participated in the survey conducted by EEN considered that the issues addressed by the Regulation continue to require action at the EU level. In contrast, only one respondent (3%) disagreed. The results of the SME survey therefore reflect those of the OPC.

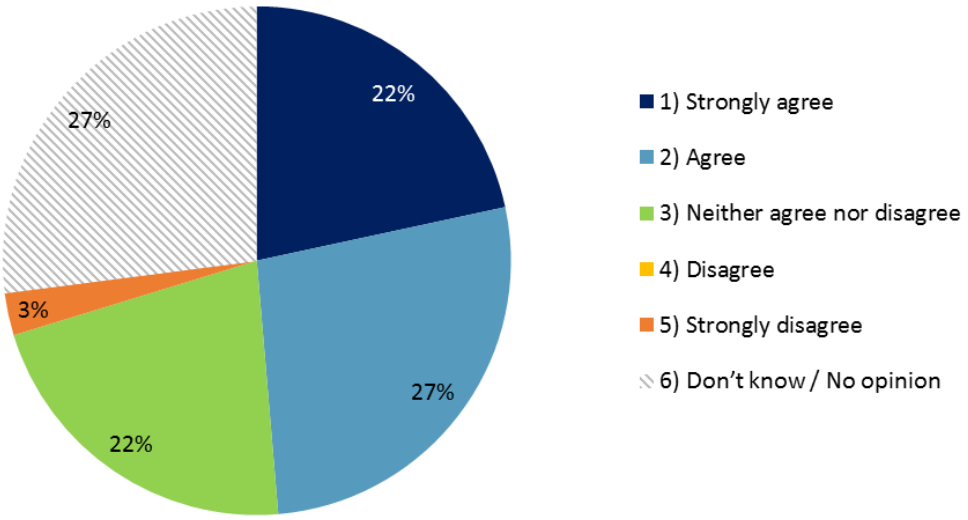

Figure A2-7: To what extent do you agree that the issues addressed by the Detergents Regulation continue to require action at the EU level. Responses to the SME survey conducted by EEN. *(n=40)*

A2.3 Biodegradability requirements

A2.3.1 Main provisions of the Detergents Regulation

One of the main environmental protection requirements of the Detergents Regulation deals with the concept of biodegradability and is applicable to surfactants and detergents containing surfactants. As summarised in Table A2-1 (and outlined in Recital 1 of the Regulation), the Detergents Regulation updates and consolidates existing Directives on detergents and is wider in scope than the pre-existing legislation. For example:

- Pre-existing EU legislation on detergents only covered two categories of surfactant – anionics and non-ionics, which at the time left approximately 10% of the total surfactants on the EU market outside the scope of the legislation. The scope of the Detergents Regulation is now wider, covering all surfactants, including anionics, non-ionics, cationics and amphoterics[4].

- While previous legislation only covered the "primary biodegradability" of surfactants in detergents, the Detergents Regulation imposes a two-tier testing regime on the biodegradability of surfactants in detergents with the main emphasis on "ultimate biodegradability" (for an explanation of these terms refer to Table A2-2). Under the Detergents Regulation, surfactants that pass the more stringent "ultimate" biodegradability test (as outlined in Annex III of the Regulation) can remain on the market. Industrial or institutional surfactants that fail the test for ultimate biodegradability but pass the less

[4] Intertek (2012): Understanding & attaining compliance to the EU Detergent Regulation, available at: www.intertek.com/WorkArea/DownloadAsset.aspx?id=48909

stringent test for "primary" biodegradability can remain on the market, if the manufacturer is granted derogation by the European Commission (in accordance with Articles 5, 6 and 9 of the Regulation). The level of primary biodegradability must be measured (following the test methods in Annex II of the Regulation) for all surfactants that fail the ultimate biodegradability tests. Surfactants that fail to meet the primary biodegradation criteria (i.e. is lower than that) stipulated in Annex II of the Regulation will not be granted a derogation and cannot be placed on the market.

- The requirements outlined in the Detergents Regulation refer to aerobic biodegradation of surfactants and detergents containing surfactants. Thus, the Regulation does not consider anaerobic biodegradation or the biodegradation of non-surfactant organic detergent ingredients in its current form. Recital 31 indicates these aspects should be examined by the Commission and, where justifiable, a proposal should be presented to the European Parliament and the Council. It also noted that pending further harmonisation; MS may maintain or introduce national rules concerning these aspects that are not currently covered by the Detergents Regulation.

Table A2-2: Primary and ultimate biodegradation – key definitions from Article 2

Article 2 of the Detergents Regulation sets out some key definitions. These include:

- "**Primary biodegradation**" means the structural change (transformation) of a surfactant by micro-organisms resulting in the loss of its surface-active properties due to the degradation of the parent substance and consequential loss of the surface-active property as measured by the test methods listed in Annex II. (Article 2(7))
- "**Ultimate biodegradation**" means the level of biodegradation achieved when the surfactant is totally used by micro-organisms in the presence of oxygen resulting in its breakdown to carbon dioxide, water and mineral salts of any other elements present (mineralisation), as measured by the test methods listed in Annex III, and new microbial cellular constituents (biomass). (Article 2(8))

Since the introduction of the Detergents Regulation, a number of amendments have been made to the Regulation that link to the biodegradability requirements.

Commission Regulation (EC) No 907/2006[5] introduced adaptations to Annex III of the Detergents Regulation in relation to the ultimate biodegradability test methods for surfactants. This Regulation recognises that some of the methods laid down in Annex III of the Detergents Regulation (e.g. the ISO 14593 reference method) are also applicable for testing substances that are poorly soluble in water, if adequate dispersion of the substance is ensured (with more guidance provided in ISO 10634). Commission Regulation (EC) No 907/2006 indicates that an additional test method should be introduced for use with surfactants that are poorly-soluble in water (with the additional test being ISO standard 10708:1997 'Water quality – Evaluation in an aqueous medium of the ultimate aerobic biodegradability of organic compounds'). Reference to this ISO standard was included in Section A of Annex III of the Detergents Regulation.

As previously discussed, the Detergents Regulation ensures the free circulation of detergents, and of surfactants for detergents, on the internal market, whilst also providing a high level of protection to the environment by laying down requirements for the ultimate biodegradability of surfactants used

[5] Commission Regulation (EC) No 907/2006 of 20 June amending Regulation (EC) No 648/2004 of the European Parliament and of the Council on detergents, in order to adapt Annexes III and VII thereto. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32006R0907

in detergents. In addition, Articles 5, 6 and 9 of the Regulation provide a mechanism by which surfactants that do not fulfil the ultimate biodegradability requirement may be granted a derogation for use in specific industrial or institutional applications providing that those applications constitute a low dispersive use and that the associated risk to the environment is small compared to the socio-economic benefit. Surfactants that are granted a derogation are to be listed in Annex V to the Detergents Regulation, whereas those that are refused a derogation should be listed in Annex VI to the Regulation. Commission Regulation (EC) No 551/2009[6] amends Annex V of the Detergents Regulation by including 'alcohols, Guerbet, C16-20, ethoxylated, n-butyl ether (7-8EO)' in the list of surfactants that have obtained a derogation for use in bottle-washing, cleaning-in-place and metal washing (which, in this case, applies for 10 years to encourage the development of surfactants of equivalent performance that also fulfil the criteria of ultimate biodegradability and therefore would not require a derogation).

A2.3.2 Compliance and environmental impacts

In 2014, the Chemical Legislation European Enforcement Network (CLEEN)[7] published the results of its enforcement project (EuroDeter). The study analysed the compliance of 907 detergents (319 companies) with the legal obligations of the Detergents Regulation, the Dangerous Preparations Directive (Directive 1999/45/EC) and the Biocidal Products Directive (Directive 98/8/EC).[8] The report provides some useful insights into the compliance of companies with the provisions of the Detergents Regulation.

As indicated in Figure A2-8, **more than 97% of surfactants inspected during the EuroDeter study were found to be biodegradable and therefore compliant with the biodegradability requirements of the Detergents Regulation**. The CLEEN study therefore concluded that the Regulation is meeting its goals concerning environmental protection in terms of detergents biodegradability.

[6] Commission Regulation (EC) No 551/2009 of 25 June 2009 amending Regulation (EC) No 648/2004 of the European Parliament and of the Council of detergents, in order to Adapt Annexes V and VI thereto (surfactant derogation). Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009R0551

[7] CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu/

[8] Note that the DPD has been repealed and replaced by the CLP Regulation. The BPD has been repealed and replaced by the Biocidal Products Regulation.

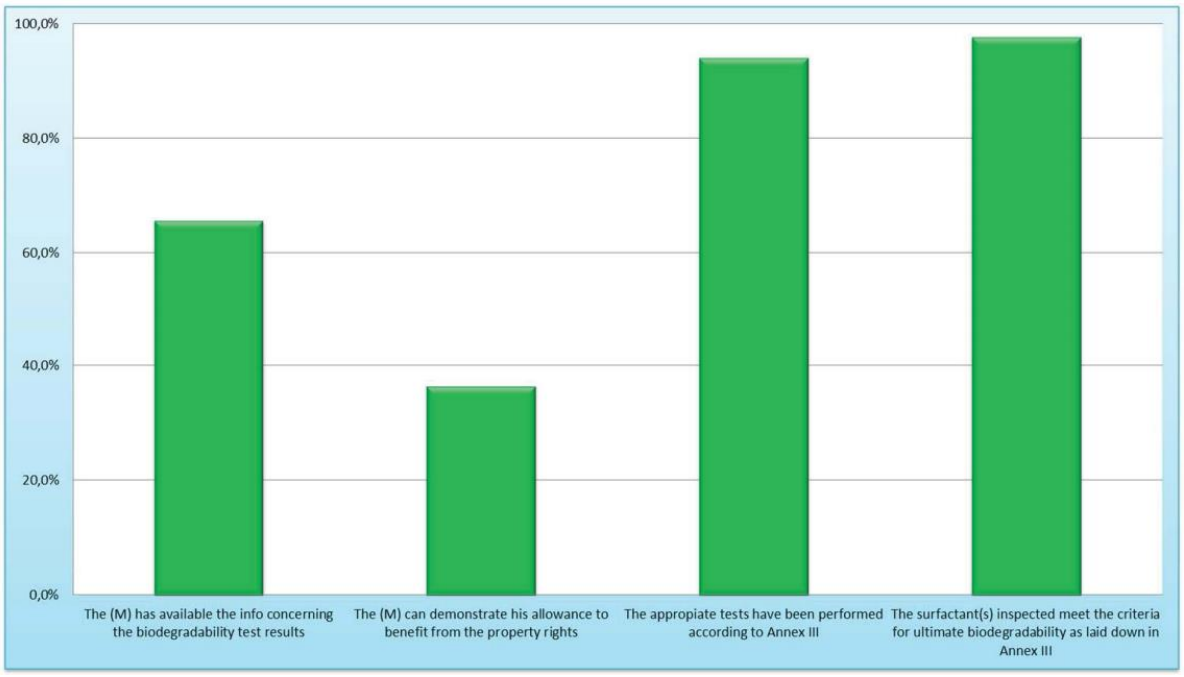

Figure A2-8: Proportion of checked detergents that are compliant with the Detergents Regulation with regard to biodegradability of its surfactants

Source: CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu

Information received from one national market surveillance authority during the consultation similarly indicates that there is a high compliance rate for detergent products and overall adherence to the biodegradability requirements of the Regulation. The stakeholder explained that during the period 2006 to 2016, 1,377 detergent products were tested, with 24 samples taken for further analysis (to check product composition, biodegradability and washing efficiency). Of the products tested, only one sample failed to meet the requirements.

During the OPC, several industry stakeholders stated that **the Detergents Regulation is often seen internationally as the "golden standard" for the biodegradability of surfactants**.

A large company indicated that **the biodegradability requirements for surfactants outlined in the Regulation have clearly directed industry to move to more environmentally friendly formulations** compared to in the past. A SME similarly indicated that an increasing number of detergent manufacturers are using ecological, environmentally friendly and degradable substances and that the Regulation had helped to push the sector in this direction. The stakeholder explained that, in the past, there were very few biodegradable surfactants used in detergents but that now practically all manufacturers offer biodegradable/ecological surfactants. Thus, the stakeholder noted that the sector has changed its attitude in this respect.

During the consultation, an official from the European Commission indicated that the biodegradability requirements of the Detergents Regulation are important for ensuring the protection of the environment and the general compliance of industry with these requirements. The stakeholder suggested that the requirements could therefore be pushed further to reduce the environmental impact of detergents.

"Primary" versus "ultimate" biodegradability

As previously discussed, the Detergents Regulation introduced a two-tier regime for testing the biodegradability of surfactants with a focus on ultimate biodegradability (as opposed to primary biodegradability, which was the main consideration under the previous legislation).

During the consultation**, the majority view of stakeholders (all types) was that the shift in focus from primary to ultimate biodegradability had been a positive step in terms of ensuring a high degree of protection of the environment**. As explained by one MS authority, consideration of only primary biodegradability of surfactants does not ensure there are no negative impacts on the environment, as mixtures can be broken down into substances that are equally or more harmful. Thus, primary biodegradability is only acceptable if a mixture is broken down into substances that are not harmful (i.e. have no/no intended classification).

Interestingly, **several industry associations noted that, in practice, the change in focus to ultimate biodegradability would have had little impact in terms of the biodegradability of products available on the market.** For example, one industry association explained that ultimate biodegradability was already considered long before the introduction of the Detergents Regulation, and that the surfactants used in detergents produced by its members already performed well in this regard. Nevertheless, the introduction of criteria for ultimate biodegradability of surfactants was a positive step as this contributes to protecting the environment and also ensures a level playing field for manufacturers across the EU. Another industry association similarly remarked that most of the products on the EU market are likely to have already met the requirements for ultimate biodegradability of surfactants before these were introduced by the Detergents Regulation.

Another industry association noted that the change in focus introduced by the Detergents Regulation (towards ultimate biodegradability) meant that companies had to initiate studies to test the ultimate biodegradability of surfactants to determine whether they could still be used in detergents. The stakeholder explained that although most surfactants could still be used in detergents, some could not, resulting in the need to reformulate some detergent products. The association suggested that the focus on ultimate biodegradability may have resulted in some benefits to the environment, but also indicated that most surfactants that demonstrate primary biodegradability are also likely to demonstrate ultimate biodegradability. Thus, in these cases, the focus of the Detergents Regulation on ultimate biodegradability may not have resulted in any change in terms of environmental impact.

A SME explained that to make surfactants biodegradable, producers have to add more nutrients, which results in abnormal growth of aquatic plants and leads to disturbance of the normal water life cycle. This issue was not raised by any other stakeholders during the consultation.

It was also noted that just because an ingredient used in detergents is biodegradable, does not mean that it is not harmful. For example, one SME indicated that bleaching agents and enzymes are permitted for use in detergents but can cause damage to the environment and that more could be done to further protect the environment from detergents.

Biodegradability of different types of surfactant

As outlined in recital 10 of the Detergents Regulation, previous legislation on the biodegradability of surfactants in detergents (in place prior to the introduction of the Detergents Regulation) was only

applicable to anionic[9] and non-ionic[10] surfactants. The scope of the Detergents Regulation is now wider, covering all surfactants, including anionics, non-ionics, cationics and amphoterics.

During the consultation, one industry association noted that consideration of all types of surfactant within the Detergents Regulation has been beneficial for the detergents industry as the requirements are now harmonised across the EU.

Biodegradability of non-surfactant ingredients

The Detergents Regulation only regulates the biodegradability of surfactants; it does not regulate the biodegradability of non-surfactant ingredients. As surfactants make up about a quarter of a typical detergent formula, this leaves a large proportion of the detergent formulation unaccounted for.[11]

A 2006 report by RPA, elaborated for DG Enterprise, looked at the human and environmental risks associated with the use of non-surfactant organic ingredients and zeolite-based detergents.[12] The report focussed on organic co-builders and other organic non-surfactants in detergents with particular attention given to non-readily biodegradable substances or substances with other properties of particular concern. Based on a list of 50 (organic and inorganic) non-surfactant ingredients commonly used in household laundry and dishwashing detergents, the report identified 11 groups of substances of potential concern. Further analysis of these groups concluded that the following six substance groups were associated with a potential concern (some of them due to a lack of data):

- Phosphonates: concern regarding degradation and ecotoxicity;
- EDTA/EDTA salts: concern regarding mobilisation of metals;
- NTA: classification as carcinogenic;
- Detergent Dyes: available data insufficient for conclusion of potential risks;
- Fluorescent Whitening Agent FWA-5: degradation products of potential concern; and
- Triethanolamine: available data insufficient for conclusion of potential risks.

The findings of RPA's report were evaluated in an opinion by the Scientific Committee of Health and Environmental Risks (SCHER) in 2007.[13]

Article 16(2) of the Detergents Regulation states that, by April 2009, the Commission shall:

9 Directives 73/405/EEC and 82/243/EEC.

10 Directive 82/242/EEC.

11 European Cleaning Journal (2014): Sustainable detergents – one standard for all. Article available at: http://www.europeancleaningjournal.com/magazine/february-march-2014/latest-news/sustainable-detergents-one-standard-for-all

12 RPA (2006): Non-surfactant organic ingredients and zeolite-based detergents. Final Report prepared for the European Commission.

13 SCHER (2007): Non surfactant organic ingredients and zeolite-based detergents (RPA report J480b / detergents – 30 June 2006). Available at: http://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_057.pdf

"carry out a review of the application of this Regulation, paying particular regard to the biodegradability of surfactants, and shall evaluate, submit a report on, and, where justified, present legislative proposals relating to:

- *Anaerobic biodegradation,*

- *The biodegradation of main non-surfactant organic detergent ingredients"*

In the resulting Commission Communication (COM/2009/0208[14]), published in 2009, the Commission concluded that:

"When the Detergents Regulation was adopted in 2004, the criterion of ultimate biodegradability was considered to be an effective and proportionate way of ensuring that detergent surfactants do not pose a risk to the environment. Biodegradability was used as a proxy for environmental toxicity because insufficient direct data on the environmental toxicity of surfactants was available at that time. However, in the meantime, and in preparation for REACH, much effort has gone into carrying out targeted risk assessments on detergent ingredients. The Commission has therefore been able to go further than required by Article 16(2) and has been able to evaluate not only the biodegradability, but also the risk posed by those substances.…

No risk to the environment has been identified for any of the non-surfactant organic detergent ingredients. Although, risk cannot be definitely excluded for a few of those substances, as information on them is incomplete, the amount of additional data needed for a complete risk assessment is now relatively small. It is, therefore, not considered appropriate to propose legislation to impose a requirement of ultimate biodegradability on the non-surfactant organic ingredients. In fact, many of the non-surfactant organic ingredients for which data is complete are not ultimately biodegradable, but are neither toxic to human health nor to the environment. Applying a surrogate risk indicator such as ultimate biodegradability to the non-surfactant organic ingredients would therefore ban a number of them where it is known that they do not pose risks. It would therefore be more proportionate, as well as more scientifically robust, to complete instead the risk assessments on the few outstanding substances.…

Consequently, the Commission does not intend to propose legislation concerning the biodegradability of non-surfactant organic ingredients. The concept of using biodegradability as an acceptance criterion for detergent ingredients has become redundant in light of comprehensive risk assessment data on the environmental toxicity of the substances."

One national authority that responded to the consultation stated that:

"…From our point of view, this evaluation has not been carried out intensively enough. In particular, the Commission should reconsider to include the biodegradation of non-

[14] Report from the Commission to the European Parliament and the Council Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the biodegradation of main non-surfactant organic detergent ingredients, COM/2009/0208. Available at: http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52009DC0208

surfactant organic ingredients into the regulation to reduce the emission of persistent micro pollutants into water bodies."

During the consultation, **stakeholders provided a mixed response when asked whether the biodegradability requirements of the Detergents Regulation should be extended to other ingredients used in detergent products**. One the one hand, some stakeholders (including environmental NGOs, consumer associations and MS authorities) suggested that there are other ingredients (besides surfactants) that pose a risk to the environment. For example, one environmental NGO noted that in Southern Europe there are many ingredients that are used in detergents that are not biodegradable. It was suggested these substances should be covered by the Detergents Regulation to ensure that substances that are used as alternatives to phosphorus/phosphate in detergents do not present a risk to the environment. A MS authority remarked that detergents are used in large quantities, thus, regulating the biodegradability of the most important organic ingredients used detergents (in addition to surfactants) could significantly reduce the entry of difficult-to-decompose substances into the environment. In contrast, several industry associations noted that other ingredients are regulated through other legislation. For example, one industry association explained that other ingredients used in detergents are regulated under e.g. REACH Regulation, CLP Regulation, Biocidal Products Regulation or other specific sectoral legislation. Also, other substances (such as polymers) are evaluated using specific industry risk assessments to demonstrate that they do not pose a risk to the environment. The stakeholders suggested that there is no urgent need to cover the biodegradability of non-surfactant ingredients in the Detergents Regulation as the health and environmental aspects are already covered by other legislation.

One industry association explained that biodegradability is not necessarily a good measure of how harmful or not a substance is to the environment because in some (rare) cases, the toxicity of a degradation product might be much higher than the toxicity of the starting material. The stakeholder explained that the Globally Harmonized System (GHS) including Classification and Labelling indicates which substance properties are considered to be dangerous for the environment. Ready biodegradability (according to any of the OECD 301 protocols) is not part of this evaluation scheme.

When asked whether the biodegradability requirements of the Detergents Regulation should be extended to other non-surfactant organic ingredients used in detergents, the industry association stated that the biodegradability requirements should not be extended to substances other than surfactants because:

- Compared to surfactants, other organic substances are used in significantly smaller amounts in detergents;
- The protocols for testing biodegradability (OECD 301 tests) are not always applicable to other substances (particularly carbon-poor organic substances); and
- Abiotic degradation pathways are not considered in the Detergents Regulation but play an important role in nature.

Anaerobic biodegradability of surfactants

A research partnership between members of AISE, the European Committee of Surfactants and their Organic Intermediates (CESIO) as well as other independent members, known as ERASM, produced a position paper on the anaerobic biodegradation of surfactants. This noted that most surfactants entering the environment will be exposed and degraded under aerobic conditions and that less than

20% of surfactants entering the environment will potentially reach anaerobic environmental compartments (and in the majority of cases their presence will not be permanent). [15]

An evaluation of the risk to the structure and function of these environmental compartments resulting from the presence of un-degraded surfactants led to the conclusion that the lack of anaerobic biodegradation does not appear to correlate with any apparent environmental problem for most compartments (which is in contrast to the adverse effects observed in the absence of aerobic biodegradation). The position paper therefore concludes that anaerobic biodegradability does not have the same environmental relevance as aerobic biodegradability.[16]

As indicated above, Article 16(2) of the Detergents Regulation required a review of the Detergents Regulation to be undertaken in relation to the anaerobic biodegradability requirements for surfactants. A report (COM/2009/230)[17] was subsequently published by the European Commission in 2009 concerning the anaerobic biodegradability of detergent surfactants. The report indicates that:

> *"As most waste-water streams and surface waters are aerobic, surfactants that are fully biodegradable under aerobic conditions should be rapidly degraded, and in principle should not enter the compartment where anaerobic conditions prevail. That is why the Detergents Regulation sets ultimate biodegradability as the main criterion for use of surfactants in detergents. Surfactants that do not meet the criterion of ultimate biodegradability can only be used in exceptional circumstances and only when it can be demonstrated by means of a risk assessment that such uses do not pose a risk".*

The report also notes that some surfactants have been found to accumulate in sewage sludge (under anaerobic conditions), which is where they remain until they are disposed of (e.g. as fertiliser in agriculture) and where re-exposure to aerobic conditions allows aerobic biodegradation to continue to completion.

In 2005, the Scientific Committee on Health and Environmental Risks (SCHER) provided an opinion on the environmental risk assessment of non-biodegradable detergent surfactants under anaerobic conditions[18]. SCHER reviewed the conclusions drawn in the 2005 opinion in a 2008 opinion on

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[15] ERASM (2003): ERASM Position Paper on Anaerobic Biodegradation. Environment Risk Assessment of Surfactants Management – A research partnership of detergent and surfactant industries in Europe. Available at: http://www.lasinfo.eu/images/Documents/erasm_pos_paper_anexo_anaerobic_biodegr.pdf

[16] ERASM (2003): ERASM Position Paper on Anaerobic Biodegradation. Environment Risk Assessment of Surfactants Management – A research partnership of detergent and surfactant industries in Europe. Available at: http://www.lasinfo.eu/images/Documents/erasm_pos_paper_anexo_anaerobic_biodegr.pdf

[17] Report from the Commission to the European Parliament and the Council Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning anaerobic biodegradation, COM/2009/230. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009DC0230&qid=1500630118553&from=EN

[18] SCHER (2005): Opinion on Environmental Risk Assessment on non Biodegradable Detergent Surfactants under Anaerobic Condition, Scientific Committee on Health and Environmental Risks (SCHER), available at: http://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_021.pdf

anaerobic biodegradation of surfactants and biodegradation of non-surfactant organic ingredients[19]. SCHER did not change the conclusions drawn in its 2005 opinion that:

a) *"Poor biodegradability under anaerobic conditions is not expected to produce substantial modifications in the risk for freshwater ecosystems as the surfactant removal in the waste water treatment plant (WWTP) seems to be determined by its aerobic biodegradability; and*

b) *The requirement for ready and ultimate biodegradability under anaerobic conditions is not by itself regarded as an effective measure for environmental protection".*

The Commission (COM/2009/230) report concludes that:

> *"Following a systematic evaluation of the risks from the presence of non-biodegradable surfactants in various anaerobic compartments, it was concluded that, in contrast to the adverse effects observed in the absence of aerobic degradation, the lack of anaerobic degradation does not seem to be correlated with any apparent risk for these environmental compartments. It can therefore be concluded that anaerobic biodegradability should not be used as an additional pass/fail criterion for the environmental acceptability of surfactants such as LAS [linear alkylbenzene sulphonate] which are readily biodegradable under aerobic conditions".*

During the consultation, a consumer association and a non-governmental organisation were both of the view that surfactants should be biodegradable under both aerobic and anaerobic conditions. They elaborated that the EU Ecolabel and Nordic Swan require that detergent ingredients must be biodegradable under aerobic conditions, and anaerobic biodegradability is only required for surfactants that are hazardous to the environment. An EU official also indicated that the EU Ecolabel provides specific requirements in terms of the biodegradability of substances included in detergents (e.g. ingredients that are not aerobically or anaerobically biodegradable are excluded from these products). An environmental NGO indicated that both aerobic and anaerobic biodegradability of surfactants should be considered within the Detergents Regulation. In contrast, an industry association noted that the Commission advisory report clearly indicates that anaerobic biodegradability should not be considered in the Detergents Regulation. They also noted that consideration of the anaerobic biodegradation of surfactants (in addition to the aerobic biodegradability of surfactants) would not result in any significant environmental benefits, thus there is no need to broaden this requirement.

Provision of biodegradability information to consumers

Two consumer organisations suggested that it may be helpful to have guidance on biodegradability on the packaging of detergent products, e.g. a biodegradability score/index or environmental footprint. For example, one consumer organisation suggested that products could be given a score from 1 to 100, or that the product could be labelled with the number of days it takes to biodegrade. The purpose of this would be to inform the consumer of the biodegradability performance of the product and to allow comparison with other similar products, thus enabling consumers to make informed choices regarding the products they use.

[19] SCHER (2008): Opinion on Anaerobic Degradation of Surfactants and Biodegradation of Non Surfactant Organic Ingredients, Scientific Committee on Health and Environmental Risks (SCHER), available at: http://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_109.pdf

In response to this suggestion, CESIO has explained that providing consumers with a biodegradability score or index would not work in practice because attempting to relate the outcome of current biodegradation tests to a higher degree of biodegradability of a chemical substance is meaningless from a scientific and regulatory point of view, and would only lead to consumer misunderstanding. The extract shown in Table A2-3 below is taken from a position paper by CESIO, provided to the consultants following the workshop.

Table A2-3: CESIO's view regarding the use of biodegradability indices/scores to convey information to consumers on the biodegradability of surfactants

Following the workshop, CESIO clarified its views regarding the use of biodegradability indices/scores to convey information to consumers on the biodegradability of surfactants. CESIO noted that:

> *"According current OECD guidelines, ready biodegradability tests are designed so that positive results are unequivocal. The pass levels of either 60% (ThOD or ThCO2) or 70% DOC practically represent complete ultimate degradation of the test substance as the remaining fraction of 30-40% of the test substance is assumed to be assimilated by the biomass or present as products of biosynthesis. Given a positive result in a test of ready biodegradability, it may be assumed that the chemical will undergo rapid and ultimate biodegradation in the environment.*
>
> *For example, the required pass level for ready biodegradability in the OECD 301B test is >60% within a test duration of 28 days. In the CO2-Evolution Test, the oxidation of the organic matter to CO2 is measured. From this oxidation process the microorganisms win the energy to sustain their metabolic functions. At the same time, a certain proportion of the organic matter is used by the bacteria as a carbon source to allow them to grow and produce new biomass. These catabolic processes, however, do not let to the formation of CO2. Therefore, the CO2-Evolution Test can never result in 100% CO2-formation, and hardly gives results >80% biodegradation. Thus, any value of CO2-formation greater than the pass level of 60% demonstrates that the substance is readily biodegradable, and the exact values of CO2 formed in the OECD 301B Test are meaningless, i.e. do not reflect better biodegradability, as long as the ratio between oxidation and biomass formation is not known. Further equivalent OECD 301 guidelines, i.e. OECD 301A-F, also support the scientific understanding defining a pass level of 60% ultimate biodegradation, rather than 100% values.*
>
> *Pass levels are the only value approved by both the scientific community and the regulatory community. For this reason, CESIO will not report values other than the pass level for ready biodegradability.*
>
> *Attempting to relate the outcome of current biodegradation tests to a higher degree of biodegradability of a chemical substance is meaningless from a scientific or a regulatory point of view. On the contrary, we understand that its use by the consumer would only lead to erroneous conclusions and misunderstandings."*

Whilst increasing information to allow consumers to make better and more informed choices in terms of the products they purchase and how they are used is generally encouraged across the chemicals legislative framework, many stakeholders have highlighted issues with excessive information included on product labels. Having a large amount of information on labels is considered to cause confusion for consumers and may discourage consumers from reading labels. Therefore, the inclusion of any additional information on product labels (and the way this is to be presented) would need to be carefully considered to ensure it provides added value from the perspective of the consumer. Also, it is important to recognise that the biodegradability requirements outlined in the Detergents

Regulation currently only apply to surfactants and ingredients containing surfactants. Thus, careful consideration would need to be given as to the appropriateness of presenting the biodegradability of detergent products as a whole.

A2.4 Phosphate limits

A2.4.1 Main provisions of the Detergents Regulation

In 2012, the Detergents Regulation was amended (by Regulation (EU) No 259/2012) to harmonise rules on limiting the content of phosphates and other phosphorus compounds in consumer laundry detergents and CADD. The new limits outlined by this amendment were introduced to reduce the environmental damage caused by phosphates from detergents, particularly to aquatic ecosystems, through the process of eutrophication. In its Annex VIa, Regulation (EU) No 259/2012 sets a limitation of 0.3 grams of the total phosphorus content in the standard dosage in CADD from the 1st January 2017. It was anticipated that a limitation on phosphorus use in CADD of 0.3 grams per wash would reduce the total phosphorus load in wastewater in the EU to ca. 1.6% in 2017.[20] For laundry detergents, Annex VIa outlines a limitation of a maximum of 0.5 grams of the total phosphorus content from the 30th June 2013.

According to AISE, the above restriction applies only to inorganic phosphates and phosphorus compounds used in consumer laundry detergents and CADD.[21] This is because alternatives to phosphate-based consumer laundry detergents require small amounts of other organic phosphorus compounds, namely phosphonates. Thus, in order to be effective, phosphonates are needed in detergents but can be used in doses which are an order of magnitude lower than phosphates. This is why the Detergents Regulation restricts the use of inorganic phosphates, whilst allowing the use of phosphonates to continue as necessary.[22, 23]

The Detergents Regulation, and its 2012 amendment, does not specifically indicate that the limitation on the content of phosphorus in detergents applies to detergents used for washing laundry and dishes by hand (in addition to those used in washing and dishwashing machines). This aspect was discussed during the meeting of the Detergents Working Group on the 8th November 2012, where it was

[20] European Commission (2015): Report from the Commission to the European Parliament and the Council, Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphorous in consumer automatic dishwasher detergent, COM(2015) 229 final. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

[21] AISE (2017): Activity & Sustainability Report 2016-17 – Cleanliness & Hygiene at Home and in Society. International Association for Soaps, Detergents and Maintenance Products. Available at: https://www.aise.eu/library/publications.aspx

[22] Regulation (EU) No 259/2012 of the European Parliament and of the Council of 14 March 2012 amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32012R0259

[23] EPA (2015): European Phosphonates Association – input to the revision of the EU Ecolabels related to detergents. Available at: http://www.phosphonates.org/images/Images/Documents/EPA%20phosphonate%20input%20detergent%20Ecolabel.pdf

confirmed that the restriction on the use of phosphates and other phosphorus compounds also applies to hand-washing laundry detergents (even though it was recognised that the wording of the restriction does not clearly set out how to calculate phosphorus content in the case of laundry detergents used solely for hand washing). In the case of dishwasher detergents, it was noted during the meeting that the restriction only applies to detergents used in automatic dishwashers and that hand-dishwashing detergents are not covered by the restriction.[24] In light of the Working Group discussion, AISE updated its guidelines on the implementation of the Detergents Regulation to clarify the situation.[25]

Discussions with AISE and other industry associations during the consultation suggest that the market for hand washing detergents is much smaller than for products used in washing machines or dishwashers, and that many companies have voluntarily removed phosphates/phosphorus from hand washing detergents. Thus, today, the sector is considered to be virtually phosphate free. It is worth noting, however, that 2016 data from AISE also shows that in the dishwasher detergents market, hand dishwashing accounts for a significant market share (31% of the total market value, as shown in Annex 1, Table A1-24).

It is also important to note that the Detergents Regulation and its amendments do not set any limitations on the content of phosphorus in industrial and institutional detergent products. Recital 4 of Regulation (EU) No 259/2012 states that:

> *"It is currently not appropriate to extend limitations on the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents to industrial and institutional detergents at the level of the Union because suitable technically and economically feasible alternatives to the use of phosphates in those detergents are not yet available..."*

Recital 5 of the Regulation states that:

> *"One of the aims of this Regulation is to protect the environment by reducing eutrophication caused by phosphorus in detergents used by consumers. It would therefore not be appropriate to force Member States that already have restrictions concerning phosphorus in consumer automatic dishwasher detergents to adapt those restrictions before the Union restriction becomes applicable. Furthermore, it is desirable that Member States be permitted to phase in the restrictions set out in this Regulation as early as possible."*

A2.4.2 The process of eutrophication and its economic consequences

Phosphates and other phosphorus compounds have, in the past, been one of the most commonly used ingredients in domestic and industrial detergents. Their function is to combat water hardness to

[24] European Commission (2012): Draft Summary Record of the Meeting of the Detergents Working Group – 8th November 2012. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1321

[25] AISE (2013): Guidelines on the implementation of the Detergents Regulation, International Association for Soaps, Detergents and Maintenance Products. Available at: https://www.aise.eu/documents/document/aise_detergentsguidelines2013.pdf

ensure efficient cleaning by detergents. The most commonly used phosphate in detergents is sodium tripolyphosphate (STPP), which has the following function in detergent products:[26]

- Efficient sequestering of hardness salts;
- Removal and prevention of encrustation on fibres;
- Enhancement of the washing process; and
- Acting as a carrier for other detergent ingredients.

Phosphorus is, however, one of the main limiting factors for biomass production in nature and phosphorus emissions, along with emissions of nitrogen, have been recognised as a major contributor to eutrophication in the aquatic environment. Increasing the phosphorus concentration in water bodies can increase the growth rate and biomass of algae, in the form of slime, mats and blooms, as well as certain rooted aquatic plants and weeds. This can affect ecosystems in a number of ways, especially with respect to water quality and the uses to which water can be put.[27] Eutrophication can result in visible algal blooms which cause an increase in the turbidity of water and can create taste and odour problems. During a bloom, algae can also produce noxious toxins that can render water unsafe and cause fish mortality or can impact human health through the consumption of contaminated seafood, skin contact or water swallowed during recreational activities.[28] Excessive algal growth can also have important economic implications for water and power companies due to filter blockages at abstraction points and water treatment requirements resulting from algal blooms producing taints and toxins.[29] Figure A2-9 provides an overview of the eutrophication process, its causes and consequences. Note that it has been estimated that 1kg of phosphorus that reaches the sea can produce up to 500kg of algae.[30]

[26] European Commission (2007): Report from the Commission to the Council and European Parliament pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, COM(2007) 234 final. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0234:FIN:en:PDF

[27] Bateman I et al. (2006): Does the phosphate treatment prevention of eutrophication pass the benefit-cost test? CSERGE Working Paper EDM 06-13. Available at: https://s3-eu-west-1.amazonaws.com/esrc-files/.../mY3kqLIpuEeVWVXVGuxE9Q.pdf

[28] JRC (2016): Algal bloom and its economic impact. Available at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101253/lbna27905enn.pdf

[29] Environment Agency (2016): Climate change and eutrophication risk in English rivers. Available at: https://www.gov.uk/government/publications/climate-change-and-eutrophication-risk-in-english-rivers

[30] WWF (2011): Washing our Dishes and Clothes without Polluting our Rivers and Seas – The importance of an EU restriction of phosphate detergents for laundry and dishwashers. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/web_phosphate_brochure_1.pdf

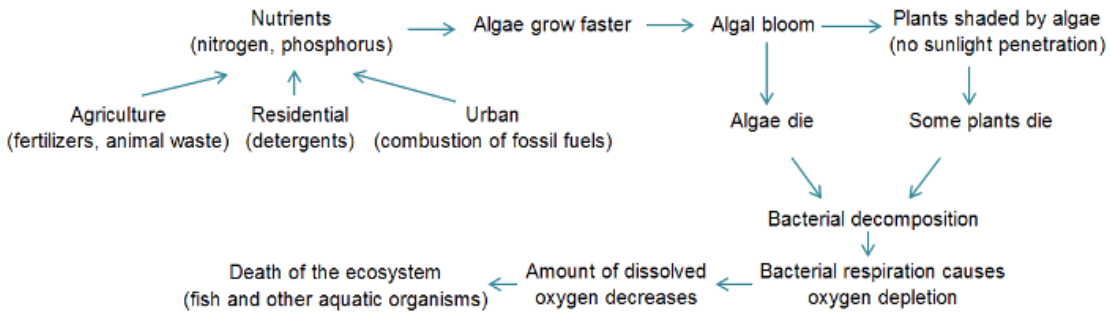

Figure A2-9: Eutrophication process, causes and consequences

Source: Marbef (2014)[31]

Figure A2-10, taken from a recent (2016) report by the European Commission Joint Research Council (JRC)[32], shows that the socio-economic effects of harmful algal blooms can be grouped into four main categories: (1) human health impacts, (2) fishery impacts, (3), tourism and recreation impacts, and (4) monitoring and management costs.

[31] Marbef (2014): Possible consequences of eutrophication. Available at: http://www.marbef.org/wiki/Possible_consequences_of_eutrophication

[32] JRC (2016): Algal bloom and its economic impact. Available at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101253/lbna27905enn.pdf

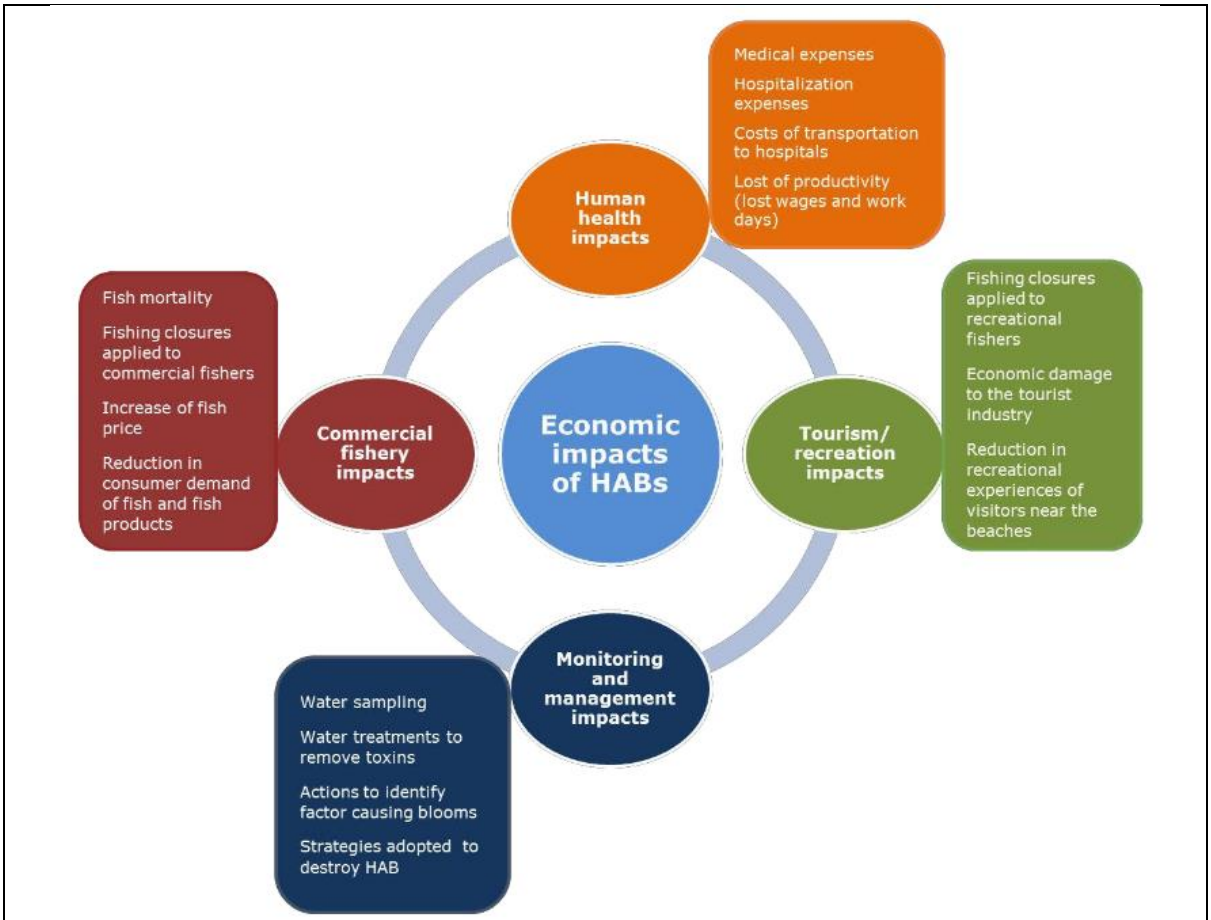

Figure A2-10: Economic impact of harmful algal blooms

Source: JRC (2016)[33]

The report by JRC (2016) provides a useful literature review on the economic losses caused by harmful algal blooms. It is worth noting that the authors found it particularly difficult to collect economic data regarding blooms in Europe (versus, for example, the USA) and that information about the direct effects of toxins on human health was also limited.

One of the studies reviewed by the JRC is a 2003 study by Pretty et al.[34] on the "*Environmental costs of freshwater eutrophication in England and Wales*". The study estimates the costs associated with the effects of nutrient enrichment and eutrophication in England and Wales and provides a useful framework of cost categories for estimating impacts. Table A2-4 provides a summary of the cost estimates provided by Pretty et al. for the 16 cost categories analysed. It should be recognised that the costs provided in this table cannot be attributed solely to phosphorus emissions (since, for example, nitrogen emissions can also lead to eutrophication), nor can they be attributed solely to the detergents sector (since other sources of emissions are also included, e.g. from agriculture).

[33] JRC (2016): Algal bloom and its economic impact, available at: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101253/lbna27905enn.pdf

[34] Pretty JN et al. (2003): Environmental costs of freshwater eutrophication in England and Wales, Environmental Science and Technology, Vol 37 (2), pp 201-208, available at: http://pubs.acs.org/doi/pdf/10.1021/es020793k

Nevertheless, the paper does provide a helpful breakdown of the cost categories that can potentially be attributed to eutrophication and also some useful background data.

Table A2-4: Summary of annual costs of freshwater Eutrophication in the UK	
Cost categories	**Range of annual costs ($ million)**
(A) Damage costs: reduced value of clean or non-nutrient-enriched water	
(A1) Social damage costs	
i. Reduced value of waterside properties	13.76
ii. Reduced value of water bodies for commercial uses (abstraction, navigation, livestock watering, irrigation, industry)	0.7-1.4
i. Drinking water treatment costs (treatment and action to remove algal toxins and algal decomposition products)	26.6
ii. Drinking water treatment costs (to remove nitrogen)	28.1
iii. Clean up costs of waterways (dredging, weed-cutting)	0.7-1.4
i. Reduced value of non-polluted atmosphere (via greenhouse and acidifying gas emissions)	7.17-11.19
i. Reduced recreational and amenity value of water bodies for water sports (bathing, boating, windsurfing, canoeing), angling, and general amenities (picnics, walking, aesthetics)	13.51-46.96
i. Revenue losses for normal tourist industry	4.12-16.32
i. Revenue losses for commercial aquaculture, fisheries and shell fisheries	0.04-0.17
ii. Health costs to humans, livestock and pets	Near 0
(A2) ecological damage costs	
i. Negative ecological effects on biota (arising from changed nutrients, pH, oxygen), resulting in changed species composition (biodiversity) and loss of key sensitive species	10.28-14.17
Total	**105-160**
(B) Policy response costs: costs incurred in responding to eutrophication	
(B1) compliance control costs arising from adverse effects of nutrient enrichment	
i. Sewage treatment costs (to remove P from large point sources)	70.4
ii. Costs of treatment of algal blooms and in-water preventative measures (bio-manipulation, stratification, straw bale deployment)	0.70
iii. Costs of adopting new farm practices that emit fewer nutrients	4.75
(B2) direct costs incurred by statutory agencies for monitoring, investigating and enforcing solutions to eutrophication	
i. Monitoring costs for water and air	0.62
ii. Costs of developing eutrophication control policies and strategies	0.28
Total	**77**
Source: Pretty JN et al. (2003) [35]	

[35] Pretty JN et al. (2003): Environmental costs of freshwater eutrophication in England and Wales, Environmental Science and Technology, Vol 37 (2), pp 201-208, available at: http://pubs.acs.org/doi/pdf/10.1021/es020793k

Studies have also been conducted in the Black Sea region on the economic costs of eutrophication. For example, Table A2-5 provides information on the benefits of avoiding the effects of eutrophication for nine countries, estimated on the basis of people's willingness to pay. The data are taken from a study by the Swedish Environmental Protection Agency. As shown in the table, there are considerable differences between countries.

Table A2-5: Benefits of avoiding the effects of eutrophication, estimated on the basis of people's willingness to pay

Country	Benefits of avoiding the effects of eutrophication (€ millions per year)
Denmark	290
Estonia	10
Finland	10
Germany	130
Latvia	30
Lithuania	220
Poland	1,680
Russia	90
Sweden	100
Total	**2,560**

Source: Swedish Environmental Protection Agency (2009)[36]

A2.4.3 Sources of phosphorus to the aquatic and marine environment

During the consultation, a European water representative indicated that limited information is available at the EU level on emissions of phosphorus/phosphates specifically from detergents.

Phosphorus enters surface water bodies from diffuse sources (such as agricultural runoff and animal husbandry) and from point sources (municipal and industrial wastewater). The relative importance of these sources varies widely between catchments depending on:[37]

- The degree of urbanisation;
- The standard of sewage treatment; and
- The nature and intensity of agricultural practices.

Table A2-6 provides baseline data (from the early 2000s) on the gross phosphorus balance from different sources based on untreated sewage input. Based on the data from this table, Figure A2-11 shows that across the 18 countries analysed, 16% of the total phosphorus in untreated sewage input comes from detergents. However, the total phosphorus load from detergents is highly variable across countries, ranging from just 2% in Italy to 34% in Portugal.

[36] Swedish Environmental Protection Agency (2009), What's in the sea for me? Ecosystem Services Provided by the Baltic Sea and Skagerrak. Report 5872, Stockholm, Sweden.

[37] Glennie E B et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

Table A2-6: Gross phosphorus balance from different sources based on untreated sewage input (1000 t P/a)						
Country	**Natural background**	**Diffusive sources****	**Industrial sources**	**Detergent**	**Human faeces and waste**	**Total**
Austria*	0.28	2.22	0.20	0.82	6.95	10.5
Belgium-Luxembourg*	0.07	1.84	0.80	0.91	9.10	12.7
Denmark	0.02	2.71	0.05	1.04	4.59	8.4
Finland	0.53	3.39	0.37	0.59	4.40	9.3
France	0.88	20.57	1.48	22.13	50.32	95.4
Germany*	0.53	20.77	1.10	7.10	70.11	99.6
Greece	0.28	2.98	0.27	4.65	9.13	17.3
Ireland*	0.24	2.36	0.10	0.18	3.20	6.1
Italy*	0.85	11.43	1.44	1.48	47.63	62.8
Netherlands*	0.06	2.19	1.76	1.27	13.51	18.8
Portugal	0.19	3.18	0.25	6.23	8.24	18.1
Spain	0.55	17.75	1.02	17.24	33.93	70.5
Sweden	0.85	4.17	0.52	1.01	7.46	14.1
United Kingdom	0.72	10.24	1.47	22.09	50.22	84.7
Czech Republic	0.07	2.55	0.26	2.10	8.54	13.5
Hungary	0.03	3.54	0.25	2.22	8.24	14.3
Poland	0.27	10.55	1.07	6.73	31.75	50.3
EU-18	**6.40**	**122.43**	**12.51**	**97.81**	**367.33**	**606.5**

** Countries in which sodium tripolyphosphate (STPP) from laundry detergents have been 100% replaced*
*** Diffusive sources correspond to run-off from arable- & non-arable land and groundwater*
Source: European Water Association (2007)[38]

A 2007 report from the European Commission to the Council and European Parliament concerning the use of phosphates in detergents[39] indicated that the annual consumption of phosphate containing detergents in the then EU-25 was approximately 1.8 million tonnes (which is equivalent to a phosphorus content of 110,000 tonnes) with 90-95% consumed in domestic laundry and dishwashing detergents. In comparison, the use of phosphates in fertiliser was equivalent to approximately 1.25 million tonnes of phosphorus per year. This suggests that, even before Regulation (EU) No 259/2012 came into force, the use and potential emissions of phosphorus from detergents was small compared to fertilisers. This point was also iterated by several industry stakeholders during the consultation.

[38] European Water Association (2007): The role of detergents in the phosphate-balance of European surface waters. Available at: http://www.ewa-online.eu/tl_files/_media/content/documents_pdf/Publications/E-WAter/documents/25_2007_03.pdf

[39] European Commission (2007): Report from the Commission to the Council and European Parliament pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, COM(2007) 234 final. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0234:FIN:en:PDF

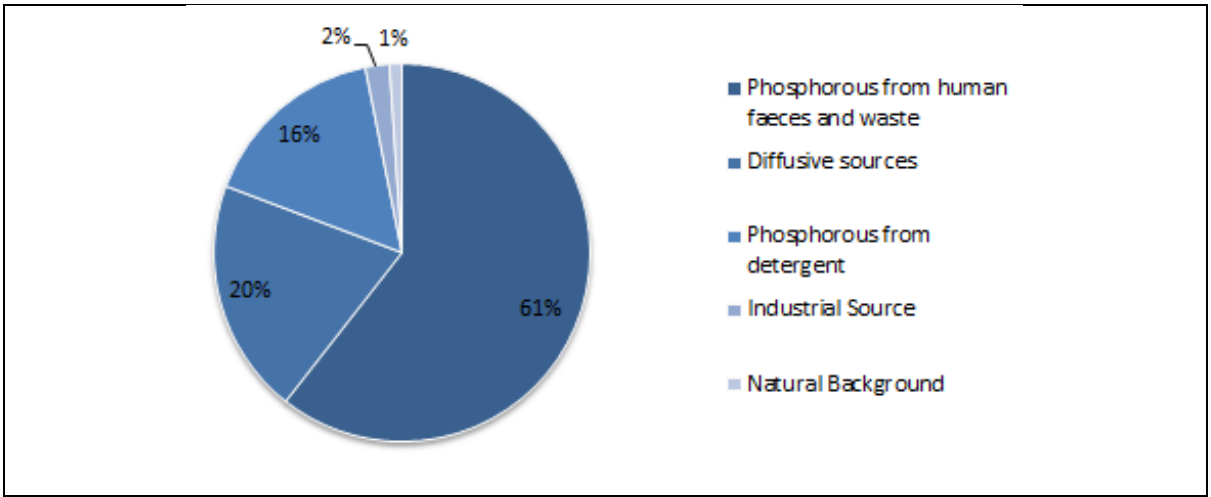

Figure A2-11: Sources of phosphorus in the EU18, based on untreated sewage input
Source: European Water Association (2007)[40]

A 2002 study for the European Commission estimated that in catchments where household laundry and dishwasher detergents contained phosphate as a builder, up to 50% of soluble phosphorus in municipal wastewater came from this source.[41]

The European Commission's Scientific Committee on Toxicity, Ecotoxicity and the Environment (SCTEE) produced an opinion in 2003[42] regarding the use of phosphates (and in particular STPP) in detergents. This concluded that, in the absence of measures for reducing the STPP content of detergents, the contribution of this phosphorus source to the total phosphorus load in surface water would vary significantly between catchments (ranging from 10% to 40%) depending on the different human and land use activities that take place. Thus, in some areas of the EU, the use of STPP in detergents would produce a considerable increase in phosphorus load in surface water resulting in a significant risk of eutrophication. However, the SCTEE also noted in its 2003 report that the situation in Europe had changed substantially since the 1980s in that many European Countries had undertaken measures to reduce the use of STPP in detergents. Consequently, detergents were no longer a substantial contributor to the overall phosphorus load of the EU's waterbodies, with other sources contributing a higher percentage (although there was still ongoing variation across countries and geographic basins due to differing human/land use activities).

[40] European Water Association (2007): The role of detergents in the phosphate-balance of European surface waters. Available at: http://www.ewa-online.eu/tl_files/_media/content/documents_pdf/Publications/E-WAter/documents/25_2007_03.pdf

[41] Glennie E B, Littlejohn C, Gendebien A, Hayes A, Palfrey R, Sivil D, Wright K (2002): Phosphates and Alternative Detergent Builders – Final Report. For the EU Environment Directorate. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

[42] SCTEE (2003): Opinion. In: European Commission (2007): Report from the Commission to the Council and European Parliament pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, COM(2007) 234 final. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0234:FIN:en:PDF

A 2011 position paper from WWF[43] on the importance of an EU restriction of phosphate detergents for laundry and dishwashers has noted that detergents contribute between 16% and 24% of the phosphate load in the Danube River and the Black Sea respectively. It notes that two other major sources of phosphorus to these water bodies are agricultural activities and human waste. The position paper reports that, in 2005, the total amount of phosphorus entering the Baltic Sea was 30,200 tonnes, with detergents contributing almost a quarter of this load. Thus, detergents were (in 2005) a significant source of phosphates to the Baltic Sea.

This finding is further supported by a study undertaken for the industry federation for detergent phosphate manufacturers (CEEP)[44] to develop a pan-European assessment of the eutrophication risk associated with the use of phosphates in detergents, which indicated that additional eutrophication risks related to phosphates in detergents are very variable in different regions of the EU as a result of factors such as hydrological characteristics, agricultural intensity and population density.[45] This study was updated in 2009 with this estimating the expected contribution of phosphate-based detergents on the eutrophication risk at the pan-European level. The study concluded that the general average contribution to the eutrophication risk from each type of detergent (laundry or dishwashing) is estimated to be below 5%, with the combined contribution estimated to be around 4-6%. It is suggested that the contribution of detergents to the eutrophication risk may exceed 10% in extreme conditions, with these conditions expected to occur very infrequently.[46] The quantitative estimations suggest that the contribution of phosphate-based detergents to eutrophication risk is less than 10% in around 90% of sensitive water bodies in the Central/Baltic and Northern ecoregions of Europe and in an even larger percentage in the Atlantic and Mediterranean ecoregions.[47]

[43] WWF (2011): Washing our Dishes and Clothes without Polluting our Rivers and Seas – The importance of an EU restriction of phosphate detergents for laundry and dishwashers. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/web_phosphate_brochure_1.pdf

[44] De Madariaga B M, Ramos J M, Tarazona J V (2007): Development of an European Quantitative Eutrophication Risk Assessment of Polyphosphates in Detergents – Model Implementation and Quantification of the Eutrophication Risk Associated to the use of Phosphates in Detergents. Available at: http://ec.europa.eu/growth/sectors/chemicals/legislation_en

[45] European Commission (2007): Report from the Commission to the Council and European Parliament pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, COM(2007) 234 final. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0234:FIN:en:PDF

[46] De Madariaga B M, Ramos J M, Tarazona J V. (2009): Development of an European Quantitative Eutrophication Risk Assessment of Polyphosphates in Detergents – Model Validation using the WFD Intercalibration Data, Model Re-calibration and Pan-European Assessment of the Eutrophication Risk Associated to the use of Phosphates in Detergents. Available at: http://ec.europa.eu/growth/sectors/chemicals/legislation_en

[47] De Madariaga B M, Ramos J M, Tarazona J V. (2009): Development of an European Quantitative Eutrophication Risk Assessment of Polyphosphates in Detergents – Model Validation using the WFD Intercalibration Data, Model Re-calibration and Pan-European Assessment of the Eutrophication Risk Associated to the use of Phosphates in Detergents, Layman's Summary of the Final Study Report. Available at: http://ec.europa.eu/growth/sectors/chemicals/legislation_en

A2.4.4 Phosphorus content of detergents

Table A2-7 provides data on the degree to which laundry detergents were phosphate free in the early 2000's across the EU-25.

Table A2-7: Degree to which EU25 countries were phosphate-free (laundry detergents) in the early 2000's		
Country	**Population**	**% Phosphate-Free**
Belgium	10.4	100%
Czech Republic	10.2	35%
Denmark	5.4	80%
Germany	82.5	100%
Estonia	1.3	20%
Greece	11.0	50%
Spain	42.2	40%
France	59.9	50%
Ireland	4.0	100%
Italy	57.8	100%
Cyprus	0.7	20%
Latvia	2.3	20%
Lithuania	3.4	20%
Luxembourg	0.4	100%
Hungary	10.1	30%
Malta	0.4	20%
Netherlands	16.2	100%
Austria	8.1	100%
Poland	38.2	15%
Portugal	10.4	30%
Slovenia	2.0	95%
Slovakia	5.4	20%
Finland	5.2	90%
Sweden	9.0	85%
United Kingdom	59.5	55%
EU-25	**456.0**	**66%**
Source: RPA (2006)[48] *Countries which were 100% P-free in the early 2000's have been highlighted in dark grey. Countries >80% P-free are highlighted light grey.*		

Table A2-8 provides separate estimates of the use of phosphate-free laundry detergents in the Danube River Basin countries in 2005.

Tables A2-7 and A2-8 both contain data on the situation before the new limits on the phosphorus content of detergents came into force (in Regulation (EU) No 259/2012).

[48] RPA (2006): Non-surfactant organic ingredients and zeolite-based detergents, Final Report prepared for the European Commission, available at: http://ec.europa.eu/DocsRoom/documents/14124/attachments/1/translations

Table A2-8: Detergent usage and proportion of detergents that are phosphate-free in countries within the Danube River Basin (WRc, 2006)				
Country	**Total population (million)[1]**	**Total population in Danube Basin (million)[2]**	**Total laundry detergent usage (tonnes/year)**	**% of detergents that are phosphate-free**
Austria	8.1	7.7	55,197	>98%
Germany	82.0	9.1	643,000	
Czech Republic	9.9	2.7	-	>~50%
Hungary	10.3	10.3	126,300	
Slovenia	2.0	1.7	-	
Serbia-Montenegro[3]	9.3	9.1	89,057	
Bosnia-Herzegovina	4.4	2.5	7,485	<10%
Bulgaria	7.9	4.4	-	
Croatia	4.7	3.2	16,516	
Moldova	4.3	1.1	-	
Slovak Republic	5.4	5.2	-	
Ukraine	49.1	3.1	219,873	
Romania	22.4	21.8	154,584	Not known[4]
Total	**219.8**	**81.9**		

Source: WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

Notes:

[1] Information from Whitaker's Almanack 2005

[2] Information from Joint Action Programme, 2000-2005

[3] Data for 'phosphate-free' may include low phosphate detergents (i.e. up to 5% phosphate).

[4] Data for products indicates no phosphate-free detergents on the market in 2005.

Table A2-8 includes information on the total usage of laundry detergent and the population from each country that falls within the Danube River Basin. It should be recognised that, in many cases, the information is incomplete and uncertainties have been introduced due to differing approaches to defining what is meant by "phosphate-free" detergents. In some cases (such as Serbia-Montenegro) "phosphate-free" refers to detergents that may contain up to 5% phosphate, while in the case of the Czech Republic, phosphate-free detergents may contain phosphate at a concentration of up to 2%.

Despite the above uncertainties, the data show that detergent products in Austria and Germany contained almost no phosphates in 2005, which is sometime before the introduction of Regulation (EU) No 259/2012.[49] In the case of the Czech Republic, Hungary, Slovenia and Serbia-Montenegro over 50% of laundry detergent products were "phosphate-free" by 2005 (with 50%, 40-60%, >75% and 64% of laundry detergents considered to be phosphate free respectively). In the remaining seven countries (Bosnia-Herzegovina, Bulgaria, Croatia, Moldova, Slovak Republic, Ukraine and Romania)

[49] Regulation (EU) No 259/2012 of the European Parliament and of the Council of 14 March 2012 amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorus compounds in consumer laundry detergents and consumer automatic dishwasher detergents. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32012R0259

less than 10% of detergents used were phosphate-free. This was particularly significant as Romania accounts for over a quarter (27%) of the total population of the Danube River Basin.[50]

Table A2-9 provides some baseline information on STPP consumption across the EU before the 2012 amendment to the Detergents Regulation came into force. This shows that there was a significant reduction in the use of STPP in consumer detergents in many countries between 1985 and 2000.

Table A2-9: Estimated detergent consumption in Europe in 2002

Country	Population (2000)	Detergent use (1998)		Detergent with STPP builder (CEFIC 2000)	STPP consumption*		% reduction (1985 to 2000)
		Laundry	Automatic dishwasher				
	millions	kilotonnes	kilotonnes	%	kilotonnes	kg/hd	%
Austria	8.1	59	13	0	0	0.0	100
Belgium	10.2	78	15	0**	0	0.0	100
Denmark	5.3	31	10	20	2	0.4	90
Finland	5.1	32	7	10	1	0.2	95
France	58.4	450	168	50	74	1.3	60
Germany	81.9	490	158	0	0	0.0	100
Greece	10.5	65	9	50	9	0.8	66
Ireland	3.6	41	3	0**	0	0.0	100
Italy	57.3	415	36	0	0	0.0	100
Luxembourg	0.4	n/a	n/a	n/a	n/a	n/a	n/a
Netherlands	15.5	100	21	0	0	0.0	100
Portugal	9.9	43	2	70	8	0.8	50
Spain	39.3	241	25	60	38	1.0	65
Sweden	8.8	44	9	15	2	0.2	90
UK	58.8	573	85	45	71	1.2	40
Hungary	10.2	40	1	70	7	0.7	50
Czech Republic	10.3	17***	0	65	3?	0.3?	?
Poland	38.6	372	6	85	77	2.0	15
Total	**432.2**	**3088**	**568**		**292**		

Source: EC (2002): Phosphates and alternative detergent builders. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

** Assumes that detergents that use STPP as a builder contain 24% STPP, and therefore 6% phosphorus. Overall use may be under-estimated.*

*** These values are set to zero, assuming implementation of recent measures to control phosphorus in detergents.*

**** This figure is low on a per capita basis. Either it is incorrect, or it may be higher now & in the near future.*

[50] WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

Figure A2-12 provides data on per capita detergent and STPP[51] consumption from laundry and dishwashing, in 18 EU countries in 1998/2004. It shows that, of the countries analysed, per capita consumption of laundry detergents was highest in Italy at nearly 12 kg per capita, over this period. Consumption of STPP was highest in Portugal, amounting to approximately 2.5 kg per capita.

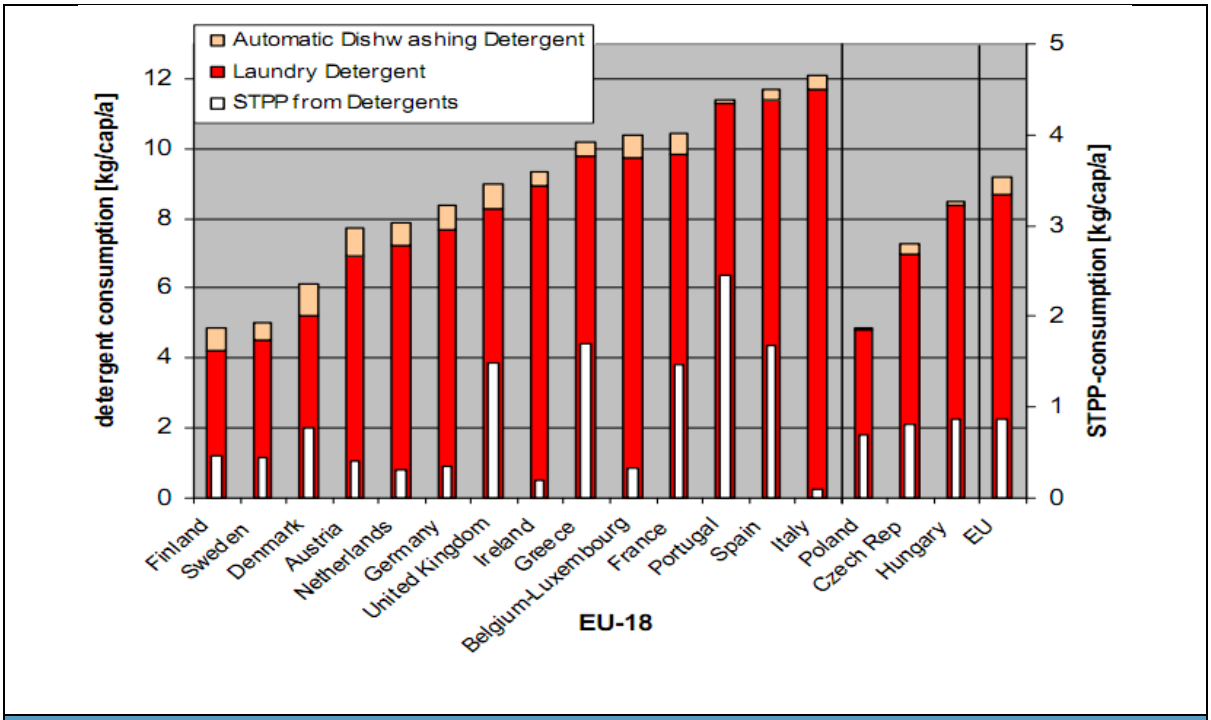

Figure A2-12: Detergent and STPP consumption (from laundry and dishwashing) per capita in 19 EU countries in 1998/2004

Source: European Water Association (2007)[52]

In 2015, Richards et al.[53] tested the phosphorus concentration of 80 household detergent products available on supermarket shelves and widely used in the UK and Europe. The detergent products tested spanned a variety of forms (condensed tablets, powders, gels and liquids) and included: 27 regular laundry detergent products and five eco-laundry detergents; 12 regular dishwasher detergent products and three eco-dishwasher detergents; seven fabric softeners; 12 washing up liquids; nine general cleaning products and five hand soaps[54]. The results of this analysis (shown in Table A2-10) suggest that the concentration of phosphorus in dishwasher detergents was (in 2015) considerably higher than that of laundry detergents and other detergent product types. The results also show that

[51] STPP are used as builders in heavy duty laundry detergents to provide optimum washing conditions (e.g. reduction of water hardness, stabilisation of alkalinity) and also to stabilise the powder grains in a formulated detergent product.

[52] European Water Association (2007): The role of detergents in the Phosphate-balance of European surface waters, available at: http://www.ewa-online.eu/tl_files/_media/content/documents_pdf/Publications/E-WAter/documents/25_2007_03.pdf

[53] Richard S et al. (2015): The contribution of household chemicals to environmental discharges via effluents: Combining chemical and behavioural data, Journal of Environmental Management, 150, pp 427-434, available at: http://www.sciencedirect.com/science/article/pii/S0301479714006021

[54] Note that hand soaps would not fall within the scope of the Detergents Regulation.

eco-laundry and dishwasher detergent products contained a lower concentration of phosphorus than regular detergent products.

Richards et al. calculated total weekly phosphorus load scenarios for a typical household by combining the data received from household questionnaires (on type and frequency of detergent use) with detergent composition data. It was estimated that, on average, a household using standard laundry detergent and dishwasher detergents has a total annual phosphorus load of 0.414 kg P/year. The average annual load of total phosphorus produced by the same size of household using only eco-labelled laundry and dishwasher detergents has been estimated at 0.021 kg P/year. Thus, the use of regular laundry and dishwasher detergents results in a total phosphorus load over 19 times greater than the equivalent use of eco-labelled products. Based on the survey data, the total phosphorus load combined from regular and eco detergents were calculated to be 0.154 kg P/person/year (0.417 g P/person/day). This was dominated by the total phosphorus load from dishwashers which was calculated as 0.147 kg P/person/year (0.401 g P/person/day).

Richards et al. noted that the phosphorus load contributions from washing up liquid, fabric softener and hand soap are insignificant by virtue of their low phosphorus concentrations when compared to dishwasher detergent and laundry detergent products and therefore excluded these in the total phosphorus load calculations. The survey results also revealed that general cleaning products are used infrequently and in small quantities and so their phosphorus contribution is also excluded from the total phosphorus load calculations. This is important because Regulation (EU) No 259/2012 does not set limits on the phosphorus content of washing up liquids, fabric softeners, general cleaning products or hand soaps; and so, it can be taken that this 'gap' in the detergents regulation is not a significant concern.

Table A2-10: Soluble reactive P and total P in household detergents and cleaning products, average mg/g ± 1 s.e. (with range)								
	Laundry detergent		Dishwasher detergent		Washing up liquid	Fabric softener	General cleaning products	Hand soaps
	Regular	Eco	Regular	Eco				
Number of products tested	27	5	12	3	12	7	9	5
Soluble reactive P	0.13 ± 0.03 (<0.03-0.61)	0.12 ± 0.08 (<0.03-0.43)	1.23 ± 0.14 (0.55-1.97)	0.30 ± 0.08 (0.22-0.46)	<0.03 ± 0.00 (<0.03)	<0.03 ± 0.01 (<0.03)	0.48 ± 0.44 (<0.03-3.02	<0.03 ± 0.00 (<0.03-0.05)
Total P	1.61 ± 0.30 (0.03-4.61)	0.17 ± 0.08 (0.03-0.62)	95.36 ± 9.46 (43.05-130.94)	5.22 ± 2.46 (0.66-9.10)	0.03 ± 0.00 (<0.03)	0.03 ± 0.00 (0.03-0.05)	0.65 ± 0.42 (0.03-3.96)	0.03 ± 0.00 (<0.03)
Note: Values denoted '<' are below stated detection limit.								

A2.4.5 The influence of other legislation on phosphorus loads

Besides the Detergents Regulation, there are other pieces of EU and national legislation, as well as voluntary measures in place, which may have directly or indirectly influenced the amount of phosphorus used in detergents and/or the emissions of phosphorus to the environment. These are discussed below.

Urban Waste Water Directive (91/271/EEC)

The objective of the Urban Waste Water Treatment Directive is to protect the environment from the adverse effects (such as eutrophication) of urban wastewater discharges from certain industrial sectors (as stipulated in Annex III of the Directive). The Directive requires EU countries to[55,56] :

- Collect and treat wastewater in urban settlements with a population of at least 2,000 and apply secondary treatment on the collected wastewater;
- Apply more advanced treatment in settlements with populations over 10,000 that are located in designated sensitive areas (defined as natural water which are found to be or may become eutrophic in the near future if protective action is not taken, or those which need more advanced treatment to reach compliance with other EU Directives (e.g. the Bathing Water Directive);
- Require pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- Guarantee that treatment plants are properly maintained to ensure sufficient performance and that they can operate under normal weather conditions;
- Take measures to limit polluting receiving waters from storm water overflows under extreme conditions (such as unusually heavy rain); and
- Monitor performance of treatment plants and receiving waters; and monitor sewage sludge disposal and re-use.

Most of the chemicals used in detergents find their way into wastewater (sewage) treatment plants. The degree to which these chemicals and other contaminants are removed from the effluent discharged to river or sea depends on the level of treatment - as illustrated in Figure A2-13. As can be seen, the removal of phosphorus requires tertiary treatment, which forms the key requirement of the Urban Waste Water Directive (Council Directive 91/271/EEC).[57]

Table A2-11 provides data on the proportion of the population (by country) connected to tertiary urban wastewater collection and treatment systems. Unfortunately, the data are fragmentary and not available for all countries and years. Nevertheless, it can be seen that the overall share of the population connected to tertiary urban wastewater collection and treatment systems varies quite considerably between countries. As shown in the Table, around 70% of the population in Northern and Central Europe are connected to tertiary treatment while only around 9% of the population in

[55] Eur-Lex (2017): Urban waste water treatment – Summary of Directive 91/271/EEC urban wastewater treatment. Available at: http://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:31991L0271&qid=1502463557137

[56] European Network of Environmental Law Organisations (2013): Action 7 of the EU Strategy for the Danube Region "To legislate at the appropriate level to limit the presence of phosphates in detergents" – Policy response and overview report. Available at: https://www.danubewaterquality.eu/uploads/mod_files/EUSDR_PA4_Action_7_milestone_2_study.pdf

[57] The Urban Waste Water Directive requires a tertiary phosphorus elimination step for all municipal sewage treatment plants of agglomerations of >10,000 population equivalents in areas sensitive to eutrophication.

Southern and Eastern Europe connected to tertiary wastewater treatment.[58] The data also indicate that the proportion of the population connected appears to be increasing over time.

This is important given that tertiary treatment is required to effectively remove phosphorus from wastewater. Thus, an increased application of tertiary treatment will increase phosphorus and other nutrient removal from wastewater and contribute to reducing the release of these substances to the aquatic environment (and associated eutrophication).

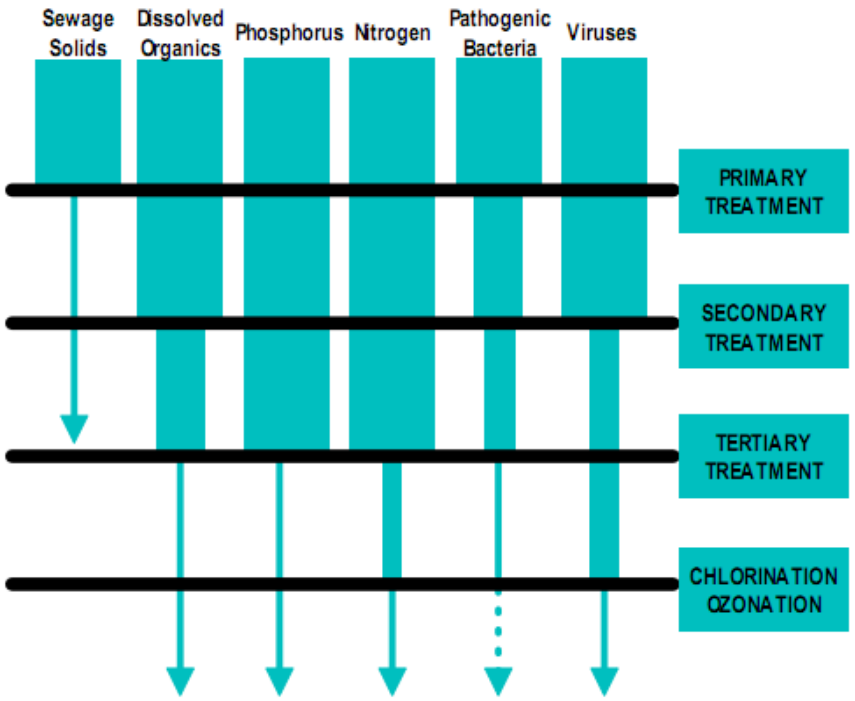

Figure A2-13: Removal of Contaminants by Waste Water Treatment

Source: ReVelle & ReVelle, 1988[59]

[58] Bio by Deolitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD) – Stakeholder Workshop.

[59] ReVelle P & ReVelle C (1988): The Environment - Issues and Choices for Society, Boston, Jones & Bartlett.

Table A2-11: % population connected to tertiary urban wastewater collecting and treatment systems												
Country	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Austria	:	83.4	:	88.2(e)	:	91.7(e)	:	92.6(e)	:	93.5	:	:
Belgium	42.4	45.6	46.7(e)	49.5(e)	59.4	63	63.4	66	69	72	73	:
Bulgaria	0	0	0	0	0.5	0.5	0.5	26.8	34.5	34.7	35.3	:
Croatia	:	:	:	:	:	:	:	:	35.9	:	:	:
Cyprus	14.8	16.8	18.3	:	:	:	:	:	:	:	:	:
Czech Republic	54.8	52.9	55.9	60	62.2	65.8	66.3	68.2	70.1	69.4	71.6	:
Denmark	:	:	:	:	:	:	87.2	85.6	86.5	86.6	88.2	89(e)
Estonia	46	46	48	55	61	61	61	64.7	67.8	74.2	77.1	78(e)
Finland	:	:	:	:	:	:	:	83	83(e)	83(e)	83(e)	:
France	:	42.5	:	:	:	:	:	:	22.8	22.5(p)	22.1(p)	:
Germany	:	90.5	95.9	:	88.4	:	:	92.3	:	:	93(e)	:
Greece	:	:	:	:	78.2	:	79.6	79.6	82	85.8	:	:
Hungary	18.4	19.2	21.3(e)	15.8(e)	21.5(e)	23.3(e)	24.7(e)	33.1(e)	37.2(e)	54.9(e)	56.5(e)	:
Iceland	0	0	0	:	:	1	:	1(e)	:	:	:	:
Ireland	:	:	:	:	10(e)	:	11(e)	:	14(e)	:	18(e)	18(e)
Italy	:	:	:	:	:	38(e)	48.8	:	:	35(e)	:	:
Latvia	33.1	38.7	38.1	37.9	9.3	11.9	13.7	16.1	16.5	17.5	17.2	:
Liechtenstein	:	:	:	:	:	:	:	:	:	:	:	:
Lithuania	21.1	:	:	:	:	:	:	:	:	60.7	:	:
Luxembourg	22.3	:	:	:	:	:	:	29.3	31	68.8	69.8	70(e)
Malta	0	0	0	0	0	0	0	6.6	92.3(e)	92.2(e)	92.09(e)	:
Netherlands	86.9	91.2	96.5	98.2	:	98.5	:	98.7	:	99.1	:	:
Norway	53.6	54.7	56.6(d)	57(d)	56.8(d)	57.1(d)	57.6(d)	57.6(d)	59.8(e)	61.2(d)	61.2(d)	:

Table A2-11: % population connected to tertiary urban wastewater collecting and treatment systems												
Country	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Poland	30.5	33.5	37.3(d)	39(d)	41.1(d)	46.6	48.6	49.6	52.2	54.6	56	58(e)
Portugal	7	:	15.2	12	14	14	16.4	:	:	:	:	:
Romania	:	0	0(e)	:	:	:	:	0.7	0.8	19.2	18	18.3
Slovakia	:	:	:	:	:	:	:	:	:	:	:	:
Slovenia	1	7.6	10.9	11	11.7	13.8	16.7	16.2	17.4	19.3	21.7	:
Spain	:	:	:	36	:	51	:	60	:	66.7	:	:
Sweden	81	81	81	81	81	81	81	82	82	83	83	:
UK	38(e)	43(e)	43(e)	:	:	46.9	47.7	49.9	:	:	:	57(e)
Source: Eurostat (ten00020). Notes: : = not available, e = estimated, b = break in time series, p = provisional, d = definition differs (see metadata)												

The Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC) and the Industrial Emissions Directive (2010/75/EU)

The Integrated Pollution Prevention and Control (IPPC) Directive requires industrial and agricultural activities with a high pollution potential to have a permit, with this permit only being issued if certain environmental conditions are met. Annex III of the Directive provides an indicative list of the main polluting substances to be taken into account for fixing emission limit values and includes substances that contribute to eutrophication, in particular nitrates and phosphates.[60,61]

The provisions of the IPPC Directive remained applicable up to the 6th January 2014 after which this Directive was replaced by Directive 2010/75/EU on industrial emissions.[62] The Industrial Emissions Directive lays down rules to prevent and control pollution into the air, water and land and to avoid generating waste from large industrial installations. The legislation covers the following industrial activities: energy, metal production and processing, minerals, chemicals, waste management and other sectors such as pulp and paper production, slaughterhouses and the intensive rearing of poultry and pigs with all installations covered by the Directive required to prevent and reduce pollution by applying best available techniques (BATs), as well as ensuring efficient energy use, waste prevention and management and measures to prevent accidents and limit their consequences. Installations are only allowed to operate if they possess a permit and comply with the conditions of the permit.[63]

This Directive therefore considers emissions of phosphorus from a variety of industrial activities and contributes to reducing releases to the environment.

Water Framework Directive (2000/60/EC)

The implementation of the Water Framework Directive (Directive 2000/60/EC) has led to an increased focus on eutrophication. Under the Water Framework Directive, Member States are required to enact programmes of measures to ensure that waterbodies throughout the EU reach "good status" by 2015. Where monitoring and assessment show that phosphorus inputs are contributing to eutrophication, Member States are required to implement measures to address this problem. The status objectives of the Water Framework Directive mean that if phosphorus discharges to the environment are causing deterioration in water quality then sewage phosphorus removal should be installed, even for situations not already covered by the Urban Waste Water Treatment Directive.[64]

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[60] Eur-Lex (2011): Integrated pollution prevention and control (until 2013). Available at: http://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32008L0001&qid=1502466074168

[61] European Network of Environmental Law Organisations (2013): Action 7 of the EU Strategy for the Danube Region "To legislate at the appropriate level to limit the presence of phosphates in detergents" – Policy response and overview report. Available at: https://www.danubewaterquality.eu/uploads/mod_files/EUSDR_PA4_Action_7_milestone_2_study.pdf

[62] Eur-Lex (2011): Integrated pollution prevention and control (until 2013). Available at: http://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32008L0001&qid=1502466074168

[63] Eur-Lex (2015): Industrial emissions. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:ev0027

[64] BIO by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD). Report prepared for the European Commission – DG Enterprise and Industry. Available at: https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKE

Ecolabels

Environmental labels (generally referred to as "ecolabels") can be used by producers in the EU to differentiate their products on the basis of their environmental performance. They can help consumers and companies to identify products (or services) that are environmentally preferable overall. A plethora of such ecolabels exist in the EU. Some are linked to voluntary industry initiatives and others are EN ISO 14024 Type I ecolabels[65], such as the EU Ecolabel.

Some examples of ecolabels that can be applied to detergents are shown in the case study boxes below.

EU Ecolabel

The EU Ecolabel (with its distinctive EU flower logo) is the only pan-European official voluntary scheme that provides producers an opportunity to market their products or services with a label of environmental excellence provided that they fulfil the criteria on environmental performance. It also offers consumers an opportunity to identify a product that has reduced environmental impact. The criteria the products must meet are being developed based on a life-cycle assessment of the most important environmental impacts on a product group basis.

EU Ecolabel criteria exist for 6 Detergent Groups:

- Hard surface cleaning products,
- Detergents for dishwashers,
- Hand dishwashing detergents,
- Laundry detergents,
- Industrial and institutional dishwasher detergents,
- Industrial and institutional laundry detergents.

They cover the following areas:

- Dosage requirements (for dishwasher detergents only)
- Toxicity to aquatic organisms
- Biodegradability
- Sustainable sourcing of palm oil, palm kernel oil and their derivatives
- Excluded and restricted substances
- Packaging
- Fitness for use
- Automatic dosing systems (only for Industrial and Institutional ones)
- User information
- Information appearing on the EU Ecolabel

wikr NqdbVAhVMK8AKHdWPA2QQFgg1MAE&url=http%3A%2F%2Fec.europa.eu%2Ftransparency%2Fregdoc%2Frep%2F1%2F2015%2FEN%2F1-2015-229-EN-F1-1.PDF&usg=AFQjCNGDa16qJUjNuN7VfYKsMBy2ryC2jQ

[65] "Type I environmental labelling" is defined by the International Organization for Standardization (ISO) in the "ISO 14024:1999 Environmental labels and declarations – Type 1 environmental labelling – Principles and procedures" Guidance Standard as: "*A voluntary, multiple-criteria based, third party program that awards a license which authorizes the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations*."

In order to qualify for the EU Ecolabel, detergent products must be phosphate-free, with the exception of laundry detergents and dishwasher detergents designed for industrial or institutional use, for which there are limits on the total phosphorus content.

Nordic Swan Ecolabel

The Nordic Swan Ecolabel is the official ecolabel of the Nordic countries and is a voluntary tool to assist consumers in choosing environmentally sound products. The Nordic Swan ecolabel was established in 1989 and now covers 63 product groups, including cleaning products, dishwasher detergents and rinsing agents, dishwasher detergents for professional use, hand dishwashing detergents, laundry detergents and stain removers and laundry detergents for professional use. In the case of cleaning products, the criteria prohibit the use of phosphorus and indicate that this must not be actively added to ingredients used. With regard to dishwasher detergents and rinsing agents, the Nordic Swan Ecolabel sets the following criteria:

- Dishwasher detergents: ≤0.2 g P/wash; and
- Rinsing agents: ≤0.03 g P/wash

The criteria document also notes that the amount of phosphorus has to be made clear in the formulation and a calculation of the total quantity of phosphorus is also required. In addition, for products containing phosphates, the product must display the following or equivalent text (on the label): "Products that contain phosphates should only be used by households that are connected to mains drainage".[66]

For hand dishwashing detergents, products should also display the following or equivalent text: "Contains phosphates. Should only be used if connected to the municipal waste water system". In addition, for products sold in Norway it must be specified that the hand washing detergent contains no more than 0.2% phosphorus.[67]

In the case of dishwasher detergents for professional use, the total quantity of phosphates and other phosphorus compounds must not exceed the following[68]:

- Dishwasher detergents and pre-soaks: 0.08 g P/litre water; and
- Rinse aids: 0.04 g P/litre water.

The Nordic Swan criteria for laundry detergents and stain removers indicate that that the total phosphorus content is limited to the following:[69]

- Heavy duty laundry detergent (normally soiled): 0.03 g/kg wash;
- Low duty laundry detergent (normally soiled): 0.03 g/kg wash;
- Stain-removers (in-wash): 0.01 g/kg wash; and

[66] Nordic Ecolabelling (2017): Dishwasher detergents and Rinsing agents. Available at: http://www.nordic-ecolabel.org/criteria/product-groups/?p=1

[67] Nordic Ecolabelling (2017): Hand dishwashing detergent. Available at: http://www.nordic-ecolabel.org/criteria/product-groups/?p=1

[68] Nordic Ecolabelling (2017): Dishwasher detergents for professional use. Available at: http://www.nordic-ecolabel.org/criteria/product-groups/?p=1

[69] Nordic Ecolabelling (2017): Laundry detergents and stain removers. Available at: http://www.nordic-ecolabel.org/criteria/product-groups/?p=1

- Stain-removers (pre-treatment): 0.005 g/kg wash.

For laundry detergents for professional use, the Nordic Swan sets criteria which restrict the total quantity of phosphates and other phosphorus compounds to below the following amounts:[70]

- Light: 0.5 g P/kg laundry;
- Medium: 1.0 g P/kg laundry;
- Heavy: 1.5 g P/kg laundry.

During the consultation, representatives from industry, the Member States and the European Commission indicated that ecolabels and other voluntary initiatives contributed to a reduction in the use of phosphates and phosphorus compounds in detergents in the EU, even before the introduction of Regulation (EU) No 259/2012.

Indeed, during the consultation, one company noted that although when the Detergents Regulation was first introduced, it did have a beneficial impact in terms of helping to protect the environment, many companies produce detergent products to adhere to ecolabel criteria which go beyond the requirements of the Detergents Regulation. Thus, in these cases, the ecolabel criteria helped to provide a greater level of environmental protection compared to the Detergents Regulation.

Several stakeholders (including an EU official, a consumer organisation, an environmental NGO and a company) noted that the requirements of the Detergents Regulation could now be pushed further to facilitate a greater level of environmental protection in the EU. For example, several stakeholders suggested that ideas could be borrowed from the EU ecolabel. One MS authority, for example, suggested that the criteria referred to in ecolabels (such as biodegradability factors, anaerobic biodegradability conditions and only including ingredients that are not harmful to the environment) could be included within the Detergents Regulation, thus increasing the stringency of the requirements and further benefitting the environment.

Regional commitment

Some regions of the EU had already adopted commitments to limit the use of phosphorus in consumer laundry and dishwasher detergents before the introduction of the restrictions under Regulation (EU) No 259/2012. As previously outlined, the Danube River Basin consists of 19 countries, including both members and non-members of the EU. All are contracting parties to the International Convention for the Protection of the Danube River (ICPDR).[71] The ICPDR is a transnational body that was established to implement the Danube River Protection Convention. It works to ensure the sustainable and

[70] Nordic Ecolabelling (2017): Laundry detergents for professional use. Available at: http://www.nordic-ecolabel.org/criteria/product-groups/?p=1

[71] ICPDR (2017): Countries of the Danube River Basin. International Convention for the Protection of the Danube River. Available at: https://www.icpdr.org/main/danube-basin/countries-danube-river-basin

equitable use of waters and freshwater resources in the Danube River Basin.[72] Point 18 of the Danube Declaration, which was adopted by the ICPDR in February 2010, states [73]:

> *"the introduction of limitations on phosphate in detergents as a particularly cost effective and necessary measure to complement the efforts of implementing urban wastewater treatment and as Ministers of the Danube countries commit ourselves to initiate the introduction of a maximum limit for the content of total phosphorus of 0.2 to 0.5% P weight/weight, in laundry detergents for consumer use, if possible by 2012 and to work towards a market launch of polyphosphate-free dishwasher detergents for consumer use until 2015".*

Hence, there was already a regional commitment in the Danube River Basin to limit the use of phosphates in consumer laundry detergents before the restriction under the Detergents Regulation came into force (in June 2013).

The 2015 update of the Danube River Basin District Management Plan[74] indicates that that a number of strategies have been implemented to reduce nutrient pollution in the Danube River Basin, including:

- upgrading wastewater treatment plants with nutrient (nitrogen and phosphorus) removal technology for agglomerations with more than 10,000people;
- using phosphate-free detergents; and
- enhancing agricultural practices.

These measures, in combination, have decreased phosphorus from point source emissions by 45% relative to the first Danube River Basin District Management Plan in 2009. The management plan also indicates that the introduction of phosphate-free detergents has been a fast and efficient measure to reduce phosphorus emissions to surface waters, and has been particularly beneficial in that is has decreased phosphorus loads in the Danube relatively quickly and before all countries have built a complete network of sewers and wastewater treatment plants.

National legislation

Some countries had already implemented legislation (e.g. a ban or a restriction) on the use of phosphates in detergents before Regulation (EU) No 259/2012. For example, in Belgium, phosphates have been prohibited in household laundry detergents since 2003[75] and information from consultation has indicated that in some countries, limitations/prohibitions on the use of phosphorus in detergents were introduced even earlier than this. Information received from AISE and a number of its member

[72] ICPDR (2017): About Us. International Convention for the Protection of the Danube River. Available at: https://www.icpdr.org/main/icpdr/about-us

[73] ICPDR (2010): Danube Declaration – Adopted at the Ministerial Meeting, February 16, 2010. International Convention for the Protection of the Danube River. Available at: https://www.icpdr.org/flowpaper/viewer/default/files/Ministerial%20Declaration%20FINAL.pdf

[74] ICPDR (2015): Danube River Basin District Management Plan – Part A Basin Wide Overview. International Convention for the Protection of the Danube River. Available at: https://www.icpdr.org/flowpaper/viewer/default/files/nodes/documents/drbmp-update2015.pdf

[75] Federal Public Service (2016): Effect of detergents on the environment. Available at: http://www.health.belgium.be/en/effect-detergents-environment

organisations indicated that as of 2009, 11 EU MS had measures in place to restrict the use of phosphorus in laundry detergents.

As indicated in Section A2.4.4., a significant proportion of the laundry detergents made available on certain national markets in the early 2000s were phosphate-free (or contained relatively low phosphorus concentrations), with this being the case before the introduction of the Detergents Regulation and Regulation (EU) No 259/2012. The reason for this is that many countries had introduced legislation to reduce or ban the use of phosphates in detergents (e.g. Germany, the Czech Republic, Italy, the Netherlands, France and Sweden). Other countries (such as Austria, Denmark, Finland and Ireland) implemented voluntary agreements that were effectively equivalent to phosphate bans in detergents.[76, 77]

Table A2-12 provides a summary of the legislation in place in EU MS to limit the content of phosphates and other phosphorus compounds in detergents as of 2011.

Table A2-12: Legislation in place in EU Member States setting limits for the content of phosphates and other phosphorus compounds in detergents as of 2011

Country	Laundry detergents			Dishwasher detergents		
	Regulation in place (max. 0.5% of phosphate allowed)	Regulation or voluntary initiatives in preparation or in place (threshold for phosphate is >0.5%)	No regulation in place	Regulation in place (max. 0.5% of phosphate allowed)	Regulation or voluntary initiatives in preparation or in place (threshold for phosphate is >0.5%)	No regulation in place
Austria	✓				✓	
Belgium	✓					✓
Bulgaria			✓			✓
Cyprus			✓			✓
Czech Republic	✓					✓
Denmark	✓				✓	
Estonia			✓			✓
Finland	✓				✓	
France	✓			✓		
Germany	✓			✓		
Greece			✓			✓
Hungary		✓				✓
Iceland						

[76] WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

[77] BIO by Deloitte (2014): Evaluation of the use of phosphates in Consumer Automatic Dishwasher Detergents (CADD). Report prepared for the European Commission – DG Enterprise and Industry. Available at: https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwikr_NqdbVAhVMK8AKHdWPA2QQFgg1MAE&url=http%3A%2F%2Fec.europa.eu%2Ftransparency%2Fregdoc%2Frep%2F1%2F2015%2FEN%2F1-2015-229-EN-F1-1.PDF&usg=AFQjCNGDa16qJUjNuN7VfYKsMBy2ryC2jQ

Table A2-12: Legislation in place in EU Member States setting limits for the content of phosphates and other phosphorus compounds in detergents as of 2011						
Country	Laundry detergents			Dishwasher detergents		
	Regulation in place (max. 0.5% of phosphate allowed)	Regulation or voluntary initiatives in preparation or in place (threshold for phosphate is >0.5%)	No regulation in place	Regulation in place (max. 0.5% of phosphate allowed)	Regulation or voluntary initiatives in preparation or in place (threshold for phosphate is >0.5%)	No regulation in place
Ireland		✓				✓
Italy	✓				✓	
Latvia	✓				✓	
Lithuania			✓			✓
Luxembourg			✓			✓
Malta			✓			✓
Netherlands	✓					✓
Poland		✓				✓
Portugal			✓			✓
Romania			✓			✓
Slovakia		✓				✓
Slovenia			✓			✓
Spain			✓			✓
Sweden	✓			✓		
UK	✓				✓	
Source: WWF (2011)[78]						

Further details of the legislation and voluntary agreements to reduce phosphate use in detergents in some countries before the introduction of the Detergents Regulation are provided below.

Austria

A voluntary agreement (Freiwillige Verzichtserklärung Waschmittel) was entered into by the Austrian authorities and the detergent industry, which specified not to use phosphates in household laundry detergents. This appears to have been successful as the findings from the WRc study from 2006 suggest that the vast majority of household laundry detergents used in Austria were phosphate-free in 2005.[79]

[78] WWF (2011): Washing our Dishes and Clothes without Polluting our Rivers and Seas – The importance of an EU restriction of phosphate detergents for laundry and dishwashers. Available at: http://d2ouvy59p0dg6k.cloudfront.net/downloads/web_phosphate_brochure_1.pdf

[79] WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

Czech Republic

A voluntary agreement between the Czech Association of producers of Soaps, Cleaning Agents and Detergents (CSDPA) and the Ministry of Environment was introduced in 1995 (with further amendments agreed in 1998 and 2001) with the aim of gradually reducing the environmental impact of detergents. A decrease in the use of phosphates in laundry detergents from 9,000 tonnes in 1995 to 5,065 tonnes in 2003 was observed and considered to result from the agreement. In 2003, 36.6% of the overall amount of detergents produced by the Association members were phosphate-free and since the 1st January 2005 members of the Association no longer sell laundry detergents containing phosphates. Thus, the goal of the agreement had been met.[80]

However, from 2000 there was an increase in the number of phosphate containing detergents from producers that were not members of the association. Given that the market share of companies that were not members of the association was not negligible (50% in 2005); legislative action was taken (through amendment of the Ministry of Environment Regulation No. 221/2004) which stipulated a list of dangerous substances, whose introduction into the market, distribution or use were prohibited or limited. This amendment applied to laundry detergents, banning the placement of laundry detergents with a phosphorus content of more than 0.5% by weight on the market.[81]

Germany

Initially, the use of phosphorus was defended in Germany on the grounds that substitutes would be more expensive than alternative ways of reducing phosphorus, such as improved treatment (and removal of phosphorus) from wastewater. A joint research programme between Henkel (who had held the patent for zeolite, a potential replacement for phosphorus in detergents, since 1973) and the German government resulted in the production of zeolite being supported on economic grounds in the 1980's. This research led to the 'Phosphate-Höchstmengenverordnung', which entered into force on the 1st January 1984 and halved the maximum permitted concentration of phosphates in detergents. Following the introduction of the Regulation there was a decline in the consumption of STTP from 185,900 tonnes in 1984 to 13,000 in 1990 and none in 1998.[82]

In addition, industry-led voluntary agreements and consumer preference for phosphate-free products, are considered to have contributed to a situation whereby virtually no phosphate was used in detergents in Germany by 2005.[83]

[80] WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

[81] WRc (2006): Recommendations for the reduction of phosphorus in detergents – Final Report. Available at: https://www.icpdr.org/main/sites/default/files/1.8_Detergent%20FnRep28Nov06-f2.pdf

[82] Glennie E B, Littlejohn C, Gendebien A, Hayes A, Palfrey R, Sivil D, Wright K (2002): Phosphates and Alternative Detergent Builders – Final Report. For the EU Environment Directorate. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

[83] Glennie E B, Littlejohn C, Gendebien A, Hayes A, Palfrey R, Sivil D, Wright K (2002): Phosphates and Alternative Detergent Builders – Final Report. For the EU Environment Directorate. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

France

In January 2000, the 'Taxe Généralesur les Activités Polluantes (TGAP)' was introduced in France to tax various activities that were seen as polluting (including laundry detergents). One of the core objectives of the TGAP was to reduce polluting activities through improved application of the polluter pays principle.[84] During the consultation, an industry association indicated the TGAP encourages companies to substitute/remove phosphates from detergent products because products that contain a greater amount of phosphate are taxed more heavily than those that contain less phosphate. However, it was noted that even companies that produce textile washing and cleaning products that do not contain any phosphates are still required to pay the tax (albeit at a lower rate than companies that produce products containing phosphates).

An assessment of the TGAP by Köhler in 2001 showed that the tax has been reasonably effective in terms of reducing the amount of phosphate in detergents without imposing a large additional cost on the consumer. However, Köhler also notes that the tax will not achieve its environmental aim in terms of reducing cyanobacterial blooms and algae in surface waters. The TGAP taxes the use of STPP in laundry detergents, but STPP is a small part of the phosphate load, thus this marginal additional load will only be significant in a small number of cases (e.g. in catchments that are dominated by wastewater impacts). Hence, in catchments where surface waters are predominantly impacted by wastewater, the tax on STPP in detergents is likely to contribute to a reduction in surface water phosphate concentrations. However, the effect will be much less in catchments dominated by impacts from other phosphate sources (e.g. agriculture).[85, 86]

Italy

In the case of Italy, Decree nr. 801 (of the 30th December 1981) set a limit of 5% on the content of phosphorus in household laundry detergents and required a statement of phosphorus content on the product packaging. Law nr. 413 became effective as of the 1st January 1989 and further restricted the content of phosphorus in detergents (with the exception of dishwasher detergents) to 1%. This law effectively banned the use of STPP in consumer laundry detergents.[87] Thus, the restriction on the use of phosphates and other phosphorus compounds will have had limited impact on manufacturers of consumer laundry detergents and the environment in Italy. However, as indicated during discussions with an industry association, the introduction of the restriction on the use of phosphates in dishwasher detergents has required manufacturers to reformulate their products to meet the requirements of the Detergents Regulation.

[84] Köhler J (2001): Detergent phosphates and detergent ecotaxes: a policy assessment. For the Centre Européen d'Etudes des Polyphosphates (CEEP). Available at: http://infohouse.p2ric.org/ref/08/07826.pdf

[85] Köhler J (2001): Detergent phosphates and detergent ecotaxes: a policy assessment. For the Centre Européen d'Etudes des Polyphosphates (CEEP). Available at: http://infohouse.p2ric.org/ref/08/07826.pdf

[86] Glennie EB et al. (2002): Phosphates and alternative detergent builders – final report for DG Environment of the European Commission. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

[87] Glennie E B, Littlejohn C, Gendebien A, Hayes A, Palfrey R, Sivil D, Wright K (2002): Phosphates and Alternative Detergent Builders – Final Report. For the EU Environment Directorate. Available at: http://ec.europa.eu/environment/water/pollution/phosphates/pdf/phosphates.pdf

Poland

Discussions with an industry association indicated that, in the case of consumer laundry detergents, national limits for phosphorus/phosphate content were in place in Poland before the introduction of the Detergents Regulation, although these were less stringent compared to those outlined in the Regulation.

Sweden

Discussions with an environmental NGO and Member State authority indicated that a ban on the use of phosphates in consumer laundry detergents was introduced in March 2008. This was followed by a ban on the use of phosphates in consumer automatic dishwasher detergents in July 2011.[88, 89]

A2.4.6 The influence of the Detergents Regulation on phosphorus loads

Phosphorus content of detergents

During the OPC, organisations were asked whether consumer laundry detergent products and CADD on the market today contain less phosphates/phosphorus compounds than they did in the past as a direct result of the Detergents Regulation and its amendments. Of the 41 organisations that responded to this question, **most (35 respondents, 85%) agreed that consumer laundry detergent products contain less phosphate/phosphorus compounds than they did in the past as a result of the Detergents Regulation** (Figure A2-14). **Most organisations (35 out of 41, 85%) also agreed that CADD contain less phosphate/phosphorus compounds than they did in the past as a direct result of the Detergents Regulation**. Industry representatives (companies and associations) and national authorities both indicated that consumer laundry detergents and CADD contain less phosphorus as a direct result of Regulation (EU) No 259/2012 coming into force. Nevertheless, one consumer organisation remarked that it was aware of some non-compliant products that were available on the market three months after the deadline for limiting phosphorus in CADD (i.e. 1 January 2017). The organisation indicated that the Regulation must be closely checked and enforced by national authorities, particularly when updates come into force.

[88] European Commission (2015): Report from the Commission on the European Parliament and the Council - Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 21 March 2004 on detergents, concerning the use of phosphorus in consumer automatic dishwasher detergents. Available at: http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-229-EN-F1-1.PDF

[89] KemI (2010): Nationell reglering av fosfor i tvättmedel och maskindiskmedel för enskilt bruk. Förutsättningar och konsekvenser. Available at: http://www.kemi.se/global/rapporter/2010/rapport-4-10.pdf?_t_id=1B2M2Y8AsgTpgAmY7PhCfg%3d%3d&_t_q=fosfat&_t_tags=language%3asv%2csiteid%3a007c9c4c-b88f-48f7-bbdc-5e78eb262090&_t_ip=172.17.0.79&_t_hit.id=KemI_Web_Models_Media_SiteMediaData/_feb62106-18f9-4275-a29d-52f9dcb86e9f&_t_hit.pos=3

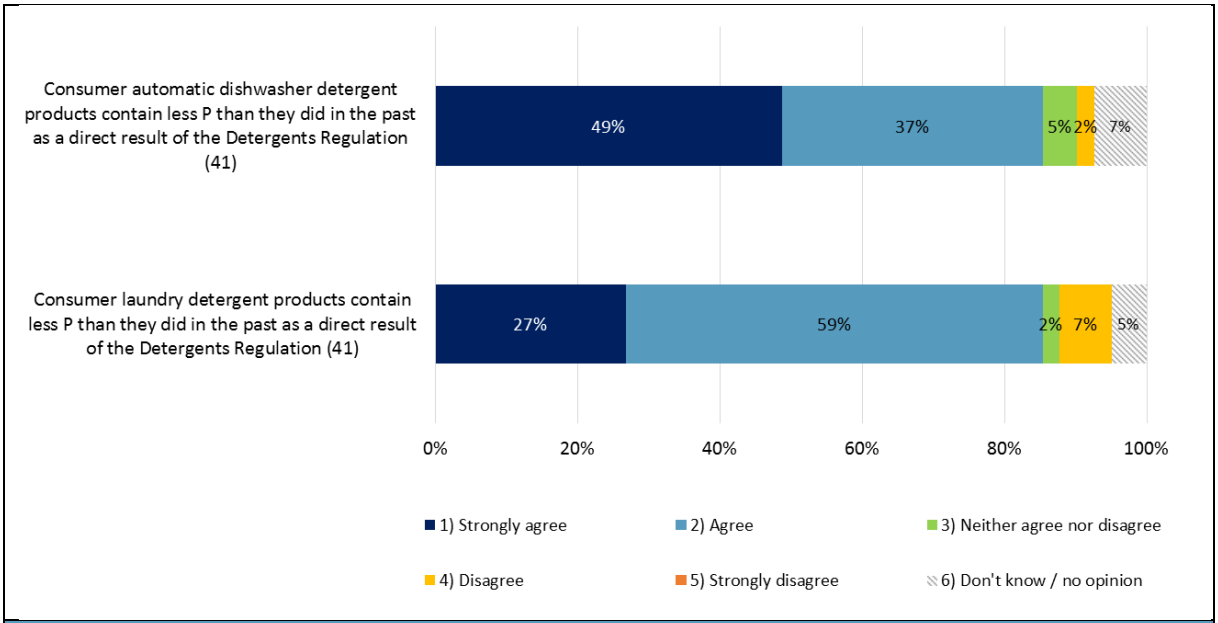

Figure A2-14: To what extent do you agree that consumer laundry detergent products and consumer automatic dishwasher detergent products on the market today contain less phosphates and phosphorus containing compounds than they did in the past as a direct result of the Detergents Regulation and its amendments? Responses to the OPC – Organisations. *(n=41)*

During the OPC, detergent manufacturers were asked whether they had reformulated some (or all) of their detergent products to reduce the total phosphorus/phosphate content. As presented in Figure A2-15, six respondents (50%) indicated that they had reformulated some (or all) of their consumer laundry detergent products, while one respondent (17%) indicated that they had not. Three respondents (50%) indicated that they had reformulated some (or all) of their CADD products to reduce the phosphorus/phosphate content, while one respondent (17%) indicated that they had not.

Interestingly, a large proportion of the manufacturers that responded indicated that they had also reformulated their other consumer detergent products (33% of respondents) and industrial and institutional detergent products (17% of respondents) to reduce the total phosphorus content, even though the Detergents Regulation does not specifically regulate the phosphorus content of these product groups (Figure A2-15). There are a few potential reasons why this may be the case: 1) MS have implemented requirements that go beyond those of the Detergents Regulation; 2) companies have voluntarily reduced the phosphorus content of these product groups, 3) companies misunderstood the question.

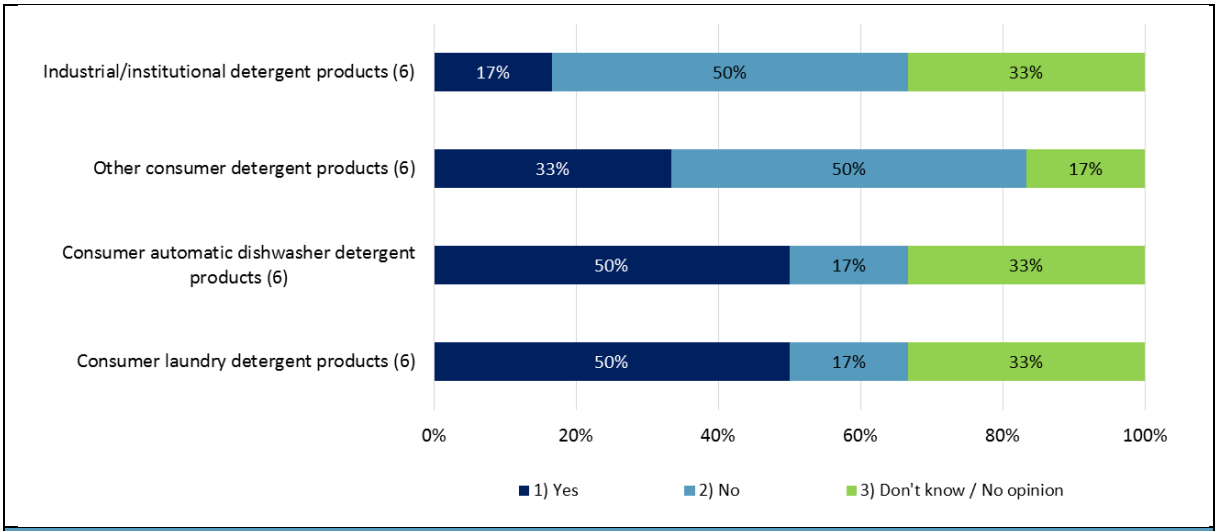

Figure A2-15: If you are a detergents manufacturer, have you reformulated some (or all) of your detergent products to reduce the total phosphorus/phosphate content? Responses to the OPC – Organisations. *(n=6)*

Detergent manufacturers that indicated that they have reformulated some (or all) of their detergent products to reduce the total phosphorus/phosphate content were asked about the drivers for such changes (see Figure A2-16). All three of the detergent manufacturers that responded to this question indicated that they had reformulated their detergent products to reduce the total phosphorous/phosphate content as a direct result of the Detergents Regulation and its amendments. Two respondents (67%) indicated that they reformulated some or all of their detergent products due to national legislation. The three manufacturers also indicated that they reformulated some or all of their detergent products to reduce the total phosphorous/phosphate content due to other reasons. One manufacturer indicated that they reformulated their detergent products in order to meet ecolabel criteria.

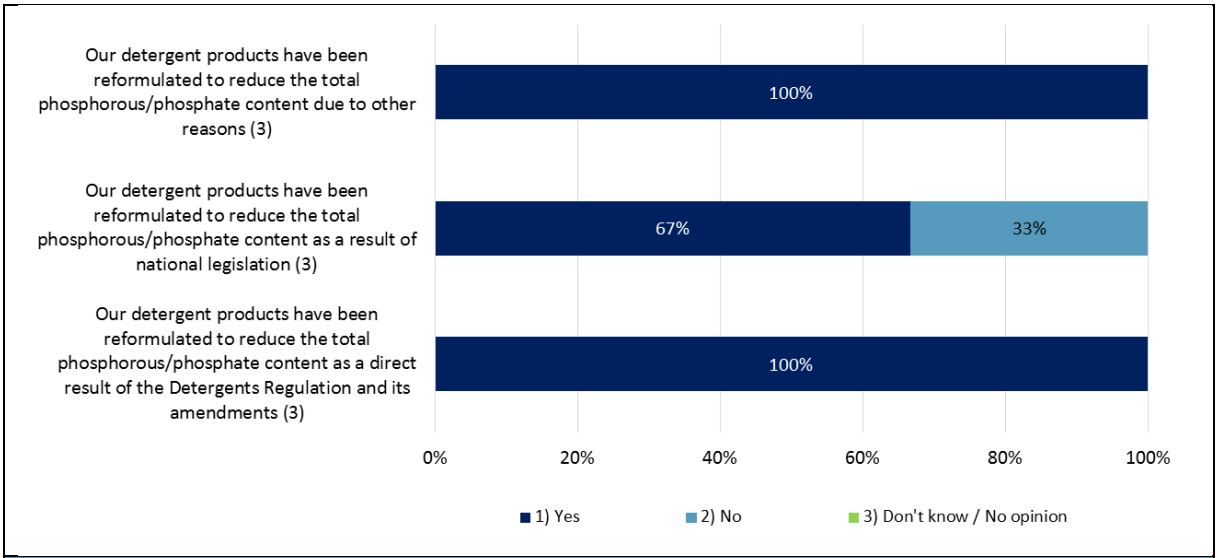

Figure A2-16: If you are a detergents manufacturer and have reformulated some (or all) of your detergent products to reduce the total phosphorus/phosphate content, please indicate whether this was due to the Detergents Regulation and its amendments, national legislation, or other reasons. Responses to the OPC – Organisations. *(n=3)*

Detergent manufacturers or formulators classified as SMEs were also asked whether they had reformulated some (or all) of their detergent formulations to reduce the total phosphorous/phosphate content as a direct result of the Detergents Regulation and its amendments (with the results presented in Figure A2-17).

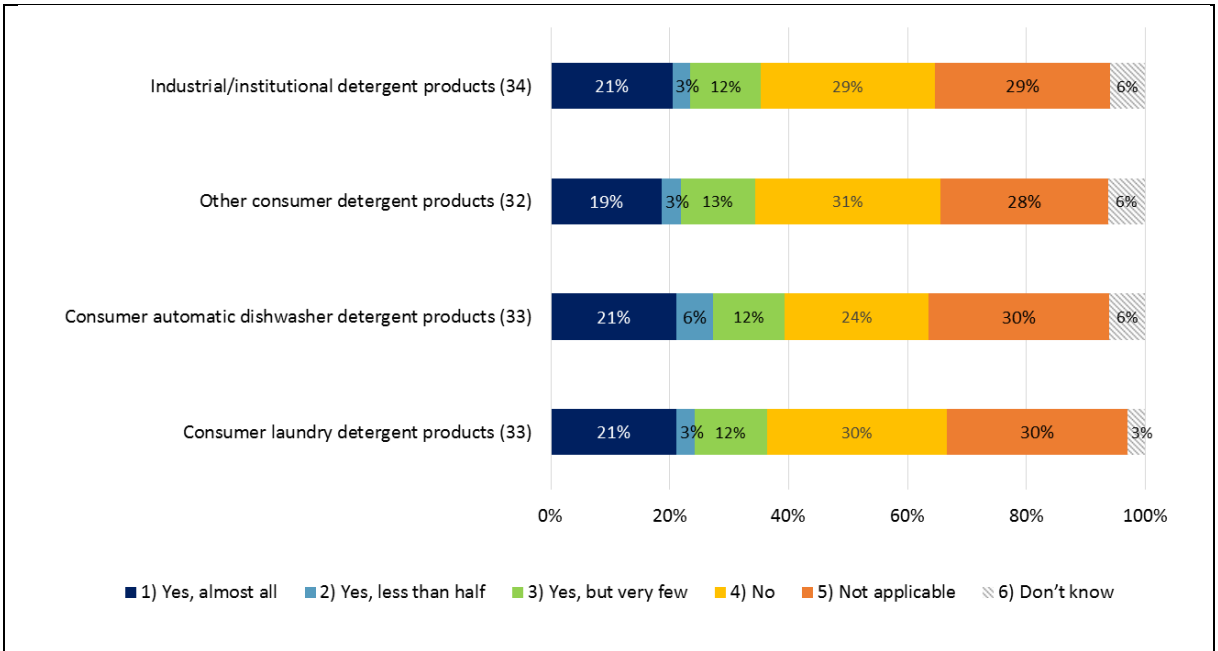

Figure A2-17: Did you have to reformulate some (or all) of your detergent formulations to reduce the total phosphorus/phosphate content as a direct result of the Detergents Regulation and its amendments? Responses to the SME survey. *(n=32 to 34)*

The outcome is similar across the different detergent product types. In all cases, just over a third of respondents indicated that they reformulated at least some of their detergent products to reduce the

total phosphorus/phosphate content, with approximately a fifth indicating that they have reformulated almost all of their product formulations.

During the consultation, AISE and a number of its members indicated that in 2009 there were 11 EU countries that had measures in place to restrict the use of phosphorus in consumer laundry detergents. In the case of CADD, only a limited number of MS (four) had phosphorus/phosphate restrictions in place before the introduction of Regulation (ECU) No 259/2012. Hence, at the EU level the main driver for restricting the use of phosphorus/phosphate in detergents was the Detergents Regulation; particularly in the case of CADD. It was also noted that national voluntary actions to reduce phosphorus/phosphate levels in detergents were already in place in some countries (such as Germany and the Netherlands) at the time of adoption of the Detergents Regulation.

Stakeholders explained that in the professional market, detergents have been reformulated to meet national restrictions. It was also noted that some products have been reformulated to meet company policies and/or responsible care programs. One manufacturer indicated that it had voluntarily moved away from phosphate containing laundry detergents and CADD ahead of EU and national legislation. The company indicated that its portfolio of automatic dishwasher tablets was phosphate-free five years before the Detergents Regulation deadline. Therefore, this indicates that while the Detergents Regulation has been an important driver for reducing the use of phosphorus/phosphate in consumer laundry and automatic dishwasher detergents (as well as harmonising the requirements across the EU), the detergents sector had already undertaken steps to reduce the use of phosphorus/phosphate in detergents (through national legislation and voluntary actions) prior to the introduction of the Detergents Regulation.

A non-governmental organisation indicated that the national restrictions on the use of phosphorus/phosphate in detergents in different countries as well as voluntary agreements (such as ecolabelling) paved the way for the restrictions in the Detergents Regulation.

AISE has estimated that, across the EU, about 70% of laundry detergent formulations and 5% of CADD were already phosphorus-free as a result of voluntary actions and national restrictions by 2012. This means that about 30% of laundry detergent formulations and 95% of CADD were reformulated as a result of Regulation (EU) No 259/2012. AISE has noted that this is equivalent to a reduction of about 55,000 tonnes of phosphorus per year.

Detergent phosphorus in wastewater

There are a number of factors that make it difficult to link the restrictions introduced in Regulation (EU) No 259/2012 (on the use of phosphates and other phosphorus compounds in consumer laundry detergents and CADD) to a reduction in the phosphorus content of wastewater and the concentration of phosphorus in rivers and lakes. The main ones being as follows:

- Firstly, **it is still too soon to see the impacts**. The phosphorus/phosphate restrictions introduced by Regulation (EU) No 259/2012 have only come into force very recently (from the 30th June 2013 for consumer laundry detergents and 1st January 2017 for CADD). Thus, as noted by one MS authority, the full effects of the restriction (especially for CADD) may not be observed for several years.
- Secondly, as outlined fully in Section A2.4.4, **some MS had already introduced restrictions or voluntary agreements on the use of phosphates in detergents before the 2012 amendment came into force**. For example, as indicated in Section A2.4.4., a ban on the use of phosphates in consumer laundry detergents was introduced in Sweden in March 2008, which was subsequently followed by a ban on the use of phosphates in CADD in July 2011. A study was undertaken by Eriksson and Lagerkvist in 2015 to investigate the impact of these bans on the

phosphorus levels in household wastewater from the neighbourhood of Skarpnäck in South Stockholm. The study measured the content of wastewater for the period 1995-1999 and compared this with data from the period 2010-2013. Since the introduction of the bans, the concentration of phosphorus in the wastewater from this neighbourhood decreased by 55%.[90] During the consultation, a European water representative similarly noted that, in Belgium, a ban on the use of phosphates in household laundry detergents was introduced in 2003 and that this effectively halved the level of phosphate in wastewater entering wastewater treatment plants.

- In addition, detergent manufacturers would have been aware for many years that restrictions on the use of phosphates in detergents were likely to be introduced. Consequently, stakeholders noted that many moved to phosphate-free detergents or products containing small amounts of phosphate well before the Detergents Regulation (and its amendments) came into force.
- Thirdly, other legislation (such as the Urban Waste Water Treatment Directive, the Industrial Emissions Directive and the Water Framework Directive) will have influenced actions taken by industry and Member State authorities in terms of reducing emissions of phosphates to the environment. In particular, the increase in tertiary treatment at wastewater treatment plants and the subsequent removal of phosphorus will have made a significant contribution to reducing phosphorus emissions to rivers and lakes.
- Fourthly, the contribution of detergents to crude sewage phosphorus content and phosphorus concentrations in rivers and lakes was quite small even before the restrictions were introduced (with household waste and the agricultural sector typically the main contributors of phosphates to the environment). Hence, activities undertaken to reduce phosphorus emissions from other sources could also have a potentially significant impact on the levels observed in wastewater and the aquatic environment.

Given the above factors, determining the impact of Regulation (EU) No 259/2012 on phosphorus concentrations in wastewater, on phosphorus loads in rivers/lakes and on environmental impacts is extremely difficult.

Nevertheless, in the UK, the Department for the Environment, Food and Rural Affairs (Defra) undertook an impact assessment in 2009 (i.e. before Regulation (EU) No 259/2012) to investigate the possibility of limiting the use of phosphates in consumer laundry detergents.[91] This estimated that domestic laundry cleaning detergents and dishwasher detergents contribute to 7.5% and 9% of domestic crude sewage phosphate loadings respectively in England and Wales. The assessment also estimated that around 3,000 tonnes of phosphorus is used per year in domestic laundry cleaning detergents, with 1,356 tonnes of this being discharged into the environment on an annual basis. This is equivalent to 4% of the soluble reactive phosphorus and 3% of the total phosphorus discharged to the waters of England and Wales. Thus, restricting the use of phosphates in domestic laundry cleaning detergents is likely to have contributed (albeit to a small extent) to achieving the targets set under the Water Framework Directive. The economic benefits of this contribution could be considerable given that, in the UK, a significant proportion of the Water Framework Directive benefits (estimated as £0.65

[90] Eriksson M & Lagerkvist R (2015): Hushållsspillvatten från Skarpnäck - en sammanställning 1995-2013. Stockholm Vatten. Available at: http://www.stockholmvattenochavfall.se/globalassets/pdf1/rapporter/avlopp/paverkan-av-industri-och-samhalle/15sv468_hushallsspillvatten-fran-skarpnack-en-sammanstallning-fran-1995-2013.pdf

[91] Legislation.gov.uk (2010): Explanatory Memorandum to the Detergents Regulation 2010. Available at: http://www.legislation.gov.uk/uksi/2010/740/pdfs/uksiem_20100740_en.pdf

to £1.7 billion per year) are likely to be dependent upon the reduction in the amount of phosphorus in freshwaters.

During the consultation, a MS authority and a European water representative both indicated that a reduction in the use of phosphorus/phosphates in consumer detergents can also have positive implications for wastewater treatment plants. It was noted that a reduced need to precipitate chemicals in wastewater treatment plants results in reduced operating costs. In addition, the lowering of phosphorus content of wastewater results in improved purification and a higher efficiency in the biological treatment process. However, neither the MS authority nor the European water representative were able to provide associated cost information.

Detergent phosphorus in the environment

Data on the amount of phosphorus in the EU's rivers and lakes are available from the European Environment Agency, as shown in Figures A2-18 and A2-19 overleaf. The data covers the period from 2000 to 2012 but, unfortunately, does not cover the period from 2013 onwards, i.e. after Regulation (EU) No 259/2012 came into force. This data show that, in general, there has been a decreasing trend in orthophosphate levels in the majority of MS. Discussions with an environmental NGO indicated that there has been a decreasing trend since the 1990s which is (in part) due to the increased construction and use of wastewater treatment plants, as well as restrictions introduced (at the national level and subsequently the EU level via the Detergents Regulation) on the content of phosphates and other phosphorus compounds in consumer laundry and dishwashing detergents.

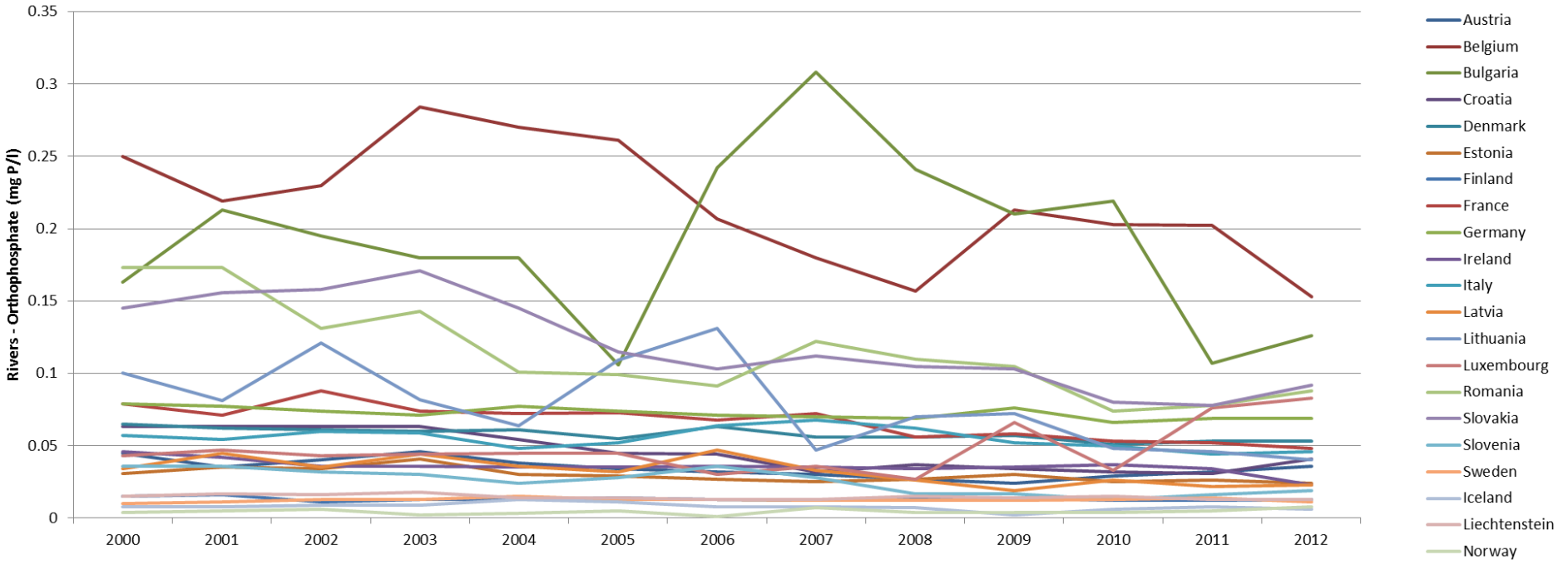

Figure A2-18: Rivers – orthophosphate (mg P/l)

Source: European Environment Agency (2013)[92]

Data not available for Cyprus, Czech Republic, Greece, Hungary, Malta, Netherlands, Poland, Portugal, Spain, United Kingdom

[92] European Environment Agency (2013): Nutrients in freshwater, data available at: http://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater/nutrients-in-freshwater-assessment-published-6

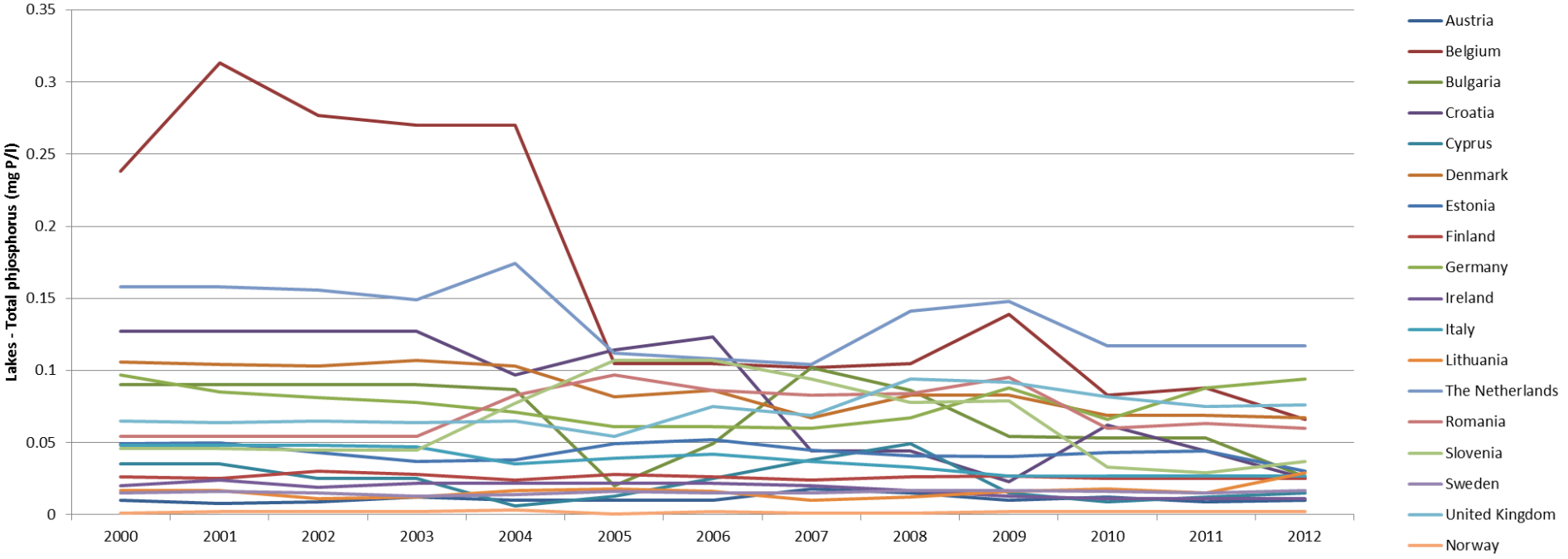

Figure A2-19: **Lakes – total phosphorus (mg P/l)**

Source: European Environment Agency (2013)[93]

Data not available for Czech Republic, France, Greece, Hungary, Latvia, Luxembourg, Malta, Poland, Portugal, Slovakia, Spain, Iceland and Liechtenstein

[93] European Environment Agency (2013): Nutrients in freshwater, data available at: http://www.eea.europa.eu/data-and-maps/indicators/nutrients-in-freshwater/nutrients-in-freshwater-assessment-published-6

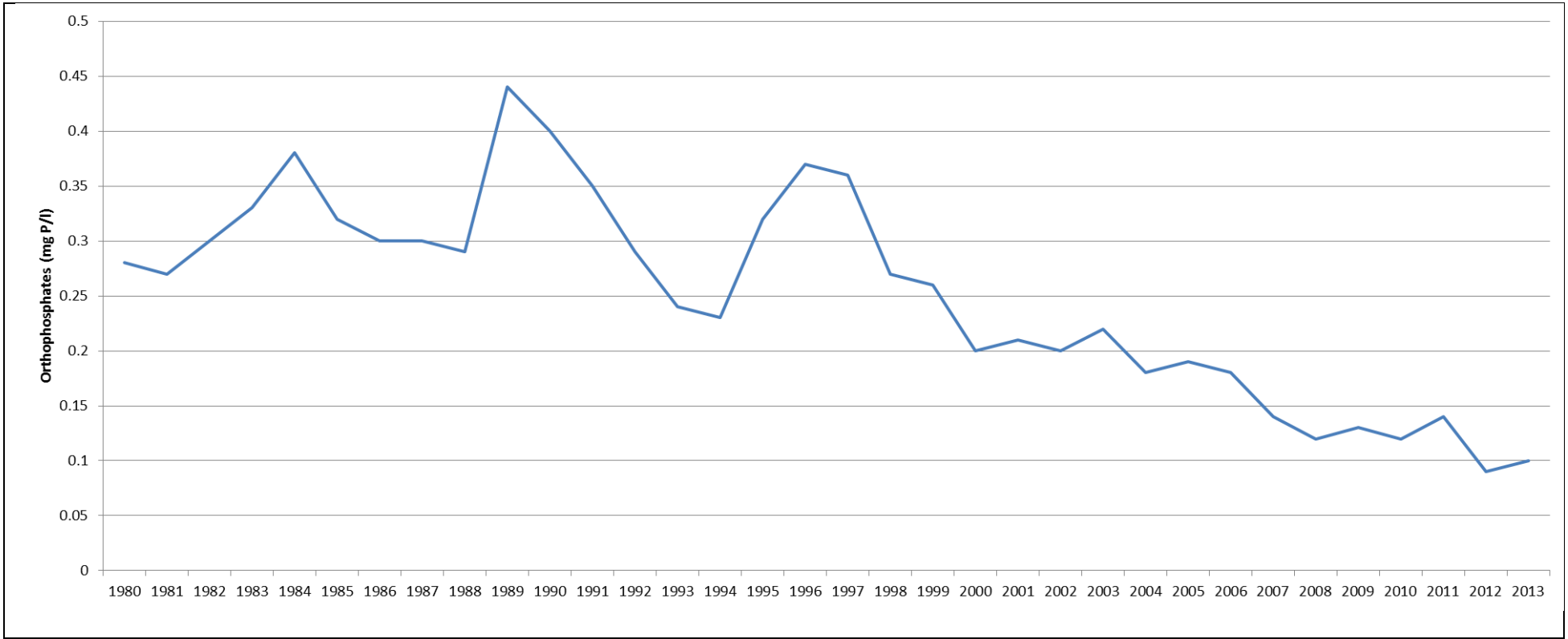

Figure A2-20: Annual average concentrations of orthophosphates in rivers in Great Britain between 1980 and 2013 (mg P/l)

Source: GOV.UK (2014)[94]

[94] GOV.UK (2014): ENV-16 Harmonised Monitoring Scheme datasets. Available at: https://www.gov.uk/government/statistical-data-sets/env-16-harmonised-monitoring-scheme-datasets

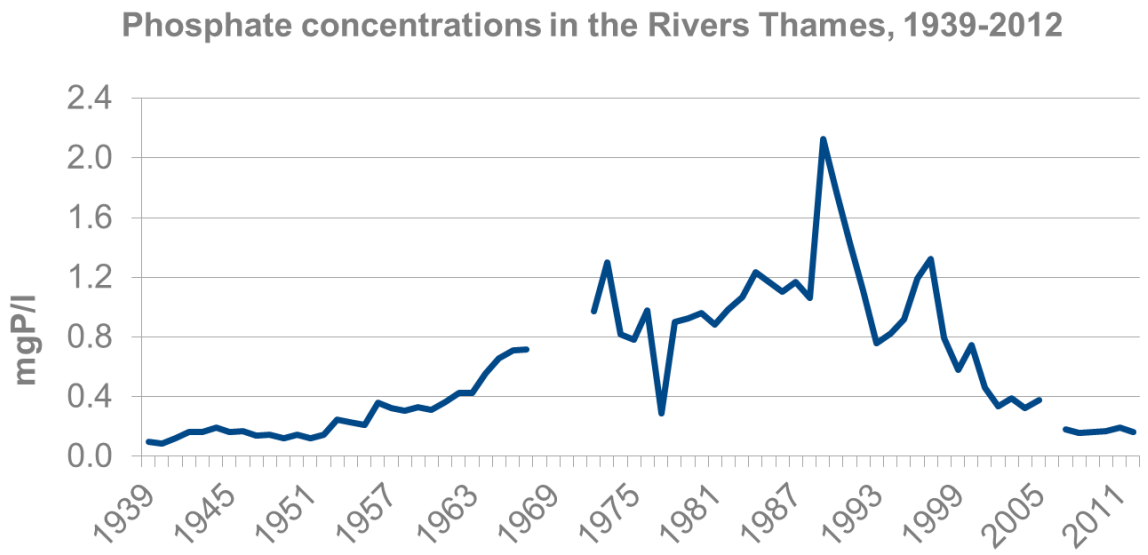

Figure A2-21: Phosphate concentrations in the UK River Thames between 1939 and 2012 (mg P/l)

Source: Pers. Comm. with Member State authority

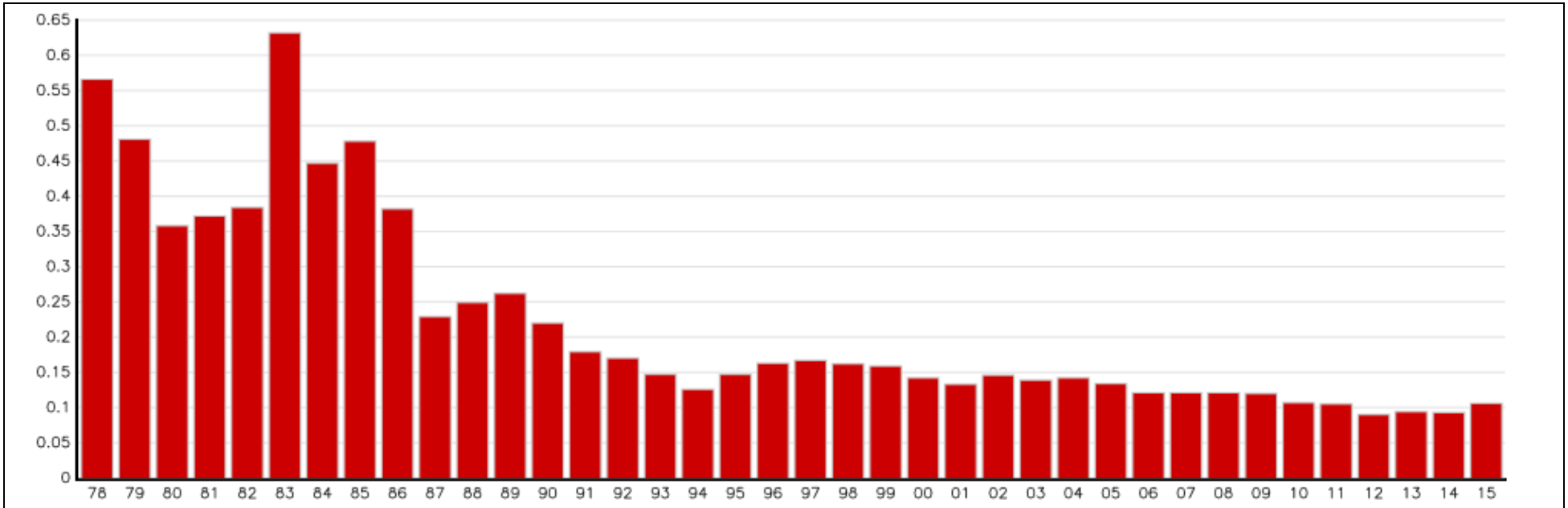

Figure A2-22: Total phosphorus concentration in the River Rhine at Bimmen between 1978 and 2015 (mg P/l)

Source: ICPR (2015)[95]

[95] ICPR (2015): Total Phosphorus Concentrations in the River Rhine at Bimmen. International Commission for the Protection of the Rhine. Available at: http://iksr.bafg.de/iksr/Ij_grafik.asp?S=3&ME=Bimm&KG=P%20G

Figure A2-20 above provides the annual average concentrations of orthophosphates in rivers in the UK between 1980 and 2013. It shows that phosphate levels in UK rivers were decreasing even before the implementation of Regulation (EU) No 259/2012.

Figure A2-21 provides the phosphate concentrations specifically in the UK River Thames between 1939 and 2012. This indicates that phosphate levels increased significantly from the 1950s to the 1980s with detergents considered to be an important contributory factor. Phosphate-based detergents were first introduced in 1947 and, by 1957, contributed around 10% to 20% of the phosphate content of raw sewage. This increased to around 45% to 60% in the 1970s and 1980s. From 1990, the contribution of phosphates from detergents to sewage steadily reduced, falling to around 16% in 2008 and 8% in 2012. During the consultation, a MS authority from the UK indicated that the contribution of phosphates from detergents to sewage is now minimal. The stakeholder explained that the decrease in phosphate concentrations since 1990 is mainly due to phosphorus removal at sewage treatment plants, but a reduction in the use of phosphates in detergents and reduced fertiliser use and livestock numbers will also have been contributory factors.

Figure A2-23 indicates that there has been a significant national reduction in phosphate loading to rivers from water company sewage treatment works in England and Wales. However, as indicated during a discussion with a UK authority, this decrease cannot be ascribed in any major way to the Detergents Regulation (although it may be a contributory factor) as a result of the widespread introduction of phosphate removal at sewage treatment works and reduced losses from agriculture. In addition, the authority suggested that the lengthy discussions and gestation period for the EU detergent phosphate restrictions will have contributed to the reduction in phosphates in detergents as manufacturers began reformulating products in advance.

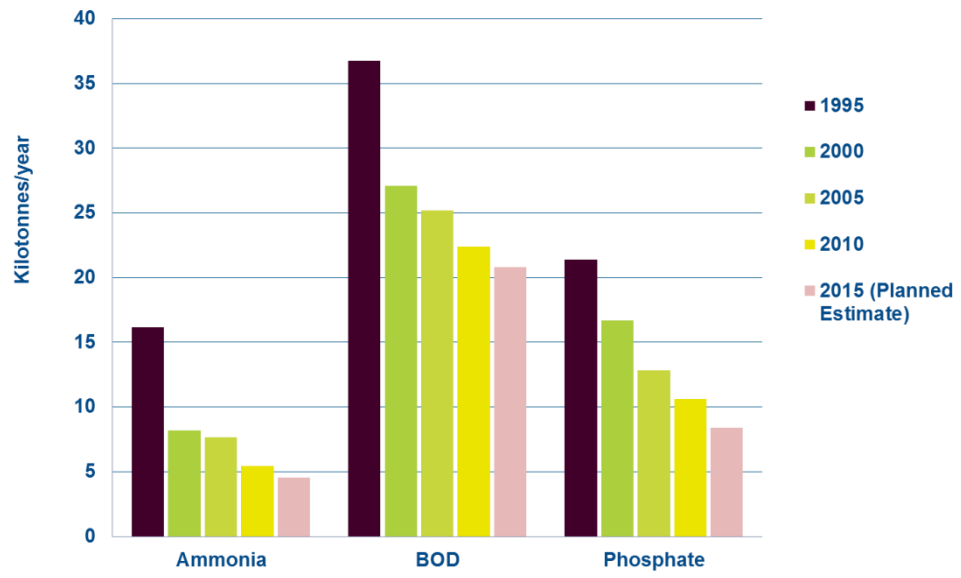

Figure A2-23: Reductions in loadings of ammonia, BOD and phosphate from water company sewage treatment works in England and Wales between 1995 and 2015 (kilotonnes/year)

Source: Pers. Comm. with Member State authority

Information provided by the International Commission for the Protection of the Rhine (ICPR) indicates that phosphate concentrations at Bimmen (between the border of Germany and the Netherlands) have decreased between 1978 and 2015 (see Figure A2-22). The largest reduction in phosphates in the River Rhine occurred during the 1970s and 1980s, which is largely the result of constructing wastewater treatment plants. Since the 1990s, there has been a more gradual decline in phosphate levels. The 2015 ICPR management plan indicated that the Nitrates Directive (91/676/EEC), the Urban Waste Water Directive (91/271/EEC) and, to a lesser degree, the IPPC Directive (2010/75/EC) have been important instruments for the further reduction and avoidance of nutrient emissions into water bodies. In addition, the implementation of other political programmes, such as the Rhine Action Programme and the investments associated with its implementation as well as OSPAR recommendations are considered to have been of great importance. The plan indicates that these programmes contributed to a distinct reduction of phosphorus and nitrogen concentrations in the entire Rhine catchment over the previous two decades. No specific mention is made of the Detergents Regulation, which suggests that while it may have contributed to reducing phosphate loads within the Rhine it is not a key driver for the observed declining trend.

Effectiveness of the phosphate restrictions for protecting the environment

During the consultation, stakeholders were asked whether the Detergents Regulation and its amendments have been successful in protecting the environment. A company indicated that the reduction in the use of phosphates and other phosphorus compounds in consumer laundry and automatic dishwasher detergents will not have had a significant impact on the aquatic environment because other sources of phosphorus (e.g. from agriculture and human waste) cancel out any savings.

An industry association indicated that the introduction of phosphorus/phosphate limits for consumer laundry detergents and CADD will not have resulted in major environmental benefits as, in their country, wastewater treatment plants remove most of the phosphorus from wastewater. Another industry association similarly explained that the original driver for restricting the use of phosphates and other phosphorus compounds in detergents (under the Detergents Regulation) was to reduce the environmental impact (i.e. associated with eutrophication) resulting from emissions to the aquatic environment. However, in their opinion, this argumentation is no longer applicable, as each wastewater treatment plant in the EU must have appropriate phosphorus removal mechanisms, leading to appropriate management of residual phosphates in wastewater and thus controlling environmental impacts.

However, an environmental NGO indicated that the introduction of the Detergents Regulation has been important for protecting the environment, especially in countries where there were previously no restrictions on phosphorus/phosphate use in detergents. An industry association and two MS authorities also held a similar view, indicating that the requirement to limit the content of phosphates in consumer laundry detergents and CADD is likely to have provided environmental benefits for those countries that have poorer wastewater treatment facilities (and are not able to remove phosphates as efficiently as other countries). It was also noted that in some countries (such as Sweden and Norway) there are a number of isolated dwellings that are not connected to municipal wastewater treatment plants. These properties may therefore discharge their wastewater directly into the environment. Thus, the restriction on the content of phosphates and other phosphorus compounds in consumer laundry detergents and CADD is likely to have benefited the local environment in these situations.

A MS authority indicated that they support the restriction on the use of phosphates and other phosphorus compounds in consumer laundry and automatic dishwasher detergents as this is a direct measure against the eutrophication of surface waters and is therefore closely related to the objectives of the Water Framework Directive (of achieving good ecological status of waterbodies). The authority

noted that the current phosphate level in surface waters does not correspond to the phosphate usage in detergents because there are several overlaying processes involved (e.g. the construction of new wastewater treatment plants, improvements in phosphate elimination, re-suspension of phosphates from sediments etc.).

It is clear from the information obtained during the literature and stakeholder consultation that a number of EU countries had adopted national rules to restrict the use of phosphorus/phosphates in consumer detergents before the introduction of the Detergents Regulation (and specifically the 2012 amendment). In many cases, these national restrictions only applied to consumer laundry detergents, thus the introduction of the restriction to limit the phosphate-content of CADD under the Detergents Regulation is likely to have resulted in some environmental benefits. Industry have also undertaken voluntary measures to reduce the phosphorus/phosphate content of detergents prior to the introduction of the Regulation. In addition, other legislation (such as the Urban Waste Water Treatment Directive, the Industrial Emissions Directive and the Water Framework Directive) will have had a positive impact in terms of requiring MS and industry to undertake actions that have directly or indirectly reduced the amount of phosphate entering the environment. The increase in the use of tertiary wastewater treatment is a particularly important factor in reducing emissions of phosphorus from wastewater treatment plants (with a much greater proportion of the population of Northern and Central Europe connected to tertiary treatment than in Southern and Eastern Europe). Hence, the environmental benefits from the introduction of the Detergents Regulation and the restriction on the use of phosphates and other phosphorus compounds in consumer laundry and automatic dishwasher detergents will vary in different countries.

Thus, the greatest benefits of the phosphates restrictions introduced by the Detergents Regulation are likely to accrue in countries where:

- There was previously a significant use of phosphate-containing detergents;
- There is a low provision of tertiary wastewater treatment;
- There was previously no national legislation restricting the use of phosphates in detergents;
- There are a large number of households not connected to wastewater treatment infrastructure; and
- There are problems of eutrophication in surface waters.

Table A2-13, taken from the European Commission report to the Council and the European Parliament concerning the use of phosphates in detergents, provides an overview of the potential benefits of moving to phosphate-free detergents and indicates that these vary on a country by country basis. The score provided relates to the EU countries that would benefit most from a move to phosphate-free detergents based on the annual per capita consumption of detergent phosphate, the percentage of the population provided with tertiary water treatment and the extent of concern regarding eutrophication.

Table A2-13: Benefits of moving to phosphate-free detergents		
Score	**Description**	**Member States**
>10	Maximum benefits	Czech Republic, Latvia, Lithuania, Poland, Portugal, Slovakia, Spain
5-10	Some benefits	Belgium, Cyprus, Estonia, France, Greece, Hungary, Luxembourg, UK
1-5	Few benefits	Austria, Denmark, Finland, Germany, Ireland, Italy, Netherlands, Slovenia, Sweden
0	No benefits	Malta
Source: European Commission (2007): Report from the Commission to the Council and the European Parliament, Pursuant to Article 16 of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, concerning the use of phosphates, COM(2007) 234 final. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52007DC0234&qid=1502956737958&from=EN		

A2.4.7 Further restrictions on the use of phosphorus/phosphates in detergents

During the consultation, it was suggested (by both NGOs and MS authorities) that the environmental benefits of the Detergents Regulation would have been greater if the phosphorus/phosphate restrictions had been applied to industrial and institutional products as well as consumer products. It was noted, for example, that there is a false assumption that all professional users are connected to wastewater treatment. A European water representative indicated that in some cases industry may treat effluent before it enters the wastewater treatment system. It was also noted that restricting the use of phosphorus/phosphates in industrial detergents could benefit the water sector (in terms of reducing treatment costs) if industrial waste enters wastewater treatment plants.

At the workshop, one MS authority indicated that the use of phosphorus in industrial and institutional laundry and dishwashing detergents should be revisited and that the phosphorus concentration limits provided in Annex VIa of the Regulation should potentially be extended to cover these detergent types. The authority indicated that for laundry detergents designed for industrial and institutional use, suitable alternatives to phosphorus/phosphate are now available; however, for industrial/institutional dishwasher detergents, phosphorus is still required. Two consumer organisations similarly indicated that evidence from ecolabels demonstrates that it would be possible for phosphorus/phosphate to be further limited in at least some other categories of detergent.

A company indicated that introducing restrictions on the use of phosphorus and other phosphate compounds in detergents for the professional sector would result in increased costs (as alternative raw materials to replace phosphorus are more expensive), which could result in higher product costs for downstream users. An industry association also noted that the European Commission considered introducing phosphate limits for professional products as well as for consumer products. However, after further investigation, it was concluded that professional detergent products were not a significant source of phosphates. Therefore, the Commission did not introduce phosphate limits for professional products within the Detergents Regulation.

AISE and a number of its members indicated that some industrial and institutional detergents have been reformulated to meet national restrictions. In addition, some products have been reformulated to meet company policies and/or responsible care programs. This therefore suggests that work is ongoing by the detergents sector to continue to improve the environmental performance of detergents, including reducing the content of phosphorus/phosphate in industrial and institutional products.

A2.4.8 Influence of the Detergents Regulation on other third countries

During the consultation, stakeholders were asked about the extent to which harmonising the rules on the phosphorous content of laundry and dishwasher detergent helped to secure agreement with third countries on reducing phosphate emissions to waterbodies (such as the Baltic Sea and Danube River) that span both EU and non-EU territories. Although many stakeholders were not able to provide any information, an EU representative indicated that the Water Framework Directive has made a much larger contribution to helping secure agreement with third countries on reducing phosphorus/phosphate emissions to waterbodies, and that the Detergents Regulation can be considered secondary to this.

However, a MS authority indicated that the emission of phosphorus/phosphates and the associated eutrophication issues are an international problem. In their view, there are spill-over benefits resulting from the introduction of the Detergents Regulation as it can help to encourage other countries to reduce phosphorus/phosphate emissions (e.g. Norway has also adopted the Detergents Regulation). An environmental NGO noted that having EU legislation to limit the use of phosphates in detergents is beneficial in terms of bringing other non-EU countries on board and encouraging them to act.

A2.5 Dosing information

A2.5.1 Main provisions of the Detergents Regulation

In order to prevent the overuse of detergents by consumers, and thereby reduce the total amount of detergent and surfactant entering the environment, the Detergents Regulation requires certain information to be given to consumers on the correct dosage of detergent to use. As prescribed in Article 11(4) and Annex VII B, the packaging of detergents sold to the general public and intended to be used as laundry detergents must bear information on:

- The recommended quantities and/or dosage instructions; and
- The number of standard washing machine loads (for heavy duty detergents).

The capacity of any measuring cup provided must also be indicated in millilitres or grams, and markings must be provided to indicate the dose of detergent appropriate for a standard washing machine load for soft, medium and hard water hardness levels.

From 2012, the packaging of consumer automatic dishwasher detergents (to be sold to the general public) must also bear specific information on the standard dosage (according to Regulation (EU) No 259/2012).

A standard washing machine load is defined as 4.5kg dry fabric for heavy-duty detergents and 2.5kg dry fabric for light-duty detergents, in line with the definitions of Commission Decision 1999/476/EC of 10 June 1999 establishing the Ecological Criteria for the award of the Community Eco-label to Laundry Detergents.

A2.5.2 Compliance

Figure A2-24 (taken from the CLEEN Report) shows the proportion of inspected consumer laundry detergent products that were found to be compliant with some of the requirements on dosage information under the Detergent Regulation. Although 90% of the inspected consumer laundry

detergent products were labelled with information on recommended quantities and/or dosage instructions, less than 70% provided information on standard washing machine loads (in accordance with Annex VII B).

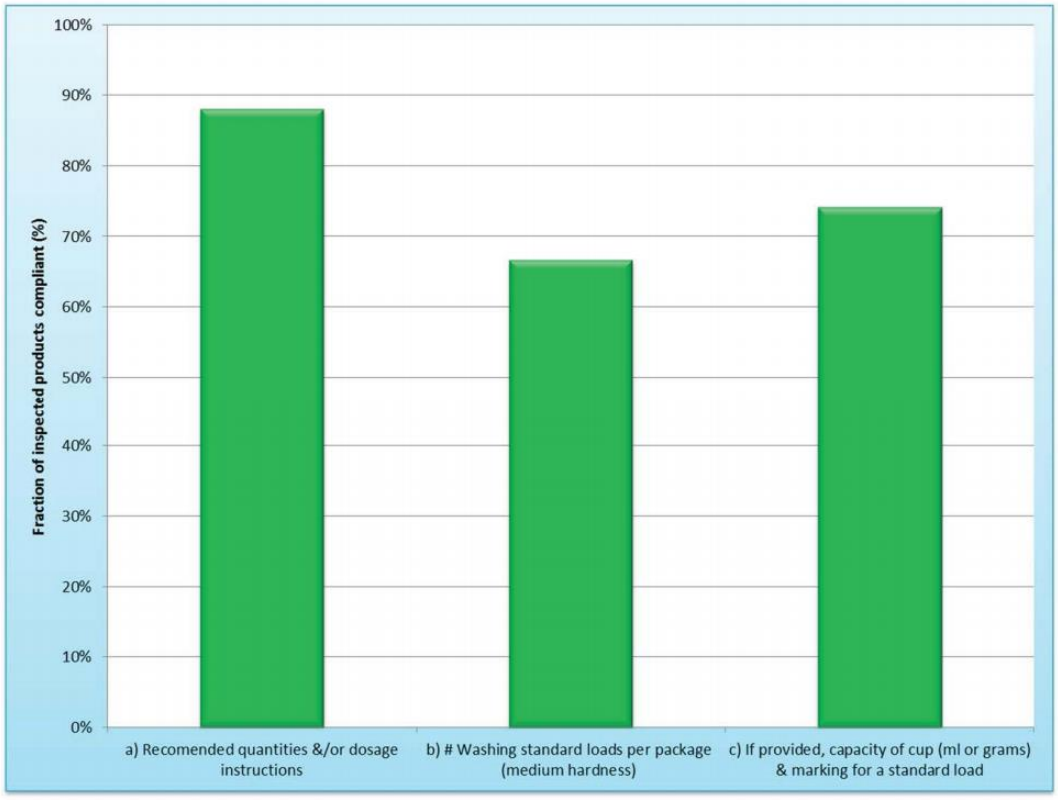

Figure A2-24: Compliance rate of the specific requirements for laundry detergents sold to the general public (according to Annex VII B of the Detergents Regulation)

Source: CLEEN (2014)[96]

A2.5.3 Consumer behaviour

Citizens that participated in the OPC were asked whether they measure the amount of laundry detergent they are using to ensure the correct dose is being used. As shown in Figure A2-25, the vast majority indicated that they do at least sometimes measure the amount of detergent they should use. Indeed, 43% of citizens that responded to the survey (26 respondents) indicated that they always measure the amount of laundry detergent that they use, 30% (18 respondents) indicated they measure the amount of laundry detergent most of the time and 18% (11 respondents) indicated that they measure the amount some of the time. Only 3% (2 respondents) of citizens indicated that they never measure the amount of laundry detergent they should use to ensure the correct dose is used for the washing machine load.

There are, however, limitations to bear in mind when interpreting this result:

- Firstly: It is not possible to determine from a survey alone whether consumers are actually measuring the correct dose. This could only be judged by testing (in person) whether the

[96] CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu

consumer measures the correct amount of detergent to use, bearing in mind factors such as the size of the load, water hardness, level of soiling, and so on.

- Secondly: The respondents to our survey do not form a representative sample of consumers. Respondents to an OPC are self-selecting and a proportion of the citizens that has completed our questionnaire are likely to be linked to the detergents sector (having also been sent a link to the questionnaire for organisations).

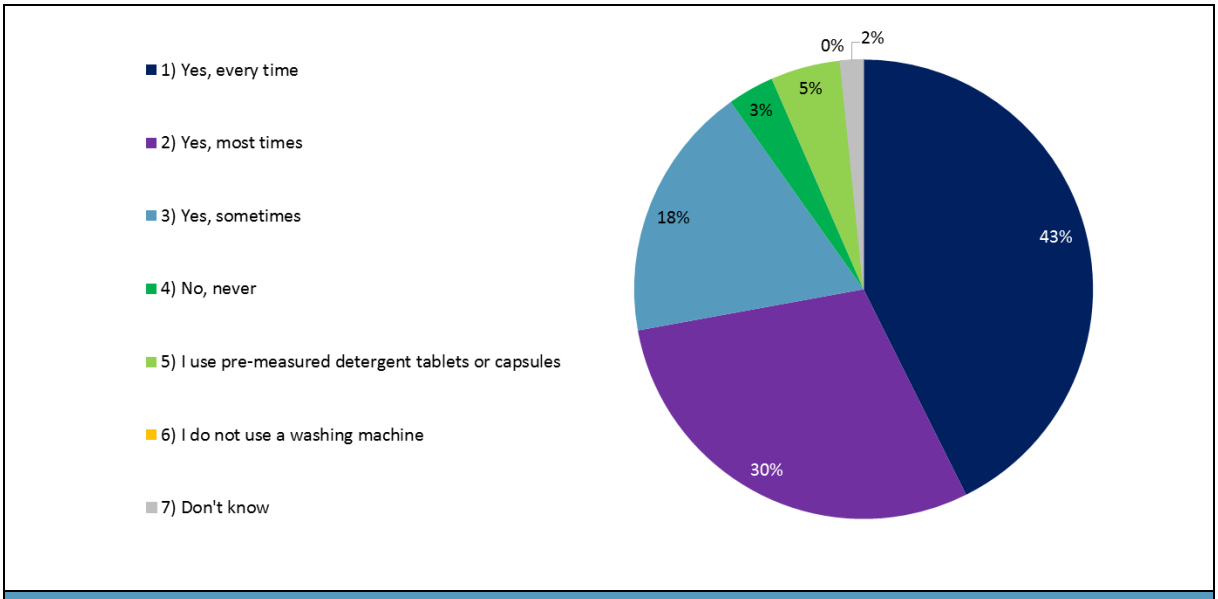

Figure A2-25: When doing laundry, do you measure the amount of laundry detergent you use to check you are using the correct dose for the washing machine load? OPC – Response from citizens. *(n = 61)*

During the OPC, citizens were also asked whether it is clear from detergent packaging (and any measuring cup provided with the product) how much laundry detergent should be used during washing. As indicated in Figure A2-26, most citizens (70%) believe it is clear from the detergent packaging how much laundry detergent should be used. In contrast, 13 citizens (21%) were of the view that detergent packaging is not clear in providing information on how much laundry detergent should be used.

Citizens were also asked whether, when using an automatic dishwashing machine, they measure the amount of detergent they are using to ensure they use the correct dose. Of the 61 responses received, 14 respondents (23%) indicated that they always measure the amount of dishwasher detergent, 23 (38%) indicated that they measure at least some of the time, and four respondents (7%) measure the amount most of the time. Five respondents (8%) indicated that they only measure the amount of dishwasher detergent used some of the time, and three respondents (5%) said that they never measure the quantity of dishwasher detergent used. It is also clear from the responses received that a large proportion of respondents (39%) use pre-measured detergent tablets or capsules (as presented in Figure A2-27).

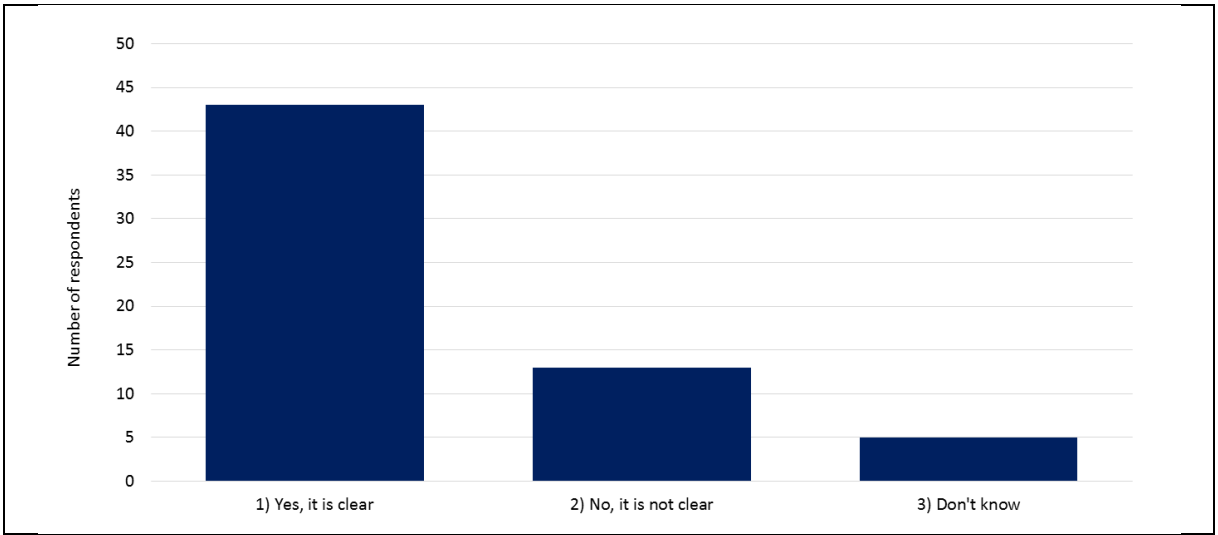

Figure A2-26: Is it clear from the detergent packaging (and any measuring cup provided with the product) how much laundry detergent you should use? OPC – Response from citizens. *(n = 61)*

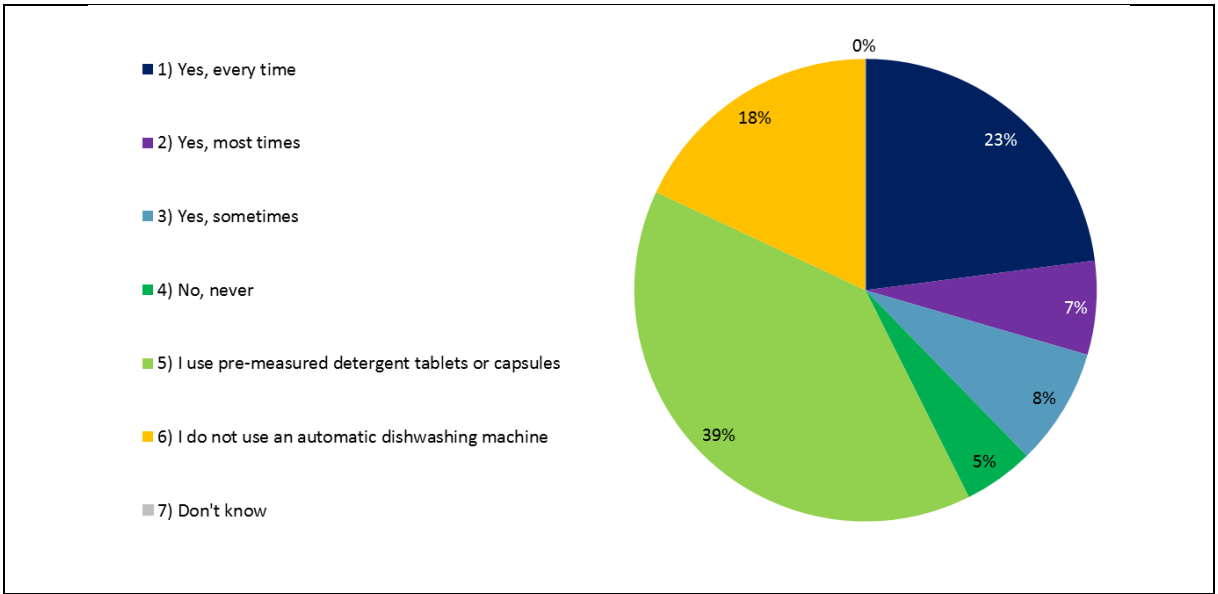

Figure A2-27: When using an automatic dishwashing machine, do you measure the amount of detergent you use to check you are using the correct dose? OPC – Response from citizens. *(n = 61)*

Citizens were asked whether it is clear from the detergent packaging (and any measuring cup provided with the product) how much dishwasher detergent should be used. Of the 61 citizens responding, 40 (66%) indicated that it is clear from the packaging the quantity of dishwasher detergent that should be used, whereas 10 respondents (16%) said that it is not clear how much detergent should be used.

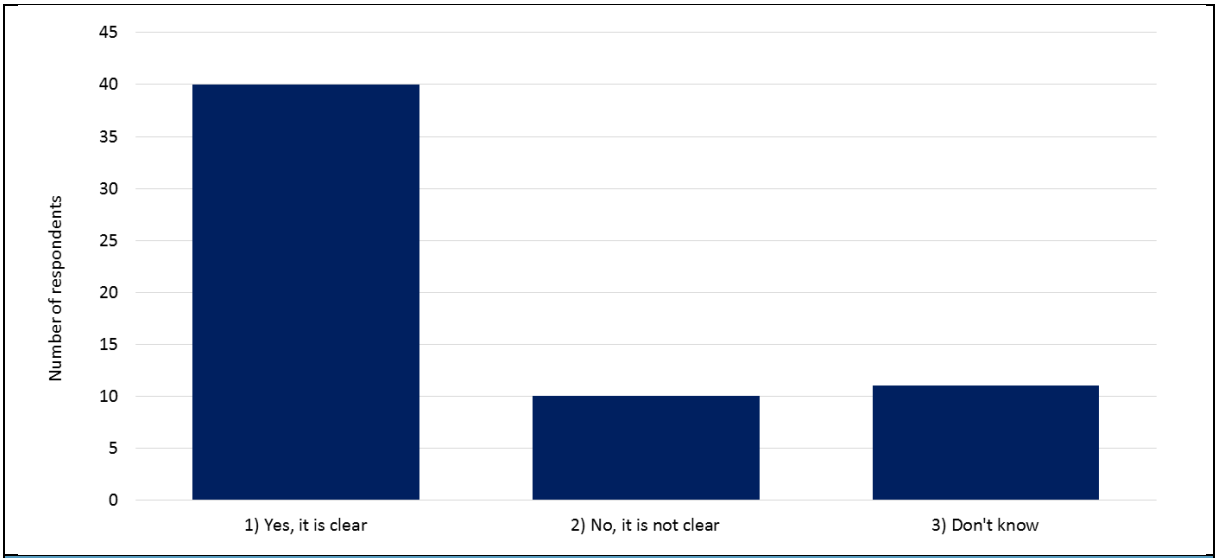

Figure A2-28: Is it clear from the detergent packaging (and any measuring cup provided with the product) how much dishwasher detergent you should use? OPC – Response from citizens. *(n = 61)*

A2.5.4 Discussion points

The consultation activities undertaken as part of this study indicate that the dosing requirements of the Detergents Regulation are generally perceived as an effective means of reducing the over consumption of detergents, albeit with some limitations. The issues identified are discussed in the following sections.

Labelling of dosage information in the case of hand-washing laundry detergents

As previously discussed, Annex VII B of the Detergents Regulation outlines the provisions for labelling dosage information on the packaging of consumer laundry detergents and CADD. The provisions for the dosage labelling of consumer laundry detergents relate to detergents used in washing machines. They do not explicitly mention the dosage information that must be included on the packaging of hand-washing laundry detergents.

It was noted during the meeting of the Detergents Working Group on the 8th November 2012[97] that questions have been raised about how these labelling rules should be implemented for hand-washing laundry detergents. AISE indicated that, while the market is likely to be small, detergents exclusively used for hand-washing of laundry are available on the market and their use is not recommended in washing machines due to excessive foaming which would damage the appliances. AISE also noted that hand-washing laundry detergents available on the market do contain dosage information on the labels with this usually expressed as dosage per litre of water. It was suggested that providing dosage instructions by standard washing machine load (which would be required if the provisions on Annex VII B were strictly applied) would be counterproductive given that detergents specifically used for hand-washing are not recommended for use in washing machines.

[97] European Commission (2012): Draft Summary Record of the Meeting of the Detergents Working Group 8 November 2012. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1321

During the working group meeting, it was agreed that the dosage information for hand-washing laundry detergents should remain as it has done since the introduction of the Detergents Regulation (i.e. usually grams or ml of the hand-washing detergent per litre of water). It was concluded at the meeting that a new question and answer would be drafted and included in the revised FAQ document accompanying the Detergents Regulation.

The Guidelines on the implementation of the Detergents Regulation developed by AISE[98] provide further clarification on the labelling of dosage information on the packaging of hand-washing laundry detergents. This indicates that *"dosage information for hand-wash should be indicated as amount (in g or ml) per 5 or per 10 litres of water"*. The guidance also indicates that for detergents intended for hand-wash only, it is advised to include the following indication on the label: *"Not for use in washing machines"*.

During the consultation, no specific issues were raised regarding the labelling of dosage information for hand-washing detergents. This suggests that the clarification provided in the AISE guidance document to the Detergents Regulation is adequate and suitably clarifies the situation.

Changing washing machine loads over time

During the OPC, stakeholders noted that average washing machine capacities have increased over the course of the last decade and that this affects the correct dose of detergent that is needed per wash. On the European market, the average washing machine load capacity has increased from 4.8kg in 1997 to 5.4kg in 2005.[99] By 2010, washing machines with a capacity of between 5.5kg and 7kg were the most important market segment in Austria, Belgium, Germany, Spain, France, the UK, Italy, the Netherlands, Portugal and Sweden.[100] In 2012, the top selling appliances were those with a capacity of 7kg.[101] Data purchased from market research company GfK and reported by Michel A (2014) shows that there is a strong trend towards larger capacity washing machines over the period 2004 to 2014 (see Figure A2-29).

Despite this trend, many studies have shown that consumers do not use the full capacity of their washing machine for every wash. In Germany, for example, the average washing machine load has

[98] AISE (2013): Guidelines on the implementation of the Detergents Regulation, International Association for Soaps, Detergents and Maintenance Products. Available at: https://www.aise.eu/documents/document/aise_detergentsguidelines2013.pdf

[99] CECED (2005), in Lasic E & Stamminger R (2015): Larger washing machines and smaller household size – how can they fit together? Simulation of a sustainable use of washing machines. Tenside Surfactant Detergents, 52, available at: https://www.landtechnik.uni-bonn.de/forschung/.../lasic-virtual-houshold

[100] Bertoldi P et al. (2012), in Lasic E & Stamminger R (2015): Larger washing machines and smaller household size – how can they fit together? Simulation of a sustainable use of washing machines. Tenside Surfactant Detergents, 52, available at: https://www.landtechnik.uni-bonn.de/forschung/.../lasic-virtual-houshold

[101] OECD (2011): in Lasic E & Stamminger R (2015): Larger washing machines and smaller household size – how can they fit together? Simulation of a sustainable use of washing machines. Tenside Surfactant Detergents, 52, available at: https://www.landtechnik.uni-bonn.de/forschung/.../lasic-virtual-houshold

been calculated as 3.2kg per washing cycle.[102] A study by Kruschwitz et al (2014)[103] has shown that for an average washing machine capacity of 5kg, consumers consider an average load of 3.7kg as a full load.

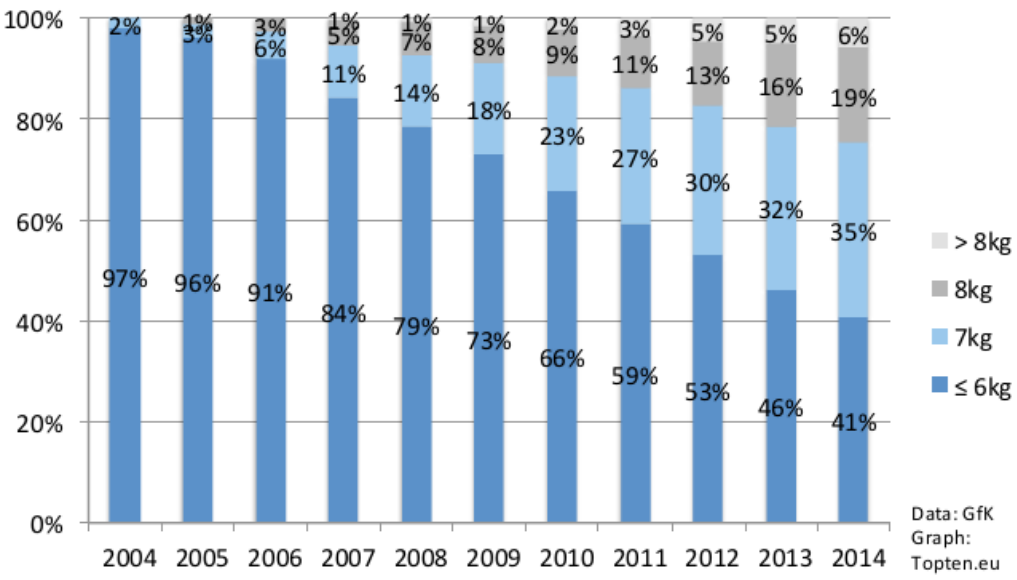

Figure A2-29: EU Capacities (kg) of washing machine sales
Source: Michel A et al (2014)[104]

In October-November 2014, AISE commissioned a pan-European survey on consumers' washing habits in 23 countries, covering Western, Southern and Eastern Europe and Scandinavia.[105] Approximately 200 respondents took part per country (4,741 in total). The results showed that:

- 84% of washing machine loads are full (versus 87% in 2011 and 85% in 2008); and
- 66% of people measure the amount of detergent they should use in the washing machine (versus 72% in 2011 and 79% in 2008).

A company providing input as part of the targeted consultation indicated that the standard load size of washing machines has increased over the years; however, despite washing machines becoming

[102] Berkholz P et al (2007), in Lasic E & Stamminger R (2015): Larger washing machines and smaller household size – how can they fit together? Simulation of a sustainable use of washing machines. Tenside Surfactant Detergents, 52, available at: https://www.landtechnik.uni-bonn.de/forschung/.../lasic-virtual-houshold

[103] Kruschwitz A et al (2014): Consumer laundry practices in Germany. International Journal of Consumer Studies, 265-277, available at: http://onlinelibrary.wiley.com/wol1/doi/10.1111/ijcs.12091/full

[104] Michel A et al (2014): Monitoring the washing machines market in Europe, available at: http://www.topten.eu/uploads/File/EEDAL15_Anette_Michel_Monitoring_washing_machines_market.pdf

[105] AISE (2015): Pan-European consumer survey on sustainability and washing habits [Summary of findings, 2014], available at: https://www.aise.eu/our-activities/information-to-end-users/consumer-activities.aspx

larger, consumers do not typically fill them to capacity each time they are used. This therefore results in inefficiencies in terms of using more detergent than necessary.

A citizen responding to the OPC indicated that the current market offers washing machines/dishwashers of different capacities and noted that the detergents they purchase do not take account of this. Thus, they have experienced situations whereby pre-dosed capsules do not necessarily correspond to the quantity of linen to be washed or the volume of their dishwasher. Another stakeholder similarly remarked that the use of tablets has drawbacks as the dose cannot be adjusted for areas of differing water hardness.

Consumer understanding of dosage information

During the consultation, one MS authority noted that:

> *"The dosing instructions are an important aspect of the user information. However, it is unclear how the user is interpreting the classification "lightly-soiled", "normally-soiled" and "heavily soiled". We believe that "Lightly-soiled"-fabrics are the "normal" case today, potentially resulting in a general overdosing.*
>
> *Moreover, the dosing measures provided by industry are often not viable, because the marks are often barely visible or do not correspond to the specifications on the packaging."*

During the consultation, there was an interesting contradiction between the views of citizens and the consumer organisations that represent them. During the OPC, citizens mostly indicated that they read, understand and follow the dosing information provided on detergent packaging. In direct contrast, several consumer organisations indicated that most consumers do not read, understand or correctly follow the instructions; in addition, two consumer organisations noted that the dosing provisions should be revised so that the information is easier for consumers to understand. There are a variety of reasons why this contradiction in views might have arisen – e.g. consumers might not realise that they are not correctly following the instructions (e.g. they may not realise that they live in a soft water area, or know what is meant by "lightly soiled"), or consumer organisations may have underestimated the willingness and ability of consumers to understand and follow the instructions.

Citizens' responses to the OPC highlight consumers' confusion surrounding the correct dose of detergents. One citizen stated that the information regarding how much detergent to be used should be made more prominent on product labels. Another citizen indicated that, in the case of dishwashing tablets, it is not always clear if one tablet is sufficient and how the dose varies depending on the soiling level of clothes. Whilst over-dosing is thought to be common, clearly there are some citizens that use less than the suggested dose; for example, one citizen indicated that half a dishwasher tablet is enough for cleaning a full load. Another citizen indicated that they typically use less laundry detergent than recommended and still achieve good washing results. Citizens iterated their confusion about the impact water hardness can have on the efficiency of detergents and how the dose should be adjusted to take this into account. One positive example provided on this issue is of an eco-conscious detergent brand in France that includes a comprehensive table and a map outlining the low- and high-water hardness areas in the country. It was indicated that this has been helpful for consumers.

During the consultation, an industry association further noted that the dosage information is still relevant and makes it clear how much detergent the consumer should use. It also enables consumers to compare the dosage required for different products.

A company indicated that, for consumer laundry detergents, the concept of 'number of washes per pack' in the Detergents Regulation is clear and has helped manufacturers change to more concentrated detergents. It was noted that the use of concentrated products has provided significant environmental savings in packaging and transport over the last 20 years.

Other suggestions made by stakeholders during the consultation include:

- Requiring a measuring cup or device to be included with detergent products;
- Increasing awareness with regard to the impacts of using too much detergent on the washing machine (i.e. the build-up of residue) and on the environment;
- Including the following text, or equivalent, on the primary packaging of all detergent products bearing the ecolabel to encourage the consumers to use the correct dose: *''all detergents have an effect on the environment. For maximum effectiveness always use the correct dose and, the lowest recommended temperature. This will minimize both energy and water consumption and reduce water pollution''.*

An industry association representing the detergents industry confirmed that there is potentially room for improvement in terms of the standards applicable to measuring devices and on graphical elements to communicate water hardness.

One stakeholder also remarked that the dosing instructions in the Detergent Regulation (Annex VII B) cross-reference to outdated criteria of the ecolabel and should therefore be updated.

Auto-dosing machines and detergent packaging

During the consultation, an EU official indicated that they are aware of washing machines that automatically measure the dose of detergent required and suggested that this is a very promising development given the importance of ensuring the correct dose of detergent.

It has been reported that, in the case of commercial washing machines, self-dosing (automatic-dosing) has been available for some time and is in full commercial use. The primary reason is to control costs, preventing operators from using too much detergent, or indeed too little, as the machines are often operated by unskilled labour.[106] New self-dosing washing machines have also been developed for use in a domestic setting, although they are not (yet) widely used. However, a number of issues have been raised in terms of their ability to deliver the correct detergent dose. For example, the machine will only dose according to the programme that has been selected, and the user will need to ensure that they have selected the correct programme. If the wrong programme is selected on the machine, then the machine will wash the laundry with the incorrect dose. Furthermore, UK Whitegoods has recently (in 2017) reported that all the domestic self-dosing systems that they have seen (e.g. Miele, Indesit and Bosch) can only use liquid laundry detergents.

Some detergent manufacturers have also started producing detergent packaging with an auto-dosing function. For instance, Henkel's Purex PowerShot detergent (which launched in early 2015)[107], which is reminiscent of the packing for Mr. Clean Liquid Muscle produced by Procter & Gamble. It is worth

[106] UK Whitegoods (2017): Washing machine buying guides: Is auto dosing worth paying for? Article available at: http://www.ukwhitegoods.co.uk/help/buying-advice/washing-machine/4247-is-auto-dosing-worth-paying-for

[107] Henkel (2017): Sustainability at laundry and home care. Article available at: http://sustainabilityreport2014.henkel.com/laundry-home-care/sustainability-at-laundry-home-care

noting, however, that these auto-dosing devices would not account for factors such as water hardness, the size of the washing machine load, or the level of soiling. Premeasured detergent capsules/pods suffer from a similar limitation.

Dosing information may become increasingly less relevant for consumers if they are purchasing machines and detergents in packaging that already measure the correct dose (although dosing information would remain relevant in the case of hand/manual washing). There is, however, a need to ensure that companies manufacturing such machines/packages understand and produce machines/packages that provides the correct dose in different areas/situations.

A2.6 Concerns about the ingredients used in detergents

During the consultation, various stakeholders expressed their concern at some of the ingredients used in detergent products and how these detergents (and ingredients) are regulated. Further information is provided in the following sections.

A2.6.1 Enzymes

The use of enzymes in detergents is commonplace in developed countries, with over half of all detergents available containing enzymes. The detergent industry is the largest single market for enzymes with this sector accounting for 25-30% of total sales.[108] Enzymes enable lower temperatures to be used during the washing process, resulting in potential energy savings.[109, 110] In addition enzymes have helped improve whiteness performance of detergents when cleaning textiles through cleaving off damaged cotton fibres, improved stain removal performance (particularly at lower temperatures and assisted in the development of compacted and concentrated detergent products (as enzymes are weight-efficient thus only a small amount is required)).[111]

Information received from stakeholders during the consultation indicates that enzymes have been increasingly used to reduce the use of corrosive substances in detergents. Also, enzymes can be added to detergents in small amounts to help improve the performance of substances that are being used to replace phosphorus/phosphates in detergents.

However, concerns have been raised about the environmental performance of enzymes use in detergents. For example, during the consultation, one industry association noted that citric acid, methyglycinediacetate and some enzymes are being used as alternatives to phosphorus/phosphate in detergent products, but that the environmental effects of these alternatives are only known for citric

[108] Chaplin M. (2014): Enzyme Technology – the use of enzymes in detergents. London South Bank University. Available at: http://www1.lsbu.ac.uk/water/enztech/detergent.html

[109] Chaplin M. (2014): Enzyme Technology – the use of enzymes in detergents. London South Bank University. Available at: http://www1.lsbu.ac.uk/water/enztech/detergent.html

[110] AMFEP (2017): Technical – Laundry detergents. Association of Manufacturers and Formulators of Enzyme Products. Available at: http://www.amfep.org/content/technical

[111] AMFEP (2017): Detergents – benefits of enzymes. Association of Manufacturers and Formulators of Enzyme Products. Available at: http://www.amfep.org/content/detergents-benefits-enzymes

acid. This suggests that the environmental consequences of enzymes and the other alternative substance are not known, which the association highlighted as a potential issue.

Information provided on the Association of Manufacturers and Formulators of Enzyme Products (AMFEP) website indicates that enzymes are readily biodegradable and, apart from aquatic toxicity resulting from the catalytic effect (protein biodegradation) inherent to protease enzymes, there is no hazardous effect from enzymes in the environment. AMFEP notes that given that enzymes are inactivated and biodegraded during the transport to and treatment in wastewater treatment plants and municipal sewage treatment plants, this aquatic toxicity effect is not relevant to the environment.[112] During the consultation, one industry association similarly indicated that the use of enzymes in detergents is being promoted above the use of hazardous chemicals.

A2.6.2 Microplastics

Use of microplastics in detergents

Tiny pellets of plastic – sometimes referred to as plastic microbeads or microplastics – are reportedly being used in detergents, for example as an abrasive media or for decoration. These microplastic particles (in principle items smaller than 5mm)[113] can enter the environment after being washed down the drain and can subsequently be released into the aquatic environment with wastewater outflows. Microplastics are a particular concern because they are not completely eliminated by sewage treatment plants. During the consultation, one water sector representative indicated that wastewater plants are not designed to remove microplastics, and so there is concern that they can pass through the system and end up in the environment (although some studies, such as Magnusson & Noren (2014)[114], have shown relatively high removal efficiencies for microplastics following wastewater treatment). Repeated studies (e.g. Andrady (2011)[115] and Cole et al. (2011)[116]) have shown that microplastic particles can be ingested by marine animals, leading to physical harm to marine wildlife (such as fish and sea birds) and reproductive and/or toxic effects. In fish, for example, microplastics can lead to gut blockages, gill blockages, abrasion/tissue damage, altered behaviours, hormone disruption and inhibited growth (Horton, 2017)[117]. There is also evidence to suggest that microplastics are entering the human food chain (e.g. beer, honey, seafood, salt) and plastic microfibres have been

[112] AMFEP (2017): Environmental Safety. Association of Manufacturers and Formulators of Enzyme Products. Available at: http://www.amfep.org/content/environmental-safety

[113] Although there is no universally accepted definition of what constitutes a microplastic, the National Oceanic and Atmospheric Administration of the USA defines a microplastic as being a piece of plastic smaller than 5mm in size, and this definition is broadly accepted in the academic literature.

[114] Magnusson K & Noren F (2014): Screening of microplastic particles in and down-stream a wastewater treatment plant, available at: http://naturvardsverket.diva-portal.org/smash/record.jsf?pid=diva2%3A773505&dswid=2756

[115] Andrady AL (2011): Microplastics and the marine environment, Marine Pollution Bulletin, 62 (8) pp 1596-1605. Available at: http://www.sciencedirect.com/science/article/pii/S0025326X11003055

[116] Cole M et al. (2011): Microplastics as contaminants in the marine environment: A review, Marine Pollution Bulletin, 62 (12), pp 2588-2597. Available at: http://www.sciencedirect.com/science/article/pii/S0025326X11005133

[117] Horton A (2017): Presentation at the Royal Society of Chemistry, on "Microplastic Pollution: Everyone's problem", 16th October 2017

found in drinking water around the world (Horton, 2017)[118]. Microplastics can be absorbed and stored by tissues and cells, providing a potential pathway for the accumulation of hydrophobic organic contaminants.[119,120] Although the consequences of plastic build-up in the food chain are not yet fully known, human-health concerns are being raised as many marine animals affected are eaten by humans.

While there is very little publicly available information on the extent of microplastic ingredient use in detergent products, a 2017 review by Flora & Fauna International has found at least one floor cleaning product on the UK market that contains polyethylene.[121] A recent study in the Netherlands has also found suspected plastic ingredients in 10 out of more than 400 tested abrasive floor cleaners on the Dutch market.[122] For instance, polypropylene terephthalate was found as an ingredient in several laundry detergents on the market in the Netherlands. The European Commission has launched two dedicated studies to be executed in 2017 which will examine the origin pathways and impacts of intentionally added microplastics in products and microplastics generated during the life cycle of products.[123]

Sources of microplastics

Recent EU-funded research in the Mediterranean has indicated that more than 80% of marine litter is comprised of microplastics. It has also shown that relatively clean rivers, with thinly populated catchment areas, can transport 50 billion microplastic particles per year.[124]

Microplastics can enter and accumulate in the aquatic environment from a number of sources. Plastic microbeads are used directly in products (such as exfoliants or industrial abrasives) and can also enter

[118] Horton A (2017): Presentation at the Royal Society of Chemistry, on "Microplastic Pollution: Everyone's problem", 16th October 2017

[119] House of Commons Library (2017): Briefing Paper, Microbeads and microplastics in cosmetic and personal care products, available at: http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7510

[120] Mermaids Life+ (2016): Policy recommendations based on actions A and B (associated action B6). Mitigation of microplastics impact caused by textile washing processes.

[121] Flora & Fauna International (2017): Appendix 3: Summary of microplastic ingredient (MPI) data from UK product database. Report available at: www.fauna-flora.org/wp.../FFI-Microbeads-Guidance-Document-January-2017.pdf

[122] Verschoor et al (2016), as reported by ELUK (2017): Environment Links UK response to Defra, Scottish Government, Welsh Government and Department of Agriculture, Environment and Rural Affairs in Northern Ireland's Consultation: Proposals to ban the use of plastic microbeads in cosmetics and personal care products in the UK and call for evidence on other sources of microplastics entering the marine environment. Available at: http://www.wcl.org.uk

[123] European Commission (2017): Our Oceans, Seas and Coasts – Marine Litter. Available at: http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm

[124] European Commission (2017): Our Oceans, Seas and Coasts – Marine Litter. Available at: http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm

the environment by fragmenting from larger pieces of plastic waste (e.g. plastic bags or bottles) or can be generated during the use of products (e.g. from car tyre abrasion).[125, 126]

Plastic microfibres from synthetic textiles (such as polyester, acrylic and nylon) have also been recognised as an important source of microplastic pollution in the world's oceans and seas. Researchers have been investigating how some of the ingredients used in laundry detergent products increase or decrease the release of microfibres into the water after several washes. It has been noted that polyester, which is the main synthetic fibre used in the textile industry, is sensitive to alkaline hydrolysis, with temperature accelerating the chemical damage. However, most commercial detergents contain alkaline agents such as sodium carbonate and bicarbonate, sodium hydroxide, or sodium silicate to remove soil, oils and fats. Research suggests that the use of alkaline detergents can release on average nine times more microplastic fibres from polyamide and polyester yarns when compared to distilled water.[127] In addition to alkalinity, powder laundry detergents usually contain sodium percarbonate, a granulated bleaching agent that, in combination with alkalinity, is currently being targeted as a potential contributor to microfibre release.

The Mermaids Life+ Project[128] was undertaken to investigate the release of microplastics from the washing of textiles (including the amounts released and the impacts resulting from microplastics in the environment) and also to identify ways of mitigating the environmental impacts of microplastics released from laundry washing. Consultation with a stakeholder from the Mermaids Life+ Project has indicated that around 20 million micro-fibres can be released per item of clothing washed (which is much higher than previous estimated have suggested). The reason for this difference is that micro-fibres are very small and are therefore difficult to detect.

The Mermaids Life+ Project found that the amount of fibres released from textiles during washing depends on a number of factors, including the type of material being washed, the detergent used, and the washing conditions (i.e. it was found that washing at lower temperatures released less fibres). It was also discovered that the release of microplastic fibres from textiles changes depending on the detergent used. The use of liquid detergents was found to result in fewer fibres being released compared to detergent powders because of the reduced friction resulting from the use of liquid products. It was noted that some detergent additives are capable of reducing friction during textile washing which means that fewer microplastic fibres are removed from the item and released into the environment. The research undertaken also found that the use of fabric softeners significantly reduced the release of microplastic fibres from textiles during washing. This is because the fabric softener 'softens' the fibres making them more flexible and less likely to break. The use of softeners also reduces the friction between fibres, thus helping to reduce the amount of microplastics

[125] European Commission (2017): Our Oceans, Seas and Coasts – Marine Litter. Available at: http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/index_en.htm

[126] UK Parliament (2016): Environmental impact of microplastics inquiry. Environmental Audit Committee. Available at: https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2015/environmental-impact-of-microplastics-15-16/

[127] Coronado Robles M (2016): Plastic micro-fibres – Problem or opportunity? Available at: http://blog.euromonitor.com/2016/03/plastic-microfibres-problem-or-opportunity.html

[128] Mermaids Life+ Project (2017): Description of the project. Available at: http://life-mermaids.eu/en/about/this-project/

released.[129] However, it is recognised that there are issues with the use of fabric softeners given their environmental impacts.

The research undertaken for the Mermaids Life+ Project also looked at detergents containing microplastics. It was found that detergents in northern Europe rarely contain microplastics, with these more commonly found in detergents sold in Southern Europe. In addition, it was found that detergents used in Southern Europe contain more bleaching additives compared to those used in Northern Europe although the reason for this is unclear. It was also found that different countries wash textiles at different temperatures, which (as previously mentioned) impacts the release of microplastic fibres to the environment. Although, the study did not collect data on the quantity of microplastics used in detergents it was suggested during the discussion that the release of microplastics from detergents to the environment is small compared to the release of microplastics from man-made textiles.

During the discussions relating to the Mermaids Life+ Project, it was noted that there are a number of ways to reduce the release of microplastic fibres during the washing of textiles. These include washing at a lower temperature, using liquid (rather than powder) detergent and washing at full load. It was suggested that banning the use of microplastics in detergents could be a possibility for reducing releases to the environment from this source. It was also suggested that there is an opportunity for innovation within the detergents sector to produce detergents that limit the release of microplastic fibres from textiles during washing. This may also have benefits in terms of helping to increase the quality and life of textiles as fewer fibres are removed during washing in addition to the environmental benefits (of reducing the release of fibres to the environment). It was recognised that detergent products and cosmetic products are relatively small sources of microplastics, however, these are considered to be low hanging fruit, and thus restricting the use of microplastics in these products could be a simple gain (easy win). Innovation within the detergents sector to help reduce the release of microplastic fibres from textiles during washing could also result in significant benefits given that this is a key source of microplastics to the environment. Realistically, a combination of options will be needed to effectively reduce microplastic levels in the environment from textiles (e.g. using the appropriate detergent, using textile materials that limit fibre release, washing at lower temperatures etc.).

Actions taken to limit the use of microplastics in detergents

To protect marine life from contamination, the Netherlands, Austria, Belgium and Sweden issued a joint call (on the 3rd December 2014) to ban the use of micro-plastics in detergents and cosmetics.[130] These countries have indicated that it is of utmost importance that this initiative takes place, arguing that hundreds of tonnes of microplastics are being released onto the EU market each year. In response, the Commission has indicated that it is aware of the threats posed by microplastics to marine biodiversity, the environment and potentially human health. The Commission has indicated

[129] Mermaids Life+ (2016): Policy recommendations based on actions A and B (associated action B6). Mitigation of microplastics impact caused by textile washing processes.

[130] European Parliament (2015): Parliamentary Questions – Ban on the use of microplastics in detergents and cosmetics. Available at: http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+WQ+E-2015-000968+0+DOC+XML+V0//EN

that it is in the process of examining the effectiveness of existing efforts to reduce microplastics in cosmetics and other possible measures to address this problem.[131]

A coalition of UK environmental NGOs has also called for a UK and EU ban on all microplastic use in all down-the-drain consumer products. The coalition stated that such legislation should include[132]:

- All solid microplastic ingredients (where microplastics are defined as particles <5mm with no lower size limit);
- All product types reaching domestic, commercial or industrial drainage;
- No exemptions for 'biodegradable' plastics; and
- Deadline for implementation within two years from announcement.

During the consultation, a number of stakeholders raised concerns regarding the use of microplastics in detergents. An industry association indicated that microplastics are very rarely used in detergents with only specialised products with mild abrasive properties likely to contain these. Another industry association indicated that they are aware of microplastics being used in detergents although these are not in large-scale use. It was also noted that the impact of microplastics on animals and the environment is somewhat unknown, thus further investigation is required.

A consumer organisation indicated that detergent products do contain plastics, but noted that it is not always clear from the labelling whether these plastics are in solid or liquid form. In their view, the use of solid microplastics in detergents should be banned; however, they also suggested that further investigation should be undertaken to consider the environmental fate of other plastics used in detergents (e.g. polymers). They indicated that there is a need to determine whether (and to what extent) other (liquid) plastics can conglomerate and create solid particles further along the drainage system or in the environment. Two environmental NGOs held a similar view indicating that microplastics are an important environmental concern that needs to be thoroughly evaluated to determine their impact on the environment. They also suggested that microplastics should be banned from detergents. A consumer organisation indicated that the use of microplastics in detergents should be phased out without delay.

It is important to note that voluntary agreements are already in place to restrict the use of microplastics in detergent products. The EU Ecolabel criteria indicates that dishwasher detergents[133],

[131] European Parliament (2015): Parliamentary Questions. Available at: http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2015-000968&language=EN

[132] Hirst D, Bennett O (2017): Microbeads and microplastics in cosmetic and personal care products. House of Commons Library – Briefing Paper. Available at: http://researchbriefings.files.parliament.uk/documents/CBP-7510/CBP-7510.pdf

[133] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to dishwasher detergents. Available at: http://ec.europa.eu/environment/ecolabel/documents/detergents_for_dishwashers_annex.pdf

hard surface cleaning products[134], industrial and institutional dishwasher detergents[135], hand dishwashing detergents[136], laundry detergents[137] and industrial and institutional laundry detergents[138] shall not include microplastics (regardless of concentration).

As previously discussed, research is ongoing regarding the impacts of microplastics on the environment and the potential implications for human health. It has been reported that the Commission is currently considering three options to implement regulatory restrictions (to ban or restrict the use of microplastics): including provisions in the EU's chemicals legislation, REACH; creating an ad hoc regulation such as the 2015 Directive on single-use plastic bags; or using the EU's cosmetics legislation.[139] In relation to the latter, it should be noted that only individual substances/ingredients can be regulated under the Cosmetic Products Regulation and that the Regulation only takes into account human health concerns and not environmental concerns.

A2.6.3 Other ingredients of concern for the environment

An official of the European Commission indicated that there are substances of concern used in detergents that should be looked at and further investigated (e.g. nanomaterials, microplastics, preservatives (MIT and BIT) and microorganisms) with regard to their health and environmental impacts. It was also noted that endocrine disruptors are a significant issue and should be covered by the Detergents Regulation. Another European Commission official suggested that further investigation could be undertaken into the possibility of removing substances from detergents that are considered to be the most allergenic or sensitising rather than just including them on the product label in order to further protect human health.

A consumer organisation also highlighted a number of substances used in detergents that potentially pose environmental issues. It was noted that investigations could be undertaken into the use of brighteners and perfumes in detergents; the perfume called limonene has been classified as having a negative effect on the environment. The organisation suggested that it could be interesting to look at some of these types of ingredients that are often used in detergents in order to understand their

[134] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to hard surface cleaning products. Available at: http://ec.europa.eu/environment/ecolabel/documents/hard_surface_cleaning_products_annex.pdf

[135] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to industrial and institutional dishwasher detergents. Available at: http://ec.europa.eu/environment/ecolabel/documents/industrial_automatic_dishwashers_annex.pdf

[136] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to hand dishwashing detergents. Available at: http://ec.europa.eu/environment/ecolabel/documents/hand_detergents_annex.pdf

[137] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to laundry detergents. Available at: http://ec.europa.eu/environment/ecolabel/documents/laundry_detergents_annex.pdf

[138] European Commission (2017): EU Ecolabel Criteria – Criteria for awarding the EU Ecolabel to industrial and institutional laundry detergents. Available at: http://ec.europa.eu/environment/ecolabel/documents/industrial_laundry_detergents_annex.pdf

[139] Solletty M (2017): Commission looking at how to cut down on plastic microbeads. Politico. Available at: http://www.politico.eu/pro/commission-looking-at-how-to-cut-down-on-plastic-microbeads/

effects on the environment. The organisation also noted that colourants are frequently used in detergents and that it should be a requirement that the colourants being used have absolutely no hazardous effects on either health or environment, because these are non-essential elements in a detergent product. Another consumer association and an environmental NGO held a similar view and suggested that preservatives and colouring agents that meet the CLP criteria for classification as hazardous for the environment and health should be avoided/strictly limited in detergents.

During the consultation, an environmental NGO indicated that propellants used in detergents are contributing to climate change and therefore their use should be restricted in detergents.

Another NGO has noted that the use of polymeric materials in detergents should be further examined concerning the effects on the environment, especially the effects for the aquatic environment and sludge from wastewater treatment plants.

Reports from the International Commission for the Protection of the Rhine have shown that **odoriferous substances** (i.e. perfumes) (ICPR, 2010)[140] **and complexing agents** (ICPR, 2012)[141] used in detergents and cleaning agents are a concern for the environment and are present at high concentrations in the Rhine.

A2.6.4 Making ingredient datasheet available to environment authorities

One MS authority explained that an essential prerequisite of achieving a high level of protection of the environment (and human health) is the identification of those detergent ingredients that pose a risk to the environment. The stakeholder noted that:

> *"For this purpose, an extensive knowledge of the detergents market and on the formulations used in the products marketed is necessary. For this reason, the information on the ingredient datasheet, as stipulated in Annex VII C, should not exclusively be used by medical professionals to respond to medical emergencies, but also made available to environment authorities in order to establish more targeted water monitoring programmes, which might result in the identification of certain potentially problematic ingredients and their restricted use. Extending this idea to other product types that are also frequently discharged via wastewater effluents, like cosmetic ingredients, the Commission might consider to establish a European-wide product database that lists the ingredients of all industrial and consumer "down the drain" products."*

This position was supported by a consumer organisation at the workshop, which highlighted that a central database of ingredients used in detergents would be beneficial in terms of identifying ingredients that may be of concern from an environmental or human health perspective.

[140] International Commission for the Protection of the Rhine (2010): Evaluation report for odoriferous substances, available at: http://www.iksr.org/en/topics/pollution/micropollutants/index.html?tx_queofontresizer_pi1[fontresize]=0

[141] International Commission for the Protection of the Rhine (2012): Evaluation report for complexing agents, available at: http://www.iksr.org/en/topics/pollution/micropollutants/index.html?tx_queofontresizer_pi1[fontresize]=0

Note that the US Department of Health and Human Services already provides a similar database.[142]

[142] US Department of Health and Human Services (2017): Household Products Database, available at: https://hpd.nlm.nih.gov/cgi-bin/household/list?tbl=TblBrands&alpha=A

Annex 3 – Human health

A3.1 Key provisions of the Detergents Regulation

The labelling requirements of the Detergents Regulation can be viewed as one of the primary means by which the Detergents Regulation aims to ensure the protection of human health. The labelling requirements of the Detergents Regulation include (Article 11(3)):

- Providing information on the content, in accordance with the specifications provided for in Annex VII, part A (which includes the provision of information on fragrance allergens); and
- Indicating instructions for use and special precautions, if required.

The original Detergents Regulation only required labelling of allergenic fragrances if they were added in the form of pure substances; there was no requirement to declare them if they were added as constituents of more complex ingredients, such as essential oils or perfumes. Amendment of the Regulation by Commission Regulation (EC) No 907/2006 to ensure that allergenic fragrances in detergents are declared irrespective of the way they are added to the detergent should, in theory, have increased the effectiveness of the Regulation by making it easier for consumers to identify the presence of allergenic fragrances.

In addition to harmonising the rules for the labelling of detergents, the Detergents Regulation also specifies the information that manufacturers' must make available to Member State (MS) competent authorities and medical personnel. Article 9(3)(1) of the Detergents Regulation states that manufacturers must "*upon request, make available without delay and free of charge, to any medical personnel, an ingredient data sheet as stipulated in Annex VII C*". Article 9(3)(2) of the Detergents Regulation foresees that "*this is without prejudice to the right of a Member State to request that such a datasheet be made available to a specific public body to which the Member State has assigned the task of providing this information to medical personnel*".

To ensure that information concerning detergent composition is readily available to the general public, the 2006 amendment to the Detergents Regulation also obliges manufacturers to provide an ingredient data sheet online (Annex VII D). The address of the website containing the ingredient list must be provided on the detergent packaging. Access to the website cannot be subject to any restriction or condition and the website must be kept up to date. Note that the obligation to provide the ingredient data sheet online does not apply to industrial or institutional detergents, or to surfactants for industrial or institutional detergents, for which a technical data sheet or safety sheet should be available.

Like many pieces of EU legislation, the Detergents Regulation also includes a 'safeguard clause'. Safeguard clauses are particularly important in European public health and environmental legislation since, in the words of the Court of Justice, "they give expression to the precautionary principle".[1] In the Detergents Regulation (Article 15(1)), the safeguard clause states that:

[1] Case C-6/99 Greenpeace France and others (2000), ECR 1-1651, para 44; as quoted in Matthews P (2004): European Union Law for the Twenty-First Century, Volume 2, Rethinking the New legal Order, Hart Publishing, USA.

"Where a Member State has justifiable grounds for believing that a specific detergent, although complying with the requirements of this Regulation, constitutes a risk to the safety or health of humans or of animals or a risk to the environment, it may take all appropriate provisional measures, commensurate with the nature of the risk, in order to ensure that the detergent concerned no longer presents that risk, is withdrawn from the market or recalled within a reasonable period or its availability is otherwise restricted.

The Member State shall immediately inform the other Member States and the Commission thereof, giving the reasons for its decision."

The safeguard clause may only be used on a case-by-case basis for a specific product, not for a class of product.[2] The safeguard clause cannot, therefore, be used to introduce risk management measures of a general nature.

The following sections are broken down according to these key provisions of the Detergents Regulation and provide an overview of the impacts of the Detergents Regulation in terms of human health.

A3.2 Labelling of contents (Article 11(3) and Annex VII A)

A3.2.1 Compliance

In 2014, the Chemical Legislation European Enforcement Network (CLEEN)[3] published the results of its enforcement project (EuroDeter). The study analysed the compliance of 907 detergents (319 companies) with the legal obligations of the Detergents Regulation, the Dangerous Preparations Directive (Directive 1999/45/EC) and the Biocidal Products Directive (Directive 98/8/EC).[4] The report provides some useful insights into the compliance of companies with the provisions of the Detergents Regulation.

During the EuroDeter study, the CLEEN assessed compliance with the labelling and packaging requirements of Annex VII, parts A and D of the Detergents Regulation. The results of this analysis are provided in Figure A3-1 overleaf.

In the study, the highest non-compliance rate was found to pertain to the obligation to "list the allergenic substances" on the label. More than 40% of the inspected products did not include, where applicable, all mandatory allergenic fragrances on the label or packaging. The second highest non-compliance rate was found in the obligation to "list the preservative agents" contained in the mixture: over 30% of the inspected detergent products did not provide this information, where applicable, on the label or packaging.

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[2] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents. Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations/en/renditions/native

[3] CLEEN (2014): EuroDeter, Final Report, available at: http://www.cleen-europe.eu/

[4] Note that the DPD has been repealed and replaced by the CLP Regulation. The BPD has been repealed and replaced by the Biocidal Products Regulation.

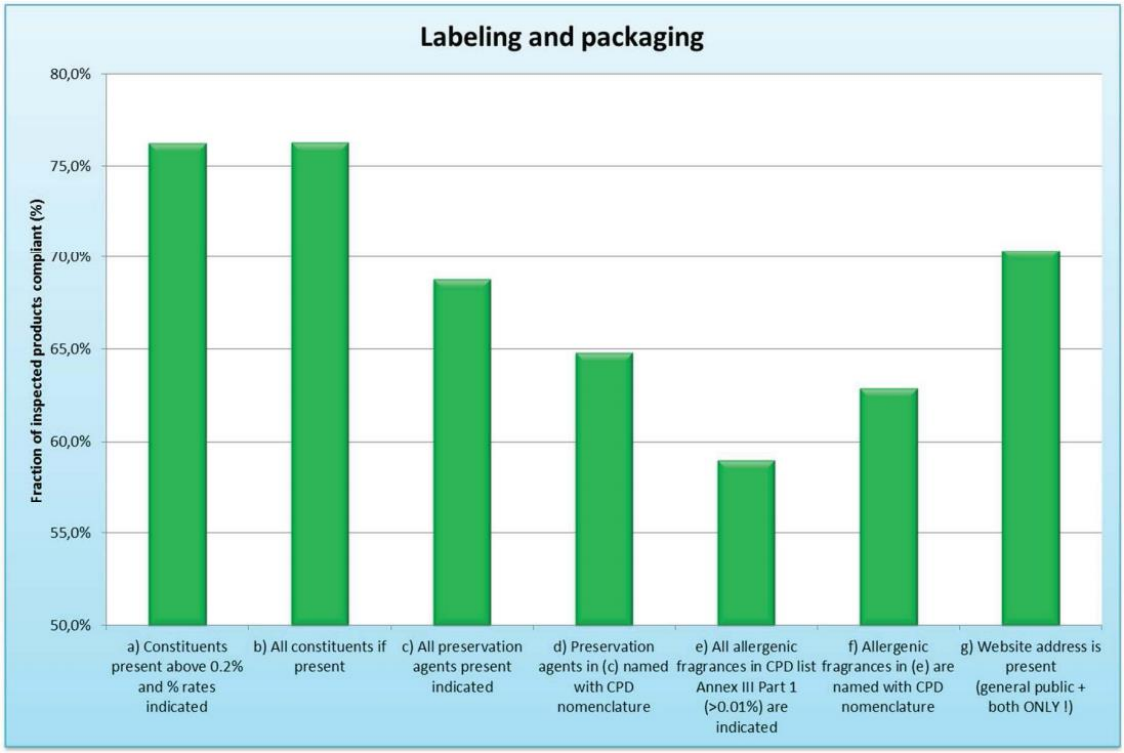

Figure A3-1: Compliance rate with labelling requirements from Detergents Regulation Annex VII, parts A and D

Source: CLEEN (2014)[5]

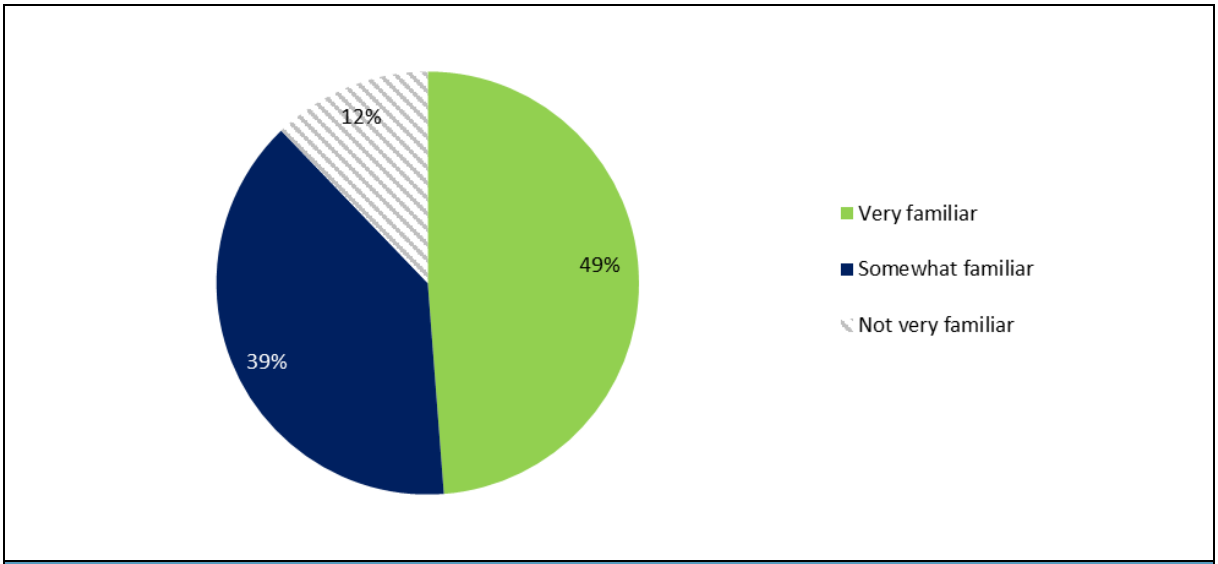

Figure A3-2: How familiar are you with the following requirements under the Detergents Regulation? – Requirements on the labelling of fragrance allergens. Responses to the survey of SMEs conducted by EEN.

5 CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu

During the consultation, SMEs were asked how familiar they are with various requirements under the Detergents Regulation, including the requirements pertaining to the labelling of allergens. As shown in Figure A3-2, half of the respondents (49%) indicated that they are "very familiar" with the requirements for the labelling of fragrance allergens, while a further 39% indicated that they are "somewhat familiar". Only 12% of respondents indicated that they are "not very familiar" with the requirements for the labelling of fragrance allergens.

A3.2.2 Labelling of allergens

Allergens are an important issue within the chemicals framework as an estimated 1-3% of the EU population has a skin allergy to fragrances, with the Scientific Committee on Consumer Safety (SCCS) reporting that around 16% of eczema patients in the EU are sensitised to fragrance ingredients.[6] Overall, the prevalence of allergies in children varies from 1.7% in Greece to 4% in Italy and Spain, to over 5% in France, UK, Netherlands and Germany.[7] An estimated 150 million plus people have allergies in Europe, with it being the most common chronic disease in the EU at a prevalence of greater than 20% of the population.[8] This figure is estimated by the European Academy of Allergy and Clinical Immunology to rise to around 40% of the population having an allergic predisposition in Europe by 2040 (it should be noted that a range of factors have been identified as possible causes for this trend - including increased diagnosis, increased allergen exposure, excessive cleanliness, sedentary lifestyle, etc.). As well as impacting individuals' productivity and quality of life, dealing with allergic reactions imposes a significant cost on national health systems.[9] In the UK alone, an estimated £900 million per annum was spent on primary care related to allergens in 2004.[10] It is, therefore, clear that providing consumers with information on the presence of known allergens is important given the potential for reducing disease cases and associated health care costs.

During the consultation, one industry association representing entities in the detergents sector noted that there are no indications that detergents are causing a disproportionate number of allergic reactions/skin irritations when compared to other chemical products. In support of this claim, the industry association referred to a recent report by IKW which indicates that there have been relatively few medically confirmed cases of allergies or skin irritations linked to detergent products. Further information is provided in the Table A3-1 below. At the workshop, one industry

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[6] European Commission (2012): Scientific Committee on Consumer Safety (SCCS) - Opinion of 26-27 June 2012 on fragrance allergens in cosmetic products, SCCS/1459/11. Available at: http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_102.pdf

[7] EAACI (2011): Allergy statistics from the EAACI: 17 million Europeans allergic to food; allergies in children doubled in the last 10 years, The European Academy of Allergy and Clinical Immunology (EAACI). Available at: http://www.foodsmatter.com/allergy_intolerance/miscellaneous/research/allergy_statistics.02.11.html

[8] EAACI (2016): European Union Activities. The European Academy of Allergy and Clinical Immunology (EAACI). Available at: http://www.eaaci.org/outreach/eu-activities/eu-activities.html

[9] EAACI (2015): Advocacy manifesto, Tackling the allergy crisis in Europe – Concerted policy action needed. Available at: http://www.eaaci.org/documents/EAACI_Advocacy_Manifesto.pdf

[10] House of Commons Health Committee (2004): The provision of allergy services. Sixth report of session 2003–04. London: TSO. Available at: http://www.bsaci.org/pdf/HoL_6th_report_vol1.pdf

association explained that where allergic reactions arise as a result of detergents, these are typically caused by allergenic ingredients (such as perfumes and preservatives).

Table A3-1: Allergies and skin irritations in Germany

Since 2007, the German Cosmetic, Toiletry, Perfumery and Detergent Association (IKW) has been conducting surveys asking its member companies (selling detergents and maintenance products to private consumers in Germany) about registered intolerances. The results, as shown in the table below, indicate that there have been relatively few medically confirmed cases of allergies and skin irritations caused by detergents. Between 2006 and 2015, 16.4 billion packages were sold. Over this period, there were only 28 medically confirmed cases of skin allergy, which equates to 2 cases per 1 billion packages sold.

Number of cases of allergies and skin irritations in Germany linked to detergent and maintenance product use by private consumers

		Number of cases from 2006 to 2015	Number of cases per 1 billion packages sold
Allergies	Inquiries by doctors	47	3
	Medically confirmed	28	2
Skin irritations	Described plausibly by the consumer	4,331	264
	Medically confirmed	121	7

Source: IKW (2017)[11]

Under the Detergents Regulation (Annex VII A), allergenic fragrances listed of in Annex III to the Cosmetic Products Regulation that are added to detergents at concentrations exceeding 0.01% by weight shall be listed on the product using the nomenclature provided in the Cosmetic Products Regulation. The Scientific Committee on Consumer Safety (SCCS) is responsible for identifying the fragrance allergens that must be labelled under the Cosmetic Products Regulation and, as a consequence, also under the Detergents Regulation.

Over the last 20 years, the number of allergens that need to be listed on detergent products has remained relatively constant.[12] There are currently 26 allergens listed in Annex III to the Cosmetic Products Regulation that must therefore be labelled if present in a detergent in a concentration >100 ppm (0.01% by weight). However, issues regarding the labelling of fragrance allergens on cosmetic products have been subject to an opinion of the SCCS, which recommended that the presence of any of the 127 fragrance allergens should be indicated on cosmetic product labels (see Table A3-2 for further details). A potential expansion of the list of fragrance allergens included on the labels of cosmetic products (and detergent products), would result in more allergens being listed on the pack. Whilst informing consumers of the allergens contained in products is useful for

[11] IKW (2017): Annual Report, 2016-2017. Available at: http://www.ikw.org/fileadmin/content/z-IKW-ENGLISCH/IKW_Annual_Report_2016_2017_final.pdf

[12] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

enabling informed choices, industry is concerned that this could result in too much information having to be provided on labels, which may be detrimental to consumer understanding.[13]

Table A3-2: Proposals for the additional labelling of fragrance allergens in cosmetic products
The SCCS in its 2012 opinion[14] identified additional fragrance allergens which should be labelled in cosmetic products. The SCCS opinion recommended that the presence of any of 127 fragrance allergens should be indicated on cosmetic product labels, with 11 key ingredients restricted to 0.01% in the final product. In addition, the SCCS also indicated that substances that are known to be transformed, through air oxidation and/or bioactivation (prehaptens and prohaptens), into allergens should be treated as being equivalent to those allergens. In response to this opinion, industry is understood to be working with the Commission and other stakeholders under the framework of the IDEA project (International Dialogue for the Evaluation of Allergens) to agree a transparent framework for assessing fragrance sensitisers globally. In 2014, the Commission launched a consultation on fragrance allergens, with the aim of addressing the issue of labelling as well as proposing changes to the Regulation, which have been drafted.[15] In the follow-up to the public consultation, three allergens were banned in 2017. As to the labelling of additional fragrance allergens, different ways of labelling will be examined thoroughly.

AISE has asked consumers whether, when shopping for detergents, they deliberately seek information on the product's ingredients (Table A3-3). The proportion of consumers that answered yes to this question ranged from over half (52%) in the UK/Ireland to about a quarter (26%) in Scandinavia. Throughout Europe, almost a third (29%) of consumers deliberately seek information on the product's ingredients.

Table A3-3: When you are shopping for detergents, do you deliberately seek information on the product's ingredients?

Region	Proportion of respondents
Western Europe	37%
Eastern Europe	29%
Southern Europe	42%
UK/Ireland	52%
Scandinavia	26%
Total	**29%**

Source: Vandecasteele B et al. (2014)[16]

[13] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[14] European Commission (2012): Scientific Committee on Consumer Safety (SCCS) - Opinion of 26-27 June 2012 on fragrance allergens in cosmetic products, SCCS/1459/11. Available at: http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_102.pdf

[15] European Commission (n.d.): Public consultation on fragrance allergens in the framework of Regulation (EC) No. 1223/2009 of the European Parliament and of the Council on cosmetic products. Available at: http://ec.europa.eu/dgs/health_food-safety/dgs_consultations/ca/consultation_cosmetic-products_fragrance-allergens_201402_en.htm

[16] Vandecasteele B. et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016

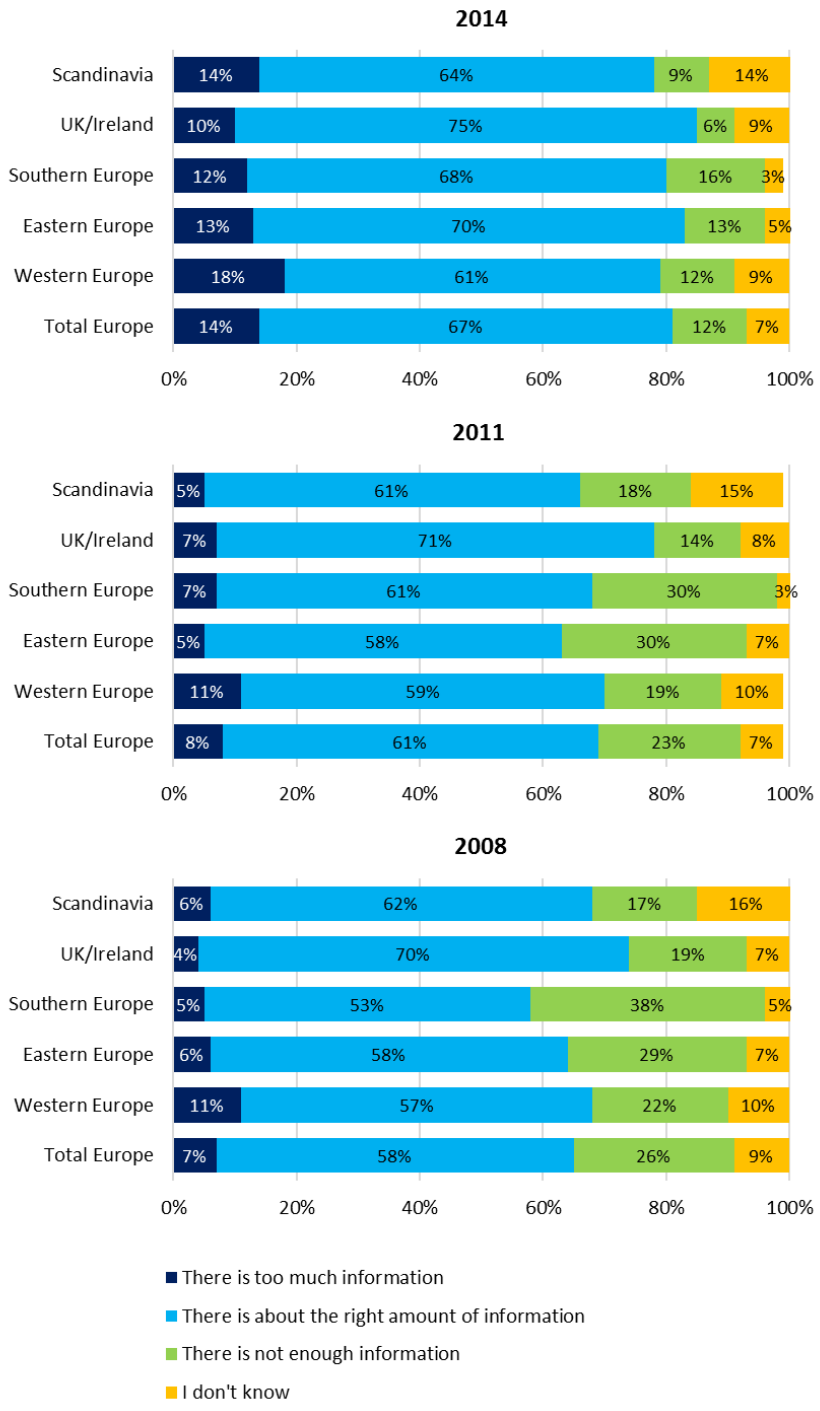

Figure A3-2: When it comes to the amount of information provided on how to use your products safely, which statement would you agree with the most?
Vandecasteele B et al. (2014)[17]

[17] Vandecasteele B. et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016

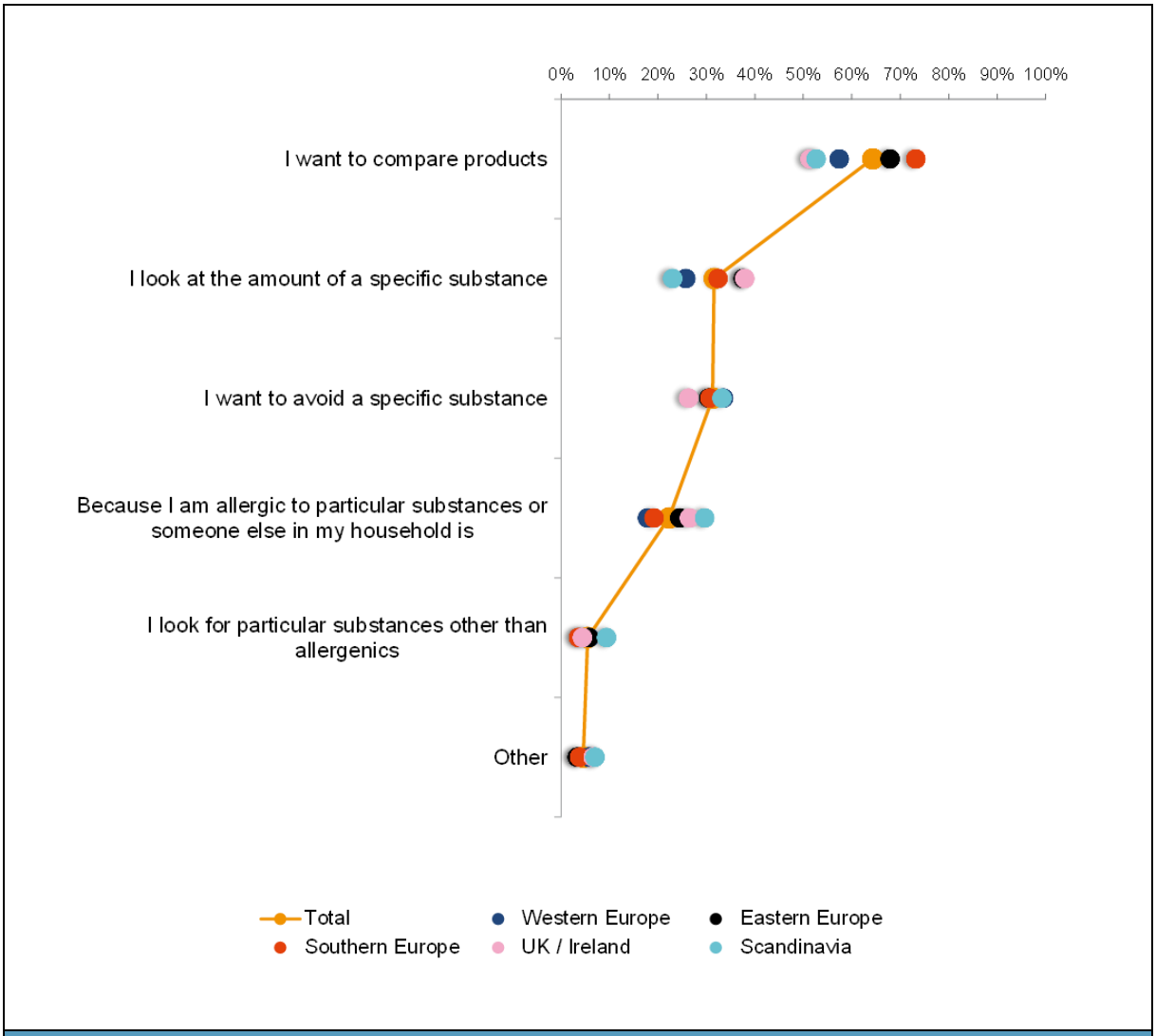

Figure A3-3: Why do you deliberately seek information on the ingredients when shopping for detergents? (only respondents that deliberately seek information on the product's ingredients are included within this sample)

Vandecasteele B et al. (2014)[18]

As indicated in Figure A3-4 the comparison of products appears to be the main driver for seeking information on the ingredients in detergent products, with around two thirds of European consumers (that deliberately seek information on ingredients) listing this as a reason for looking for information on the ingredients in detergent products. About a third of consumers say that they want to avoid a specific substance, and a similar - although slightly lower - proportion have indicated that they (or one of their household members) is allergic to particular substances. This gives an indication of the proportion of consumers that may have benefitted from the provisions of Commission Regulation (EC) No 907/2006 that ensure that allergenic fragrances in detergents are declared irrespective of the way they are added to the detergent; although, of course, the actual

[18] Vandecasteele B et al. (2014): Washing habits 2014, U&A tracking, Prepared for AISE by InSites Consulting. Research Abstract for RPA, prepared March 2016

number will also be determined by other factors, such as whether the allergenic fragrances consumers' are seeking to avoid are those that must be labelled, and whether consumers' are able to identify the allergenic substances they are seeking to avoid, etc.

There was general agreement among consultees (all groups) that the labelling of allergens is useful for consumers and that, in this regard, the Detergents Regulation has been effective in terms of ensuring a high degree of protection of human health.

Nevertheless, results from the supporting study for the chemicals fitness check[19] show that some consumers believe **a lack of detailed ingredient lists restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain substances**. During the consultation for the present study, several consumer organisations similarly advocated that detergents should carry full ingredient lists in order to provide consumers with an informed choice. It was noted that this is particularly important because consumers are exposed to a cocktail of chemicals from different products (cosmetics, detergents, etc.) and so there is an issue of aggregate exposure to allergens.

It should be noted that this view was not unanimous. One industry association, for example, explained that:

> *"…for surfactants, current disclosure by families is enough, because more detailed disclosure will not give more information to the consumer, on the contrary, it will introduce more irrelevant information that the consumer will not be able to understand. So that it will provoke more confusion or it will cause that attention is not paid to other important information."*

The International Nomenclature of Cosmetic Ingredients, abbreviated to 'INCI', was established in the 1970's by the Personal Care Products Council (former CTFA, Cosmetic, Toiletry, and Fragrance Association) for listing ingredients on cosmetic product labels. Today, the list of INCI names is maintained by the Personal Care Products Council. In addition to the EU, INCI names are used in the United States, China, Japan, and many other countries and, with few exceptions, the INCI labelling names in all countries are the same. There are currently more than 16,000 ingredients in the INCI list, which is the most comprehensive listing of ingredients used in cosmetic and personal care products (Chemical Inspection & Regulation Service, 2017)[20]. Annex VII C of the Detergents Regulation makes use of the INCI nomenclature for listing ingredients in the ingredient datasheet, while Annex VII D requires the listing of ingredients using the INCI nomenclature on a website.

During the consultation, MS authorities and consumer organisations both suggested that all ingredients should be labelled on detergent products using the INCI nomenclature, or a similar standardised format. It was noted that this would prevent the need for information to be included in several languages (as the INCI names are universal), which in turn may help to reduce the burden

[19] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Evaluation Report. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/1/translations/

[20] Chemical Inspection & Regulation Service (2017): International nomenclature of cosmetic ingredients (INCI). Available at: http://www.cirs-reach.com/Cosmetic_Inventory/International_Nomenclature_of_Cosmetic_Ingredients_INCI.html

of labelling for industry and save space so that more important information can be included on the product label. It was also suggested that full ingredient listing on the product would potentially negate the need to provide a full list of ingredients online.

At the validation workshop, a company questioned whether consumers understand the INCI names and whether this is an appropriate way of communicating ingredient information. It was indicated that the INCI nomenclature relates to cosmetics and that some detergent ingredients will not have an INCI code. An industry association has also noted that:

> *"In general, consumers do not understand the chemical nomenclature or the INCI (International Nomenclature of Cosmetic Ingredients) nomenclature. In the case of the INCI names, these have been developed for the cosmetic industry and are currently sufficiently accepted for that industry. Their introduction into detergents to provide irrelevant (in the case of surfactants) information could affect the labelling of both industries and could raise a perception by formulators and consumers that these products could also for cosmetic use."*

In contrast, a MS authority explained that most INCI names are clear to consumers with an allergy and that once the INCI nomenclature has been learnt and becomes established this could be an effective means of communication. It was suggested that research could be undertaken to identify the number of detergent ingredients that do not have INCI names.

A company noted that if the INCI nomenclature is used to label all ingredients (e.g. surfactants) in a product, then product labels would need to be updated each time the product is reformulated.

Of the 61 citizens that responded to the OPC, 12 (20%) said that they, or another member of their household, is allergic to substances found in detergent products (as indicated in Figure A3-5). Of those that indicated that they, or another member of their household, are allergic to substances found in detergents, most (75%) indicated that they can at least sometimes identify the allergens from the detergent packaging (see Figure A3-6).

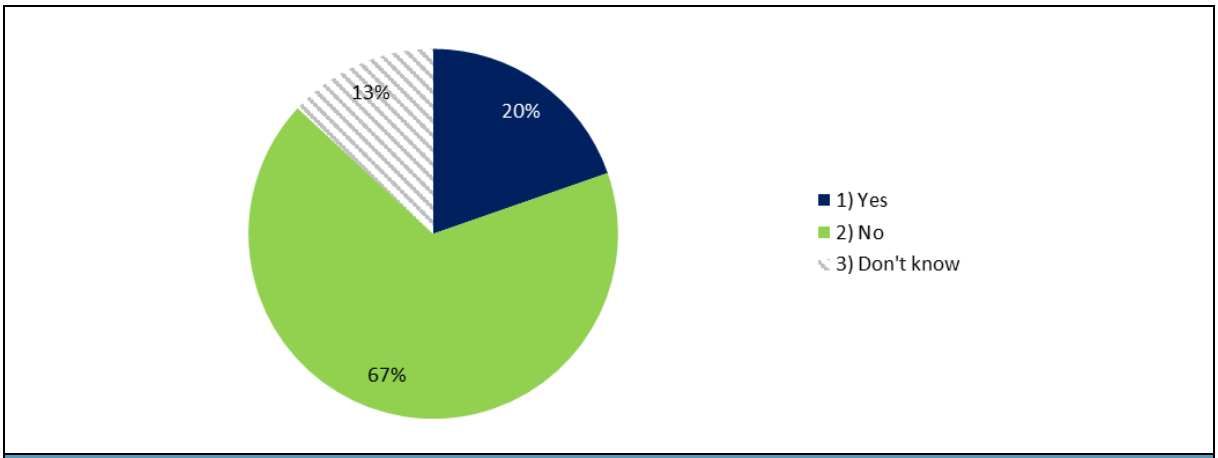

Figure A3-4: Are you, or is anybody in your household, allergic to any substances found in detergents? Responses to the OPC – Citizens. ***Number of responses: n=61***

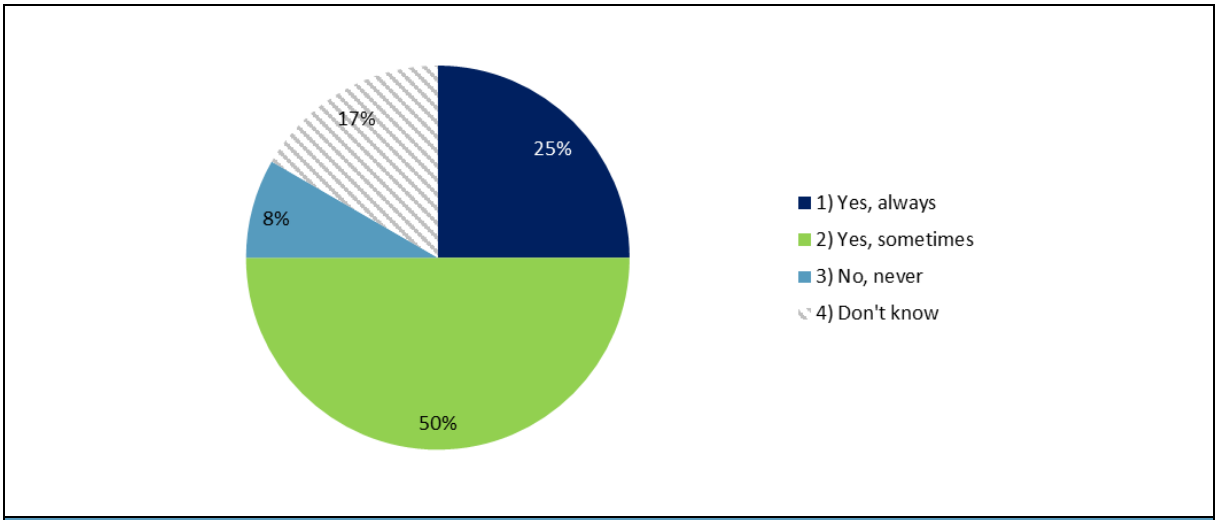

Figure A3-5: Are you able to identify these allergens from the detergent packaging? Responses to the OPC – Citizens. *Number of responses: n=12*

One consumer organisation explained that although allergens are listed in the ingredient lists for detergents, unless you are a specialist, then you would never know that these substances are allergens. The consumer organisation explained that it would be good to highlight these substances (e.g. in italic or bold), as is already the case for food products.

At the workshop, it was noted that AISE's Better Regulation and Safe Use (BRE&S) project found that less than 10% of consumers are aware of product ingredient lists and that chemical names are not understood and therefore offer limited value to the consumer (with the exception being allergens).

AISE suggested that the labelling for allergens should be maintained but that other ingredients could be identified using INCI names but via alternative means (e.g. improved IT disclosure, telephone line, etc.). For more on this topic, see Section A3.4.

One consumer organisation explained that the SCCS drew up a report where they looked at a number of different perfume substances. The report identified that there are many perfumes that cause allergies but that do not need to be listed on the product. As noted above, the Commission is currently considering extending the list of allergenic substances that must be labelled on detergents and so this issue may be addressed in the near future (at least in part).

Organisations that responded to the OPC were asked about the extent to which they agree that the labelling requirements outlined in the Detergents Regulation are sufficient to inform consumers and downstream users about potential allergenic substances in detergents (Figure A3-7). Out of the 38 stakeholders that responded to this question:

- 71% of respondents agreed or strongly agreed that the labelling requirements outlined in the Detergents Regulation are sufficient to inform consumers about potential allergenic substances in detergents; 13% of respondents disagreed or strongly disagreed;
- 71% of respondents agreed or strongly agreed that the labelling requirements outlined in the Detergents Regulation are sufficient to inform downstream users about potential allergenic substances in detergents; 13% of respondents disagreed or strongly disagreed.

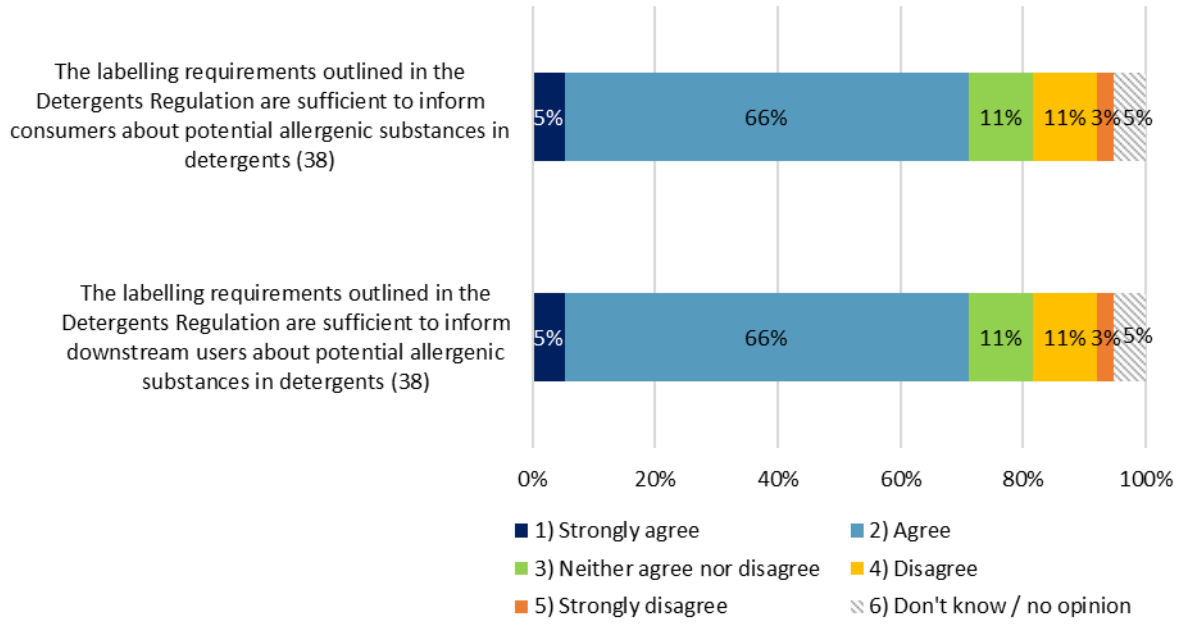

Figure A3-6: To what extent do you agree with the following statements regarding the labelling/packaging requirements outlined in the Detergents Regulation? Responses to the OPC – Organisations. *Number of respondents shown in brackets.*

During the consultation, **stakeholders identified that there are some overlaps and inconsistencies, in terms of the labelling of fragrance allergens, between the Detergents Regulation and other pieces of EU legislation** (as indicated in Figure A3-8). Indeed, when it comes to the provisions on the labelling of fragrance allergens a quarter of SMEs indicated that they are aware of gaps, overlaps or inconsistencies within the provisions of the Detergents Regulation and/or between the Detergents Regulation and other pieces of legislation.

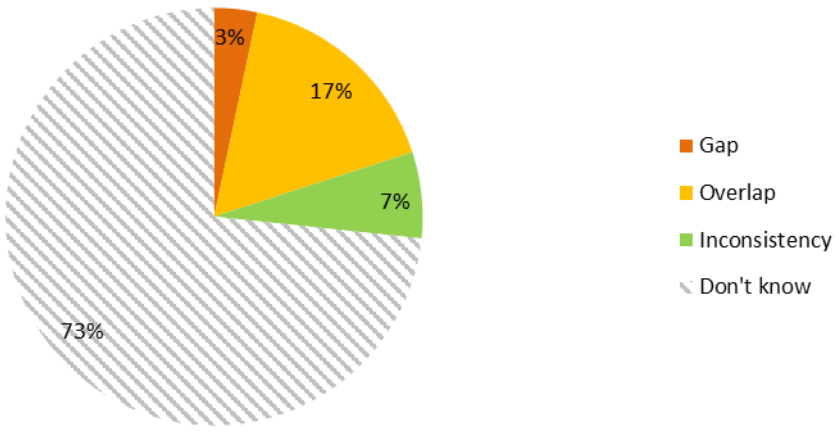

Figure A3-7: Are you aware of any gaps, overlaps or inconsistencies within the provisions of the Detergents Regulation and/or between the Detergents Regulation and other pieces of legislation? - Labelling of fragrance allergens. Responses to the survey of SMEs conducted by EEN.

The following overlaps and inconsistences have been identified between the Detergents Regulation and CLP in terms of the labelling of allergens:

- The Detergents Regulation requires economic operators to include allergens within the list of ingredients when they are included above certain thresholds and allows the listing using INCI names on consumer products. The CLP Regulation requires the inclusion of skin sensitisers in the list of ingredients when they occur above certain thresholds, however, the use of INCI names is challenged by some authorities (RPA et al., 2017).[21, 22] This can create problems, as most allergens are also skin sensitisers.
- Under the Detergents Regulation, allergenic fragrances (as listed in the Cosmetic Products Regulation) must be indicated on the label of the detergent product if added at concentrations exceeding 0.01% by weight. Under CLP, skin sensitisers must be indicated if added at concentrations exceeding 1.0% (skin sensitiser Category 1), 0.1% (skin sensitiser Category 1A) and 1.0% (skin sensitiser Category 1B). Some stakeholders therefore indicated that this represents an inconsistency between the Detergents Regulation and CLP. Note that some MS authorities viewed the more stringent limits of the Detergents Regulation as being of benefit in terms of protecting human health.

A3.2.3 Labelling of preservatives

Annex VII A, of the Detergents Regulation states that, if added, preservation agents shall be listed on the product label irrespective of their concentration. According to AISE, this means that detergent manufacturers must ascertain (e.g. by looking at the specification or Safety Data Sheet (SDS)) whether any preservatives have been added to the constituents of the product by their producer/supplier and subsequently included in the detergent product, regardless of the inclusion level.[23]

AISE's guidance document (dated 3 June 2013) – provided by the Commission on its webpage[24] - clarifies that:

[21] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[22] INCI names derive from the U.S. system which is 95% the same as in the EU but with one difference. In the U.S. certain ingredients (e.g. milk, honey, and eggs) can be listed in their English names, whereas in the EU it is not permitted to use only one EU language. As a result, to avoid translating these names into all EU languages, the Latin name is used. However, stakeholders indicate that the use of Latin words is not necessarily understood in all EU languages, which means that only a proportion of consumers will be able to determine the ingredients used in these products (RPA et al., 2017).

[23] AISE (2013): Guidelines on the implementation of the Detergents Regulation v.2., 3 June 2013. Available at: http://ec.europa.eu/growth/sectors/chemicals/legislation_en

[24] AISE (2013): Guidelines on the implementation of the Detergents Regulation v.2., 3 June 2013. Available at: http://ec.europa.eu/growth/sectors/chemicals/legislation_en

> *"Preservatives at trace levels will need to be labelled as ingredients unless the mixture manufacturer can demonstrate that these traces are technically unavoidable and technologically ineffective and do not cause adverse effects to human health even for sensitised persons."*

It would appear, therefore, that **AISE's guidelines do not follow the legal text of the Regulation.**

It should be noted, however, that Annex VII Part A of the Detergents Regulation specifies that "*if added, preservation agents shall be listed irrespective of their concentration*". One interpretation of this provision is that agents unintentionally present would not be "added" and would not, therefore, need to be labelled. This could apply to, e.g. unavoidable traces or impurities that are not voluntarily added. This interpretation would be in line with the rules applicable to ingredients to be mentioned in Safety Data Sheets as per Part C of Annex VII.

Companies, industry associations and MS authorities all noted that **it is not clear how carry-over preservatives should be dealt with in the context of the Detergents Regulation**. A large company from Denmark for example remarked that it is not clear what is meant by a "trace level" (a term referred to in AISE's guidance but not in the legal text of the Regulation).

A second issue is that **there appear to be differences between MS in the way this provision of the Detergents Regulation is implemented and enforced**. For example, a Danish consumer organisation noted that carry-over preservatives are not always being included on the ingredient list for the final product (only preservatives that preserve the product are mentioned and not those that preserve the ingredients). An industry association highlighted the example of a company that had declared the use of a substance (a carry-over preservative) in a detergent on the product label even though it was included in the detergent at a concentration below the limit of detection. The company had received an official complaint by the authorities who indicated that the substance had been incorrectly labelled (because the authorities were unable to detect it). It was noted that there are potential issues with labelling substances that are used in very small (undetectable) quantities. Another industry stakeholder indicated that the ability to test for substances used in products has increased over recent years and that the most important consideration is that substances used in detergents are below the levels deemed to cause any adverse impacts.

A large company from Denmark and an SME from Belgium both remarked that it is not clear whether carry-over preservatives should be labelled and that the guidance that is currently available to companies is unclear.

During the OPC, AISE noted that:

> *"The requirement to list preservative substances (irrespective of their concentration and if added) has resulted in a disharmonised approach by some authorities in particular with the request to list low concentration of carry over preservatives not added by the manufacturer itself (e.g. preservative added by a supplier to protect a specific ingredient used for the formulation of a detergent)."*

AISE has suggested that only those substances that are intentionally added as preservatives should be considered preservatives within the meaning of the Detergents Regulation. Annex VII of the Detergents Regulation states that "*if added, preservation agents shall be listed, irrespective of their concentration…*", which – according to AISE - suggests that this entails an active action by the manufacturer to add the preservative. However, the Regulation does not clarify if this means added by the manufacturer, or the raw material supplier.

During the consultation, the following concerns were also raised about the labelling of preservatives:

- An SME from the Netherlands noted that if a preservative is used in a raw material and needs to be labelled on the final product irrespective of the concentration it is added at, then the label of the final detergent product might list five or six preservatives.
- Companies noted that it can sometimes be difficult to track which preservatives have been used in the raw materials, although it would seem that the situation is improving with more companies now mentioning preservatives in their SDS.
- A company from Denmark questioned how the labelling of preservatives is of use to the consumer.

There would appear to be a difference between the Detergents Regulation and Cosmetic Products Regulation in terms of the labelling of preservatives. Under the Cosmetic Products Regulation, carry-over preservatives, to the extent that they constitute 'impurities in the raw materials used' (Article 19(1)(g)) do not need to be labelled.

A3.2.4 Concerns about the ingredients used in detergent products

During the OPC, citizens showed that they are concerned about some of the ingredients being used in detergent products; as illustrated by the following quotes:

> *"I understand that the EU has recently changed the amount of methyl isothiazolinone permitted in rinse off cosmetic products. Isothiazolinones can be highly allergenic, and their effects are cumulative - in other words they may be tolerated for a period of time until a tipping point is reached, after which any type of contact (including airborne) can cause a negative reaction in the body. Is there any intention to investigate the health effects of isothiazolinones contained in detergents, fabric conditioners, cleaning products, paints etc as well as cosmetics. The permitted use of these preservatives in products has destroyed my health, and made me a prisoner in my own home. I am not alone in suffering damaging reactions to these preservatives."*

> *"People should be warned about the toxicity of the ingredients and instructed to look for safer options. Less fragranced or fragrance free products for instance can be just as effective as heavily fragranced ones, but commercials let consumers believe the fragrances are a bonus without negative consequences. There always is a price to pay; more and more people are becoming chemically sensitive."*

> *"Chemical factories in the past few years use all the cheaper and more toxic synthetic chemicals in their products. This is not enough, but thousands of various extremely harmful synthetic scented chemicals (especially neurotoxins) are added to make the product more appealing to customers. Environmental pollution tests and the destruction of people's health are nothing or fake. I do not want tests on poor animals, it's enough to take small amounts of blood and test the blood. Synthetic chemicals destroy the enzymes of all living beings and thus cause various diseases and dying. To begin with, nano technology and phthalate use should be banned. There is a need to develop the chemical industry in the direction of using more efficient and natural enzymes and natural odours. The factories would have their own fields of lavender, lemon, orange,*

mint and other herbs that make essential oils so that cannot no longer justify the use of natural essential oils is expensive. Need to think long term!!!"

The Danish Consumer Council 'THINK Chemicals' has looked in detail at the ingredient lists of 51 Danish laundry detergents (including both liquids and powders) for coloured clothing, to check for ingredients that may be problematic for the environment or human health.[25] During this study, THINK Chemicals found that more than half of the 51 laundry detergents tested do not contain problematic chemicals or perfume. During the test, eight laundry detergents were found to contain allergenic preservatives, such as methylisothiazolinone (MIT)[26] or similar substances. The laundry detergents that contained allergenic preservatives were all liquid products. The tests also found two laundry detergents containing sodium borate, which is suspected of having an adverse effect on fertility and is also on the EU's candidate list of Substances of Very High Concern (SVHC). Sodium borate was not listed as an ingredient on the detergent packaging but could be found on the detergent datasheets. One consumer organisation that participated in an interview explained that other types of products have already banned the use of sodium borate, which demonstrates that it is possible to produce a detergent without it. The consumer organisation stated that, in its view, the use of sodium borate in detergents should be banned.

At the workshop, one industry stakeholder remarked that sodium borate can be found in vegetables, certain alcohols and dietary supplements as well as being used in detergents. It was indicated that sodium borate does not pose a risk when used in detergent products and that there is a need to consider the risk posed by the use of a substance as well as the hazard.

THINK Chemicals has carried out a similar study into the ingredients used in liquid dishwashing detergents sold in Denmark.[27] In this study, 33 detergent products for washing dishes by hand were inspected for problematic chemicals, including suspected endocrine disruptors, sensitising substances and chemicals with other problematic effects. None of the products inspected were found to contain suspected endocrine disruptors, and 14 of the 33 inspected detergents were found to be free from problematic chemicals; however, six dishwashing liquids were found to contain perfume and 13 contained sensitising preservatives. MIT was used in 12 of the 13 dishwashing soaps that contained sensitising preservatives and the following sensitising preservatives/antioxidants were also found:

- Benzisothiazolinone in nine products;
- Octylisothiazolinone in one product;
- Propyl gallate in two products; and
- Glutaral in one product.

The EU Ecolabel is a voluntary ecolabel scheme, established by the European Commission in 1992. Covering a wide variety of product and service groups, the EU Ecolabel criteria have been carefully designed to ensure that only the most environmentally friendly (10-20% of products/services) on the

[25] KEMI (2017): Test examines chemicals in laundry detergents for colored clothes. Available at: http://kemi.taenk.dk/bliv-groennere/test-examines-chemicals-laundry-detergents-colored-clothes

[26] Methylisothiazolinone is a highly sensitizing preservative used in many different products, such as paint, cosmetics and detergents.

[27] KEMI (2017): Check your dishwashing soap for allergenic preservatives. Available at: http://kemi.taenk.dk/bliv-groennere/check-your-dishwashing-soap-allergenic-preservatives

market can meet them.[28] Products meeting the criteria are permitted to use the EU flower logo; the idea being that consumers and other downstream users are then able to easily identify the 'greenest' products. For detergents, the substances that go into the products are one of the key priority areas for the EU Ecolabel. Separate criteria have been available for the following detergent products:

- All-purpose cleaners and sanitary cleaners;
- Detergents for dishwashers;
- Industrial and institutional automatic dishwasher detergents;
- Handwashing detergents;
- Laundry detergents; and
- Industrial and institutional laundry detergents.

In summer 2017, new criteria were proposed for laundry detergents under the EU Ecolabel (for further information, see Section 2.10.1 of JRC (2017)).[29] The new criteria include a list of substances that will be prohibited for use in laundry detergent formulations regardless of their concentration (e.g. microplastics, nanosilver, glutaraldehyde, triclosan, formaldehyde, etc.), as well as substances that will be prohibited in product formulation above specified concentrations (e.g. 2-methyl-2H-isothiazol-3-one).

The Cosmetic Products Regulation (Annex II and Annex III) similarly bans or restricts the use of certain substances in cosmetic products. This is important because many of the same substances are used in detergents and the potential for skin contact for some detergents, such as hand dishwashing detergents, can be comparable to rinse-off cosmetics. During the consultation, **several consumer organisations were concerned that some carcinogenic, mutagenic, reprotoxic (CMR) substances are still permitted for use in detergents.** One consumer organisation noted, for example, that:

> *"…REACH continues the semi-automatic ban on sale to consumers of mixtures containing CMRs. However, unlike article 15 of the cosmetics regulation, this ban only covers substances classified as CMR category 1A and 1B. A mechanism to restrict use in detergents of substances classified as CMR category 2 is needed to close this gap and to ensure coherence with e.g. the cosmetics regulation. Further, use in detergents of substances meeting the criteria in REACH article 57 (substances of very high concern), including those with endocrine disrupting properties, should not be allowed."*

One official from the European Commission similarly noted that **further investigation should be undertaken into the possibility of restricting the substances banned in cosmetic products from detergents that come into contact with skin**. It has been noted that this would help to protect human health, but would also ensure that the Cosmetic Products Regulation and Detergents Regulation are aligned. (Although it should be noted that there are exemptions from such bans under the Cosmetic Products Regulation, including if the use of the substance has been evaluated and found safe by the Scientific Committee on Consumer Safety).

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[28] European Commission (2017): EU Ecolabel for business. Article available at: http://ec.europa.eu/environment/ecolabel/eu-ecolabel-for-businesses.html

[29] JRC (2017): Technical Report (Final Version). Available at: http://susproc.jrc.ec.europa.eu/detergents/stakeholders.html

Several consumer organisations also expressed concern that some substances identified as SVHC under REACH are still being used in detergent products, and noted that **the use of SVHC in detergents should be banned**. One consumer organisation that participated in the consultation explained that detergents are just part of the problem and that consumers are exposed to cocktail effects from different types of products (e.g. food, paint, building materials, etc.).

In contrast, an industry association explained that:

> *"For our industry, these kind of substances [CMRs and SVHC] are strongly regulated by REACH, which studies and restricts its utilization for consumer uses.*

The inclusion of rules on CMR and SVHC substances in the Detergents Regulation when already they are regulated by REACH, would not help improve human health protection, but would create overlap between regulations, contrary to the current objectives of the REFIT program."

Nanomaterials

A recent development in the detergents market is the development of detergents that contain nano ingredients (e.g. nanosilver, which is used as an antibacterial agent in some detergent products). During the consultation, it was indicated that hard surface cleaners, dishwasher tablets and laundry detergents (powders and liquids) are the most likely to contain nano ingredients. In Denmark, the Danish Consumer Council and the Danish Ecological Council have, in cooperation with DTU Environment developed a database ("The Nanodatabase"[30]) that contains information on consumer products that contain nanomaterials. A quick search of the database using the term "detergent" brings up several products containing nanosilver (including a liquid laundry detergent, liquid dishwasher detergent and laundry ball), as well as car shampoos containing nano diamond and nano silicon.[31]

During the consultation, it was reported that around a decade ago, tests were carried out to develop glass cleaners using nanomaterials, although at the time these were not very successful. A consumer organisation indicated that it was aware of products containing nanosilver being imported from outside of the EU. During the interviews, one trade union noted that its biggest concern relates to nanotubes, which mimic asbestos; however, it is not clear whether these have been used in detergent products.

Although nanomaterials offer technical and commercial opportunities, they may also pose a risk to the environment and raise health and safety concerns for humans and animals[32] and some people have therefore argued that consumers have a right to know whether the products they buy contain nanomaterials.[33] Unlike the Detergents Regulation (which does not include any requirements for nanomaterials), both the Biocidal Products Regulation and Cosmetic Products Regulation provide specific provisions regarding nanomaterials and require the name of each nanomaterial included in

[30] Available at: http://nanodb.dk/en

[31] Search undertaken on 27 July 2017.

[32] ECHA (2017): Nanomaterials under Biocidal Products Regulation. Article available at: https://echa.europa.eu/regulations/nanomaterials-under-bpr

[33] Nano&me (2017): Household cleaning products. Article available at: http://www.nanoandme.org/regulation/household-cleaning-products

the product to be stated on the label, followed by the word "nano" in brackets.[34, 35] The ecolabel also requires that all nanomaterials in detergents are clearly indicated on the product label.

During the consultation, a Commission official confirmed that the reason for including a nanomaterial labelling provision in the Biocidal Products Regulation is to follow a precautionary and transparent approach, given questions and potential concerns about their properties and potential risks. The Commission official stated that the labelling of nanomaterials under the Biocidal Products Regulation has not been a subject of controversy. Another Commission official noted that, in the context of the EU Ecolabel, the word "nano" is included on the product label, mainly for consumer information.

MS authorities and companies agreed that **whether nanomaterials should be labelled depends on whether the nanomaterial is hazardous.** The consensus was that if nanomaterials are hazardous, then they should be labelled or removed from the product altogether; if they are not hazardous, then they should not be labelled. It was indicated that the definition of a nanomaterial is very broad and that, **if products need to be labelled as containing nanomaterials, then there needs to be a clear definition of what a nanomaterial is.** Note that the Commission's definition for a nanomaterial is set out in Recommendation 2011/696/EU[36].

A3.2.5 Labelling of content for professional products

Annex VII A of the Detergents Regulation lists the information – in terms of the content of detergents – that must be provided on the labels and packaging of detergents sold to the general public. The final paragraph of Annex VII A states that:

> *"For detergents intended to be used in the industrial and institutional sector, and not made available to members of the general public, the abovementioned requirements do not have to be fulfilled if the equivalent information is provided by means of technical data sheet, safety data sheets, or in a similar appropriate manner."*

A response received to the OPC from a MS authority indicated that, in the case of professional, products, the Detergents Regulation does not stipulate specifically where the content of detergents should be presented (e.g. a specific place or document). They indicate that this prevents effective enforcement as authorities have to search through the documents to locate the content information and then compare this with the actual formulation of the product. The authority suggests that it would be helpful if a requirement was included in the Regulation specifying where the labelling of the contents of a detergent should be stated in the relevant documentation. Although this point was only raised by one MS authority, specifying where specifically the content information should be

[34] ECHA (2017): Nanomaterials under Biocidal Products Regulation. Article available at: https://echa.europa.eu/regulations/nanomaterials-under-bpr

[35] European Commission (2012): Public health, Nano guidance for cosmetic products now available. Article available at: http://ec.europa.eu/dgs/health_consumer/dyna/enews/enews.cfm?al_id=1276

[36] European Commission (2011): Commission Recommendation of 18 Octover 2011 on the definition of nanomaterial. Available at: https://ec.europa.eu/research/industrial_technologies/pdf/policy/commission-recommendation-on-the-definition-of-nanomater-18102011_en.pdf

presented in the accompanying documentation could help ensure a standardised approach across industry and assist enforcement authorities through increasing the efficiency of the process.

A3.3 Provision of ingredient data sheets to MS competent authorities and medical personnel (Article 9(3) and Annex VII C)

The Detergents Regulation specifies that detailed information on the composition of detergents must be provided to medical professionals, upon request, via the "*ingredient data sheet*". The ingredient data sheet must be provided "*without delay and free of charge*" (Article 9(3)(1)). The content of the ingredient data sheet must be prepared according to Annex VIII C. In addition, the Detergents Regulation foresees in Article 9(3)(2) that "*this is without prejudice to the right of a Member State to request that such a datasheet be made available to a specific public body to which the Member State has assigned the task of providing this information to medical personnel*".

It has been noted that the intention of Article 9(3) is to cover two separate medical needs: (i) allergies and (ii) incidents of poisoning.

For allergies, the needs are those of dermatologists who are investigating the cause of allergies in patients. This need is covered in the first paragraph of Article 9(3).[37] In cases of poisoning, the need for information is more urgent than for cases of allergy. In recognition of this, Article 9(3)(2) of the Detergents Regulation foresees that manufacturers can be required by MS authorities to provide the data to poison centres in advance, i.e. when the product is first placed on the market, so that the poison centres are able to supply the information immediately to the doctor. It has been noted that this is simply a confirmation of the current practice in most MS.[38] Annex VII D of the Detergents Regulation also requires the list of ingredients to be made publicly available on a website. It was anticipated that this would enable information to be available from two separate sources (i.e. the manufacturer and the poison centre) and would help to prevent any delays in information reaching a doctor treating a patient.[39] In the UK, the Government (HM Government, 2010)[40] has clarified that the Detergents Regulation should lead to "*improved access for health care professionals to data on substances that they consider could cause irritant or allergic reactions. This could reduce the number of cases of allergic reaction and improve the treatment of any such cases*".

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[37] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations

[38] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations

[39] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version: September 2015. Available at: http://ec.europa.eu/DocsRoom/documents/19522/attachments/1/translations

[40] HM Government (2010: Explanatory memorandum to the Detergents Regulations 2010, 2010 No. 740. Available at: http://www.legislation.gov.uk/uksi/2010/740/memorandum/contents

Article 45(1) of CLP creates a framework for the submission (by importers and formulators of hazardous mixtures) of information relevant *"for formulating preventative and curative measures, in particular in the event of emergency health response"* to the appointed bodies across the EU. This information should include *"the chemical composition of the mixtures"* and *"the chemical identity of substances in mixtures for which a request for use of an alternative chemical name has been accepted by the Agency."*[41]

Article 45(4) of CLP gives mandate to the Commission to adopt a harmonized EU *"format for the submission of [such] information by importers and downstream"* if, based on a comprehensive review and consultations with the stakeholders, it considers that the different notification systems in place in the EU MS lead to inconsistencies in the information available to medical personnel and the general public, detrimental in cases of poisoning incidents. Article 45(4) specifies that in such a case *"the Commission may adopt a Regulation adding an Annex to this Regulation",* including such harmonized format.

Regulation (EU) 2017/542 was adopted by the Commission in March 2017. It amended the CLP Regulation by adding an Annex VIII on the harmonised information relating to emergency health response, i.e. that harmonises the information to be provided to the national appointed bodies in the EU MS.

Pursuant to the new Annex VIII (Part B, Section 3), the information contained in a submission must cover the chemical identity and concentration of components classified as hazardous on the basis of their health or physical effects, which:

- are present in concentrations equal to or greater than 0.1 %;
- are identified, even if in concentrations lower than 0.1 %, unless the submitter can demonstrate that those components are irrelevant for the purposes of emergency health response and preventative measures.

Mixture components that are not classified as hazardous on the basis of their health or physical effects, must be notified as well, if they are identified and present in concentrations equal to or greater than 1%.

Finally, mixture components of major concern must be notified with their exact percentage or specific concentration ranges. The hazard classes identified as being of '*major concern'* are the (i) acute toxicity, Cat. 1, 2 or 3; (ii) specific target organ toxicity -single exposure, Cat.1 or 2; (iii) specific target organ toxicity - repeated exposure, Cat. 1 or 2; (iv) skin corrosion, Cat. 1, 1A, 1B or 1C; (v) serious eye damage, Cat.1

Annex VIII requirements establishes different deadlines for submitting information depending on the intended use of the hazardous mixtures at stake. Indeed, if a hazardous detergent is supplied for consumer use, the information must be submitted by 1 January 2020. Detergents used in professional or industrial settings will need to comply by 2021 and 2024, respectively.

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[41] It is important to clarify that Article 45 and Annex VIII apply to *mixtures*. Substances, either classified or not, are excluded by the obligation. Also, mixtures classified for environmental hazards only are outside the scope of Article 45 and information according to Annex VIII does not need to be submitted. Finally, mixtures which are subject to supplemental labelling requirements according to Part 2 of Annex II to CLP but are not themselves classified for health or physical hazards are not subject to notification requirements.

During the consultation, **one large company estimated that about 95% of all detergent products on the market would be classified as hazardous under CLP.** Several industry associations explained that as Regulation 542/2017 comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete and that the Detergents Regulation should, therefore, foresee the gradual abolishment of these provisions. One stakeholder from Greece noted that Article 45 of CLP:

> *"has brought duplication of work to detergent enterprises and unjustified increase of administrative costs. The Poison Control Centre already has the necessary hazard and safety data provided according to Art 45 of CLP and any other medical personnel calling a company for urgent help (rarely having immediate access to an e-mail or a fax!) needs basic info on the formulation of the product in question, on the phone."*

During the consultation, AISE and others similarly indicated that **requiring manufacturers of detergent products to provide a list of ingredients to medical personnel on request causes an unnecessary additional burden for industry**[42] and that it would be more logical and efficient for medical personnel to obtain this information from poison centres, which not only have information on product ingredients, but also on the actions that should be taken following a poisoning incident. Stakeholders pointed out that **it is unusual for medical professionals to seek ingredient lists from product manufacturers**. For example:

- AISE has noted that a survey across nine EU countries, covering about 300 million citizens, has shown that requests from medical personnel according to Article 9(3) of the Detergents Regulation are very rare. In half the countries analysed, only two to three requests were received each year, while in the remaining half, no requests were received;
- a national industry association from the detergents industry reported that it had asked its members to identify the number of requests received by detergent manufacturers by medical personnel for information on the ingredients used in detergent products. This research indicated that during the 10-year period from 2006 to 2015, less than 50 requests were received by manufacturers from medical personnel. This is compared to 16.4 billion detergent packages being sold during the same period.
- another industry association noted that it was not aware of any companies having received a request from a medical professional for an ingredient data sheet.
- one small company from Belgium explained that it had been approached by a medical professional for an ingredient data sheet, as well as by the poison centre. The stakeholder noted that most requests come from the poison centre, as opposed to medical personnel.

SMEs that participated in the survey were asked to indicate how familiar they are with the requirements of the Detergents Regulation on the provision of information to authorities and medical staff. As shown in Figure A3-9, most (85%) indicated that they are at least somewhat familiar with the Regulation's provisions.

[42] Note that one stakeholder stated that a similar requirement (i.e. to send an information sheet to medical personnel) already existed in Romania before the introduction of the Detergents Regulation. This means that, in Romania at least, the administrative burden of the Detergents Regulation should not be counted as additional.

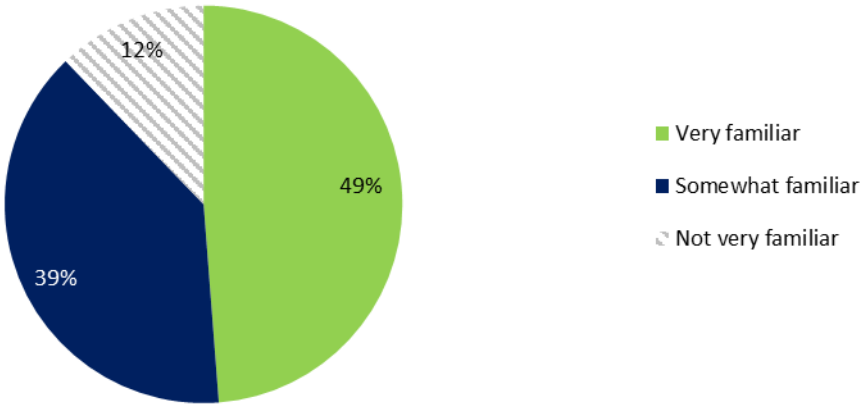

Figure A3-8: How familiar are you with the following requirements under the Detergents Regulation? – Requirements on the provision of information to authorities and medical staff. Responses to the survey of SMEs conducted by EEN. ***Number of responses: n = 41***

In terms of compliance with the Regulation's requirements on ingredient data sheets, the CLEEN Report found that for 23% of inspected detergent products, contact details (which would be required by medical personnel seeking the ingredient data sheet) were missing. Furthermore, for 23% of inspected products, an ingredient data sheet was not available at all; while for 14% of inspected products, the ingredient data sheet was not made available for inspectors. A quarter (26%) of the ingredient data sheets were not in conformity with the requirements listed in Annex VII C. Figure A3-10 provides data on the occurrence of shortcomings in the lists of ingredients checked in the EuroDeter study. It shows how often various shortcomings appeared.

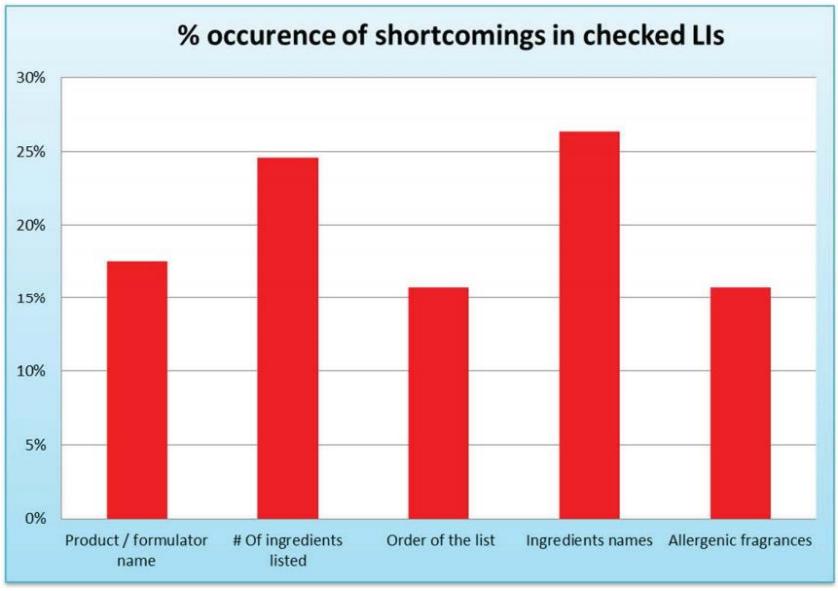

Figure A3-9: Occurrence of shortcoming in the checked lists of ingredients

Source: CLEEN (2014)[43]

A3.4 Publication of the list of ingredients on a website (Annex VII D)

As mentioned previously, the 2006 amendment to the Detergents Regulation (Annex VII D) requires manufacturers to make available on a website, a simplified ingredient data sheet. The Detergents Regulation does not prescribe how the website should be hosted, but the edited version of the data sheet must be made available somewhere on the internet. AISE recommends that the choice is made "*on the basis of logical access*", for example, via a website dedicated to the product or to the manufacturer and states that "*the manufacturer can also consider making joint arrangements with other manufacturers, e.g. via their trade association, with a view to producing a general detergent product ingredient database website*".[44] The UK Health and Safety Executive (HSE) similarly suggests that it might be possible for smaller manufacturers that do not have their own website to make use of a trade association website.[45]

[43] CLEEN (2014): EuroDeter, Final Report. Available at: http://www.cleen-europe.eu

[44] AISE (2013): Guidelines on the implementation of the Detergents Regulation v2, available at: https://www.aise.eu/our-activities/product-safety-and-innovation/detergents.aspx

[45] UK HSE (2017): Frequently asked questions, Regulation (EC) No 648/2004 on Detergents, available at: http://www.hse.gov.uk/detergents/frequently-asked-questions.htm

The Commission's guidance on the Detergents Regulation[46] clarifies that:

> *"…While the location on the website is not stipulated the information should be easily accessible and intuitive to the general public/consumers. Access to the website shall not be subject to any restriction e.g. requirement to enter a specific code or to register as a user. If a URL link is given on the packaging label, the path to the ingredient data sheet should be intuitive and easy to follow for any consumer with basic internet knowledge, starting with a "click" on the URL given on the packaging. Ideally (when technically possible, depending from the company's website structure), this URL link should give direct access to the product's ingredient data sheet.*
>
> *With regard to the language used on the website, it is recommended that the ingredient information is made available in all languages of the Member States where the product is placed on the market."*

Information from literature review and consultation indicates that there are compliance issues with the obligation to provide the ingredient data sheet online. The EuroDeter study, for example, found that almost 30% of the inspected detergents, for use by the general public, did not provide a website address related to the list of ingredients on the label or packaging. Furthermore, the list of ingredients was not available at the website address mentioned on the label for 46% of the inspected products.

The compliance checks carried out by the Danish Consumer Council 'THINK Chemicals'[47] similarly found missing ingredient lists (data sheets), lists that were extremely difficult to find and lists that were outdated. When THINK Chemicals looked online for the ingredient datasheets for 33 soaps for washing dishes by hand, they found correct information for just nine products; information was available but incorrect for 10 products and no data were available for the remaining 14 products. Some ingredient lists were found with help from the companies and other companies had the datasheet and made them available to THINK Chemicals on request.

Information received during the consultation similarly confirms that such issues are prevalent. For instance, one consumer organisation from Portugal noted that some brands provide outdated information in their ingredient lists, some brands indicate the ingredient's commercial name, and not the IUPAC or CAS number, and some brands do not communicate the ingredient lists when required. A consumer organisation from Denmark also commented that sometimes the ingredient list is not available online, sometimes it is difficult to find, sometimes it is there but has not been updated (and therefore contains incorrect information) and sometimes it is available and correct.

A MS authority from Germany explained that the website link given on the packaging of the detergent should link directly to the list of ingredients, but that this is not always the case, and a MS authority from Finland similarly commented that it is not always possible to find the list of ingredients on the manufacturer's website. It was noted that easy accessibility is not currently a

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[46] European Commission (2015): Questions and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, Version: September 2015, available at: http://ec.europa.eu/DocsRoom/documents/19522

[47] KEMI (2017): Check your dishwashing soap for allergenic preservatives, available at: http://kemi.taenk.dk/bliv-groennere/check-your-dishwashing-soap-allergenic-preservatives

requirement of Annex VII D of the Detergents Regulation and that navigation on foreign-language websites is particularly difficult.

When asked why these compliance issues arise, one MS authority from Ireland suggested that it may be because the obligation to provide information on a website is "hidden" in the annexes. A MS authority from Germany noted that the reason why the website is hard to find or missing is not due to unclear requirements in the Regulation, but due to other reasons (although these were not specified).

SMEs that participated in the survey were asked to indicate how familiar they are with the Detergent Regulation's requirements for ingredient lists and websites. As shown in Figure A3-11, most respondents indicated that they are at least somewhat familiar with the requirements for ingredient lists and websites.

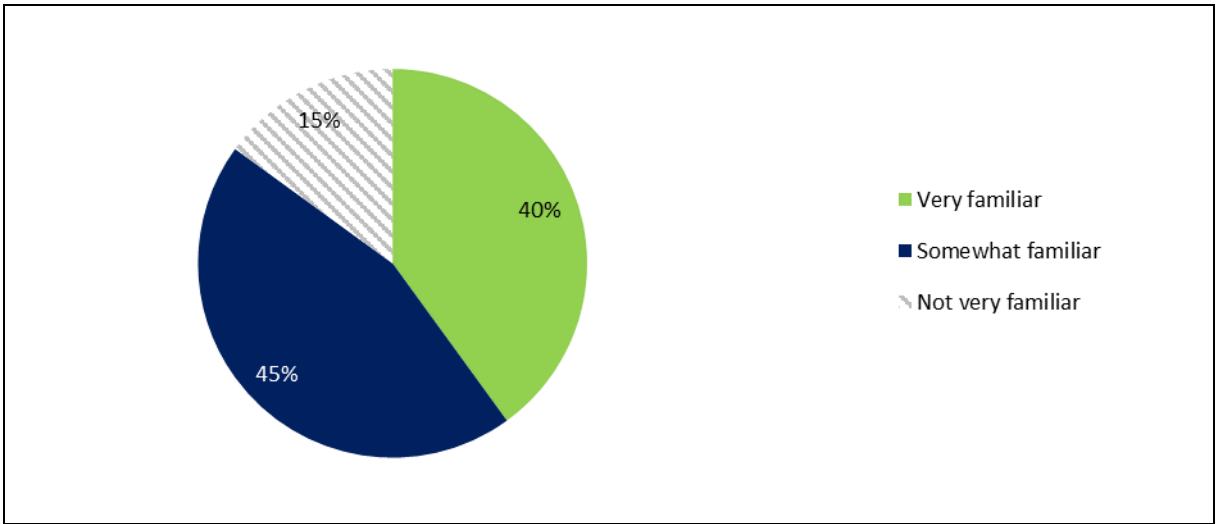

Figure A3-10: How familiar are you with the following requirements under the Detergents Regulation? – Requirements for ingredient lists and websites. Responses to the survey of SMEs conducted by EEN.

One consumer organisation suggested that it would make more sense to have the full list of ingredients on the product itself – as is already the case for cosmetic and food products. This would ensure that consumers' always have access to the right information, without having to go to the trouble of finding out. The consumer organisation noted that there would not be any issues in terms of space on the packaging, as some products (e.g. Danish Blue Label products) are already required to list all of the ingredients on the packaging. It should be noted that this comment is in contrast to the prevailing view of industry. During the consultation, **many companies and industry associations indicated that there is too much information provided on detergent packaging and that this is confusing for consumers and costly to industry**. **Stakeholders repeatedly suggested that some of the ingredient information currently provided on product labels would be better provided online, and linked to the product using a QR code.** As stated by AISE during the OPC:

> *"A potential way of reducing the level of information included on product labels while ensuring it remains available is through the use of innovative communication technologies, such as QR codes and bar codes."*

It was indicated that QR codes are already used on some detergent products available on the EU market.

As previously remarked, AISE believes that the labelling of allergens should be maintained on product labels but that other ingredient information (identified by INCI names) could be provided using other means, such as improved IT disclosure or by telephone line.

Citizens that stated that they, or another member of their household, is allergic to substances found in detergents[48] were asked whether they, or anybody in their household, has ever visited the website where the ingredient datasheets can be found. Of the 12 citizens that responded to this question, six indicated that they had visited the website. When asked whether the website was easy to find, and whether the information provided on this website was helpful, half (six respondents) indicated "yes" (Figure A3-12).

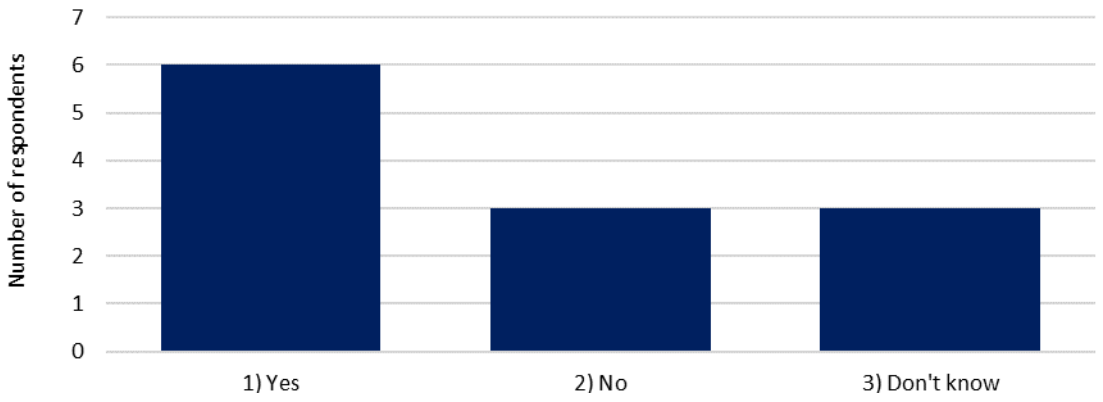

Figure A3-11: The Detergents Regulation requires information on the ingredients in detergents to be made available on a website. The website address must be provided on the product packaging. Have you, or has anybody in your household, ever visited the website where these ingredient data sheets can be found? Responses to the OPC – Citizens.

A3.5 Instructions for use and special precautions (Article 11(3))

Article 11(3) of the Detergents Regulation specifies that "the packaging of detergents shall indicate … instructions for use and special precautions, if required". While the CLEEN Report found that 85% of inspected products are compliant with this obligation, it is worth noting that **the Detergents Regulation does not provide any guidance on what indications of use or measures should be mentioned and how they could be included on the label**; although it would appear, based on information received during the consultation, that **some industry associations have issued guidance on this issue**.

During the consultation, MS authorities were generally of the view that companies comply with this provision and that the labelling of instructions for use and special precautions have not caused any issues. Industry associations and companies were also predominantly of the view that this aspect of the Detergents Regulation is working well, although a couple stated that further guidance would be welcomed. One MS authority noted that it would be beneficial if the packaging also contained

[48] i.e. citizens that stated "yes" to Question 8 of the OPC survey: "Are you, or is anybody in your household, allergic to any substances found in detergents?"

information on the scope of application or proposed use for the product, as well as information on compatibility with the materials cleaned.

A number of themes were, however, recurrent during the consultation and raised by stakeholders from different groups:

1. that consumers generally do not read the instructions and precautions provided on product labels;
2. that too much, and too complex, information is presented on detergent labels and packaging; and
3. that consumers cannot be assumed to protect themselves with personal protective equipment (PPE).

Over the last few years, AISE has regularly asked consumers about the quantity of information provided on how to use detergents safely (see Figure A3-3). When data are compared from 2008, 2011 and 2014, it appears that an increasing proportion of consumers believe there is about the right amount of information appearing on detergent products. At the same time, however, **an increasing share of consumers also believe there is too much information on how to use detergents safely**.

Citizens that participated in the OPC were asked how they feel about the amount of information provided on how to use detergents safely. As shown in Figure A3-13, **41% of citizens responding to this question have indicated that "there is about the right amount of information"** available on how to use detergent products safely, although 16% indicated that there is too much information. 39% of citizens that responded to the OPC indicated that "there is not enough information" available on how to use detergents safely.

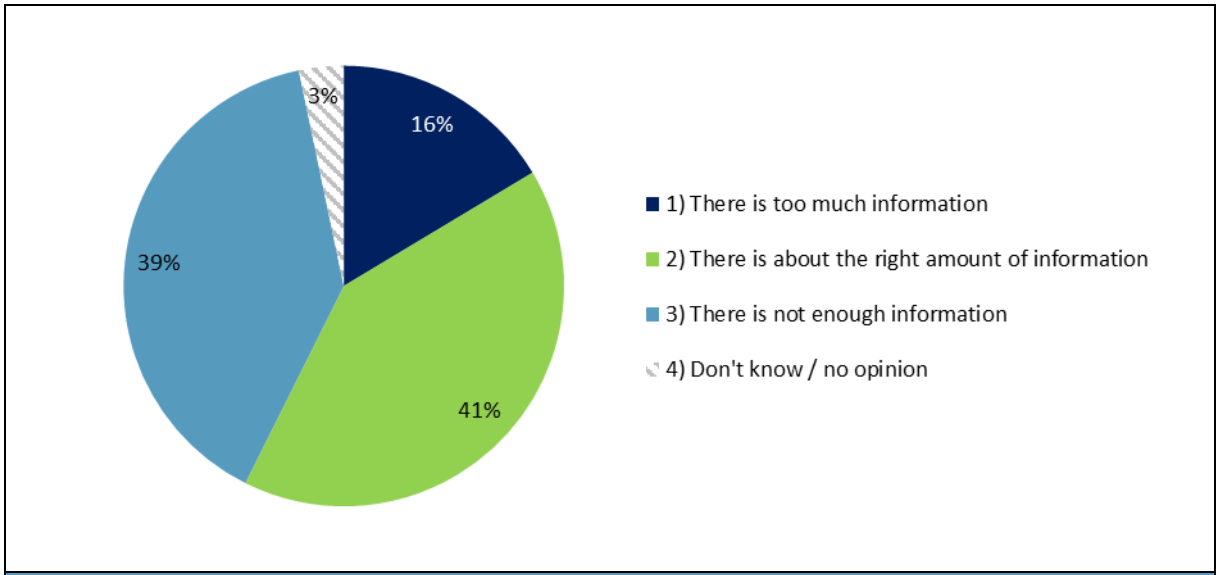

Figure A3-12: When it comes to the amount of information provided on how to use detergent products safely, which statement do you agree with the most? Responses to the OPC – Citizens. ***Number of responses: n=61***

Results from the supporting study for the fitness check on chemicals legislation (excluding REACH)[49] show that most MS authorities consider the labelling requirements of the Detergents Regulation to be effective at communicating hazards and risks to workers, professional users and consumers; and most organisations that responded to the OPC for the present study also indicated that **the labelling requirements outlined in the Detergents Regulation are sufficient to inform consumers and downstream users about the ingredients and instructions regarding detergent use** (Figure A3-14).

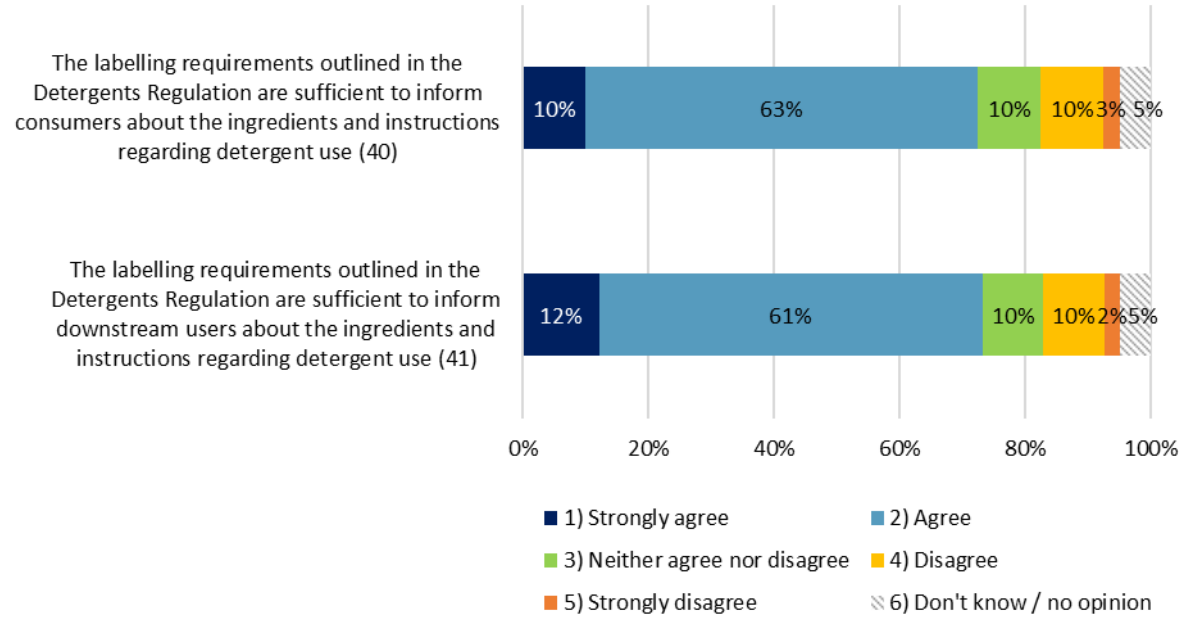

Figure A3-13: To what extent do you agree with the following statements regarding the labelling/packaging requirements outlined in the Detergents Regulation? Responses to the OPC – Organisations. ***Number of respondents shown in brackets.***

The CLP Regulation entered into legal effect in January 2009 and, after a lengthy transition period, introduced a new classification and labelling system for hazardous chemicals in the EU. Under CLP, detergent products must be labelled with the appropriate hazard pictograms (see Figure A3-15) and bear the relevant hazard statements (see Table A3-5), precautionary statements (Table A3-6) and supplemental information (Table A3-7). Consequently, complying with CLP enables companies to – in part - fulfil the requirements of the Detergents Regulation, Article 11(3); although this is not explicitly stated in the legal text of the Regulation.

[49] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

Explosive

Corrosive

Flammable

Acute toxicity

Oxidising

Hazardous to the environment

Figure A3-14: CLP hazard pictograms[50]

Table A3-1: Hazard statements		
Hazard statement codes	**Hazard class**	**Example**
H2**	Physical hazards	H252: Self-heating in large quantities; may catch fire
H3**	Health hazards	H362: May cause harm to breast-fed children
H4**	Environmental hazards	H410: Very toxic to aquatic life with long lasting effects
Source: Chemical Inspection and Regulation Service (2017)[51]		

[50] HSE (2017): Hazard pictograms, available at: http://www.hse.gov.uk/chemical-classification/labelling-packaging/hazard-symbols-hazard-pictograms.htm

[51] Chemical Inspection and Regulation Service (2017): Labelling and packaging under CLP. Available at: http://www.cirs-reach.com/CLP/Labelling_Packaging.html

Table A3-2: Precautionary statements		
Precautionary statement codes	**Precautionary measurement**	**Example**
P1**	General	P102: Keep out of reach of children
P2**	Prevention	P210: Keep away from heat/sparks/open flames/ hot surfaces
P3**	Response	P311: Call a poison centre or doctor/physician
P4**	Storage	P403: Store in a well-ventilated place
Source: Chemical Inspection and Regulation Service (2017)[52]		

Table A3-3: Supplemental information	
Supplemental information codes	**Example**
EUH001	Explosive when dry
EUH006	Explosive when dry
EUH014	Reacts violently with water
Source: Chemical Inspection and Regulation Service (2017)[53]	

Stakeholders noted that there are also a number of voluntary initiatives in the detergents sector that help to ensure that detergent products are correctly and safely used. For example, AISE has developed a set of safe use icons (for on-pack labelling) to assist companies in presenting a clear message to consumers on how to use AISE consumer products (Figure A3-16). The safe use icons are made freely available by AISE to any company placing detergents on the EU market, provided the use of the icons/messages complies with AISE's legal and technical guidelines. AISE's safe use icons have been developed primarily for the EU market and safe use icons are available in the languages of the EU. However, they may also be used outside of the EU and outside of AISE's product portfolio (i.e. soaps, detergents and maintenance products) so long as they comply with AISE's rules.

During the supporting study to the fitness check on chemicals legislation (excluding REACH)[54], most MS authorities agreed that voluntary icons, such as the AISE safe use icons, are effective in communicating to consumers and other downstream users. However, some MS authorities suggested that they can be misleading and sometimes appear at first sight to say the opposite of CLP pictograms. Furthermore, it was found that very large icons can divert attention from the CLP information and lead to visual confusion. More generally, concern was expressed that safe-use icons and marketing information take up space that could better be given to regulatory pictograms and statements. MS authorities were split in opinion as to whether a reduction in labelling requirements

[52] Chemical Inspection and Regulation Service (2017): Labelling and packaging under CLP. Available at: http://www.cirs-reach.com/CLP/Labelling_Packaging.html

[53] Chemical Inspection and Regulation Service (2017): Labelling and packaging under CLP. Available at: http://www.cirs-reach.com/CLP/Labelling_Packaging.html

[54] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes I to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

to provide only the most important hazard information on the label may be appropriate, if additional information is available as part of use instructions.

Figure A3-15: AISE safe use icons[55]

In 2010-2011, AISE conducted market research on consumers' understanding of the safe-use pictograms, which confirmed that consumers had a relatively good understanding of most of the icons.[56]

During the consultation for the present study, industry associations explained that **it is helpful for manufacturers if symbols are used to present information to consumers instead of text**, because using symbols would mean that less information needs to be translated into different languages. It was noted that **manufacturers would like to use the same label for products sold in multiple**

[55] AISE (2017): Safe use icons – update 2014, available at: https://www.aise.eu/library/artwork/safe-use-icons---update-2014.aspx

[56] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes I to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

countries. If a company wants to sell products in a country with a relatively small population (e.g. Sweden), then it is helpful if the company can sell the same product (labelled in the same way) in other countries too (e.g. Finland). This enables the available stock to be switched between different national markets according to demand.

From a consumer perspective, stakeholders also advised that symbols are advantageous because they can be understood across all MS and because they eliminate the need for very small text on labels that can be difficult for consumers to read.

One official from the European Commission explained that consumers will rarely wear personal protective equipment (PPE) – such as gloves or goggles – when using detergent products and **it cannot reasonably be assumed that consumers will always wear PPE.** The stakeholder explained that this is why, under the Biocidal Products Regulation, biocidal products are not normally authorised for use by consumers if PPE has to be worn to ensure safe use.

A3.6 Safeguard clause (Article 15)

The existence of a safeguard clause in the Detergents Regulation is consistent with other European chemicals legislation (including REACH and CLP) that also includes similar safeguard clauses. As shown in Table A3-8, and concluded in the fitness check on chemicals legislation (excluding REACH)[57] there is good coherence between when and how actions can be taken under these different pieces of legislation.

[57] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes I to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

Table A3-4: Safeguard clause under various European laws				
REACH (1907/2006/EC)	CLP (1272/2008/EC)	Detergents (648/2004/EC)	Cosmetics (1223/2009/EC)	Biocides (528/2012/EC)
Article 129: **Safeguard clause** 1. Where a Member State has justifiable grounds for believing that urgent action is essential to protect human health or the environment in respect of a substance, on its own, in a preparation or in an article, even if satisfying the requirements of this Regulation, it may take appropriate provisional measures. The Member State shall immediately inform the Commission, the Agency and the other Member States thereof, giving reasons for its decision and submitting the scientific or technical information on which the provisional measure is based. 2. **The Commission shall take a decision in accordance with the procedure referred to in Article 133(3) within 60 days** of receipt of the information from the Member State. This decision shall either: (a) authorise the provisional measure for a time period defined in the decision; or (b) require the Member State to revoke the provisional measure. 3. If, in the case of a decision as referred to in paragraph 2(a), the provisional measure taken by the Member State consists in a	**Article 52:** **Safeguard clause** 1. Where a Member State has justifiable grounds for believing that a substance or a mixture, although satisfying the requirements of this Regulation, constitutes a serious risk to human health or the environment due to reasons of classification, labelling or packaging, it may take appropriate provisional measures. The Member State shall immediately inform the Commission, the Agency and the other Member States thereof, giving the reasons for its decision. 2. **Within 60 days of receipt of the information from the Member State**, the Commission shall in accordance with the regulatory procedure referred to in Article 54(2) either authorise the provisional measure for a time period defined in the decision or require the Member State to revoke the provisional measure. 3. In the case of an authorisation of a provisional measure related to classification or labelling of a substance as referred to in paragraph 2, the competent	**Article 15:** **Safeguard clause** 1. Where a Member State has justifiable grounds for believing that a specific detergent, although complying with the requirements of this Regulation, constitutes a risk to safety or health of humans or of animals or a risk to the environment, it may temporarily prohibit the placing on the market of that detergent in its territory or make it temporarily subject to special conditions. It shall immediately inform the other Member States and the Commission thereof, giving the reasons for its decision. 2. After consultation of the Member States, or, if appropriate, of the relevant technical or scientific committee of the Commission, a decision shall be taken on the matter **within ninety days** in accordance with the procedure referred to in Article 12(2).	**Article 27:** **Safeguard clause** 1. In the case of products meeting the requirements listed in Article 25(1), where a competent authority ascertains, or has reasonable grounds for concern, that a cosmetic product or products made available on the market present or could present a serious risk to human health, it shall take all appropriate provisional measures in order to ensure that the product or products concerned are withdrawn, recalled or their availability is otherwise restricted. 2. The competent authority **shall immediately c**ommunicate to the Commission and the competent authorities of the other Member States the measures taken and any supporting data. For the purposes of the first subparagraph, the information exchange system provided for in Article 12(1) of Directive 2001/95/EC shall be used. Article 12(2), (3) and (4) of Directive 2001/95/EC shall apply. 3. The Commission shall determine, as soon as possible, whether the provisional	**Article 88:** **Safeguard clause** Where, on the basis of new evidence, a Member State has justifiable grounds to consider that a biocidal product, although authorised in accordance with this Regulation, constitutes a serious immediate or long-term risk to the health of humans, particularly of vulnerable groups, or animals, or to the environment, it may take appropriate provisional measures. The Member State shall, **without delay**, inform the Commission and the other Member States accordingly and give reasons for its decision based on the new evidence. The Commission shall, by means of implementing acts, **either permit the provisional measure for a time period defined in the decision or require the Member State to revoke the provisional measure.** Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 82(3).

Table A3-4: Safeguard clause under various European laws				
REACH (1907/2006/EC)	**CLP (1272/2008/EC)**	**Detergents (648/2004/EC)**	**Cosmetics (1223/2009/EC)**	**Biocides (528/2012/EC)**
restriction on the placing on the market or use of a substance, the Member State concerned shall initiate a Community restrictions procedure by submitting to the Agency a dossier, in accordance with Annex XV, within three months of the date of the Commission decision. 4. In the case of a decision as referred to in paragraph 2(a), the Commission shall consider whether this Regulation needs to be adapted.	authority of the Member State concerned shall in accordance with the procedure laid down in Article 37 submit a proposal to the Agency for harmonised classification and labelling, within three months of the date of the Commission decision.		measures referred to in paragraph 1are justified or not. For that purpose it shall, whenever possible, consult the interested parties, the Member States and the SCCS. 4. Where the provisional measures are justified, Article 31(1) shall apply. 5. Where the provisional measures are not justified the Commission shall inform the Member States thereof and the competent authority concerned shall repeal the provisional measures in question.	
60 days	60 days	90 days	Immediately	Defined in the decision
Source: RPA (2017)[58]				

[58] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annexes I to V. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/2/translations/

During the research undertaken for this study, one instance has been identified of the safeguard clause being used under the Detergents Regulation (see Table A3-9 below) and at least one MS also considering using the safeguard clause to address the risk of unintentional poisoning posed by liquid laundry detergent capsules (see Table A3-10). In the case of the latter, however, it was concluded that the safeguard clause was not adequate to deal with this issue, because the problem covered a whole category of laundry detergent, and not a specific brand or product within this type.

Table A3-5: Use of the safeguard clause: The case of POR-ÇÖZ

In 2010, the German Federal Environment Agency notified the Commission and the other EU MS that it had temporarily prohibited a cleaning product (POR-ÇÖZ) from being placed on the German market. POR-ÇÖZ - a mixture intended for cleaning purposes, and therefore a detergent according to Article 2 of the Detergents Regulation - was being marketed as a limescale and rust remover to the general public. Manufactured in Turkey, the product had been imported to Germany and was mainly being sold in Turkish retail shops. It contained 25% nitric acid, which is classified as corrosive to the skin, Category 1, under CLP.

The German authorities reported that a child (aged two years and eleven months) had ingested a small quantity of the household cleaner and, as a result, had suffered severe chemical burns (BfR, 2010). The child had been admitted to the intensive care unit of a hospital where she underwent 12 days of intensive medical and surgical treatment, followed by six weeks of inpatient treatment and many months of follow-up examinations. [59]

In cooperation with the German poison information centres, the Federal Institute for Risk Assessment (BfR) initiated immediate investigations into the case and assessment of the product involved. They found that between 1999 and 2010, there had been 134 incidents involving POR-ÇÖZ, some of which had resulted in severe health damage (see Figure A3-17).

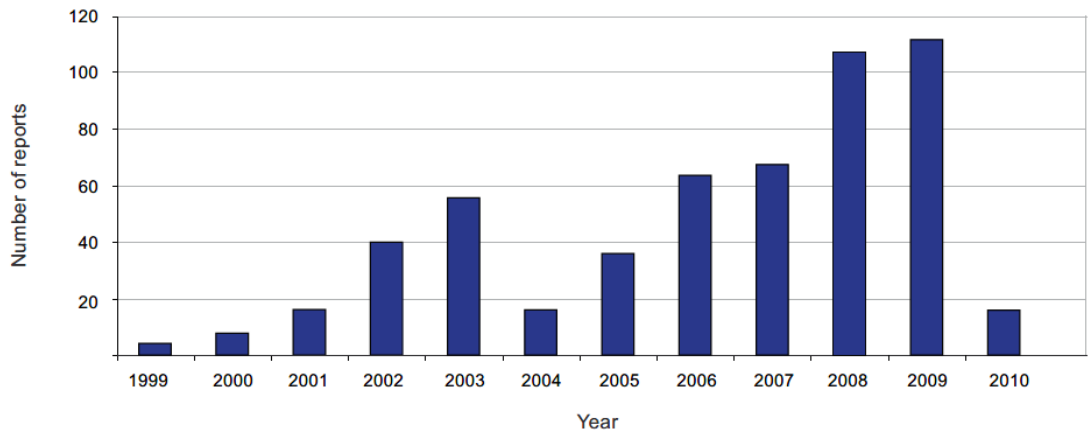

Figure A3-16: Cases of poisoning by POR-ÇÖZ by year of accident

Source: BfR (2010) [60]

[59] BfR (2010): Cases of Poisoning Reported by Physicians in 2010. Bundesinstitut für Risikobewertung. Available at: http://www.bfr.bund.de/cm/364/cases-of-poisoning-reported-by-physicians-2010.pdf

[60] BfR (2010): Cases of Poisoning Reported by Physicians in 2010. Bundesinstitut für Risikobewertung. Available at: http://www.bfr.bund.de/cm/364/cases-of-poisoning-reported-by-physicians-2010.pdf

In a letter dated 22 December 2010, the German authorities confirmed that the product POR-ÇÖZ complied with the requirements of the Detergents Regulation, notably its labelling and packaging requirements, and was packaged with a German-language label and fitted with child-proof fastening. Nevertheless, the German authorities had justifiable grounds for believing that the product constituted a risk to the safety and health of humans and the Article 15 safeguard clause was applied by Germany. The resulting Commission Implementing Decision of 6 April 2011 enabled Germany to maintain its temporary prohibition on the placing on the market of the cleaning product POR-ÇÖZ for one year from the date of adoption of the Decision.[61]

With regard to this decision, one German MS authority that participated in the consultation noted that "*the Commission´s Decision on the prohibition of placing a product on the market is only temporary and does not consider the temporal demand of the risk management procedures in accordance with REACH and CLP*".

Table A3-6: Use of the safeguard clause: Liquid laundry detergent capsules

Liquid laundry detergent capsules with a water-soluble film packaging were initially launched in the UK, Ireland and France in 2001.[62] Originally a niche product, their market share has increased considerably and they are now a popular household product across the European market (see Annex 1).

In recent years, several MS have expressed concern after noticing an increase in unintentional poisoning incidents from this new form of liquid laundry detergent product.[63] Reports of unintentional poisonings associated with these products started to emerge from 2005 (e.g. Horgan et al., 2005[64]) and cases from France (Mathieu-Nolf et al., 2007[65]), Italy (Celentano et al., 2012[66]] and the United Kingdom [Williams et al.,

[61] European Commission (2011): Commission Implementing Decision of 6 April 2011 on the temporary prohibition of the placing on the market in Germany of the detergent POR-ÇÖZ (notified under docu-ment C(2011) 2290), 2011/225/EU. Available at: http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32011D0225

[62] Groucutt et al. (2014); as referenced in European Commission (2017): Study on hazardous detergents mixtures contained in soluble packaging for single use ('LiquiCaps Study'), Tender no 406/PP/ENT/IMA/14/119429. Final Report available at: https://www.researchgate.net/publication/315685980_STUDY_ON_HAZARDOUS_DETERGENTS_MIXTURES_CONTAINED_IN_SOLUBLE_PACKAGING_FOR_SINGLE_USE_%27LiquiCaps_Study%27_Tender_no_406PPENTIMA14119429

[63] European Commission (2017): Study on hazardous detergents mixtures contained in soluble packaging for single use ('LiquiCaps Study'), Tender no 406/PP/ENT/IMA/14/119429. Final Report available at: https://www.researchgate.net/publication/315685980_STUDY_ON_HAZARDOUS_DETERGENTS_MIXTURES_CONTAINED_IN_SOLUBLE_PACKAGING_FOR_SINGLE_USE_%27LiquiCaps_Study%27_Tender_no_406PPENTIMA14119429

[64] Horgan N et al (2005): Eye injuries in children: a new household risk. The Lancet, 336, pp 547-548

[65] Mathieu-Nolf M et al. (2007): Liquid detergent capsules: a new risk. Clinical toxicology, 45, 386 (abstract)

[66] Celentano A et al (2012): Accidental exposures to liquid detergents capsules. Clinical toxicology, 50 (4), 353 (abstract).

2014[67]] reported an increase in incidence of accidental exposures, especially in young children (age < 5yrs). Recent studies and analyses of poison centres' data suggest that incidents involving liquid laundry detergent capsules may have been related to inappropriate storage (AISE, 2015[68]) and handling or perceived attractiveness to children (Settimi et al., 2016[69]).[70]

At the Detergents Working Group Meeting in November 2012, one MS raised the possibility of using Article 15 of the Detergents Regulation to address this issue.[71] The Commission explained that using the Article 15 safeguard clause was probably not adequate to deal with the risks associated with liquid detergent capsules for children, as the problem covers a type of laundry detergent and not a specific brand or product within this type.

In 2012, AISE introduced a voluntary product stewardship programme that recommended the implementation of several voluntary safety measures, and in 2015, mandatory safety measures were adopted at the EU level (Regulation No 1297/2014[72]) to try and address the issue under CLP.

There was generally consensus among MS authorities and consumer associations that the safeguard clause is an important, and beneficial, element of the Detergents Regulation, even if it has rarely been used. Stakeholders commented, for instance, that:

> *"The safeguard clause is an important principle in consumer product safety legislation that aims to keep consumers safe even if unforeseen situations arise in which the Member States need to be able to act quickly. As conditions and circumstances vary between different Member States, a detergent which gives rise to little or no concern in some Member States could nonetheless present an unacceptable risk in others. Article 15 thus serves as a key safeguard of consumer health should risks arise in future."*

> *"It's important to know that a detergent could be withdrawn from the market if there is a problem even if it isn't prohibited."*

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[67] Williams et al (2014): Reported toxicity in 1486 liquid detergent capsule exposures to the UK National Poisons Information Service 2009-2012, including their ophthalmic and CNS effects. Clinical Toxicology, 52 (2), pp 136-140.

[68] AISE (2015): Detergent capsules "accidentology" project, Final Report, October 2015.

[69] Settimi et al. (2016): Surveillance of pediatric exposures to liquid laundry detergent capsules in Italy. Clinical Toxicology, 54 (4), 376 (abstract).

[70] With regard to the latter, it is important to note that Article 11(6) of the Detergents Regulation states that "Para-graphs 1 to 5 [of Article 11 on labelling] are without prejudice to existing national rules according to which graphic representations of fruits which may lead the user into error as to the use of liquid products, shall not appear on the packaging in which the detergents are put up for sale to the consumer".

[71] European Commission (2012): Draft summary record of the meeting of the Detergents Working Group, 8 November 2012. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=10916&no=2

[72] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014R1297

"It cannot be excluded that there may be a case where the safeguard clause should be used."

"…We believe the safeguard clause is in fact a crucial element of the Detergent Regulation to withdraw specific detergents from a national market, if a risk to the safety or health of humans or of animals or a risk to the environment is identified, irrespective of its compliance with the requirements of the Regulation…"

In contrast, some industry representatives noted that if the detergent complies with the Detergents Regulation, then there is no need for the safeguard clause; as illustrated by the following quotes from the OPC:

"The Detergents sector … is committed to place on the market products that are intrinsically safe when correctly used. Since 2008 the safeguard clause was not applied it is therefore highly unlikely this would happen in the future. In our view, RAPEX, CLP and General Product Safety Directive are working well when needed."

"If the detergent complies with the requirements of the detergents regulation this clause is not necessary."

"The safeguard clause appears to superfluous, as to our opinion the General Product Safety legislation and linked Rapid reporting and response systems (RAPEX) seem to be adequate. On top of this, safeguards are also provided through legislation such as CLP and REACH."

Several limitations have been identified by stakeholders with regard to the safeguard clause:

- During the interviews, one EU official explained that **the safeguard clause is very broad and that it is not very clear when it can be used**. The stakeholder explained, for example, that the phrase "justifiable grounds" is too ambiguous. It was therefore suggested that the safeguard clause should be more explicit and that further clarification could be provided regarding its meaning and how it should be applied (e.g. further explanation could be provided in an annex outlining the process that should be undertaken if the safeguard clause is triggered).
- A MS authority from Germany pointed out that **one disadvantage of the safeguard clause is that it can only be used to withdraw one specific detergent from a national market** and not all products with the identified harmful ingredient in the whole EU internal market (presumably referring to the sale of detergent products containing nitric acid in other MS of the EU). The same MS authority also stated that "…***The interpretation by the Commission that a detergent has to be compliant with the requirements of the Detergents Regulation before being withdrawn from the market based on the safeguard clause is not reasonable.*** *If a risk of a detergent is indicated based on its ingredients, it makes no sense to request the manufacturer to first bring it in compliance and then to still withdraw it afterwards when it is still a risk…"*
- A MS authority from Germany explained that **the Commission's Decision on the prohibition of placing a product on the market is too short (one year)** and that the Commission should consider the temporal demand for risk management procedures (i.e. in some cases, the safeguard clause could be used to put in place a longer prohibition);
- One MS authority from Romania was concerned that **inadequate resources are available to use the safeguard clause**. The stakeholder stated that:

"In order to prove that a detergent poses a risk to human health or safety, it is necessary to prove these claims with test data, we consider that the role of the safeguard clause in the future is not applicable. We draw attention to the fact that Bulgaria does not have the necessary resources, both financially, to carry out the necessary tests, as well as to experts who are qualified in the field of toxicology and ecotoxicology. The implementation of such a clause requires each Member State to have the necessary team of experts in place to carry out a thorough risk assessment of a detergent (subject to Article 15 of Regulation (EC) No 648/2004) for the purpose of safety of human health."

Organisations that participated in the OPC were provided with a short description of the safeguard clause and asked whether they believe there is a role for the provision to be used in the future. Their responses are shown in Figure A3-18 below. Out of the 40 organisations that responded to this question 43% (17 respondents) indicated that they do believe there is a role for the safeguard clause to be used in the future, while 35% (14 respondents) indicated that there is not. **There would appear to be a split in views among the different types of respondent**: industry associations and companies on the one hand were mostly of the view that there is not a role for the safeguard clause to be used in the future. In contrast, most other organisations that responded (government and public authorities; NGOs; consumer associations; intergovernmental organisations; and other organisations) indicated that the safeguard clause does have a role to be used in future.

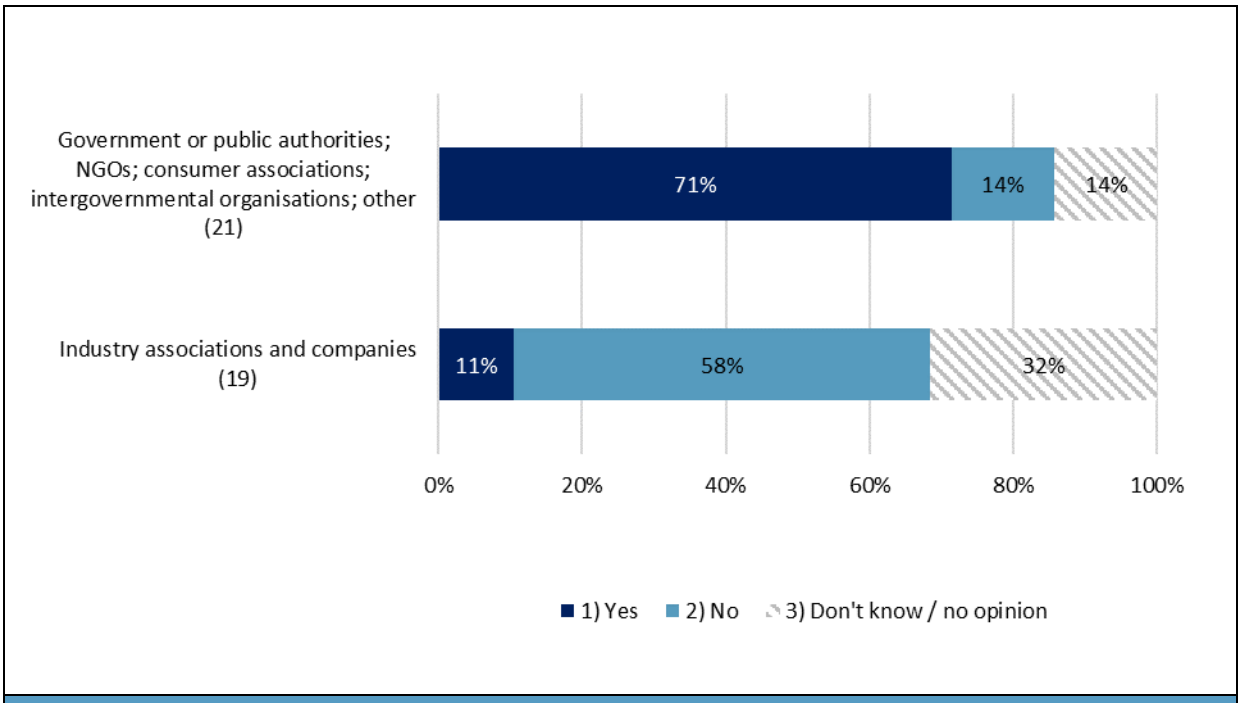

Figure A3-17: Do you believe there is a role for the safeguard clause to be used in the future? Responses to the OPC - Organisations ***Number of respondents: n=40***

A3.7 Other issues

A number of other issues have been identified of relevance to the Detergents Regulation and human health. These are summarised in the sections that follow.

A3.7.1 Languages used on labels

Article 11(5) of the Detergents Regulation states that:

> *"In cases where a Member State has a national requirement to label in the national language(s), the manufacturer and distributor shall comply with that requirement for the information specified in paragraphs 3 and 4."*

This is slightly different to CLP (Article 17), which states:

> *"The label shall be written in the official language(s) of the Member State(s) where the substance or mixture is placed on the market, unless the Member State(s) concerned provide(s) otherwise."*

During the consultation, it was noted that **there are no clear provisions in the Detergents Regulation regarding the language to be used on the label** and that **different authorities have different requirements on the use of (multiple) languages**. Stakeholders explained that this makes it more complex to update labels, and leads to mistakes on the ingredient datasheets provided online and to medical personnel. It was also noted that the translation of detergent ingredients into different EU languages is problematic.

A consumer organisation from Denmark noted that **there can sometimes be a problem when product labels are written in several different languages.** The organisation explained that this makes the label difficult to read, and that the consumer must skip through a lot of text. The stakeholder suggested that the number of languages allowed on products should therefore be lowered. A consumer organisation from Cyprus indicated that the instructions for some products, made for use in other markets (e.g. Egypt or Spain), are not always translated into the native language (note that this would appear to be an issue of non-compliance). The organisation explained that, for food products, there are obligatory language requirements, but that for detergents, this does not appear to be the case. The stakeholder also noted that a contact number is usually provided on products for a national poison centre. Sometimes, although this information has been translated, the number is wrong and is for a poison centre in another country.

A3.7.2 Refill sale of detergents

There appear to be some areas where the Detergents Regulation has not kept pace with innovations in the Detergents Sector, or where there are misunderstandings or confusion about how the Detergents Regulation should be interpreted. For example, some shops – mainly small eco-shops – are providing a container refill service whereby customers fill up their own bottles from a larger container (see Table A3-11). Based on discussions within the Detergents Working Group, the Commission recognises that there are different types of refill sale taking place in Europe.[73] For instance, some stores are known to have refill distribution machines that recognise specific

[73] European Commission (2016): 20th Meeting of Competent Authorities for REACH and CLP (CARACAL) – 8-9 March 2016. Available at: https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:libraryContentList:pager&page=1&FormPrincipal_SUBMIT=1&org.apache.myfaces.trinidad.faces.STATE=DUMMY

receptacles (with the correct label) and only allow refill if the correct receptacle is used. Other stores verify at the check-out whether the correct label is applied to the receptacle.

Table A3-7: Refill sale of detergents – current practice

In 2013, it was reported that some shops (mainly small eco-shops) in Finland were providing a container-refill-service for detergents.[74] Although this practice has now been banned in Finland[75], information gathered during the consultation suggests that the practice is still ongoing in (at least) Ireland, Germany and Denmark, albeit at a relatively small scale. In Ireland, it was indicated that the practice tends to occur for fabric conditioners, liquid laundry detergents and washing up liquids.

Ecover – which is recognised as the EU's most prominent 'green cleaning' brand – reportedly offers refills for the following product types at stores located across the UK[76]:

- Washing-up liquid
- Fabric conditioner
- Laundry liquid
- Multi-surface cleaner
- Toilet cleaner

A pan-European association noted that the practice of allowing consumers to refill detergents is not, yet, very widespread.

Although the Detergents Regulation specifies that certain information must be legible and visible on the packaging, it does not cover the refill situation.[77] This could result in potential issues in terms of protecting human health and the environment if the correct labels are not included with the associated detergent products. Tukes[78], the Finnish Safety and Chemicals Agency, has therefore expressed some doubts about the legality of this approach with regard to Article 11 of the

[74] Musso F (2014): Letter 'to the kind attention of the members of the Detergents Working Group', in preparation for the Detergents Working Group Meeting on 14 November 2013. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=11241&no=2

[75] Tukes (2014): Kosmetiikan irtomyynti sallittu – pesuaineet myytävä pakattuina ja merkittyinä. Available at: http://www.tukes.fi/fi/Ajankohtaista/Tiedotteet/Kemikaalituotevalvonta/Kosmetiikan-irtomyynti-sallittu--pesuaineet-myytava-pakattuina-ja-merkittyina/

[76] MyZeroWaste (2009): Reuse Ecover containers for refills. Article available at: http://myzerowaste.com/2009/05/reuse-ecover-containers-for-refills/

[77] RPA et al. (2017): Study on the regulatory fitness of the legislative framework governing the risk management of chemicals (excluding REACH), in particular the CLP Regulation and related legislation – Annex VI. For the European Commission. Available at: http://ec.europa.eu/DocsRoom/documents/22063/attachments/3/translations/

[78] Tukes (2013): Letter to the attention of the members of the Detergents Working Group. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=11241&no=2

Detergents Regulation and notes on its website[79] that the refill sale of bulk detergents is prohibited in Finland.

It should be noted that AISE's Cleanright panel labels actively promote the refilling of detergent packaging, as indicated in the figure below.

Figure A3-18: AISE Cleanright Panel – Trigger spray cleaners[80]

Although consistent with the European Commission's action plan for the Circular Economy[81], a number of concerns have been identified during the literature review and consultation with the practice of refilling detergent containers:

- **the refill sale of detergents could present a safety issue for consumers if the correct labels are not provided**. A Danish consumer association pointed out that many of the accidents that arise occur because the product is put into a different container that does not display the appropriate labels. The stakeholder explained that labels are there for a very good reason and that it is important that they remain associated with the appropriate product. It was suggested that this could perhaps be helped by making labels that can be attached to reusable containers. During the workshop, a MS authority and a consumer organisation both indicated that it is important to ensure that a labelling solution is in place to protect consumers and that the labels on packaging must correspond with the refilled product.
- **the refill sale of detergents could present a safety issue for consumers if unsuitable containers are used**. During the consultation, an SME from Germany noted that the right sort of packaging must be used. If, for example, a consumer turns up with an old drinks

[79] Tukes (2014): Kosmetiikan irtomyynti sallittu – pesuaineet myytävä pakattuina ja merkittyinä. Available at: http://www.tukes.fi/fi/Ajankohtaista/Tiedotteet/Kemikaalituotevalvonta/Kosmetiikan-irtomyynti-sallittu--pesuaineet-myytava-pakattuina-ja-merkittyina/

[80] AISE (2017): Trigger spray cleaners cleanright panel. Available at: https://www.aise.eu/library/artwork/trigger-spray-cleaners-cleanright-panel.aspx

[81] European Commission (2015): Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions, Closing the loop – An EU action plan for the Circular Economy, COM(2015) 614. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614

bottle, this could potentially be dangerous for consumers if the bottle filled with detergent is then mistaken for a drink. During the OPC, one MS authority noted that:

> *"…it should also be mentioned that there is no requirements for packagings in the Detergents Regulation (as there are for packagings containing hazardous chemicals in the CLP Regulation, Article 35). Such a requirement should be considered especially in the case of refill-sale of detergents."*

- **the use of refillable detergent bottles would make it impossible for producers to claim back products/batches that are found out to be defective** (e.g. contamination, formulation error, etc.) after they have been distributed to the market.[82] Such products would be impossible to track due to lack of accurate batch information that is often found on the labels or surfaces of "regular" bottles/containers (i.e. bottles that are filled by the producer at the production site). The Finnish Safety and Chemicals Agency (2013)[83] has indicated that although batch identifiers are not legally required, they are widely used and considered useful.
- **there may be the potential for microbial growth if detergent containers are not washed properly before being refilled.** Stakeholders noted that this poses a potential risk to human health, but may also reduce the effectiveness of the detergent.
- **the definition of a manufacturer in the Detergents Regulation could lead to a situation whereby a retailer that offers a refill product, becomes a manufacturer within the meaning of the Regulation**. This issue has been raised at the Detergents Working Group[84] but was also highlighted by MS authorities during the consultation. One MS authority, for example, commented that:

> *"The Detergents Regulation should better consider this form of sale. We are for example not sure who is responsible for the correct labelling of products which have been re-filled by consumers and whether the retailer can be held liable on the basis of the detergent regulation. We believe the wording "…on the packaging in which the detergents are put up for sale to the consumer…." in Article 11 (2) should be adopted to ensure that not only the bulk container is properly labelled but also the product that the customer leaves the store with."*

One industry association also noted that many of the products used to clean containers are highly alkaline and that there is a need to use PPE (e.g. gloves and/or goggles) when handling these products. Although not an issue raised explicitly by stakeholders, we believe that there could

[82] European Commission (2014): Meeting of the Detergents Working Group – 14th November 2013. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=19715&no=5

[83] Finnish Safety and Chemicals Agency (2013): Letter to the members of the Detergents Working Group. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=11241&no=2

[84] European Commission (2015): Meeting of the Detergents Working Group – 5th December 2014. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=24959&no=2

potentially be risks associated with consumers cleaning containers at home; for example, an increased risk of splashing detergent into eyes or onto skin. There may also be risks associated with the safety fastening or catches (e.g. child-proof catches) on the packaging wearing out due to repeated use.

During the workshop, one MS authority suggested that the refill sale of detergents should be restricted to products that do not have corrosive or irritating properties and that refill stations should be located out of reach of children.

AISE has noted that the bulk/refill sale of detergents does not introduce any vulnerability in terms of safety and is a practice that has the potential to contribute to sustainability and the circular economy.

Several stakeholders remarked that further guidance on the refill situation should be provided by the Commission and it was suggested by one MS authority that the term "refill sale" should be defined in the Detergents Regulation.

It is worth noting that some laundrettes may also be selling and dispensing detergent for consumers. If the correct labelling information is not being provided, then this may not be consistent with the requirements of the Detergents Regulation.

A3.7.3 Online sale of detergents

During the workshop, one MS authority explained that online traders of household detergents should provide all information as required by Annex VII of the Detergents Regulation (e.g. list of ingredients, instructions for use and special precautions). It was noted that consumers purchasing detergents via the internet should have the same information as if they purchased the product in a shop or supermarket.

At the Detergents Working Group meeting of 14th November 2013, Germany indicated that some companies that sell detergent products online are not complying with the information-on-label requirements of the Detergents Regulation[85] Germany asked whether there are legal means of dictating to an online seller, even when they are not based in the EU, that their products fulfil the labelling and information provision requirements according to EU legislation. The Commission indicated that they would look into this issue and asked MS to provide their comments in written form by 30th November 2013.

[85] European Commission (2014): Meeting of the Detergents Working Group – 14th November 2013. Available at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=19715&no=5

Annex 4 Consultation report

A4.1 Objectives of the consultation

Risk & Policy Analysts Ltd and Mayer Brown LLP were commissioned by the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) to conduct a study in support of the ex-post evaluation of the Detergents Regulation (Regulation (EC) No 648/2004[1]). The purpose of this study was to assess the relevance, coherence, effectiveness, efficiency and EU-added value of the Detergents Regulation.

This report describes the consultation actions undertaken to support the evaluation. It provides a summary of stakeholders' contributions and outlines the key findings.

A4.2 Consultation approach

The following consultation methods have been used to elicit information from stakeholders for the purposes of the evaluation: an Open Public Consultation (OPC), a targeted survey of SMEs, telephone interviews, targeted email consultation and a validation workshop.

A4.2.1 Open Public Consultation

Two separate questionnaires were developed for the purposes of the OPC: one for citizens and one for organisations. The latter was targeted at a broad range of stakeholder groups including public authorities; companies (large and small); industry associations; trade unions; environmental and consumer NGOs, universities and research institutes; and any other organisations interested in responding to the survey. Both questionnaires were made available in English, German and French and uploaded to the EU Survey tool.

The OPC generated a total of 102 responses, distributed as shown in Table A4-1 by type of respondent and whether or not they are on the EC transparency register.

The OPC survey for citizens gathered a total of 61 online replies from citizens from 15 EU Member States (MS), as well as one response from a citizen from outside the Union (Switzerland). Figure A4-2 summarises the geographical distribution of respondents to the citizen's survey. As can be seen from the figure, the largest number of responses to the citizen's questionnaire came from Germany (17 responses), France (10 responses) and the UK (9 responses).

A total of 41 organisations submitted a response to the OPC survey for organisations. As shown in Table A4-1, most responses were from industry associations (12 responses) and government or public authorities (12 responses). Although the proportion of responses from companies was relatively low (17%), the OPC also elicited consolidated contributions from industry organisations, with these accounting for a sizeable proportion of the total replies received (29%). Five of the seven companies

[1] Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32004R0648

that responded to the OPC were 'large' enterprises (≥250 employees), while two were SMEs (≤249 employees).

Table A4-1: Respondents registered in the EC transparency register, split by type	
Type of respondent	**Number of respondents**
Registered organisations[1]	**16**
Industry association	7
Business	3
Consumer association	3
Non-governmental organisation (NGO)	2
Public authority (government or public body)	1
Unregistered organisations[2]	**25**
Industry association	5
Business	4
Non-governmental organisation (NGO)	1
Public authority (government or public body)	12
Intergovernmental organisation	1
Other	2
Individual citizens	**61**
Total	**102**

[1] Registered organisations are included in the EC transparency register and subscribe to its code of conduct

[2] Organisations that did not specify whether they are registered or not have been counted as unregistered.

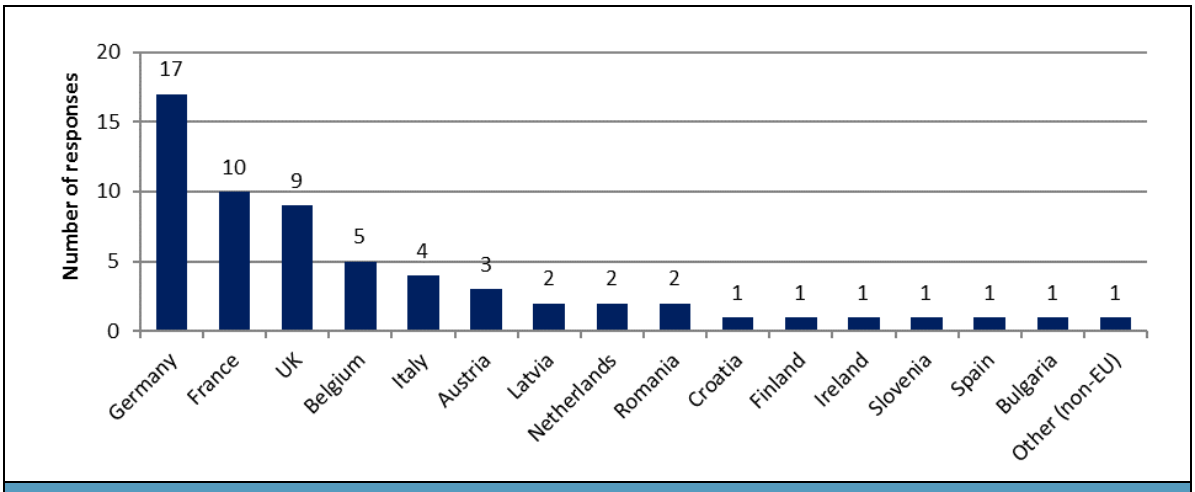

Figure A4-1: Location of respondents to the OPC survey of citizens (*n=61*)

Most organisations that responded to the OPC were based in Belgium (10 responses), but responses were also received from 19 other EU MS (Figure A4-2). One organisation responded from outside the Union (Norway). It should be noted that many of the organisations that responded from Belgium have a pan-European remit and therefore represent the views of stakeholders from other EU MS.

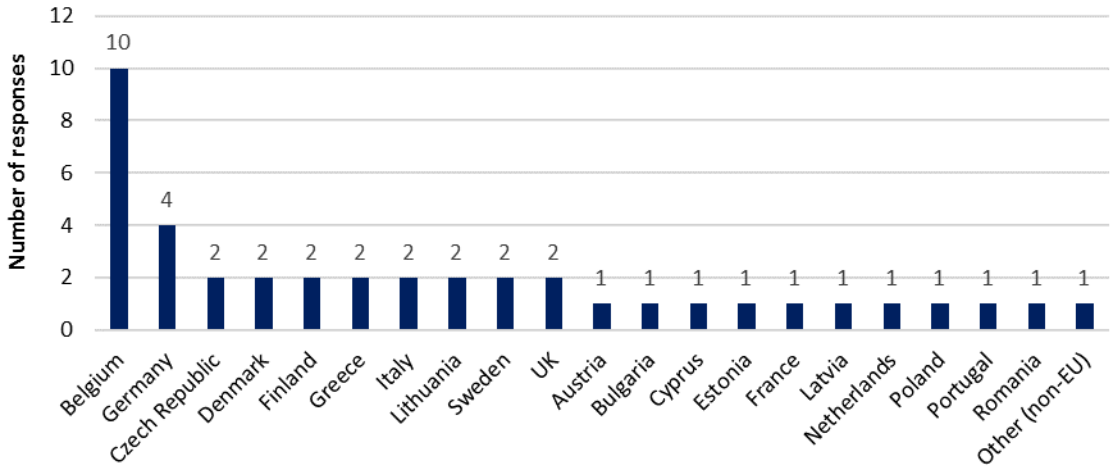

Figure A4-2: Location of respondents to the OPC survey of organisations *(n=41)*

A4.2.2 SME survey

In order to ensure that SMEs were adequately represented in the consultation, a simplified questionnaire was developed and distributed to SMEs via the Enterprise Europe Network (EEN). The SME survey generated a total of 41 responses, split almost equally between micro-enterprises (<9 employees; 34% of respondents), small enterprises (10 to 49 employees; 34% of respondents) and medium-sized enterprises (50 to 249 employees; 32% of respondents). Most SME respondents indicated that they were distributors (33%), formulators (27%) and/or a manufacturer (22%) (Figure A4-3). Other downstream users that responded to the survey clarified that they were a "retailer", involved in the "building materials trade" and "cleaning".

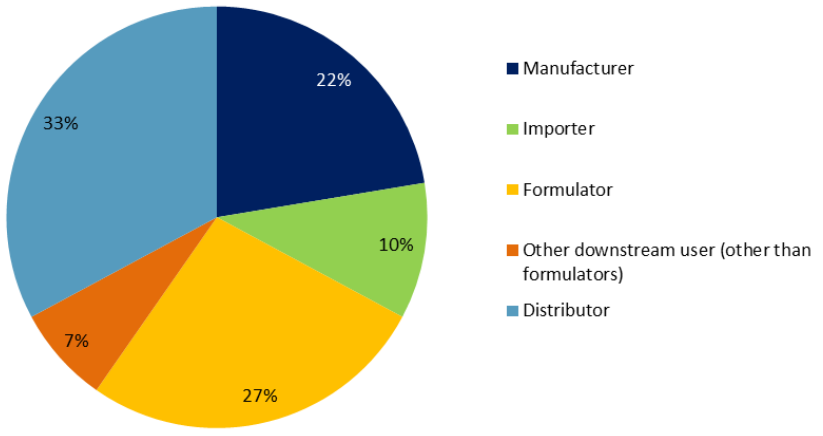

Figure A4-3: Please indicate the term which best describes your company and its activities (please tick all that apply). Responses to the survey of SMEs conducted by EEN (*n=67*)

About a quarter (27%) of the respondents to the SME survey were based in Italy. The remainder were based in France (15%), Lithuania (15%), Poland (12%), Romania (12%), Portugal (10%), Denmark (5%) and Greece (5%). There was a good geographical distribution of respondents and representatives from both large, small, old and new EU MS.

A4.2.3 Telephone interviews

In order to ensure a good response rate in the OPC and SME survey, it was important to minimize the total number of questions asked. However, this provided a constraint in terms of amount of detailed information that could be gathered (e.g. on costs relative to the baseline situation). To examine stakeholders' views in greater depth, a series of targeted interviews were held. Table A4-2 shows the number of interviews conducted for each country and stakeholder group.

Arranging interviews with companies proved problematic and, as a result, the study team decided to redirect its focus towards industry associations and sector groups that were more willing to participate and could represent the views of their member companies. Environmental and consumer NGOs were also very difficult to engage, with several citing a lack of knowledge of the Detergents Regulation as a reason for not wanting to participate.

Table A4-2: Telephone interviews

Type of stakeholder	Country	Number interviewed
EU officials	EU	4
Industry associations / sector groups	EU	7*
	Germany	2
	Austria	1
	Italy	1
	France	1
	Belgium	1
	UK	1
	Denmark	1
	Romania	1
	Poland	1
	Netherlands	1
MS authorities	Denmark	1
	Ireland	1
	Sweden	1
	Luxembourg	1
	Germany	1*
	Romania	1*
	Estonia	1*
Companies	Netherlands (SME)	1
	Germany (SME)	1
	Belgium (SME)	1
	Denmark (large)	1
	Austria (large)	1
	Canada (large)	1
Environmental NGOs	Sweden	1
	Netherlands	1
Consumer NGOs	Cyprus	1
	Denmark	1
Trade unions	Romania	1
	UK	1
Other	International (EU)	4
Total		**45***
**four respondents provided a written response to the questions in the targeted interview guide.*		

A4.2.4 Targeted email consultation

The study team sent tailored emails to a variety of organisations to try to obtain additional data, information and views. This included emails to market surveillance authorities (e.g. to obtain data on enforcement related to the Detergents Regulation), emails to national Poison Centres (e.g. to obtain information on detergents' related illnesses/incidents) and emails to regional seas conventions (to obtain data in relation to phosphorous loads in EU water bodies). Unfortunately, the response from national Poison Centres was poor, with only one providing a (limited) response and another stating that "…*Since we have limited knowledge of this legislation we are not able to contribute*." As a result, it has not been possible to quantify whether the Detergents Regulation has impacted the incidence of allergic reaction to detergents in the EU.

A4.2.5 Validation workshop

A validation workshop was held at the Commission's offices in Brussels on the 13th October 2017. The aim of this workshop was to bring together stakeholders from across the detergents sector in order to validate the preliminary findings and conclusions of the study. In total, 27 participants (representing 20 organisations) participated at the workshop, where this excludes members of the study team. The following table provides a summary of the participants that were present.

Table A4-3: Workshop participants

Type of stakeholder	Number of participating organisations
EU officials, including members of the Steering Group	4
Industry associations / sector groups	7
MS authorities	2
Companies	5
Consumer NGOs	2
Total	**20**
Note: Members of the study team from RPA and Mayer Brown were also present	

A4.2.6 Timing of the consultation

The timing of the various consultation activities is summarised in Table A4-4 below.

Table A4-4: Summary of stakeholder consultation

Timeline	Activity
12 December 2016	Contract signature and start of study
May to July 2017 (12 weeks)	Open Public Consultation
May to June 2017 (8 weeks)	SME survey, launched through EEN
May to July 2017	Targeted email consultation
May to August 2017	Telephone interviews
13 October 2017	Validation workshop

A4.3 Findings observed from the consultation

The analysis presented in the following sections of this report is based on inputs received by stakeholders during the consultation.

A4.3.1 Relevance

During the OPC, 87% of organisations agreed that the objectives of the Detergents Regulation (i.e. to achieve the free movement of detergents and surfactants for detergents in the internal market while, at the same time, ensuring a high degree of protection of the environment and human health) are still relevant considering the evolution of societal needs and technological developments, and a similar view was reflected among most participants during the telephone interviews.

There are, however, some areas where stakeholders identified that the Regulation has not kept pace. For instance, several industry representatives indicated that innovative communication methods (e.g. Q-R codes) are now available and could help to reduce the amount of information presented on product labels. It was suggested that this could help to improve the clarity of information provided to consumers, particularly as some of the information that is currently presented, e.g. % surfactant content, is not information that most consumers need or understand[2]. Industry stakeholders also noted that using digital communications tools could help to alleviate the administrative burden for the detergents industry.

Stakeholders also identified a range of new issues related to detergents, their use and their impacts on the environment and human health that are not currently addressed through the Regulation. For example, it was noted that the labelling requirements of the Regulation are not well adapted to the refill sale of detergents and that the dosing instructions required under Annex VII B need to be updated to take account of modern load sizes, and new detergent products (e.g. concentrated products, pre-measured products and auto-dosing products/machines).

A key issue that was identified during the consultation is that it is not always clear to industry whether some products available on the market are included within the Regulation's scope. For instance, there is some confusion as to whether 'microbial cleaning products' with a claimed cleaning effect based on the action of bacteria fall within the scope of the Detergents Regulation. Other products that might also pose an issue include washing eggs/balls, cleaning wipes/scouring pads impregnated with detergents, related household products (e.g. waxes, polishes and textile dyes), and some 'do-it-yourself' cleaning products.

A4.3.2 Coherence

Although approximately half (49%) the organisations that responded to the OPC indicated that there are gaps, overlaps and inconsistences/contradictions within the provisions of the Detergents Regulation, it would appear from looking at stakeholders' discursive responses that these relate mainly to perceived gaps in the legislative framework or to areas where the Regulation is unclear. For example, one of the issues raised during the consultation was a lack of clarity surrounding the definitions and scope of the Detergents Regulation (e.g. a lack of clarity regarding the definition of a

[2] As noted by both MS authorities and consumer organisation.

"manufacturer" in the context of refill detergent sales[3]; and gaps in the Detergents Regulation pertaining to air fresheners[4] and surfactant-free cleaning enhancers[5]). Some consumer organisations were also concerned that a lack of detailed ingredient lists restricts the ability of consumers and downstream users to make informed decisions and thus avoid products containing certain ingredients.

Consumer organisations, environmental NGOs and citizens were concerned at some of the ingredients that are still permitted for use in detergents. From the perspective of human health, several consumer organisations commented that CMRs[6] and SVHC should not be permitted for use in detergents and that that if nanomaterials are hazardous, then they should be labelled or removed from detergent products. From the perspective of the environment, the use of microplastics in detergents was seen as a particularly important issue that remains to be addressed - either by the Detergents Regulation or by other means (such as REACH). Other substances identified as a concern for the environment included PBTs and hormone distributors (identified by one MS authority); odoriferous substances and complexing agents (identified by one 'other' organisation); and brighteners, colourants and perfumes (identified by one consumer organisation).

Some MS authorities and environmental NGOs suggested that the biodegradability criteria for surfactants should be applicable to all organic compounds included in detergents and not just surfactants, and that the anaerobic biodegradability of detergents should also be considered within the Detergents Regulation. However, the Commission has made it clear that it does not view these as gaps in the legislation. Furthermore, industry associations have noted that non-surfactant ingredients are already adequately regulated through REACH and CLP.

Stakeholders also suggested a range of other information that should potentially be included on product labels, including the scope of application/intended use for the product (as noted by one MS authority), the environmental footprint/biodegradability score (as noted by consumer organisations from Cyprus and Denmark respectively), security advice (e.g. "keep out of reach of children") (as noted by one MS authority) and a suggestion to use the lowest recommended washing temperature (as suggested by an environmental NGO).

Nearly two thirds (64%) of organisations that responded to the OPC identified overlaps and inconsistences/contradictions between the Detergents Regulation and other pieces of EU legislation. The principal areas of overlap/inconsistency were identified as being between:

- **the Detergents Regulation and Biocidal Products Regulation.** During the consultation, several stakeholders noted that there is an overlap between the Detergents Regulation and Biocidal Products Regulation in the sense that some products would need to comply with the provisions (notably the labelling provisions) of both. Stakeholders explained that, in some cases, MS authorities and companies differ in their interpretation of the scope of the two Regulations, and that overlaps between these two pieces of legislation can result in duplicate labelling. There may also be differences between countries in the way the provisions on

[3] As noted by at least two MS authorities

[4] As noted by one environmental NGO

[5] As noted by one MS authority

[6] Note that CMR categories 1A and 1B are prohibited in consumer products under REACH. However, CMR 2 can still be used in detergents for consumer use and CMRs 1A, 1B and 2 could still be used in detergents for industrial/institutional purposes.

'carry-over' preservatives[7] are implemented (by companies) and enforced (by MS authorities), which may arise from differences in the wording of the legal text of the Regulation and the guidance provided by AISE.

- **the Detergents Regulation and Cosmetic Products Regulation.** During the consultation, some stakeholders noted that there is a difference between the Cosmetic Products Regulation and the Detergents Regulation in the treatment of CMRs (i.e. CMRs 1A, 1B and 2 are not permitted for use in cosmetics (unless exempted) but some CMRs[8] can still be used in detergents). Stakeholders also noted that there is an inconsistency between the labelling of nanos under the Detergents Regulation and Cosmetic Products Regulation (i.e. nanos must be indicated on the label for cosmetics; this is not the case for detergents). Furthermore, some stakeholders indicated that cosmetics must be labelled with a full ingredient list, unlike the Detergents Regulation that only requires some ingredients to be labelled. One MS authority noted that it would be beneficial if the labelling of ingredients under the Detergents Regulation could be harmonized with the labelling of cosmetic ingredients using the INCI nomenclature according to the Cosmetic Products Regulation.
- **the Detergents Regulation and REACH and CLP**. During the consultation, stakeholders identified some inconsistent definitions (e.g. "placing on the market", "manufacturer") between the Detergents Regulation, REACH and CLP. Inconsistencies were identified between the information that must be presented in the SDS under REACH and the information that must be provided for industrial and institutional detergents under the Detergents Regulation. There are also legislative overlaps between the Detergents Regulation and the CLP Regulation with regard to the labelling of allergens. During the consultation, several industry associations explained that as Regulation 542/2017 (Annex VIII of CLP) comes into effect, the provisions in Article 9(3) and Annex VII C of the Detergents Regulation should become obsolete.

A4.3.3 Effectiveness

The majority view of stakeholders (across all stakeholder groups) was that the Detergents Regulation has helped to harmonize the rules in place in different EU MS and that this has levelled the playing field and made it easier for companies to trade cross-border. For example, 53% of SMEs that participated in the survey conducted by the EEN agreed that the Detergents Regulation has levelled the playing field for manufacturers of detergents and surfactants within the EU (6% disagreed). Three quarters of organisations (75%) that participated in the OPC indicated that the Regulation has made it easier to trade detergents and surfactants cross-border within the EU (only 3% disagreed).

During the OPC, 85% of organisations agreed that the Detergents Regulation has been effective in protecting the environment. Some industry stakeholders even noted that the Detergents Regulation is seen internationally as the "golden standard" for the biodegradability of surfactants. Furthermore, the new limits on the phosphorus content of consumer laundry detergents and CADD introduced by Regulation (EU) No. 259/2012 were seen, by both MS authorities and industry, as having successfully directed the market to producing more environmentally friendly products.

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[7] Carry-over preservative refers to preservatives added to the raw materials or ingredients that are subsequently used as an ingredient in the final detergent product.

[8] CMR categories 1A and 1B are prohibited in consumer detergents under REACH. This means that CMR Category 2 may still be used in consumer detergents; while CMR categories 1A, 1B and 2 may still be used in industrial/institutional detergent products.

While dosing instructions are generally perceived as an effective means of reducing the over consumption of detergents, some stakeholders were concerned that the dosing information that must be provided according to the Regulation is now out of date (as noted by at least one company during the consultation) and that consumers may not read, understand or correctly follow the instructions (as explained by at least one consumer association).

Nearly two thirds of organisations (63%) that participated in the OPC agreed that the Detergents Regulation has been effective in achieving its objective of ensuring a high degree of protection of human health (24% disagreed), although it was also noted (particularly by industry stakeholders) that compared to other chemicals legislation (e.g. REACH, CLP and Biocides), the Detergents Regulation has had a lesser impact. There was general agreement among stakeholders (all types) that the labelling requirements of the Detergents Regulation are sufficient to inform consumers and downstream users about potential allergenic substances in detergents (71% of organisations that participated in the OPC agreed). Some stakeholders, however, were concerned about some of the substances/ingredients that are still being used in detergent products and that a lack of detailed ingredient lists on product labels restricts the ability of consumers and other downstream users to make informed decisions and avoid products containing certain substances.

In general, the sanctions put in place by the MS for infringements of the Detergents Regulation are perceived by MS authorities as dissuasive, effective and proportionate. However, many authorities appear to lack the resources to carry out proactive enforcement of the Regulation. Furthermore, inspections tend not to be carried out for the Detergents Regulation in isolation, rather they are coordinated with inspections for other chemicals legislation, such as CLP and REACH.

Finally, one instance has been identified of the safeguard clause being used (for the product POR-ÇÖZ, placed on the market in Germany). There was a split in view among respondents regarding the safeguard clause. While MS authorities and consumer associations generally agreed that the safeguard clause is an important, and beneficial, element of the Detergents Regulation, even if (to date) it has rarely been used, some industry representatives noted that if the detergent complies with the Detergents Regulation, then there is no need for the safeguard clause.

A4.3.4 Efficiency

During the consultation, industry associations and companies clarified that the costliest elements of the Detergents Regulation for industry have been the one-off costs associated with reformulation (to reduce the total phosphorus content), keeping information for websites and medical personnel up to date, and the one-off and ongoing costs associated with labelling changes (which may impact SMEs more than larger companies due to the need to dispose of old labels). Detergent manufacturers have also faced on-going costs associated with using different raw materials in place of phosphorus in consumer laundry detergents and CADD. Several industry representatives noted that switching to producing phosphorus-free detergents led to a 10% increase (approximately) in raw material costs. Industry stakeholders indicated that these costs have not been passed on to consumers (as higher prices).

About a fifth (21%) of industry stakeholders that responded to the OPC said that the Detergents Regulation had led to market opportunities (compared to 42% that disagreed). Stakeholders noted that the Detergents Regulation has had a mixed effect in terms of innovation. On the one hand, stakeholders (including industry) have noted that new products have been developed in response to the Detergents Regulation, particularly in response to the phosphorus limits introduced for CADD. On the other hand, several industry stakeholders noted that resources had to be used to ensure compliance and that this reduced the total resources available for innovation. During the OPC, three

quarters (74%) of industry associations and companies indicated that the Detergents Regulation has improved the corporate image of the sector.

Most of the stakeholders consulted (including most SMEs) have indicated that the costs involved in implementing the Detergents Regulation are justified given the benefits that have been achieved, or that will be achieved in the longer term.

A4.3.5 EU added value

The general view of stakeholders (all groups) during the consultation was the Detergents Regulation has delivered better outcomes for the environment than could have been achieved by MS acting on their own. The phosphorus limits, especially the limits for CADD, were seen as having raised the bar in many countries, where similar limits were not already in force. Similarly, stakeholders noted that creating a level playing field for manufacturers in terms of the biodegradability of surfactants would not have been achievable in the absence of EU legislation.

While some stakeholders indicated that the Detergents Regulation has delivered added value in terms of human health (particularly the provisions on the labelling of fragrance allergens), it was indicated that multiple other pieces of EU legislation covering detergents (e.g. REACH, CLP and Biocidal Products Regulation) are also important in this regard. Overall, there was consensus among stakeholders (all groups) that the issues addressed by the Detergents Regulation continue to require action at the EU level (83% of organisations during the OPC agreed).

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