

JRC SCIENCE FOR POLICY REPORT

Revision of the European Ecolabel Criteria for: All-purpose cleaners, sanitary cleaners and window cleaners

Preliminary Report

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Abstract:

Towards a sustainable cleaning!

The EU Ecolabel for All-purpose cleaners and sanitary cleaners is under revision. This report is meant to provide a first evaluation of likely areas for investigation and provides the scientific evidence for the revised EU Ecolabel criteria.

The technical analysis found that the key environmental impacts of APCs are mainly due to the extraction stage, for window/glass cleaners packaging has larger contributions than ingredient extractions. When warm water is used to rinse off the product during use, the use phase has a significant impact. These findings are reflected in the score of the environmental indicators under consideration

Based on these findings, measures should be developed in close cooperation with stakeholders (industry, academia and interested parties) to improve the formulation of the cleaners, decrease the energy consumed to heat the water and decrease the amount of product used per application, among others.

This preliminary report takes part of the revision of the EU Ecolabel criteria for six detergents and cleaners related product groups. The EU Ecolabel revision process is foreseen to be held simultaneously. The progress of these discussions can be followed through the official website: <http://susproc.jrc.ec.europa.eu/detergents/index.html>

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Executive summary

The Preliminary Report presents the research carried out on areas related to the product groups covered by the EU Ecolabel on all-purpose cleaners and sanitary cleaners. The report provides background information that underpins the new criteria proposals.

Policy context

The EU Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) policy is an integral part of the Resource Efficiency flagship initiative of the Europe 2020 Strategy. This policy aims to reduce the environmental impact of production and consumption and contribute to the decoupling of the economic growth from environmental degradation.

The EU Ecolabel is the main instrument included in this Plan aiming at promoting products with the best environmental performance. The EU Ecolabel is a voluntary tool awarded to a product through a process in which an applicant has to demonstrate that the specified Ecolabel criteria for a particular product group are met. 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.

This study is being carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) together with Oakdene Hollins and Pre-consultants. The work is being developed for the European Commission's Directorate General for the Environment. The report will be used as a consultation document to gain feedback, evidence and opinion from stakeholders and experts on the proposed changes and significant environmental issues.

Key conclusions

This background document for the revision of the criteria for EU Ecolabel for all-purpose cleaners and sanitary cleaners (both kinds of products will be referred to collectively as APC in this study) is meant to provide a first evaluation of likely areas for investigation as a result of stakeholder surveys, market analysis and known concerns with existing criteria, including changes in hazardous substance classification of commonly used ingredients. As policy-relevant recommendations, it points out where there is scope for strengthening the EU Ecolabel and which criteria could be removed, amended or further developed.

The information contained in this document provides an overview of changes to the all-purpose and sanitary cleaners market since the last revision of the criteria in 2011, and a technical analysis to understand where the greatest environmental impacts arise in their life cycle.

Main findings

The main findings of the Preliminary Report are:

- The market analysis reported that the total retail value of the EU market for hard surface cleaning is €5,7 bn. The cleaning market across Europe can be further categorised as all-purpose cleaners (46%), window/glass cleaners (4%), sanitary cleaning (36%) and other ancillary cleaning products (14%). Consumer choice of cleaning products is driven by ease of use and convenience of the product, price, health and safety during use and efficacy of the product.

- The technical analysis found that the key environmental impacts of APCs are mainly due to the extraction stage. For window/glass cleaners packaging has a larger contribution than ingredient extraction. When warm water is used to rinse off the product during use, the use phase has a significant impact. However, this is only relevant for some of the products covered by this product group, such as kitchen cleaners and all-purpose cleaners.

- Based on the normalisation chosen by far the most important impact category for all-purpose cleaners in Europe is natural land transformation

The results of the LCA for a general purpose cleaner showed that ingredient extraction is an important contributor to the characterised midpoint results, particularly for the terrestrial ecotoxicity, agricultural land occupation and natural land transformation impact categories. Of all the ingoing substances, the majority of the environmental impact can be attributed to ethoxylated alcohol surfactants. The manufacturing, use and disposal phases also represent important contributors to the overall environmental impact.

The KPIs based on the results of this study, are (not ranked):

- Amount of product used per application,
- Formulation – specifically the choice and amount of surfactant,
- Energy consumed to heat the water (if warm water is used),
- Energy source used to heat the water (if warm water is used).

Moreover, even though waste generation was not among the top 4 KPIs named previously, it can still have an impact of up to 37% for some environmental aspects. This environmental impact score can even being higher in the case of window cleaners. Given the prevalence of cleaners in everyday life and the fact that they all come with packaging, a relatively small impact can quickly add up; thus, this aspect is also considered in the EU Ecolabel.

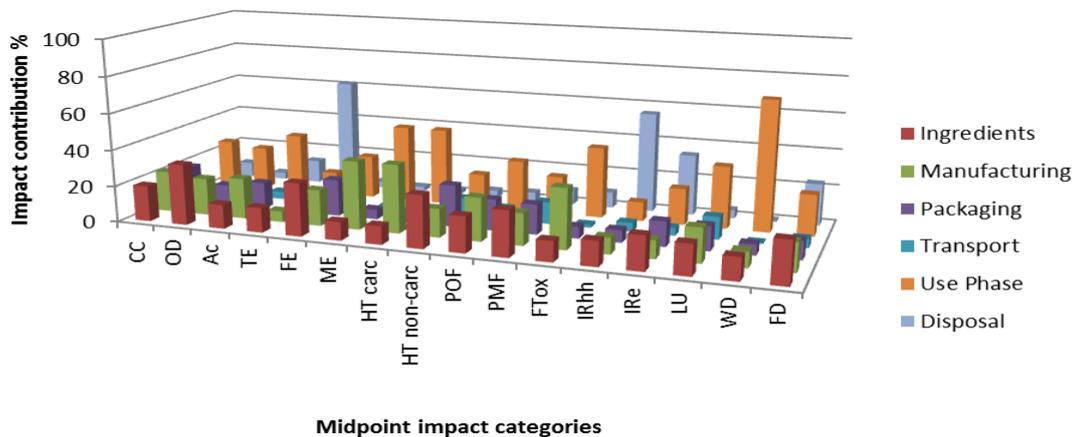


Figure 1: Impact contribution of different life cycle stages of an all-purpose cleaner according to the ILCD method

Related and future JRC work

This preliminary report takes part of the revision for EU Ecolabel criteria for six detergent product groups, namely: "Detergents for dishwasher", "Industrial and institutional automatic dishwasher detergents", "Laundry detergents", "Industrial and institutional laundry detergents", "All purpose cleaners and sanitary cleaners" and "Hand dishwashing detergents". The publication of this report is foreseen to be followed by continuous wide consultation with experts and stakeholders, i.e. manufacturers, supply chain industry, consumer organizations and NGOs. The progress of these discussions can be followed through the official website <http://susproc.jrc.ec.europa.eu/detergents/index.html>.

1. INTRODUCTION

1.1 Background

The EU Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) policy is an integral part of the Resource Efficiency flagship initiative of the Europe 2020 Strategy¹. This policy aims to reduce the environmental impact of production and consumption and contribute to the decoupling of the economic growth from environmental degradation. The objective of the 'product pillar' of this policy is to improve the environmental performance of products on the EU market through a mix of supply and demand side measures.

The European Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan² adopted in 2008 outlined the dynamic system of regulatory, market based and voluntary information instruments that removes the worst products from the market and stimulates production and consumption of better products. The EU Ecolabel³ is the main instrument included in this Plan aiming at promoting products with the best environmental performance.

The EU Ecolabel is a voluntary tool awarded to a product through a process in which an applicant has to demonstrate that the specified Ecolabel criteria for a particular product group are met. 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. The successful applicant is then allowed to use the EU Ecolabel logo and advertise the product as having been awarded the EU Ecolabel.

1.2 Purpose of this document

This background document for the revision of the criteria for EU Ecolabel for all-purpose cleaners and sanitary cleaners (both kinds of products will be referred to collectively as APC in this study) is meant to provide you with a first evaluation of likely areas for investigation as a result of stakeholder surveys, market analysis and known concerns with existing criteria, including changes in hazardous substance classification of commonly used ingredients. It identifies where there is scope for strengthening the EU Ecolabel and which criteria could be removed, amended or further developed.

The information contained in this document provides an overview of changes to the all-purpose and sanitary cleaners market since the last revision of the criteria in 2011, and a technical analysis to understand where the greatest environmental impacts arise in their life cycle.

This report is also being used as a consultation document to gain feedback, evidence and opinion from stakeholders and experts on the proposed changes and significant environmental issues.

¹ COM(2010)2020

² COM(2008)397

³ Regulation (EC) No 66/2010 of the European Parliament and the Council of 25 November 2009 on the EU Ecolabel, 30.1.2010 OJEU L27/1 available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:027:0001:0019:en:PDF>

1.3 EU Ecolabel for all-purposes cleaners and sanitary cleaners

The EU Ecolabel criteria for 'all-purpose cleaners and sanitary cleaners' were adopted in EU Commission Decision 2011/383/EU. The aim of these criteria was to promote all-purpose cleaners and sanitary cleaners that correspond to the top 10-20% environmental performing of the products available on the Community considering the whole life cycle of production, use and disposal. These criteria are due to expire in 2016. A breakdown of the number of EU Ecolabel products for the APC category can be found in the market analysis.

1.4 Investigation overview

The revision process takes the existing criteria document as the starting point and seeks to update these, taking into account technological and economic changes in the European market, relevant legislative change and improved scientific knowledge.

To review the existing EU Ecolabel criteria, the following aspects have been investigated:

- 1) Product definition and categorisation.
- 2) Economic and market analysis.
- 3) Technical analysis including environmental performance investigation.
- 4) Product innovations and improvement opportunities for dishwasher detergents.

2. LEGAL REVIEW, SCOPE AND DEFINITION

2.1 Introduction

The aim of the first task is to conduct a review of the practicality of the existing product group definition and scope. The areas where the existing criteria and scope are no longer in line with current legislation or alternative voluntary labelling schemes will be identified. The review will consider feedback from stakeholders, literature reviews, legal reviews and alternative ecolabels. This first task has been divided into the following sub-tasks:

1. An introduction to the existing product scope and definition.
2. A summary of the feedback received from the stakeholder questionnaire.
3. A review of existing EU legislation that is likely to affect the criteria revision.
4. A review of alternative and national ecolabels for all-purpose and sanitary cleaners.
5. The proposed scope and definitions for the all-purpose-cleaners and sanitary cleaners category (abbreviated as APC in this document).

2.2 Scope and definition

2.2.1 Product definition

Before investigating the classification and definition of all-purpose and sanitary cleaners (APCs), it is important that key concepts of the product, such as its composition, are fully described and understood. Within the context of the EU Ecolabel and this report, the definition used for detergents is taken from the definition of detergents used in the Regulation (EC) No 648/2004 (the Detergents Regulation).⁴

'Detergent' means 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.

The Detergents Regulation defines 'cleaning preparation' as the following:

'Cleaning preparation', 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.)

In addition to the definition provided by the Detergent Regulation, it is beneficial to include definitions of products which fall under the EU Ecolabel APC category, from other sources. This section provides definitions which may be useful for further understanding the APC product category. A search on definitions of all-purpose and sanitary cleaners found the definition provided by Public Health and the Environment (RIVM) to be the most complete. The Dutch National Institute for RIVM in its fact sheet on cleaning products defines all-purpose cleaners intended for household use as the following⁵:

'All-purpose cleaners' can be used for cleaning hard surfaces like windows, mirrors, wood, floors and tiled walls. They are used for different purposes in and around the house. Because the types of soil and the sorts of surfaces differ, there

⁴ EC Regulation 648/2004 of The European Parliament and of The Council of 31 March 2004 on detergents. Available from: http://ec.europa.eu/enterprise/sectors/chemicals/documents/specific-chemicals/detergents/index_en.htm

⁵ Cleaning Products Fact Sheet To assess the risks for the consumer, RIVM report 320104003/2006.

are all kinds of all-purpose cleaners: regular, concentrated, liquid soft soap and acid cleaners; the last can remove scale. There is no universal cleaner in particular that can handle all cleaning objectives and their soil. All-purpose cleaners are offered as liquids, they are also available as trigger sprays or as tissues.

The on-going studies for the development of European Green Public Procurement criteria for cleaning services provide a definition for 'professional cleaning operations':

'Professional cleaning operations' performed regularly or periodically in order to keep an indoor space clean and sanitized, and that can be performed manually or making use of machinery.

For sanitary cleaners, few definitions of this product group have been found. We have chosen to use the definition from the Good Environmental Choice Australia Standard:

'Sanitary cleaners': includes cleaners for use on toilets, bathrooms and other wet areas.

However, other definitions that fall into the sanitary cleaners' classification refer specifically to one or several sub-products included into this group. This is the case of the definitions provided by Nordic Ecolabelling for the following products:

'Ready-to-use WC professional' are professional toilet cleaners that are pre-diluted and ready for use straight from the package. This category only includes products for use on toilets and excludes cleaners for other sanitary porcelain and bathroom cleaners

'Ready-to-use window cleaner, consumer and professional' are professional window and glass cleaners that are pre-diluted and ready for use straight from the package.

'Ready-to-use WC consumer' are consumer toilet cleaners that are pre-diluted and ready for use straight from the package. This category only includes products for use on toilets and excludes cleaners for other sanitary porcelain and bathroom cleaners.

For window cleaners, the definition provided by New Zealand's Good Environmental Choice scheme has been chosen:

Glass and window cleaner means a product designed to clean glass or other highly polished surfaces, including window, mirrors and metallic surfaces.

Within the product groups 'all-purpose cleaners' and 'sanitary cleaners', there are sub-categories for products which cover different cleaning functions. In the first instance it is useful to define these different products that fit under the subcategories of all-purpose cleaners, sanitary cleaners and window cleaners. Table 1 provides definitions for these products.

Table 1: Cleaning products which fall under the categories all-purpose cleaners and sanitary cleaners

Product use category	Definition⁶	Examples
General (multi) purpose	General or multi-purpose cleaners are intended for use in a variety of applications indoors and primarily intended for cleaning of hard surfaces. They can be formulated for professional or domestic use, ready to use or require dilution prior to use.	Multi-purpose trigger spray, concentrated floor cleaner, multi-purpose concentrated cleaner
Bathroom	A product used to clean hard surfaces in a bathroom, such as	Limescale removers,

⁶ Not appearing in the current EU Ecolabel criteria for All-purpose cleaners and sanitary cleaners. These are general definitions have been added aiming at clarifying the names of stated in product use category column.

cleaners	counters, walls, floors, fixtures, basins, bath tubs and tiles. This does not include products specifically intended to clean toilet bowls. ⁷	bathroom cleaner trigger spray, other ready to use bathroom cleaners
Scouring cleaners	Surface cleaners combining an abrasive.	Abrasive kitchen liquids
Glass cleaners	Cleaners specifically formulated for the cleaning of glass.	Glass cleaner trigger spray
Toilet bowl cleaners	Products designed specifically to clean the toilet bowl and which have no other intended use. Toilet cleaners are divided into two different sub categories: acidic and bleach containing.	Acidic toilet cleaner ready to use
Kitchen cleaner	Cleaners designed for use on kitchen surfaces such as work tops, cookers, tiles and wash basins.	Kitchen surface cleaner trigger spray

2.2.2 Product composition

The key active components of the formulation of APCs are: surfactants, builders, bleaching agents, acids and scouring abrasives. In addition to these, secondary components including solvents, biocides, fragrances, dyes, preservatives, thickening agents and water are added to formulations. A description of each of these ingredients is provided in Annex I.

While the function of APCs is to remove stains, their chemical compositions vary depending on their exact function. For instance scouring agents contain abrasives to enhance their cleaning effect. Kitchen cleaners contain more surfactants than other types of cleaner (5-30% of the formulation) and more alkalis (1-35%), this is necessary for removing different kinds of soil and grease.⁵ Window cleaners contain fewer ingredients than other types of APC, typical formulations contain little more than surfactants, alcohol, fragrance and water.

Sanitary cleaners often contain strong acids, because they need to be able to remove mineral deposits as well as normal organic and inorganic soils from sinks, toilets and other sanitary ware. Toilet cleaners are divided into two different product types depending on their formulation. They can be either acid-containing for removal of calcium or metal salts, or they can be bleach-containing. For comparison the standard formulations of different types of APCs are provided in Annex I.

2.2.3 Current EU Ecolabel product scope and definition

The Commission Decision 2011/383/EU⁸ defines 'all-purpose cleaners and sanitary cleaners' as the following:

The product group 'All-purpose cleaners and sanitary cleaners' shall comprise: all-purpose cleaners, window cleaners and sanitary cleaners.

- a) *All-purpose cleaners comprising detergent products intended for the routine cleaning of walls, ceilings, windows and other fixed surfaces, and which are either diluted in water prior to use or used without dilution. All-purpose cleaners shall mean products intended for indoor use in buildings which include domestic, commercial and industrial facilities.*

⁷ Definition adapted from Green Seal Standard for Cleaning Products for Household Use, edition 5.1, July 2013.

⁸ Commission Decision of 28 June 2011 on establishing the ecological criteria for the award of the EU Ecolabel to all-purpose cleaners and sanitary cleaners (2011/383/EU) (notified under document C(2011) 4442) L 169/52 OJEU 29.6.2011

- b) *Window cleaners comprising specific cleaners intended for the routine cleaning of windows, and which are used without dilution.*
- c) *Sanitary cleaners comprising detergent products intended for the routine removal, including by scouring, of dirt and/or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms, showers and kitchens. This subgroup contains bathroom cleaners and kitchen cleaners.*

The product group shall cover products for both private and professional use. The products shall be mixtures of chemical substances and must not contain micro-organisms that have been deliberately added by the manufacturer.

2.3 Feedback from stakeholder consultation

In order to obtain feedback on the current EU Ecolabel product scope and definition for APCs, a questionnaire was sent to stakeholders. A blank copy of the questionnaire can be found in Annex II. The target groups for the questionnaire were European Ecolabel competent bodies, industry, technology institutes and trade associations. Nine stakeholders formally responded to the consultation by returning the completed questionnaire. The respondents feature a mixture of stakeholders, as summarised in Table 2.

Table 2: Summary of respondents to questionnaire

Stakeholder	Number of respondents
Competent bodies	4
Environment Agency	1
Industry	14
Testing institute	1
Industry association	2

The responses and comments from the stakeholders gathered from the questionnaire are presented in Table 3 and Table 4. These responses will be used along with scientific evidence to direct the revision of the criteria for the all-purpose cleaners and sanitary cleaners product category.

Table 3: Summary of responses to the stakeholder questionnaire

Criteria	Existing EU Ecolabel criteria		Questions	Number of responses		
				Yes	No	N/A
Scope and definition	a) All-purpose cleaners comprising detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaces, and which are either diluted in water prior to use or used without dilution. All-purpose cleaners shall mean products intended for indoor use in buildings which include domestic, commercial and industrial facilities. b) Window cleaners comprising specific cleaners intended for the routine cleaning of windows, and which are used without dilution. c) Sanitary cleaners comprising detergent products intended for the routine removal, including by scouring, of dirt and/or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms, showers and kitchens. This subgroup thus contains bathroom cleaners and kitchen cleaners.		Do you agree with the existing classification of the products included in the scope?	12	10	
			Is the current definition appropriate and suitable for each product category?	11	11	
			Are there any all-purpose cleaning products which are excluded by this definition which, in your opinion, should be included?	11	10	1
			Does the current definition require clarification? Is the current definition too complicated to be understood? Should the distinction between private and professional products be addressed in more detail?	9	13	
			Should a list of excluded products be provided as part of product group definition?	9	12	1
Toxicity to aquatic organisms: Critical Dilution Volume	Product type	CDV_{chronic}	Are the CDV limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group? Is CDV the most appropriate method for assessing aquatic toxicity? If not which assessment method should be considered. Do private and professional products require different CDV limits?	7	10	5
	All-purpose cleaners (diluted in water at manufacturer's dose to create a litre of cleaning solution)	18 000 l/1l of solution				
	All-purpose cleaners (used without dilution)	52 000 l/100g of product				
	Window cleaners	4 800 l/100g of product				
	Sanitary cleaners	80 000 l/100g of product				
Biodegradability of surfactants	The current criteria specify that each surfactant in the product shall be readily biodegradable (aerobically). For anaerobically non-biodegradable surfactants (anNBO) the following limits apply:		Are requirements for anaerobic biodegradability necessary for this product group? Which other parameters could be considered?	11	4	7
	Product type	anNBO	Are the current limits set for anaerobic biodegradability of surfactants strict enough? Are the current limits effective in distinguishing between the state-of-the-art and the best performing products in the APC	11	6	5
	All-purpose cleaners diluted prior to use	0.40 g/100 g of product				
	All-purpose cleaners used without dilution	4.0 g/100 g of product				
	Window cleaners	2.0 g/100 g of product				
	Sanitary cleaners	2.0 g/100 g of product				

Criteria	Existing EU Ecolabel criteria	Questions	Number of responses																	
			Yes	No	N/A															
		product group?																		
Excluded or limited substances	<p>The following ingredients must not be included in the product:</p> <ul style="list-style-type: none"> • APEO (alkyl phenoethoxylates) and ADP (alkylphenols and derivatives thereof) • EDTA (ethylenediamine tetraacetate) • 5-bromo-5-nitro-1,3-dioxane • 2-bromo-2-nitropropane-1,3-diol • Diazolinidylurea • Formaldehyde • Sodium hydroxyl methyl glycinate • Nitromusks and polycyclic musks <p>There are restrictions on the use of quaternary ammonium salts and biocides.</p> <p>The following derogations are in place:</p> <table border="1"> <thead> <tr> <th>Substance</th> <th>Hazard statement</th> <th>Risk phrase</th> </tr> </thead> <tbody> <tr> <td>Surfactants (in concentrations <25%wt)</td> <td>H400 & H412</td> <td>R50 & R52-53</td> </tr> <tr> <td>Fragrances</td> <td>H412</td> <td>R52-53</td> </tr> <tr> <td>Enzymes</td> <td>H334 & H317</td> <td>R42 & R43</td> </tr> <tr> <td>NTA as in impurity in MGDA and GLDA</td> <td>H351</td> <td>R40</td> </tr> </tbody> </table>	Substance	Hazard statement	Risk phrase	Surfactants (in concentrations <25%wt)	H400 & H412	R50 & R52-53	Fragrances	H412	R52-53	Enzymes	H334 & H317	R42 & R43	NTA as in impurity in MGDA and GLDA	H351	R40	Are there any additional ingredients which should be specifically excluded or limited from EU Ecolabelled APCs?	5	11	6
		Substance	Hazard statement	Risk phrase																
		Surfactants (in concentrations <25%wt)	H400 & H412	R50 & R52-53																
		Fragrances	H412	R52-53																
		Enzymes	H334 & H317	R42 & R43																
		NTA as in impurity in MGDA and GLDA	H351	R40																
Are any additional derogations required?	3	14	2																	
Are there any substances or mixtures which no longer need to be excluded?	6	11	5																	
Should nanomaterials be excluded from EU Ecolabelled APC products?	10	7	4																	
Are further requirements needed for the use of biocides in the product?	3	15	4																	
Fragrances	<p>Under the current criteria the following requirements on fragrances apply:</p> <p>a) Nitro- and polycyclic musk-based fragrances are prohibited as in Criterion 3.</p> <p>b) Any substance added to the product as a fragrance must have been manufactured and/or handled in accordance with the code of practice of the International Fragrance Association. The code can be found on IFRA's website: http://www.ifraorg.org</p> <p>c) Other fragrances may be limited to < 100 ppm (w/w) by the requirements of Regulation (EC) No 648/200 (Annex VII) or where they are classified H317/R43 may cause allergic skin reaction and/or H334/R32 may cause allergy or asthma symptoms or breathing difficulties if inhaled.</p>	Are there any additional fragrance ingredients which should be specifically excluded or limited from EU Ecolabel APCs?	1	10	2															
		Are there any further requirements needed for fragrances?		10	3															
		Should the use of fragrances be allowed in professional products?	9	3	1															
Volatile organic compounds (VOCs)	<p>The following limits are set for VOCs in the product:</p> <table border="1"> <thead> <tr> <th>Product type</th> <th>Total VOC</th> </tr> </thead> <tbody> <tr> <td>All-purpose cleaners diluted prior to use</td> <td>< 0.2 % (w/w) in the washing water</td> </tr> <tr> <td>All-purpose cleaners used without dilution</td> <td>< 6 % (w/w) in the product</td> </tr> <tr> <td>Window cleaners</td> <td>< 10 % (w/w) in the product</td> </tr> </tbody> </table>	Product type	Total VOC	All-purpose cleaners diluted prior to use	< 0.2 % (w/w) in the washing water	All-purpose cleaners used without dilution	< 6 % (w/w) in the product	Window cleaners	< 10 % (w/w) in the product	Are the limits on VOCs in the product strict enough?	13	4	5							
		Product type	Total VOC																	
		All-purpose cleaners diluted prior to use	< 0.2 % (w/w) in the washing water																	
		All-purpose cleaners used without dilution	< 6 % (w/w) in the product																	
Window cleaners	< 10 % (w/w) in the product																			

Criteria	Existing EU Ecolabel criteria		Questions	Number of responses		
				Yes	No	N/A
	Sanitary cleaners	< 6 % (w/w) in the product				
Phosphorus	The limits on phosphorus are:		Are the current limits set for the maximum amounts of phosphorus strict enough for APCs available on the market?	10	7	5
	Product type	Total phosphorus content				
	All-purpose cleaners diluted prior to use	< 0.02 g (P)/1 L of washing water	Are the current limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	9	5	8
	All-purpose cleaners used without dilution	< 0.2 g (P)/100 g of product				
	Window cleaners	None permissible				
Sanitary cleaners	< 1.0 g (P)/100 g of product	Should phosphorus compounds such as phosphates and phosphonates be banned from this product group?	5	12	5	
Packaging requirements	The existing criteria specify the following requirements on packaging:		Do you think that is it necessary to have a criterion on packaging requirements for this product group?	19	1	2
	a) Sprays containing propellants must not be used		Are the WUR limits acceptable for APCs currently on the market?	7	11	4
	b) Plastics that are used for the main container must be marked in accordance with EC Directive 94/62/EC or DIN 6120 part 1 and 2 in connection with DIN 7728 part 1					
	c) If the primary packaging is made of recycled material, any indication of this on the packaging shall be in conformity with the ISO 14021 standard		Should additional criteria be set to further promote the use of recycled materials in packaging?	5	15	2
	d) Products packaged in trigger sprays must be sold as part of a refillable system		Should there be restrictions on combinations of materials used for packaging? For instance to design for recycling (like the new proposed criterion for rinse-off cosmetics).	3	13	6
	e) Only phthalates that at the time of application have been risk assessed and have not been classified according to Criterion 3c may be used in the plastic packaging					
f) The weight utility ratio (for primary packaging) must not exceed the following values:						
Product type	WUR					
Concentrated products, including liquid concentrates and solids that are diluted in water prior to use.	1.2 g/ l use solution (washing water)					
Ready-to-use products, i.e. products used without further dilution.	g/ l use solution (washing water)					

Criteria	Existing EU Ecolabel criteria	Questions	Number of responses		
			Yes	No	N/A
Washing performance (fitness for use)	<p>The existing criteria state that the product shall be fit for use, meeting the needs of the consumer:</p> <p>a) All-purpose cleaners and window cleaners For all-purpose cleaners, only fat-removing effects must be documented. For window cleaners, stripe-less drying must be documented. The cleaning ability must be equivalent to, or better than, that of a market-leading or generic reference product, approved by a Competent Body. Frameworks for testing the performance of all-purpose cleaners, window cleaners and sanitary cleaners can be found here: http://ec.europa.eu/environment/ecolabel/documents/performance_test_cleaners.pdf</p> <p>b) Sanitary cleaners include bathroom cleaners, toilet cleaners and kitchen cleaners. For bathroom cleaners, both limesoap and limescale removal shall be documented. For acidic toilet cleaners, only limescale removal shall be documented. For kitchen cleaners, fat removing effects shall be documented. The cleaning ability must be equivalent to or better than that of the generic reference detergent specified in the framework for testing performance given in the above link. The generic reference detergent shall be the one prescribed in IKW performance test 'Recommendation for the quality assessment of acidic toilet cleaners' (SÖFW-journal, 136, 11, pp50-56, 200). The reference detergent is applicable for toilet cleaners and bathroom cleaners; however, the pH must be reduced to 3.5 for testing bathroom cleaners.</p>	Stakeholders were asked to provide comments – see comments section	6	3	
User instructions	<p>Dosage instructions: Information on the recommended dosage of all-purpose cleaners and sanitary cleaners shall appear on the packaging in a reasonably sufficient size and against a visible background. In the case of a concentrated product, it shall be clearly indicated on the packaging that only a small quantity of the product is needed compared to normal (i.e. diluted) products. The following (or equivalent) text shall appear on the packaging: <i>"Proper dosage saves costs and minimises environmental impacts"</i> The following (or equivalent) text shall appear on the packaging of ready-to-use all-purpose cleaners: <i>"The product is not intended for large scale cleaning"</i></p>	Are additional requirements and instructions for dosage needed?	1	18	3
		Are additional requirements needed for dosing of products intended for professional users?	4	15	3
		Are the requirements for safety advice on the packaging sufficient?	18	2	2

Criteria	Existing EU Ecolabel criteria	Questions	Number of responses		
			Yes	No	N/A
	Safety advice: The following safety advice (or equivalent) shall appear on the product in text or as pictograms: -“Keep away from children” -“Do not mix different cleaners” -“Avoid inhaling sprayed product” (only for products that are packaged as sprays)				
Information appearing on the EU Ecolabel	An optional label with text box shall contain the following text: -“Reduced impact on aquatic life” -“Reduced use of hazardous substances” -“Reduced packaging waste” -Clear user instructions	Is there any other information which should be included on the EU Ecolabel claims text?	1	19	2
Professional cleaning	Under the current criteria for detergents which are used by professional users, the producer, distributor or a third party shall offer training or training materials for cleaning staff. These shall include step-by-step instructions for proper dilution, use, disposal and the use of equipment.	Are any further requirements for professional training needed?	1	17	3

Table 4: Summary of the comments received from stakeholders in response to the questionnaire. Full responses can be found in Annex IV

Criterion	Question	Summary of the comments received
Scope and definition	Do you agree with the existing classification of the products included in the scope?	Modifications to the current classification of the products included in the scope were pointed out by the stakeholders. Some expressed a preference of using the AISE categorisation, which classifies products into three main groups: - toilet cleaners - trigger spray cleaners: glass/window, bathroom, kitchen and all-purpose for hard surfaces - dilutable all-purpose and floor cleaners (it was pointed out that this group is not considered so far) Others pointed out that kitchen cleaners should not be included in sanitary cleaners and products for outdoor use should be considered.
	Is the current definition appropriate and suitable for each product category?	Agreement was expressed on the need to provide more clarification concerning dilutable and undilutable sanitary cleaners and toilet cleaners. Besides, and especially referring to the professional products, a higher level of disaggregation was requested for APC product group due to the differences in their uses such as interior cleaners, floor cleaners, degreasers, etc.
	Are there any APC products which are excluded by this definition which, in your opinion, should be included?	Several products were named by the respondents: - APC for outdoor cleaning (terrace floors and furniture) - some dilutable sanitary cleaners which do not fit the definition, such as: a) window cleaners used with dilution in water buckets (concentrated window cleaners)

Criterion	Question	Summary of the comments received
		<ul style="list-style-type: none"> b) concentrated sanitary and kitchen cleaners to be used in diluted - toilet cleaning blocks, - car cleaning products, - floor care products (carpet cleaner, polish, stripper and wash and wax) - products containing microorganisms
	Does the current definition need clarification? Is the current definition too complicated to be understood? Should the distinction between private and professional products be addressed in more detail?	Several points were highlighted as response: <ul style="list-style-type: none"> a) the need to distinguish between household and industrial and institutional categories because of the different user's profile (non-expert vs professional) b) the distinction between dilutable and ready-to-use in all categories of this product group c) further clarification about what is covered in each category (i.e. are products aimed at cleaning mirrors and screens covered under window cleaners?)
	Should a list of excluded products be provided as part of the product group definition?	Some stakeholders suggested the need to exclude very special cleaners such as those used for cleaning ovens. A large majority commented on the advantages of including a list of excluded products if there are any.
Toxicity to aquatic organisms: Critical Dilution Volume (CDV)	Are the CDV limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	Several new values for CDV values were proposed and it was advised to make a distinction between undiluted and read-to-use products. Overall, the current CDV values required for all purpose cleaners and sanitary cleaners.
	Is CDV the most appropriate method for assessing aquatic toxicity? If not which assessment method should be considered.	Risk-based methodologies might provide better results such as AISE's ESC tool. Several stakeholders commented that they do not have enough information to answer.
	Do private and professional products require different CDV limits?	It was generally agreed that domestic and professional products should have different CDV values but industry and competent bodies disagreed on whether the CDV values for professional products should be more lax or stricter.
Biodegradability of surfactants	Are requirements for anaerobic biodegradability necessary for this product group? Which other parameters could be considered?	A general response from the stakeholders suggested that anaerobic biodegradability is not a relevant environmental parameter, but it was also noted that the current criteria do limit non-biodegradable non-surfactant organic substances.
	Are the current limits set for anaerobic biodegradability of surfactants strict enough?	Several responses were received. Some of them highlighted the non-relevance of this parameter and made reference to the SCHER opinion, others pointed out that the current limits are too strict, while other stated that full anaerobic biodegradability of surfactants should be required.
	Are the current limits effective in distinguishing between the state-of-the-art and the best performing products in the APC product group?	As for the previous question, some stakeholders remarked on the non-relevance of this parameter while others suggested that the EU Ecolabel should require full anaerobic biodegradability of surfactants or that limits should cover all kind of substances that are not anNBO biodegradable.
Excluded or limited	Are there any additional ingredients which should be specifically excluded or limited from	Substances proposed for exclusion include phosphorus, NTA, enzymes and chloromethylisothiazolinone.

Criterion	Question	Summary of the comments received
substances and mixtures	EU Ecolabelled APCs?	
	Are any additional derogations required?	A derogation for preservatives classified as H400, due to the classification of several proteases. This derogation is also included in the domestic and I&I laundry detergents. Derogations for preservatives classified as H317 and H412 were suggested.
	Are there any substances or mixtures which no longer need to be excluded?	Only two substances were named in the question: - APEOs (alkyl phenol ethoxylates) as these do not meet the biodegradability requirements of detergents regulation - bacterial stains for odour control, although information should be verified
	Should nanomaterials be excluded from EU Ecolabel APC products?	It was stated by several that nanomaterial should be excluded if a specific environmental or health risk is identified. In line with this, they pointed out that nanomaterials can have a possible impact on the final user's health when they become dried onto surfaces, due to their tiny particle size, but that the risks are unknown at this stage.
	Are further requirements needed for the use of biocides in the product?	Biocides allowed should not be bioaccumulative and further clarification should be provided on the maximum dosage allowed.
Fragrances	Are further any additional fragrance ingredients which should be specifically excluded or limited from EU Ecolabel APCs?	Fragrances classified as R43 should be fully excluded.
	Are there any further requirements needed for fragrances	Several further requirements were proposed: - the CDV calculation for fragrances should be improved to stimulate the use of more sustainable substances - including a formaldehyde content/emission limit - limit the use environmentally hazardous substances fragrance substances
	Should the use of fragrances be allowed in profession products?	According to industry members, fragrance is essential for most professional used products other than kitchen cleaners and those used in the food industry, and is even more important in the household sector. Clients appreciate a fresh smell after cleaning, and perceive it as a sign of good performance. A competent body commented that fragrances should be limited by the EU Ecolabel.
Volatile organic compounds	Are the limits on VOCs in the product strict enough?	Stakeholders asked for clarification of what is considered VOC as the definitions provided by ISO 16000-6 and WHO seem to be different. Several modification were suggested: - higher VOC values for undiluted products, - ethanol should not be taken into account when calculating VOCs, - VOCs can be lowered for ready-to-use products.
Phosphorus	Are the current limits set for the maximum amounts of phosphorus strict enough for APCs available on the market?	The general consensus is that phosphorus values can be lowered and many stakeholders commented that phosphorus can be banned altogether.
	Are the current limits effective in distinguishing	Several points arose:

Criterion	Question	Summary of the comments received
	between the state-of-the-art and the best environmental performing products in the APC product group?	<ul style="list-style-type: none"> - the formulation of highly concentrated detergents needs the use of very efficient raw materials, typically phosphonates, therefore the phosphorus limit should be increased to 0.06 g/l of washing water for diluted APC - high levels of phosphates or other phosphorous containing ingredients are not currently used in the formulation of detergents; thus limits on phosphorus content will have no impact on the environmental performance of products currently on the market - there are already products on the shelves that are phosphorus-free: this underpins that the limits can be stricter
	Should phosphorus compounds such as phosphonates and phosphates be banned from this product group?	<p>Concerning these compounds the following information was received:</p> <ul style="list-style-type: none"> - phosphonates, even if they are used at very low concentration, play an important role. For example, they are the only efficient stabilizer for H₂O₂-based detergents used in sanitary cleaners, are used to improve washing performance in hard water and are able to balance or replace the high caustic ingredients required for burnt on soil removal Due to the low levels used, a ban on phosphonates does not bring relevant environmental benefits. - phosphates are proposed to be banned
Packaging	Do you think that it is necessary to have a criterion on packaging?	Stakeholders were in favour of introducing requirements on packaging, as packaging has an influence on promoting green purchases
	Are the WUR limits acceptable for APCs currently on the market?	<p>In general, stakeholders pointed out that the current WUR limits are too strict, especially for sprays and when compared to the limited environmental impact caused by the packaging. Moreover in some case WUR favours read-to-use products over undiluted ones.</p> <p>Possible alternatives to this criterion were suggested, such as: introducing advice on recycling the packaging, proposing refilling in ready-to-use detergents or lowering the limits for ready-to-use products</p>
	Should additional criteria be set to further promote the use of recycled materials in packaging?	Two different opinions were expressed in the consultation. Some stakeholders considered that the availability of recycled materials is increasing on the market and their use should be stimulated; others considered that any recycling criteria should go beyond market reality
	Should there be restrictions on combinations of materials used for packaging?	<p>The pros and cons of setting restrictions on combinations of materials were expressed. The use of laminated pouches has advantages such as lower environmental impacts during transportation and waste production. However, ultimately they have to go be recycled in general plastic waste.</p> <p>Non-compatible materials are a major barrier to improve the recyclability of packaging, and it affects the technical and economic aspects of this process.</p> <p>It was also pointed out that packaging that is easy-to-empty and easy-to-access concepts and indexes could also ease the recycling process</p>
Washing performance	Please provide your comments on the washing performance test and, if appropriate, proposals	The general opinion was that the current requirements are ok and workable although the tests were also perceived as "unfair" by some applicants. Some also suggested that the target performances are

Criterion	Question	Summary of the comments received
(fitness for use)	for modification	<p>easy to reach. Additionally, a distinction between private and professional products should be made regarding both the reference product and the level of ambition.</p> <p>The following modifications were proposed:</p> <ul style="list-style-type: none"> - for APC, stripe-less (streak free) should be required as it is already the case for the 'rinse-off' products. - for kitchen cleaners, evaluation of burnt-on-soil removal needs to be added - for window cleaners, the protocol required is not clear - harmonization of the reference product is needed, particularly for professional applications. For the protocols, some modifications were added such as: <ul style="list-style-type: none"> - increasing the number of repetitions to 20 - attaching a chemical characterization to the performance test to allow a further quality control.
User instructions	Are additional requirements and instructions for dosage needed?	<p>Two points were suggested as additional requirements:</p> <ul style="list-style-type: none"> - to express the dosage in ml/l - to introduce new user instructions for concentrated products, stating that that only a small quantity is necessary to obtain good results.
	Are additional requirements needed for dosing of products intended for professional users?	Requirements for professional use required clarification of the statement " <i>the product is not intended for large scale cleaning</i> " and some parts of the instructions are redundant.
	Are the requirements for safety advice on the packaging sufficient?	Stakeholders indicated that they are already regulated by the CLP Regulation, and it may be less confusing if the advice only appeared if the product is not classified under CLP phrases. In general the inclusion of safety measures was considered not relevant in professional products, especially the statement " <i>Keep away from children</i> ".
Information appearing on the EU Ecolabel	Is there any other information which should be included on the EU Ecolabel claims text?	It was suggested that a performance claim can be included.
Professional training	Are any further requirements for professional training needed?	Although this criterion seems to be important from the stakeholders perspective, the current state of the criterion does not fulfil expectations. It was pointed out the need not to repeat the information included on the EU Ecolabel and requiring the right source of information that reaches the end-users. The user manual should be updated to be in accordance with the EU Ecolabel text – a training course or training material is required, not both.
Further issues or hotspots	Should further criteria be developed, either because not all issues are already covered or because of recent developments which affect the environmental performance of APCs?	<p>Some suggestions were:</p> <ul style="list-style-type: none"> - to include the benefits of including raw materials sustainably sourced or based on renewable carbon - higher restrictions on biocide (disinfectants) as they are more frequently used
	Do you consider it feasible to link the CDV or aquatic toxicity criterion and performance	General disagreement was expressed. Two examples were provided: the fragrances dominate the CDV score whereas their washing performance is negligible and the acidic materials with very good

Criterion	Question	Summary of the comments received
	criteria? If yes, please explain your approach	CDV can have very little degreasing performance
	Do you know of any examples of the use of nanomaterials in APCs? Should their use be banned from this product group and why?	Nanomaterials were used in window cleaners. However, concern over using nanomaterials is low in the liquid phase. The main concern arises when it dries and tiny particles are left dried on the surfaces.

2.3.1 Summary of the stakeholder's consultation and implications in the revision of the EU Ecolabel criteria.

Based on the feedback received from the stakeholders, there are a number of following areas that have been identified for revision: product group definition, aquatic toxicity, biodegradability of surfactants and organics, review of excluded ingredients, packaging, dosage instructions for professional users, training for professional users, cleaning performance (fitness for use) and renewable raw materials.

Following the review of stakeholder feedback and alternative ecolabels and voluntary agreements, suggested changes to the criteria have been collated. A summary of the relevant suggested changes and further actions to be taken are summarised in Table 5.

Table 5: Summary of suggested criteria changes for APCs from stakeholders feedback

Criterion	Suggested change	Further action
Toxicity to aquatic organisms	CDV limits should be set for ready-to-use and concentrated products	Further investigation of CDV values of different product types is required in order to set new CDV limits.
	Add limits for concentrated sanitary cleaners – if these are to be included in the scope	Further stakeholder engagement required – CDV values for a range of concentrated sanitary cleaners are needed in order to set limits.
	Adjust CDV values according to changes in product formulation since last revision	Acquire CDV limits of APC products from industry and competent bodies, then check these values against the current limits.
	Add CDV limits for professional products	Using CDV data gathered, investigate the differences in CDV values between domestic and professional products.
Biodegradability of surfactants	Limits for anNBO should cover organics as well as surfactants	Further investigation is required into use of non-surfactant organic substances in APCs.
	Change name of criterion to 'biodegradability' to reflect above change	If criterion changes to include organics, a name change is required.
Excluded or limited substances	Exclude endocrine disruptors	Investigate the use of endocrine disruptors in APC products and how they are dealt with in EU regulations.
	Enzymes classified as H400	Further investigation into the use of enzymes with this classification is required.
	Exclude nanomaterials of specific concern	Further investigation on the use of nanomaterials in APCs is required.
	Exclusion no longer required for APEO	...as it does not meet the requirements of the Detergents Regulation
	Biocides which are bioaccumulating should not be allowed	Align with the other EU Ecolabel detergent product groups criteria, for treatment of biocides.
	Subsittilism	Apart from the feedback received through the stakeholders consultation, DG ENV received a request for derogating the enzyme subsittilisin that has recently changed classification
Fragrances	Add reference to fragrances limited by detergents regulation	Investigate which fragrances are limited by the Detergents Regulation and harmonise with EU Ecolabel requirements.
Volatile organic compounds	Clarification on definition of VOC required	Draft new clarification of VOC.
Phosphorus	Review the necessity for phosphorus limits – a ban for phosphate and limit for phosphonates may be more appropriate	Align approach with other detergents product groups.

Criterion	Suggested change	Further action
Packaging requirements	Make WUR less strict – not justified by the impact of packaging on the environment	Further investigation into packaging for APC products is required.
	Add criteria to encourage ease of recycling	Align with approach taken for rinse-off cosmetics.
User instructions	Clarification of the phrase “ <i>The product is not intended for large-scale cleaning</i> ”	As the current definition has led to mistranslations, reformulate in a way that is less open to misinterpretations.
Information appearing on the EU Ecolabel	Align with approach for LD, IILD, DD, IIDD and HDD product categories	Harmonise with these product categories.
Professional training	Add requirement for product information sheets	Further investigation required into relevance of product information sheet for professional users.
Additional criteria	Sustainable sourcing of palm oil derivatives	Further information to assess the relevance of a criterion for sustainable sourcing of palm oil derivatives.

2.4 Review of legislation – key changes since the 2011 revision

2.4.1 Regulation EC/66/2010 (the EU Ecolabel Regulation)

Regulation EC/1980/2000⁹ on a revised Community eco-label award scheme was replaced by Regulation EC/66/2010¹⁰ on the EU Ecolabel (the EU Ecolabel Regulation) to increase its effectiveness and streamline its operation.

A number of key changes, relevant to this product group, were incorporated:

- 1) Criteria would be determined on a scientific basis (Ecolabel Regulation - Art.6.3)
- 2) There would be a focus on the most significant environmental impacts over the product life cycle (Ecolabel Regulation - Art.6.3.a)
- 3) The substitution of hazardous substances with safer substances (Ecolabel Regulation – Art.6.3.b)
- 4) Any substances classified according to Regulation (EC) No 1272/2008 (The CLP Regulation)¹¹ as hazardous to the environment, toxic, carcinogenic, mutagenic or toxic for reproduction and referred to in Art.57 of Regulation EC/1907/2006 (the REACH Regulation) would be restricted (EU Ecolabel Regulation - Art.6.6)
- 5) Derogations may be given in respect of the above, if substitution or use of alternative materials is not technically feasible. However no derogations are possible in respect of substances of very high concern (SVHC) identified in accordance with the procedure set out in REACH - Art.59 (EU Ecolabel Regulation - Art.6.7).

⁹ Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme

¹⁰ Regulation (EC) No 66/2010 of the European Parliament and of the Council of November 25 2009 on the EU Ecolabel

¹¹ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

2.4.2 Regulation (EU) No 528/2012 (the Biocidal Product Regulation)

The Directive (98/8/EC)¹² (the Biocidal Products Directive or BPD) applies to insecticides and products that have anti-microbial properties, including disinfectants. In household cleaning products, biocides may be used in small amounts as preservatives to maintain product quality and/or as disinfectants.¹³ The original BPD regulated the placing of biocidal products on the EU market. The Directive applied only to products containing active agents that imparted biocidal properties to the product into which they were incorporated.

When the BPD came into force, it was already being criticized as too complicated and inadequate in some respects. Demands for simpler and quicker authorization procedures and EU-wide authorization came especially from industry. Authorities from the Member States called for uniform testing and evaluation during authorization, and consumer and environmental non-governmental organizations criticized the lack of rules on articles treated with biocides and on biocide use phases.

Regulation EU/528/2012¹⁴ concerning the *making available on the market and use of biocidal products* (the BPR) repeals and replaces the BPD. Due to the above-mentioned requirements, the BPD was reviewed and implemented some modifications concerning: the prohibition of the use of active biocidal substances with extremely hazardous profiles; the authorization by the Member States of active substances if the exposure to humans or the environment is negligible; the labelling of substitution candidates of the substances that will be gradually replaced; and, overall, the simplification of expedition authorization procedures for products in the entire European market. In this respect, the BPR includes the stepwise introduction of union authorization by 2020 with an increase in the transparency of the process. Finally, the BPR increases consumer protection as a higher number of substances cannot be made available to the general public and further information will be available on-line.

Under BPR, the mandate for the regulation of biocidal products has been transferred to the European Chemicals Agency (ECHA), the aim being further convergence with the biocidal requirements of REACH. The BPR also establishes a *Register for Biocidal Products*, which allows the Member States, the Commission and ECHA to make available to each other the particulars and scientific documentation submitted in connection with applications for authorisation of biocidal products.

2.4.3 Regulation (EC) No 1272/2008 (The CLP Regulation)

The use of many (often incompatible) national systems for providing information on hazardous properties and control measures of chemicals requires multiple labels and Safety Data Sheets for the same product. This causes confusion for customers of these chemicals and increases the burden on companies complying with many different regulations. To address this, the Regulation EU/1272/2008¹⁵ on the Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) was developed to harmonise the process, requiring only one set of labels for all products sold throughout the EU.

¹² Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market.

¹³ Scientific Committee on Emerging and Newly Identified Health Risks SCENIHR, Assessment of the Antibiotic Resistance Effects of Biocides, EC DG-SANCO, 2009. Available from: http://ec.europa.eu/health/ph_risk/committees/04_scenihhr/docs/scenihhr_o_021.pdf

¹⁴ Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products

¹⁵ Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

The CLP Regulation came into force on 20 January 2009 and implemented the UN Globally Harmonised System at EU level. The new system of classification, labelling and packaging was implemented by 1 December 2010 for substances, and will be implemented by 1 January 2015 for mixtures. However, substances and mixtures will still have to be classified and labelled according to the predecessor Directive 67/548/EEC on Dangerous Substances Directive and Directive 1999/45/EC for preparations, until 1 June 2015.

2.4.4 Regulation (EU) No 259/2012 (the Detergents Regulation)

Regulation EU/259/2012¹⁶ (the Detergents Regulation), revised in 2012, expresses concern that phosphate-based substitutes (phosphonates) pose a potential a risk to the environment. It limits the use of phosphates and phosphonates in laundry and dishwasher detergents for household use, but not in other detergents such as all-purpose cleaners. Accordingly, the Revision encourages producers to use alternative substances with a more environmentally-friendly profile than phosphate-based substitutes. The Detergents Regulation is clear that these alternative substances should either be risk-free, or should pose only a limited risk, to humans and the environment (under normal conditions of use).

Although APCs are not in scope for the 2012 Revision, they are in scope of the Regulation EU No 648/2004 on Detergents. They are included in the scope under Article 2(1) *other cleaning and washing preparations/ mixtures intended for any other washing and cleaning process*. Additionally, detergents do not need to contain surfactants to fall within scope.¹⁷

2.5 Review of national ecolabels

As well as the EU Ecolabel, which operates Europe-wide, there are a variety of national labels that can be sought out for APCs, including 'Nordic Swan' (Nordic Countries), and the Austrian Ecolabel. A number of labels are also used outside the EU, including 'Green Seal' (predominantly used in the USA) and the 'Environmental Choice' labelling programme (New Zealand).¹⁸ The aim of this section is to identify where these alternative ecolabels have product categories for APCs. In general ecolabels can be categorised as either single-attribute or multi-attribute standards. 'Single attribute' refers to certifications which only relate to one environmental characteristic, for example recycled content, whereas 'multi-attribute' certifications relate to more than one environmental characteristic. As the EU Ecolabel is a multi-attribute certification, only multi-criteria ecolabels will be compared in this section. An overview of the alternative voluntary labelling schemes is presented in Table 6, including industry voluntary agreements.

The product scope and definitions for a range of national ecolabels have been studied and are presented in Table 7. Nordic Swan, Czech ecolabelling, France's Ecocert and

¹⁶ Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents (L 104/1 OJEU 8.4.2004) Available from: http://ec.europa.eu/enterprise/sectors/chemicals/documents/specific-chemicals/detergents/index_en.htm

¹⁷ Question and agreed answers concerning the correct implementation of Regulation (EC) No 648/2004 on detergents, European Commission, February 2011. Available from: http://ec.europa.eu/enterprise/sectors/chemicals/files/docs/updated_detergents_faq_feb_2011_en.pdf

¹⁸ Information on ecolabels on detergents, including all-purpose cleaners and sanitary cleaner can be found on the following website: http://www.globalecolabelling.net/categories_7_criteria/list_by_product_category/1300.htm

Sweden's Good Environmental Choice are all multi-attribute Type 1 ecolabelling schemes operated in Europe which have criteria for APCs. Globally, Green Seal in the United States, Environmental Choice in New Zealand, EcoLogo in Canada, the Korean Eco-Label, the Singapore Green Label, Good Environmental Choice Australia and Green Choice Philippines all have criteria documents for APCs. In addition, a review of the criteria for a selection of alternative ecolabels has been provided in this section (Table 8 and Table 9). This review highlights the different approaches taken to ecolabelling and the level of detail employed by different schemes.

Table 6: Alternative voluntary labelling schemes

Labelling program	Region	Product category	Date of adoption/last revision
Nordic Swan	Denmark, Finland, Iceland, Norway, Sweden.	Cleaning products ¹⁹	Version 5.0 – 13 March 2013 – 31 March 2017
		Industrial cleaning and degreasing agents ²⁰	Version 2.5 – 13 October 2005 – 31 March 2016
Blue Angel	Germany	No criteria for APC	N/A
Austrian Ecolabel	Austria	All-purpose cleaners and sanitary cleaners ²¹	Last issued July 2011
Bra Miljöval (Good Environmental Choice)	Sweden	Chemical products ²²	Last issued 2006
Czech Ecolabelling ²³	Czech Republic	All purpose cleaners and cleaners for sanitary facilities ²⁴	Last issued 2012
Ecocert	Global (founded in France)	Natural detergents and Natural detergents made with organic ²⁵	Last revised May 2012
Green Seal	USA	GS-08 Cleaning products for household use ²⁶	Last issued July 2013
		GS-37 Cleaning products for industrial and institutional use ²⁷	Last issued July 2013
		GS-52 Specialty cleaning products for household use ²⁸	Last issued April 2014
		GS-53 Specialty cleaning products for industrial and institutional use ²⁹	Last issued April 2014
Environmental Choice	New Zealand	EC-22-14 General purpose cleaning products ³⁰	Last issued January 2014

¹⁹ Nordic Ecolabelling of Cleaning products, 026 Cleaning products, version 5.0, 20 September 2013. Available from <http://www.nordic-ecolabel.org/criteria/product-groups/>

²⁰ Nordic Ecolabelling of Industrial cleaning and degreasing agents, 065 Industrial cleaning and degreasing agents, version 2.5, 15 May 2013. Available from <http://www.nordic-ecolabel.org/criteria/product-groups/>

²¹ Austrian Ecolabel, all-purpose and sanitary cleaners, UZ 30, version 5.2, July 2011. Available from http://www.umweltzeichen.at/richtlinien/Uz30_R5.2a_Allzweckreiniger_2011.pdf

²² Good Environmental Choice criteria: Chemical products, Version 2006:4, Swedish Society for Nature Conservation, available from: <http://www.naturskyddsforeningen.se/sites/default/files/dokument-media/bra-miljoval-engelska/bmv-kem-chemical-crit.pdf>

²³ <http://www.ekoznacka.cz/>

²⁴ Technical Guidelines, All purpose cleaners and cleaners for sanitary facilities, V7, 2012, Ministry of Environment available from: [http://www.cenia.cz/web/www/web-pub2.nsf/\\$pid/MZPMSFHMV9DV/\\$FILE/072012.pdf](http://www.cenia.cz/web/www/web-pub2.nsf/$pid/MZPMSFHMV9DV/$FILE/072012.pdf)

²⁵ Ecocert Standard: Natural detergents and natural detergents made with organic, May 2012, Ecocert Greenlife SAS, available from: <http://www.ecocert.com/sites/default/files/u3/Natural-Detergents-made-with-Organic-Ecocert-Greenlife-11.05.2012.pdf>

²⁶ Green Seal Standard for cleaning products for household use, GS-08 Edition 5.1 July 2013. Available from: <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=1>

²⁷ Green Seal Standard for cleaning products for industrial and institutional use, GS-37 Edition 7.1 July 2013. Available from: <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=23>

²⁸ Green Seal Standard for Specialty cleaning products for household use, GS-52 Edition 2.2 April 2014. Available from: <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=38>

²⁹ Green Seal Standard for Specialty cleaning products for industrial and institutional use, GS-53 Edition 2.2 April 2014. Available from: <http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=2&sid=42>

³⁰ The New Zealand Ecolabelling Trust: Licence criteria for General purpose cleaning products, EC-22-14, January 2014. Available from: http://www.environmentalchoice.org.nz/docs/publishedspecifications/ec2214_general_purpose_cleaners.pdf

Labelling program	Region	Product category	Date of adoption/last revision
		EC-37-14 Commercial and institutional cleaning products ³¹	Last issued January 2014
EcoLogo	Canada	UL 2759 Hard surface cleaners ³²	Last issued September 2011
Korea Eco-Label	Korea	EL305 Multipurpose cleaner ³³	Last issued 2013
AISE Charter for Sustainable Cleaning	Europe	Household dilutable all purpose and floor cleaners ³⁴	Last issued June 2013
		Household trigger spray cleaners ³⁵	Last issued October 2013
Singapore Green Label	Singapore	Floor cleaners ³⁶	Last issued May 2013
		Surface cleaners ³⁷	Last issued May 2013
		Industrial & institutional cleaners	
Good Environmental Choice Australia	Australia	Cleaning products ³⁸	Last issued November 2013
Green Choice	Philippines	Liquid disinfectant ³⁹	Last issued 2008
Green Label Scheme	Hong Kong	All purpose cleaner ⁴⁰	Last issued 2010
		Disinfectant / disinfectant cleaner ⁴¹	Last issued 2010
Green Mark	Chinese Taipei	Kitchen and bathroom detergents ⁴²	Last issued January 2012
		Floor cleaners ⁴³	Last issued January 2012

Nordic Swan⁴⁴: The Nordic Swan became the official Ecolabel for the Nordic countries in 1989. It is a voluntary scheme that used a life cycle based approach to evaluate a product's impact on the environment. At present there are 63 product categories covered by the Nordic Swan; these include products and services. Each Nordic country has a national office which is responsible for licensing, auditing, marketing and criteria development.

Austrian Ecolabel⁴⁵: The Austrian Ecolabel scheme was created in 1990 as an initiative by the Austrian Environment Ministry. The intention of the label is to inform the public about the environmental impacts of products and services. The Ecolabel covers products, services, as well as schools and other educational institutions. The standards are based on the principle of life cycle assessment and cover four main areas: consumption of raw

³¹ The New Zealand Ecolabelling Trust: Licence criteria for Commercial and institutional cleaning products, EC-37-14, January 2014. Available from: http://www.environmentalchoice.org.nz/docs/publishedspecifications/ec3714_commercial__institutional_cleaners.pdf

³² UL Environmental standard for hard surface cleaners. Available from: <http://www.comm-2000.com/ProductDetail.aspx?UniqueKey=23384>

³³ Korea Eco-Label: Multipurpose cleaners, EL305-1999/9/2013-132. Available from: <http://el.keiti.re.kr/enservice/enpage.do?mMenu=2&sMenu=1>

³⁴ AISE Charter for Sustainable Cleaning: Advanced sustainability profiles for Household Dilutable All Purpose and Floor Cleaners, 2014. Available from: http://www.sustainable-cleaning.com/content_attachments/documents/ASPs_MDW_1January2014.pdf

³⁵ AISE Charter for Sustainable Cleaning: Advanced sustainability profiles for Household Trigger Spray Cleaners, 2013. Available from: http://www.sustainable-cleaning.com/content_attachments/documents/ASPs_TriggerSprayCleaners_1October2013.pdf

³⁶ Singapore Green Labelling Scheme Certification Guide: Floor Cleaners, May 2013. Available from: <http://www.sec.org.sg/sxls/standards-criteria.php>

³⁷ Singapore Green Labelling Scheme Certification Guide: Surface Cleaners, May 2013. Available from: <http://www.sec.org.sg/sxls/standards-criteria.php>

³⁸ The Australian Ecolabel Program: Cleaning Products, Version 2.2 November 2013. Available from: http://www.geca.org.au/media/medialibrary/2013/11/CPv2.2-2012_Cleaning_Products_Standard_Final.pdf

³⁹ Green Choice Philippines, GCP 2008014 Liquid disinfectant, 2008. Available from: <http://www.pcepsdi.org.ph/downloads.html>

⁴⁰ Hong Kong Green Label Scheme, Product environmental criteria for all purpose cleaner (GL-003-005), 2010. Available from: http://www.greencouncil.org/eng/doc/GL003005_rev2.pdf

⁴¹ Hong Kong Green Label Scheme, Product environmental criteria for disinfectants / disinfectant cleaners (GL-003-007), 2010. Available from: http://www.greencouncil.org/eng/doc/GL003007_rev0.pdf

⁴² Chinese Taipei Green Mark criteria for Kitchen and Bathroom Detergents (56), 2012. Available from: <http://greenliving.epa.gov.tw/GreenLife/uploadfiles/Criteria/56/b2da054a-2e66-4cb9-8241-02df824260af.pdf>

⁴³ Chinese Taipei Green Mark criteria for Floor Cleaners (62), 2012. Available from: <http://greenliving.epa.gov.tw/GreenLife/uploadfiles/Criteria/62/f2096234-e081-443e-a828-6c4c4ecfee6b.pdf>

⁴⁴ More information available at: <http://www.nordic-ecolabel.org/>

⁴⁵ More information available at: <http://www.umweltzeichen.at/cms/home/produkte/content.html>

materials and energy, waste and emissions, marketing and transportation, disposal and recycling.

Bra Miljöval (Good Environmental Choice)⁴⁶: Good Environmental Choice (or Bra Miljöval in Swedish) is the ecolabelling system established by the Swedish Society for Nature Conservation. An LCA-based approach is employed for the testing and award procedure. At present the system covers 11 product areas including chemical products.

Czech Ecolabelling⁴⁷: The Czech Ecolabel was launched in 1994 and is administered by CENIA, the Czech Environmental Information Agency. The Ecolabel covers a wide range of products and services, and for many of these it employs the EU Ecolabel criteria. The criteria for product groups which exist in both labelling schemes are gradually being unified.

Ecocert⁴⁸: Ecocert is an inspection and certification body founded in France in 1991. Its focus is on sustainable development and organic agricultural products. Ecocert develops internationally recognised standards for products, systems and services. The product categories include natural cleaning products, paintings and coatings from natural origin and inputs eligible for use in organic farming. The basic principle of the label is to protect our planet and its resources, to protect and inform the consumer and to reduce unnecessary waste and discharges. In France Ecocert is accredited by the French Accreditation Committee (Cofrac).

Green Seal⁴⁹: Green Seal is an independent non-profit certification organisation that operates in the USA and was established in 1989. Green Seal uses a life cycle approach to evaluate the environmental impacts of products, services and companies. It develops its criteria for product categories with input from industry, government, academia and the public.

Environmental Choice (New Zealand): The Environmental Choice ecolabel is operated by the New Zealand Ecolabelling Trust and is endorsed by the New Zealand government. The ecolabel was launched in 1992, and has standards based on life cycle considerations for a wide range of products, services and companies.

EcoLogo⁵⁰: EcoLogo is North America's largest environmental standard and certification mark. It uses a life cycle based approach to certify products, services and packaging. The standards use metrics in a wide variety of criteria including: materials, energy, manufacturing and operations, health and environment, product performance and use, and product stewardship and innovation.

Korea EcoLabel: The Korean EcoLabel was launched by the government of the Republic of Korea in 1992. The label uses a life cycle based approach and is verified by an independent organisation. The Korea EcoLabel covers a wide range of products and services.

Singapore Green Label: The Singapore Green Label Scheme was launched by the Ministry of the Environment in 1992. Since 1995 the scheme has been run by the Singapore Environment Council (SEC), which is an independently managed non-profit and non-government organisation. The Green Label considers overall product environmental impacts such as raw materials, manufacturing process, health impacts and disposal. The ecolabel covers a wide range of products, but does not cover services and processes. In addition there are five levels of certification: basic, bronze, silver, gold and

⁴⁶ More information available at: <http://www.naturskyddsforeningen.se/in-english>

⁴⁷ More information available at: <http://www1.cenia.cz/www/ekoznaceni/ekologicky-setrne-vyroby>

⁴⁸ More information available at: <http://www.ecocert.com/>

⁴⁹ More information available at: <http://www.greenseal.org/Home.aspx>

⁵⁰ More information available at: <http://www.ul.com/global/eng/pages/offering/businesses/environment/services/ELmark/>

platinum. Products are scored across all five criteria categories and the overall certification level is equal to the lowest score in any category.

Good Environmental Choice Australia: The Australian Good Environmental Choice program was launched in November 2011 and is currently managed by a not-for-profit organisation. The program is compliant with ISO 14024 and provides standards for a wide range of products and services. The scheme aims to enable consumers to choose certified products and standards and have confidence that they have a lower impact on the environment, human health and address important social considerations.

Chinese Taipei Green Mark: The Green Mark Program is the official ecolabelling program in Chinese Taipei and was founded in 1992 by the Taipei Environmental Protection Administration (TEPA). At present, the Program has issued Green Mark ecolabel certificates to nearly 6,000 products under 112 product categories, including various cleaning products, office supplies and equipment, energy/water-saving products, home appliances, information technology products, construction materials, etc. The Program is instrumental in the government's green procurement program which has been in place since 2002, as Green Mark products are designated as the priority products for government agencies and all publicly-owned enterprises/schools/hospitals to choose from.

Green Choice Philippines: Launched in 2008, the National Ecolabelling Programme - Green Choice Philippines (NELP-GCP) is a voluntary, multiple criteria-based, third party programme that aims to encourage clean manufacturing practices and consumption of environmentally preferable products and services. This government project is seen as an important marketing instrument to complement laws and regulations for environmentally preferable products and a guide to consumers' purchasing preferences. The project is under the auspices of the Department of Trade and Industry and the Department of Environment and Natural Resources.

The Charter for Sustainable Cleaning: The Charter is a voluntary initiative of AISE⁵¹, and aims to encourage both consumers and industry to adopt more sustainable approaches to cleaning. It is based on a life cycle analysis and covers initiatives and activities ranging from human and environmental safety of chemicals and products, to eco-efficiency, occupational health and safety, resource use and consumer information. In order to participate in the program, companies must report annually on key performance indicators. The Charter has advanced sustainability profiles (ASPs) for Household Dilutable All Purpose and Floor Cleaners⁵² and Household Trigger Spray Cleaners.⁵³ The ASPs are sustainability criteria which have been created for each AISE product category, taking into account a life cycle approach. However, there are no limit values set for environmental impacts such as aquatic toxicity and biodegradability. The ASP for a given product category describes the product group characteristics which the industry considers represent a good sustainability profile.

An overview of the ecolabelling schemes and the product definitions used (for the schemes which provide product definitions) is given in Table 7. Note that not all standard documents for ecolabels provide category or product definitions.

⁵¹ More information available at: <http://www.sustainable-cleaning.com/en.home.orb>

⁵² More information available at: http://www.sustainable-cleaning.com/content_attachments/documents/ASPs_MDW_1January2014.pdf

⁵³ More information available at: http://www.sustainable-cleaning.com/content_attachments/documents/ASPs_TriggerSprayCleaners_10October2013.pdf

Table 7: Product group definitions and scope from alternative voluntary labelling schemes

Labelling programs	Product category	Definitions & scope
EU Ecolabel	All-purpose cleaners and sanitary cleaners	The product group 'All-purpose cleaners and sanitary cleaners' shall comprise: all-purpose cleaners, window cleaners, and sanitary cleaners. a) All-purpose cleaners comprising detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaces, and which are either diluted in water prior to use or used without dilution. All-purpose cleaners shall mean products intended for indoor use in buildings which include domestic, commercial and industrial facilities. b) Window cleaners comprising specific cleaners intended for the routine cleaning of windows, and which are used without dilution. c) Sanitary cleaners comprising detergent products intended for the routine removal, including by scouring, of dirt and/or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms, showers and kitchens. This subgroup thus contains bathroom cleaners and kitchen cleaners. The product group shall cover products for both private and professional use. The products shall be mixtures of chemical substances and must not contain micro-organisms that have been deliberately added by the manufacturer.
The Nordic Swan	Cleaning products	The product group encompasses cleaning products intended for indoor, general and regular cleaning of the following areas: <ul style="list-style-type: none"> • fixed surfaces (floors, walls, ceilings, doors, tiles and windows) • kitchen equipment (for example windows, work surfaces, kitchen cabinets, stoves) • sanitary installations (toilets, baths, showers, wash basins, cabinets) Professional products (products are considered professional if more than 80% of sales are to the professional market) and/or consumer products can be labelled.
Austria Ecolabel	All-purpose cleaners and sanitary cleaners	Same definition as used in the EU Ecolabel.
Sweden Bra Miljöval (Good Environmental Choice)	Chemical products	All-purpose cleaners: Products that are used for routine cleaning of floors, walls, interiors, bathrooms, kitchens, stairs, etc. Toilet cleaners: Products that are used to clean toilets regularly. Heavy-duty cleaning agents: Products that are used to clean heavily soiled surfaces.
Czech Ecolabelling	All purpose cleaners and cleaners for sanitary facilities	Same definition as used in the EU Ecolabel.
Ecocert	Natural detergents and Natural detergents made with organic	Any substance or preparation 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.
USA Green Seal	GS-08 Cleaning products for household use	This standard establishes requirements for general-purpose, bathroom, glass, and carpet cleaners marketed specifically for use in households or similar residential settings. This standard includes general-purpose, bathroom, glass and carpet cleaning products that contain enzymes or microorganisms.
	GS-37 Cleaning products for industrial and institutional use	This standard establishes requirements for industrial and institutional general-purpose, restroom, glass, and carpet cleaners. For purposes of this standard, industrial and institutional cleaners are defined as those cleaners intended for routine cleaning of offices, institutions, warehouses, and industrial facilities. This standard includes general-purpose, bathroom, glass and carpet cleaning products that contain enzymes or microorganisms. Furthermore, the criteria in this standard include consideration of vulnerable populations in institutional settings such as schools, day-care facilities, nursing homes, and other facilities.

Labelling programs	Product category	Definitions & scope
	GS-52 Specialty cleaning products for household use	This standard establishes environmental, health, and social requirements for specialty cleaning products intended for household use. For the purposes of this standard, this includes, but is not limited to: boat cleaning products; boat wax, polish, sealant, or glaze products; deck, siding, and outdoor furniture cleaning products; dish cleaning products (automatic and hand); furniture polish products; graffiti remover products; metal cleaning products; motor vehicle cleaning products; motor vehicle wax, polish, sealant, or glaze products; motor vehicle dressing products; waterless motor vehicle cleaning products; tire and wheel cleaning products; motor vehicle windshield washing fluid; odour remover products; optical lens cleaning products; oven cleaning products; chewing gum remover; upholstery cleaning products; antimicrobial pesticide products, and other household cleaning products sold for specialty uses. This standard includes specialty cleaning products that contain enzymes or microorganisms.
	GS-53 Specialty cleaning products for industrial and institutional use	This standard establishes environmental, health, and social requirements for specialty cleaning products intended for industrial and institutional use. For the purposes of this standard, this includes, but is not limited to: boat cleaning products; boat wax, polish, sealant or glaze products; deck, siding, and outdoor furniture cleaning products; dish cleaning products (automatic and hand); furniture polish products; graffiti remover products; metal cleaning products; motor vehicle cleaning products; motor vehicle wax, polish, sealant, or glaze products; motor vehicle dressing products; waterless motor vehicle cleaning products; tire and wheel cleaning products; motor vehicle windshield washing fluid; odour remover products; optical lens cleaning products; oven cleaning products; upholstery cleaning products; printing press cleaning products; chewing gum remover products; adhesive remover products; rust stain remover products; dishwasher cleaning products; electronic cleaning products; leather cleaning products; pressurized gas duster products; dusting aid products; antimicrobial pesticide products, and other industrial and institutional use products sold for specialty uses. This standard includes specialty cleaning products that contain enzymes or microorganisms.
New Zealand Environmental Choice	EC-22-14 General purpose cleaning products	This category includes all general purpose cleaning products for household use.
	EC-37-14 Commercial and institutional cleaning products	This category includes any cleaning product sold for use by the commercial cleaning and property maintenance industry during the routine cleaning of offices, institutions, warehouses and industrial facilities. It includes products used to clean organic or inorganic soil from plastic, glass, ceramic, metal, porcelain, rubber, leather, wood, stone, or any other hard surface. It includes glass/window cleaning products, floor cleaning products, carpet cleaning products, bathroom cleaning products and degreasers.
Canada EcoLogo	UL 2759: Hard surface cleaners	This standard establishes human health and environmental criteria for hard surface cleaners. There exist many differing types of hard surface cleaners, many of which perform diverse functions and which perform diverse functions and which are chemically unique. Class-specific products covered by this standard include the following: bathroom cleaners, boat and bilge cleaners, cleaners for cooking appliances, degreasers, dish washing detergents, general purpose cleaners, industrial cleaners, vehicle cleaners and window and glass cleaners. Cleaning and degreasing products that are biologically-based and those products requiring registration under the Federal Insecticide, Fungicide and Rodenticide Act in the United States are outside the scope of this standard.
Korea Eco-Label	EL305 Multipurpose cleaner	This standard applies to cleaners as the main ingredients and used to remove general soils chiefly found in the home, office, and other work places. However, this scope does not include products with a specific use for removing specific soils, such as sewer cleaners, products with additional polishing functions, products with abrasives, or products with cleaners absorbed in the tissues or sponges.

Labelling programs	Product category	Definitions & scope
European AISE Charter for Sustainable Cleaning	Household dilutable all purpose and floor cleaners	Dilutable all-purpose cleaners and floor cleaners.
	Household trigger spray cleaners	Household trigger spray glass/window, bathroom, kitchen and all purpose (for hard surfaces) cleaners
	Household toilet cleaners	Household toilet cleaners
Singapore Green Label	Floor cleaners	This category includes all floor cleaners intended for household use.
	Surface cleaners	The Green Label category for surface cleaners establishes grading criteria on environmental, health and performance parameters for surface cleaners. The standard includes product specific environmental and health prerequisites, such as biodegradability and reduced toxicity.
Good Environmental Choice Australia	Cleaning products	General purpose cleaners: includes cleaners for use on tables, benches, tiles, windows, walls, floors and other fixed surfaces. This includes cleaners for kitchen use. Sanitary cleaners: includes cleaners for use on toilets, bathrooms and other wet areas.
Philippines Green Choice	Liquid disinfectant	These criteria are applicable to liquid disinfectants.
Hong Kong Green Label Scheme	All purpose cleaner	The criteria apply to apply to all disinfectants and disinfectant-cleaners.
	Disinfectant / disinfectant cleaner	The criteria apply to all 'all-purpose cleaners' in powdered, liquid or other forms.
Chinese Taipei Green Mark	Kitchen and bathroom detergents	This standard is applicable to synthetic cleaning agents ('product') used for cleaning kitchens and bathrooms, but excludes those contained in high-pressure spray cans.
	Floor Cleaners	This standard is applicable to cleaning agents ('product') used for cleaning floor.

The products included in the scope of different ecolabels vary, with some covering all cleaning products and others - such as the current EU Ecolabel and Nordic Swan - adopting a more selective approach. There is a large range of cleaning products, and therefore a degree of variation in the scopes of different ecolabels is to be expected.

Table 8 and Table 9 give an overview of the requirements for different ecolabels covering APCs, for household and industrial products respectively.

The Nordic Swan for cleaning products, New Zealand's Environmental Choice for general purpose cleaning products, the AISE Charter for Sustainable Cleaning for all purpose and floor cleaners, Sweden's Good Environmental Choice for chemical products and Green Seal cleaning products for household use have been selected above others because of their completeness in the household APC category. The Austrian Ecolabel and Czech Ecolabel criteria have been excluded from Table 8 because they are identical to the current EU Ecolabel criteria. Few ecolabels with separate criteria for professional cleaning products were identified. The Nordic Swan criteria encompass both consumer and professional products, like the EU Ecolabel.

The most relevant ecolabel schemes in terms of professional APCs use are New Zealand's Environmental Choice for commercial and institutional cleaning products and Green Seal for cleaning products for industrial and institutional use. These schemes have been selected above others in Table 7 because of their completeness in the professional APC category.

Of the schemes compared in Table 8, all provide information regarding the use of limited and excluded substances, with New Zealand's Environmental Choice and Sweden's Good Environmental Choice being the most stringent (Table 10). The current EU Ecolabel, Nordic Swan and Sweden's Good Environmental Choice specify thresholds for the biodegradability of surfactants, with the others either placing minimal restrictions on this aspect or not considering it at all. All these schemes include a criterion on dosage

instructions. The EU Ecolabel and Nordic Swan have extensive requirements relating to both environmentally hazardous substances and aquatic toxicity, but the AISE Charter does not consider these aspects at all. All criteria list packaging and consumer information requirements, but the New Zealand Environmental Choice label is the most descriptive by far. These differences are summarised in Table 8.

Table 8: Overview of the requirements of different ecolabels for all-purpose cleaners and sanitary cleaners for Consumer use

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Nordic Swan (cleaning products)	Environmental Choice New Zealand (general purpose cleaning products)	Good Environmental Choice Australia (cleaning products)	Bra Miljöval (Good Environmental Choice) (chemical products)	Green Seal (cleaning products for household use)												
Limited substances																	
<p>Fragrances: The product shall not contain perfumes containing nitro-musks or polycyclic musks. Any substance added to the product as a fragrance must have been manufactured and/or handled in accordance with the code of practice of the International Fragrance Association. Fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 (Annex VII) shall not be present in quantities $\geq 0.010\%$ per substance.</p> <p>Biocides: the product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants which may also have biocidal properties. It is prohibited to claim on the packaging or by any other communication that the product has an antimicrobial action.</p> <p>Volatile organic compounds (VOCs): The final products of</p>	<p>Enzymes: (including stabilisers and preservatives in enzyme materials) may be included if in liquid form or encapsulated granulate form.</p> <p>Fragrances: if fragrance is used this must be done in accordance with the International Fragrance Association (IFRA) guidelines. The following substances must not be included in the product at levels >100 ppm (0.010%) per substance:</p> <ul style="list-style-type: none"> • 26 fragrance substances encompassed by the declaration requirement in the Detergents Regulation 648/2004/EEC and its subsequent amendments • Fragrances classified as H317 (R43) or H334 (R42) <p>Fragrances must no longer be included in professional spray products or their refills.</p> <p>Preservatives: must not be bioaccumulating. The requirement applies to all preservatives in product</p>	<p>Phosphorus: the product shall not be formulated with phosphates and phosphonates that are not aerobically biodegradable.</p> <p>Heavy metals: General purpose cleaning products shall not be formulated or manufactured with compounds or substances that contain toxic metals, including arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb), or mercury (Hg).</p> <p>Solvents: general purpose cleaning products must not contain:</p> <ul style="list-style-type: none"> • halogenated organic solvents; • volatile organic compounds in excess of 10 % by weight. <p>Biocides and preservatives: The product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This criterion does not apply to ingredients (e.g. quaternary ammonium salts)</p>	<p>Palm oil: A minimum of 20% of palm oil and palm oil derivatives used in the product must be Roundtable on Sustainable Palm Oil (RSPO) certified.</p> <p>Palm kernel oil: the applicant/licensee must make a positive contribution to the production of sustainable and responsibly grown palm kernel oil.</p> <p>Volatile organic compounds: the total amount of volatile organic compounds (VOCs) contained in the product must not exceed 3.0 % by weight once diluted as per instructions.</p> <p>Fragrances: Fragrance must be used in accordance with the 'Code of Practice' compiled by the International Fragrance Associations (IFRA)</p> <p>Colorants: colorants used must be included on 'List of Colouring Agents Allowed for use in Cosmetic Products'</p> <p>Sodium: The maximum</p>	<p>Phosphorus: Ingredients that contain phosphorus must not be added to the product intentionally.</p> <p>Nitrogen: The nitrogen content of the product must not exceed 1.0 % by weight.</p> <p>Complexing agents: Organic complexing agents must be readily biodegradable.</p> <p>Solvents: Solvents must be readily biodegradable</p> <p>Solvents, preservatives, thickening agents/dissolving agents, bleaching agents must have a bioconcentration factor (BCF) of < 100. or $\log K_{ow} < 3$.</p> <p>Thickening agents that are completely biodegradable according to OECD 302 may be included to a maximum concentration of 0.5 % by weight.</p> <p>Colouring agents are not permitted.</p> <p>Fragrances: No more than 0.5 % by weight fragrance</p>	<p>Phosphorus: the product as used shall not contain more than 0.5 % by weight of total phosphorus</p> <p>Volatile organic compound (VOC) content: VOCs include all organic compounds that have a vapour pressure of greater than 0.1 mm mercury at 1 atm pressure and 20 °C. 'VOC content' means the total weight of VOCs in a product expressed as a percentage of the product weight. The limits for VOC in the product are:</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Limit VOC %</th> </tr> </thead> <tbody> <tr> <td>Carpet cleaners (dilutable)</td> <td>0.1</td> </tr> <tr> <td>Carpet cleaners (ready-to-use)</td> <td>1</td> </tr> <tr> <td>General purpose cleaners</td> <td>0.5</td> </tr> <tr> <td>Glass cleaners</td> <td>3</td> </tr> <tr> <td>Bathroom/restr oom cleaners</td> <td>1</td> </tr> </tbody> </table> <p>Combustibility: The undiluted product shall not be combustible. The product or 99 % by volume of the product ingredients shall</p>	Product	Limit VOC %	Carpet cleaners (dilutable)	0.1	Carpet cleaners (ready-to-use)	1	General purpose cleaners	0.5	Glass cleaners	3	Bathroom/restr oom cleaners	1
Product	Limit VOC %																
Carpet cleaners (dilutable)	0.1																
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<p>all-purpose cleaners and sanitary cleaners shall not contain more than 6 % (by weight) of VOCs with a boiling point lower than 150 °C. Alternatively, for concentrated products to be diluted in water, the total concentration of VOCs with a boiling point lower than 150 °C shall not exceed 0.2 % (by weight) in the washing water. The final products of window cleaners shall not contain more than 10 % (by weight) of VOCs with a boiling point lower than 150 °C.</p> <p>Phosphorus: The total quantity of elemental phosphorus in the product shall be calculated on the basis of the dosage of the product recommended by the manufacturer for preparing 1 litre of washing water for cleaning of normally soiled surfaces (for products diluted in water prior to use) or per 100 g of product (for products used without dilution):</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Maximum phosphorus level</th> </tr> </thead> <tbody> <tr> <td>Diluted all-purpose cleaner</td> <td><0.02 g/l of water</td> </tr> </tbody> </table>	Product	Maximum phosphorus level	Diluted all-purpose cleaner	<0.02 g/l of water	<p>ingredients and raw materials. Preservatives may not be added to produce a disinfecting or antibacterial effect.</p> <p>Colorants: must not be bioaccumulating ($\log K_{ow} < 4.0$ or $BCF < 500$).</p>	<p>added for other functions but which may also have biocidal properties.</p> <p>Enzymes: The enzyme production micro-organism shall be absent from the final enzyme preparation. Enzymes must not be present in aerosol products. In other products, enzymes must be present in liquid form or as a dust-free granulate.</p> <p>Fragrances: Fragrances must be produced and used in accordance with the code of practice compiled by IFRA. Fragrance containing nitro-musk or polycyclic musk compounds must not be used. Fragrance ingredients added for functions other than smell must also comply with all other requirements in this specification.</p> <p>Colorants: Colouring agents may be added to liquid products only, provided they have been approved a food additive or are not bioaccumulative. The colouring agent is not considered to be bioaccumulative if the $BCF < 100$ or if $\log K_{ow} < 3.0$. Where there is information on both BCF and $\log K_{ow}$, the values for BCF must be used.</p>	<p>sodium per wash for laundry detergents is 10 g.</p> <p>Phosphorus: The product must not be manufactured using any phosphorus compounds. Trace amounts of phosphorus must not exceed 0.05 % w/w excluding water.</p> <p>Microorganisms: Products containing microorganisms or compounds produced by microorganisms (enzymes) must meet the criteria outlined in the criteria document.</p>	<p>content is permitted in the product. This limit also applies to concentrated products that are diluted before use.</p> <p>Enzymes are approved in products that bear the Good Environmental Choice label.</p> <p>Fillers must meet the requirements for other additives.</p> <p>Water content must not exceed 75 % by weight. No requirement is set for water content for products that are sold in spray dispensers.</p>	<p>have a flashpoint above 150 °F, as tested using either the Cleveland Open Cup Tester (ASTM D92-97) or a closed-cup method ISO 13736 or ISO 2719. Alternatively, the product shall not sustain a flame when tested using ASTM D 4206.</p> <p>Fragrances: Manufacturers shall disclose the use of any added fragrances on their safety data sheets (SDSs) and product labels. Any ingredient added to a product as a fragrance must follow IFRA's Code of Practice.</p> <p>Microorganisms: Products that contain microorganisms shall meet all Annex D criteria.</p> <p>Enzymes: shall be in liquid form or an encapsulated solid form in the product. The source from which enzymes were derived shall be identified to a species level and disclosed to the certification program. Documentation shall be provided that the source microorganism is absent from the finished product. Enzymes are exempt from being categorised as asthmagens or respiratory</p>
Product	Maximum phosphorus level								
Diluted all-purpose cleaner	<0.02 g/l of water								

Undiluted all-purpose cleaner	<0.2 g/100 g of product		Palm oil and palm kernel oil: the licence applicant must have an effective purchasing policy for all palm oil, palm kernel oil (or derivatives) or raw materials that are manufactured from palm kernel oil to maximise the use of palm oil and palm kernel oil from sustainable sources.			sensitisers. Enzyme products in spray packaging shall demonstrate airborne enzyme exposure below 1 ng/m ³ . A declaration shall be included on the product label.																	
Sanitary cleaner	<1.0 g/100 g of product																						
Window cleaner	Zero																						
Biodegradability																							
<p>Each surfactant used in the product shall be readily biodegradable.</p> <p>Surfactants that are not biodegradable under anaerobic conditions may be used in the product within specified limitations provided that the surfactants are not classified with H400/R50 (Very toxic to aquatic life):</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Weight of anaerobically non-biodegradable surfactants</th> </tr> </thead> <tbody> <tr> <td>Diluted all-purpose cleaner</td> <td><0.40 g/l of water</td> </tr> <tr> <td>Undiluted all-purpose cleaner</td> <td><4.0 g/100 g of product</td> </tr> <tr> <td>Sanitary</td> <td><2.0 g/100 g</td> </tr> </tbody> </table>		Product	Weight of anaerobically non-biodegradable surfactants	Diluted all-purpose cleaner	<0.40 g/l of water	Undiluted all-purpose cleaner	<4.0 g/100 g of product	Sanitary	<2.0 g/100 g	<p>All surfactants must be aerobically and anaerobically biodegradable.</p> <p>All surfactants classified as environmentally hazardous (with H410, H411, H412, H413) must also be anaerobically degradable.</p> <p>The threshold values for aNBO and anNBO organic material are:</p> <table border="1"> <thead> <tr> <th>Market/cat</th> <th>aNBO (g/l)</th> <th>an-NBO (g/l)</th> </tr> </thead> <tbody> <tr> <td>Concentrated, consumer</td> <td>0.100</td> <td>0.100</td> </tr> <tr> <td>RTU WC, consumer</td> <td>2.10</td> <td>6.00</td> </tr> </tbody> </table>	Market/cat	aNBO (g/l)	an-NBO (g/l)	Concentrated, consumer	0.100	0.100	RTU WC, consumer	2.10	6.00	<p>All surfactants must be readily biodegradable and anaerobically degradable.</p>	<p>All surfactants and organic ingredients must be readily biodegradable in accordance with AS 4351, relevant OECD tests, or shown on the most recent Detergents Ingredients Database (DID) list.</p> <p>All surfactants used in the product must be anaerobically biodegradable in accordance with ISO 11734, relevant OECD test or shown on the most recent DID list.</p>	<p>Surfactants must be readily biodegradable.</p> <p>Surfactants must be 60 % anaerobically biodegradable. Surfactants must have a very low residual content of organohalogen compounds – below 100 mg/kg TOX.</p> <p>Surfactants must not be very toxic to aquatic organisms.</p> <p>Surfactants must not be classified as R50, very toxic to aquatic organisms.</p> <p>If palm oil is used as a raw material in surfactant production, the surfactant manufacturer or the palm oil supplier must be a member of the Roundtable on Sustainable Palm Oil (RSPO) or be able to show that the palm oil used to produce the surfactants comes from a</p>	<p>Each of the organic ingredients in the product as used shall exhibit ready biodegradability in accordance with the OECD definition except for the polymer portion of a carpet cleaner. However, all other ingredients in carpet cleaner must comply. Biodegradability shall be measured by one of the following methods: OECD TG 301A-F, ISO 9439 carbon dioxide (CO₂) evolution test, ISO 10708 (two-phase closed-bottle test), ISO 10707 (closed bottle test), or ISO 7827 (dissolved organic carbon removal).</p> <ul style="list-style-type: none"> Removal of Dissolved Organic Carbon (DOC) > 70 % Biochemical Oxygen Demand (BOD) > 60 % BOD, as % of Theoretical Oxygen Demand (ThOD)
Product	Weight of anaerobically non-biodegradable surfactants																						
Diluted all-purpose cleaner	<0.40 g/l of water																						
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cleaner	of product	RTU other, consumer	2.00	2.00			plantation that is certified in accordance with RSPO's sustainable cultivation rules.	> 60 %
Window cleaner	<2.0 g/100 g of product	RTU window, consumer and professional	2.00	2.00			For soft soaps, only surfactants made from saponified vegetable fatty acids may be used.	<ul style="list-style-type: none"> CO₂ evolution, as % of theoretical CO₂ > 60% For organic ingredients that do not exhibit ready biodegradability in these tests, the manufacturer may demonstrate biodegradability in sewage treatment plants using the Coupled Units Test found in OECD 303A by demonstrating DOC removal > 90 %.
		Conc'd, professional	0.045	0.250				
		RTU WC, professional	2.25	30.0				
		RTU, professional	0.70	0.70				
Dosage and dosage instructions								
For all-purpose cleaners which are diluted in water prior to use the dosage in grams of the product recommended by the manufacturer for preparing 1 litre of washing water for cleaning of normally soiled surfaces is taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of cleaning ability.	<p>If the product requires dilution before use, the recommended dose at a normal level of soiling/normal use must be stated clearly on the packaging.</p> <p>Clear user instruction as to use of the product.</p> <p>Clear instruction regarding area of application.</p> <p>In the case of consumer products, for example, the dose may be shown as x number of ml equivalent to y caps full per z number litres of water.</p>	<p>If the product requires dilution before use, the recommended dosage at a normal level of soiling/normal use must be stated clearly on the primary packaging in ml/L diluting water.</p>			<p>The dosage for consumer products must be stated in litres, decilitres, millilitres or other measurement units. In cases where the dosage cannot be given in measurement units, a phrase of the type "try not to use more than needed" should be printed on the packaging.</p> <p>There are no other specific requirements for all-purpose cleaners.</p>			

	In case of products intended for use by professional users, the dose may be specified as, for example, x number of ml equivalent to y strokes of the pump or number of lines on the dosing equipment per z litres of water. The information sheet or technical datasheet must state the recommended dispensing device.				
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Environmentally hazardous substances

<p>The product or any part of it thereof shall not contain substances or mixtures meeting the classification with the hazard class or categories listed below:</p> <table border="1"> <thead> <tr> <th>GHS Hazard statement</th> <th>EU Risk Phrase</th> </tr> </thead> <tbody> <tr><td>H300</td><td>R28</td></tr> <tr><td>H301</td><td>R25</td></tr> <tr><td>H304</td><td>R65</td></tr> <tr><td>H310</td><td>R27</td></tr> <tr><td>H311</td><td>R24</td></tr> <tr><td>H330</td><td>R23; R26</td></tr> <tr><td>H331</td><td>R23</td></tr> <tr><td>H340</td><td>R46</td></tr> <tr><td>H341</td><td>R68</td></tr> <tr><td>H350</td><td>R45</td></tr> <tr><td>H350i</td><td>R49</td></tr> <tr><td>H351</td><td>R40</td></tr> <tr><td>H360F</td><td>R60</td></tr> <tr><td>H360D</td><td>R61</td></tr> <tr><td>H360FD</td><td>R60-61</td></tr> </tbody> </table>	GHS Hazard statement	EU Risk Phrase	H300	R28	H301	R25	H304	R65	H310	R27	H311	R24	H330	R23; R26	H331	R23	H340	R46	H341	R68	H350	R45	H350i	R49	H351	R40	H360F	R60	H360D	R61	H360FD	R60-61	<p>Products must not be classified according to the classifications listed below:</p> <table border="1"> <thead> <tr> <th>Classification</th> <th>Haz stmt (CLP Reg)</th> <th>EU Risk Phrase</th> </tr> </thead> <tbody> <tr> <td rowspan="5">Hazardous to the aquatic environment</td> <td>H400</td> <td>N with</td> </tr> <tr> <td>H410</td> <td>R50</td> </tr> <tr> <td>H411</td> <td>R50/53.</td> </tr> <tr> <td>H412</td> <td>R52,</td> </tr> <tr> <td>H413</td> <td>R53 or R52/53 without N.</td> </tr> </tbody> </table>	Classification	Haz stmt (CLP Reg)	EU Risk Phrase	Hazardous to the aquatic environment	H400	N with	H410	R50	H411	R50/53.	H412	R52,	H413	R53 or R52/53 without N.	<p>General purpose cleaning products shall not be formulated or manufactured with substances that are classified as:</p> <ul style="list-style-type: none"> Category 1 or Category 2 under the EC priority list developed under the Community strategy for endocrine disruptors Under Hazardous Substances and New Organisms Act (HSNO) as: 6.6 (mutagenic), 6.7 (carcinogens), 6.8 (reproductive/developmental toxins), 9.1B (aquatic ecotoxins). 	<p>The product as used must not be classifiable as hazardous according to Safe Works Australia (SWA).</p> <p>The product as supplied and as used must not be classifiable as dangerous according to the Australian Dangerous Goods (ADG) code. Certified products must not contain any ingredients that are or may decompose into substances that are classified as a known endocrine disruptor, carcinogen, mutagen or teratogen.</p> <p>The product must not contain any substances carrying any of the following classifications: R40(H351), R45 (H350), R46 (H340), R48 (H372, H373), R49 (H350), R60 (H360), R61</p>	<p>Ingredients or their known breakdown products must not be classified as:</p> <table border="1"> <thead> <tr> <th>Classification</th> <th>EU Risk Phrase</th> </tr> </thead> <tbody> <tr><td>Carcinogenic</td><td>R45, R49, R40</td></tr> <tr><td>Mutagenic</td><td>R46, R68</td></tr> <tr><td>Toxic for reproduction</td><td>R60, R61, R62, R63, R64</td></tr> </tbody> </table> <p>Products must not be classified as:</p> <table border="1"> <thead> <tr> <th>Classification</th> <th>EU Risk Phrase</th> </tr> </thead> <tbody> <tr><td>Toxic</td><td>R48, R33</td></tr> <tr><td>Sensitising</td><td>R42, R43</td></tr> <tr><td>Very toxic</td><td>R26, R27, R28, R23, R24, R25, R39</td></tr> <tr><td>Irritant</td><td>R35</td></tr> </tbody> </table>	Classification	EU Risk Phrase	Carcinogenic	R45, R49, R40	Mutagenic	R46, R68	Toxic for reproduction	R60, R61, R62, R63, R64	Classification	EU Risk Phrase	Toxic	R48, R33	Sensitising	R42, R43	Very toxic	R26, R27, R28, R23, R24, R25, R39	Irritant	R35	<p>Toxicity The undiluted product shall not have toxic characteristics such that it falls under the labelling requirements as toxic or highly toxic product, as defined by the Consumer Product Safety Commission regulations found at 16 Code of Federal Regulations (CFR) Chapter II, Part 1500.</p> <p>Carcinogens, mutagens and reproductive toxins: the undiluted product shall not contain any ingredients that are carcinogens, mutagens or reproductive toxins.</p> <p>Skin and eye irritation: the undiluted cleaning product shall not be corrosive to the skin, as tested using the OECD guidelines for testing chemicals. The undiluted product shall also not be</p>
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H360Fd	R60-63	Acute toxicity	H300	Tx with	(H360), R62 (H361), R63 (H361), R64 (H362), R68 (H341).	The product must not contain more than 1 % by weight of any substances that carries one or more of the following risk phrases: R21(H312), R23 (H331), R24 (H311), R25 (H301), R26 (H330), R27 (H310) or R28 (H300); and R50 (H400), R50/53 (H410), R51/53 (H411), R52/53 (H412), R53 (H413) , R54, R55, R56, R57, R58 or R59 (H420) and R65 (H304).	corrosive to the eye as tested using the bovine cornea opacity test.
H360Df	R61-62		H301	R26,			
H361f	R62		H302	R27,			
H361d	R63		H310	R28,			
H361fd	R62-63		H311	R39.			
H362	R64		H312	T with			
H370	R39/23;		H330	R23,			
	R39/24;		H331	R24,			
H371	R39/25;		H332	R25,			
	R39/26;			R39 and/or			
H372	R39/27;			R48.			
	R39/28			Xn with			
H373	R68/20;			R20,			
	R68/21;			R21,			
H400	R68/22			R22.			
	R48/25;						
H410	R48/24;		H370	Tx with			
	R48/23		H371	R39.			
H411	R48/20;		H372	T with			
	R48/21;		H373	R39,			
H412	R48/22	(spray prod H335, H318)	R48.				
	R50		Xn with				
H413	R50-53		R68.				
	R51-53		(spray product				
EUH059	R52-53		Xi with				
	R53		R37, Xi				
EUH070	R59		with				
	R29		R41)				
H334	R31						
	R32						
H317	R39-41						
	R42						
H317	R43						
Derogations: the following substances or mixtures are specifically exempted from this requirement:		Aspiration hazard	H304	Xn with			
				R65			
Derogations: the following substances or mixtures are specifically exempted from this requirement:		Carcinogenic	H350, H350i or H351	T with			
				R45, R49 or Xn with R40			

Substance/mixture	GHS Haz stmt	EU Risk Phr														
Surfactants in concs < 25 % in the product	H400	R50	Mutagenic	H340 H341	T with R46. Xn with R68.											
Fragrances	H412	R52-53	Toxic for reproduction	H360 H361 H362	T with R60, R61, R64, R33. M Xn with R62, R63, R64, R33.											
Enzymes	H334	R42														
Enzymes	H317	R43														
NTA as an impurity in MGDA and GLDA	H351	R40	Harmful to health	H304 H312 H332 H371 H373	Xn with R20, R21, R48, R65 and/or R68											
			Skin or respiratory sensitisation	H317 H334	Xi with R43. Xn with R42.											
			Skin corrosion/irritation	H314	C with R34 or R35											
			The following are specifically exempt from the above requirements:													

- Professional products can be labelled with acute toxicity category 4 with H332, H312, H302 (R20, R21, R22) if the packaging is designed so that the user does not come in contact with the product.
- For skin corrosion/irritation H314 (C with R34, R35) Professional products where the classification is due to pH and WC-products for the consumers where the classification is due to pH.

Substances in the product must not be classified according to the classifications in the table below:

Classification	Haz stmt (CLP Reg)	EU Risk Phr
Carcinogenic	H350 H350i H351	R45, R49, R40
Mutagenic	H340 H341	R46, R68
Toxic for reproduction	H360F H360D H361f H361d H362	R60, R61, R62, R63, R64

The use of substances classified with any of the

	<p>hazard statements H410, H411 or H412 or any of the risk phrases R50/53, R51/53 or R52/53 is limited as follows:</p> <p>Requirement: $FV < LV$ $FV = 100 * CH_{410} + 10$ $*CH_{411} + CH_{412}$ in g/L in-use solution or $FV = 100 * CR_{50/53} + 10 * CR_{51/53} + CR_{52/53}$ in g/L in-use solution</p> <p>Where: LV = limit value FV = factor value C H410 / R50/53 = concentration of substances classified as H410 or R50/53 in g/L in-use solution C H411 / R51/53 = concentration of substances classified as H411 or R51/53 in g/L in-use solution C H412 / R52/53 = concentration of substances classified as H412 or R52/53 in g/L in-use solution Surfactants classified with H412 are exempted from the requirements provided that they are readily biodegradable and anaerobically degradable.</p>				
Toxicity to aquatic environments					
The critical dilution volumes ($CDV_{chronic}$) for different products are listed in the	The product's CDV must not exceed the following limit values for $CDV_{chronic}$:	Any raw ingredient that is classified as 9.1A (aquatic ecotoxin) must be readily		The toxicity of chemical substances to aquatic organisms must be specified,	The product as used shall not be toxic to aquatic life. A compound is considered not

table below.		<table border="1"> <thead> <tr> <th>Product</th> <th>CDV_{chronic}</th> </tr> </thead> <tbody> <tr> <td>Concentrated</td> <td>10,500</td> </tr> <tr> <td>RTU WC consumer</td> <td>600,000</td> </tr> <tr> <td>RTU other, consumer</td> <td>700,000</td> </tr> <tr> <td>RTU window, consumer and professional</td> <td>75,000</td> </tr> <tr> <td>Concentrated professional</td> <td>9,500</td> </tr> <tr> <td>RTU WC, professional</td> <td>700,000</td> </tr> <tr> <td>RTU, professional</td> <td>450,000</td> </tr> </tbody> </table>	Product	CDV _{chronic}	Concentrated	10,500	RTU WC consumer	600,000	RTU other, consumer	700,000	RTU window, consumer and professional	75,000	Concentrated professional	9,500	RTU WC, professional	700,000	RTU, professional	450,000	<p>biodegradable and not potentially bioaccumulative.</p>		<p>giving results for fish, daphnia and algae (except for preservatives for which data is only required for fish and daphnia).</p> <p>Complexing agents must not be very toxic to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 1 mg/L).</p> <p>Solvents must not be toxic to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 10 mg/L).</p> <p>Included solvents must not be harmful to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 100 mg/L).</p> <p>Preservatives must not be very toxic to aquatic organisms (LC₅₀ and EC₅₀ > 1 mg/L).</p> <p>Thickening agents/dissolving agents must not be toxic to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 10 mg/L).</p> <p>Bleaching agents must not be very toxic to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 1 mg/L).</p> <p>Acids must not be toxic to aquatic organisms (LC₅₀, EC₅₀ and IC₅₀ > 10 mg/L).</p>	<p>toxic to aquatic life if it meets one or more of the following criteria: Acute LC50 for algae, daphnia, or fish >100 mg/L. Aquatic toxicity tests shall follow the appropriate protocols in ISO 7346.2 for fish or OECD test guidance 203 for fish, OECD test guidance 201 for algae, and 202 OECD test guidance for daphnia.</p>
Product	CDV _{chronic}																					
Concentrated	10,500																					
RTU WC consumer	600,000																					
RTU other, consumer	700,000																					
RTU window, consumer and professional	75,000																					
Concentrated professional	9,500																					
RTU WC, professional	700,000																					
RTU, professional	450,000																					
Diluted all-purpose cleaner	< 18,000 l/l of water																					
Undiluted all-purpose cleaner	< 52,000 l/100 g of product																					
Sanitary cleaner	< 80,000 l/100 g of product																					
Window cleaner	< 4,800 l/100 g of product																					
RTU – Ready to use																						

Packaging											
<p>Sprays containing propellants must not be used.</p> <p>Plastics that are used for the main container shall be marked in accordance with Directive 94/62/EC or DIN 6120 part 1 and 2 in connection with DIN 7728 part 1.</p> <p>If the primary packaging is made of recycled material, any indication of this on the packaging shall be in conformity with ISO 14021.</p> <p>Products packaged in trigger sprays must be sold as a part of a refillable system.</p> <p>Only phthalates that at the time of application have been risk assessed and have not been classified according to criterion 3(c) may be used in the plastic packaging.</p> <p>The weight utility ratio (WUR) of the primary packaging must not exceed: 1.20 gram packaging per litre use solution (washing water) for concentrated products i.e. liquid concentrates and solids, that are diluted in water prior to use; 1.50 gram packaging per litre use</p>	<p>Plastic packaging (including caps, lids and pumps) and labels containing PVC or plastic based on other types of chlorinated materials must not be used.</p> <p>To facilitate identification for recycling, plastic bottles that are used as packaging must be marked in accordance with DIN 6120, section 2, ISO 11469:2000 or equivalent standard. Caps, lids and pumps are exempt from this requirement.</p> <p>The products weight-to-benefit ratio (WBR) must not exceed the following values:</p> <table border="1"> <thead> <tr> <th>Product</th> <th>WUR (g/l in-use solution)</th> </tr> </thead> <tbody> <tr> <td>RTU</td> <td>200.0</td> </tr> <tr> <td>Concentrated</td> <td>1.20</td> </tr> </tbody> </table> <p>Take-back system: national regulations, legislation and/or agreements within the sector regarding the recycling systems for products and packaging shall be met in the Nordic countries in which the company markets its dishwasher detergents.</p>	Product	WUR (g/l in-use solution)	RTU	200.0	Concentrated	1.20	<p>All plastic packaging must be made of plastics that are able to be recycled in the country where the product is sold.</p> <p>Primary packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).</p> <p>Primary cardboard packaging shall consist of 80 % recycled content, 25 % of which must be post-consumer material</p> <p>The primary packaging, shall have a weight utility ratio (WUR) of less than or equal to 150 g/l. The weight of the primary package is to include caps, stoppers bottles and hand pumps/ spraying devices.</p> <p>Information shall be provided to The Trust at application and thereafter reported annually on PVC and/or phthalates used in the packaging. This should include information from production records and/or suppliers on:</p> <ul style="list-style-type: none"> • the percentages by weight of recycled and virgin PVC; • the particular production 	<p>Each materials used as packaging must comply with at least one of the following. Packaging must:</p> <ol style="list-style-type: none"> contain at least 50 % recycled content by weight. Be derived from plant-based materials Be compostable to relevant standard Be biodegradable to a relevant standard Be recyclable in local municipal recycling system. Recyclable packaging must not be treated or labelled in a manner that would prevent recyclability. 	<p>Packaging must be made of components that are easy to take apart, and each component must consist of a single type of material. Refill packaging that weighs no more than 30% of the weight of the original packaging is exempted from this rule.</p> <p>Plastic packaging must be made from polyethylene (PE), polypropylene (PP), poly-ethylene terephthalate (PET) or an equivalent plastic. PVC is not permitted. Plastic packaging must be marked in accordance with DIN 6120 or American SPI. It is not necessary to mark small parts, such as stoppers, in this way.</p> <p>At least 80 % of cardboard packaging must be manufactured from wood fibre obtained from recycled raw material. If new raw material is used for the rest of the card-board, at least 30 % of this must be certified by Forest Stewardship Council (FSC). If the product content prevents the use of recycled raw materials for packaging, it is acceptable to use cardboard that is 100 % FSC-certified. Only wholly chlorine-free bleaching</p>	<p>The primary package shall be a recyclable package. If the primary package is not a recyclable package must be a refillable package. An exception may be made for lightweight packaging (e.g., pouches or bags) that represents a significant reduction in material use when compared with rigid packaging.</p> <p>The primary package shall contain the state-of-the-art amount of recovered and post-consumer material. Where a product's packaging is below these levels, the manufacturer must demonstrate that efforts have been made to use the maximum available post-consumer material in packaging.</p> <p>Concentrates are prohibited from being packaged in ready-to-use forms, including but not limited to spray-dispenser bottles.</p> <p>Aerosol cans shall be recyclable packages. Further, manufacturers of products packaged in aerosol cans must show that recycling programs are widely available where the product</p>
Product	WUR (g/l in-use solution)										
RTU	200.0										
Concentrated	1.20										

<p>solution (washing water) for ready-to-use products i.e. products used without further dilution.</p>		<p>processes (membrane cells, non-asbestos diaphragms, modified diaphragms, graphite anodes, mercury cells, closed-lid production etc.) used to produce chlorine and VCM for the PVC being used in the packaging for ECNZ-licensed products (including the locations of the production);</p> <ul style="list-style-type: none"> • information, where available, on waste disposal, wastewater treatment and emissions to air (occupational exposure, emissions from the factory and emissions from the final PVC resin); • information on any Environmental Management System (EMS) for the production process, including requirements for waste, water, air and product-related requirements; • the types of stabilisers used; • the types and amounts of any phthalate plasticisers present in recycled content of the PVC (if that information is available) and/or added when manufacturing PVC; • research and initiatives implemented on 		<p>methods may be used.</p> <p>As far as possible, the packaging must comply with REPA's recommendations to facilitate recycling. Products that are intended for sale to consumers must carry instructions on how the packaging should be sorted for recycling in accordance with the document <i>REPA's instructions</i>. If the packaging consists of different materials, information must also be given on how the different components should be recycled.</p> <p>No metal may be used in the packaging. Exceptions to this requirement may be allowed for large packaging that can be recycled. Metal may be used in the handles of buckets that hold 15 litres or more if the handle can easily be removed when the packaging is recycled. Nozzles on packaging such as pump bottles and trigger sprays are exempted from this requirement.</p>	<p>is sold. In addition, manufacturers of products packaged in aerosol cans must demonstrate why aerosol cans are the most suitable packaging for a given product considering environmental, health, and performance considerations.</p> <p>There shall be no intentional introduction of phthalates. An exception is allowed for packages that would not have added phthalates but for the addition of recovered material.</p> <p>A secondary package shall only be used for concentrates. An exception may be made for packaging of multiple units when up to one of the units is a ready-to-use form, including but not limited to spray-dispenser bottles, and total packaging (primary package plus secondary package) is a reduction in packaging material use.</p> <p>Ancillary Products. Products may contain disposable towelettes or other disposable wiping materials if they are made from 100 % renewable materials including, but not limited to cellulosic materials, and meet the state-of-the-art</p>
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		<p>substitutes for phthalates identified as of concern by regulators; and</p> <ul style="list-style-type: none"> any product stewardship arrangements for the packaging. 			amount of <i>recovered material</i> content.
Consumer information					
<p>Dosage instructions. Information on the recommended dosage of all-purpose cleaners and sanitary cleaners shall appear on the packaging. In the case of a concentrated product, it shall be clearly indicated on the packaging that only a small quantity of the product is needed compared to normal (i.e. diluted) products. The following text (or equivalent) shall appear on the packaging: <i>“Proper dosage saves costs and minimises environmental impacts”</i></p> <p>The following text (or equivalent text) shall appear on the packaging of ready-to-use all-purpose cleaners: <i>“The product is not intended for large-scale cleaning.”</i></p> <p>The following safety advice (or equivalent) shall appear on the product in text or as pictogram:</p> <ul style="list-style-type: none"> “Keep away from children” “Do not mix different 	<p>The following should be clearly stated on the label:</p> <ul style="list-style-type: none"> The information text on the packaging must comply with Regulation 48/2004/EC and 907/2006/EC on detergents. For products to be sold in Norway, documentation must also be submitted to demonstrate that ‘<i>uten fosfat</i>’ (phosphate free) is displayed on the label. 	<p>The products shall be accompanied by instructions for proper use so as to maximise product performance and minimise waste. These instructions shall include information on reuse, recycling and/or correct disposal of packaging.</p> <p>If the product requires dilution before use, the recommended dosage at a normal level of soiling/normal use must be stated clearly on the primary packaging in ml/L diluting water.</p> <ul style="list-style-type: none"> A second well-known metric, such as teaspoons, shall additionally be given in brackets. However, if the packaging has an efficient and convenient dosing system that can provide an equally reliable dosage, an alternative metric (e.g. capfuls, squirts, or other) can be used. The dosing instructions may be stated for various 	<p>Suitable information must be supplied with the product or made available to the public. Information that must be included on the label includes:</p> <ul style="list-style-type: none"> Instructions for correct use including doses or dilution rates for varying levels of soiling if applicable All hazards associated with the product, its use, storage or disposal Complete ingredients listing, according to Annex VII of the European Union Commission Directive 89/542/EEC on the Labelling of Detergents and Cleaning Products. 		<p>The label must include detailed instructions for proper use to maximise product performance and minimise waste.</p> <p>When the product is intended to be diluted with water by the consumer prior to use, the label shall clearly state and prominently that dilution with water from the cold tap is recommended and shall state the recommended level of dilution in commonly understood measures.</p> <p>The label must include proper disposal instructions. If the product is a towelette or other disposable wipe product, the label must clearly indicate proper disposal of the wipes. For the package disposal, the label must include clear recycling instructions.</p> <p>If plastic, the packaging must be clearly marked with the appropriate Society of the Plastics Industry symbol to</p>

<p><i>cleaners”</i></p> <ul style="list-style-type: none"> • <i>“Avoid inhaling sprayed product”</i> (only for products that are packaged as sprays). 		<p>water hardnesses and for various levels of soiling.</p> <p>All products must display on the container a list of product ingredients that complies with the labelling requirements of Article 11 of Regulation (EC) No. 648/2004 of the European Parliament and of the Council of 31 March 2004 on Detergents, as amended by Regulation (EC) No 907/2006 of 20 June 2006.</p> <p>The following or equivalent words should be clearly displayed on the packaging. <i>“All general purpose cleaning products have an effect on the environment. Always use the correct dose for maximum efficiency and minimum environmental impact.”</i></p> <p>Any proposed changes/alterations to this wording must be submitted to and approved by The Trust.</p> <p>All labelling shall comply with the requirements of the HSNO legislation or the appropriate hazardous substance legislation for the country where the product is sold.</p> <p>All packaging shall include a website reference where a</p>			<p>identify the type of plastic for recycling.</p>
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		<p>copy of the product data sheet can be obtained.</p> <p>Product data sheets shall be prepared and available on a website with public access and shall include:</p> <ul style="list-style-type: none"> • the product name • contact details of the New Zealand importer, supplier or manufacturer including a phone number • listing of all hazardous ingredients added to the product • identification of any hazards associated with the product as sold and used • directions for use, including relevant dilution rates and dose rates, and • disposal information. 			
Performance					
<p>The product shall be fit for use, meeting the needs of the consumers.</p> <p>a) All-purpose cleaners and window cleaners: For all-purpose cleaners, only fat-removing effects must be documented. For window cleaners, stripe-less drying must be documented. The cleaning ability must be equivalent to or better than that of a market-leading or generic</p>	<p>The product must through laboratory testing demonstrate equal or superior cleaning performance to a reference product within the same product category. The product must also clean better than water alone.</p> <p>If the product is marketed for both professional and consumer use it shall be tested against a professional product.</p>	<p>The product shall be fit for its intended use and conform, as appropriate, to relevant product performance standards.</p> <p>Performance of the product with respect to both cleaning ability (ability to remove soil) and cleaning performance (the total amount of soil removed per dish wash) must be assessed.</p>	<p>To be certified, the products must be fit to perform its intended purpose or application.</p> <p>The product must demonstrate fitness for purpose or market acceptance or suitability or quality. If reformulation takes place, the applicant must demonstrate that the new formulation also complies with this requirement.</p>		<p>Standard performance requirements: each product, as used when dilute with water from the cold tap, shall clean common soils and surfaces in its category effectively, as measured by a standard test method. The criteria give details of recommended test methods by product group.</p>

<p>reference product, approved by a competent body.</p> <p>b) Sanitary cleaners – for bathroom cleaners both limesoap and limescale removal shall be documented. For acidic toilet cleaners, only limescale removal shall be documented. The cleaning ability must be equivalent to or better than that of the generic reference detergent specified in the criteria document.</p>	<p>If the product is tested in accordance with the EU Ecolabel’s test for all-purpose cleaners and sanitary cleaners (Commission Decision of 28 June 2011 or later version), this laboratory test can be used.</p> <p>User test – professional products only. The product must demonstrate cleaning performance that is equal to or better than a reference product within the same product category in 80 % of tests. The performance of the shall be judged in three area: ability to remove soil in comparison to the reference product, abrasion to the cleaned surface in comparison to the reference product and effectiveness in comparison to the reference product. The tests shall be performed by at least 3 users.</p> <p>If the product is tested in accordance with the EU Ecolabel’s test for all-purpose cleaners and sanitary cleaners, this user test can be used.</p>		<p>Demonstration of conformance:</p> <ol style="list-style-type: none"> 1)Independent audit or test reports 2)Report from an independent organisation that demonstrates fitness for purpose, market acceptance, suitability or quality or 3)Report from consumer based product comparison testing program. This may be conducted internally or externally. 		
Waste management					
		The licence applicant/holder and product manufacturer must have effective waste	The manufacturer must have a documented system for monitoring volume and COD		

		management policies and procedures and/or a waste management programme. In addition licence holders must report annually to The Trust on waste management.	of liquid waste discharged, and keep records of the results obtained. System and results must be at minimum as required by authority that regulates liquid discharge, if there is one. Waste minimisation: the applicant must demonstrate that at least 97 % of material inputs (ingredients) result in product and that effective waste management/material efficiency policies and procedures are developed and implemented		
Energy management					
		The licence applicant/holder and product manufacturer must have effective energy management policies and procedures and/or an energy management programme. In addition, license holders must report annually to The Trust on energy management.			
Product claims					
Optional label with text box shall contain the following text: <ul style="list-style-type: none"> • reduced impact on aquatic life • reduced use of hazardous substances • reduced packaging waste • clear user instructions. 		No claim or suggestion, on the packaging or by any other means, shall be made that the product has an antimicrobial action. If the licence holder includes claims relating to the product being 'natural' or 'plant based' the licence holder shall provide	Products that declare 'food safe' claims or similar must be able to provide evidence of formal recognition of this claim by Food Standards Australia and New Zealand. Products that declare 'organic' or similar must contain at least 95 % of ingredients certified as		The Green Seal Certification Mark shall not appear in conjunction with any human health or environmental claims, unless verified and approved in writing by Green Seal.

		<p>evidence to support the claim, including but not limited to:</p> <ul style="list-style-type: none"> • the definition used by the licence holder to support the 'natural' or 'plant based' claim; • the source of all ingredients including whether they are synthetic versions of the chemicals; and • evidence of chain of custody where synthetic versions exist and the ingredients are non-synthetic versions 	<p>organic by one of the organic certification bodies named in the criteria documents.</p> <p>Other environmental claims shall be verifiable by GECA citing, as a minimum, appropriate test results from an independent laboratory in accordance with an internationally recognised and relevant test method.</p>		
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Table 9: Overview of the requirements of different ecolabels and voluntary agreements for all-purpose cleaners and sanitary cleaners for professional use

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)																
Limited substances																		
<p>Fragrances: The product shall not contain perfumes containing nitro-musks or polycyclic musks. Any substance added to the product as a fragrance must have been manufactured and/or handled in accordance with the code of practice of the International Fragrance Association. Fragrance substances subject to the declaration requirement provided for in Regulation (EC) No 648/2004 (Annex VII) shall not be present in quantities ≥ 0.010 % per substance.</p> <p>Biocides: the product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants which may also have biocidal properties. It is prohibited to claim on the packaging or by any other communication that the product has an antimicrobial action.</p> <p>Volatile organic compounds (VOCs): The final products of all-purpose cleaners and sanitary cleaners shall not contain more than 6% (by weight) of VOCs with a boiling point lower than 150 °C. Alternatively, for concentrated products to be diluted in water, the total concentration of VOCs with a boiling point lower than 150 °C shall not exceed 0.2 % (by weight) in the washing water. The final products of window cleaners shall not contain more than 10% (by weight) of VOCs with a boiling point lower than 150 °C.</p> <p>Phosphorus: The total quantity of elemental phosphorus in the product shall be calculated on the basis of the dosage of the product recommended by the manufacturer for preparing 1 litre of washing water for cleaning of normally soiled surfaces (for products diluted in water prior to use) or per 100 g of product (for products used without dilution):</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Max phosphorus level</th> </tr> </thead> <tbody> <tr> <td>Diluted all-purpose cleaner</td> <td>< 0.02 g/l of water</td> </tr> <tr> <td>Undiluted all-purpose cleaner</td> <td>< 0.2 g/ 100 g of product</td> </tr> </tbody> </table>	Product	Max phosphorus level	Diluted all-purpose cleaner	< 0.02 g/l of water	Undiluted all-purpose cleaner	< 0.2 g/ 100 g of product	<p>Heavy metals: Commercial and institutional cleaning products shall not be formulated or manufactured with compounds or substances that contain toxic metals, including arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb), or mercury (Hg).</p> <p>Complexing agents: Phosphorus may be included in commercial and institutional cleaners up to no more than 0.5% of total weight. All phosphonates must be readily aerobically biodegradable.</p> <p>Solvents: The undiluted product must not contain:</p> <ul style="list-style-type: none"> halogenated organic solvents; volatile organic compounds in excess of 10% by weight. <p>Biocides and preservatives: The product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This criterion does not apply to ingredients (e.g.: quaternary ammonium salts) added for other functions but which may also have biocidal properties.</p> <p>Enzymes: The enzyme production micro-organism shall be absent from the final enzyme preparation. Enzymes must not be present in aerosol products. In other products, enzymes must be present in liquid form or as a dust-free granulate.</p> <p>Fragrances: Fragrances must be produced and used in accordance with the code of practice compiled by IFRA. Fragrance containing nitromusk or polycyclic musk compounds must not be used. Fragrance ingredients added for functions other than smell must also comply with all other requirements in this specification.</p> <p>Colorants: Colouring agents may be added to liquid products</p>	<p>Volatile Organic Compounds (VOC): VOCs include all organic compounds that have a vapour pressure of greater than 0.1 mm mercury at 1 atm pressure and 20° C. 'VOC content' means the total weight of VOCs in a product expressed as a percentage of the product weight.</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Limit (%)</th> </tr> </thead> <tbody> <tr> <td>Carpet cleaners (dilutable)</td> <td>0.1</td> </tr> <tr> <td>Carpet cleaners (ready to use)</td> <td>1</td> </tr> <tr> <td>General purpose cleaners</td> <td>0.5</td> </tr> <tr> <td>Bathroom/restroom cleaners</td> <td>1</td> </tr> </tbody> </table> <p>Phosphorus: The product as used shall not contain more than 0.5% by weight of total phosphorus</p> <p>Fragrances: Fragrances added to the product must follow the code of practice of the IFRA. All fragrance components must be disclosed to the certifying body.</p> <p>Colorants: Each colour component shall meet one of the following:</p> <ul style="list-style-type: none"> US Food and Drug Administration-certified and permitted for ingestion. A natural colour component. Not have any of the following heavy metals intentionally added during its production: arsenic, cadmium, cobalt, hexavalent chromium, lead, manganese, mercury, nickel and selenium. <p>Concentrates: The product, except for toilet bowl/urinal cleaners, dry/absorbent compound carpet cleaners, or products solely labelled as carpet spot removers, must be concentrated to at least the following levels: general purpose cleaner: 1:32, glass, restroom and carpet cleaners: 1:16</p> <p>Enzymes: Enzymes in the product shall be in liquid or encapsulated solid (or other dust-free form). The source from</p>	Product	Limit (%)	Carpet cleaners (dilutable)	0.1	Carpet cleaners (ready to use)	1	General purpose cleaners	0.5	Bathroom/restroom cleaners	1
Product	Max phosphorus level																	
Diluted all-purpose cleaner	< 0.02 g/l of water																	
Undiluted all-purpose cleaner	< 0.2 g/ 100 g of product																	
Product	Limit (%)																	
Carpet cleaners (dilutable)	0.1																	
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General purpose cleaners	0.5																	
Bathroom/restroom cleaners	1																	

EU Ecolabel (all-purpose cleaners and sanitary cleaners)		Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
Sanitary cleaner	< 1.0 g/ 100 g of product	<p>only, provided they have been approved a food additive or are not bioaccumulative. The colouring agent is not considered to be bioaccumulative if the BCF < 100 or if $\text{Log } K_{ow} < 3.0$. Where there is information on both BCF and $\text{Log } K_{ow}$, the values for BCF must be used.</p> <p>Palm oil and palm kernel oil: the licence applicant must have an effective purchasing policy for all palm oil, palm kernel oil (or derivatives) or raw materials that are manufactured from palm kernel oil to maximise the use of palm oil and palm kernel oil from sustainable sources.</p>	<p>which enzymes were derived shall be identified to a species level and disclosed to the certification program. For enzymes derived from microorganisms, documentation shall be provided that the source microorganism is absent from the finished product. Enzymes are exempt from being categorised as asthmagens or respiratory sensitisers. Products containing enzymes shall include a declaration on the product label.</p> <p>Microorganisms: The presence of genetically modified microorganisms as a deliberate addition or as a contaminant above 0.01 % in the finished product is prohibited. All microorganisms shall be classified as WHO Risk Group 1 or equivalent biosafety designation. Microorganism strains shall be identified through a taxonomic review. Pathogenic microorganisms shall not be present in the microbial strain, finished product, or at the end of the product's intended shelf life. All microorganisms shall be demonstrated to be susceptible to the following prevention and treatment measures: antimicrobial agents, each of the five major antibiotic classes. A microorganism used to serve the primary cleaning function in the undiluted product shall have a plate count that is greater than or equal to 1×10^7 CFU /ml for liquid products and 1×10^9 CFU /g for solid products. Products containing microorganisms shall include a declaration on the product label.</p>
Window cleaner	Zero		
Biodegradability			
<p>Each surfactant used in the product shall be readily biodegradable.</p> <p>Surfactants that are not biodegradable under anaerobic conditions may be used in the product within specified limitations provided that the surfactants are not classified with H400/R50 (Very toxic to aquatic life):</p>	<p>All surfactants must be readily biodegradable and anaerobically degradable.</p>	<p>Each of the individual organic ingredients in the product as used, except for the polymer portion of a carpet cleaner, shall exhibit ready biodegradability in accordance with the OECD definition.</p> <p>An exception shall be made for an organic ingredient that does not exhibit ready biodegradability if it has low aquatic toxicity, is not bioaccumulating (3.12), and exhibits biodegradation rates above 70% (measured as BOD, DOC or COD), per ISO test methods 9887 or 9888; or OECD 302A, B or C.</p>	

EU Ecolabel (all-purpose cleaners and sanitary cleaners)		Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
Product	Weight of anaerobically non-biodegradable surfactants		
Diluted all-purpose cleaner	< 0.40 g / l of water		
Undiluted all-purpose cleaner	< 4.0 g / 100g of product		
Sanitary cleaner	< 2.0 g / 100g of product		
Window cleaner	< 2.0 g / 100g of product		
Dosage and dosage instructions			
For all-purpose cleaners which are diluted in water prior to use the dosage in grams of the product recommended by the manufacturer for preparing 1 litre of washing water for cleaning of normally soiled surfaces is taken as the reference dosage for the calculations aiming at documenting compliance with the EU Ecolabel criteria and for testing of cleaning ability.		The recommended dosage and dilution instructions at a normal level of soiling/normal use must be stated clearly on the primary packaging in ml/L diluting water.	
Environmentally hazardous substances			
The product or any part of it thereof shall not contain substances or mixtures meeting the classification with the hazard class or categories listed below:		Commercial and institutional cleaning products must not be classified under the Hazardous Substances and New Organisms (HSNO) regulation as: Class 1 (explosive), Class 3 (flammable), Class 5 (oxidising), 6.1A or 6.1B (acutely toxic), 6.5 (sensitisers), 6.6 (mutagenic), 6.7 (carcinogens), 6.8 (reproductive/developmental toxins), 6.9A (target organ systemic toxicants), 8.2 (skin corrosive). Products intended for use solely for cleaning toilets are exempt from the requirement on corrosivity, if the classification is set because of pH.	Acute toxicity – the undiluted product shall not be toxic to humans. A product is considered toxic if either of the following apply: Oral lethal dose 50 (LD ₅₀) < 5,000 mg/kg Inhalation lethal concentration (LC50) < 20 mg/l at 1 hour Skin and eye irritation – The undiluted product shall not cause skin corrosion or cause serious eye damage as defined by GHS. Furthermore, a product is considered to cause skin corrosion or to cause serious eye damage if it has a pH of 2 or less or a pH of 11.5 or greater, unless tested and proven otherwise. Carcinogens, mutagens, and reproductive toxins - The undiluted product shall not contain any ingredients or components that are carcinogens, mutagens or reproductive toxins. The product shall not contain any ingredients known to produce or release carcinogens, mutagens or reproductive toxins. Ingredients that cause asthma – the undiluted product shall
GHS Hazard statement	EU Risk Phrase		
H300	R28		
H301	R25		
H304	R65		
H310	R27		
H311	R24		
H330	R23; R26		
H331	R23		
H340	R46		
H341	R68		
H350	R45		
H350i	R49		
H351	R40		
H360F	R60		
H360D	R61		
H360FD	R60-61		
H360Fd	R60-63		

EU Ecolabel (all-purpose cleaners and sanitary cleaners)		Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
H360Df	R61-62		not contain any ingredients that have been identified as asthmagens
H361f	R62		
H361d	R63		
H361fd	R62-63		Skin sensitization – the undiluted product shall not be a skin sensitiser.
H362	R64		
H370	R39/23; R39/24; R39/25; R39/26; R39/27; R39/28		Skin absorption – the undiluted product shall not contain ingredients present at greater than or equal to 1% in the product that are listed on the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value list (TLV) carrying a skin notation, or substances that are listed on the German Deutsche Forschungsgemeinschaft (DFG) Maximum Allowable Concentrations (MAK) list with a skin absorption H notation. Further, the product shall not contain ingredients that sum to 1% in the formula that are listed on ACGIH or DFG with the same target organ.
H371	R68/20; R68/21; R68/22		
H372	R48/25; R48/24; R48/23		
H373	R48/20; R48/21; R48/22		
H400	R50		
H410	R50-53		
H411	R51-53		
H412	R52-53		
H413	R53		
EUH059	R59		
EUH029	R29		
EUH031	R31		
EUH032	R32		
EUH070	R39-41		Chronic inhalation toxicity – the product as used shall not contain ingredients with a vapour pressure above 1mm mercury at ambient conditions, that cause chronic inhalation toxicity as evidenced by:
H334	R42		<ul style="list-style-type: none"> • listed as R48.23 by European Chemicals Bureau • Classified as producing significant toxic effects in mammals from repeated inhalation exposure at or below 1.0 mg/L as a vapour according to OECD Harmonized Integrated Classification System for Human Health and Environmental Hazards of Chemical Substances and Mixtures.
H317	R43		Bioaccumulating compounds – The product as used shall not contain any ingredients that bioaccumulate or that form degradation products that bioaccumulate. A chemical is considered to bioaccumulate when it has a bioconcentration factor (BCF) greater than 100 (or log BCF >2) as determined by ASTM E-1022-94(2007) Standard Guide for Conducting Bioconcentration test with Fishes and Saltwater Bivalve Molluscs or OECD 305 Bioconcentration: Flow-through Fish Test.
Derogations: the following substances or mixtures are specifically exempted from this requirement:			
Substance /mixture	GHS Hazard statement	EU Risk Phrase	
Surfactants in concentrations < 25% in the product	H400	R50	
Fragrances	H412	R52-53	
Enzymes	H334	R42	
Enzymes	H317	R43	
NTA as an impurity in MGDA and GLDA	H351	R40	
VOCs: The final products of all-purpose cleaners and sanitary cleaners shall not contain more than 6% (by weight) of VOCs			

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)										
<p>with a boiling point lower than 150 °C. Alternatively, for concentrated products to be diluted in water, the total concentration of VOCs with a boiling point lower than 150 °C shall not exceed 0.2 % (by weight) in the washing water. The final products of window cleaners shall not contain more than 10% (by weight) of VOCs with a boiling point lower than 150 °C.</p> <p>Phosphorus: The total quantity of elemental phosphorus in the product shall be calculated on the basis of the dosage of the product recommended by the manufacturer for preparing 1 litre of washing water for cleaning of normally soiled surfaces (for products diluted in water prior to use) or per 100 g of product (for products used without dilution):</p> <table border="1"> <thead> <tr> <th>Product</th> <th>Max phosphorus level</th> </tr> </thead> <tbody> <tr> <td>Diluted all-purpose cleaner</td> <td>< 0.02 g/ l of water</td> </tr> <tr> <td>Undiluted all-purpose cleaner</td> <td>< 0.2 g/100 g of product</td> </tr> <tr> <td>Sanitary cleaner</td> <td>< 1.0 g/100 g of product</td> </tr> <tr> <td>Window cleaner</td> <td>Zero</td> </tr> </tbody> </table>	Product	Max phosphorus level	Diluted all-purpose cleaner	< 0.02 g/ l of water	Undiluted all-purpose cleaner	< 0.2 g/100 g of product	Sanitary cleaner	< 1.0 g/100 g of product	Window cleaner	Zero		
Product	Max phosphorus level											
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Sanitary cleaner	< 1.0 g/100 g of product											
Window cleaner	Zero											
Toxicity to aquatic environments												
<p>The critical dilution volumes (CDV_{chronic}) for different products are listed in the table below.</p> <table border="1"> <thead> <tr> <th>Product</th> <th>CDV_{chronic}</th> </tr> </thead> <tbody> <tr> <td>Diluted all-purpose cleaner</td> <td>< 18,000 l/ l of water</td> </tr> <tr> <td>Undiluted all-purpose cleaner</td> <td>< 52,000 l/100 g of product</td> </tr> <tr> <td>Sanitary cleaner</td> <td>< 80,000 l/100 g of product</td> </tr> <tr> <td>Window cleaner</td> <td>< 4,800 l/100 g of product</td> </tr> </tbody> </table>	Product	CDV _{chronic}	Diluted all-purpose cleaner	< 18,000 l/ l of water	Undiluted all-purpose cleaner	< 52,000 l/100 g of product	Sanitary cleaner	< 80,000 l/100 g of product	Window cleaner	< 4,800 l/100 g of product	<p>Any raw ingredient that is classified as 9.1A (aquatic ecotoxin) must be readily biodegradable and not potentially bioaccumulative.</p>	<p>The product as used shall not be toxic to aquatic life. A compound is considered not toxic to aquatic life if it meets one or more of the following criteria: Acute LC50 for algae, daphnia, or fish >100 mg/L</p>
Product	CDV _{chronic}											
Diluted all-purpose cleaner	< 18,000 l/ l of water											
Undiluted all-purpose cleaner	< 52,000 l/100 g of product											
Sanitary cleaner	< 80,000 l/100 g of product											
Window cleaner	< 4,800 l/100 g of product											
Packaging												
<p>Sprays containing propellants must not be used.</p> <p>Plastics that are used for the main container shall be marked in accordance with Directive 94/62/EC or DIN 6120 part 1 and 2 in connection with DIN 7728 part 1.</p> <p>If the primary packaging is made of recycled material, any</p>	<p>All plastic packaging must be made of plastics that are able to be recycled in the country where the product is sold.</p> <p>Primary packaging must not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent recycling (i.e. PVC sleeves, metallic labels).</p>	<p>A plastic primary package shall be recyclable, a refillable package, a source-reduced package, or contain at least 25% post-consumer material. The package must be clearly marked with the appropriate Society of the Plastics Industry symbol to identify the type of plastic for recycling.</p> <p>Primary packaging, for materials other than plastic shall</p>										

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
<p>indication of this on the packaging shall be in conformity with ISO 14021.</p> <p>Products packaged in trigger sprays must be sold as a part of a refillable system.</p> <p>Only phthalates that at the time of application have been risk assessed and have not been classified according to criterion 3(c) may be used in the plastic packaging.</p> <p>The weight utility ratio (WUR) of the primary packaging must not exceed: 1.20 g packaging per litre use solution (washing water) for concentrated products i.e. liquid concentrates and solids, that are diluted in water prior to use; 1.50 g packaging per litre use solution (washing water) for ready-to-use products i.e. products used without further dilution.</p>	<p>Primary cardboard packaging shall consist of 80 % recycled content, 25 % of which must be post-consumer material</p> <p>The primary packaging, shall have a weight utility ratio (WUR) of less than or equal to 150 g/l. The weight of the primary package is to include caps, stoppers bottles and hand pumps/ spraying devices.</p> <p>Products sold with sprayers must also be available in bottles without a sprayer so that consumers can have the option of reusing the original sprayer.</p> <p>Information shall be provided to The Trust at application and thereafter reported annually on PVC and/or phthalates used in the packaging. This should include information from production records and/or suppliers on:</p> <ul style="list-style-type: none"> • the percentages by weight of recycled and virgin PVC; • the particular production processes (membrane cells, non-asbestos diaphragms, modified diaphragms, graphite anodes, mercury cells, closed-lid production etc.) used to produce chlorine and VCM for the PVC being used in the packaging for ECNZ-licensed products (including the locations of the production); • information, where available, on waste disposal, wastewater treatment and emissions to air (occupational exposure, emissions from the factory and emissions from the final PVC resin); • information on any Environmental Management System (EMS) for the production process, including requirements for waste, water, air and product-related requirements; • the types of stabilisers used; • the types and amounts of any phthalate plasticisers present in recycled content of the PVC (if that information is available) and/or added when manufacturing PVC; • research and initiatives implemented on substitutes for phthalates identified as of concern by regulators; and • any product stewardship arrangements for the packaging. • 	<p>contain at least 25 % post-consumer material or demonstrate that efforts were made to use the maximum available post-consumer material in the package.</p> <p>Concentrated products are prohibited from being packaged in spray-dispenser bottles or other ready to use package types.</p> <p>Aerosol cans are prohibited.</p> <p>Closed dispensing control systems and concentrate packaging must meet the following requirements:</p> <ul style="list-style-type: none"> • The primary package shall be durable as demonstrated by passing a drop test. • Backflow prevention that meets the American Society of Sanitary Engineering's (ASSE) 1055B standard shall be included in the closed dispensing-control system. <p>Phthalates and chlorinated packaging materials are prohibited from being intentionally introduced.</p>

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
User information		
<p>Dosage instructions. Information on the recommended dosage of all-purpose cleaners and sanitary cleaners shall appear on the packaging. In the case of a concentrated product, it shall be clearly indicated on the packaging that only a small quantity of the product is needed compared to normal (i.e. diluted) products. The following text (or equivalent) shall appear on the packaging: ‘Proper dosage saves costs and minimises environmental impacts’</p> <p>The following text (or equivalent text) shall appear on the packaging of ready-to-use all-purpose cleaners: ‘The product is not intended for large-scale cleaning’.</p> <p>Safety advice. The following safety advice (or equivalent) shall appear on the product in text or as pictogram:</p> <ul style="list-style-type: none"> • “Keep away from children” • “Do not mix different cleaners” • “Avoid inhaling sprayed product” (only for products that are packaged as sprays). 	<p>The product shall be accompanied by instructions for proper use so as to maximise product performance and minimise waste. These instructions shall include information on reuse, recycling and/or correct disposal of packaging.</p> <p>The manufacturer's label must include English and a graphical representation or icons, in order to assist illiterate or non-English speaking personnel.</p> <ul style="list-style-type: none"> • Icons shall be included to explain dilution, use and appropriate PPE only. Appropriate hazard symbols must also be included on the label, where necessary. • The recommended dosage and dilution instructions at a normal level of soiling/normal use must be stated clearly on the primary packaging in ml/L diluting water. • A second well-known metric, such as teaspoons, shall additionally be given in brackets. However, if the packaging has an efficient and convenient dosing system that can provide an equally reliable dosage, an alternative metric (e.g. capfuls, squirts, or other) can be used. • The dosing instructions may be stated for various water hardnesses and for various levels of soiling <p>All products must display on the container a list of product ingredients that complies with the labelling requirements of Article 11 of Regulation (EC) No. 648/2004 of the European Parliament and of the Council of 31 March 2004 on Detergents, as amended by Regulation (EC) No 907/2006 of 20 June 2006.</p> <p>The following or equivalent words should be clearly displayed on the packaging. Any proposed changes/ alterations to this wording must be submitted to and approved by The Trust. <i>“All cleaning products have an effect on the environment. Always use the correct dose for maximum efficiency and minimum environmental impact.”</i></p> <p>Dilution from the cold tap shall be recommended.</p>	<p>.</p> <p>The manufacturer’s label shall state the following:</p> <ul style="list-style-type: none"> • Clearly and prominently that dilution with water from the cold tap is recommended and shall state the recommended level of dilution. • Explicit disposal, recycling, reuse or refill instructions, proper and clear instructions for use and appropriate precautions and recommendations for the use of personal protective equipment. • Declaration if a fragrance has been added or not <p>The Green Seal® Certification Mark may appear on the product, packaging, secondary documents, and promotional materials, only in conjunction with the certified product.</p>

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
	<p>All labelling shall comply with the requirements of the HSNO legislation or the appropriate hazardous substance legislation for the country where the product is sold.</p> <p>The label or accompanying documents must specify that the product is intended for use in commercial and institutional facilities only.</p> <p>No claim or suggestion, on the packaging or by any other means, shall be made that the product has an antimicrobial action.</p>	
Performance		
<p>The product shall be fit for use, meeting the needs of the consumers.</p> <p>a) All-purpose cleaners and window cleaners: For all-purpose cleaners, only fat-removing effects must be documented. For window cleaners, stripe-less drying must be documented. The cleaning ability must be equivalent to or better than that of a market-leading or generic reference product, approved by a competent body.</p> <p>b) Sanitary cleaners – for bathroom cleaners both limesoap and limescale removal shall be documented. For acidic toilet cleaners, only limescale removal shall be documented. The cleaning ability must be equivalent to or better than that of the generic reference detergent specified in</p>	<p>The product shall be fit for its intended use and conform, as appropriate, to relevant product performance standards.</p>	<p>Each product shall clean common soils and surfaces in its category effectively, at the most dilute/least concentrated manufacturer-recommended dilution level for routine cleaning, as measured by the following applicable standard test methods:</p> <ul style="list-style-type: none"> • General-purpose cleaners – shall remove at least 80 % of the particulate soil in ASTM International D4488-95, A5. • Restroom cleaners – shall remove at least 75% of the soil in ASTM D5343-06 • Carpet cleaners – shall have a pH between 3-10 and tested following the requirements of an appropriate method as outlined in the standard • Glass cleaners – shall achieve at least a rating of three in each of the following consumer speciality products associations (CSPA) DCC09 categories: soil removal, smearing and streaking.
Professional training		
<p>For detergents which are used by professional users, the producer, its distributor or a third party shall offer training or training materials for cleaning staff. These shall include step-by-step instructions for proper dilution, use, disposal and use of equipment.</p>	<p>The product manufacturer, its distributor, or a third party must offer training or training materials on the proper use of the product. This shall include step-by-step instructions for the proper dilution, use, disposal of the product, and the use of equipment, as well as recommended personal protection equipment for each stage of the product's use.</p>	<p>The product manufacturer, its distributor or a third party shall offer training or training materials on proper use of the product</p>

EU Ecolabel (all-purpose cleaners and sanitary cleaners)	Environmental Choice New Zealand (commercial and institutional cleaning)	Green Seal (Cleaning Products for Industrial and Institutional Use)
	Product manufacturers must make the appropriate product and/or equipment training information, including safety data sheets, available electronically as well as in hard copy.	
Waste management		
	The licence applicant/holder and product manufacturer must have effective waste management policies and procedures and/or a waste management programme. In addition licence holders must report annually to The Trust on waste management.	
Energy management		
	The licence applicant/holder and product manufacturer must have effective energy management policies and procedures and/or an energy management programme. In addition, license holders must report annually to The Trust on energy management.	
Product Claims		
<p>Optional label with text box shall contain the following text:</p> <ul style="list-style-type: none"> • reduced impact on aquatic life • reduced use of hazardous substances • reduced packaging waste • clear user instructions. 	<p>No claim or suggestion, on the packaging or by any other means, shall be made that the product has an antimicrobial action.</p> <p>If the licence holder includes claims relating to the product being 'natural' or 'plant based' the licence holder shall provide evidence to support the claim, including but not limited to:</p> <ul style="list-style-type: none"> • the definition used by the licence holder to support the 'natural' or 'plant based' claim; • the source of all ingredients including whether they are synthetic versions of the chemicals; and evidence of chain of custody where synthetic versions exist and the ingredients are non-synthetic versions 	<p>The Green Seal Certification Mark shall not appear in conjunction with any human health or environmental claims, unless verified and approved in writing by Green Seal.</p>

Table 10: Comparison of excluded substances for household products

Substance	EU Ecolabel (APCs)	Nordic Swan (cleaning products)	Environmental Choice NZ	Good Environmental Choice Australia Standard	Bra Miljöval (Good Environmental Choice)	Green Seal (Cleaning products for household use)
APEO and derivatives	X	X	X	X		
EDTA and salts	X	X	X	X		
5-bromo-5-nitro-1,3-dioxane	X					
2-bromo-2-nitropropane-1,3-diol	X					
Diazolinidylurea	X					
Formaldehyde	X					
Sodium hydroxyl methyl glycinate	X					
Nitro-musks and polycyclic musks	X	X		X		
Quaternary ammonium salts that are not readily biodegradable	X	X	X	X	X	
Fragrances	Limitations apply	Limitations apply	Limitations apply		Limitations apply	Limitations apply
APD and derivatives		X				
Methyldibromo-glutaronitrile (MG)		X				
Substances on EU list of endocrine disruptors		X				
Substances that are PBT or vPvB		X				
Substances of very high concern listed on EU candidate list		X				
Nitrotriacetic acid (NTA) of any of its salts			X			
Diethylene triamine pentaacetic acid (DTPA)		X	X	X		
Reactive chlorine compounds		X	X	X		
Phosphates/phosphorus	Limitations apply	X	X	X	X	Limitations apply
Heavy metals			X	X	X	X

Chlorine containing bleach					X	
Halogenated organic solvents		X	X	X	X	
Benzalconium chloride		X		X		
LAS (linear alkylbenzene sulfonates)		X		X		
Nanomaterials/nanoparticles		X				
Perfluorinated substances and polyperfluorinated alkylated substances (PFAS)		X				
Micro-organisms	X	X	X			
Aziridine or polyaziridines				X		
Selenium and selenium compounds				X		
Benzotriazole and its derivatives				X		
Monoethanolamine (MEA) and triethanolamine (TEA)				X		
2-butoxyethanol						X
Alkylphenol ethoxylates						X
Optical brighteners						X
Ozone-depleting compounds						
Substances listed in Annex III of the Rotterdam Convention				X		
Persistent Organic Pollutants				X		

Note that this does not take into account other substances which may be excluded by applicable regulations in the region for which they operate.

Table 11: Comparison of excluded substances for industrial and institutional products

Substance	EU Ecolabel (APCs)	Environmental Choice NZ	Green Seal
APEO and derivatives	X	X	
EDTA and salts	X	X	
5-bromo-5-nitro-1,3-dioxane	X		
2-bromo-2-nitropropane-1,3-diol	X		
Diazolidinidylurea	X		
Formaldehyde	X		
Sodium hydroxyl methyl glycinate	X		
Nitro-musks and polycyclic musks	X		
Quaternary ammonium salts that are not readily biodegradable	X	X	
Fragrances	Limitations apply	Limitations apply	Limitations apply
Nitrotriacetic acid (NTA) of any of its salts		X	
Diethylene triamine pentaacetic acid (DTPA)		X	
Reactive chlorine compounds		X	
Phosphates/phosphorus	Limitations apply	Limitations apply	
Heavy metals		X	X
Chlorine containing bleach			
Halogenated organic solvents		X	
Micro-organsims	X		
2-butoxyethanol			X
Alkylphenol ethoxylates			X
Optical brighteners			X
Ozone-depleting compounds			X

Note that this does not take into account other substances which may be excluded by applicable regulations in the region for which they operate.

2.6 Summary of the findings

For all-purpose cleaners and sanitary cleaners, few formal definitions or scope documents have been developed. However, those which have been developed for the alternative national ecolabels - such as the Nordic Swan, Green Seal and Environmental Choice - have defined these product groups. From the evidence gathered in this section, namely from the stakeholder survey and the review of other national ecolabels and voluntary agreements for cleaning products, a set of initial recommendations on a revised scope definition have been formulated. We recommend the following:

- The name of the product group 'All-purpose cleaners and sanitary cleaners' should be changed to reflect that window cleaners are also included into this product group. Further stakeholder input is required, so that a suitable name can be agreed upon. New names for the product group will be suggested in the technical report.
- An extension of the scope should be studied in the Technical report to include dilutable sanitary cleaners (if CDV values can be provided by stakeholders).
- In order to avoid confusion with the overall product category, either the sub category all-purpose cleaners shall be called general purpose cleaners or the product group should be called in another way.
- A list of excluded products should be added, the idea behind this is to make it more explicit which products are in and out of scope. The user manual may be a more appropriate place for such a list, as such it has not been added to the current proposal.

In this section and regarding specific request to delete the ban on microorganisms, further investigations should be carried out.

3. MARKET ANALYSIS

3.1 Introduction

In order to characterise the relevant European market for the product group under study, a market analysis has been conducted. The objective of the market analysis is to identify significant changes in the market for all-purpose cleaners and sanitary cleaners since the last revision of the EU Ecolabel criteria and investigate whether any such changes need to be reflected in the criteria, so that the 10-20 % best environmentally performing products will be selected in accordance with Annex 1 of the EU Ecolabel Regulation.

The research in this section consists of a desktop study using a variety of available literature and statistical databases (notably Datamonitor, Mintel and Euromonitor data and market reports). The market analysis covers the period 2008-13 and includes a market forecast to 2018.

3.1.1 Economic indicators

Analysis of Eurostat PRODCOM data categories compared with the current EU Ecolabel criteria definition and scope indicates that the classifications are irreconcilable. The PRODCOM 'cleaning product' categories are not broken down in a way that could be useful for analysis of current EU Ecolabel 'APCs' criteria (Table 12). This is primarily because the PRODCOM categories are broken down by product *type*, not product *application*.

Table 12: PRODCOM⁵⁴ cleaning product categories, code and description

Code(s)	Description
20.20.14.30	Disinfectants based on quaternary ammonium salts put up in forms or packing for retail sale or as preparations or articles
20.20.14.50	Disinfectants based on halogenated compounds put up in forms or packing for retail sale or as preparations
20.20.14.90	Disinfectants put up in forms or packing for retail sale or as preparations or articles (excluding those based on quaternary ammonium salts, those based on halogenated compounds)
20.41.20.20	Anionic surface-active agents (excluding soap)
20.41.20.30	Cationic surface-active agents (excluding soap)
20.41.20.50	Non-ionic surface-active agents (excluding soap)
20.41.20.90	Organic surface-active agents (excluding soap, anionic, cationic, non-ionic)
20.41.31.20	Soap and organic surface-active products in bars, etc., n.e.c.*
20.41.31.50	Soap in the form of flakes, wafers, granules or powders
20.41.31.80	Soap in forms excluding bars, cakes or moulded shapes, paper, wadding, felt and non-wovens impregnated or coated with soap/detergent, flakes, granules or powders
20.41.32.40	Surface-active preparations, whether or not containing soap, p.r.s.* (excluding those for use as soap)
20.41.32.50	Washing preparations and cleaning preparations, with or without soap, p.r.s. including auxiliary washing preparations excluding those for use as soap, surface-active preparations
20.41.32.60	Surface-active preparations, whether or not containing soap, n.p.r.s.** (excluding those for use as soap)
20.41.32.70	Washing preparations and cleaning preparations, with or without soap, n.p.r.s. including auxiliary washing preparations excluding those for use as soap, surface-active preparations

Source: Eurostat PRODCOM

*not elsewhere classified (n.e.c.)

** packaged for retail sale (p.r.s.)

*** not packaged for retail sale (n.p.r.s.)

⁵⁴ Eurostat (2014) PRODCOM Cleaning products, value and volume, data. [online] Available at: <http://epp.eurostat.ec.europa.eu/portal/page/portal/prodcom/introduction> [Accessed September 2014]

Furthermore, the composition of the various 'cleaning product' categories is not clearly outlined. Additional PRODCOM categories also exist for a number of the various chemicals which make up cleaning products. It is not possible, however, to determine what percentage of these chemicals can be attributed to cleaning products (let alone APCs) and so further analysis of this data will not be of relevance. Table 13 better outlines the variance between this data and the EU Ecolabel categories for APCs.

Table 13: Comparison of the categorisation criteria for PRODCOM (cleaning product type) and EU Ecolabel for APCs

PRODCOM categories (cleaning product type)	EU Ecolabel for APCs product classification (cleaning product application)
<ul style="list-style-type: none"> • Disinfectants based on quaternary ammonium salts put up in forms or packings for retail sale or as preparations or articles • Disinfectants based on halogenated compounds put up in forms or packings for retail sale or as preparations • Disinfectants put up in forms or packings for retail sale or as preparations or articles (excluding those based on quaternary ammonium salts, those based on halogenated compounds) • Anionic surface-active agents (excluding soap) • Cationic surface-active agents (excluding soap) • Non-ionic surface-active agents (excluding soap) • Organic surface-active agents (excluding soap, anionic, cationic, non-ionic) • Soap and organic surface-active products in bars, etc., n.e.c. • Soap in the form of flakes, wafers, granules or powders • Soap in forms excluding bars, cakes or moulded shapes, paper, wadding, felt and non-wovens impregnated or coated with soap/detergent, flakes, granules or powders • Surface-active preparations, whether or not containing soap, p.r.s. (excluding those for use as soap) • Washing preparations and cleaning preparations, with or without soap, p.r.s. including auxiliary washing preparations excluding those for use as soap, surface-active preparations • Surface-active preparations, whether or not containing soap, n.p.r.s. (excluding those for use as soap) • Washing preparations and cleaning preparations, with or without soap, n.p.r.s. including auxiliary washing preparations excluding those for use as soap, surface-active preparations 	<p>The product group comprises:</p> <ul style="list-style-type: none"> • All-purpose cleaners comprising detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaced, and which are either diluted in water prior to use or used without dilution. All-purpose cleaners shall mean products intended for indoor use in buildings which include domestic, commercial and industrial facilities. • Window cleaners comprising specific cleaners intended for the routine cleaning of windows, and which are used without dilution. • Sanitary cleaners comprising detergent products intended for the routine removal, including by scouring, or dirt and/or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms, showers and kitchens. This subgroup thus contains bathroom cleaners and kitchen cleaners

EUROSTAT data (PRODCOM) will therefore be used only to provide cumulative data on the overall cleaning products market in Europe (including disinfectants, soaps and other washing and cleaning preparations), broken down by Member State. This analysis will include all APCs, but will not allow for specific analysis of this product category.

3.1.1.1 Trade and production data, cleaning products market

The table below provides the PRODCOM production data (value and volume) for all cleaning products in 2013, including disinfectants, soaps and other washing and cleaning preparations.

The total value of EU-28 cleaning production in 2013 is €19 billion with 17 million tonnes produced. Germany has the highest production value (€5 billion) and the highest production volume (3.3 million tonnes). Note, countries marked with an asterisk (*) exclude some data which is anonymous. Figures may therefore be higher than indicated in Table 14.

Table 14: Production of manufactured cleaning products, EU-28, value and tonnes, 2013

EU-28	Value (€000s)	Sold volume (tonnes)
Austria*	372,619	421,327
Belgium*	547,217	557,297
Bulgaria*	63,052	74,552
Croatia	102,119	116,239
Cyprus	0	0
Czech Republic*	110,486	123,683
Denmark	205,600	167,633
Estonia	17,229	24,074
Finland	41,481	22,225
France*	872,608	1,656,392
Germany*	4,601,831	3,232,793
Greece*	117,792	91,311
Hungary*	228,066	230,961
Ireland*	18,784	20,474
Italy	2,673,495	3,003,591
Latvia*	0	0
Lithuania	10,116	12,507
Luxembourg	0	0
Malta	0	0
Poland*	816,017	923,134
Portugal*	149,367	246,307
Romania*	159,284	233,224
Slovakia*	5,656	6,608
Slovenia*	5,719	4,732
Spain	2,168,032	2,413,072
Sweden*	57,148	35,372
The Netherlands*	36,625	21,202
The United Kingdom	1,953,162	1,438,265
Total EU-28	19,265,686	16,592,287

* These figures include estimates or are incomplete, due to the inclusion of confidential data. For this reason, the columns do not equate to the EU-28 Total.

Source: PRODCOM (Eurostat)

According to the data shown in Table 16 and Table 17, the main importers of cleaning products in the intra-EU market are France, Germany and UK while the main exporters in this market are Germany, Italy and Poland. Additionally, the analysis of the Extra-EU market shows that the main importers are UK, Germany and France and the main exporters are Germany, UK and Italy.

These data show that Italy is mainly an exporter country of cleaning products while France is mainly an importer one. Other countries with relevant positions are Poland as an exporter in the intra-EU market and Germany that acts significantly in all the analysed roles.

In the same way that PRODCOM data is irreconcilable with current EU Ecolabel definitions for APCs, COMEXT data (international trade data) also consists of different categories which do not fully correspond to EU Ecolabel APC product categories. Table 15 shows the COMEXT codes and description for categories which primarily include soaps and other washing and cleaning preparations. It can also be seen that these do not directly relate to the PRODCOM categories indicated above. Even so, this data can be used to give an overall indication of both intra and extra-EU trade for cleaning products.⁵⁵

Table 15: COMEXT detergent code and description

Product Code	Description
34012090	Soap in paste form 'soft soap' or in aqueous solution 'liquid soap'
34012010	Soap in the form of flakes, granules or powders
34011100	Soap and organic surface-active products and preparations, in the form of bars, cakes, moulded pieces or shapes, and paper, wadding, felt and nonwovens, impregnated, coated or covered with soap or detergent, for toilet use, incl. medicated products
34011900	Soap and organic surface-active products and preparations, in the form of bars, cakes, moulded pieces or shapes, and paper, wadding, felt and nonwovens, impregnated, coated or covered with soap or detergent (excl. those for toilet use, incl. medicated products)

Table 16 shows the value and volume of intra-EU trade of cleaning products for 2013. Overall, this totals:

- an import value of €1,090 million
- an export value of €1,150 million
- imports of 623,793 tonnes
- exports of 690,659 tonnes.

Table 17 shows the value and volume of extra-EU trade of cleaning products for 2013. Overall, this totals:

- an import value of €302 million
- an export value of €487 million
- imports of 215,796 tonnes
- exports of 219,224 tonnes.

Table 16: Intra-EU trade of cleaning products, import and exports, 2013

Intra EU Trade	IMPORT		EXPORT	
	Country	Value (€million)	Quantity (100kg)	Value (€million)
Austria	43	194,848	8	17,343
Belgium	71	348,454	65	440,996
Bulgaria	9	42,852	4	29,439
Croatia	8	47,416	0	692
Cyprus	3	14,960	0	633
Czech Republic	32	178,434	26	146,934
Denmark	21	139,862	16	79,277
Estonia	4	14,542	1	2,248
Finland	21	80,538	1	2,107

⁵⁵ Intra-EU trade refers to the trade between the Member States of the European Union, while extra-EU trade refers to the trade between Member States and partner countries that are not members of the European Union.

France	167	966,219	66	274,158
Germany	133	758,634	304	1,899,952
Greece	17	94,548	9	49,206
Hungary	28	168,663	10	43,066
Ireland	54	211,946	8	24,810
Italy	49	299,228	205	1,377,243
Latvia	5	23,092	1	3,753
Lithuania	6	29,207	2	8,094
Luxembourg	7	23,359	1	4,391
Malta	2	9,415	0	0
Netherlands	72	420,593	77	362,389
Poland	56	385,558	120	805,672
Portugal	49	382,657	9	41,269
Romania	24	158,425	3	12,126
Slovakia	13	83,864	4	27,713
Slovenia	10	49,120	4	14,808
Spain	52	323,535	47	340,615
Sweden	33	195,601	24	132,164
United Kingdom	100	592,369	136	765,500
EU-28	1,090	6,237,939	1,150	6,906,598

Source: COMEXT trade data.

Table 17: Extra-EU trade of cleaning products, import and exports, 2013

Extra EU Trade	IMPORT		EXPORT	
	Value (€million)	Quantity (100kg)	Value (€million)	Quantity (100kg)
Austria	6	25,106	2	6,326
Belgium	22	157,013	7	20,365
Bulgaria	10	100,764	4	29,543
Croatia	2	15,546	2	8,804
Cyprus	1	3,805	0	126
Czech Republic	9	66,150	6	30,143
Denmark	4	22,912	11	42,636
Estonia	0	1,835	0	858
Finland	0	1,166	1	3,434
France	32	276,851	52	153,958
Germany	44	350,637	117	587,966
Greece	2	17,530	2	12,174
Hungary	2	13,344	3	17,159
Ireland	0	2,457	0	118
Italy	13	113,920	37	189,006
Latvia	1	5,787	3	10,013
Lithuania	1	6,756	5	26,754
Luxembourg	0	1	0	1
Malta	0	2,141	0	768
Netherlands	29	186,073	44	178,489
Poland	19	141,489	30	140,824
Portugal	2	19,172	12	97,462
Romania	9	73,520	3	11,029

Slovakia	2	11,646	0	1,766
Slovenia	1	3,913	2	11,956
Spain	12	82,408	19	108,681
Sweden	5	33,695	20	75,432
United Kingdom	73	422,331	104	426,456
EU-28	302	2,157,968	487	2,192,247

Source: COMEXT trade data.

3.1.1.2 Data sources and split

In place of the PRODCOM and COMEXT data, a number of more relevant sources will be used to better analyse the EU markets for APCs.

Market segmentation

The main sources of data used for the market segmentation analysis are the Euromonitor reports for surface care and toilet care. To ensure that this data is relevant to the revision of the EU Ecolabel for APCs, the data from these reports have been aggregated and then split into relevant categories, i.e. the same categories as outlined in the APC Ecolabel (all-purpose cleaners, window cleaners and sanitary cleaners). This is possible because of the high level of data segregation within each report. The results are shown in Table 18. The left column indicates how the data is categorised in the two Euromonitor reports, and the right column shows how these have been re-categorised.

Table 18: Market segmentation, breakdown of data sources

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’ – available for 7 EU countries.
Includes: <ul style="list-style-type: none"> Household care wipes (Inc. 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: <ul style="list-style-type: none"> In-cistern devices Rim blocks Rim liquids Toilet care mousse/foam Toilet care tablet/powder Toilet cleaning systems Toilet liquids 	<ol style="list-style-type: none"> All-purpose cleaners, includes: <ul style="list-style-type: none"> Household care wipes (inc. floor cleaning systems) Multi-purpose cleaners Floor cleaners Household antiseptics/disinfectants Window cleaners, includes: <ul style="list-style-type: none"> Window/glass cleaners Sanitary cleaners, includes: <ul style="list-style-type: none"> Kitchen cleaners Bathroom cleaners All toilet care Other surface cleaners, includes: <ul style="list-style-type: none"> Descalers Drain openers Oven cleaners Scouring agents

The total of all these categories (i.e. surface care + toilet care OR all-purpose cleaners + window cleaners + sanitary cleaners + other surface cleaners), will hereafter be described as ‘hard surface cleaning’.

Note, this highly segregated data is only available for seven European countries, across different regions of the EU, including: France, UK, Italy, Germany, Netherlands, Denmark and Poland.

Data summary, for seven European countries (2013):

- Total overall sales value for all hard surface cleaning products is €4,287 million⁵⁶, including:
 - surface care at €3,122 m
 - toilet care at €1,165 m

This breaks down into:

- Total sales value of all-purpose cleaners is €1,954 m
- Total sales value of window cleaners is €187 m
- Total sales value of sanitary cleaners is €1,557 m
- Total sales value of other surface care cleaners is €589 m

EU Market data

For Europe as a whole, Euromonitor (Passport) country reports are available for (1) surface care and (2) toilet care for each European country, including estimates up to 2018. The data will be used to provide an overall view of the European market for hard surface cleaning (surface care and toilet care) – which includes all-purpose cleaners, bathroom cleaners and kitchen cleaners, as specified in the EU Ecolabel for APCs. However, the data are not segregated into further categories and so cannot be used to provide an indication of the types of products included within surface and toilet care.

Data summary, EU-25 (2013):

- Total retail value of all hard surface cleaning products is €5,738 million, including:
 - total retail value of surface care at €4,232 m
 - total retail value of toilet care at €1,506 m

The sales value of all products for the seven countries outlined in the section above is €4,287 million – it can be assumed that these represent 75 % of the European market for household surface cleaning products.

Supply chain data

The data informing the analysis of the supply chain (including raw materials) is primarily from the 2009 Frost & Sullivan report, *Strategic analysis of the home and fabric care speciality ingredients market in Europe*. This report provides an overview of the supply chain of products in the home and fabric care market, which includes: speciality surfactants, functional polymers, fabric enhancers, active ingredients and rheology modifiers in home and fabric care as well as hard surface cleaners, car interior and upholstery cleaners, fabric care, furniture, shoe and leather polishes and dishwashing products.

As noted, this literature has a broader scope than this work. Hard surface care is thus included in this literature, but data cannot be further segregated to better match the categories in the present study. Therefore, this report will be used to provide an overview of the entire home and fabric care market, which includes relevant APC products, but the overview should be viewed with caution as it does not have to tightly match the real trends, sales or consumptions observed in this smaller sector.

⁵⁶ 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 further determine what proportion of this data relates to domestic only.

3.2 Market structure

3.2.1 *Global overview, market size*

The global market for household products (including household cleaners and bleach products, air fresheners and textile washing products) is valued at an estimated \$170 billion (or €123 billion – 2010 data). Overall, the EU is estimated to account for about 35 % of this market in terms of value – a total of \$60 billion (or €45 billion – 2010 data). This market is growing, representing more than 19% growth between the years of 2006-2011. It is estimated that this growth will lead to a global market worth \$203 billion by 2015 (or €152 billion).⁵⁷

Within this product group, the household detergents and cleaners industry is also expected to see overall growth in the next five years, although it is estimated that it will be lower between 2014 and 2018 (an estimated 5.8 % overall) than that which was seen between 2009 and 2013. This slowdown in market growth can also be seen in recent years, with growth peaking in 2010 and subsequently tapering off. The lower growth is the result of a number of factors, including the production of concentrated products, the maturity and high levels of competition in the market, and the sharp rise in volume sales from discount retailers.^{58,59}

In the long term, global growth will be driven by continued investment and new product development, as well as a focus on making cleaners more efficient.⁶⁰ Moreover, consumers are also becoming more concerned about hygiene. The global household cleaners market is therefore increasingly focusing on safe food storage, hygienic rubbish disposal, the importance of sanitary conditions and the need to disinfect household surfaces. Convenience is also an important issue for consumers of household cleaners. Changes in lifestyles mean that less time is allocated to cleaning, so consumers want products which work quickly but also maintain high standards of hygiene and cleanliness.⁶¹

Global demand for household cleaning products is also driven by rising incomes, product innovation and an overall improving economic climate. Manufacturers are also likely to concentrate on the promotion of 'green' products, as a direct response to increased consumer awareness of the environmental impacts of cleaning products.⁶¹

Typically, brand loyalty is difficult to maintain in the cleaning products markets, and manufacturers have to provide consumers with constant innovations and brand promotion. This is also a market which is categorised by a high level of price discounts and promotion. This suggests that, although the global market for cleaning products is expected to grow over the next five years, manufacturers will need to work harder to maintain a brand presence in this increasingly competitive and price-sensitive market.

⁵⁷ MarketLine Industry Guide (2014) *Household products*. Available at: <http://www.reportlinker.com/ci02166/Household-Products.html>

⁵⁸ A more mature market in general means higher levels of competition and more willingness for manufacturers/retailers to discount products. This is related to the market value – more discounted sales will mean profit margins are reduced = lower value growth

⁵⁹ Key Note (2014) *Household detergents and cleaners market report 2014*. Available at: <http://www.researchandmarkets.com/research/fvhlxs/household>

⁶⁰ Key Note (2014) *Household detergents and cleaners market report 2014*. Available at: <http://www.researchandmarkets.com/research/fvhlxs/household>

⁶¹ Global Industry Analysts (2012) *Global household cleaners industry*. Available at: <http://www.reportlinker.com/ci02166/Household-Products.html>

3.2.2 EU Overview, market size

Table 19 provides a summary of EU market size for surface and toilet care (see Table 18 for more detail about product categories). Combining the retail value for surface and toilet care gives an overall figure for the hard surface cleaning market in Europe.

Table 19: EU Overview, market size (retail value)

	Total EU retail value, €	Percentage
Surface care	€4.2 bn (€4,232,000,000)	74 %
Toilet care	€1.5 bn (€1,506,100,000)	26 %
Total (Hard surface cleaning)	€5.7 bn (€5,738,100,000)	

Source: Passport (Euromonitor) Market sizes for surface care and toilet care

* The surface care category includes window cleaning – see Table 18 for further details.

The data in Table 19 do not distinguish between the household and the industrial and institutional cleaning product markets. Moreover, many of the well-known household brands (such as *Flash*) are also available as industrial cleaners. Therefore, the figures in Table 18 - although primarily referring to household - will likely also include some products used for industrial purposes.

To better understand the Industrial cleaning market, AISE data have been analysed.⁶² According to AISE, the total market value of the overall detergents and maintenance products (for both household and industrial products) is estimated at €35.1 billion⁶³ (2013 figure, EU-28 + Norway (NO) + Switzerland (CH)). In comparison, the industrial cleaning products market is valued at an estimated €6.6 billion⁶⁴, 18 % of the total market value for all detergents and maintenance products.

Included within the data on industrial cleaners is the building care product category which includes: cleaning and maintenance products (general purpose cleaners, façade cleaning), floor care (hard surface and textile), sanitary cleaners, abrasive cleaners, sanitizing cleaners, air conditioners hygiene and surface disinfectants (hospital, sanitary, general, wipes). Building care is valued at €886 million (2013 figure, EU28 + CH + NO).⁶⁵ Part of this value will relate directly to APCs, but it is not possible to further define this. Therefore, the actual market size of industrial cleaning products will be smaller than the €886 million figure cited above.

Although the AISE data does not allow for further segregation, the following figures have been estimated based on data from Italy only (Table 20).

Table 20: Professional cleaning product consumption in EU28 + NO + CH by product type

	Volume (tonnes)	Value (€ million)
Detergents	383,106	495
Dewaxer	21,769	42
Emulsions/Floor wax	20,598	63
Sanitizer/disinfectant	75,564	124
Air freshener	10,488	31
Other products	78,473	132
Total	590,000	886

Source: based on 2012 data provided by Afidamp (Italian association of manufacturers)⁶⁶.

⁶² AISE website [Accessed September 2014 (www.aise.eu)]

⁶³ This figure includes laundry care, surface care, dish washing, maintenance products and bleaches.

⁶⁴ Available at: <http://www.aise.eu/our-industry/market-and-economic-data.aspx>

⁶⁵ AISE. (2013) *AISE activity and sustainability report*. [online] Available at: www.aise.eu/cust/documentrequest.aspx?DocID=233 [Accessed September 2014]

⁶⁶ Information retrieved from market analysis report for the development of Green Public Procurement for cleaning services. Preliminary report available at <http://susproc.jrc.ec.europa.eu/cleaning%20services/stakeholders.html>

The data in Table 20 can only be considered as an estimate. The industrial cleaning market for hard surface cleaners can be valued at an estimated €619 million (consisting of €495million of detergents and €124 million of sanitizer/disinfectant). A portion of the €132 million market for 'other products', may also include some relevant industrial products for this product group.

3.2.3 EU market structure, national level

Table 21 shows the retail value of the surface and toilet care market in Europe (EU-25) only. The total retail value of the European market for hard surface cleaning is €5.7 billion. This consists of the toilet care market (representing €1.5 billion retail value or 26 % of the total market for hard surface cleaning) and the surface care market (representing €4.2 billion retail value or 74 % of the total market for hard surface cleaning).

Table 21: Retail value of hard surface cleaning market (€ million), 2013

	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	1,150.9
Greece	104.3
Hungary	55.1
Ireland	42.2
Italy	737.0
Latvia	7.5
Lithuania	8.4
Netherlands	203.9
Poland	344.6
Portugal	130.3
Romania	86.7
Slovakia	43.7
Slovenia	15.9
Spain	466.5
Sweden	77.5
United Kingdom	995.4
TOTAL EU	5,738.1

Source: Passport (Euromonitor) Market sizes for surface care and toilet care

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).

Combined, these five countries represent 71 % of the market for total hard surface cleaning products. In all countries, the market is larger for surface care than for toilet care (Figure 1). The largest five markets for total hard surface cleaning products are typically the largest markets for surface and toilet care – with the exception of Poland which has a high comparative retail value for toilet care. The breakdown of surface care and toilet care products is further presented in Figure 2, below. This highlights the scale of the surface care market, in comparison to toilet care.

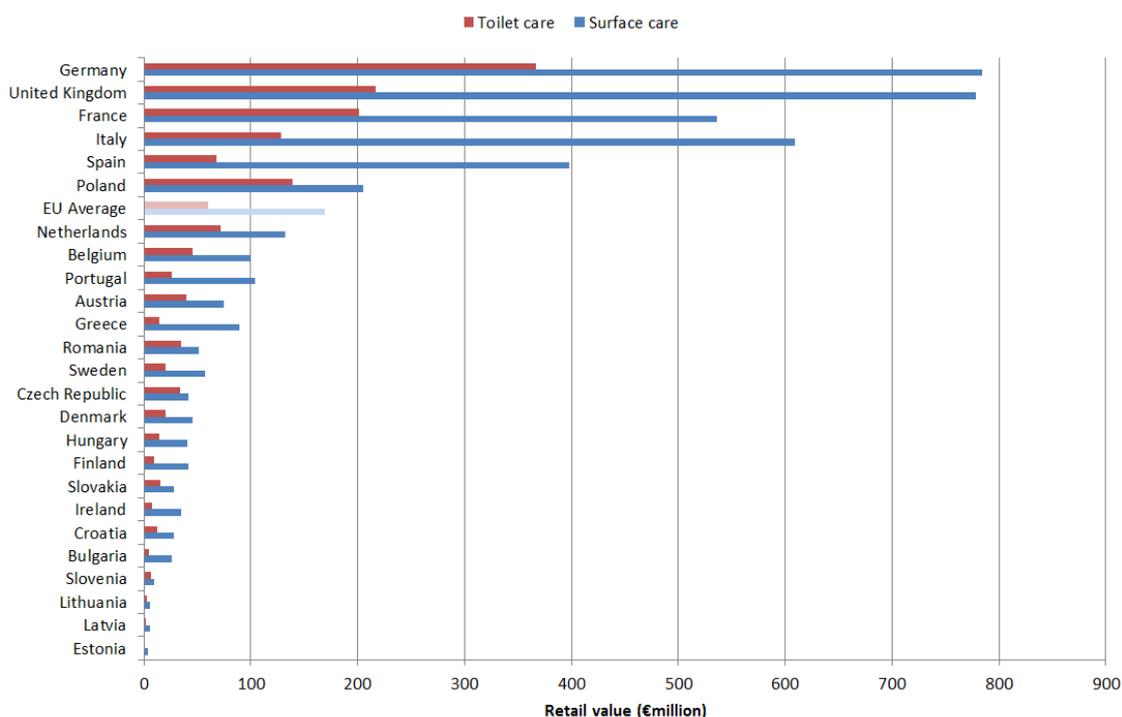


Figure 2: Retail value (€ million) for surface care and toilet care, EU, 2013

Source: Passport (Euromonitor) Market sizes for surface care and toilet care

3.2.4 Market segmentation

The hard surface cleaning market can be further segregated into:

- all-purpose cleaners (corresponding to general or multi-purpose cleaners)
- sanitary cleaners
- window cleaners
- other cleaning products.

This analysis cannot be performed at EU-28 level, as the supply of data is limited. The following seven Member States have been analysed: UK, Italy, France, Germany, Netherlands, Denmark and Poland. Table 22 shows the sales value in each of these countries for the hard surface cleaning market.

Table 22: Sales value (€ million) in seven European countries, hard surface cleaners by category, 2013

	Ranking of countries by sales value, per product type			
	All-purpose cleaners	Sanitary cleaners	Window cleaners	Other
Poland	5	5	3	5
Denmark	7	7	7	7
Netherlands	6	6	6	6

Germany*	2	1	1	1
France	4	3	5	4
Italy	3	4	2	2
UK	1	2	4	3

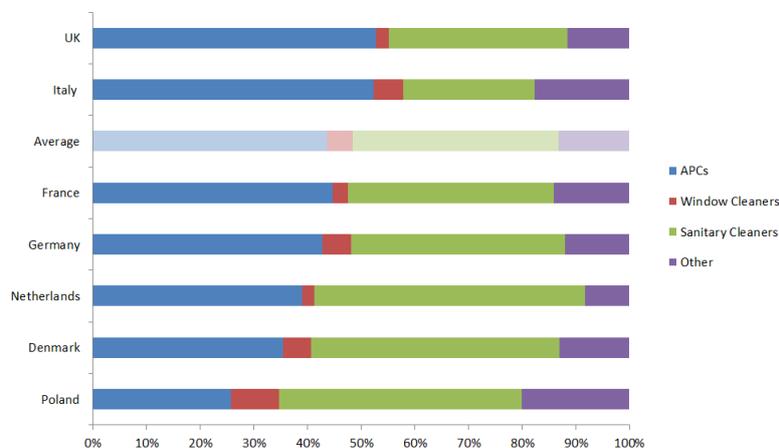
Legend: 1= highest sales value (indicated in green), 7= lowest sales value (indicated in red).

* no, data was available for Germany in 2013. However, Germany represents 20% of the market and so it is important to include data from the country to get a more reliable average. Data from 2007-2012 has therefore been extrapolated to estimate the 2013 sales.

Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

The total sales value across the seven European country is⁶⁷ €2,000 million for all-purpose cleaners, €1,600 million for sanitary cleaners, €200 million for window cleaners and €600 million for other cleaning products. The ranking shows that sales values for all product groups are highest in Germany (excluding all-purpose cleaners which has the highest sales value in the UK) and lowest in Denmark.

Figure 3 shows the percentage split of sales (based on € millions) for hard surface cleaning products, categorised by all-purpose cleaners (or multi-purpose cleaners), window cleaners, sanitary cleaners and other, ancillary cleaning products.



Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

Figure 3: Percentage split of sales (€ million) of hard surface cleaning products, by country, 2013

To summarise:

- On average, all-purpose (general or multi-purpose) cleaners represent the largest percentage sales of all cleaning products across Europe. By country, all-purpose (multi-purpose) cleaners range between 26 % of the market in Poland to 53 % in the UK.
- Window cleaners have the lowest proportion of sales in all of the European countries analysed. The percentage of sales ranges from 2 % in the Netherlands and UK to 9 % in Poland.
- Sanitary cleaners are also a popular product group, with a high percentage of sales, ranging from 24 % in Italy to 50 % of all hard surface cleaning products in the Netherlands.
- The percentage sales of other surface cleaners varies by country, but is typically low compared to all-purpose (general or multi-purpose) cleaners or sanitary cleaners. Percentage sales by country range from 8 % in the Netherlands to 20 % in Poland.

⁶⁷ To the nearest €100 million

3.2.5 All-purpose cleaners

The all-purpose cleaners' category can be further broken down into:

- multi-purpose cleaners
- household care wipes
- floor cleaners
- household antiseptics/disinfectants.

Table 23 shows the sales value in each of the seven countries analysed for the all-purpose cleaners market, broken down by product.

Table 23: Ranking of seven European countries by sales value, all-purpose cleaners by category, 2013

	Ranking of countries by sales value, per product type			
	Multi-purpose cleaners	Household care wipes	Floor cleaners	Household antiseptic/disinfectants
Poland	5	6	4	6 (joint)
Denmark	7	7	7	
Netherlands	6	5	6	5
Germany	3	1	2	2
France	4	3	3	4
Italy	2	4	1	3
UK	1	2	5	1

Legend: 1= highest sales value (indicated in green), 7= lowest sales value (indicated in red).

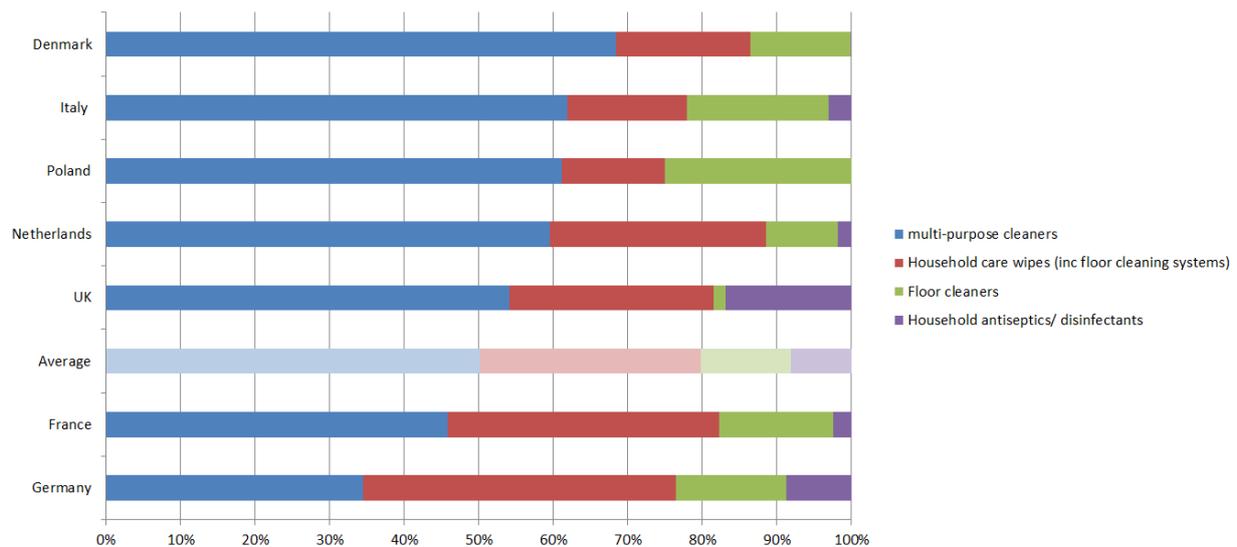
Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

The total sales value across these seven European countries is ⁶⁸€1,000 million for multi-purpose cleaners, €600 million for household care wipes, €200 million for floor cleaners and €200 million for household antiseptic/disinfectants. Based on the ranking of countries, the sales values for all product groups are consistently lowest in Denmark.

Notably, the market for household antiseptic/disinfectants is centred on the UK and Germany, with the sales value in Poland and Denmark being close to €0. Figure 4 shows the breakdown (in terms of percentage split of sales) of these products in the seven European countries.

Within the all-purpose cleaners category, multi-purpose cleaners typically have the highest proportion of sales across all of the European countries – with the exception of Germany where sales of wipes are very high (42 %). These wipes typically represent the second highest proportion of sales after multi-purpose cleaners.

⁶⁸ To the nearest €100 million



Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013)

Figure 4: Percentage split of sales (€million) of all-purpose cleaners, by country, 2013

One point of note is the UK sales of antiseptic/disinfectant. Sales value is by far the highest (in terms of value and percentage – at €95 million in the UK (17 % of total sales across all all-purpose cleaners) compared to near 0 % in Poland and Denmark.

3.2.6 Window/glass cleaners

The window/glass cleaners market cannot be further segregated, as this category consists of only one product.

Table 24 shows the sales value in each of the seven countries analysed for window/glass cleaners.

Table 24: Ranking of seven European countries by sales value, window/glass cleaners, 2013

Ranking of countries by sales value, window/glass cleaner	
Poland	3
Denmark	7
Netherlands	6
Germany	1
France	5
Italy	2
UK	4

Legend: 1= highest sales value (indicated in green), 7= lowest sales value (indicated in red).

Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

The total sales value of window/glass cleaners in the 7 Member States is €200 million.⁶⁹

3.2.7 Sanitary cleaners

The sanitary cleaners category can be further broken down into:

- kitchen cleaners

⁶⁹ To the nearest €100 million

- bathroom cleaners
- toilet care.

Table 25 shows the sales value across the seven countries analysed for the sanitary cleaners market, by product type.

Table 25: Ranking of seven European countries by sales value, sanitary cleaners by category, 2013

	Ranking of countries by sales value, per product type		
	Kitchen cleaners	Bathroom cleaners	Toilet care
Poland	4	7	4
Denmark	7	6	7
Netherlands	5	5	6
Germany	6	1	1
France	2	3	3
Italy	3	4	5
UK	1	2	2

Legend: 1= highest sales value (indicated in green), 7= lowest sales value (indicated in red).

Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

Across these seven Member States, total sales value of kitchen cleaners is⁷⁰ €100 million, bathroom cleaners is €300 million and toilet care is €1,200 million. Figure 5 shows the percentage split of sales for each of these categories across the seven countries analysed.



Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

Figure 5: Percentage split of sales (€million) of sanitary cleaners, by country, 2013

Notably, sales of kitchen cleaners are comparably small in Germany compared to other countries. Although in total this still represents a significant sales value (€6 million). It suggests that kitchen cleaners are less popular in this country. This is significant as Germany represents almost 20% of the cleaning product market and so is a possible opportunity for large sales growth of kitchen cleaners if a manufacturer can target this market.

The data is also available to further break down the toilet care category – this can be split into:

- toilet liquids
- rim liquids

⁷⁰ To the nearest €100 million

- rim blocks
- in-cistern devices
- toilet cleaning systems
- toilet care mousse/foam.

Table 26 shows the sales value across the seven countries analysed for toilet care, by product type. The highest sales value for each product category is indicated in green, and the lowest sales value for each product category is indicated in red.

Table 26: Ranking of seven European countries by sales value, toilet care by category, 2013

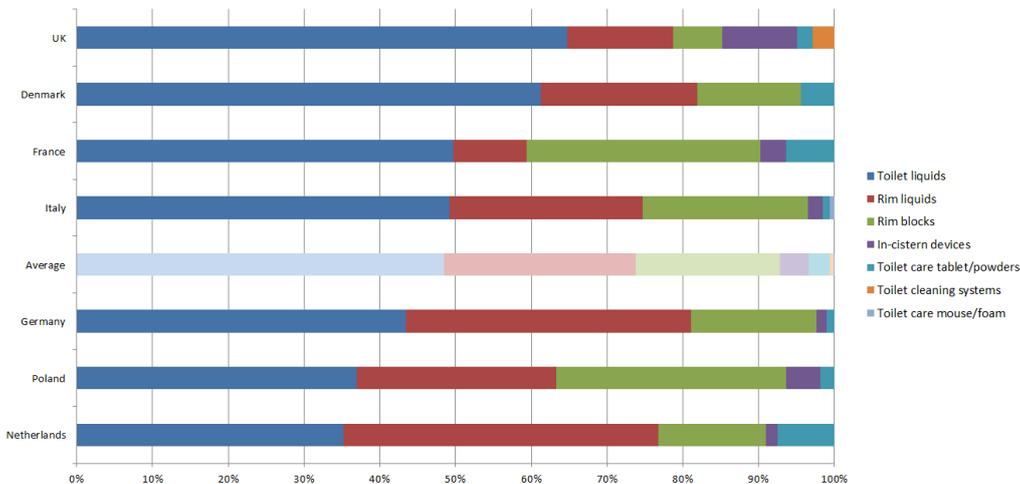
	Ranking of countries by sales value, per product type					
	Toilet liquids	Rim liquids	Rim blocks	In-cistern devices	Toilet cleaning systems	Toilet care mousse/ foam
Poland	5	2	4	3	2 (joint with all countries except UK)	2 (joint with all countries except Italy)
Denmark	7	7	7	7		
Netherlands	6	5	6	6		
Germany	1	1	2	4		
France	3	6	1	2		
Italy	4	4	5	5		
UK	2	3	3	1		1

Legend: 1= highest sales value (indicated in green), 7= lowest sales value (indicated in red).

Source: Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

The total sales values for these seven countries is €600 million for toilet liquids, €300 million for rim liquids, €300 million for rim blocks, €50 million for in-cistern devices, €7 million for toilet cleaning systems and €1 million for toilet care mousse/foam.

This data has been further analysed in terms of percentage of total sales in each country (Figure 6).



Source: Data from Passport - Euromonitor country reports on toilet care (2008-2013)

Figure 6: Percentage split of sales (€million) of toilet cleaners, by country, 2013

The percentage split of sales of each product varies across each country, with toilet liquids typically representing the largest portion of sales, followed by rim liquids. Rim blocks also typically make up a significant portion of total sales, with all other cleaning products representing less than 10 % of sales (closer to 15 % in the UK where the proportion of in-cistern devices and toilet cleaning systems is highest).

3.2.8 **Manufacturers and market share**

Based on the information from Euromonitor⁷¹ the European APC market (composed of the Surface care and Toilet care markets) is heavily dominated by a few well-known and globally recognised manufacturers (see Table 27 and Table 28). In the European market, there are also around 120 other global organisations operating with less than 1 % of the market.

Overall, the top six organisations in the European market for surface care had around 59 % of the market share in 2013. Procter & Gamble (P&G) has the largest market share (14 %) followed by Unilever Group and Reckitt Benckiser Plc. There are two other companies which have a market share of above 1%; Bolton Group (1.9 %) and Werner & Mertz (1.7 %). All other companies have a market share below 1 %.

Table 27: 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

* Surface care includes window cleaners. See Table 18 for further details

Source: Passport (Euromonitor) Surface care company shares (by global brand owner)

In 2013 the top six organisations in the European market for Toilet care had 52 % of the market share. SC Johnson had the largest market share (16 %).

Table 28: Largest manufacturers in Toilet care market, % breakdown by retail value, Europe, 2013

Manufacturers name	share of 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: Passport (Euromonitor) Toilet care company shares (by global brand owner)

Much like the market for surface care, there are only two other organisations in the toilet care market which have a market share of above 1 %; Werner & Mertz GmbH (1.7 %) and Colgate-Palmolive Co (1 %). The remaining companies each have a market share below 1 %.

3.2.9 **Brand data**

Table 29 and Table 30 identify the top cleaning product brands, by brand share. These show that not only is there a small number of organisations dominating the market, but also a small number of brands within these organisations hold the greatest market share.

⁷¹ Euromonitor country reports on toilet care (2008-2013)

Table 29: 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: Passport (Euromonitor) Surface care brand shares

Table 30: 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
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: Passport (Euromonitor) Toilet care brand shares

Private labels represent a large portion of available cleaning products, with a brand share of 18 % in surface care and almost 17 % in toilet care. This shows the potential influence that private labels can have over the trends in the cleaning products market.

This strong presence of private labels is primarily due to declining brand loyalty and typical lower price points. In fact, a number of the larger brands will compete primarily through price discounting and promotions – this prevalence of ‘low price’ promotions from larger brands explains why the value share of private label is steadily growing. For example, many retailers now offer price matching, promising to match the price of competitors’ branded goods. This is making it more important for private label lines to be differentiated, which means a focus on innovation and new product launches.⁷²

As shown in

Table 29 and Table 30, *Ecover* - the most prominent ‘green cleaning’ brand - has an estimated brand share of 0.1 % in both the surface care and toilet care markets.

⁷² Passport (Euromonitor) Toilet care brand shares

Although this is a low share, compared to private labels and the larger brands, this shows that environmentally focused products are increasing in terms of market presence.

It should be noted that these brand shares have typically remained the same in the surface and toilet care market over the past five years. For example, between 2008 and 2013, private labels have maintained a strong lead, with the same branded products making up most of the brand share.

3.2.10 Supply chain and raw materials

The market is sensitive to the changes in availability, and the impact this can have on price, of the raw materials used in products. The cleaning products market relies on a number of ingredients, including:

- surfactants
- builders
- biocides/preservatives
- bleaches
- optical brighteners
- fragrances
- dyes
- enzymes
- solvents.

the use of more natural products.

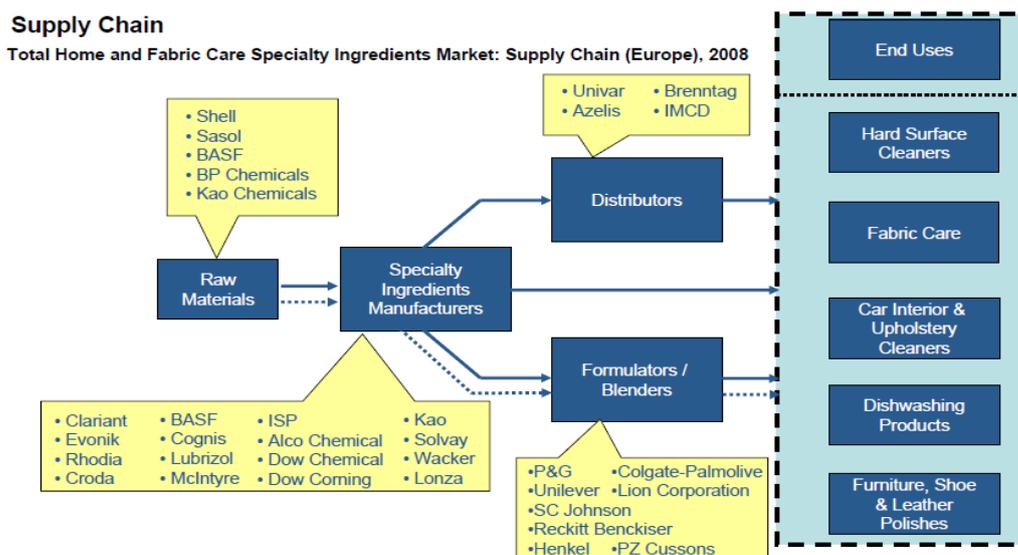


Figure 7: The supply chain for the home and fabric care specialty ingredients market, Europe, 2008

Source: Frost & Sullivan (2009) Strategic analysis of the home and fabric care specialty ingredients markets in Europe, July 2009

The market for these ingredients is in a mature stage, with most opportunities for growth in the development of 'green' or 'natural' chemicals and multi-functional products. There is also scope for market expansion in Eastern Europe. There are 40-50 companies in the home and fabric care specialty ingredient market⁷³, with the dominant players mainly

⁷³ This includes: fabric washing and care; hard surface cleaners; car interior and upholstery cleaners; furniture, shoe and leather polishes; and dishwashing products.

being speciality surfactants companies. However, the market is also characterised by an increasing degree of consolidation, which alters the number of competing organisations.⁷⁴

Figure 7 below shows the supply chain for the home and fabric care speciality ingredients market in Europe.

The specialist chemical market for home and fabric care is facing a number of challenges over the next decade which may alter current business practises. Table 31 ranks the top eight challenges which the industry is expected to face, along with an indication of the possible impact on organisations. The top challenge (volatility in oil prices) relates directly to the manufacture of raw materials. This is something which many organisations are now adapting to, and has helped drive innovation and research in the use of plant-based chemicals. The use of 'green chemicals' is also driven by consumers focusing on

Table 31: Impact of industry challenges on European home and fabric care speciality ingredients market

Rank	Challenge	Expected impact 5-7 years
1	Volatility in crude oil prices affects the costs across the supply chain	High
2	REACH creates scepticism in the home and fabric care speciality chemicals market	High
3	The trend for ultra-concentrates lowers substantially the amount of carriers and other chemicals used	High
4	The super-buyers exert pressure backwards in the supply chain	High
5	Consolidation in the industry alters the market dynamics	High
6	Product switching due to price shortens the life cycle of products	High
7	Increase in multifunctional products that cater for more than one 'job'	Medium
8	Increase in the use of natural proteins as fabric enhancers	Medium

Source: Adapted from Frost & Sullivan (2009) *Strategic analysis of the home and fabric care speciality ingredients market in Europe*
 Note, this table was produced in 2009

A number of other chemicals manufacturers have been seen to adapt as a result of these trends, in particular the increased demand for plant-based chemicals and shift toward liquid-based detergents:

- The **Arkema Group** has recognised the challenge of responding to environmental concerns and has shifted away from the use of non-renewable fossil fuels by focusing on innovations in plant chemistry; specifically by developing raw materials of plant origin. To emphasise this, the Arkema Renewable label is awarded to those products from the company which are made from raw materials of renewable origin (over 20 % non-fossil based carbon). These products currently account for an estimated 12 % of Arkema's sales, with a predicted rise to 15 % by 2016.⁷⁵
- **BASF** is also showing its commitment to reducing the use of fossil fuels as raw materials, and is using renewable materials where possible. The organisation estimates that of total chemical production, approximately 10 % currently uses renewable raw materials.⁷⁶
- **Clorox**, the global leader in chlorine bleach (19 % market share, 2008), launched *Green Works* in January 2008. The company claims that the product, which is made from lemons, corn and coconuts, is "at least 99% natural"⁷⁷

⁷⁴ Frost & Sullivan (2009) *Strategic analysis of the home and fabric care speciality ingredients markets in Europe*, July 2009

⁷⁵ Arkema, *Products made from renewable raw materials*. Available at: <http://www.arkema.com/en/innovation/responses-to-global-trends/renewable-raw-materials/> [Accessed 7 April 2014]

⁷⁶ BASF, *Renewable raw materials*. Available at: <http://www.basf.com/group/corporate/en/sustainability/dialogue/in-dialogue-with-politics/renewable-raw-materials/index> [Accessed 7 April 2014]

⁷⁷ Clorox, *Green Works*. Available at: <https://www.greenworkscleaners.com/>

As an output of these commitments, it is expected that an extended range of cleaning products with ingredients derived from plant-based sources will be available on the market in the near future.

3.3 Trends and innovation

3.3.1 Market trends

Figure 8 outlines the current trends and projections for toilet and surface care products (by retail value, average across EU) to 2018.

Both product categories are expected to see continued growth between 2013 to 2018, with surface care estimated to increase by 14 % (or €583 million) in this period (an average annual increase of around 2.6 %) and toilet care expected to increase by 20 % (or €286 million). This will equate to a European hard surface cleaning market with a value of €6,419 million, representing an average annual increase of approximately 3.7 %.

Figure 9 shows the retail value for the seven countries analysed throughout this report (actual retail value is shown for 2008-2013, with estimated retail value between 2014-2018). Combined, these countries account for over 70% of the total European market for hard surface cleaners, and so it is important to identify any trends in retail values in these countries, as this will have a large impact on overall European trends.

In summary, each country shows an upward trend in terms of retail value for hard surface cleaning products. The UK - currently the second largest market for all hard surface cleaning products - is expected to see the steepest increase, reflecting the importance for manufacturers to continue trying to develop brand loyalty in these mature markets.

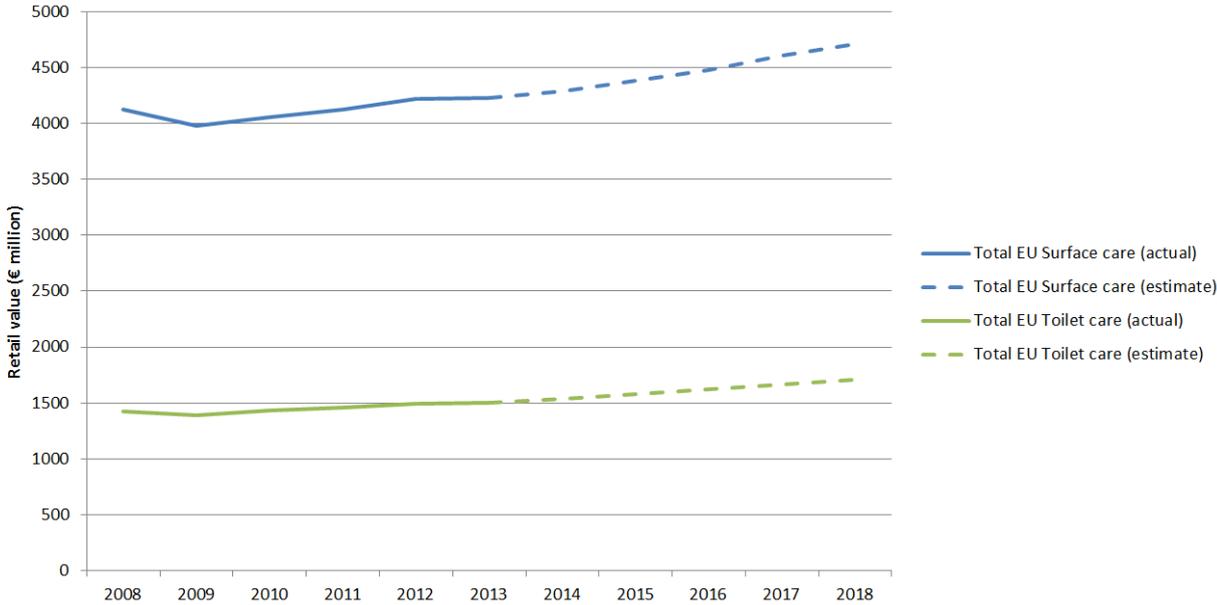


Figure 8: Trends in the surface care and toilet care market, EU-25 retail value (€ million), 2008-2018

Source Figure 7-9: 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. Data from Passport - Euromonitor country reports on surface care (2008 -2013) & country reports on toilet care (2008-2013)

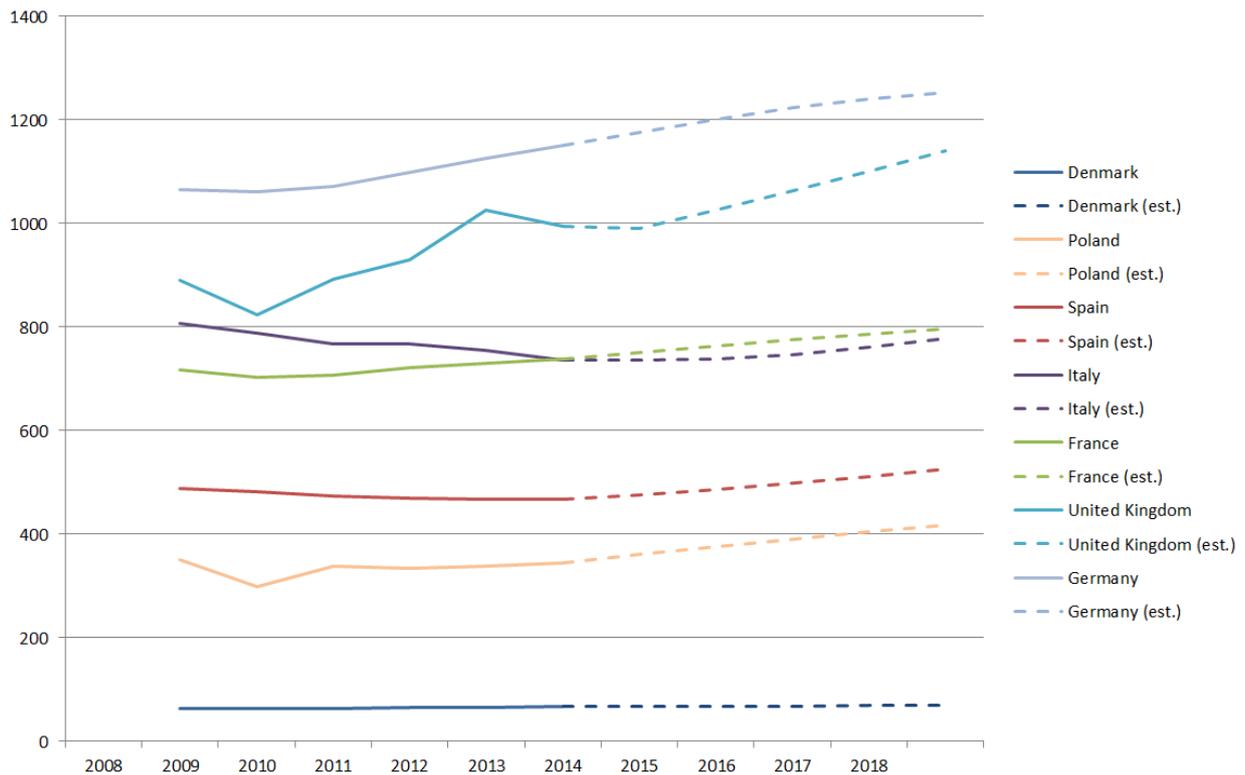


Figure 9: hard surface cleaning products (surface care + toilet care), retail value (€million)

Figure 10 shows the total sales values of these seven countries, for each category of product in the hard surface care market (all-purpose cleaners, window cleaners, sanitary cleaners and other surface care).

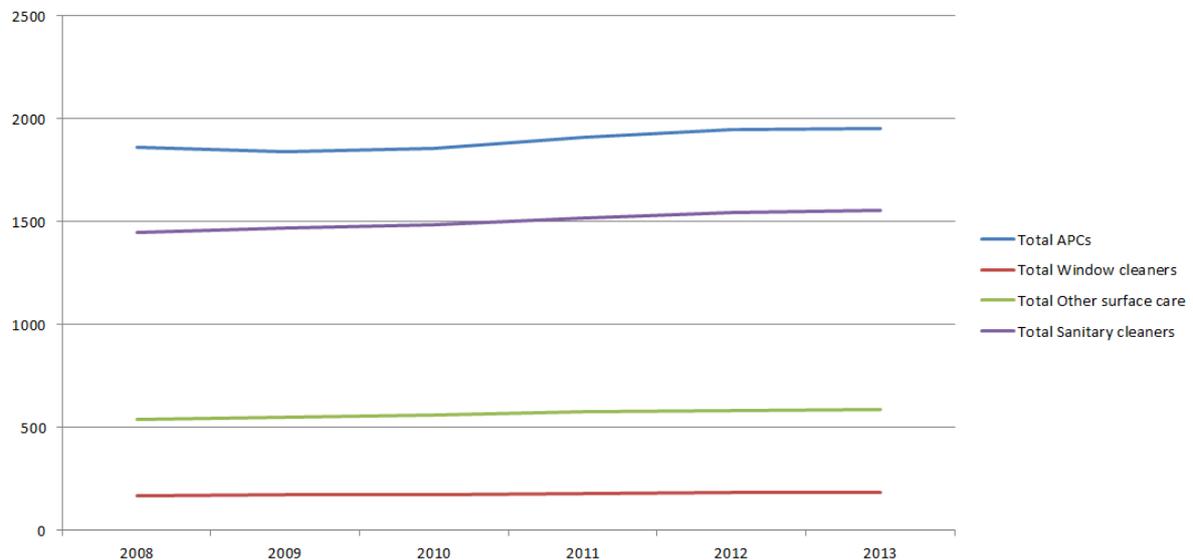


Figure 10: Sales value trend 2008-2013 (€million), Total of DK,FR,DE,IT,NL,PL,UK

Overall, sales values have remained steady in these categories between 2008 and 2013. However, each product type has seen a slight increase across this period. The percentage change in sales value for each of the categories has been further broken down in Table 32.

Table 32: Percentage change in the 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 antiseptics/disinfectants	31 %	5.4 %
all-purpose cleaners Total	5 %	1 %
Window/glass cleaners	11 %	2.0 %
Window cleaners Total	11 %	2 %
Bathroom cleaners	5 %	0.9 %
Kitchen cleaners	-1 %	-0.1 %
In-cistern devices	-19 %	-4.0 %
Toilet blocks	14 %	2.6 %
of which (Rim blocks)	20 %	3.6 %
of which (Rim liquids)	9 %	1.9 %
Toilet care mousse/foam	-29 %	-6.7 %
Toilet care tablet/powders	7 %	2.0 %
Toilet cleaning systems	-42 %	-10.2 %
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 Total	9 %	1.7 %

Overall, all product categories are up in terms of percentage growth, based on sales value. Between 2008 and 2013 there was an estimated total increase of 7 % across all hard surface cleaners (CAGR of 1.3 %).

However, 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 (CAGR of -10.2 % and -6.7 %, respectively). However, each of these products has a relatively low sales value in comparison to other product types, and so this large decrease has had little impact on overall product categories.

Notably, household antiseptics/disinfectants have seen a significant sales value increase (31 %) between 2008 and 2013 (CAGR of 5.4 %). Again, the overall sales value of this category is comparatively low, but the increase is still significant. This increase is primarily due to the increase in sales in the UK (58 % increase since 2008) which is the largest market for antiseptic/disinfectant products in Europe.

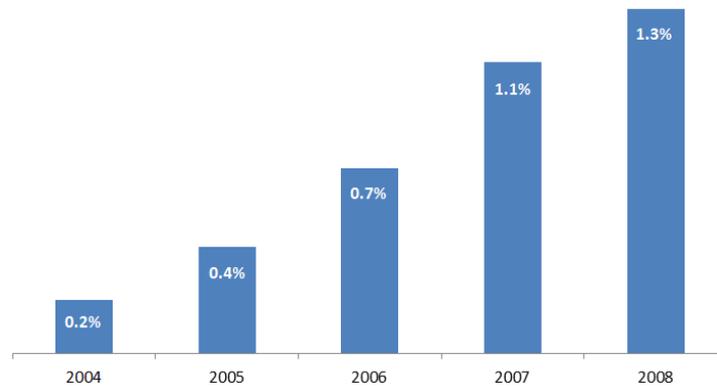
3.3.2 Environmental sustainable cleaning products

Consumers of household care and industrial cleaning are placing a higher emphasis on sustainability when purchasing products. This is reflected by the increasing number of product innovations and launches which focus on environmental claims. It is no longer just niche brands, but global brands which advertise the green credentials of cleaning products to encourage sales.

As a response to this increasing focus on environmental issues, a number of companies with a focus on sustainability have joined the market - including brands such as *Ecover* and *Method* which can now be commonly found in supermarkets across Western Europe.

Private label manufactures are also increasingly developing cleaning products with 'green credentials'.⁷⁸

Among the multinational 'green cleaning' brands, *Ecover* is the most prominent, with significant sales across main Western European markets. Figure 11 shows the scale of this growth between 2004 and 2008 in the UK (one of *Ecover's* significant markets) – *Ecover* saw an increased share of 1.1 % of the total household care market in this period (Figure 10).



Source: Adapted from Euromonitor International (2009)

Figure 11: Ecover's Share Increase (% of total household care) in the UK 2004- 2008

Typically, innovation in the household cleaning market is driven by larger brands, with occasional innovative product launches from smaller, niche brands. Where these brands are successful, private labels (such as own-branded supermarket products) typically move into the market with a similar product offering. 'Green' cleaning products have been a success across the cleaning products market, which has led to private labels launching similar offerings and establishing a significant presence in the environmentally-friendly cleaning market.

These private label green cleaning products include:

- UK: Tesco's *Naturally* range of household care products - made from plant-based ingredients, not tested on animals is free from synthetic colours.
- UK: Asda's *Eco-Friendly* brand includes toilet cleaner and multi surface cleaner.
- Switzerland: the Migros supermarket chain has launched a range of environmentally-friendly products under the brand *M-Plus*. In Switzerland, private label accounts for almost 30 % of the household care market (2008 estimate) which means the Migros product is well positioned to exploit the potential of a private label in the sustainability product market.
- France: the Monoprix supermarket chain sells the own-brand *Monoprix Vert* range of cleaning products, including toilet cleaners and all-purpose cleaner.

Private labels can often be purchased at lower prices than their branded equivalents – this drives the purchase of private label green products by consumers who are both eco-conscious and price-sensitive. However, although private labels are maintaining the balance between green benefits and price, these eco- products can often be considered as less efficient than the standard products.⁷⁹

However, the trend for environmentally aware 'green cleaning' remains strong. The key sustainability trends for cleaning product innovation include:

⁷⁸ Euromonitor International (2009) *Global Household Case: Green Cleaning – Still an Oxymoron?* September 2009

⁷⁹ Euromonitor International (2009) *Global Household Case: Green Cleaning – Still an Oxymoron?* September 2009

- the increased use of plant-based or 'green' ingredients
- an increase in availability of compacted or concentrated versions of products
- a focus on minimising packaging.

Each of these trends is outlined in more detail below.

3.3.2.1 **Green Ingredients**

A focus on sustainability of cleaning products has led to a number of manufacturers substituting commonly used chemicals for plant-based ingredients. P&G for example, has set a goal to replace 25 % of petroleum-based raw materials with sustainably sourced renewable materials for all products and packaging by 2020⁸⁰, alongside the eradication of phosphate use in its leading detergent brands.⁸¹

A number of household cleaning products also directly advertise the use of green ingredients. *Method*, for example, uses lactic acid, not phosphates in its toilet cleaner.⁸² *Ecover* (the largest 'eco-cleaning' brand) has carried out recent trials to identify whether algal oil is a suitable alternative to petroleum and palm oil based ingredients⁸³, and sells toilet cleaners which are "10 times less toxic than many of the leading brands". Other soap and detergent companies, such as Unilever, are also looking into algal oil, and are testing new products that contain it. OzKleen, a French 'power' cleaning product, contains no phosphates, ammonia or chlorine, and advertises its suitability for "strong cleaning with high environmental standards".

This increase in home care products with a reduced number of synthetic chemical ingredients is not only due to a rise in environmental awareness, but also because of consumers becoming more focused on the possible health risks of using 'harmful' chemicals. Some chemicals used in household cleaners have carcinogen properties and some evidence suggests that avoiding them in the long term helps prevent diseases such as cancer, respiratory problems or allergies.⁷⁹ In the US (2009) four in 10 respondents to a Mintel survey cited allergies as their reason for buying eco-friendly cleaning products.⁸⁴

However, there may be a limit to the increase in the use of 'natural' ingredients. A 2013 Datamonitor global survey found that 43 % of consumers think a drawback of these natural household products is that they are "too expensive". Another concern is the efficacy of these products; 26 % of consumers suggest that a major disadvantage of natural products is that they are "not as effective as non-natural products".⁸⁵

3.3.2.2 **Concentrated detergents and packaging innovations**

Concentrated cleaning products reduce the impact on the environment in a number of ways, compared to standard products:

- A cleaning product for the same number of uses can be concentrated into a smaller bottle, reducing packaging sizes.

⁸⁰ P&G, *Working to reduce environmental impacts*. Available at:

http://www.pg.com/en_US/sustainability/environmental_sustainability/renewable_resources/renewable_resources.shtml

⁸¹ GreenBiz (2014) *P&G is washing phosphate out of tide*. Available at: <http://www.greenbiz.com/blog/2014/01/28/pg-aims-remove-phosphates-leading-detergent-brands>

⁸² Available at: http://www.methodproducts.co.uk/ind_bath_toilet.html

⁸³ Ecover website. *Ecover and Algal Oil*. Available at: <http://uk.ecover.com/en/why-ecover/algal-oil-the-alternative-to-palm-oil/>

⁸⁴ Available at: <http://www.adweek.com/news/advertising-branding/mintel-households-embracing-eco-friendly-cleaning-products-105250>

⁸⁵ Datamonitor (2013) *Global Consumer Survey*. Available at: http://www.research-store.com/ibcasia/Product/2013_consumer_survey_data_household_care?productid=CM00270-003

- In turn, this minimises the amount of space needed to transport these products and so reduces transport related impacts.
- The amount of water used per dose of cleaning product is greatly reduced.

Concentrated products also reduce the manufacturers' production costs and can be more convenient for consumers when purchasing and storing products.

Concentrated cleaning products are becoming increasingly common across Europe, with large manufacturers launching concentrated products (for example, Procter & Gamble recently launched *Flash Liquid Gel*, a multi-purpose surface cleaner which is marketed as providing more effective cleaning while using less liquid).

The move towards more concentrated products will need to be accompanied by a greater amount of information on packaging, aimed at consumers. Consumers are increasingly becoming aware of the environmental benefits of concentrated products and are paying more attention to information about the number of doses being offered per package. Manufacturers of concentrated products are increasingly providing information on packaging to outline environmental and potential cost saving benefit to consumers.

Figure 12 identifies the countries which have seen high and low growth in the use of concentrated liquid detergents. It can be seen that Western Europe in particular is an area of high growth. Concentrated liquid detergents are expected to continue to see growth in this region and North America in particular.

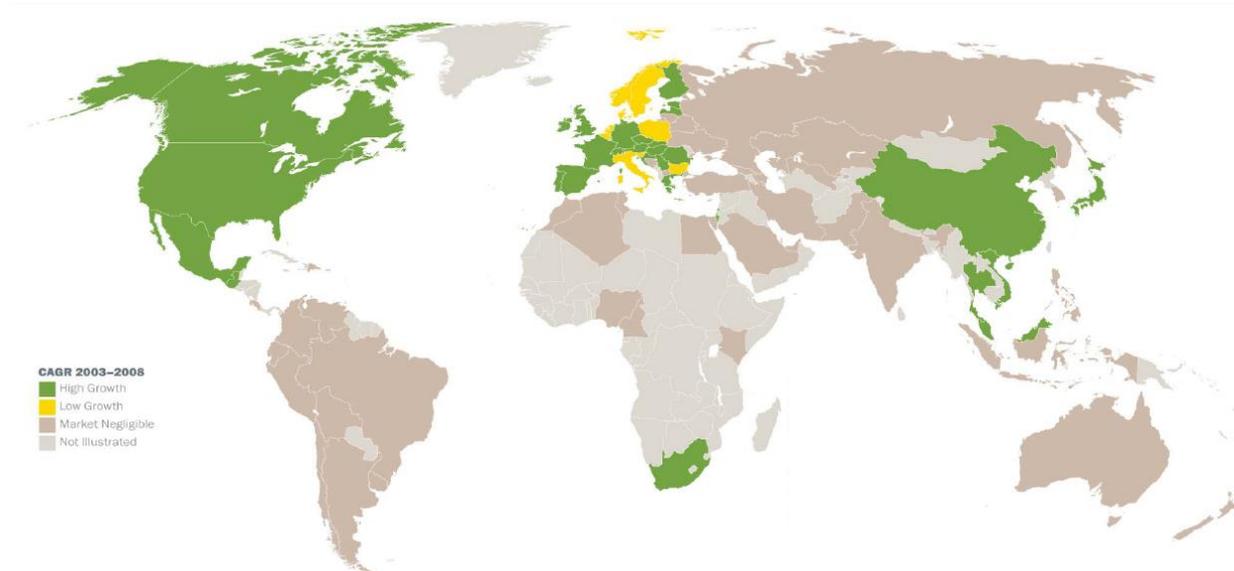


Figure 12: Household care – Concentrated liquid detergents, CAGR, 2003-2008

Source: Euromonitor International (n.d.) *Household Care – Green Cleaning*

Packaging innovation is relatively limited in the household cleaning market but, with consumers increasingly aware of the environmental impacts of packaging waste, a number of companies are focusing on this as an area of improvement – and using packaging innovation to distinguish their brands from the numerous others on the market. Recent packaging innovations include:

- *Ecover* has developed a new polyethylene (PE) bottle made from sugarcane, which is 100 % renewable and recyclable.
- Replenish multi-surface cleaners are sold in small 'pods' filled with concentrated cleaning product. The pod is screwed into a spray bottle (included as part of a starter kit for the product) and the user dilutes this with water – to create the spray-on cleaning product. This allows the customer to re-use the trigger spray bottle, by screwing in another pod once the first one runs out. This product also has the added benefit of reducing the need to transport water, which typically

makes up about 95 % of household cleaners – instead the user adds this water at home.⁸⁶

- Light-weight packaging is also common across numerous brands.

3.3.2.3 Barriers to sustainability

Consideration of sustainability is becoming vital in new product launches and brings a lot of opportunities to the cleaning market. There are also, however, barriers to the rise of green cleaning. Importantly, most consumers will put ease of use, price and efficacy of product (which may mean using an antibacterial product) ahead of sustainability considerations.

Table 33 outlines the key opportunities and challenges facing the household care products market.

Table 33: Opportunities and challenges in the household care products market

Opportunities	Challenges
<p>Increasing consumer concern about product safety and the harmful ingredients in some cleaning products – an opportunity for increased sales for green cleaning products.</p> <p>Global economies of scale can be utilised to help extend the green products trend – pricing will likely become more competitive in developing markets</p> <p>Global players can utilise mergers and acquisitions (M&As) to help establish a presence in the green products market.</p>	<p>Consumers are becoming increasingly price sensitive, making them slower to switch to more costly environmentally friendly products. There is a difficult balance between value for money and green credentials</p> <p>Many consumers do not consider environmental issues, and are unlikely to be persuaded of their benefits in their lifetime.</p> <p>Limited consumer budget will mean that environmentally friendly products will be most likely adopted if they have a subsequent saving in the use phase – for example, energy saving.</p> <p>Eco friendly products are often unable to match the cleaning capabilities of conventional products – a big problem for consumers who identify cleaning power as a top priority.</p>

Source: Adapted from: Euromonitor International (2009) *Global Household Care: Green Cleaning – Still an Oxymoron?*

3.3.2.4 Ecolabelling

Ecolabelling schemes are becoming widely used for a number of consumer products, including for cleaning and household care items. These labelling schemes can be particularly useful to private labels in the cleaning market as they can be used to persuade consumers of the benefits of these own-brand products, without the need for costly marketing strategies. For example, in the UK, Sainsbury's *Cleanhome* product range (launched in December 2007) has been certified by both the EU Ecolabel and Swedish Good Environmental Choice label.

In a number of markets, private labels were the first to provide environmentally friendly cleaning products. For example, in France, Monoprix launched a green surface care product in 2007. This product was ecolabelled, which helped retailers convince consumers about the benefits of the product. In contrast, there are limited ecolabelling schemes available in the USA, and branded products hold a significant market share.⁸⁷

⁸⁶ Available at: http://www.c2ccertified.org/products/scorecard/multi-surface_cleaner

⁸⁷ Euromonitor International (2009) *Global Household Case: Green Cleaning – Still an Oxymoron?* September 2009

Table 34 provides an estimate of the number of EU Ecolabel APC products manufactured and sold in Europe.⁸⁸ The first column (country) indicates the country which awarded the EU Ecolabel to various manufacturers and products; this is also the country in which the product is manufactured. 89 manufacturers have been awarded the EU Ecolabel for a total of 536 products.

Table 34: EU Ecolabel APC products manufactured and sold, by country (EU-28 + Norway)

Country	No. of manufacturers awarded the EU Ecolabel	No. of products awarded the EU Ecolabel	Countries where products are sold (Europe only)
Austria	7	18	Austria, Czech Republic, Denmark, Estonia, Germany, Greece, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia
Belgium	6	126	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Spain, Sweden, UK
Cyprus	1	2	Cyprus
Czech Republic	1	2	Czech Republic
Denmark	3	41	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, UK
Finland	1	4	Denmark, Finland, Sweden
Germany	18	100	Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK
Hungary	1	4	Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Spain, Sweden, UK
Italy	2	5	Italy
Norway	1	1	Belgium, Bulgaria, Cyprus, Denmark, Finland, France, Germany, Greece, Italy, Latvia, Malta, Netherlands, Poland, Portugal, Romania, Spain, Sweden, UK
Poland	4	14	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK
Portugal	2	2	Portugal
Spain	35	180	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK
Sweden	2	4	Sweden
UK	5	33	UK
TOTAL	89	536	

Source: EU Ecolabel E-Cat (last viewed on 07/08/2014) - <http://ec.europa.eu/ecat/>

In general, there is widespread availability of EU Ecolabel APCs across Europe. However, only 14 of 28 European countries (plus Norway) manufacture any products which have been awarded the EU Ecolabel; all other countries rely on import of EU Ecolabel products. Table 35 indicates how many EU Ecolabel products are available in each country. Spain has the highest number of products available (251), followed by France (200). Although all countries have EU Ecolabel products available to purchase on the market, this availability is more limited in Croatia and Cyprus (each with only six products available)

⁸⁸ ECAT (2014) [online] Available at: <http://ec.europa.eu/environment/ecolabel/facts-and-figures.html> [Accessed August 2014]

and Malta (nine products available). All other countries have at least 40 EU Ecolabel APCs available on the market.

Table 35: EU Ecolabel APC products on the European market (EU-28)

EU Member State	No. of EU Ecolabel PC products on the market*	EU Member State	No. of EU Ecolabel consumer APC products on the market*
Austria	79	Italy	111
Belgium	124	Latvia	68
Bulgaria	38	Lithuania	68
Croatia	6	Luxembourg	84
Cyprus	6	Malta	9
Czech Republic	60	Netherlands	131
Denmark	88	Poland	92
Estonia	65	Portugal	134
Finland	61	Romania	48
France	220	Slovakia	62
Germany	203	Slovenia	62
Greece	75	Spain	251
Hungary	53	Sweden	78
Ireland	41	United Kingdom	122

* Note, this may include the same product in different size packaging – e.g. 500ml and 750ml varieties, and so does not give an indication of the number of brands or product types available in each country.

Source: EU Ecolabel E-Cat (last viewed on 07/08/2014) - <http://ec.europa.eu/ecat/>

In addition to the EU Ecolabel which operates across the EU-28, the Nordic Council has a set of Nordic Swan ecolabel criteria for cleaning products and one for industrial cleaning and degreasing agents. APCs are included within this product group. The Nordic Swan can be awarded to these items which are produced and marketed in its five Member States, i.e. Sweden, Denmark, Finland, Norway and Iceland.

Due to the similarities between the EU Ecolabel criteria for APCs and the Nordic Swan criteria sets for cleaning products⁸⁹ and industrial cleaning and degreasing agents⁹⁰, it is worth identifying the number of products which carry these labels. Table 36 identifies the number of Nordic Swan cleaning products on the European market.

Table 36: Number of Nordic Swan labelled household and industrial cleaning products on the Nordic market⁹¹

Nordic Swan Country	No. of Nordic Swan-labelled cleaning products on the market (consumer and professional)
Denmark	491
Norway	20
Sweden	158
Finland	56
Iceland	Unknown
Total	725

Source: Danish Ecolabelling website/product catalogue, Norwegian Ecolabelling website/product catalogue, Swedish Ecolabelling website/product catalogue - last viewed on 13/08/2014

⁸⁹ Nordic Ecolabelling of Cleaning products, 026 Cleaning products, version 5.0, 20 September 2013. Available from <http://www.nordic-ecolabel.org/criteria/product-groups/>

⁹⁰ Nordic Ecolabelling of Industrial cleaning and degreasing agents, 065 Industrial cleaning and degreasing agents, version 2.5, 15 May 2013. Available from <http://www.nordic-ecolabel.org/criteria/product-groups/>

⁹¹ Nordic Ecolabelling of Cleaning Products, Background to ecolabelling, Version 5, 13 March 2013

There are a number of other national environmental labelling programmes operating in Europe which have criteria for APCs. Table 37 indicates the number of products available on the European market which have been awarded the Austrian Ecolabel (for all-purpose cleaners and sanitary cleaners⁹²) and the Czech Ecolabel (for all-purpose cleaners and cleaners for sanitary facilities⁹³).

Table 37: Number of Austrian ecolabel and Czech ecolabel cleaning products

Country/label	Number of products with environmental label
Austrian ecolabel (Umweltzeichen) – all-purpose and sanitary cleaners	110 (18 manufacturers)
Czech ecolabel (Ekologicky setrny vyrobek) - cleaners	4

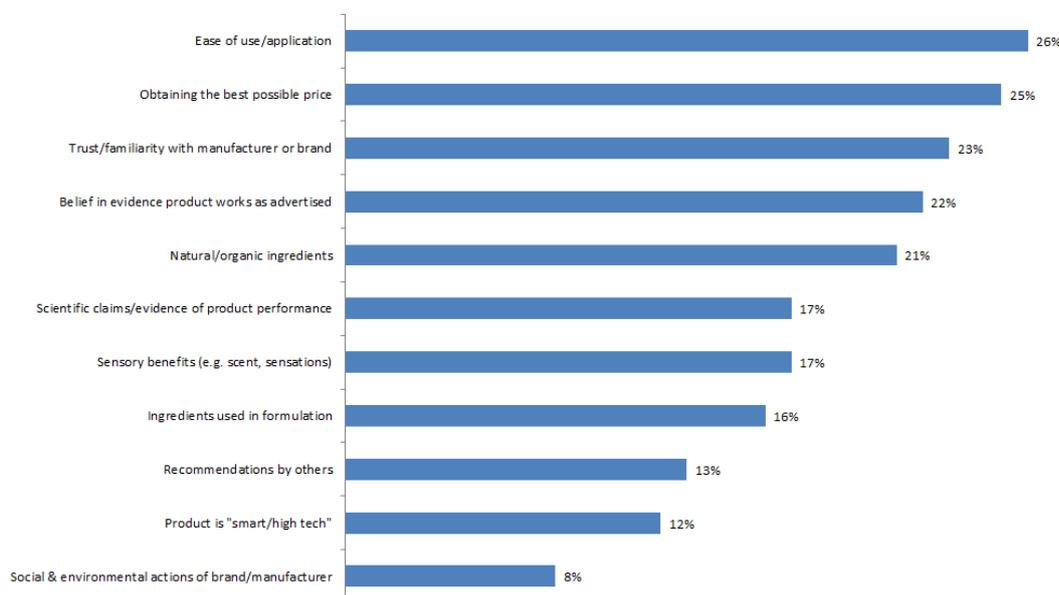
Source: Austrian Ecolabel, all-purpose and sanitary cleaners, UZ 30, version 5.2, July 2011. Available from http://www.umweltzeichen.at/richtlinien/Uz30_R5.2a_Allzweckreiniger_2011.pdf; Czech Ecolabelling scheme, all-purpose cleaners Available from <http://www.ekoznacka.cz/>

A number of labels are also used elsewhere in the world, including:

- **'Green Seal'** (USA) labels for 'cleaning products for household use', 'cleaning products for industrial and institutional use', 'speciality cleaning products for household use' and 'speciality cleaning products for industrial and institutional use'.
- **'Environmental Choice'** (New Zealand) labels for 'general purpose cleaning products' and 'commercial and institutional cleaning products'.

3.3.3 Consumer trends and market innovations

As shown in Figure 13, there are a number of factors which influence the consumers choice of household care products; most important of which are ease of use, price, brand trust, and product efficacy.



* Factors ranked by percentage stating 'highest influence' Source: Datamonitor (2013) Global Consumer Survey

Figure 13: Factors influencing choice of household care products

⁹² Austrian Ecolabel, all-purpose and sanitary cleaners, UZ 30, version 5.2, July 2011. Available from http://www.umweltzeichen.at/richtlinien/Uz30_R5.2a_Allzweckreiniger_2011.pdf

⁹³ Czech Ecolabelling scheme, all-purpose cleaners and cleaners for sanitary facilities. Available from <http://www.ekoznacka.cz/>

Several of these significant factors, are outlined below.

3.3.3.1 Ease of use

As a result of a change in lifestyles, busy consumers are doing more 'touch up' cleaning, i.e. cleaning which takes 15 minutes or less. A 2014 Datamonitor report found that in the USA, 70 % of total cleaning time is spent on 'touch-up' cleaning, compared to 40 % five years ago. A 2014 Datamonitor report also found that an estimated two thirds of consumers, globally, want to minimise the amount of time spent on household cleaning and laundry. Although this data is not available for the EU, it can be assumed that Europe has also seen a change in lifestyles and demand for more free time away from cleaning, which has facilitated the need for convenience cleaning products. Cleaning wipes, for example are becoming more widely available as these are easy to use and readily disposable.⁹⁴ There has also been an increase in launches of more innovative, 'time saving' products such as dispensers (e.g. Windex touch-up cleaner) or multi-purpose products (e.g. *Flash Magic Eraser*, which can be used on a variety of surfaces around the house).

3.3.3.2 Emphasis on efficacy of the product

Recent innovations in the household cleaning market have seen an increased emphasis on products which have longer lasting scents and cleaning actions.

For example, probiotics (typically seen by consumers in food products) are now starting to be used in cleaning products, as a response to the demand for longer lasting cleaning action. The concept behind probiotics is that they use 'friendly bacteria' to continue to clean (sanitize) a surface once applied, as opposed to harsher chemical products which only work for a brief period of time. For example, the American toilet bowl cleaner '*Flushy*' claims that probiotics (once activated by water) can consume odours and help keep the toilet sanitized for as long as a week.⁹⁵ This is also linked to the increase of fragranced cleaning products available on the market, as consumers may relate long lasting fragrance to long lasting cleaning.

The use of fragrances and the move away from harsh chemicals are described below.

3.3.3.3 Fragrance

The addition of fragrance to household cleaning products has become commonplace as a way of differentiating products which are otherwise very similar. Adding fragrance to household products has become a trend across a number of household product categories, not just – as would be expected – in air fresheners and laundry detergent products.⁹⁵

Much of the marketing around these fragranced cleaning products is the promotion of a fresh/fragrant smell during cleaning rather than a chemical smell which the user may also link to the health risks of using 'harsh' chemicals. Examples of new products which focus on the fragrance of the cleaners include: *Cif* cream cleaner with a 'cream strawberry and lily' scent; and *Cif* multi-purpose cleaners, scented like 'Ocean spray'. *Method*, an eco-focused brand also offers scented cleaning products, such as spearmint scented toilet cleaner or a multi-purpose lavender or pink grapefruit scented spray.

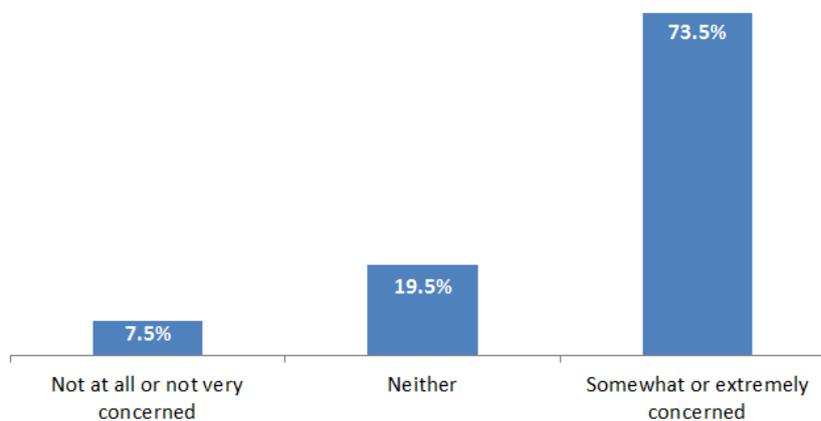
⁹⁴ Available at: <https://www.smithersapex.com/market-reports/insight-do-you-know-the-five-most-important-trends-in-the-cleaning-products-market.aspx>

⁹⁵ Datamonitor (2014) *Household Products Focus: Emerging trends to watch*. Webinar, presented by Tom Vierhile April 3 and 4 2014.

Typically, the addition of fragrances is used to add value to household care products. This had led to a crossover between brands (owned by the same manufacturer), including the combination of *Flash* all-purpose with *Febreze* (Thai orchid or cotton fresh fragranced) or the *Windex* touch-up cleaner with *Glade* (lavender and peach blossom scented). This also allows manufacturers to sell products which compliment these cleaning products, such as similarly fragranced air fresheners.

3.3.3.4 Move away from harsh chemicals

Steam cleaners are becoming more popular as an effective and chemical free way to sanitize the home. Importantly, chemicals are not used in steam cleaning – only water and heat. This appeals to consumers who are becoming more worried about the safety of the cleaning chemicals they are using, particularly in the home. Figure 14, shows the results of a global survey which shows that 74 % of people asked are “*somewhat or extremely*” concerned about the safety or harshness of chemicals used in household cleaning products.



Source: Adapted from Datamonitor Global Consumer Survey (2013)

Figure 14: Global response to survey question: “How concerned are you about the safety/harshness of chemicals used in household cleaning agents?”

Product innovations in the cleaning market are pushing the ‘safer use of chemicals’, for example through a move away from bleach to oxygen or hydrogen peroxide – this links with the increasing popularity of sustainable cleaning products which use ‘natural’ chemicals.

However, consumers are also becoming increasingly focused on good hygiene practices, and surface cleaners are a critical part of maintaining a sanitary environment in the home.

3.4 Conclusions

Based on the information collected in the market analysis, the highlights and main conclusions are summarised below:

- The total retail value of the EU market for hard surface cleaning (surface and toilet cleaning) (EU-25) is €5.7 bn. This consists of a surface care market with a retail value of €4.2 bn (74 % of all hard surface cleaning products) and a toilet care market with a retail value of €1.5 bn (26 % of all hard surface cleaning products).
- The hard surface cleaning market can also be categorised as: All-purpose cleaners (46 % of the total hard surface cleaning market, on average across Europe),

window/glass cleaners (4 % of the total hard surface cleaning market, on average across Europe), sanitary cleaning (36% of the total hard surface cleaning market, on average across Europe) and other ancillary cleaning products (14 % of the total hard surface cleaning market, on average across Europe).

- The I&I cleaning products market is valued at an estimated €619 million (this includes, but is not made up exclusively of APCs and relevant cleaning products. However, this data cannot be further disaggregated).
- The market for APCs is expected to continue to grow – with an expected 14 % increase in total sales value in surface care, and a 20 % increase in toilet care by 2018.
- Private label household cleaning products are common across Europe and represent 16-18 % of all brands available. The rest of the market is dominated by a small number of large manufacturers, including: SC Johnson, Colgate-Palmolive Co, Unilever, Proctor & Gamble, Henkel and Reckitt Benckiser Plc.
- Innovation in the cleaning products market is driven by large brands, with private labels typically developing similar products after they are more established. However, in a number of markets, private labels were first to develop environmentally friendly cleaning products (outside of the niche products, operated by small manufacturers).
- Consumer choice of cleaning products is driven by ease of use of the product, price, health and safety during use of the product and efficacy of the product. This has led to a number of developing trends in the cleaning market, in particular: the use of fragrance in cleaning products and the move away from harsh chemicals as a response to consumers who are becoming more worried about the safety of harsh cleaning chemicals.
- Environmental Sustainability in the cleaning products market is becoming important for consumers, and therefore manufacturers. Innovations in the sustainable offerings include an increased use of green/plant-based chemicals, an increase in concentrated products and a focus on minimising packaging.

4. TECHNICAL ANALYSIS

4.1 Technological aspects

4.1.1 Supply chain for APC production

An overview of the supply chain for home and fabric care products, including APCs, is shown in Figure 15. Manufacturers of APCs (formulators/blenders) such as Procter & Gamble, Unilever and Henkel, acquire ingredients such as surfactants from speciality manufacturers and then blend these to produce APCs.

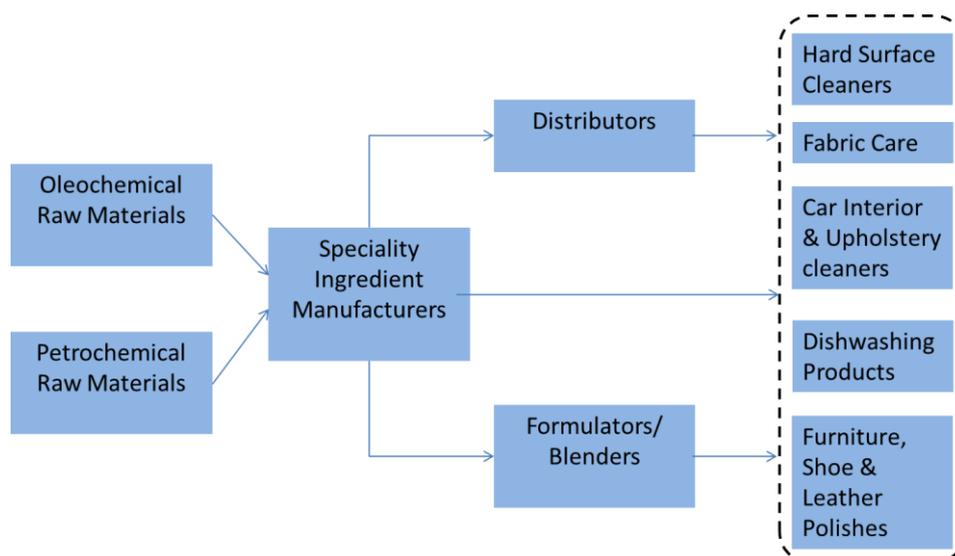


Figure 15: Supply chain for home and fabric care products

The raw materials used for the production of detergent ingredients are obtained either from oleochemical sources or petrochemical sources. Oleochemical raw materials are derived from plant and animal fats; these include coconut oil, tallow, palm kernel oil and palm oil. These raw materials are often referred to as *renewable* raw materials. Petrochemical raw materials are derived from crude oil or natural gas; these materials are often termed *synthetic*.⁹⁶ According to the American Cleaning Institute, there is no inherent environmental advantage to choosing surfactants from one source over the other and there are environmental trade-offs associated with both oleochemical and petrochemical sources.⁹⁷ A further investigation into the use of oleochemical sources for surfactants is presented in the annex to the technical report.

Companies active in the European market for detergent speciality ingredients include Clariant, Rhodia, Solvay, Rohm & Hass, Cognis, Croda, Dow Corning, Elementis, Alco Chemical and BASF amongst others. Within the home and fabric care ingredients sector, speciality surfactants hold the largest market share in Europe.⁹⁸

⁹⁶ Further data on the production process and their relevance from the environmental point of view can be found in the Annex of the accompanying Technical Report for the Revision of EU Ecolabel for All-purpose cleaners and sanitary cleaners. Available at http://susproc.jrc.ec.europa.eu/all_purpose_cleaners/stakeholders.html

⁹⁷ Sustainability resources from the American Cleaning Institute, available from: http://www.cleaninginstitute.org/sustainability/some_facts_about_4.aspx

⁹⁸ Henkel (2011) *The world of fragrances; how washing and cleaning can affect the senses*. Available at: <http://www.henkel.com/henkel-headlines/news-2011-20111024-the-world-of-fragrances-34010.htm>

4.1.2 Description of the production process

The first step of APC production is to select the ingredients. This is done according to several criteria, which will typically include cost, sustainability, human health, environmental safety and performance. Detergent manufacturers use different approaches to ensure that their products have the least impact on the environment and human health. One example of such an approach is the *Greenlist*TM process developed by SC Johnson, which scores ingredients by their impact on the environment and human health.⁹⁹ Using the process a final product score is obtained, which takes into consideration the environmental classifications of both chemical and packaging constituents.¹⁰⁰

The manufacturing process employed for APC products in general consists of mixing and pumping the ingredients into mixing vessels. The exact process employed will depend on the manufacturer and the format of the final product. Extraction of raw materials is in general done by other agents than the manufacturers. Detergents are produced either in a batch process or a continuous process. The batch process is the simplest; ingredients are introduced to an agitated tank, and additional mixing or heating can be provided through a recirculation loop.¹⁰¹ In comparison, continuous processes are more sophisticated and better suited to large-scale operations. In a continuous process both dry and liquid ingredients are added and then blended using in-line mixers.

The final in the manufacturing process is packaging. APCs are typically packed in plastic bottles, due to the large share of water in the final composition. During the selection process for packaging materials, product compatibility, product stability, cost, safety, solid waste impact, ease of use and shelf appeal are all taken into consideration.

4.1.3 Ingredients

APCs are generally composed of five types of ingredients: surfactants, builders, solvents, antimicrobials, and miscellaneous ingredients.⁹⁵

Surfactants are the most important group of ingredients, present in all types of detergents. Their job is to fully moisten the surface, remove soil and stains, and keep the soil in the aqueous solution. In general, both adsorption and detergency performance increase with increasing chain length.¹⁰² Anionic, non-ionic, and amphoteric surfactants are used mainly for cleaning. Cationic surfactants are often used as antimicrobials.⁹⁵

The function of *builders* is to support detergent (surfactant) action and to soften water, i.e. move calcium ions, which arise from the water and from soil, into solution.¹⁰³

Solvents are used to dissolve fatty soil and food residues. Their job is also to cause rapid drying of the cleaned surface, and to dissolve surfactants.¹⁰³

Antimicrobials are pesticides which kill bacteria, fungus or mildew on surfaces. Sometimes the same materials are used in smaller amounts as preservatives.⁹⁵

The category *miscellaneous* includes all other ingredients, such as abrasives, fragrances, dyes, thickeners, hydrotropes (substances which keep a mixture from separating),

⁹⁹ For more information <http://www.scjohnson.com/en/commitment/focus-on/greener-products/greenlist.aspx>

¹⁰⁰ S.C. Johnson's Greenlist Program for raw material selection: pushing the sustainability frontier, presentation by Dr Pat Guiney, S.C. Johnson & Son Inc. at Minnesota Green Chemistry Conference, January 2012. Available from:

<http://www.greenchemistrymn.org/sites/greenchemistrymn.org/files/presentations/Pat%20Guiney.pdf>

¹⁰¹ Handbook of Detergents, Part F: Production, Surfactant Science Series Volume 142, Uri Zoller and Paul Sosis, CRC Press, 2009.

¹⁰² Ullmann's encyclopaedia of industrial chemistry. 2012. Laundry Detergents, 2. Ingredients and Products

¹⁰³ Vollebregts, L. and P. van Broekhuizen, 1994. *Tussen wasmand en afdruiprek. Over de aard, gezondheidsrisico's en milieueffecten van was- en reinigingsmiddelen en tips voor een veilig en minder milieubelastend product.* Chemiewinkel UvA, Amsterdam

preservatives and anything else. Auxiliary agents are used in small quantities only, each with its own specific purpose.¹⁰²

4.2 LCA screening: number of studies and methodology

Before performing an LCA on the environmental performance of APCs along their life cycle, a detailed LCA screening of publicly available studies has been carried out. This screening has allowed the identification of the main environmental hotspots and their alternatives for this product group as well as the evaluation of the need for performing additional studies.

This section includes an LCA literature review and evaluation on APCs in accordance with several criteria, a bespoke LCA, a sensitivity analysis on APCs, and a summary of the findings.

4.2.1 Selection criteria

Relevant LCA studies were identified in literature and critically reviewed for the robustness of their results. The criteria considered for this assessment were:

- Subject of the studies: The analysed products should have representative features of the product group, sub-categories, technologies or specifications.
- Functional unit (FU): The functional unit refers to a quantified performance of a product system for use as a reference unit in LCA studies.
- Time-related coverage of data: This refers to the year the inventory data of the analysis is based on; studies should ideally be less than 4 years old.
- Comprehensiveness and robustness: This refers to the environmental impacts considered in the study. Impact Categories should be comprehensive, ideally reflecting the European Commission's Product Environmental Footprint (PEF) methodology or other recognized LCA methodologies and scientifically robust when considered against the evaluation provided in the JRC's ILCD Handbook. Studies should also be cradle-to-grave.
- Reliability: This refers to the information and the data quality provided by the authors. Studies should ideally be subject to an external critical review.

The different studies' compliance with the ISO standards for life cycle assessment (ISO 14040 and 14044) was considered as well as the information provided regarding:

- Cut-off criteria: According to the ISO 14040/44:2006 and the ILCD Handbook, cut-off criteria should be documented in an LCA study. The reasons for assuming cut-offs should be stated and their effects on results should be estimated.
- Allocation: Allocation rules should be documented in the description of the studies.
- Data quality requirements and data sources: Data quality level and sources of primary and secondary data should be documented, e.g. information on the geographical and technological representativeness of the selected LCA studies.
- Assumptions: Information and documentation of the important assumptions is crucial to ensure the transparency and reproducibility of the results. Therefore, information about the assumptions made whilst modelling should be provided.

4.2.2 Selection of reports

An overview of available and relevant studies is shown in Table 38. Among them, the following studies were selected for a more detailed revision: ADEME 2004¹⁰⁴, Koehler and Wildbolz 2009¹⁰⁵, and Kapur et al. 2012¹⁰⁶. Even though the study by ADEME dates from 2004, it was selected for further revision because of the limited availability of studies and because it was well documented. The studies disregarded for further analysis and the reasons are included in Table 39.

¹⁰⁴ ADEME 2004. Comparative life cycle assessment study, 3 cleaning products for kitchen surfaces

¹⁰⁵ Koehler A and C Wildbolz, 2009. Comparing the Environmental Footprints of Home-Care and Personal-Hygiene Products: The Relevance of Different Life-Cycle Phases. ES&T 43(22):8643-8651

¹⁰⁶ Kapur A, C Baldwina, M Swanson, N Wilberforce, G McClenachan, M Rentschler, 2012. Comparative Life Cycle Assessment of Conventional and Green Seal-Compliant Industrial and Institutional Cleaning Products. Int J LCA 17:377-387

Table 38: Overview of studies on all-purpose cleaners

Source	University of Tennessee 1992	ADEME 2004	Koehler and Wildbolz 2009	Kapur et al. 2012	AISE. 2013 (Charter update 2010. Version 1 October 2012, updated 17 June 2013: floor cleaners included)	AISE. 2013 (Charter update 2010. Final version 1 October 2013)
Title	Household cleaners: environmental evaluation and proposed standards for general purpose household cleaners	Comparative LCA study 3 cleaning products for kitchen surfaces	Comparing the Environmental Footprints of Home-Care and Personal-Hygiene Products: The Relevance of Different Life cycle Phases	Comparative LCA of Conventional and Green Seal-Compliant Industrial and Institutional Cleaning Products	ASP* substantiation dossier: Dilutable all-purpose and floor cleaners.	ASP* substantiation dossier: Household trigger spray cleaners (glass/window, bathroom, kitchen and all-purpose for hard surfaces)
Subject of the study and goal	Environmental evaluation of general purpose household cleaners, proposed standard for certification of general purpose household cleaners	Comparative ISO LCA study on kitchen cleaning with spray, wipes, or liquid household cleaning	LCA of 9 home-care and personal-hygiene products was conducted to determine the ecological relevance of different life cycle phases and compare the environmental profiles of products serving equal applications. I.e. household-cleaning agents (kitchen, window, and bathroom cleaners), detergents (liquid and powder detergents, detergent booster), soaps (liquid and bar soaps), and a toilet-care product	LCA to assess the environmental impacts of industrial and institutional cleaning products that are compliant with the Green Seal Standard for Cleaning Products	Get an understanding of the environmental impacts of the various stages of the life cycle of dilutable all-purpose and floor cleaners.	Get an understanding of the environmental impacts of the various stages of the life cycle of household trigger spray cleaners: 1. bathroom, and 2. window/glass
Study type	Evaluation of life cycle health and environmental impacts of all-purpose cleaners (NOT a quantitative LCA)	LCA	LCA	LCA	Screening LCA**	Screening LCA**

Source	University of Tennessee 1992	ADEME 2004	Koehler and Wildbolz 2009	Kapur et al. 2012	AISE. 2013 (Charter update 2010. Version 1 October 2012, updated 17 June 2013: floor cleaners included)	AISE. 2013 (Charter update 2010. Final version 1 October 2013)
Functional Unit	Not applicable.	1 year of kitchen cleaning in France for 1 household: i.e. all kitchen hard surfaces, excluding floor. Included are worktop, cooker top, kitchen cabinets, freezer, refrigerator, micro-wave, kitchen table, kitchen sink, wall tiles and cooker hood.	1 typical application	Annual cleaning of 100,000 ft ² of office space (ca. 9,290 m ²)	Preparation of 1 L of wash water	Wetting a surface of 1 m ²
System boundaries	Ingredients, packaging, use, disposal. It was found that in a large number of cases, MSDSs listed ingredients which were not found on the label and vice versa. MSDS sheets, regulated by the Occupational, Safety and Health Administration (OSHA), only list hazardous ingredients present at greater than 1% concentration, except carcinogens, which are listed at 0.1%.	Production of the primary product (at least 99.3% of the product composition was taken into account), production of the packaging material, transport of the products to the shop, usage of this product in consumer homes, end-of-life stage of the product materials.	1. Cradle to gate analysis: raw chemical production and supply, finished product manufacturing (formulation), and packaging. 2. Cradle to grave analysis (entire LC): production, sales and distribution of packaged products to whole-sale and retailers, consumer use, and end-of-life (waste disposal, recycling, and waste water treatment).	Cradle to grave	Cradle to grave: raw material production, packaging production, transport, use phase, end of life.	Cradle to grave: ingredients, formulation, packaging, transport, end of life. NB: The impact of the use phase related to the trigger spray cleaner (i.e. removal of the product using a cloth or towel) is negligible.
Time related coverage	Not specified. Study is from 1992. Literature references to studies from 1984, 1987, 1991 are made for the ingredients commonly found in APC.	Most relevant consumer studies were performed in between 2000-2003. Material choices and formula ingredients were based on 2004 data.	1995-2009, but also confidential data sources	The LCI data on product ingredients, packaging materials, electricity grid, fuels, and end-of-life management of packaging materials represent the time period from 2003 to 2012.	Data collection for relevant LCA parameters in 2010 and 2011	Data collection for relevant LCA parameters in 2011 and 2013

Table 38 (continuation)

Source	University of Tennessee 1992	ADEME 2004	Koehler and Wildbolz 2009	Kapur et al. 2012	AISE. 2013 (Charter update 2010. Version 1 October 2012, updated 17 June 2013: floor cleaners included)	AISE. 2013 (Charter update 2010. Final version 1 October 2013)
Reliability (data quality, external critical review?)	Not specified.	Followed ISO14040	Peer reviewed scientific article	Followed ISO 14044 Independent expert panel for critical review	The ASPs and the substantiation dossier were subject to consultation with Charter member companies and other interested parties (industry/external stakeholders)	The ASPs and the substantiation dossier were subject to consultation with Charter member companies and other interested parties (industry/external stakeholders)
Impact assessment	Only qualitative.	Predominantly CML 1992	Climate change according to IPCC global-warming potential (GWP) with a 100-year time frame Cumulative energy demand (CED) according to Frischknecht et al. Overall environmental footprint with the Eco-indicator (hierarchist) Ecotoxicity CFs from the USEtox model were converted to EI99 damage factors Additionally, the IMPACT2002+ method was applied in the cradle-to-grave analysis to compare with the EI99	Cumulative energy demand (CED) according to Frischknecht et al. ReCiPe 2008 Mid-point (hierarchist): 1. climate change 2. ozone depletion 3. photochemical oxidant formation 4. particulate matter formation 5. human toxicity 6. terrestrial acidification 7. freshwater eutrophication 8. marine eutrophication 9. freshwater ecotoxicity 10. terrestrial ecotoxicity 11. agricultural land occupation 12. urban land occupation 13. natural land transformation 14. water depletion 15. fossil depletion	Method not specified 1. Eutrophication 2. Aquatic ecotoxicity 3. Human toxicity 4. Photochemical smog 5. Ozone depletion 6. Acidification 7. Climate change	Method not specified 1. Climate change 2. Ozone depletion 3. Terrestrial acidification 4. Freshwater eutrophication 5. Marine eutrophication 6. Photochemical oxidant formation 7. Particulate matter formation 8. Ionising radiation 9. Agricultural land occupation 10. Urban land occupation 11. Natural land transformation 12. Water depletion 13. Metal depletion 14. Fossil depletion

*ASP – Advanced Sustainability Profiles, a high standard in product characteristics **Screening LCA — A screening LCA is quantitative and uses readily available data. The main difference between a screening LCA and an ISO compatible LCA has to do with data quality evaluation and the critical review which is not mandatory.

Table 39: Reason for excluding available studies

Study	Reason for disregarding
University of Tennessee 1992	Outdated, reliability of data unknown, only qualitative description of impacts
AISE. 2013 Dilutable all-purpose and floor cleaners	Impact assessment model unknown, assumptions unknown
AISE. 2013 Household trigger spray cleaners	Impact assessment model unknown, assumptions unknown

4.2.3 Detailed revision of selected reports

Table 40 presents an overview of the functional unit, system boundaries, data sources, cut-off criteria, allocation rules applied, and geographical scale of the selected studies. Table 41 presents an overview of the comprehensiveness based on the PEF methodology.

Table 40: Cut-off criteria, allocation, and geographical scale of the selected studies

	ADEME 2004	Koehler and Wildbolz 2009	Kapur et al. 2012
Functional unit	1 year of kitchen cleaning in France for 1 household	1 typical application	Annual cleaning 100,000 ft ² of office space (~9,290 m ²)
System boundaries	Cradle to grave	Cradle to gate and Cradle to grave	Cradle to grave
Data sources	Suppliers, the ETH Energy Database, the International Energy Agency (IEA), Franklin Associates, (US)- Environmental Protection Agency or Ecobilanz.	Product-blending formulas were provided by two producers. Data on average product dosage and application frequencies were collected from the manufacturers' consumer-behaviour studies and various bibliographic sources. Data on background processes for both the cradle-to-gate and cradle-to-grave analysis were taken from the Ecoinvent database.	LCI data from databases included in Semipro 7: product ingredients, process and packaging materials, electricity grid, and fuels.
Cut-off criteria	Not specified	Not specified	If the flow was less than 1% of the cumulative mass of all inputs and outputs of the LCI model, it may have been excluded, provided its environmental relevance was not of concern. The sum of neglected flows shall not exceed 5 % of cumulative mass.
Allocation	The single process which needs an allocation rule is the use of the PU sponge in the rinsing step. 50 % of the sponge usage is allocated to kitchen cleaning while other 50 % is allocated to dish washing (outside the system boundaries).	End of life allocation: open loop	End of life allocation: open loop
Geographical scale	Predominantly France	Western-Europe	North America

Table 41: Evaluation of comprehensiveness based on the PEF methodology

EF impact category	EF impact assessment method	EF impact category indicators	Source	ADEME 2004	Koehler and Wildbolz 2009	Kapur et al. 2012
Climate Change	Bern model - GWP over a 100 year time horizon.	kg CO ₂ equivalent	IPCC, 2007	- ¹	+	- ReCiPe 2008 (hierarchist)
Ozone Depletion	EDIP model based on the ODPs of the World Meteorological Organization (WMO)	kg CFC-11 equivalent	WMO, 1999	+	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the E199	- ReCiPe 2008 (hierarchist)
Ecotoxicity for aquatic fresh water	USEtox model	CTUe (Comparative Toxic Unit for ecosystems)	Rosenbaum et al., 2008	- Aquatic toxicity potential (m ³ polluted water) (derived from CML 1992 / adapted version by P&G)	+ ²	- ReCiPe 2008 (hierarchist)
Human Toxicity - cancer effects	USEtox model	CTUe (Comparative Toxic Unit for humans)	Rosenbaum et al., 2008	0	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the E199	- ReCiPe 2008 (hierarchist)
Human Toxicity – non-cancer effects	USEtox model	CTUe (Comparative Toxic Unit for humans)	Rosenbaum et al., 2008	- Human toxicity potential (kg bodyweight) (CML 1992)	- Eco-indicator (hierarchist) and IMPACT 2002+ to compare with the E199	- ReCiPe 2008 (hierarchist)
Particulate Matter/ Respiratory Inorganics	RiskPoll model	kg PM2.5 equivalent	Humbert, 2009	0	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the E199	- kg PM ₁₀ eq as applied in ReCiPe 2008 (hierarchist)
Ionising Radiation – human health effects	Human Health effect model	kg U235 equivalent (to air)	Dreicer et al., 1995	0	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the E199	- ReCiPe 2008 (hierarchist)
Photochemical Ozone Formation	LOTOS-EUROS model	kg NMVOC equivalent	Van Zelm et al., 2008 as applied in ReCiPe	- Photochemical Ozone Creation Potential (g eq. C ₂ H ₄) (WMO, 1991, average)	0	+
Acidification	Accumulated Exceedance model	mol H+ eq	Seppälä et al., 2006; Posch et al., 2008	- Air acidification potential (g eq. H ⁺) (CML 1992)	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the E199	- ReCiPe 2008 (hierarchist)

Eutrophication – terrestrial	Accumulated Exceedance model	mol N eq	Seppälä et al., 2006; Posch et al., 2009	0	0	0
Eutrophication – aquatic	EUTREND model	fresh water: kg P equivalent marine: kg N equivalent	Struijs et al., 2009 as implemented in ReCiPe	- Eutrophication potential (g eq. PO ₄ ³⁻) (derived from CML 1992)	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the EI99	- ReCiPe 2008 (hierarchist)
Resource Depletion – water	Swiss Ecoscarcity model	m ³ water use related to local scarcity of water	Frischknecht et al., 2008	0	- Freshwater consumption in a waterscarce region (Pfister et al.) – screening only, because of limited LCI data	- ReCiPe 2008 (hierarchist)
Resource Depletion – mineral fossil	CML2002 model	kg antimony (Sb) equivalent	van Oers et al., 2002	0	- Eco-indicator (hierarchist) and IMPACT2002+ to compare with the EI99	- (ReCiPe, kg oil eq. based on their heat content)
Land Transformation	Soil Organic Matter (SOM) model	Kg (deficit)	Milà i Canals et al., 2007	0	0	- ReCiPe 2008 (hierarchist)
Agricultural land occupation	Not applied	m ² occupiable land used		0	- Land use. Eco-indicator (hierarchist) and IMPACT 2002+ to compare with the EI99	- ReCiPe 2008 (hierarchist)
Urban land occupation	Not applied	m ² occupiable land used		0	0	- ReCiPe 2008 (hierarchist)
Energy consumption	Not applied	Decrease in energy available		0	- Fossil cumulative energy demand (CED _{fossil}) according to Frischknecht et al.	- Fossil cumulative energy demand (CED _{fossil}) according to Frischknecht et al.
The number of environmental impacts categories that are investigated within the studies				7	13	16
The number of impact categories that are the same as PEF but don't use the same methodology				6	11	15
The number of impact categories compliant with the PEF methodology, i.e. use the same methodology				1	2	1

+ = compliant with the requirements of the PEF methodology

- = not compliant with the requirements of the PEF methodology

0 = not taken into account

1. In accordance with IPCC 1998, as applied in CML 1992.

2. Ecotoxicity CFs from the USEtox model were converted to EI99 damage factors, and IMPACT2002+ to compare with the EI99.

4.3 LCA screening: results

4.3.1 Results of the selected studies

4.3.1.1 Results from the study by ADEME, 2004

ADEME performed a comparative LCA to assess the impact of three market relevant kitchen cleaning products: kitchen cleaning wipes, kitchen cleaning spray and a liquid household cleaner (LHC) product in a bottle. They found that not a single one of the products was environmentally superior on all environmental indicators

Regarding the consumption of resources, the spray and wipe product consume significantly (3x) less water than the LHC product (mix of dilute and pure use). This can be explained by the assumption on water consumption in the use phase. The spray consumes the least primary energy (26 % and 48 % less than wipes and LHC respectively).

Regarding the contributions to climate change, air acidification, and human toxicity, no significant differences between the three product groups were found.

With respect to solid waste, ADEME found that spray or liquid household cleaners produce less household waste than wipes (3x less and 6x less, respectively). Yet, the difference in total residual solid waste left by the three product types becomes smaller after waste treatment, when spray and LHC produce 35 % less solid waste compared to wipes.

4.3.1.2 Results from Koehler and Wildbolz, 2009

Koehler and Wildbolz performed LCA on nine home-care and personal-hygiene products: household-cleaning agents (kitchen, window, and bathroom cleaners), detergents (liquid and powder detergents, detergent booster), soaps (liquid and bar soaps), and a toilet-care product. They studied the ecological relevance of different life cycle phases and compared the environmental profiles of the products that had identical applications. They calculated that the use of these products accounts for around 1 % of the 10 tonnes of CO₂ equivalents, produced by the average European consumer each year.

Although chemical production significantly adds to environmental burdens, substantial impacts are caused in the consumer-use phase. The impact of these products on the environment would be substantially reduced if consumers could be encouraged to apply only correct product dosages and low water temperatures during product application. Furthermore, to cut down the energy and materials required for packaging, production and transport, manufacturers should produce detergents in concentrated form. Different waste disposal or recycling options had little effect on environmental impact.

4.3.1.3 Results from Kapur et al., 2012

Kapur et al. compared the environmental impacts of industrial and institutional cleaning products that are compliant with the Green Seal Standard for Cleaning Products (GS-37) to the environmental impact of conventional products. The LCA showed that GS-37 can be used to identify products with notably lower environmental impacts compared to typical alternatives in the market. The scores of GS-37-compliant products were lower than those of the conventional products in most impact categories studied. The lower environmental impact of the GS-37 compliant products is due to their higher concentration and use of environmentally friendlier ingredients. Furthermore, normalization of the results showed that the impact categories of marine ecotoxicity, human toxicity, and freshwater ecotoxicity were dominant, and the conventional products led these impact categories (See Table 42).

The packaging and distribution stages were dominant for the conventional products, and the reduced impact of the GS-37 compliant products was a result of the requirements in the Green Seal standard that addressed the leading sources of the impacts (namely packaging and transportation). This fact is mainly due to the lower concentration of conventional products. The ingredients contributed significantly to overall impacts for GS-37-compliant products as shown in the sensitivity analysis carried out.

Table 42: Summary of study by Kapur et al

Item	Observation
Title	Comparative LCA of conventional and Green Seal compliant industrial and institutional cleaning products
Authors	A. Kapur, C. Baldwin, M. Swanson, N. Wilberforce, G. McClenachan, M. Rentschler
Reference and year	Life cycle management, 2012
Scope	Cradle-to-grave of the following industrial and institutional cleaning products: <ul style="list-style-type: none"> - all-purpose cleaners - window cleaners - bathroom cleaners
Type of study	Assessing the environmental impacts of GS-37 compliant and conventional products (non-GS-37-compliant) products.
Functional unit and reference flow	The primary function of the cleaning products is to clean soil and dirt in an institutional/office space environment. The plausible secondary functions of these products such as disinfection or polish were excluded from the study. <ul style="list-style-type: none"> - Generic function unit: annual cleaning of 100,000 ft² of office space (50 % hard floor area and 50% carpeted area) - Reference flow for each of the products under study is: <ul style="list-style-type: none"> - All-purpose: 79.5 kg/year - Windows cleaner: 88.1 kg/year - Hydrogen peroxide: 79.5 kg/year - Sanitary cleaner (bathrooms): 109.0 kg/year
System boundaries	<ul style="list-style-type: none"> - <i>included</i>: production of the raw materials ingredients, production of primary packaging materials, transportation of finished product, consumer use of product, wastewater treatment, recycling and landfill disposal of primary packaging - <i>excluded</i>: production of cleaning product, secondary and tertiary packaging, fragrances and dyes, transportation of raw materials, cleaning equipment and maintenance and consumer use of water for cleaning. - Geographical location: North America market, 2011
Assumptions (e.g. allocation)	<p>Allocation:</p> <ul style="list-style-type: none"> - recycling of packaging materials as per the ISO 14044. An open loop approach with no changes in inherent properties of the recycled material was considered for recycling of packaging (system expansion and substitution methods were applicable). - use of primary or virgin materials was substituted by use of secondary or recycled materials - environmental burdens associated with recycling were also included <p>Cut-off criteria</p> <ul style="list-style-type: none"> - if the flow was less than 1 % of the cumulative mass of all inputs and outputs of the LCI model, it may have been excluded, provided its environmental relevance was not of concern. - the sum of neglected flows shall not exceed 5 % of cumulative mass
Data sources & quality	Data from Simapro 7 LCA software and cumulative energy demand based on Fischknecht et al. 2007: product ingredients, process and packaging materials, electricity grid and fuels.
Impact assessment categories/methods	ReCiPe 2008 Midpoint (hierarchist perspective) impact methodology. Impact categories: climate change, ozone depletion, human toxicity, photochemical oxidant formation, terrestrial acidification, freshwater eutrophication, freshwater ecotoxicity, agricultural land occupation, natural land transformation, water depletion, fossil depletion.

Item	Observation
<p>Conclusions (e.g. most important LC phases; drivers to impacts, process or material; improvement options)</p>	<p>The product with the highest environmental impact for most of the categories studied was the conventional ready-to-use product. The <u>hydrogen peroxide-based GS-37 compliant cleaner</u> did not have the highest impact for any of the categories studied and had <u>the lowest environmental burden of all the products studied in most impact categories except for climate change, ozone depletion, natural land transformation and fossil depletion.</u></p> <p>For the <u>glucoside-based GS-37 compliant product</u>, the <u>ozone depletion, terrestrial ecotoxicity, agricultural land occupation and natural land transformation impacts were higher than the other products. This is due to the use of fatty alcohol from coconut oil and palm kernel oil in lauryl glucoside ingredient in the compliant general-purpose cleaner.</u></p> <p>The impact of the <u>conventional concentrate</u> was <u>higher than all other products studied for fossil depletion.</u> This is <u>due to the use of petroleum-based ethoxylate and HDPE packaging.</u> Both <u>GS-37 compliant products were lower than the conventional products in most impact categories.</u></p> <p><u>Although not reported LCIA results of the windows and bathroom cleaners indicated a similar trend as the general-purpose cleaner.</u></p> <p>The conventional ready-to-use product had a higher environmental burden in most impact categories except for higher land use impacts for the compliant product. However, the compliant <u>window cleaner had higher water depletion impacts, driven by water use during irrigation of palm fruits.</u> The compliant bathroom cleaner did not indicate any appreciable difference in the trend.</p> <p>The <u>study concludes that the contribution of overall life cycle impacts from the product formulation compliant products was substantial. Some of the ingredients such as surfactants in cleaning products can be derived from petrochemical and bio-based or renewable feedstock.</u> In this analysis the ethoxylated alcohol (AE7) from petrochemical source was replaced with ethoxylated alcohol from coconut oil. The results show that the increase in the land use impact is substantial (more than 100 %) whereas the reduction in impacts for the other categories is marginal. The renewable energy portion cumulate energy demand also increases by 10 % whereas the non-renewable portion declines by 14 %. Similar results were obtained for the window and bathroom cleaners</p> <p>When <u>the conventional formula contained bio-based ingredients (as compared to the based scenario of being made from petrochemical-based ingredients) the land use impacts also increased.</u> This increase ended up resulting in the conventional product overtaking the compliant product in all the impact categories except one.</p> <p>To sum up, the conclusions of the study include:</p> <ul style="list-style-type: none"> - GS-37 had substantially lower environmental impacts than typical alternatives in the market - Aspects that decrease the environmental impacts of the products are the high concentration and to meet a comprehensive set of health and environmental criteria for the product formulation (product formulation is the major contributor to environmental impacts for compliant products, being driven by the use of bio-based ingredients) - Minimum product performance, use of unheated water, health hazards and through to environmental fate are also key aspects to decrease the environmental impacts
<p>Critical review</p>	<p>Results of the study were provided to an independent expert panel for critical review consisting of Jim Darr (US EPA) and Weslynnne Ashton (Illinois institute of Technology)</p>

4.3.2 Summary of findings

A wide variety of all-purpose cleaners is available on the market. Generally, there is not one type of product that is environmentally superior on all environmental indicators. Although the scopes and goals of the reviewed LCA studies vary, most of them draw similar conclusions that are summarised below. From a life cycle perspective the major environmental impacts associated with APCs are due to:

- The consumption of resources. The ingredients used for the production of APCs contributed significantly to the environmental impact. The extraction and processing of raw materials causes impacts on categories such as land use and energy use.
- Depending on the type of APC, the consumption of water in the use phase is also relevant.
- The energy and materials required for packaging have a large contribution to the overall environmental impact.

Opportunities for improvement identified in the literature:

- Adjusting the formulation. A superior cleaner is also one that minimizes ingredients that do not add to its function.
- Reducing the water temperature in which the product works appropriately.
- Encouraging consumers to apply only correct product dosages.
- To cut down the energy and materials required for packaging, production and transport, manufacturers should produce detergents in concentrated form.

4.4 Non-LCA impacts

4.4.1 Toxicity to aquatic organisms

Toxicity to aquatic organisms is evaluated using Critical Dilution Volume (CDV). CDV was originally developed as an evaluation criterion for detergent ingredients in the context of the European Eco-label scheme^{107,108}. It expresses the substance-specific amount of water needed for dilution to a safe level, and is therefore expressed in L per functional unit (FU). The Detergent Ingredient Database (DID) List, a public source of agreed ecological data for detergent production ingredients, can be used to perform CDV calculations as well as laboratory and *in silico* test results. The outcomes can be considered as a product-based relative assessments, on the basis of a functional unit – dose per wash^{109,110}.

CDV calculations are based on the dosage, degradation and toxicity of a substance using the formula below:

$$CDV = \sum CDV_i = \sum (((dosage_i \cdot DF_i) / TF_i) \cdot 1000)$$

Where dosage_i is the recommended dosage expressed in g per wash, DF_i is the degradation factor and TF_i is the toxicity factor.

¹⁰⁷ EU Eco-label 1995. *Commission decision of 25 July 1995 establishing the ecological criteria for the award of the community ecolabel to laundry detergents*. Official J European Communities L217:0014–0030, 95/365/EC

¹⁰⁸ Van Hoof G., D. Schowanel, H. Franceschini, I. Muñoz, 2011. *Ecotoxicity impact assessment of laundry products: a comparison of USEtox and critical dilution volume approaches*. Int J Life Cycle Assess, 16:803–818

¹⁰⁹ DID list (2007) Detergent Ingredient Database (DID list) – 2007 version.

http://ec.europa.eu/environment/ecolabel/ecolabelled_products/categories/did_list_en.htm (accessed 17/12/2010)

¹¹⁰ DID list Part B (2004) Detergent ingredients database version 30 June 2004.

http://ec.europa.eu/environment/ecolabel/ecolabelled_products/categories/did_list_en.htm. Accessed 17 Dec 2010

4.4.1.1 Toxicity

Per chemical, a chronic toxicity 'base set' of three species should ideally be collected (fish, crustaceans and algae). The lowest toxicity value of these three values is then used for CDV calculations. The toxicity test results to be used can be expressed as the effect concentration at different percentages of effect, e.g. EC10 or EC50, which is the calculated effect concentration at 10 % or 50 % effect, or LC50, which is the concentration at 50% lethality. Measured effects may be on for example growth rate, immobility or mortality, depending on the test organism.

As there are substances with very small amounts of chronic toxicity data or which only have been tested for acute toxicity, there is a need to distinguish between these and other substances where the toxicity factors are based on more solid grounds. TF is calculated as the lowest value of toxicity test results complemented by a safety factor (SF) that is based on the availability of aquatic toxicity data and ranges from 10 to 10000.

4.4.1.2 Degradation

Degradation of substances in CDV calculations is taken into account through the Degradation Factor which considers the ready biodegradability of a substance¹¹¹. It can take four discreet values ranging from 0.05, if an ingredient is degraded in under 5 days, to 1, if an ingredient is persistent in the environment. An exceptional 5th value, 0.01, was introduced in the 2014 version of the DID list that is only assigned to very toxic substances that degrade extremely rapidly.

DF only considers biodegradation and not adsorption. This choice was made in the scope of the EU Ecolabel as adsorbed substances end up in sludge and the presence of harmful substances in sludge can cause problems when the sludge is used as a fertilizer.

4.4.1.3 DID list

The DID-list is a public tool containing toxicity and degradation information on over 200 commonly used ingredients in detergents and cosmetics. The DID list is revised on regular basis to update existing entries and introduce new ones, based on input from industry, competent bodies and ecotoxicology specialists. Error! Bookmark not defined. The list is meant to facilitate the work of companies applying for EU Ecolabel and that of competent bodies reviewing applications. Besides listing input data for CDV calculations, it also provides companies, especially SMEs, with an easy way of comparing and ranking ingredients, making it possible for them to spot a possible substitution that would result in a less impacting product.

Table 43 shows an example of the information available for common detergent ingredients in the DID-list.

Table 43: Toxicity values and degradation data for example detergent ingredients in the DID-list 112

DID number	Ingredient name	Acute toxicity			Chronic toxicity			Degradation		
		LC50 / EC50	SF (acute)	TF (acute)	NOEC	SF (chronic)	TF (chronic)	DF	Aerobic	Anaerobic
DID category: Cationic surfactants										
2301	C8-16 alkyltrimethyl or benzyldimethyl	0,08	1000	0,00008	0,0068	10	0,00068	0,05	R	O

¹¹¹ OECD Ready Biodegradability test - http://www.oecd-ilibrary.org/environment/test-no-301-ready-biodegradability_9789264070349-en

¹¹² Detergents Ingredients Database (DID-list) Part A. List of ingredients 2014

	quaternary ammonium salts									
DID category: Other ingredient										
Surfactants										
2505	Zeolite (Insoluble Inorganic)	100	1000	0,1	100	50	2	1	NA	NA
Builders										
2507	Polycarboxylates homopolymer of acrylic acid	40	1000	0,04	12	10	1,2	1	P	N
2508	Polycarboxylates copolymer of acrylic/maleic acid	100	1000	0,1	5,8	10	0,58	1	P	N
Bleachers										
2525	Perborates (as Boron)	14	1000	0,014			0,014	1	NA	NA
2526	Percarbonate	4,9	1000	0,0049	0,7	50	0,014	0,01	NA	NA
Auxiliaries										
2533	Carboxymethylcellulose (CMC)	250	5000	0,05			0,05	0,5	I	N

R = Readily biodegradable according to OECD guidelines, I = Inherently biodegradable according to OECD guidelines, P = Persistent. The ingredient has failed the test for inherent biodegradability, 0 = The ingredient has not been tested, NA = Not applicable, N = Not biodegradable under anaerobic conditions

4.4.2 Risk assessment of chemical release

The emissions occurring during the life cycle of APCs may have negative health effects on humans and ecosystems. Air emissions occur primarily during the ingredients sourcing and use phases, and are proportionally higher to the use phase since it is directly correlated to energy generation from fossil fuels. The emissions are directly correlated to the energy generation from fossil fuels, and therefore proportionally related to the amount of energy required in the use phase.

Energy source plays a role in the environmental impacts, and the lower the fossil fuel share in the national mix, the lower the impacts of the overall life cycle.

4.4.3 Sustainable sourcing

In order to protect nature and its ecosystem services, sourcing of ingredients for APC and their packaging materials should be done in a sustainable way. That means sourcing in a way that takes into account the consequences for the environment and the economic and social impacts simultaneously. For instance, ensuring that adverse effects on biodiversity are minimised and positive contributions are made where possible, while keeping high levels of social and economic development would be considered a sustainable extraction of the materials.¹¹³ This aspect will be analysed in more detail in the technical background report.

¹¹³ <http://www.unilever.com/sustainable-living-2014/reducing-environmental-impact/sustainable-sourcing/protecting-biodiversity/index.aspx>

4.5 In-house LCA studies

Due to the scarcity of publicly available studies on the environmental performance of APC, in-house LCA were carried out in this study. This section describes the methodology followed, the sources and assumptions considered as well as the obtained results and their interpretation and discussion. The LCA allows assessing the relative environmental load of each life cycle stage to have an overall profile of the products' performance.

A generic general-purpose cleaner was chosen as baseline product because this is the product with the largest market share compared to the sanitary cleaners' market share. Generic general-purpose cleaners are comprising detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaced, and which are either diluted in water prior to use or used without dilution. As shown in Table 19 a summary of EU market size for surface care and toilet care, the surface care products which include all-purpose cleaners and bathroom cleaners have a 74 % market share in Europe. In this study we use warm water as various studies have shown that consumers use warm water to clean.^{104,105,106} As the EU Ecolabel for all-purpose cleaners and sanitary cleaners covers a wide range of products, a section comparing the results of LCA studies on these different product types has been included

4.5.1 Methodology

The methodology followed in these studies was the Environmental Footprint - General Guide. Moreover, several comparative analyses and sensitivity analyses can be performed regarding the ingredients, application, etc. to assess their importance and associated improvement potentials. The LCAs were performed in accordance with the standard methodology of ISO 14040 and 14044. The four steps presented in Figure 16 were carried out in an iterative process.

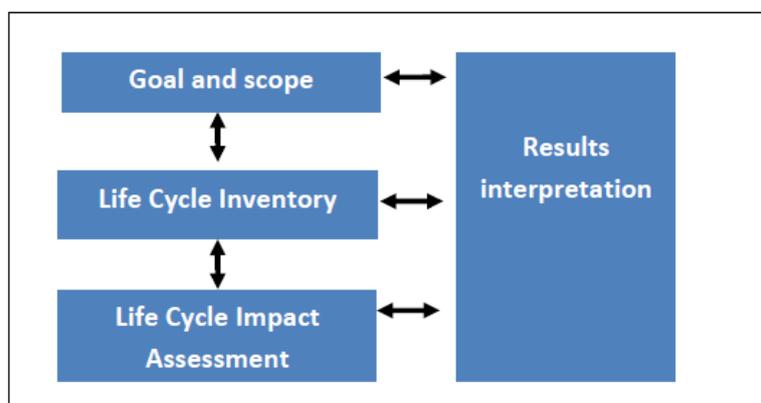


Figure 16: Steps of the life cycle assessment, according to UNE-EN ISO 14040: 2006

4.5.1.1 Goal definition

Goal definition is the first step of an LCA study. It defines the general context for the study. In the goal definition, parameters such as the intended application, the reasons for carrying out the study, the target audience, the limitations and assumptions have to be described.

The goal of this analysis is to quantify the potential environmental impacts of products included in the category 'APC' during all their life cycle phases. This analysis does not aim to do a comparison of different products or brands. The main objective is to analyse the impact of each life stage and its contribution in relation to other stages and the global environmental load of the product. The study aims only to analyse the performance of an average product manufactured in Europe.

Potential environmental improvements have been assessed by analysing different scenarios and sensitivity tests, for instance by changing substance compositions in order to see the effect the substitution of the most hazardous substances. The goal of this sensitivity analysis is to quantify the potential improvement of the environmental performance of these products.

The product systems under study are APCs. As mentioned in the scope of this report (Section 2.2), the product group 'All-purpose cleaners and sanitary cleaners' comprises: all-purpose cleaners, window cleaners, and sanitary cleaners. In the in-house LCA studies, we focussed specifically on the all-purpose cleaners, i.e. detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaces, and which are either diluted in water prior to use or used without dilution.

4.5.1.2 Scope of the study

The scope of an LCA study consists of describing the system to be analysed along with the associated considerations and specifications. In the study proposed, an LCA from cradle to grave is considered and the phases considered are shown in Figure 17. They include all of the impacts associated with the extraction and processing of the materials, production of the detergent, packaging, transport, use and end of life.

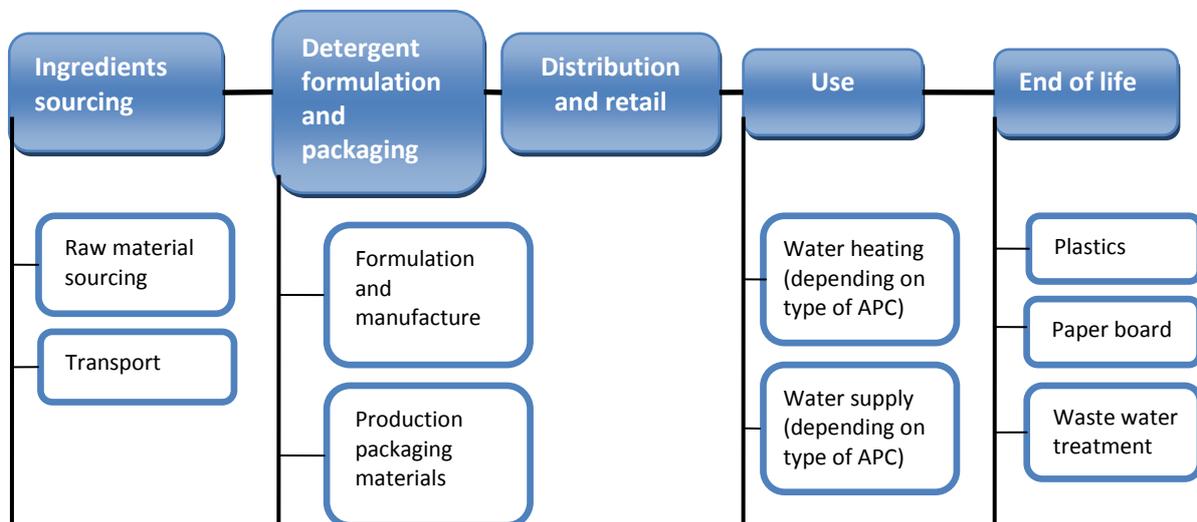


Figure 17: Schematic representation of the life cycle of an all-purpose cleaner.

4.5.1.3 Functional unit and reference flow

The functional unit (FU) describes qualitatively and quantitatively the function(s) or the service(s) provided by the product analysed. The FU is used to define what the LCA is measuring, and provides a reference to which the inputs and outputs can be related. In this case the FU chosen is one typical application of a general purpose cleaner, i.e. cleaning of an area of 0.24 m² (e.g. a small kitchen sink, or an area of tiling or floor).¹⁰⁵

The reference flow describes the amount of the product required to fulfil the functional unit. The reference flow is assumed to be 5 spraying cycles (approximately 4.7 g).¹⁰⁵ The reference flow is an estimate based on the review of the existing literature and is not based on the performance of a specific all-purpose cleaner. Additionally, in this type of products no differences are generally made between the domestic and industrial and institutional uses.

4.5.1.4 System description and boundaries

The system boundaries were defined following general supply-chain logic including: raw materials (including raw materials extraction and ingredients manufacturing), manufacturing, packaging, distribution, use and final disposal.

- *Raw materials:* In this sub-system raw materials and processing of ingredients are included. Composition and formulation of these products have been analysed taking into account: origin of substances (e.g. vegetal, petroleum), production processes (energy and resources used) of substances and the performance of substances (toxicity properties to assess potential environmental impacts). Transport processes have not been considered due to lack of data.
- *Manufacturing:* Standard processes and technologies to manufacture the studied products have been analysed. The use of energy and water during manufacturing is reported, together with waste generation, air emissions and water emissions.
- *Packaging:* Primary and secondary packaging have been analysed. Some relevant aspects are: weight of material, recycled origin of materials, recyclability and use of hazardous substances. A commonly used packaging has been considered for the general-purpose cleaner under study.
- *Transport/Distribution:* The average distribution of products in the European market has been analysed, consisting in the transport from the plant to the final point of sale, including transport among intermediate storages. Storage processes in manufacturing plant and intermediary storage have not been included in the system.
- *Use:* During use it is important to investigate whether a risk that the product may have negative health impacts exists. The potential for negative health impacts could be reduced by increasing the health requirements on fragrances, preservatives and hazardous compounds. LCA results do not reflect these effects in the use phase (either due to generic use of data or because the inputs are 'diluted' with the inclusion of all the LCA inputs), so these effects are discussed in section 4.4 . We assume 0.55 L of water at 40°C was used for rinsing.¹⁰⁵ Energy required to heat the water falls within the system boundaries. The use of ancillary cleaning items such as cloths or paper towels was not taken into account.
- *Disposal:* Two kinds of 'waste' were included in the LCA analysis:
 - *Disposal of the product into water after use phase:* as products studied are rinsed-off, it is considered that the whole product is released to wastewater after cleaning action and subsequently the wastewater is purified in a wastewater treatment plant.
 - *Disposal of the packaging:* a scenario has been defined for each kind of packaging where a part is recycled and the other goes to disposal. Impacts from recycling have been included in the LCA study carried out in this work but balanced with environmental benefits occurring due to avoidance of use of virgin materials (LCA processes pre-defined products life cycles allocation rule). All impacts coming from waste disposal are included in the system

4.5.2 Life cycle inventory

Life-cycle inventory (LCI) is a 'cradle to grave' accounting of the environmentally significant inputs and outputs of the system. The inventory involves the compilation and quantification of the inputs (materials and resources) and outputs for the product system throughout its life cycle (See Figure 18). The environmental burdens measured in this case study include material input requirements, total energy consumed, air and water emissions released, and total solid waste associated with the product's life-cycle. LCI data is normalized with respect to the study's functional unit.

For each sub-system defined, inputs and outputs of the processes have been gathered and quantified. For the most important stages primary data (information gathered from products) has been used when possible. For secondary data other studies and existing

databases (such as Ecoinvent) have been used. For a few stages which are not considered of high relevance because they do not depend on the product characteristics, such as distribution or use phase, generic data from other studies was also used.

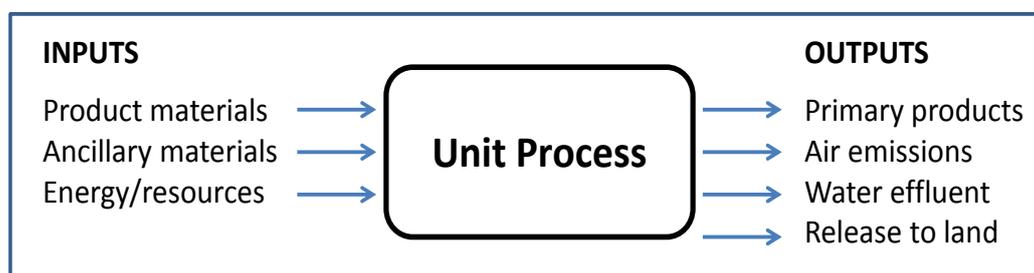


Figure 18 Inventory inputs and outputs

Raw materials and ingredients manufacturing

There is no 'standard' formulation for an all-purpose cleaner. A large number of different ingredients can be used in a variety of combinations giving rise to different detergent formulations. Generally, however, all all-purpose cleaners contain these categories of ingredients but in different concentrations: surfactants, builders, solvents, antimicrobials, and miscellaneous ingredients. Therefore, no large differences between the domestic and the industrial and institutional cleaners are expected, but of course there are differences between the ranges of possible APC formulations. Table 44 shows the general characteristics of an all-purpose cleaner

Table 44: General¹¹⁴ formula of all-purpose cleaners

All-purpose cleaner ingredients	Liquid %
Water	75 – 85
Surfactants	
Anionic surfactants	2 – 10
- Linear alkylbenzene sulphonate (LAS)	
- Alkyl ether sulphate (AES)	
- (Fatty) alcohol sulphate ((F)AS)	
- Secondary alkane sulphonate (SAS)	
- Combination of the above	
Non – ionic surfactants	0.5 – 3
- Alcohol ethoxylates (AEO)	
- Fatty acid diethanolamine (FADEA)	
- Combination of AEO and FADEA	
Amphoteric surfactants	0 – 5
- Alkyldimethylbetaine	
- Alkylamidopropylbetaine	
Solvents	
Alcohol: isopropanol/ ethanol	0 – 10
Hydrotopes	0 – 10
Additives	
Sodium citrate	0 – 2
Skin protecting agents	< 2
Preservatives	0 – 1
Dye	< 0.1
Perfume	< 0.5

¹¹⁴ Most all-purpose cleaners follow this formulation with varying degrees of the ingredients as specified within the percentages given.

In order to assess the environmental impact of all-purpose cleaner, a representative product is needed –Kapur et al.¹⁰⁶ made a comparison between conventional and green-compliant general purpose cleaners. Given the different possible formulations, we chose a conventional formula as a representative all-purpose cleaner for the LCA.¹⁰⁶ Table 45 shows the inventory data used to model the all-purpose cleaner. The influence of the product formulation is assessed in the sensitivity analysis.

Table 45: Ecoinvent data inventory for a conventional all-purpose cleaner¹¹⁵

Ingredient type	All-purpose cleaner formulation	Concentration (wt %)	Assumption on concentration (wt %)	Ecoinvent data
Surfactant	Alkylphenol ethoxylate	5 – 15	10	Ethoxylated alcohols, unspecified, at plant/RER S*
Solvent	Ethylene glycol butyl ether	0 – 5	3	Ethylene glycol diethyl ether, at plant/kg/RER S
Additive	Sodium carbonate	0 – 5	3	Sodium carbonate from ammonium chloride production, at plant/GLO S
Additive	Sodium hydroxide	0 – 5	3	Sodium hydroxide, 50% in H ₂ O, production mix, at plant/kg/RER S
	Water	rest	81	Water, completely softened, at plant/RER S

* A mix of petrochemical (AE3 and AE7), palm kernel oil (AE3 and AE7), and coconut oil (AE3 and AE7).

All-purpose cleaners contain very specific substances. Although some of the ingredients were present in Ecoinvent, some of these substances are not included in the selected database (i.e. ethylene glycol butyl ether and alkylphenol ethoxylate). Where information was lacking, alternative substances that fulfil similar functions in soaps were chosen as a best guess (i.e. ethylene glycol diethyl ether instead of ethylene glycol butyl ether, and unspecified ethoxylated alcohols instead of alkylphenol ethoxylate).

Manufacturing

This module contains energy inputs for the manufacturing of an all-purpose cleaner. As described in Section 4.1.2, the manufacturing process employed for all-purpose cleaner generally consists of mixing and pumping the ingredients into mixing vessels. The exact process employed will depend on the manufacturer and the format of the final product. For the manufacturing of all-purpose cleaner, the required energy was based on a study by Koehler and Wildbolz¹⁰⁵ and set to 3.2 MJ per kg of chemical end product. We assume this is all electricity. The average EU energy mix from the Ecoinvent database 2.2 has been used. We assume the production of the detergent and the subsequent packaging are done at the same location. In the LCA, the required ingredients, packaging and transport are combined under the assembly of the all-purpose cleaner. Production of waste and emissions for the production of an all-purpose cleaner was not included due to lack of data. Infrastructure was also not included.

Packaging

Packaging can be defined as the materials used for the containment, protection, handling, delivery, and presentation of goods. Packaging can be divided into three broad categories:

- Primary packaging is the wrapping or containers handled by the consumer.

¹¹⁵ Kapur A, C Baldwin, M Swanson, N Wilberforce, G McClenachan, M Rentschler, 2012. *Comparative life cycle assessment of conventional and Green Seal-compliant industrial and institutional cleaning products*. Int J Life Cycle Assess 17:377–387

- Secondary packaging is the term used to describe larger cases or boxes that are used to group quantities of primary packaged goods for distribution and for display in shops.
- Transit packaging refers to the wooden pallets, board and plastic wrapping and containers that are used to collate the groups into larger loads for transport, which facilitates loading and unloading of goods.

In this study, primary and secondary packaging were included in accordance with the assumptions taken by Koehler and Wildbolz.¹⁰⁵ Printing ink for the labels and pallets are excluded, as were electricity for the bottle blowing process, because this information is not publicly available. Table 46 shows the inventory data used for the packaging materials.

Table 46: Primary & secondary packaging for an all-purpose cleaner¹⁰⁵

Packaging (Primary and secondary)	Ecoinvent data
Primary pack: 500 ml bottle - 22 g amorphous PET per kg of product - 68.1 g bottle grade PET per kg of product - 20 g PP per kg of product - 20 g LDPE per kg of product	- Polyethylene terephthalate, granulate, amorphous, at plant/RER S - Polyethylene terephthalate, granulate, bottle grade, at plant/RER S - Polypropylene, granulate, at plant/RER S - Polyethylene, LDPE, granulate, at plant/RER S
Transport packaging: 10 bottles per case - 2.53 g of LDPE per kg of product - 39.5 g cardboard per kg of product	- Polyethylene, LDPE, granulate, at plant/RER S - Packaging, corrugated board, mixed fibre, single wall, at plant/RER S

Transport/Distribution

Transport of raw materials is assumed to be 8,000 km (boat) for the renewable part in surfactants, and other ingredients to be 2,000 km (lorry), except for the water. The ingredients were assumed to come from another continent, Asia, hence the large distance.

For the distribution phase, literature data were used to estimate the transport distance. Normally in the European market products are distributed via lorry first to an intermediate storage, then to the storage facilities of direct customers (retailer) and from there to the point of sale (e.g. supermarket). Transport from retail to consumer homes was omitted. Data was unavailable, although studies for other categories show that these impacts are generally minimal when compared to other activities and typical shopping habits. Based on Frischknecht and Jungbluth (2002)¹¹⁶, the distance was set to 100 km by truck (>16 tonnes, fleet average) and 600 km by freight train.

Use

Data on all-purpose cleaners including choices in study assumptions and consumer use were predominantly based on a paper by Koehler and Wildbolz¹⁰⁵ who determined product quantities in laboratory experiments, and concluded that for a trigger spray on average, five spraying cycles were conducted in cleaning activities resulting in an average applied product amount of 4.7 g. Additionally 0.55 litres of warm water (40 °C) was used for rinsing. Table 47 shows the key assumptions used in the study.

¹¹⁶ Frischknecht, R., and Jungbluth, N. (2002). Working paper: Quality guidelines Ecoinvent 2000 (in German: Arbeitspapier: Qualitätsrichtlinien Ecoinvent 2000). Swiss Centre for Life Cycle Inventories, Ecoinvent Center: Duebendorf, Switzerland. Retrieved 10.12.2010, from http://www.ecoinvent.org/fileadmin/documents/en/presentation_papers/Qualitaet_5.7.pdf.

Disposal

In this study, the 'recycled content' method is applied meaning that the benefits and burdens associated with recycling and energy recovery from incineration fall outside the scope of the study. The recycling rates for paper and board and plastic were taken from Eurostat (2012).¹¹⁷ The remaining waste is sent to landfill and incinerated, and is allocated to the all-purpose cleaner.

Data quality

For this study generic available data of the Ecoinvent database and agri-food print database. This paragraph describes the quality of the available data in these databases based on geographical scale, time-related coverage of data, comprehensiveness and robustness. Data quality concerning the ingredients is fair. For some ingredients for which no information was available, proxies were used as a best guess. Data for electricity and production is quite good. Data for waste water treatment is fair, but waste water treatment does not contribute much to the life cycle impacts. We used typical municipal waste water treatment data. For the use phase, the data quality is good.

Table 47: Key assumptions and information sources

	Reference	Value
Functional unit	Review of LCA studies, a.o. Koehler and Wildbolz 2009 ¹⁰⁵	One typical application, i.e. cleaning of an area of 0.24 m ² (e.g. a small kitchen sink).
Reference flow	Koehler and Wildbolz 2009 ¹⁰⁵	4.7 g
Raw materials and ingredients¹¹⁸	Kapur et al 2012 ¹⁰⁶	Standard formulation, for a conventional all-purpose cleaner, see Table 45
Transport ingredients to product manufacturing site	Assumption	Renewable part in surfactants 8000 km (boat) Other ingredients 2000 km (lorry)
Energy for processing raw materials	Koehler and Wildbolz 2009 ¹⁰⁵	3.2 MJ per kg of chemical end product
Packaging (primary and secondary)	Koehler and Wildbolz 2009 ¹⁰⁵	Primary pack: 500 mL bottle (2.2E-2 kg amorphous PET, 6.81E-2 kg bottle grade PET, 2.00E-2 kg PP, 2.4E-2 kg LDPE per kg of product) Transport packaging: 10 bottles per case (2.53E-03 kg of LDPE and 3.95E-2 kg cardboard per kg of product)
Energy use in the use phase	Assumption based on Koehler and Wildbolz 2009 ¹⁰⁵	0.04 kWh*
Energy source for water heating	Assumption	Electricity
Water use in the use phase	Koehler and Wildbolz 2009 ¹⁰⁵	0.55 L
Waste water treatment	Based on EU Statistics	100 % connection to secondary treatment
Transport retail	Frischknecht and Jungbluth (2002) ¹¹⁶	100 km by truck (>16 t, fleet average) 600 km by freight train
Recycling rates solid waste	Eurostat (2012) ¹¹⁷	Paper & board 83.2 % Plastic 31.9 %
Solid waste treatment (non-recycled waste)	Eurostat (2012) ¹¹⁷	Landfill 65.3 % Incineration 34.7 %

¹¹⁷ Eurostat. (2012). EU Packaging recycling 2005. Retrieved from <http://epp.eurostat.ec.europa.eu>

* Koehler and Wildbolz reported an electricity use of 1.28 kWh for the heating of 175 L water to 40 °C water temperature during laundering. We converted this to the electricity consumption needed for 0.55 L of water.

¹¹⁸ The default cleaner is a conventional general purpose cleaner (formulation shown in Table 44, and of which the results are shown in section 4.8.2). In the sensitivity analysis, we compare this product to

- a conventional APC based on hydrogen peroxide, but with the maximum amount of ingredients and the least amount of water (a so-called 'worst case conventional', see Table 48); and
- a green compliant APC, based on glucoside. Surfactants in green cleaners are usually plant-derived, and therefore renewable.

4.5.2.1 Impact assessment

This section presents the LCIA. It is based on the data obtained in the inventory stage and includes the analysis of alternative substances for different products.

Impact assessment method used

The impact assessment method used was ReCiPe.¹¹⁹ ReCiPe proposes a feasible implementation of a combined midpoint categories (expressed in units of a reference substance) and damage approach, linking all types of LCI results (elementary flows and other interventions) via midpoint categories to four damage categories: human health, ecosystem quality, climate change, and resources.

Normalization can be performed either at midpoint or at damage level. Midpoints are used for a more specific and detailed analysis, whereas damage endpoints are useful to communicate the results obtained to broader audience. The pre-defined (mathematical) weighting of the different midpoint score within the ReCiPe assessment method allow us to come to a single score. However, as previously mentioned, this should be used more for communication than for analysis, as weighting is not standardised and it is generally considered more relevant for the experts groups to hold discussions in greater detail – on midpoints level.

Contribution analysis by life cycle stage

The life cycle stages with the highest contribution to the environmental impacts were identified using characterised midpoint results from ReCiPe. The results for an all-purpose cleaner are shown in Figure 19 and Table 48. For more information please see Annex III.

Ingredients: The ingredients are quite an important contributor for the characterised midpoint results, particularly for the categories terrestrial ecotoxicity, agricultural land occupation and natural land transformation ($\geq 90\%$), but also for ozone depletion and metal depletion ($> 30\%$). Of all ingredients, the major part of the environmental impact is caused by the surfactant ethoxylated alcohol. The surfactant is of a mixed origin, i.e. both oleo chemical origin (palm and coconut resources) and petrochemical, which has an effect on both natural land transformation and agricultural land occupation. For the impacts related to ozone depletion and metal depletion, the ingredient ethylene glycol diethylether causes the largest share of the environmental impact.

Manufacturing: The environmental impact of manufacturing relates to the use of electricity to process the raw materials. Manufacturing is quite an important contributor, particularly for freshwater eutrophication (33%), and ionising radiation (38%).

Packaging: This life cycle phase contributes relatively little to the overall environmental impact. However, for fossil depletion, it is quite important (36%). This can be explained by the use of plastic bottles for the primary packaging and plastic film for the transport packaging.

Transport: The contribution of transport to the overall environmental impact is the smallest of all life cycle stages.

Use phase: The use phase is quite an important contributor for the characterised midpoint results, particularly for the categories freshwater eutrophication (39%), human toxicity (39%), freshwater ecotoxicity (33%), marine ecotoxicity (34%), ionising radiation (43%), urban land occupation (33%), and water depletion (88%). This relates to the use of water and the use of electricity to heat the water.

¹¹⁹ Goedkoop, M., Heijungs, R., Huijbregts, M., De Schryver, A., Struijs, J., & Van Zelm, R. (2009). ReCiPe 2009. A life cycle impact assessment method which comprises harmonised category indicators at the midpoint and the endpoint level. The Hague, The Netherlands: VROM.

End of Life: For marine eutrophication, the end of life was important and contributed to 77 % to the characterised midpoint results. In particular, the waste water sent to the waste water treatment plant contributed to the impact (72 %). The end of life was also important for metal depletion (29 %), mainly due to the treatment of waste water.

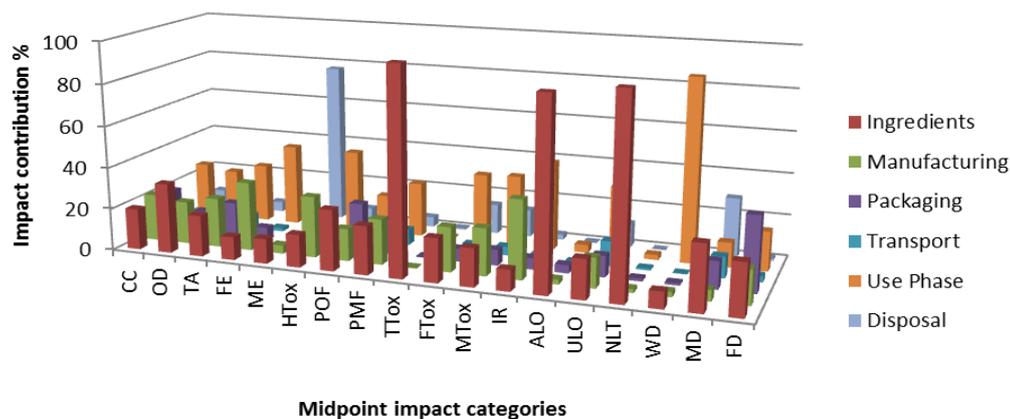


Figure 19: Impact contribution of different life cycle stages of an all-purpose cleaner

Table 48: Aggregate midpoint results for an all-purpose cleaner

Impact category	Abbreviation	Unit	Result
Climate change	CC	kg CO ₂ eq	9.9E-03
Ozone depletion	OD	kg CFC-11 eq	5.3E-10
Terrestrial acidification	TA	kg SO ₂ eq	3.9E-05
Freshwater eutrophication	FE	kg P eq	6.7E-06
Marine eutrophication	ME	kg N eq	1.6E-05
Human toxicity	HTox	kg 1,4-DB eq	4.3E-03
Photochemical oxidant formation	POF	kg NMVOC	3.0E-05
Particulate matter formation	PMF	kg PM10 eq	1.3E-05
Terrestrial ecotoxicity	TTox	kg 1,4-DB eq	1.8E-05
Freshwater ecotoxicity	FTox	kg 1,4-DB eq	4.8E-05
Marine ecotoxicity	MTox	kg 1,4-DB eq	4.7E-05
Ionising radiation	IR	kg U235 eq	4.7E-03
Agricultural land occupation	ALO	m ² a	1.2E-03
Urban land occupation	ULO	m ² a	4.8E-05
Natural land transformation	NLT	m ²	1.3E-05
Water depletion	WD	m ³	7.3E-04
Metal depletion	MD	kg Fe eq	2.3E-04
Fossil depletion	FD	kg oil eq	3.7E-03

Identification of significant impacts

The magnitude of different environmental impacts cannot be compared to each other because each impact category is expressed in a different unit. We can however, identify how significant an impact is when compared to a reference - in this case, the average impacts of a European citizen in the year 2000. This step in LCIA is known as

normalization. The results were calculated based on ReCiPe endpoint¹²⁰, using the hierarchist perspective with European normalisation data from the year 2000.¹²¹

Figure 20 shows that for an all-purpose cleaner by far the most relevant impact category relative to the reference (average impacts of a European citizen in the year 2000) was natural land transformation. This is mostly attributed to the ingredients stage of the life cycle and specifically the use of ethoxylated alcohol surfactants. Furthermore, fossil depletion, agricultural land transformation, and climate change (both for human health and ecosystems) were relevant.

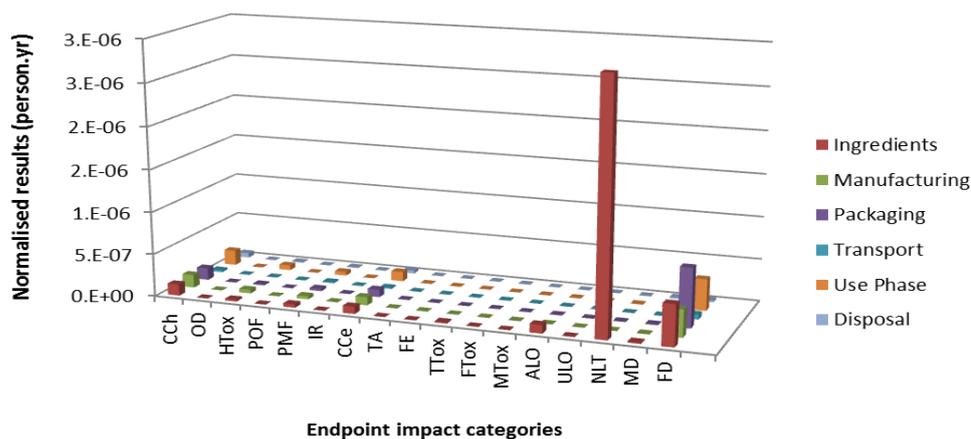


Figure 20: Normalised endpoint results for an all-purpose cleaner

4.6 Sensitivity analysis

In this section the consequences of the assumptions on the overall results are explored. The following variables were analysed: product formulation and surfactant origin, product dosage, warm water use, electricity mix, and impact assessment method. These variables were selected because the contribution analysis showed they made a significant contribution to a particular life cycle phase. In the graphs we show the results for the impact categories that are identified as significant in the normalisation step.

4.6.1 Product formulation

The formulation of an all-purpose cleaner can differ, which is why we want to assess the influence of the product formulation on the life cycle impacts. Here we make a comparison between:

- a conventional all-purpose cleaner (i.e. the formulation as shown in Table 45, and of which the results are shown in section 4.6.1.1);

¹²⁰ Goedkoop, M., Heijungs, R., Huijbregts, M., De Schryver, A., Struijs, J., & Van Zelm, R. (2009). ReCiPe 2009. A life cycle impact assessment method which comprises harmonised category indicators at the midpoint and the endpoint level. The Hague, The Netherlands: VROM.

¹²¹ Sleeswijk AW, et al, Normalization in product life cycle assessment: An LCA of the global and European economic systems in the year 2000, Sci Total Environ (2007), doi:10.1016/j.scitotenv.2007.09.040

- a conventional all-purpose cleaner, but with the maximum amount of ingredients and the least amount of water (a so-called 'worst case conventional', see Table 49); and
- a green compliant all-purpose cleaner based on glucoside. Surfactants in green cleaners are usually plant-derived, and therefore renewable. We used the formulation for a green compliant, glucoside based, general purpose cleaner from Kapur et al (see Table 50).

Table 49: Ecoinvent data inventory for a worst case conventional all-purpose cleaner¹⁰⁶

All-purpose cleaner formulation	Chemical structure	Concentration (wt %)	Assumption on concentration (wt %)	Ecoinvent data
Alkylphenol ethoxylate	$C_{15}H_{24}O[C_2H_4O]_9$ For n=9	5 – 15	15	Ethoxylated alcohols, unspecified, at plant/RER S
Ethylene glycol butyl ether	$CH_3(CH_2)_3OCH_2CH_2OH$	0 – 5	5	Ethylene glycol diethyl ether, at plant/kg/RER S
Sodium carbonate	Na_2CO_3	0 – 5	5	Sodium carbonate from ammonium chloride production, at plant/GLO S
Sodium hydroxide	$NaOH$	0 – 5	5	Sodium hydroxide, 50% in H ₂ O, production mix, at plant/kg/RER S
Water	H_2O	rest	70	Water, completely softened, at plant/RER S

Table 50: Ecoinvent data inventory for a green compliant all-purpose cleaner (glucoside-based)¹⁰⁶

All-purpose cleaner formulation	Chemical structure	Concentration (wt %)	Assumption on concentration (wt %)	Ecoinvent data
Alkylphenol ethoxylate (Non-ionic surfactant)	$C_{15}H_{24}O[C_2H_4O]_9$ For n=9	5 – 18	10	Ethoxylated alcohols (AE7), palm kernel oil, at plant/RER S
Alkyl polyglucoside (Non-ionic surfactant)	$C_{16}H_{32}O_6$	0 – 15	3	Fatty acids, from vegetarian oil, at plant/RER S
Anionic surfactant	Not reported	1 – 5	3	RER: fatty alcohol sulphate, palm kernel oil, at plant/RER S*
Sodium citrate / Citric acid	$C_6H_5Na_3O_7$	0 – 5	3	Citric acid**
Water	H_2O	rest	81	Water, completely softened, at plant/RER S

* Alcohol sulphate (AS) C₁₂₋₁₅

** Citric acid LCI data was taken from Moataza (2009)¹²²

¹²² Moataza, M. S. (2009). *Citric Acid Production from Pretreating Crude Data Syrup by Aspergillus niger NRRL595*. Journal of Applied Sciences Research, 74-79.

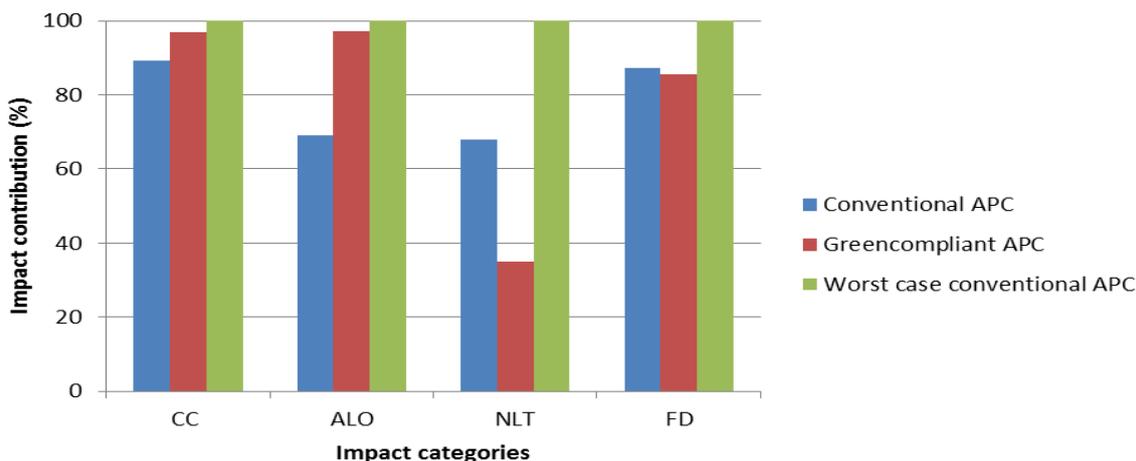


Figure 21: Sensitivity to formulation.

CC=climate change, ALO: Agricultural land occupation, NLT: Natural land transformation, FD: Fossil depletion

The results of the analysis with regard to formulation are presented in Figure 21. Trade-offs occur when choosing between a green compliant and conventional formulation (see Figure 21). The impact category that benefits most from a green compliant all-purpose cleaner is natural land transformation (NLT). The environmental impacts from the conventional and green compliant all-purpose cleaner are 68 % and 35 %, respectively, of the environmental impact from the worst case conventional all-purpose cleaner. In the (worst case) conventional formulation, the ethoxylated alcohols are a mix of petrochemical, palm kernel oil, and coconut oil. Petrochemical ethoxylated alcohols cause <1 % of the impact on natural land transformation, palm kernel oil <1 %, and coconut oil >99 %. Since the largest impacts on natural land transformation are from the coconut oil in mixed origin surfactant, the conventional and worst case conventional all-purpose cleaner have a higher impact on NLT than the green-compliant all-purpose cleaner with a surfactant based on palm kernel oil.

For agricultural land occupation (ALO), the impacts from conventional and green compliant all-purpose cleaners are 69 % and 97 % of the impacts from the worst case conventional. This is again related to the mixed origin of the ethoxylated alcohols in the (worst case) conventional formulation. Petrochemical ethoxylated alcohols cause <1 % of the impact on agricultural land occupation, palm kernel oil 22 %, and coconut oil 78 %. Because of the share of petrochemical surfactant present in the product formulation of the conventional all-purpose cleaner, the conventional product has a lower impact on ALO compared to the green-compliant product.

However, it should be noted that there are also impact categories for which the green compliant product showed the highest impact, for example a.o. terrestrial ecotoxicity (TTox). This is the result of the use of ingredients ethoxylated alcohols (55 % of ecotoxic impact), fatty acids (17 %), and fatty alcohol sulphate (28 %). The green-compliant formulation is also not the best option for the impact categories terrestrial acidification, particulate matter formation, freshwater ecotoxicity, urban land occupation, and water depletion, with differences of up to 21 % compared to the conventional all-purpose cleaner. This can be explained by the differences in formulation between the products studied. The consequences of the surfactant origin are further discussed in the preceding sections of the sensitivity analysis.

4.6.2 Surfactant origin

The surfactant used in detergent can be petroleum-derived or plant-derived from palm oil, palm kernel oil, or coconut oil. In the formulation for the conventional, based all-

purpose cleaner, a mix of petrochemical and plant-derived surfactant was used. Here the impact of the origin of the surfactant and the sensitivity of the results to this origin are analysed.

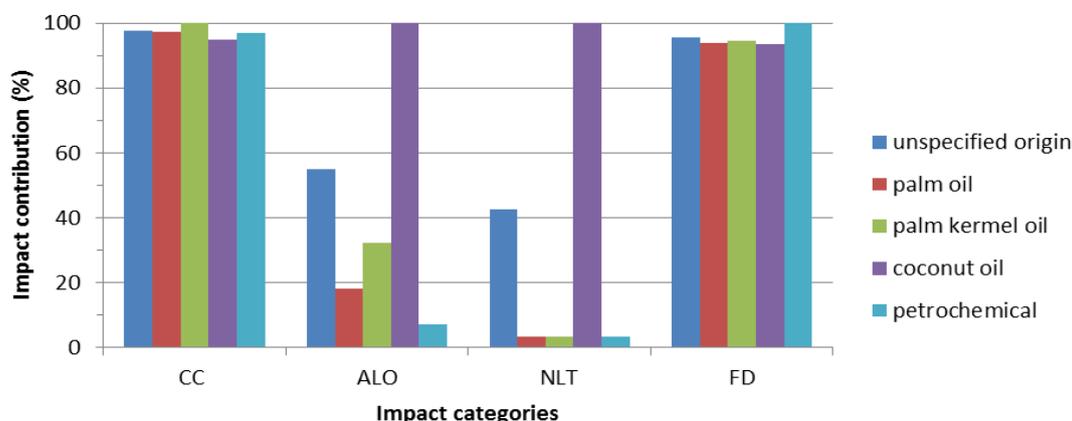


Figure 22: Sensitivity to formulation

CC=climate change, ALO=Agricultural land occupation, NLT=Natural land transformation, FD=Fossil depletion

The results show (see Figure 22) that the largest differences between surfactant origins are found for the impact categories terrestrial ecotoxicity, agricultural land occupation, and natural land transformation. Palm kernel oil contributes most to the impacts on terrestrial ecotoxicity. However, according to the results of the normalisation, terrestrial ecotoxicity is not a significant impact category.

Coconut oil contributes most to the impacts on agricultural land occupation and natural land transformation. Coconut oil is also present in the surfactant of unspecified origin, and as a consequence the impact of this surfactant is also higher. Petrochemical surfactants are of less importance for most impact categories but score the highest for fossil depletion (4-7% more compared to the other impact categories).

4.6.3 Product dosage

In the baseline scenario, the reference flow is 4.7 g of product per functional unit (FU). In the sensitivity analysis, we tested the influence of using a half dose, a double dose, or three doses. In this instance we assumed that when using less than half dose of product, the cleaning purposes are not adequately fulfilled. In addition, in most of the applications, the end-user tends to overdose and therefore the sensitivity analysis is primarily focused on the use of higher doses per application. The characterised results show that the contributions of all impact categories vary proportionally (see Figure 23). This implies that the dose is of crucial importance for the environmental impact and the impacts of overdosing the product are significant.

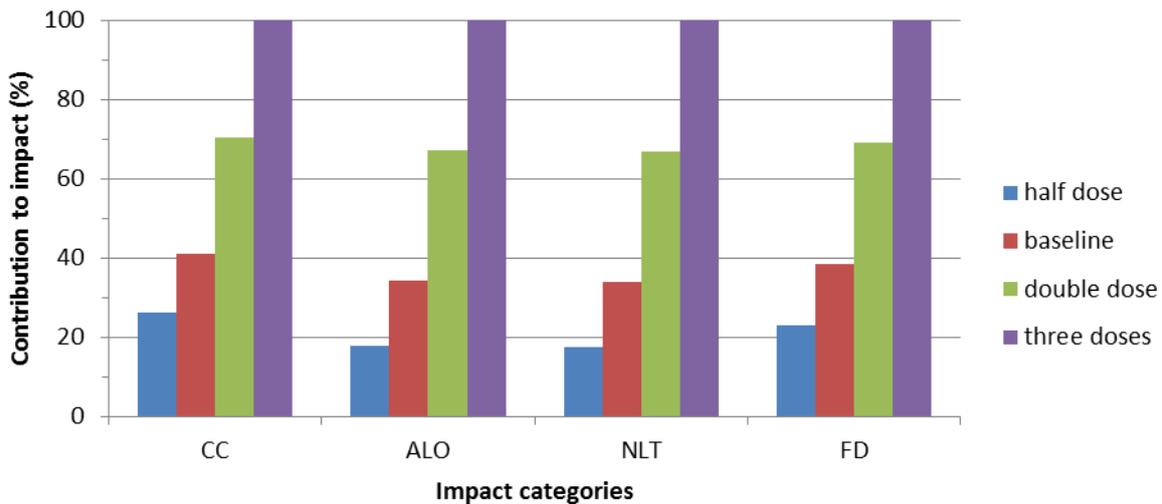


Figure 23: Sensitivity to product dosage

CC=climate change, ALO=Agricultural land occupation, NLT=Natural land transformation, FD=Fossil depletion

4.6.3.1 Quantity of warm water used

In the use phase, warm or cold water can be used to rinse the product following application. In the study using warm water was assumed based on studies found in the literature.^{105,106} In the sensitivity analysis, the influence of using no warm water (i.e. when the consumer does not rinse the detergent), 0.55 L (baseline), twice the baseline amount (1.1 L) of warm water, or three times the baseline amount (1.65 L) of warm water (see Figure 24) was explored. The characterised results show that the largest influence of warm water use is on the impact categories marine eutrophication and water depletion, which are both not identified as having a significant impact in the normalisation step.

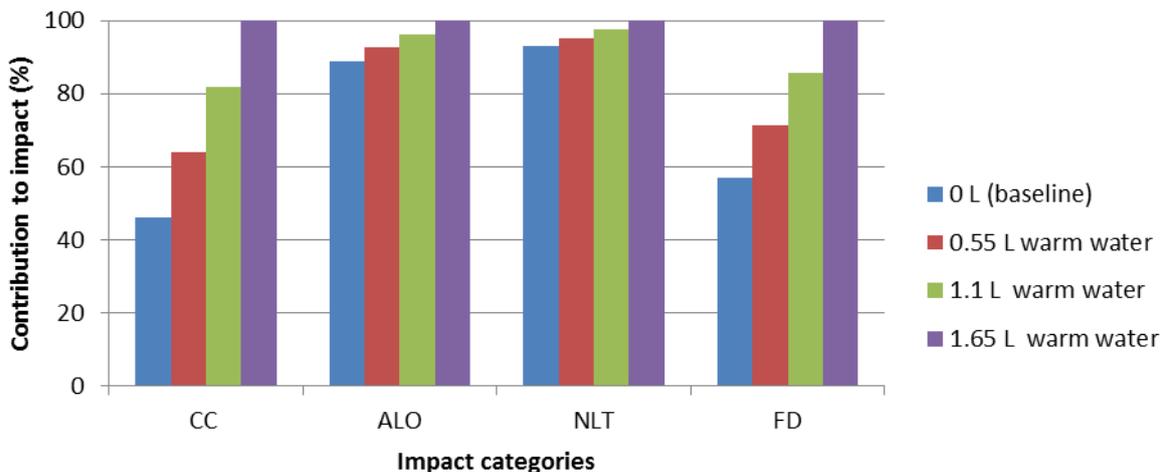


Figure 24: Sensitivity to the use of warm water

CC=climate change, ALO=Agricultural land occupation, NLT=Natural land transformation, FD=Fossil depletion

4.6.3.2 Temperature of the water used

In the use phases, warm or cold water can be used to rinse the product following application. For the in-house LCA study the use of warm water was assumed, based on studies found in the literature.^{105,106} However, it is recognised that users of a general purpose cleaner may choose to use cold water for rinsing or warm water at a range of temperatures. As such, in this sensitivity analysis the influence of using no heated water, using water of 30°C, 40°C or 50°C (see Figure 25) was explored. The characterised

results show that the largest influence of water temperature is on the impact categories: Freshwater Eutrophication, Human Toxicity and Ionising Radiation, which are all not identified as having a significant impact in the normalisation step. In conclusion, using cold water instead of warm water to rinse the product following use does not have a significant impact on the overall environmental impact of the product.

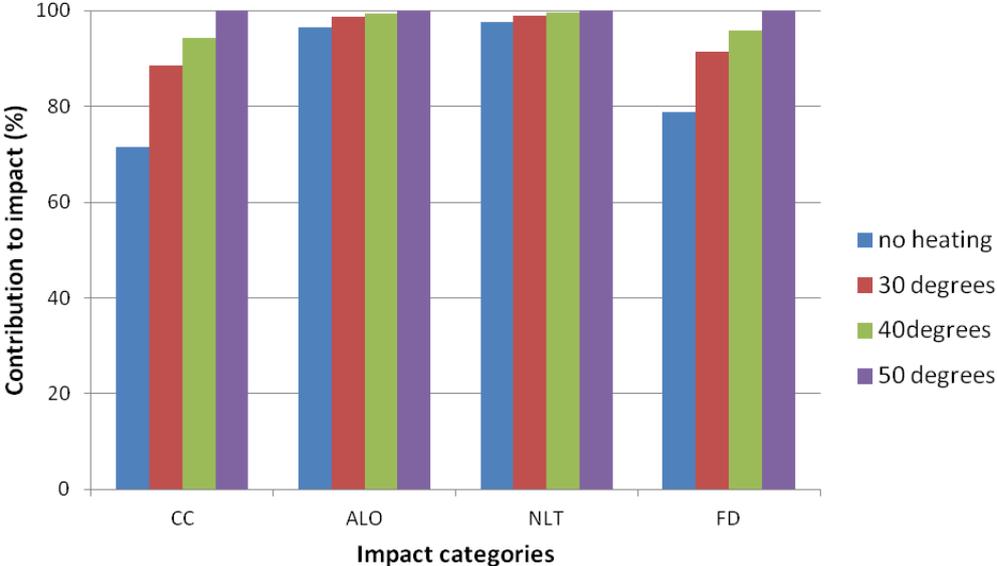


Figure 25: Sensitivity to the water temperature. Impact categories stand for CC=climate change, ALO: Agricultural land occupation, NLT: Natural land transformation, FD: Fossil depletion

4.6.3.3 Electricity mix

In the baseline scenario we used the energy mix for Continental Europe (the Union for the Coordination of the Transmission of Electricity (ECTE)) from Ecoinvent. This represents the electricity net production shares by the member countries based on annual averages from the year 2000. For the sensitivity analysis we used the dataset for electricity production in France (approximately 50 % is derived from nuclear energy), electricity production in Switzerland (approximately 50 % derived from hydropower), and electricity production in the Netherlands (approximately 50 % is derived from natural gas). The results are shown in Figure 26.

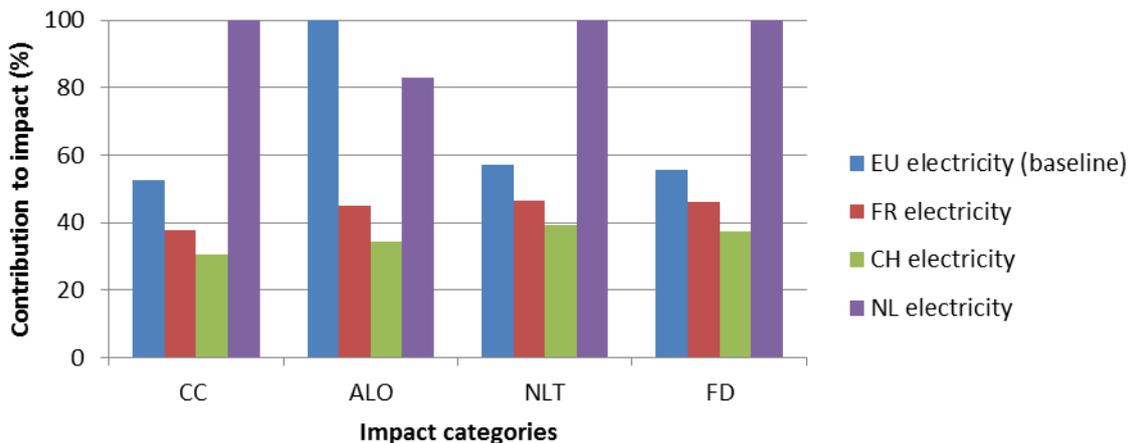


Figure 26: Sensitivity to electricity mix

CC=climate change, ALO=Agricultural land occupation, NLT=Natural land transformation, FD=Fossil depletion

The results show that switching to an energy mix based mostly on nuclear energy significantly reduces the environmental impacts in nearly all impact categories, except for ionising radiation, water depletion, and metal depletion. Switching to an energy mix based mostly on hydro power significantly reduces the environmental impacts in nearly all impact categories, except for ozone depletion, ionising radiation, water depletion, and metal depletion. As commented the results showed remarkable differences in almost all impact categories due to the change of the electricity mix under consideration. The comparison between the four electricity mixes shows that switching to an electricity mix with higher renewable energy sources share is beneficial from the environmental point of view. Switching towards an electricity mix based on nuclear energy significantly decreases the impact on the selected categories. However, we cannot conclude that this is environmentally beneficial from a holistic point of view, as it can heavily impact on other non-studied categories.

Remarkable is the increase in most of the categories under study when the electricity mix is mainly produced from natural gas. Switching to an energy mix based mostly on gas would result in higher environmental impacts for nearly all categories. However, the impact on ionising radiation would be reduced significantly, and the impact on freshwater eutrophication and human toxicity would also be reduced a little. This fact can be attributed to the larger use of fossil fuel resources

4.6.3.4 Impact method

Differences in characterization models and their substance coverage for individual impact categories have earlier been identified as influential on the results of LCAs, sometimes able to change the conclusions of comparative LCA studies and often leading to different ranking of substances in terms of major contributors to the environmental impact.¹²³

In 2012, following work involving hearing of domain experts and stakeholders at large, the JRC identified best practice and launched a recommended set of characterization models and factors for application in LCIA.¹²⁴ The recommended method, further referred to as ILCD 2009, was compiled by assessing a total of 156 different characterization models belonging to 12 different LCIA methodologies and choosing the most appropriate,

¹²³ M. Owsianiak, A. Laurent, A. Bjorn, M. Z. Hauschild, IMPACT 2002+, ReCiPe 2008 and ILCDs recommended practice for characterization modelling in LCA: a case study-based comparison. Int J LCA, DOI 10.1007/s11367-014-0708-3

¹²⁴ Energy roadmap 2050. ISBN 978-92-79-21798-2

based on a predefined set of assessment criteria.¹²⁵ Consequently the ILCD 2009 is now being introduced into LCA modelling tools, but it is not known yet whether there can be differences in impact scores between the ILCD 2009 and other frequently used LCIA methodologies and whether the choices of the ILCD 2009 matters for the implementation of LCA results.

In this study, the results were analysed with the ReCiPe midpoint hierarchist perspective (H). The influence of the method is tested in this section by performing exactly the same LCA with ILCD midpoint. The possible differences in impact scores between LCIA methods can be due to the differences in underlying characterization models, differences in substance coverage and/or errors in implementation of characterization factors into the modelling software.

According to the ILCD method, the ingredients were quite an important contributor for the characterised midpoint results, particularly for the categories ozone depletion, freshwater eutrophication, human toxicity, non-cancer effects, and particulate matter formation. The high contribution for ozone depletion is consistent with ReCiPe. However, land use (ILCD) does not score as high as agricultural land occupation (ReCiPe). Natural land transformation, which is important in ReCiPe, is not assessed in ILCD. Terrestrial ecotoxicity and metal depletion are also not assessed in ILCD.

For manufacturing, both methods give similar results (see Figure 27). Packaging contributes less than 25 % for all impact categories. For mineral, fossil and renewable resources (ILCD), packaging contributes 10 %, whereas it contributes 36 % to fossil depletion in ReCiPe. For transport, both methods give similar results.

In agreement with ReCiPe, ILCD showed that the use phase is an important contributor for the characterised midpoint results. According to ILCD, impact categories with >30 % of their impacts coming from the use phase are acidification, marine eutrophication, human toxicity cancer effects, freshwater ecotoxicity, land use, and water depletion. According to ReCiPe, impact categories with >30 % of their impacts coming from the use phase are freshwater eutrophication, human toxicity, terrestrial ecotoxicity, marine ecotoxicity, ionising radiation, urban land occupation, and water depletion. Acidification, marine eutrophication, and freshwater ecotoxicity scored high in ILCD but did not in ReCiPe. Conversely, freshwater eutrophication, terrestrial ecotoxicity, and marine ecotoxicity scored high in ReCiPe but not in ILCD. The most remarkable observation was that human toxicity contributed 39% in ReCiPe. ILCD makes a distinction between cancer and non-cancer effects. Cancer (43 %) appeared to be more important than non-cancer effects (19 %).

According to ILCD, the end of life contributed to the characterised midpoint results for terrestrial eutrophication, and ionising radiation (both human health and ecosystems). It is noteworthy that marine eutrophication, which scored particularly high in ReCiPe, did not show high impacts in ILCD. Metal depletion, which was important in ReCiPe, is not included in ILCD.

Overall, for the majority of the impact categories, both methods showed the same hotspots. This can be attributed to the fact that ILCD characterization factors are based on ReCiPe ones on six impact categories: climate change, stratospheric ozone depletion, photochemical ozone formation, freshwater eutrophication, marine eutrophication and impact from ionizing radiation to human health. ReCiPe puts a bit more emphasis on the ingredients compared to ILCD, and indicates that the ingredients contribute much to the impacts on terrestrial ecotoxicity, agricultural land occupation and natural land transformation. ILCD puts a bit more emphasis on the end of life, particularly for ionising

¹²⁵ Recommendations based on existing environmental impact assessment models and factors for LCA methods. Database and supporting information. EUR 25167 <http://et.jrc.ec.europa.eu>

radiation (both human health and ecosystems). These discrepancies between the scoring of these impacts can be due to the contribution patterns between both methodologies.

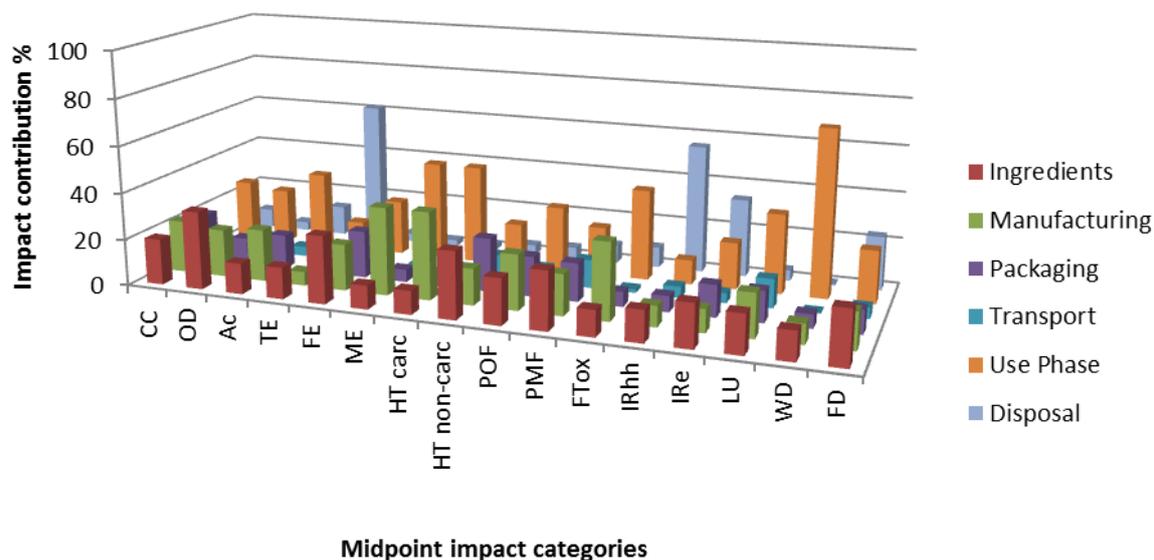


Figure 27: Impact contribution of different life cycle stages of an all-purpose cleaner according to the ILCD method

4.7 Comparison to other APC products

For the in-house LCA conducted as part of this study, a general purpose cleaner was chosen on the basis that this product type has the largest market share in Europe. However, the EU Ecolabel product group 'All-Purpose Cleaners and Sanitary Cleaners', also covers sanitary cleaners and window cleaners. Therefore it is necessary for the criteria revision to identify the key environmental impacts of sanitary cleaners and window cleaners.

As full LCA studies of sanitary cleaners and window cleaners were beyond the scope of this study, results from published studies have been used. In this section the findings for general purpose cleaners are compared to the life cycle impacts of household toilet and bathroom and glass trigger spray cleaners. The life cycle assessments conducted as part of the AISE Charter for Sustainable Cleaning have been chosen, as they use a comparable methodology to the in-house LCA study.

In the AISE Charter Advanced Sustainability Profile (ASP) substantiation dossier on toilet cleaners, the life cycle impact of acid and bleach toilet cleaners was assessed.¹²⁶ The LCAs for both toilet cleaner formats show that the most significant impact on the environment come from the ingredients sourcing (i.e. the surfactant, and bleaches or acids) followed by transport and packaging. The use phase is not relevant here, and is therefore not taken into account. For both bleach and acid toilet cleaners, natural land transformation is the largest impact category for the ingredients stage; this is comparable to the results for an all-purpose cleaner.

¹²⁶ AISE. 2013. Charter update 2010. Final version 1 July 2014. ASP substantiation dossier: Household toilet cleaners

In the context of the ASP development for household trigger spray cleaners, the life cycle impact of bathroom and window/glass trigger spray cleaners were assessed.¹²⁷ The LCAs for both trigger spray cleaner formats (bathroom and window cleaner) show that the most significant impact on the environment are the ingredients sourcing, transport and packaging, whereas manufacturing and the end of life phases have the lowest contribution towards the total environmental impacts. The impact of the use phase related to the trigger spray cleaner (i.e. removal of the product using a cloth or towel) is negligible, and therefore not taken into account. For bathroom trigger spray cleaners, ingredients sourcing was most important, with the highest impact attributed to natural land transformation. For glass/window trigger spray cleaners, the packaging was the most important life cycle stage. This can be attributed to the differences in formulation between glass/window cleaners and the other cleaning products covered by the APC category.

To conclude, other detergent types generally follow the same trends in which the ingredients are of utmost importance with the exception of window/glass cleaners for which packaging is the most important. However, if warm water is needed in the use phase, this phase is also of major importance for the overall environmental impacts.

4.8 Summary of findings

The aim of this section is to summarise the findings of the technical analysis, which comprises a literature reviews of existing LCA studies, a review of non-LCA impacts, a bespoke LCA analysis and a sensitivity analysis.

The following conclusions can be derived from the screening LCA:

- I. The life cycle stages with the largest contribution to the environmental impact profile of all-purpose cleaners are the sourcing of raw materials (the ingredients). These results were found out for a general purpose cleaner. According to the literature, other APC detergent types such as bathroom detergents, window detergents or hard surface detergents would, in general terms, follow the same trend.
- II. If hot water is used with the product during cleaning, then the use phase has a significant impact. This is because of the energy used to heat the water.
- III. Based on the normalisation assessment, by far the most significant impact category for all-purpose cleaners in Europe is natural land transformation (see Figure 20). According to the literature, this is also true of other APC products including sanitary cleaners and window cleaners.

The key environmental performance indicators (KPIs - i.e. those variables that mainly drive the results) for APCs in Europe, based on the results of the screening LCA and the literature study are:

- Amount of product used.
- Formulation, to be specific: the choice and amount of surfactant.
- Energy consumed to heat the water (when needed).
- Energy source used to heat the water (when needed).

¹²⁷ AISE. 2013. Charter update 2010. Final version 1 October 2013. ASP substantiation dossier: Household trigger spray cleaners (glass/window, bathroom, kitchen and all-purpose for hard surfaces)

The following conclusions are drawn from the technical analysis as a whole and are made about the key environmental considerations that should be linked to the ecolabel criteria of APCs and suggestions for how these issues can be addressed by the EU Ecolabel are presented in Table 51.

Table 51: Overall summary of the key environmental aspects and assessment of the possibility of reducing these impacts by using implementing EU Ecolabel

Conclusion	Environmental Significance	Possibilities of reduction applying EU Ecolabel criteria
The formulation of the product is one of the largest contributors to environmental impact of the product itself. Surfactants are responsible for most of the impact.	High	Directly by restricting the use of the worst performing surfactants
Concentrated products perform better than other product formats	High	Indirectly by encouraging the use of concentrated products.
Impacts of detergent formulation is high	Medium	Directly by encouraging the development of products with a minimum of ingredients that do not add to its function.
The use phase has a large contribution to the environmental impact, driven by energy consumed to heat water when it is needed.	High	Indirectly through consumer information on the packaging about the use of cold water for rinsing to reduce the amount of energy consumed
Environmental impact arises from the end of life, specifically related to municipal wastewater treatment.	Medium	Directly through limitations on the toxicity to aquatic organisms of the substances/ingredients
Impacts of detergent packaging are of medium importance.	Medium	Directly, by limiting packaging and requirements on the packaging materials
The impacts of distribution and transport are low	Low	No, it would require specification for local sourcing

5. PRODUCT INNOVATIONS AND IMPROVEMENT POTENTIAL

5.1 Introduction and approach

The aim of this section of the report is to assess the potential improvement from the environmental point of view that might be delivered by adopting innovations in the all-purpose cleaners and sanitary cleaners (APC).

In order to assess the potential improvement of APC the following have been undertaken:

- a sensitivity analysis using the results from the LCA study
- an identification of recent product innovations
- an estimation of the potential environmental benefits associated
- an identification of the possible measures to be undertaken to reflect these findings into the EU Ecolabel scheme.

The sensitivity analysis conducted using results from the LCA study is presented in Section 4.6 and covers the attributes which showed significant contribution to the environmental impact. These are product formulation and surfactant origin, product dosage, warm water consumption, electricity mix, and impact assessment method.

5.2 APC product innovations

In order to understand the scope of improvement options for APCs, recent product innovations which lead to enhanced environmental performance have been identified. These product innovations are: compaction, low/no harmful chemicals content, and natural/renewable ingredients. Each of these innovations and their improvement potential is discussed below.¹²⁸ Product innovations have been introduced throughout this report, the focus in this section is on innovations which offer improvement in terms of environmental performance.

5.2.1 Formulation optimisation

Ingredients sourcing is one of the most important contributors to environmental impact.^{105,129,130,131} An environmentally superior APC is one that reduces environmental impacts throughout its life cycle through the careful selection of ingredients and packaging. A superior cleaner is also one that minimises ingredients that do not add to its function. The following are examples, by ingredient type, of formulation optimisation for APCs:

- For surfactants, selecting substances which are biodegradable and consider renewable raw materials.
- For builders, sodium citrate and sodium bicarbonate have fewer environmental impacts.

¹²⁸ Global Household Care: Green Cleaning – Still an Oxymoron, Euromonitor International, September 2009.

¹²⁹ Kapur A, C Baldwina, M Swanson, N Wilberforce, G McClenachan, M Rentschler, 2012. Comparative Life Cycle Assessment of Conventional and Green Seal-Compliant Industrial and Institutional Cleaning Products. *Int J LCA* 17:377-387

¹³⁰ AISE. 2013. Charter update 2010. ASP substantiation dossier: Household trigger spray cleaners, glass/ window, bathroom, kitchen and all purpose (for hard surfaces) cleaners. Final version 1 October 2013.

¹³¹ University of Tennessee, 1992. Household cleaners: environmental evaluation and proposed standards for general purpose household cleaners.

- For solvents, pine oil and d-limonene appear to have fewer environmental impacts.
- Antimicrobials are unnecessary for the cleaning performance of some APC, but most have dual purposes. Pine oil appears to have fewer impacts than either sodium hypochlorite or quaternary ammonium compounds.
- Dyes and fragrances should be eliminated or minimised as they do not add to function.

Other general trends for formulation include no phosphates/phosphorus, low/no harmful chemicals content and natural/renewable ingredients.

5.2.2 Compaction of detergents

Compaction is now common place amongst the large brands in APC, with brands such as Unilever and Procter & Gamble offering products which are at least 2x and often 3x concentrated. However, further innovation in compaction technology has led to the development of 8x concentrated APC.¹³² Compaction of APC brings several environmental benefits, as long as the end-consumers understand this issue and do not overdose, through reductions in the amount of ingredients and packaging raw materials used and savings in water, energy and resources are made.

The concentration of a product is one of the key factors to reduce the environmental impact.¹³³ The benefits related to the compaction of detergents are significant savings in package material, energy (hence CO₂) and waste, as well as delivering substantial savings in freight as more product can be carried per truck. Furthermore, for packaging materials recycled HDPE, recycled PET or recycled cardboard are superior, whereas PVC and aerosol containers cause too many negatives.

5.2.3 Natural/renewable ingredients

The use of ingredients from natural or renewable sources instead of petrochemical sources is increasing in the APC market. This is due not only to environmental risks but also by potential health risks posed by ingredients.¹³⁴ For most of the bulk ingredients this is not an option as they are inorganic and therefore cannot be easily replaced by renewable raw materials. However, for surfactants it is possible to use raw materials from renewable origins as their lipophilic compound is usually organic. Historically, vegetable and animal oils and fats were used as raw materials for soaps and detergents. Consequently, the use of renewable raw materials in this product group is not a recent innovation. An example of a new trend in this area is the use of probiotics to break down dirt particles on a microbial level.⁹⁵

5.3 Conclusions

A summary of the results from the sensitivity analysis and the LCA analysis for APC, along with suggestions for how these issues can be addressed by the EU Ecolabel and an estimate of the potential benefits associated are presented in Table 52. The outcomes are

¹³² How laundry detergent became a catalyst for green innovation, Yale Environment 360, June 2013. Available from: http://e360.yale.edu/feature/adam_lowry_how_laundry_detergent_became_green_innovation_catalyst/2662/

¹³³ AISE. 2013. Charter update 2010. ASP substantiation dossier: Dilutable all purpose and floor cleaners. Version 1 October 2012, updated 17 June 2013: floor cleaners included

¹³⁴ Global Household Care: Green Cleaning – Still an Oxymoron, Euromonitor International, September 2009

presented by life cycle stage. As the results of the LCA and sensitivity analysis have shown that the highest environmental impacts are associated with the use phase and the ingredients used, the focus for improvement should be for these phases. The high environmental impact of the use phase can be addressed by encouraging consumers to clean at lower temperatures and promoting products which are effective at low temperatures. Moreover, impacts of the use phase could be further reduced with product compaction.

Table 52: Outcomes of sensitivity analysis

Stage	Environmental impact	Potential environmental gain	Good environmental practices/restrictions	Area of improvement
Ingredients	8-98 % impact contribution, highest for terrestrial ecotoxicity. Also important for natural land transformation, agricultural land occupation, ozone depletion, and metal depletion.	High	For each functional group in the product composition, select substances which are less harmful in terms of ecotoxicity, aquatic toxicity and biodegradability	Improvement of the environmental performance of ingredients used. The sensitivity analysis has shown that for terrestrial ecotoxicity the ethoxylated alcohols have the highest impact. For human toxicity, freshwater toxicity and marine ecotoxicity ethoxylated alcohols and ethylene glycol diethyl ether have the highest impacts.
			Restrict the use of surfactants which have a significant impact on natural land transformation and agricultural land occupation.	The sensitivity analysis showed that impact can be reduced by excluding surfactants from coconut oil
Manufacturing	0-38% impact contribution, high for freshwater eutrophication, and ionising radiation.	Low	Choose a clean source of energy	The sensitivity analysis showed that switching to an energy mix based mostly on hydro power significantly reduces the environmental impacts in nearly all impact categories, except for ozone depletion, ionising radiation, water depletion, and metal depletion.
Packaging	0-36 % impact contribution	Moderate	Reduce the use of packaging materials from virgin sources by encouraging post-consumer materials for packaging.	As the majority of the environmental impact from packaging is due to the material (extraction and processing). A decrease in the use of virgin materials will result in direct decrease of environmental impact.
Transport	0-12 % impact contribution, the highest score goes for photochemical oxidant formation, urban land occupation, and metal depletion. Overall the impact is minor compared to the other stages.	Low	Saving of fossil fuel used in transport. Decrease product weight and improve transport efficiency and logistics.	Encourage concentrated products and decrease packaging weight

Use phase	1-88 % impact contribution, The highest score goes for water depletion, but also important for freshwater eutrophication, human toxicity, freshwater ecotoxicity, marine ecotoxicity, ionising radiation and urban land occupation. The energy used to heat the water is the highest contributor to this.	Moderate – can only be addressed indirectly through recommendations on use.	Clean at lower temperatures. Encourage the use of cold water	The sensitivity analysis has shown that reducing the amount of warm water used, or the temperature of the water, would lead to reduced environmental impact, particularly for fresh water eutrophication (FE), human toxicity (HTox), freshwater toxicity (FTox), marine ecotoxicity (MTox), ionising radiation (IR), urban land occupation (ULO), and water depletion (WD).
			Do not overdose the product as this increases the overall chemical load.	The sensitivity analysis has shown that by reducing the dose, the environmental impact in all impact categories can be reduced proportionally.
Treatment of packaging waste	0-77 % impact contribution, highest for marine eutrophication, <30% for the rest of the impact categories.	Impacts are dependent on the packaging stage	Encourage the use of packaging which is recyclable and easy to disassemble and separate	Recycling of packaging waste is generally environmentally preferable than other waste treatment options.

6. CONCLUSIONS AND FURTHER STEPS

This background document summaries the findings for the revision of the criteria for EU Ecolabel for all-purpose cleaners and sanitary cleaners and provides different findings of key areas for investigation that were identified as a result of stakeholder surveys, market analysis and known concerns with existing criteria. It identifies where there is scope for strengthening the current EU Ecolabel and which criteria could be removed, amended or further developed.

The information contained in this document reflects that most of the products are intended for cleaning hard surface cleaning and that the market across Europe can be categorised as all-purpose cleaners (46 %), window/glass cleaners (4 %), sanitary cleaning (36 %) and other ancillary cleaning products (14 %). Consumer choice of cleaning products is driven by ease of use and convenience of the product, price, health and safety during use and efficacy of the product.

The technical analysis found that during the life cycle stage, the largest contribution to the environmental impact profile of all-purpose cleaners is the ingredient extraction stage except for window/glass cleaners. In this type of products, packaging has a larger contribution than ingredient extraction.

The environmental impacts during the use phase largely depend on the consumer behaviour. When warm water is used to rinse off the product during use, the use phase has a significant impact. However, this is only relevant for some of the products covered by this product group, such as kitchen cleaners and all-purpose cleaners.

The studies carried out in this report, and based on the normalisation assessment reveal that by far the most important impact category for all-purpose cleaners in Europe is natural land transformation. The results of the LCA for a generic general purpose cleaner, chosen as the representative product due to its large market share shows that the ingredient extraction is an important contributor to the characterised midpoint results, particularly for the terrestrial ecotoxicity, agricultural Land Occupation and Natural Land Transformation impact categories. Of all the ingredients, the majority of the environmental impact can be attributed to ethoxylated alcohol surfactants. The manufacturing, use and disposal phases also represent important contributors to the overall environmental impact.

The key environmental performance indicators (KPIs), i.e. those variables that mainly drive the results for APCs in Europe, based on the results of this study, are:

- Amount of product used per application,
- Formulation – specifically the choice and amount of surfactant,
- Energy consumed to heat the water (if warm water is used),
- Energy source used to heat the water (if warm water is used).

The sensitivity analysis carried out reveals ranges of environmental impacts attributed to the identified hotspots. The sensitivity analysis pointed out the importance of selecting the ingredients of the cleaning products (e.g. biodegradable surfactants, less harmful substances in terms of ecotoxicity, aquatic toxicity and biodegradability), advising consumer about the environmental benefits of using cold water, the correct dosage and the good management of the packaging. On those areas, revised or newly proposed EU Ecolabel criteria will be presented.

The revision of the EU Ecolabel criteria proposal will be presented in an accompanying document "Technical report" that will summarize the rationale behind each of the EU Ecolabel criteria changes proposed and will be presented as the first working document before the first AHWG meeting.

7. References

See footnotes along the doc

8. List of abbreviations and definitions

Abbreviations

AISE	International Association for Soaps, Detergents and Maintenance Products
aNBO	aerobically non-biodegradable
anNBO	anaerobically non-biodegradable
APC	all-purpose cleaner and sanitary cleaners, refers to name of product group
APD	alkylphenol derivative
APEO	alkylphenol ethoxylate
ASP	Advanced Sustainability Profile
BCF	bioconcentration factor
BRIC	Brazil, Russia, India and China
CADD	consumer automatic dishwasher detergents
CAGR	compound annual growth rate
CDV	critical dilution volume
CFC	chlorofluorocarbon
CLP	(EU Regulation on the) Classification, Labelling and Packaging of Substances and Mixtures
COMEXT	statistical database on trade of goods managed by Eurostat
CTUe	comparative toxic unit
DADMAC	diallyldimethylammonium chloride
DD	dishwasher detergents
DID list	Detergents Ingredient Database
DTPA	diethylenetriaminepentaacetic acid
EC	European Commission
EC50	median effective concentration
ECHA	European Chemicals Agency
EDTA	ethylenediaminetetraacetic acid
EEA	European Economic Area
EU	European Union
GDP	gross domestic product
GHG	greenhouse gas
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GLDA	glutamic acid di-acetic acid
GPP	Green Public Procurement
IC50	median inhibition concentration
I&I	industrial and institutional
IFRA	International Fragrance Association
IIDD	industrial and institutional dishwasher detergents
IKW	Industrieverband Körperpflege- und Waschmittel e. V.
ILCD	International Reference Life Cycle Data System
ISO	International Organisation for Standards
K _{ow}	octanol-water partition coefficient
LAS	linear alkylbenzene sulphonate
LCA	life cycle assessment
LCIA	life cycle impact assessment
LC50	median lethal dose
LHC	liquid household cleaner
MGDA	methylglycinediacetic acid

NACE	Nomenclature des Activités Économiques dans la Communauté Européenne
n.e.c.	not elsewhere classified
NLT	natural land transformation
n.p.r.s	Not packaged for retail sale
NTA	nitrilotriacetic acid
PBT	persistent, bio-accumulable and toxic
PET	polyethylene terephthalate
ppm	parts per million
PRODCOM	PRODUCTION COMMUNAUTAIRE (Community Production)
p.r.s	Packaged for retail sale
PVC	polyvinyl chloride
REACH	Registration, Evaluation, Authorisation and restriction of CHEMICALS
SVHC	substances of very high concern
TAED	tetraacetylenediamine
vPvB	very persistent and very bio-accumulable
WMO	World Meteorological Organization
WUR	weight/utility ratio

Terms and definitions

Domestic all-purpose or sanitary cleaner	In this report, denotes all-purpose or sanitary cleaners which are principally intended for household use.
Professional, institutional or industrial all-purpose or sanitary cleaner	In this report, denotes all-purpose or sanitary cleaners which are intended for use solely by professional users in the non-domestic or non-residential sectors (e.g. industrial and institutional sectors). 'Industrial and institutional detergent' means a detergent for washing and cleaning outside the domestic sphere, carried out by specialised personnel using specific products.
Cleaning	According to EN ISO 862 Surface active agents – Vocabulary, a process in which dirt (stains) are removed from their substratum and put into solution or into dispersion. ¹³⁵ According to AS/NZ 4187, the removal of soil and a reduction in the number of microorganisms from a surface, by a process such as washing with detergent solution without prior processing.
Detergents	Any substance or preparation 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 households, or for institutional or industrial purposes.
Biocide	Chemical substance or microorganism which can deter, render harmless, or exert a controlling effect on any harmful organism by chemical or biological means.
Biocidal products	Active substances and preparations containing one or more active substances, put up in the form in which they are supplied to the user, intended to destroy, render harmless, prevent the action of, or otherwise exert a controlling effect on any harmful organism by chemical or biological means. ¹³⁶
Bio-accumulative	The tendency for a substance to be accumulated in an organism due to difference in the

¹³⁵ In the everyday sense, the effect of detergency is the cleaning of surfaces. It is the result of setting in motion many different physical-chemical phenomena. The dirt or stains are undesirable additions on the surface and/or inside the substratum

¹³⁶ Based on Regulation (EC) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products (L 167/1 OJEU 27.8.2012) Available at: http://ec.europa.eu/environment/chemicals/biocides/index_en.htm.

	rate of intake and loss of the substance from the organism.
Enzymes	Proteins that speed up the rate of chemical reactions without interacting in the reactions themselves.
ISO 14024 Type I Environmental label	A voluntary multicriteria-based, third party program that awards a license that authorises the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations.
EU Ecolabel	The ISO 14024 Type I environmental label from the European Union that is valid throughout Europe.
Surfactant	Any organic substance and/or preparation used in detergents, which has surface-active properties and which consists of one or more hydrophilic and one or more hydrophobic groups of such a nature and size that it is capable of reducing the surface tension of water, and of forming spreading or adsorption monolayers at the water-air interface, and of forming emulsions and/or micro-emulsions and/or micelles, and of adsorption at water-solid interfaces.
Standard	A document established by consensus and approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

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ANNEXES

Annex I: All-purpose and sanitary cleaner ingredients

Surfactants

Surfactants (surface active agents) are the active cleaning ingredients found in detergent products. They function by changing the surface tension of water to assist with cleansing, wetting surfaces, foaming and emulsifying. Cleaning products often contain surfactant mixtures, this due to the different responses to water and abilities to remove certain soils experienced by individual surfactants. A wide variety of anionic and non-ionic surfactants are found in all-purpose and sanitary cleaners. These surfactants can accumulate and may be toxic and harmful in the environment. Therefore, to reduce the environmental impacts, surfactants which are readily biodegradable or environmentally innocuous should be chosen.

Builders

A variety of inorganic and organic builders are added to cleaning products to improve the cleaning effectiveness of surfactants, they function by removing metals ions to soften the water. Builders include alkalis, ion exchangers and complexing agents. Alkali salts such as sodium carbonate, ammonium compounds and sodium metasilicate are found in all-purpose cleaners, scouring cleaners and window cleaners. Alkali salts aid with the removal of oily dirt without rubbing. Liquid cleaners may contain hydrotropes; these are added in small amounts to increase the solubility of surfactants in the product.

Bleaching agents

Bleaching agents are used to dissolve and oxidise organic deposits. In toilet cleaners active oxygen bleach is used for sanitising and hard surface cleaning. Bleach catalysts and bleach activators may be used alongside bleaching agents, they are used to boost the performance and make bleaches effective at lower temperatures.

Acids

Acids such as formic acid, lactic acid, sulphuric acid or phosphoric acid are used in sanitary cleaners to calcium and other metal salt deposits which are found on sanitary ware. Acids can remove mineral deposits, rust stains, hard water deposits and discoloration; in addition to cleaning action some are also effective at disinfecting surfaces.

Scouring abrasives

Abrasives are added to cleaning products in order to remove stubborn soils from a variety of surfaces. They function through mechanical scouring action, by creating friction to ease hardened stains. They are used in kitchen cleaners to remove baked on food soils from cooker tops and in bathroom cleaners to remove grime from tiles. Types of abrasive include physical, mineral and chemical.

Solvents

The function of solvents in cleaning products is to increase the cleaning effect of surfactants by dissolving oil and grease. Solvents used in all-purpose cleaners include alcohols, glycols, glycol ethers and terpenes. Other types of solvents such as pine oil and citrus oils may also be found in cleaners.

Preservatives/biocides

Preservatives are used to prevent the product from spoiling during storage by preventing the growth of microorganisms. Biocides are often used for preservation purposes. However, they can present significant risk to the environment and human health when used for purposes beyond preserving the product.

Dyestuffs

Dyestuffs are added to the detergent formulations in order to give the detergents colour and for marketing purposes. Colouring agents are not always used just for aesthetic reasons; sometimes they are used for functions such as aiding with identification of different professional product types. Colouring agents may also aid with dosing of consumer products, as it is easier to see amounts of coloured product dosed compared to clear products.

Thickening agents

Thickening agents may also be referred to as viscosity controlling agents. They are added to the formulation in order to control the thickness of the final product.

Fragrances

Fragrances do not aid the cleaning performance function of a product; instead they are added as many consumers associate fragrance with cleanliness. They may also be added to mask unpleasant smells of some of the other ingredients. However, fragrances contain substances which have negative health and environmental impacts.

Standard formulations¹³⁷

Table 53: Standard formulation for all-purpose cleaner

All-purpose cleaner	Liquid (%)	Spray (%)
Anionic surfactants	2-10	0-15
Soap	0.5-3	
Non-ionic surfactants	0-5	
Builders	1-10	0-5
Solvents & hydrotropes	0-15	2-15
Organic polymers	<2	
Skin protecting agents	<2	
Preservatives	<2	<1
Dye	<1	<1
Perfume	<1	<1
water	75-85	85-95

Table 54: Standard formulation for abrasive cleaner

Abrasives	Liquid A (%)	Liquid B (%)	Powder (%)
Anionic surfactants	1-10	1-10	1-5
Non-ionic surfactants	1-10	1-10	
Calcium carbonate	10-50		
Calcium-magnesium carbonate			90-100
Alkaline salts/bases	1-5		5-10
Alkaline oxide/silica		10-40	
Aluminium salts/acids		1-10	
Builders	0-10	0-10	
Solvents & hydrotropes	0-5	0-5	
Organic polymers	<2	<2	
Bleaching agents	0-2	0-2	
Skin protecting agents	<2	<2	
Preservatives	<1	<1	
Dye	<1	<1	
Perfume	<1	<1	
water	40-60	40-60	

¹³⁷ Cleaning products fact sheet – to assess the risks for the consumer, RIVM Report 320104003/2006

Table 55: Standard formulation for bathroom cleaner

Bathroom cleaner	Liquid mild (%)	Liquid strong (%)	Spray (%)
Anionic surfactants			1-5
Non-ionic surfactants	1-15	0-5	
Cationic surfactants		5-15	
Builders			1-10
NTA or polycarboxylates	0-15		
Citric acid	0-15		
Sulfonic- lactic- formic acid		5-30	
Isopropanol	0-15		
Thickening agents	<1	<1	<1
Preservatives	<1	<1	
Dye	<1	<1	<1
Perfume	<1	<1	
water	50-90	65-95	70-95

Table 56: Standard formulation for toilet cleaner

Toilet cleaner	Liquid, acid (%)	Liquid, bleaching (%)
Anionic surfactants	0-10	2-10
Non-ionic surfactants	1-15	2-10
Cationic surfactants	9-15	
Acids	0-10	
Salts & acids/bases		2-10
Bleaching agents		1-5
Polymers	0-5	0-5
Builders		0-2
Dye	<1	<1
Perfume	<1	<1
water	85-90	85-90

Table 57: Standard formulation for glass cleaner

Glass cleaner	Liquid, spray (%)
Anionic surfactants	0-10
Non-ionic surfactants	0-5
Ammonia	0-5
Alcohols, glycols or glycol ethers	5-20
Perfume, preservatives	<1
water	75-95



JOINT RESEARCH CENTRE

Institute for Prospective Technological Studies (IPTS)

QUESTIONNAIRE TO ANALYSE THE EXISTING SCOPE, MARKET SEGMENTATION AND ENVIRONMENTAL PERFORMANCE FOR ALL PURPOSE CLEANERS & SANITARY CLEANERS

Stakeholders Consultation Document

*Please submit the questionnaire before **4 August 2014** to:*

JRC-IPTS-All-Purpose-Cleaners@ec.europa.eu

to ensure that all comments can be fully considered in this process.

1. INTRODUCTION

Objectives

The EU Ecolabel is a key policy instrument in promoting environmentally friendly products and services. The EU Ecolabel criteria for **all-purpose cleaners and sanitary cleaners (APCs)** were adopted 28 June 2011 (2011/383/EU). Their aim is to promote cleaning detergents that represent the best 10-20% of the products available on the EC market in terms of environmental performance considering the whole life cycle (from production, through use and until disposal). These criteria are foreseen to expire in December 2016.

The framework that sets out the EU Ecolabel criteria for APCs defines the aims of the criteria as promoting products that have a reduced impact on aquatic ecosystems, contain a limited amount of hazardous substances and have a tested performance.

There are currently criteria for each of the following aspects of all-purpose cleaners and sanitary cleaners (in the following sections APC is used as a collective term to describe both of these):

1. Toxicity to aquatic organisms
2. Biodegradability of surfactants
3. Excluded or limited substances and mixtures
4. Fragrances
5. Volatile organic compounds (VOCs)
6. Phosphorus
7. Packaging requirements
8. Fitness for use
9. User instructions
10. Information appearing on the EU Ecolabel
11. Professional training

This questionnaire is the first stage in the process of revising the criteria for the award of the EU Ecolabel for APCs. Its aim is to find out whether the current scope definition is still appropriate regarding the current market conditions and state of the art of the technology, and which criteria need to be amended, maintained or withdrawn. One of the goals of the revision is to obtain simplified criteria addressing the most important environmental impacts of APCs from a life cycle perspective.

The views of relevant stakeholders are of utmost importance.

1.2 Confidentiality and contact details

All responses received through this questionnaire will be treated as confidential. Where data is published, it will be in an aggregated format only. Comments will not be attributed to an individual person or organisation unless this is specifically requested.

We rely heavily on stakeholder consultation, so your time and expertise are greatly appreciated and valued.

For further information regarding this questionnaire, please contact us by writing to **Josie Arendorf** at the following e-mail address: josie.arendorf@oakdenehollins.co.uk.

Once you have completed this survey, please email it to: JRC-IPTS-All-Purpose-Cleaners@ec.europa.eu

Thank you for taking part!

2. QUESTIONNAIRE

2.1 Your contact details

First name:	<input type="text"/>	Family name:	<input type="text"/>
Email:	<input type="text"/>		
Company/ Organisation:	<input type="text"/>		
Position held:	<input type="text"/>		
Organisation type:	<input type="checkbox"/> Industry <input type="checkbox"/> Government		
	<input type="checkbox"/> Environmental Agency <input type="checkbox"/> Trade Association		
	<input type="checkbox"/> Competent body		
<input type="checkbox"/> Other (please specify)	<input type="text"/>		
Company/Organisation details:			
Website	<input type="text"/>		
Country	<input type="text"/>		
Telephone Number	<input type="text"/>		

2.2 Scope and definition

The product group **'All-purpose cleaners and sanitary cleaners'** comprises: all-purpose cleaners, window cleaners, and sanitary cleaners.

- a) All-purpose cleaners comprising detergent products intended for the routine cleaning of floors, walls, ceilings, windows and other fixed surfaces, and which are either diluted in water prior to use or used without dilution. All-purpose cleaners shall mean products intended for indoor use in buildings which include domestic, commercial and industrial facilities.
- b) Window cleaners comprising specific cleaners intended for the routine cleaning of windows, and which are used without dilution.
- c) Sanitary cleaners comprising detergent products intended for the routine removal, including by scouring, of dirt and/or deposits in sanitary facilities, such as laundry rooms, toilets, bathrooms, showers and kitchens. This subgroup thus contains bathroom cleaners and kitchen cleaners.

The product group covers products for both private and professional use. The products may be mixtures of chemical substances and must not contain micro-organisms that have been deliberately added by the manufacturer.

1. Do you agree with the existing classification of the products included in the scope?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
2. Is the current definition appropriate and suitable for each product category?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
3. Are there any all-purpose cleaning products which are excluded by this definition which, in your opinion, should be included?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please indicate. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
4. Does the current definition require clarification? Is the current definition too complicated to be understood? Should the distinction between private and professional products be addressed in more detail?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
5. Should a list of excluded products be provided as part of product group definition?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please indicate why. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

These questions are specifically addressed to the EUEB members and Competent Bodies:

6. Please can you provide anonymised CDV values for currently EU Ecolabel products. This is required for the analysis of CDV limits.

Please send this information by email to josie.arendorf@oakdenehollins.co.uk

7. Have producers or any other interested party had difficulty in understanding the scope of the product group, or encountered difficulties because the product was not covered within the current scope and definition?

Yes No

If yes, please specify:

8. Have you ever denied the EU Ecolabel licence for APCs because of a product not being covered by the current scope and definition?

Yes No

If yes, please specify:

These questions are specifically addressed to the stakeholders/licence holders:

9. Do you have any difficulty in understanding the scope of the product group?

Yes No

If yes, please specify:

10. Have you ever been denied the EU Ecolabel licence for APCs because of a product not being covered by the current scope and definition?

Yes No

If yes, please specify:

2.3 Questionnaire on currently valid criteria

Criterion 1: Toxicity to aquatic organisms: Critical Dilution Volume (CDV)

The current criteria specify that the critical dilution volume of the product must not exceed the following limits (CDV _{chronic}):	
Product type	CDV _{chronic}
All- purpose cleaners (diluted in water at manufacturers dose to create a litre of cleaning solution)	18 000 l/1l of solution
All-purpose cleaners (used without dilution)	52 000 l/100g of product
Window cleaners	4 800 l/100g of product
Sanitary cleaners	80 000 l/100g of product

11. Are the CDV limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
12. Is CDV the most appropriate method for assessing aquatic toxicity? If not which assessment method should be considered.	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
13. Do private and professional products require different CDV limits?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 2: Biodegradability of surfactants

The current criteria specify that the content of surfactants in the product that are aerobically non-biodegradable (not readily biodegradable aNBO) and/or anaerobically non-biodegradable (anNBO) shall not exceed the following limits:

The current criteria specify that each surfactant in the product shall be readily biodegradable (aerobically)	
For anaerobically non-biodegradable surfactants (anNBO) the following limits apply:	
Product type	anNBO
All-purpose cleaners diluted prior to use	0.40 g/100 g of product
All-purpose cleaners used without dilution	4.0 g/100 g of product
Window cleaners	2.0 g/100 g of product
Sanitary cleaners	2.0 g/100 g of product

14. Are requirements for anaerobic biodegradability necessary for this product group? Which other parameters could be considered?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
15. Are the current limits set for anaerobic biodegradability of surfactants strict enough?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
16. Are the current limits effective in distinguishing between the state-of-the-art and the best performing products in the APC product group?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 3: Excluded or limited substances and mixtures

Under the existing criteria, the following ingredients must not be included in the product:
Substance
APEO (alkyl phenol ethoxylates) and ADP (alkylphenols and derivatives thereof)
EDTA (ethylenediamine tetraacetate)
5-bromo-5-nitro-1,3-dioxane
2-bromo-2-nitropropane-1,3-diol
Diazolidinylurea
Formaldehyde
Sodium hydroxyl methyl glycinate
Nitromusks and polycyclic musks

There are restrictions on the use of quaternary ammonium salts:
Substance
Quaternary ammonium salts that are not readily biodegradable shall not be used, either as part of the formulation or as part of any mixture included in the formulation.
There are restrictions on the use of biocides
Substance
<ul style="list-style-type: none"> i) The product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants, which may also have biocidal properties. ii) It is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial action. iii) Biocides, either as part of the formulation or as part of any mixture included in the formulation, that are used to preserve the product and that are classified H410/R50-53 or H411/R51-53 in accordance with Directive 67/548/EEC, Directive 1999/45/EC of the European Parliament and of the Council (1) or Regulation (EC) No 1272/2008, are permitted but only if their bioaccumulation potentials are characterised by log Pow (log octanol/water partition coefficient) < 3,0 or an experimentally determined bioconcentration factor (BCF) ≤ 100.

In addition, the most critical substances regarding human health and environment must also not be included in

the product. This is a standard requirement for ecolabelled washing and cleaning products. However, there are certain substances which are specifically exempted from this requirement:

Substance	Hazard statement	Risk phrase
Surfactants (in concentrations <25% in the product)	H400 and H412	R50 and R52-53
Fragrances	H412	R52-53
Enzymes	H334 and H317	R42 and R43
NTA as in impurity in MGDA and GLDA	H351	R40

The criteria also impose restrictions on the use of biocides and on substances listed in accordance with Article 59(1) of Regulation EC No 1907/2006.

17. Are there any additional ingredients which should be specifically excluded or limited from EU Ecolabelled APCs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
18. Are any additional derogations required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
19. Are there any substances or mixtures which no longer need to be excluded?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
20. Should nanomaterials be excluded from EU Ecolabelled APC products?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
21. Are further requirements needed for the use of biocides in the product?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please explain why and/or propose modification and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 4: Fragrances

Under the current criteria the following requirements on fragrances apply:

- a) Nitro- and polycyclic musk-based fragrances are prohibited as in Criterion 3.
- b) Any substance added to the product as a fragrance must have been manufactured and/or handled in accordance with the code of practice of the International Fragrance Association. The code can be found on IFRA's website: <http://www.ifraorg.org>

- c) Other fragrances may be limited to < 100 ppm (w/w) by the requirements of Regulation (EC) No 648/200 (Annex VII) or where they are classified H317/R43 may cause allergic skin reaction and/or H334/R32 may cause allergy or asthma symptoms or breathing difficulties if inhaled.

22. Are there any additional fragrance ingredients which should be specifically excluded or limited from EU Ecolabel APCs?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
23. Are there any further requirements needed for fragrances?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
24. Should the use of fragrances be allowed in professional products?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify and provide rationale or supporting information. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 5: Volatile organic compounds (VOCs)

VOCs are compounds having a boiling point lower than 150 °C. The current criteria limit the VOCs permissible in the product as concentrate or in diluted form, and are currently set at the following levels:

Product type	Total VOC
All-purpose cleaners diluted prior to use	< 0.2 % (w/w) in the washing water
All-purpose cleaners used without dilution	< 6 % (w/w) in the product
Window cleaners	< 10 % (w/w) in the product
Sanitary cleaners	< 6 % (w/w) in the product

25. Are the limits on VOCs in the product strict enough?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, please explain why and/or propose modification. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
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Criterion 6: Phosphorus

The total quantity of elemental phosphorus in the product shall be calculated on the basis of the dosage of the product recommended by the manufacturer taking into account all substances containing phosphorus (e.g. phosphates and phosphonates). Under the current criteria, the limits on phosphorus are:

Product type	Total phosphorus content
All-purpose cleaners diluted prior to use	< 0.02 g (P)/1 L of washing water
All-purpose cleaners used without dilution	< 0.2 g (P)/100 g of product
Window cleaners	None permissible
Sanitary cleaners	< 1.0 g (P)/100 g of product

26. Are the current limits set for the maximum amounts of phosphorus strict enough for APCs available on the market?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If no, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
27. Are the current limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If no, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
28. Should phosphorus compounds such as phosphates and phosphonates be banned from this product group?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If yes, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 7: Packaging requirements

The existing criteria specify the following requirements on packaging:

- a) Sprays containing propellants must not be used
- b) Plastics that are used for the main container must be marked in accordance with EC Directive 94/62/EC or DIN 6120 part 1 and 2 in connection with DIN 7728 part 1
- c) If the primary packaging is made of recycled material, any indication of this on the packaging shall be in conformity with the ISO 14021 standard
- d) Products packaged in trigger sprays must be sold as part of a refillable system
- e) Only phthalates that at the time of application have been risk assessed and have not been classified according to Criterion 3c may be used in the plastic packaging
- f) The weight utility ratio (for primary packaging) must not exceed the following values:

Product type	WUR
Concentrated products, including liquid concentrates and solids that are diluted in water prior to use.	1.2 g/ l use solution (washing water)
Ready-to-use products, i.e. products used without further dilution.	150 g/ l use solution (washing water)

<p>29. Do you think that it is necessary to have a criterion on packaging requirements for this product group?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If no, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<p>30. Are the WUR limits acceptable for APCs currently on the market?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If no, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<p>31. Should additional criteria be set to further promote the use of recycled materials in packaging?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If yes, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
<p>32. Should there be restrictions on combinations of materials used for packaging? For instance to design for recycling (like the new proposed criterion for rinse-off cosmetics).</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If yes, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>

Criterion 8: Washing performance (fitness for use)

<p>The existing criteria state that the product shall be fit for use, meeting the needs of the consumer:</p> <p>a) All-purpose cleaners and window cleaners For all-purpose cleaners, only fat-removing effects must be documented. For window cleaners, stripeless drying must be documented.</p> <p>The cleaning ability must be equivalent to, or better than, that of a market-leading or generic reference product, approved by a Competent Body. Frameworks for testing the performance of all-purpose cleaners, window cleaners and sanitary cleaners can be found here: http://ec.europa.eu/environment/ecolabel/documents/performance_test_cleaners.pdf</p> <p>b) Sanitary cleaners include bathroom cleaners, toilet cleaners and kitchen cleaners. For bathroom cleaners, both limesoap and limescale removal shall be documented. For acidic toilet cleaners, only limescale removal shall be documented. For kitchen cleaners, fat removing effects shall be documented.</p> <p>The cleaning ability must be equivalent to or better than that of the generic reference detergent specified in the framework for testing performance given in the above link. The generic reference detergent shall be the one prescribed in IKW performance test 'Recommendation for the quality assessment of acidic toilet cleaners' (SÖFW-journal, 136, 11, pp50-56, 200). The reference detergent is applicable for toilet cleaners and bathroom cleaners; however, the pH must be reduced to 3.5 for testing bathroom cleaners.</p>

33. **Please provide your comments on the washing performance test and, if appropriate, proposals for modification**

Criterion 9: User instructions

Information on the packaging

Dosage instructions:

Information on the recommended dosage of all-purpose cleaners and sanitary cleaners shall appear on the packaging in a reasonably sufficient size and against a visible background. In the case of a concentrated product, it shall be clearly indicated on the packaging that only a small quantity of the product is needed compared to normal (i.e. diluted) products.

The following (or equivalent) text shall appear on the packaging:
 'Proper dosage saves costs and minimises environmental impacts'

The following (or equivalent) text shall appear on the packaging of ready-to-use all-purpose cleaners:
 'The product is not intended for large scale cleaning'

Safety advice:

The following safety advice (or equivalent) shall appear on the product in text or as pictograms:

- Keep away from children
- Do not mix different cleaners
- Avoid inhaling sprayed product (only for products that are packaged as sprays)

<p>34. Are additional requirements and instructions for dosage needed?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If yes, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px;"></div>
<p>35. Are additional requirements needed for dosing of products intended for professional users?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If yes, please explain why and/or propose modification.</p> <div style="border: 1px solid black; height: 40px;"></div>
<p>36. Are the requirements for safety advice on the packaging sufficient?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<p>If no, please explain why you think so.</p> <div style="border: 1px solid black; height: 40px;"></div>

Criterion 10: Information appearing on the EU Ecolabel

An optional label with text box shall contain the following text:

- Reduced impact on aquatic life
- Reduced use of hazardous substances
- Reduced packaging waste
- Clear user instructions

37. Is there any other information which should be included on the EU Ecolabel claims text?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
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Criterion 11: Professional training

Under the current criteria for detergents which are used by professional users, the producer, distributor or a third party shall offer training or training materials for cleaning staff. These shall include step-by-step instructions for proper dilution, use, disposal and the use of equipment.

38. Are any further requirements for professional training needed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, please specify. <div style="border: 1px solid black; height: 40px; width: 100%;"></div>
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2.4 Further issues or hotspots for APCs

The current criteria are set for 11 different aspects of APCs, with the aim of promoting products which have a reduced impact on aquatic ecosystems, contain a limited amount of hazardous substances and whose performance has been tested.

39. Should further criterion be developed, either because all the issues are not already covered or because of recent developments which affect the environmental performance of APCs? <div style="border: 1px solid black; height: 80px; width: 100%;"></div>
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40. **Do you consider it feasible to link the CDV or aquatic toxicity criterion and performance criteria? If yes, please explain your approach.**

41. **Do you know of any examples of the use of nanomaterials in APCs? Should their use be banned from this product group and why?**

2.6 Market data

The market analysis forms an integral part of the criteria revision process, as it identifies important drivers, trends and innovations in the market for APCs.

If you have any information on market data (volumes and units) statistics for any sub-product within the APC product group (e.g. floor cleaners, sanitary cleaners and windows cleaners) used for private and industrial/institutional purposes, please mention it here so that we can get in touch with you and collect the details needed for the project. Thank you in advance for your cooperation.

2.7 Commission Statement

Please find below the Commission statement accompanying the criteria revision to see the issues which should particularly be taken into account.

Annex III: Life cycle impact assessment

For each substance, a schematic cause and effect pathway needs to be developed that describes the environmental mechanism of the substance emitted. Along this environmental mechanism an impact category indicator result can be chosen either at the midpoint or endpoint level. Endpoint results have a higher level of uncertainty compared to midpoint results but are easier to understand by decision makers.

- **Midpoint** impact category, or problem-oriented approach, translates impacts into environmental themes such as climate change, acidification, human toxicity, etc.
- **Endpoint** impact category, also known as the damage-oriented approach, translates environmental impacts into issues of concern such as human health, natural environment, and natural resources

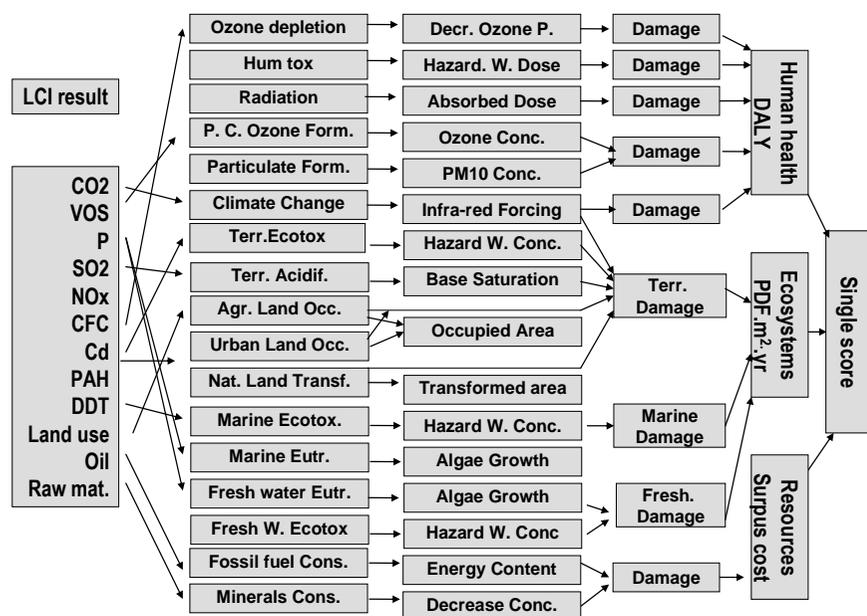


Figure 28: Relationship between LCI parameters (left), midpoint (middle) and endpoint indicator (right) in ReCiPe 2009

Annex IV: Contribution analysis of different life cycle stages

Table 58 and Table 59 show the life cycle impact contribution of a general purpose cleaner.

Table 58: Life cycle impact contribution of a general purpose cleaner

Impact category	Unit	Ingredients	Formulation	Packaging	Transport	Use phase	End of life
CC	kg CO ₂ eq	1.9E-03	2.2E-03	2.0E-03	3.3E-04	2.6E-03	8.0E-04
OD	kg CFC-11 eq	1.8E-10	1.1E-10	6.1E-11	3.9E-11	1.3E-10	2.0E-11
TA	kg SO ₂ eq	7.7E-06	9.2E-06	6.7E-06	2.6E-06	1.1E-05	1.9E-06
FE	kg P eq	7.4E-07	2.2E-06	4.3E-07	1.1E-07	2.6E-06	5.9E-07
ME	kg N eq	1.9E-06	6.3E-07	2.3E-07	1.2E-07	7.3E-07	1.2E-05
HTox	kg 1,4-DB eq	6.8E-04	1.3E-03	3.4E-04	8.5E-05	1.7E-03	2.7E-04
POF	kg NMVOC	8.7E-06	4.6E-06	6.9E-06	3.0E-06	5.5E-06	1.2E-06
PMF	kg PM10 eq	3.1E-06	2.9E-06	2.3E-06	1.0E-06	3.5E-06	6.4E-07
TTox	kg 1,4-DB eq	1.7E-05	5.6E-08	7.6E-08	2.2E-08	1.2E-07	9.9E-08
FTox	kg 1,4-DB eq	1.0E-05	1.0E-05	3.0E-06	1.7E-06	1.6E-05	6.9E-06
MTox	kg 1,4-DB eq	8.6E-06	1.1E-05	3.6E-06	1.9E-06	1.6E-05	6.3E-06
IR	kg U235 eq	4.7E-04	1.7E-03	2.5E-04	8.9E-05	2.0E-03	1.2E-04
ALO	m ² a	1.1E-03	2.9E-05	4.8E-05	3.1E-06	4.6E-05	2.8E-06
ULO	m ² a	9.0E-06	6.9E-06	4.9E-06	5.8E-06	1.6E-05	5.5E-06
NLT	m ²	1.2E-05	2.4E-07	1.6E-07	1.1E-07	3.2E-07	-8.7E-09
WD	m ³	5.9E-05	1.8E-05	7.5E-06	1.9E-06	6.4E-04	4.8E-06
MD	kg Fe eq	7.2E-05	1.2E-05	3.1E-05	2.4E-05	2.8E-05	6.7E-05
FD	kg oil eq	9.0E-04	6.0E-04	1.3E-03	1.1E-04	6.9E-04	4.3E-05

Table 59: Life cycle impact contribution of a general purpose cleaner (in percentages)

Impact category	Unit	Ingredients	Formulation	Packaging	Transport	Use phase	End of life
CC	%	20	22	21	3	26	8
OD	%	33	20	11	7	24	4
TA	%	20	24	17	7	28	5

FE	%	11	33	6	2	39	9
ME	%	12	4	1	1	5	77
HTox	%	16	29	8	2	39	6
POF	%	29	15	23	10	18	4
PMF	%	23	22	17	7	26	5
TTox	%	98	0	0	0	1	1
FTox	%	21	21	6	4	33	14
MTox	%	18	23	8	4	34	13
IR	%	10	38	5	2	43	2
ALO	%	90	2	4	0	4	0
ULO	%	19	14	10	12	33	11
NLT	%	94	2	1	1	2	0
WD	%	8	2	1	0	88	1
MD	%	31	5	13	10	12	29
FD	%	25	17	36	3	19	1

Annex V: Sensitivity analysis

Product formulation sensitivity

Table 60 shows the results of the product formulation sensitivity analysis.

Table 60: Impact contribution of the product formulation sensitivity

Impact category	Unit	Conventional all-purpose cleaner	Greencompliant all-purpose cleaner	Worst case conventional all-purpose cleaner
Climate change	kg CO ₂ eq	9.9E-03	1.1E-02	1.1E-02
Ozone depletion	kg CFC-11 eq	5.3E-10	5.3E-10	6.5E-10
Terrestrial acidification	kg SO ₂ eq	3.9E-05	4.6E-05	4.4E-05
Freshwater eutrophication	kg P eq	6.7E-06	6.6E-06	7.1E-06
Marine eutrophication	kg N eq	1.6E-05	1.9E-05	1.7E-05
Human toxicity	kg 1,4-DB eq	4.3E-03	4.3E-03	4.8E-03
Photochemical oxidant formation	kg NMVOC	3.0E-05	3.5E-05	3.6E-05
Particulate matter formation	kg PM10 eq	1.3E-05	1.7E-05	1.5E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	1.8E-05	7.7E-05	2.6E-05
Freshwater ecotoxicity	kg 1,4-DB eq	4.8E-05	6.1E-05	5.4E-05
Marine ecotoxicity	kg 1,4-DB eq	4.7E-05	5.1E-05	5.3E-05
Ionising radiation	kg U235 eq	4.7E-03	4.7E-03	5.0E-03
Agricultural land occupation	m ² a	1.2E-03	1.8E-03	1.8E-03
Urban land occupation	m ² a	4.8E-05	5.4E-05	5.4E-05
Natural land transformation	m ²	1.3E-05	6.7E-06	1.9E-05
Water depletion	m ³	7.3E-04	9.0E-04	7.6E-04
Metal depletion	kg Fe eq	2.3E-04	2.7E-04	2.8E-04
Fossil depletion	kg oil eq	3.7E-03	3.6E-03	4.2E-03

Surfactant sensitivity

Table 61 shows the results for the data source sensitivity analysis.

Table 61: Impact contribution of surfactant sensitivity

Impact category	Unit	Unspecified origin	palm oil	palm kernel oil	coconut oil	petroleum
Climate change	kg CO ₂ eq	9.9E-03	9.9E-03	1.0E-02	9.6E-03	9.8E-03
Ozone depletion	kg CFC-11 eq	5.3E-10	5.2E-10	5.4E-10	5.2E-10	5.3E-10
Terrestrial acidification	kg SO ₂ eq	3.9E-05	3.9E-05	4.1E-05	3.8E-05	3.8E-05
Freshwater eutrophication	kg P eq	6.7E-06	6.6E-06	6.7E-06	6.6E-06	6.6E-06
Marine eutrophication	kg N eq	1.6E-05	1.5E-05	1.6E-05	1.5E-05	1.5E-05
Human toxicity	kg 1,4-DB eq	4.3E-03	4.3E-03	4.4E-03	4.4E-03	4.3E-03
Photochemical oxidant formation	kg NMVOC	3.0E-05	3.0E-05	3.2E-05	2.8E-05	2.9E-05
Particulate matter formation	kg PM10 eq	1.3E-05	1.3E-05	1.5E-05	1.3E-05	1.3E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	1.8E-05	1.9E-05	4.2E-05	4.8E-07	4.8E-07
Freshwater ecotoxicity	kg 1,4-DB eq	4.8E-05	4.8E-05	5.8E-05	5.0E-05	4.6E-05
Marine ecotoxicity	kg 1,4-DB eq	4.7E-05	4.7E-05	5.3E-05	5.1E-05	4.7E-05
Ionising radiation	kg U235 eq	4.7E-03	4.7E-03	4.7E-03	4.6E-03	4.6E-03
Agricultural land occupation	m ² a	1.2E-03	4.1E-04	7.3E-04	2.3E-03	1.6E-04
Urban land occupation	m ² a	4.8E-05	4.8E-05	5.0E-05	4.7E-05	4.7E-05
Natural land transformation	m ²	1.3E-05	1.0E-06	1.1E-06	3.1E-05	1.0E-06
Water depletion	m ³	7.3E-04	7.4E-04	8.0E-04	6.9E-04	6.9E-04
Metal depletion	kg Fe eq	2.3E-04	2.3E-04	2.8E-04	2.7E-04	2.3E-04
Fossil depletion	kg oil eq	3.7E-03	3.6E-03	3.6E-03	3.6E-03	3.8E-03

Product dosage sensitivity

Table 62 shows the results of the product dosage sensitivity analysis.

Table 62: Impact contribution of the product dosage sensitivity

Impact category	Unit	half dose	baseline	double dose	three doses
Climate change	kg CO ₂ eq	6.3E-03	9.9E-03	1.7E-02	2.4E-02
Ozone depletion	kg CFC-11 eq	3.4E-10	5.3E-10	9.2E-10	1.3E-09
Terrestrial acidification	kg SO ₂ eq	2.6E-05	3.9E-05	6.5E-05	9.2E-05
Freshwater eutrophication	kg P eq	4.9E-06	6.7E-06	1.0E-05	1.4E-05
Marine eutrophication	kg N eq	1.4E-05	1.6E-05	1.9E-05	2.3E-05
Human toxicity	kg 1,4-DB eq	3.1E-03	4.3E-03	6.8E-03	9.3E-03
Photochemical oxidant formation	kg NMVOC	1.8E-05	3.0E-05	5.4E-05	7.7E-05
Particulate matter formation	kg PM10 eq	8.8E-06	1.3E-05	2.3E-05	3.2E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	8.9E-06	1.8E-05	3.5E-05	5.2E-05
Freshwater ecotoxicity	kg 1,4-DB eq	3.5E-05	4.8E-05	7.5E-05	1.0E-04
Marine ecotoxicity	kg 1,4-DB eq	3.4E-05	4.7E-05	7.3E-05	9.9E-05
Ionising radiation	kg U235 eq	3.4E-03	4.7E-03	7.2E-03	9.8E-03
Agricultural land occupation	m ² a	6.5E-04	1.2E-03	2.4E-03	3.6E-03
Urban land occupation	m ² a	3.4E-05	4.8E-05	7.6E-05	1.0E-04
Natural land transformation	m ²	6.7E-06	1.3E-05	2.6E-05	3.8E-05
Water depletion	m ³	6.9E-04	7.3E-04	8.2E-04	9.1E-04
Metal depletion	kg Fe eq	1.6E-04	2.3E-04	3.7E-04	5.1E-04
Fossil depletion	kg oil eq	2.2E-03	3.7E-03	6.6E-03	9.5E-03

Warm water use

Table 63 shows the results for the warm water use sensitivity analysis.

Table 63: Impact contribution of the warm water sensitivity

Impact category	Unit	0 L	0.55 L	1.1 L	1.65 L
Climate change	kg CO2 eq	7.1E-03	9.9E-03	1.3E-02	1.5E-02
Ozone depletion	kg CFC-11 eq	3.9E-10	5.3E-10	6.8E-10	8.2E-10
Terrestrial acidification	kg SO2 eq	2.6E-05	3.9E-05	5.2E-05	6.4E-05
Freshwater eutrophication	kg P eq	3.5E-06	6.7E-06	9.8E-06	1.3E-05
Marine eutrophication	kg N eq	3.6E-06	1.6E-05	2.8E-05	4.0E-05
Human toxicity	kg 1,4-DB eq	2.5E-03	4.3E-03	6.2E-03	8.0E-03
Photochemical oxidant formation	kg NMVOC	2.4E-05	3.0E-05	3.7E-05	4.3E-05
Particulate matter formation	kg PM10 eq	9.3E-06	1.3E-05	1.8E-05	2.2E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	1.7E-05	1.8E-05	1.8E-05	1.8E-05
Freshwater ecotoxicity	kg 1,4-DB eq	2.7E-05	4.8E-05	7.0E-05	9.2E-05
Marine ecotoxicity	kg 1,4-DB eq	2.6E-05	4.7E-05	6.9E-05	9.0E-05
Ionising radiation	kg U235 eq	2.6E-03	4.7E-03	6.8E-03	8.9E-03
Agricultural land occupation	m2a	1.2E-03	1.2E-03	1.3E-03	1.3E-03
Urban land occupation	m2a	2.8E-05	4.8E-05	6.8E-05	8.9E-05
Natural land transformation	m2	1.3E-05	1.3E-05	1.3E-05	1.4E-05
Water depletion	m3	8.7E-05	7.3E-04	1.4E-03	2.0E-03
Metal depletion	kg Fe eq	1.4E-04	2.3E-04	3.3E-04	4.2E-04
Fossil depletion	kg oil eq	2.9E-03	3.7E-03	4.4E-03	5.1E-03

Water temperature

Table 64 shows the results for the water temperature sensitivity analysis

Table 64: Impact contribution of the water temperature sensitivity

Impact category	Unit	no heating	30 °C	40 °C	50 °C
Climate change	kg CO2 eq	7.5E-03	9.3E-03	9.9E-03	1.0E-02
Ozone depletion	kg CFC-11 eq	4.2E-10	5.1E-10	5.3E-10	5.6E-10
Terrestrial acidification	kg SO2 eq	2.9E-05	3.6E-05	3.9E-05	4.2E-05
Freshwater eutrophication	kg P eq	4.2E-06	6.0E-06	6.7E-06	7.3E-06
Marine eutrophication	kg N eq	1.5E-05	1.5E-05	1.6E-05	1.6E-05
Human toxicity	kg 1,4-DB eq	2.8E-03	3.9E-03	4.3E-03	4.7E-03
Photochemical oxidant formation	kg NMVOC	2.5E-05	2.9E-05	3.0E-05	3.1E-05
Particulate matter formation	kg PM10 eq	1.0E-05	1.3E-05	1.3E-05	1.4E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	1.7E-05	1.7E-05	1.8E-05	1.8E-05
Freshwater ecotoxicity	kg 1,4-DB eq	3.6E-05	4.5E-05	4.8E-05	5.1E-05
Marine ecotoxicity	kg 1,4-DB eq	3.4E-05	4.4E-05	4.7E-05	5.1E-05
Ionising radiation	kg U235 eq	2.8E-03	4.2E-03	4.7E-03	5.1E-03
Agricultural land occupation	m2a	1.2E-03	1.2E-03	1.2E-03	1.3E-03
Urban land occupation	m2a	4.0E-05	4.6E-05	4.8E-05	5.0E-05
Natural land transformation	m2	1.3E-05	1.3E-05	1.3E-05	1.3E-05
Water depletion	m3	7.1E-04	7.3E-04	7.3E-04	7.4E-04
Metal depletion	kg Fe eq	2.2E-04	2.3E-04	2.3E-04	2.4E-04
Fossil depletion	kg oil eq	3.0E-03	3.5E-03	3.7E-03	3.8E-03

Energy source sensitivity

Table 65 shows the results for the energy source sensitivity analysis

Table 65: Impact contribution of energy source sensitivity

Impact category	Unit	UCTE	FR	CH	NL
Climate change	kg CO ₂ eq	9.9E-03	7.1E-03	5.8E-03	1.9E-02
Ozone depletion	kg CFC-11 eq	5.3E-10	4.0E-10	6.0E-10	8.1E-10
Terrestrial acidification	kg SO ₂ eq	3.9E-05	2.9E-05	2.1E-05	3.8E-05
Freshwater eutrophication	kg P eq	6.7E-06	3.0E-06	2.3E-06	5.5E-06
Marine eutrophication	kg N eq	1.6E-05	1.5E-05	1.4E-05	1.6E-05
Human toxicity	kg 1,4-DB eq	4.3E-03	2.7E-03	2.1E-03	4.0E-03
Photochemical oxidant formation	kg NMVOC	3.0E-05	2.6E-05	2.2E-05	4.1E-05
Particulate matter formation	kg PM10 eq	1.3E-05	1.1E-05	8.4E-06	1.4E-05
Terrestrial ecotoxicity	kg 1,4-DB eq	1.8E-05	1.8E-05	1.7E-05	1.7E-05
Freshwater ecotoxicity	kg 1,4-DB eq	4.8E-05	3.9E-05	3.3E-05	8.5E-05
Marine ecotoxicity	kg 1,4-DB eq	4.7E-05	3.9E-05	3.2E-05	8.5E-05
Ionising radiation	kg U235 eq	4.7E-03	2.3E-02	1.2E-02	2.1E-03
Agricultural land occupation	m ² a	1.2E-03	1.2E-03	1.2E-03	1.4E-03
Urban land occupation	m ² a	4.8E-05	4.5E-05	3.7E-05	7.6E-05
Natural land transformation	m ²	1.3E-05	1.3E-05	1.3E-05	1.5E-05
Water depletion	m ³	7.3E-04	8.1E-04	7.7E-04	7.4E-04
Metal depletion	kg Fe eq	2.3E-04	3.8E-04	3.5E-04	3.7E-04
Fossil depletion	kg oil eq	3.7E-03	2.9E-03	2.5E-03	6.7E-03

Method sensitivity

Table 66 shows the results for the method sensitivity analysis: the comparison to ILCD.

Table 66: Life cycle impact contribution of an all-purpose cleaner, according to ILCD midpoint

Impact category	Unit	Ingredients	Manufacturing	Packaging	Transport	Use Phase	Disposal
Climate change	kg CO ₂ eq	1.9E-03	2.2E-03	2.0E-03	3.3E-04	2.6E-03	8.0E-04
Ozone depletion	kg CFC-11 eq	1.8E-10	1.1E-10	6.1E-11	3.9E-11	1.3E-10	2.0E-11
Human toxicity, cancer effects	kg SO ₂ eq	9.9E-11	1.7E-10	1.1E-10	3.2E-11	2.5E-10	9.7E-11
Human toxicity, non-cancer effects	kg P eq	2.5E-10	1.1E-10	7.3E-11	5.1E-11	2.3E-10	1.2E-09
Particulate matter	kg N eq	1.4E-06	9.3E-07	9.5E-07	1.9E-07	1.1E-06	1.6E-07
Ionizing radiation HH	kg 1,4-DB eq	4.7E-04	1.7E-03	2.5E-04	8.9E-05	2.0E-03	1.2E-04
Ionizing radiation E (interim)	kg NMVOC	1.5E-09	5.4E-09	7.9E-10	2.7E-10	6.1E-09	3.5E-10
Photochemical ozone formation	kg PM10 eq	8.4E-06	4.6E-06	6.8E-06	3.0E-06	5.5E-06	1.2E-06
Acidification	kg 1,4-DB eq	1.0E-05	1.2E-05	8.8E-06	3.4E-06	1.4E-05	2.5E-06
Terrestrial eutrophication	kg 1,4-DB eq	2.3E-05	1.6E-05	1.5E-05	1.1E-05	1.9E-05	7.2E-06
Freshwater eutrophication	kg 1,4-DB eq	7.5E-07	2.2E-06	4.3E-07	1.1E-07	2.6E-06	5.9E-07
Marine eutrophication	kg U235 eq	2.8E-06	1.9E-06	1.4E-06	1.0E-06	2.2E-06	1.2E-05
Freshwater ecotoxicity	m ² a	4.8E-03	2.5E-03	3.5E-03	1.1E-03	5.1E-03	8.6E-03
Land use	m ² a	9.8E-04	1.1E-03	7.9E-04	7.3E-04	2.0E-03	2.7E-04
Water resource depletion	m ²	2.0E-05	1.4E-05	9.8E-06	8.4E-07	1.2E-04	1.1E-06
Mineral, fossil & renewable resource depletion	m ³	9.9E-09	6.7E-09	4.3E-09	2.1E-09	9.7E-09	9.9E-09

Annex VI Responses to the stakeholder questionnaire

Table 67: Responses received from the stakeholder questionnaire

Criterion	Question	Y/ N	Stakeholder type	Comment	
Scope and definition	Do you agree with the existing classification of the products included in the scope?	Y	Industry	It would be preferred to use the AISE categorisation that is used in the Charter for Sustainable Cleaning: 1- Toilet cleaners; 2- Trigger spray cleaners: a. glass/window, b. bathroom, c. kitchen, and d. all purpose for hard surfaces; 3- Dilutable all purpose and floor cleaners	
		N	Industry	concentrated sanitary & kitchen & window cleaner to be used in dilution are not considered	
		Y	Industry	I'm not sure what you mean by classification at this point? I suppose you mean definition?	
		N	Industry Association	We would propose a different categorisation of the products, as follows: 1- Toilet cleaners; 2- Trigger spray cleaners: a. glass/window, b. bathroom, c. kitchen, and d. all purpose for hard surfaces; 3- Dilutable all purpose and floor cleaners	
		N	Competent Body	I don't agree with the fact to include kitchen products in the category called "sanitary products".	
		N	Industry	Modification: microbial based cleaning products.	
		N	Competent body	It is difficult to know if some products are included	
		N	Industry	We propose to add another classification for Sanitary to dilute in water prior to use. Most ecological option.	
		N	Env agency	The limitation to indoor use, thus excluding products which use is typically outside (such as outside furniture, cars) is too restrictive	
		N	Industry	Our products contain micro-organisms with the classification 1.	
		N	Industry	Include window cleaner with dilution (in refill to dilute for example)	
	Is the current definition appropriate and suitable for each product category?		N	Industry	We believe there should be more clarification concerning dilutable sanitary cleaners, undilutable sanitary cleaners and toilet cleaners. Besides that, especially in professional use, we have specific APC such as interior cleaners, floor cleaners, degreasers etc.
			N	Industry Association	We would propose a different categorisation of the products, as follows: 1- Toilet cleaners; 2- Trigger spray cleaners: a. glass/window, b. bathroom, c. kitchen, and d. all purpose for hard surfaces; 3- Dilutable all purpose and floor cleaners
			N	Competent Body	The text: and which are either diluted in water prior to use or used without dilution should be added to all categories
			N	Industry	I not agree to considerate that product used to clean the kitchens are named "sanitary cleaners"
			N	Competent body	I don't agree with the fact to include kitchen products in the category called "sanitary products".

	N	Competent body	It is difficult to know if some products are included
	N	Industry	For sanitary cleaners, the notion of dilution is missing.
	N	Env agency	For sanitary cleaners it should be specified diluted or concentrated. Moreover, it should be specified whether specific products that can be used in the kitchen are included (such as oven cleaners). If are included, we should analyse the impact on the environment, otherwise they should be excluded
	N	Competent body	For sanitary products it isn't clearly written that concentrated products are in the scope
	N	Industry	We produce probiotic cleaners with microorganism (classification 1). The last sentence should be deleted.
Are there any all-purpose cleaning products which are excluded by this definition which, in your opinion, should be included?	Y	Industry	a) APC for outdoor cleaning (terrace floors and furniture); b) window cleaners used with dilution in water bucket
	Y	Industry	Concentrated sanitary & kitchen cleaners to be used in dilution & Concentrated window cleaner. Floor care products (polish, stripper & wash&wax).
	Y	Industry Association	There are some dilutable sanitary cleaners which do not fit in point c) of the definition. The same happens for dilutable window cleaners in point b). Additionally, some of our members would like to have criteria for the floor care products (polishes, strippers), as is already the case for Nordic Ecolabel
	Y	Competent body	Window cleaners to be diluted should be allowed with restrictions, see Nordic Swan
	Y	Competent body	We have several requests to include windows cleaners which are diluted in water prior to use but also WC blocks, car products and carpet products.
	Y	Industry	Microbial based cleaning products are excluded since it is not allowed to add microorganisms.
	Y	Industry	Example : carpet cleaners
	N	Env agency	Products to clean "outside" things (cars, furniture, car glasses...)
	N/A	Competent body	Car cleaning products
	Y	Industry	Probiotic cleaners which contains microorganism should be allowed.
	Y	Industry	Car wash cleaning products
Does the current definition require clarification? Is the current definition too complicated to be understood? Should the distinction between private and professional	Y	Industry	Need to make a distinction between household and I&I categories because we have non-expert versus professional end-users
	Y	Competent body	The text: and which are either diluted in water prior to use or used without dilution should be added to all categories
	Y	Competent body	I think the current definition require clarification, in particular for APC and the idea that the APC effect have to appear in the name of the products. Indeed, the ecolabel certification wants to encourage multi effect products in front of specific products. Furthermore the category "windows cleaners" require clarification : glass surfaces, mirrors and all modern surfaces like television screens, computers, photocopiers are included?

	products be addressed in more detail?	Y	Industry	It would be necessary to indicate products not going into the definition.
		Y	Industry	The bacterial based cleaning products are presently excluded (since 2011). We think that these types of products should be included in APCs. Bacterial products attract the interest of more and more consumers because it is the perfect combination of safety and performance. It is a good way to decrease the use of chemicals products. Some Ecolabelling organizations already and specifically include the bacterial based cleaning products in their criteria (Ex: Ecologo, Nordic Ecolabel).
		Y	Competent body	It is not clear for sanitary products (see question 2).
	Should a list of excluded products be provided as part of product group definition?	Y	Industry	If any products are excluded, it would be more clear which ones, if a list is provided.
		Y	Industry Association	There are some dilutable sanitary cleaners which do not fit in point c) of the definition. The same happens for dilutable window cleaners in point b). Additionally, some of our members would like to have criteria for the floor care products (polishes, strippers), as is already the case for Nordic Ecolabel Please see above. Also, it would be good to distinguish between consumer and I&I products.
		Y	Competent body	Especially the special cleaners as oven cleaners
		Y	Competent body	Some customers don't understand the products included in the scope.
		Y	Competent body	it would be much easier to understand
		Y	Industry	To avoid any confusion.
		Y	Env agency	Vinegar
Toxicity to aquatic organisms : Critical Dilution Volume (CDV)	Are the CDV limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	N	Industry	The requirements for sanitary cleaners and kitchen cleaners are not realistic and do not stimulate more sustainable products and the use of it. We believe it is better to use the following terms: dilutable all-purpose cleaners, sanitary cleaners & kitchen cleaners (18 000 l/ 1l of solution). Undilutable sanitary cleaners, kitchen cleaners and toilet cleaners (80 000 l/ 100g of product).
		Y	Industry	The products can be very different, e.g. professional products are often provided as concentrates that need to be diluted before final use.

	N	Industry Association	CDV criteria are taking a pure hazard approach and add up all these, whereas looking at environmental risk of each ingredient would be the most logical approach (which is also the approach of REACH).
	N	Competent body	CDV-values should be divided between RTU and concentrates. For limits see the Nordic Swan limits.
	N	Industry	All purpose cleaners : 12 000L/1L of solution ; Window cleaner : 3000 L/100g ; Sanitary cleaner : 60 000 L/100g of product; All-purpose cleaners (used without dilution) : 35 000 L/100g of product
	N	Competent body	I think we can reduce the limits because most of the products have CDV values much lower and the ecolabel certification must remain restrictive. In addition, CDV limit for sanitary cleaners which are diluted in water prior to use is missing.
	N	Competent body	The limits can be stricter for APC (at least for to be diluted but I guess also for the ready to use APC's) and for the sanitary cleaners ready to use. A separate limit for concentrated sanitary cleaners should be added. The revision of the new didlist should be taken into account, I did some comparative calculations and for most of the products the use of the new didlist results in a lower CDVtox.
	N	Industry	Far less chemical inputs should be allowed to declare it as an Eco-Friendly cleaner
	N	Industry	For sanitary cleaners: The CDV limit a very higher regarding the other product groups. Our certified products for the category have CDV values around 50000l/100g
	N	Industry	The CDV limit for Sanitary Cleaners could be lower. The CDV limit for Window Cleaners is very restrictive and the french market-leading reference product for the performance test is very hard to match.
Is CDV the most appropriate method for assessing aquatic toxicity? If not which assessment method should be considered.	N	Industry	The CDV is very much a hazard based tool, whereas environmental risk of each ingredient would be the most appropriate parameter, such as done by REACH.
	N	Industry Association	Risk-based approach methodologies, e.g. the AISE. ESC tool ?
	Y	Competent body	Information sent by email and available upon request.
	Y	Competent body	I believe we don't have enough information available about others methods.
	N/A	Industry	It has can be other methods there better but not knowing them it is difficult to answer.
	Y	Industry	Use tox database isn't as complete as vcdtox database. For example: Malic acid
Do private and professional products	Y	Industry	Professional and household products can be very different, e.g. professional products are often supplied in highly concentrated form that needs dilution before final use.

	require different CDV limits?	Y	Industry Association	The products can be very different, e.g. professional products are often provided as concentrates the need to be diluted before final use.
		Y	Competent body	The limit for CDV for professional products could be made more stringent
		N	Competent body	We've actually never had any problems to certify private or professional products but if we reduce the CDV limits several licence holders think that it will be necessary
		Y	Industry	Professional products need to be more efficient than private product, so the CDV limits should considered this point
		Y	Industry	Professional products are more concentrate than products intended for the private. It would be thus normal that they have a bigger VCD.
		Y	Env agency	Professional could be a little bit more restrictive
Biodegradability of surfactants	Are requirements for anaerobic biodegradability necessary for this product group? Which other parameters could be considered?	N	Industry	Anaerobic biodegradability is not a relevant environmental parameter, as concluded by the Commission (SCHER) in 2009.
		N	Industry	Anaerobic biodegradation is not really relevant => WWTP
		N	Industry Association	Anaerobic biodegradability is not a relevant environmental parameter (as concluded by SCHER in 2008)
	Are the current limits set for anaerobic biodegradability of surfactants strict enough?	Y	Industry	Actually they are too strict, see question 14
		N	Industry	Anaerobic biodegradation is not really relevant => WWTP
		N	Competent body	The criteria could cover all kind of substances that are not anNBO biodegradable
		Y	Competent body	Nevertheless some licence holders think the criterion is not restrictive enough
		Y	Env agency	Substances that are not anaerobically biodegradable should be excluded. At present, we never had such substances
		Y	Competent body	Surfactants should be anaerobic biodegradable. As the EU Ecolabel is a voluntary label and a label of excellence surfactants should be anaerobically biodegradable too, even if most of them are aerobically biodegraded in wastewater treatment there are still situations where they can end up in anaerobical circumstances. Second reason in the new criteria for rinse-off cosmetics this is also required, the EU Ecolabel should be consequent and moreover it is possible to produce well performing APC's with only surfactants that are aerobic and anaerobic biodegradable. There enough surfactants like that.
		N	Industry	Because they arent for an Eco-Friendly product.

		N	Industry	For APC without dilution, we can use 4% of anNBO surfactants. In general for this product category, the total surfactants does not exceed 5%. So the current criteria allows near the total quantity of required surfactants in anNBO surfactants that is not good. It's the same for windows and sanitary cleaners
	Are the current limits effective in distinguishing between the state-of-the-art and the best performing products in the APC product group?	N	Industry	Anaerobic biodegradability is not relevant (see question 14) for the environmental performance of surfactants, if they are already readily biodegradable (aerobically)
		N	Industry	Anaerobic biodegradation is not really relevant => WWTP
		N	Industry Association	Anaerobic biodegradability does not define the environmental performance of surfactants, if they are already readily biodegradable (aerobically)
		N	Competent body	The criteria could cover all kind of substances that are not anNBO biodegradable
		N	Env agency	Maybe we should push a little bit the environment commitment.
		N	Competent body	All surfactants should be anaerobic biodegradable
		N	Industry	Forbid aNBO surfactants.
Excluded or limited substances and mixtures		Are there any additional ingredients which should be specifically excluded or limited from EU Ecolabelled APCs?	Y	Competent body
	Y		Industry	Liberator of formaldehyde should not be used
	Y		Competent body	We can exclude enzymes and phosphorus because most of the products don't contain these ingredients and pass tests of washing performance. We can also cancel the exemption for NTA because we don't see this substance in the chemicals formulations. In addition, quaternary ammonium salts.
	N/A		Competent body	Criterion 3C is written for substances, this means that mixtures e.g. perfums can be classified with R phrases as long as the individual ingredients that are classified have concentration < 0,010%, this is strange.
	Y		Industry	Excude enzymes (not necessary for these products) . Exclude phosphorous
	Y		Industry	Chloromethylisothiazolinone
	Are any additional derogations required?	Y	Industry	Enzyme H400
		Y	Industry Association	Some proteases can be classified as H400. A derogation could be considered, similarly to the amendment made to the I&I laundry and dishwashing detergents criteria
		Y	Industry	It's quite difficult to preserve Ecolabel products so it will be interesting to allow the R43 (or H317) and R52 (or H412) for the preservatives
	Are there any substances or mixtures which no longer need to be excluded?	Y	Industry	Bacterial stains for odour control, manufacturers such as Novozymes can provide (new) information about safe and sustainable use.
		Y	Industry	APEO: are not used due to their too low biodegradability
		Y	Industry	APEO (alkyl phenol ethoxylates) don't meet the biodegradability requirements of Detergents Regulation.

		Y	Industry Association	APEO (alkyl phenol ethoxylates) don't meet the biodegradability requirements of Detergents Regulation.	
		Y	Industry	Quaternary ammonium salts shall not be used even if there are readily biodegradable	
	Should nanomaterials be excluded from EU Ecolabelled APC products?	Y	Industry	For their possible impact on the final user health (when they get dried on the surfaces) due to their tiny particle size	
		Y	Industry	Not needed for APC and the risks are unknown at this stage.	
		N	Industry	Should only be excluded if a specific environmental or health risk is identified	
		N	Testing institute	Not, but we have to pay attention to nanomaterial could be not biodegradable.	
		N	Industry	Should only be excluded if a specific environmental or health risk is identified.	
		N	Industry Association	Should only be excluded if a specific environmental or health risk is identified.	
		Y	Industry	Because the toxicity of a such product is not well known today.	
		Y	Competent body	The precautionary principle prevails	
		N/A	Industry	We do not know enough nanomaterials to speak about them.	
		Y	Env agency	Not enough information	
		Y	Competent body	They don't have to be excluded but it has to be proven that they are safe	
		N	Industry	Because we don't know the effects of nanoparticles in detail yet. They are rumoured to be cell-intrusive and could therefore be very harmful for human and animal life.	
		Are further requirements needed for the use of biocides in the product?	Y	Competent body	Biocides allowed should not be bioaccumulative
			Y	Competent body	Why does the criteria accept risk phrases H410 and H411 and forbid H412, is it an error?
	N/A		Competent body	There is written in the assessment and verification part that manufacturer or supplier of the preservatives should provide information on the dosage necessary to preserve the product. It should be clear what this information has to be. Is a declaration enough or should we ask for a challenge test?	
Fragrances	Are there any additional fragrance ingredients which should be specifically excluded or limited from EU Ecolabel APCs?	Y	Env agency	At present, a fragrance that contains a substance with R43 (or other) in quantity less than 0.010% is allowed. Since in the market it is possible to buy fragrances that are "clean" we should refer to those.	

	Are there any further requirements needed for fragrances?	Y	Industry	There need to be a better solution for CDV calculation of fragrances. Now we need to use 100% concentration for every perfume. CDV calculation for every ingredient (if available) should be better and stimulates the use of more sustainable fragrances.
		Y	Testing institute	The formaldehyde value.
		Y	Competent body	Limit for environmentally hazardous substances
		N/A	Competent body	Criterion 4c isn't clearly written, it seems that it is already covered by criterion 3 unless here the perfume as a whole is meant and not the different substances in the perfume
	Should the use of fragrances be allowed in professional products?	Y	Industry	Fragrance is essential for most professional used products; exception could be made for kitchen cleaners and food industry.
		Y	Industry	In professional use fragrance can be important to users as well as for in the household
		Y	Industry	Not possible to sell a product without perfume! Perfume is also a sign of the performance for the customer...
		Y	Industry Association	Also in professional use clients can appreciate a fresh smell after cleaning
		N	Competent body	Licence holders have to explain fragrances are useless to have a proper area. Introduce fragrances is a sales argument and does not take the desired direction by an ecolabel.
		Y	Industry	The fragrance is a commercial argument
		Y	Industry	The professional products have the right as much as the particular products to be perfumed.
		Y	Industry	As long as the fragrance are allowed for the domestic products.
		Y	Industry	There are also active ingredients in fragrances used (like essential oils), which are important for the cleaning performance.
		Y	Industry	We have many professional customers that require APC product with fragrances
Y	Industry	A characteristic scent is important for the recognition of a product and it should be possible to use the same product for both, private and professional		
Y	Industry	Professional users would not buy any Ecolabel products if they do not contain fragrances		
Volatile organic compounds (VOCs)	Are the limits on VOCs in the product strict enough?	Y	Testing institute	We have to pay attention to the definition of VOC. For example in the ISO 16000-6 Determination of volatile organic compounds in indoor the definition is different: VOC organic compound whose boiling point is in the range from (50 °C to 100 °C) to (240 °C to 260 °C) NOTE 1 This classification has been defined by the World Health Organization[14]. More detailed and another example in :EPHECT project
		N	Competent body	I think we can reduce the limits but we need to collect our values to propose suitable limits. Moreover, we have to specify that ethanol isn't a VOC even if its boiling point is about 80°C because it can't be considered like a VOC and it isn't dangerous.

		N	Industry	Please more VOCs for cleaners without dilution
		N	Competent body	With the current definition of VOC's the limits can possibly be a little stricter for all of those products (but not too much). The definition of VOC's should be mentioned clearly, why are they defined by a boiling point of 150°C while in the paints directive this is a boiling point of 250°C.
		N	Industry	Less than 2% in the Concentrate has to be sufficient
Phosphorus	Are the current limits set for the maximum amounts of phosphorus strict enough for APCs available on the market?	N	Competent body	Many of the products don't contain any phosphorus, so we can forbid this substance
		N	Competent body	Some of the EU Ecolabeled products in Belgium contains phosphonates but for all of them this is in a much lower concentration than the current limits, so this limits can at least be lowered
		N	Industry	Exclude phosphorous
		N	Industry	it is not necessary to use phosphates or phosphonates in APCs
	Are the current limits effective in distinguishing between the state-of-the-art and the best environmental performing products in the APC product group?	N	Industry	To be able formulating highly concentrated APC you will need to use very efficient RM @ relative low dosage level in the composition, typically phosphonates; the ultimate concentrated APC will limit water and packaging and as a consequence also the impact of the transportation on the environment. P limit should be extended to 0.06g/L of washing water for APC diluted prior to use
		N	Industry Association	Current cleaners are typically not formulated with high levels of phosphates or other phosphorus containing ingredients. Therefore setting limits for phosphorus will not have noticeable effect on reducing the phosphorus loading of the environment at all.
		N	Industry	Current cleaners are typically not formulated with high levels of phosphates or other phosphorus containing ingredients. Therefore setting limits for phosphorus will not have noticeable effect on reducing the phosphorus loading of the environment at all.
		N	Competent body	There are products without phosphorus
	Should phosphorus compounds such as phosphates and phosphonates be banned from this product group?	N	Industry	Remember that phosphonates are the only efficient stabilizer for hydrogen peroxide used in sanitising cleaners; phosphonates can also replace or balance the high caustic for burnt on soil removal in kitchen degreaser.
		N	Industry	For professional use phosphorus is still an important ingredient, however taken account of future legislation concerning phosphorus in APC in non-professional products, EU Ecolabel should never be behind (future) legislation.
		N	Industry	Phosphonates are used at very low levels, and can fulfil important functions in the formulations. As explained above, banning will not have any noticeable environmental effect.

		N	Industry	Phosphates YES, phosphonates NO because the P contribution is low (used at very low concentration) and phosphonates are compulsory to improve washing performances in hard water
		N	Industry Association	Phosphonates are used at very low levels, and can fulfil important functions in the formulations. As explained above, banning will not have any noticeable environmental effect.
		Y	Industry	Should reduce the limits, cause phosphorus are very bad for the environment, and we are capable to produce efficient product without phosphorus compounds
		Y	Industry	Alternatives without phosphorous are possible and efficient
		Y	Industry	it is not necessary to use phosphates or phosphonates in APCs
Packaging requirements	Do you think that is it necessary to have a criterion on packaging requirements for this product group?	Y	Industry Association	Yes, the packaging of these products is ultimately part of the package purchases by the final consumer.
		N	Industry	In the lowest possible will of the RPU, we lose on the quality of packagings and we risk to create dissatisfactions of the users.
	Are the WUR limits acceptable for APCs currently on the market?	N	Industry	WUR are too strict, versus a rather limited impact of packaging as a whole on the impact of a hand dishwashing detergent. Advice on recycling of the packaging could be used alternatively.
		N	Industry	For RTU products, we need to propose an Eco refill to fulfil the criteria. But in practice the Eco refill is not really used.
		N	Industry Association	WUR are too strict, whereas the impact of packaging on the environmental impact of detergents does not justify this.
		N	Competent body	The limit is ok for concentrates, but is probably too stringent for RTU (see Nordic Swan limit)
		N	Industry	Every spray packaging on the market is not conform with the Ecolabel criteria for the ready-to-use products
		N	Competent body	It's necessary to precise Ri and the WUR limit for "ready to use" products with a sprayer is ton restrictive. For these products we need a new value, maybe 200 like the Nordic Swan.
		N	Industry	No for some ready-to-use products (i.e. par cleaner toilets product)
		N	Industry	Many products ready for use are in 750 ml or 500 ml and it raises problem. In the lowest possible will of the RPU, we lose on the quality of packagings and we risk to create dissatisfactions of the users.
N	Industry	Sometimes, the WUR advantage the RTU products compared to the concentrated products. For example, we have a product that pass the WUR in RTU form but not in concentrated form (in this case to be diluted 1/30). So the WUR encourages, in this case, to sell 30 bottles of product in RTU form rather than 1 bottle of concentrate. We think that a RTU product should never be a better option than a concentrated version.		

		N	Competent body	They are too strict for small (0,5L) trigger bottles. Examples of calculation for "more special cases" should be added to the application pack: e.g. bottles are sold by 6 together with 1 trigger. it is not clear how an applicant can document a higher number than 1 for r.
		N	Industry	The limit for the spray is very restrictive and impossible to reach without using refill. This criterious must be adapted especially for sprays. Possibility to increase RPU to 200 for sprays.
Should additional criteria be set to further promote the use of recycled materials in packaging?		Y	Industry	Recycled materials are slowly being more available to the market; it would be good to stimulate this in EU Ecolabel. Perhaps research to bio-based plastic and other new forms of packaging materials could be useful.
		N	Industry	Any recycling criteria should not go further than what is reality in the market w.r.t. availability of recycled materials of sufficient quality.
		Y	Industry Association	A criterion promoting the use of recycled material will reduce the environmental impact of the packaging.
		N	Industry Association	Recycling criteria should not go beyond market reality
		Y	Competent body	I think it is possible, there is already a lot of packaging on the market with at least some recycled content. The requirement shouldn't be too high because the quality has to stay high and a high % of recycled content doesn't allow a white transparent bottle.
		N	Industry	We use quite a lot of very low weight laminated pouches, these packaging have many sustainable advantages: less transportation, less stock and less waste. However these pouches need to go to rest plastic waste for recycling.
Should there be restrictions on combinations of materials used for packaging? For instance to design for recycling (like the new proposed criterion for rinse-off cosmetics).		N	Industry	But could be yes, if it can be proven that a certain kind of packaging cannot be recycled at all, and that efficient & economically viable alternatives with same functionality exist.
		Y	Industry Association	Non compatible materials are the major barrier to improve the recyclability of packaging (at the recycler and at the sorting plants). Additionally, easy-to-empty and easy-to-access concepts and indexes could also ease the recycling process. See www.recyclclass.eu
		N	Industry Association	Unless it can be proven that a certain kind of packaging cannot be recycled at all.
		Y	Competent body	It should be easy to separate different materials to enable recycling
		N	Competent body	Some licence holders inform us that it's impossible to have a monomaterial packaging for doypacks.
		N	Industry	Some packaging are inevitably multi-materials (doypack or sprayers for example) and it's technically impossible to have a monomaterial packaging.
				N/A

nce (fitness for use)	washing performance test and, if appropriate, proposals for modification	N/ A	Industry	The requirements are ok, we are more a supporter for consumer test because the difference we see in lab tests are not relevant for use in practice and bring unnecessary high costs for certification.
		N/ A	Industry Association	The current set of proposed protocols is generally OK and workable, although harmonization of the reference product is needed, particularly for professional applications (in this case the reality is more severe than the test).
		N/ A	Industry	The current set of proposed protocols is OK and workable
		N/ A	Testing institute	<ul style="list-style-type: none"> - At least five repetitions should be increased to at least 20 - We suggest a chemical characterization to be attached to the performance test to allow certain compositional characteristics of the product in order to strengthen the declared in composition. This allows a further quality control. - For window cleaners: It is not too much clear on the FRAMEWORK FOR TESTING THE PERFORMANCE OF ALL-PURPOSE CLEANERS, WINDOW CLEANERS AND SANITARY CLEANERS (Version 1.3 of September 2012) if the 'cleaning ability' is required in addition to stripe-less drying. - For window cleaners (already required) and in all-purpose cleaners used without dilution: We suggest the stripe-less drying test on black tiles. The halo effect is more clear than glass. - I think that should be the distinction between private and professional products. This distinction is very important also in the choice of reference products for performance test.
		N/ A	Industry	The feeling is that the target performances are easier to reach and it is easier to get the EU Ecolabel in terms of washing performances. At the end, low performing products are available on the market. Reference products have to be adapted and harmonized all over the different countries!
		N/ A	Industry	Even if the efficiency tests are the same in every country, the efficiency level is not the same in every country when you have to compare the efficiency of your formulation to the reference of the national market. So there is a big problem when you have for example in the French market Ecolabel products which were validated in another country and these product are not as efficient as the reference of the French market. So I suggest to validate the efficiency of every product with a comparison test with the reference product of the country in which the product will be sold (by the competent authorities of the country if the Ecolabel certificate was delivered by another country).
		N/ A	Competent body	Most of the licence holders don't agree with the current criteria because they think it is unfair. In addition it is useless to test all purpose cleaners to be used in dilute form, e.g. for floor cleaning in their pure form if it isn't written in user instructions, especially we have instructions in the case of a concentrated product (it shall be clearly indicated on the packaging that only a small quantity of the product is needed compared to normal products - so customers don't have to use these products in their pure form!) Finally the IKW reference is too viscous to be used in bathroom cleaners tests. Indeed, the viscosity of IKW improve the washing performance and force to acidify formulations of the products which want to be certified (so VCDtox increases) whereas most important products in the market are not so visquous (and products without acid seem to be as efficiently as market leaders).
		N/ A	Competent body	We believe that consumers test products for professional use is not reliable or representative of compliance with this criterion because it is necessary that only 5 professional users (how is that evidenced?) claim that the product is

				suitable. It should be better a mandatory laboratory test or, at least, 10 professional users.
		N/A	Industry	All the tests should be IKW tests, not market-leading or generic reference product.
		N/A	Industry	Many products ready for use are in 750 ml or 500 ml and it raises problem. In the lowest possible will of the RPU, we lose on the quality of packagings and we risk to create dissatisfactions of the users.
		N/A	Competent body	I don't think that it makes much sense to test the products that have to be diluted also in pure form and to test a window cleaner against water, it only highers the cost for the applicants. How should an applicant prove that his reference product is one of the market leading products. For Bathroom cleaners the IKW reference product has to be used, this has a high viscosity, so a ready to use bathroom cleaner (in a trigger as they usually are) cannot reach the same performance on vertical surfaces. As in the framework there is refered to the IKW test 'Recommendations for the quality assessment of bathroom cleaners this is confusing because in those recommendations limescale removal on a horizontal and a vertical surface is mentionned. This is confusing.
		N/A	Industry	They are sufficient
		N/A	Industry	Why not include a reference detergent for APC and window cleaners? Because market-leading product is different from one UE-country to another. So there is differences to obtain ECOLABEL certification depending of the country of the competent body.
		N/A	Industry	The fact that there is a different reference product for each country is not fair. The "not diluted" cleaning ability of All Purpose Cleaners does not have to be evaluated if this use is not written on the instruction of use. Also, the generic reference detergent for bathroom cleaners should not thick. Indeed, there are very few thick bathroom cleaners on the market
User instructions	Are additional requirements and instructions for dosage needed?	Y	Industry	We need to decide if we would like to integrate the PVA capsules (water soluble) that are appearing on the market as single dose or refill .They represent the ultimate concentration of the detergents and need for other use instructions.
		N	Industry	Perhaps a dosage in ml per litre would be clearer.
		N/A	Competent body	It is confusing that in the case of concentrated products there should be indicated that compared to normal (diluted) products only a small quantity is needed. It would be better to mention something like: you need only a small quantity of this product to obtain good results.
	Are additional requirements needed for dosing of products intended for professional users?	N	Industry	However we combine dosage equipment with our EU Ecolabelled products.
		Y	Industry	"The product is not intended for large scale cleaning" has to be clarified. Wrong translations over different countries led to misunderstanding.
		Y	Industry Association	The text "the product is not intended for large scale cleaning" needs to be clarified as wrong translations in the different countries have led to misunderstanding.
		Y	Competent body	'The product is not intended for large scale cleaning' must be clarified. Moreover 'only a small quantity of the product is needed compared to normal (i.e. diluted) products' seems to be redundant with 'Proper dosage saves costs and minimises environmental impacts'

	Are the requirements for safety advice on the packaging sufficient?	N	Industry	These are irrelevant for professional products and take up unnecessary space on the label. Besides these advices are already regulated in EU legislation.
		Y	Industry Association	Please note that the safety advices are already regulated under CLP Regulation with the P phrases. Maybe the safety advice should only appear when a product is not classified under CLP. Also, the safety advice “Keep away from children” is not relevant for professional products.
		Y	Industry	How is going to take place the labeling at the level SGH?
Information appearing on the EU Ecolabel	Is there any other information which should be included on the EU Ecolabel claims text?	N	Industry Association	Please leave this up to the manufacturers.
		Y	Competent body	Maybe we can claim the performance of the products
Professional Training Further issues or hotspots	Are any further requirements for professional training needed?	Y	Industry	We believe this is an important subject. In our opinion a requirement for product information sheets can also be included which gives more information about the use, dosage and application areas
		Y	Industry	Criteria not relevant and repetitive with info on the labels. Technical data sheets do not reach most of the time the end-user and the label is the only way to ensure a proper use of the product.
		N	Industry Association	One comment: to comply with this criterion, a Technical Data Sheet is requested by some competent authorities. This TDS only contains information that is already provided on the label. The preparation of a TDS is time consuming and most of the times it does not reach the end-users. As the label already provides information for the proper use of the product (containing the instructions for proper dilution, use and disposal) we think the TDS does not bring any added value
		N/A	Competent body	The criterion asks for or training or training material, in the assessment and control there is asked for a training and training material. It should be clear if providing only training material (some kind of instruction sheets) without a real course is enough.
	Should further criterion be developed, either because all the issues are not already covered or because of recent developments which affect the environmental performance of APCs?	N/A	Industry	We should consider the benefit of including raw materials based on renewable carbon.
		N/A	Industry	I know this is a fragile subject, but we see a growing demand for more sustainable biocides (disinfectants) and are doing quite a lot of research for it.
		N/A	Industry	could consider sustainable sourcing of renewable, making use of existing schemes (e.g. from RSPO)
	Do you consider it feasible to link the CDV	N/A	Industry	No, CDV and performance are different. Performance is linked to specific chemistry; for example, one acidic material with a very good CDV is a bad degreaser.

	or aquatic toxicity criterion and performance criteria? If yes, please explain your approach.	N/A	Industry	No. Fragrances dominate CDV score too much, but do not contribute to technical performance. In other words, there is no clear link to technical performance and CDV.
		N/A	Industry	We don't know.
		N/A	Industry	No. The CDV tox depends to materials used in the formulations. Even if you choose raw materials with low CDV tox values, you must be as efficient as the ecolabel reference.
	Do you know of any examples of the use of nanomaterials in APCs? Should their use be banned from this product group and why?	N/A	Industry	Yes, nanomaterials are/have been already used in window cleaners. (Instanet/Henkel for ex).When nanomaterials are present in a liquid phase, they are not of concern but when these tiny particles left dried on the surfaces, they possibly be of concern for the human health
		N/A	Competent body	We don't have any examples
		N/A	Competent body	Our experts are checking this, probably I come back to you with an answer on this question next week
		N/A	Industry	We don't have any example

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