

GREEN CLAIMS GUIDANCE

FOR THE CLEANING PRODUCTS SECTOR



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CONTENTS LIST

Introduction	3
Section 1 - Making a good environmental claim for cleaning products	4
Step 1 – Ensure the content is relevant and reflects a genuine benefit	4
a) consider the whole life cycle impact of products	4
b) ensure claims address impacts that are relevant to the impact of the product concerned	5
c) ensure claims genuinely convey additional benefits or improvements	7
d) ensure claims are fair and meaningful	8
Step 2 – Present the claim clearly and accurately	9
a) Ensure the claim is truthful and accurate	9
b) The scope of claim should be clear	10
c) Use plain language - specific and unambiguous	10
d) Ensure any labels, symbols or pictures are clear and relevant	11
Step 3 – Check the claim can be substantiated	12
a) Claims about achieved environmental performance	12
b) Claims about future aspirations	13
Section 2 – Additional guidance in relation to specific issues	14
1. Claims related to biodegradability	14
2. Claims related to hazards of ingredients	15
3. 'Natural' and 'chemical' in relation to ingredients and products	15
Annex – Background to guidance on specific issues	16
1. Claims related to biodegradability	16
2. Claims related to hazards of ingredients	20
3. 'Natural' and 'chemical' in relation to ingredients and products	21
Appendix – Sources of further information	23

INTRODUCTION

This guidance has been produced at the invitation of DEFRA by UKCPI, the leading trade association for manufacturers of cleaning products, to supplement DEFRA's Green Claims Guidance published in February 2011¹ in relation to specific issues that can arise in the context of cleaning products. DEFRA have reviewed this guidance before publication.

Giving clear, straightforward, environmental information, as outlined in this guidance, has benefits for consumers and business alike. By providing information about the environmental effects and qualities of products, and how to use and dispose of them, environmental claims (sometimes called "green" claims) help consumers to make informed buying choices. They also help to raise awareness of the issues, enhance consumer understanding and improve product standards overall. At the same time businesses can enhance their credentials and demonstrate that they are acting responsibly to consumers, other business partners and regulators.

By following this guidance, companies can ensure that self-declared environmental claims are meaningful and in line with the DEFRA Green Claims Guidance and other existing standards and codes, namely UK Advertising Codes², International Standard ISO 14021³ and European Commission Guidelines⁴ for making and assessing environmental claims. The guidance is not intended to replace these codes but to provide user-friendly interpretative guidance on how to apply them.

The first section of this supplementary guidance expands on relevant aspects of Section 3 of the main DEFRA Guidance on "How to make a good environmental claim". It is structured under the same key steps - i.e. ensure claims are clear, accurate, relevant and substantiated - and highlights both areas where there is good scope for sound environmental claims and areas where claims can easily become misleading.

The second section of this guidance deals with some specific issues that sometimes arise in relation to possible claims for cleaning products, i.e.:

1. Biodegradability
2. Claims related to hazards of ingredients
3. Use of 'natural' and 'chemical' in relation to ingredients and products

Who should read this guidance?

All companies that develop, manufacture or retail cleaning products and:

- Currently make environmental or related claims about products;
- Are considering how to market the environmental attributes of their products;
- Are receiving queries from customers about the environmental performance of their products and are considering how to respond.

¹ Green Claims Guidance. DEFRA February 2011.
<http://www.defra.gov.uk/publications/files/pb13453-green-claims-guidance.pdf>

² <http://bcap.org.uk/The-Codes.aspx>

³ ISO 14021:1999 Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling)

<http://shop.bsigroup.com/en/ProductDetail/?pid=00000000030060360>

⁴ http://ec.europa.eu/consumers/cons_safe/news/green/guidelines_en.pdf

SECTION I

Making a good environmental claim for cleaning products

Step I – Ensure the content is relevant and reflects a genuine benefit

The DEFRA Green Claims Guidance lists three steps for making a good environmental claim:

Step I – Ensure the content is relevant and reflects a genuine benefit

The DEFRA guidance (as well as UK Advertising Codes) highlights that it's important to:

a) Consider the whole life cycle impact of products

When framing a claim, it's most important to consider the whole life cycle of the cleaning product or process, because reductions in the environmental impact in one area can sometimes be cancelled out by increases in another. If reductions made regarding a minor impact were accompanied by increases in a major impact, the overall sustainability could even be reduced.

There are several sources of published life cycle assessments (see appendix) for different types of cleaning products that should help you establish the key life cycle impacts for your type of product.

If you can show an overall reduction in the life cycle impact of the cleaning process, or show a reduction in an important impact without increasing the others, you should have a sound basis for an environmental claim.



Step I – Ensure the content is relevant and reflects a genuine benefit

Example: Does the claim consider the full life cycle impacts?		
	Poor practice	Good practice
Claim Example	A company claims its laundry detergent is a 'green' choice because it uses naturally-derived raw materials	A company claims its concentrated product designed for low temperature washing has a reduced environmental impact because: <ul style="list-style-type: none"> • it allows the user to save energy when washing • it uses 1/3 less packaging and 15% less ingredients compared to its original version which was comparable to other similar products on the market
Comments	Addresses one aspect of the product's environmental impact but does not consider the others Naturally-derived raw materials are not necessarily more sustainable. The latter depends on whether they are sustainably produced, how much energy (and thus fossil fuel) and other resources are required to produce them etc It is essential to consider whether performance in relation to wash and dosage are comparable to other products	Considers the full life cycle Life cycle assessment shows that energy consumption during use, consumption of ingredients, and consumption of materials for packaging raw material and solid waste generation are among the most important life cycle impacts of laundry detergents. The company holds evidence that performance at low temperatures and recommended doses is comparable to its previous version and other products on the market and that there are no significant increases in life cycle impacts in other areas.

b) Ensure claims address impacts that are relevant to the impact of the product concerned

For most consumer cleaning products, the major impacts are usually:

- the quantities of ingredients and thus raw materials used
- the quantities of packaging used
- energy used when the product is used e.g. to heat water or power machines
- water used

The sources listed in the appendix illustrate this and should help you check that your claim addresses relevant impacts.

When developing claims for products sold into Industrial and Institutional (I&I) cleaning (e.g. for cleaning food and beverage production plants, catering establishments and hotels, laundries, hospitals, schools and offices) bear in mind that the cleaning product per se, though frequently critical in terms of performance and results, sometimes accounts for only a very small part of the total environmental impact of the cleaning process. This applies particularly when processes involve high temperatures and mechanical equipment which use lots of energy to do the cleaning.

I&I products are increasingly highly concentrated and diluted at the point of use, such that packaging and transport impacts are minimised. The more concentrated the product, however, the greater the need for accurate dosing to avoid waste. With the most concentrated products, precision dosing equipment is usually needed to limit waste to very low levels. So when framing a claim about concentrated products, make sure that the product is sold and promoted in a way that will ensure good dosing control.

Step I – Ensure the content is relevant and reflects a genuine benefit

The relevance of claims for an I&I product with an improved environmental profile thus needs to be considered not only in terms of the product's own life cycle but also against the context of its use. A significant improvement in the product profile may not be very significant if most of the impact of the cleaning process arises from equipment, energy and water use.

On the other hand, there is real scope for sound environmental claims where an improvement in a product can improve the overall eco-efficiency of the cleaning process, or allow reductions in major life cycle impacts such as energy use by cleaning efficiently at lower temperatures.



Note that product hazards (for example toxicity and ecotoxicity) and environmental parameters such as biodegradability are not themselves impacts: they only help determine whether an impact will occur. (See sections 2.1 and 2.2.)

Example: Does the claim focus on the most significant life cycle impacts?		
	Poor practice	Good practice
Claim Example	A company claims its product is “good for the environment” because its packaging is made from 100% recycled material	A product claims a new ingredient in its laundry detergent (an enzyme that maintains 40 degree performance in cold water) helps lower the environmental impact of washing. The pack carries advice to use low temperatures where possible
Comments	Though packaging is a significant life cycle impact, for the product to be a superior choice other impacts and performance must be at least comparable to others on the market. If greater quantities of packaging are used to compensate for loss of strength the gain could be offset or negated. Recyclable packaging, especially at high recycled contents, often has reduced strength compared to virgin material. Using lightweight packs made from virgin material may sometimes have a lower life cycle impact than using recycled material	Claim relates to one of the most significant life cycle impacts which is reduced without decreasing performance or raising other impacts. Encourages others to act, where they are the ones in control Energy consumption to heat water for laundering clothes is one of the most important impacts in the life cycle

Step 1 – Ensure the content is relevant and reflects a genuine benefit

c) Ensure claims genuinely convey additional benefits or improvements

Improvements which you can show bring overall reductions in the life cycle impact of the cleaning process, or reductions in one important impact without increasing the others, should offer plenty of scope for sound environmental claims.

Areas that must be approached very carefully are claims related to product hazards (for example toxicity and ecotoxicity), about biodegradability and about natural occurrence or renewability, as claims in these areas can easily become misleading. Hazards and environmental parameters such as biodegradability are not themselves impacts: they only help determine whether an impact will occur.

Manufacturers have a legal responsibility to ensure their products are safe for people and the environment when used according to the instructions. Provided these conditions are met there will be no impact arising from their hazards during normal use.

Claims about the hazards of ingredients used in other products would be misleading if the impression is wrongly given that harm is likely to occur when the products are used as instructed. The DEFRA guidance specifically states that claims should not imply a product “is exceptional by suggesting others in the market are likely to cause harm if that is not true of most products sold for the same purpose or if the available evidence does not support those suggestions”.



Claims based around the absence of ingredients (e.g. “X-free”) directly suggest this represents a benefit. This in turn implies that ingredient X poses some significant risk, whether to the environment or human health, or that it has some other important environmental disadvantage. While claims related to ingredients which have been publicly debated as undesirable can have substantial consumer appeal, they need to be objectively and scientifically supported. Although such claims could be literally true, they would be misleading if there were no tangible, scientifically supported benefit - for example if human or environmental exposure when the product was used was well below safe limits, or if the alleged hazards were not confirmed.

The DEFRA Guidance further makes it clear that claims “*should not be based on the absence of ingredients or features which have never, or have not for some time, been associated with the product category.*” If you simply wish to reassure customers, for example on websites, that a product does not contain an ingredient which poses a significant risk or is legally banned, keep the phrasing neutral (e.g. use “does not contain X” rather than “X-free”), and make it clear if this applies generally to products on the market and/or is a legal requirement e.g. “as required by EU legislation / in line with a voluntary industry agreement, this product does not contain X”.

Published human and environmental risk assessments of many of the most common ingredients used in cleaning products are already available (see for example the sources listed in the appendix.) It would be misleading to suggest an ingredient is likely to cause harm if that is not the conclusion of the risk assessment. Claims suggesting that ingredients in other products on the market were likely to cause harm would need to be substantiated by evidence of harm arising from normal use of the other products concerned.

Additional guidance and background in relation to these questions is provided in sections 2.1 and 2.2.

Step 1 – Ensure the content is relevant and reflects a genuine benefit

The DEFRA guidance also points out that you should “ensure that, where a claim promotes an environmental improvement for one aspect of a product, this has not resulted in another important environmental burden or impact arising from the product (i.e. an undisclosed impact).”

It is thus important that impacts across the whole life cycle of the product and cleaning process are kept in focus in framing claims. This can be particularly important in relation to use of alternative ingredients for reasons of e.g. renewability or improved safety margins: a reduction in performance, or need for increased dosage, energy usage etc to maintain performance, may reduce sustainability in other respects.

Example: Does the claim reflect an additional benefit to the environment?		
	Poor practice	Good practice
Claim Example	The product claims to be better for the environment because it does not use various specified ingredients	The product claims to benefit the environment by using a lower dosage of ingredients per wash
Comments	<p>Though all ingredients have hazards, some of those specified have not been used in UK products for some decades and the others have been formally risk assessed and shown to present no actual risk at the levels commonly used in products</p> <p>If comparable products cause no actual harm, there is no likely benefit from switching products</p> <p>Claims should be relative to current UK practice and not imply that hazard leads to harm irrespective of the levels and conditions of use, especially when published risk assessments are available</p>	<p>Using lower dosages per wash saves resources, energy and packaging</p> <p>The company holds evidence to show that performance is maintained at lower dosages (so users will not compensate by over-dosing), and that the overall impact profile of the individual ingredients has not changed (i.e. using more ‘high-impact’ ingredients or less water) in a way that would negate the benefit of the reduced dosage.</p> <p>As dosages are lowered it becomes more critical to promote and enable accurate dosing</p>

d) Ensure claims are fair and meaningful

Make sure your claims reflect meaningful benefits and are fair bearing in mind the attributes of other products on the market.

In sectors such as cleaning products where it is easy to present and package products in a way that suggests they are generally ‘greener’, there can often be an implied comparison with competitor products that do not present themselves in such a way. The UK Advertising Code says that for comparative claims such as ‘greener’ to be justified the product should provide “a total environmental benefit over that of competitor products, and the basis of the comparison is clear.”

To substantiate such claims, superiority would need to be demonstrated in overall life cycle terms and documented evidence should be kept to demonstrate this (see Step 3). The DEFRA guidance is to avoid implied comparisons if there is not the specific information to justify the comparison.

Step 2 – Present the claim clearly and accurately

Step 2 – Present the claim clearly and accurately

a) Ensure the claim is truthful and accurate

If claims are to be made about replacement of ingredients commonly used in other products by ingredients with an improved environmental profile, it is important the current extent of usage of the replaced ingredients is properly described. The impression should not be given that an ingredient is widely used in UK products if it has little or no use, or is restricted to specific product types. Examples would include claims about replacement of alkylphenol ethoxylates, which were completely replaced many years ago in the UK and are now banned in the EU, or replacement of triclosan which has had little use in detergents or cleaning products for many years.

The extent of usage of ingredients in consumer products may be assessed by reference to the ingredient lists that manufacturers provide on websites in accordance with the EU Detergents Regulation (EC) No 648/2004.

Example: Is the claim literally true but likely to be misinterpreted?		
	Poor practice	Good practice
Claim Example	“Contains no cancer causing chemicals”	“You can be assured that all ingredients have been confirmed, following the principles of scientific risk assessment, to have good margins of safety for both people and the environment when used according to instructions.”
Comments	<p>Suggests the claimed product is exceptional by implying other products on the market typically do contain ‘cancer causing chemicals’, and there is a real risk of cancer from using those products.</p> <p>Ingredients confirmed or thought likely to be able to cause cancer in humans would be prohibited by law.</p> <p>For many common substances there are test data on some organisms or cells which suggest an ability to cause changes that can lead to cancer. If the evidence is strong enough, the substance may be classified, and use restricted, but even then a significant risk of cancer may only arise from unrealistic extreme exposures.</p>	<p>Such a statement may properly be presented as reassurance, but not as a claim, since this would be the norm for products on the market.</p> <p>Properly distinguishes between hazard – potentially harmful properties which most substances, both natural and synthetic, possess – and the risk of any harm being caused when the product is used as intended.</p>

Step 2 – Present the claim clearly and accurately

b) The scope of the claim should be clear

The DEFRA guidance says that “it should be clear for an average consumer whether the claim covers the complete offering, or only one of the components, or the packaging.”

For cleaning products, which are used with other resources including energy and equipment to perform a cleaning process, a good environmental claim should avoid giving the impression that the sustainability of the whole cleaning process has been improved unless that has been assessed and substantiated.

If making claims about biodegradability (see additional guidance in section 2.1) it is important in framing the claim to distinguish between biodegradability of surfactants (which is a legal requirement and not an additional benefit that would normally justify a claim), and that of other ingredients or of the packaging.

c) Use plain language - specific and unambiguous

The DEFRA guidance recommends being specific, and avoiding vague and undefined terms like ‘green’, ‘environmentally friendly’, ‘eco’ or ‘better for the environment’. This is a way of avoiding the pitfall of unfair implied comparisons which can easily arise in the cleaning products sector as explained in Step 1d) above.

Note that there are also legal restrictions on the use of such terms on packaging of products which are classified as ‘dangerous’ or are used as biocidal products:

The UK CHIP Regulations 7(4) and the EU CLP Regulation Article 25.4 stipulate that for products which are themselves classified as dangerous preparations or dangerous substances:

- *indications such as “non-toxic”, “non-harmful”, “non-polluting”, “ecological” or any other statement indicating that the dangerous substance or preparation is not dangerous or that is likely to lead to underestimation of the dangers of the dangerous substance or dangerous preparation shall not appear on the package.*

For Biocidal Products as defined by the EU Biocides regulation No 528/2012, Article 69.2 stipulates that:

- *authorisation holders shall ensure that labels are not misleading in respect of the risks from the product to human health, animal health or the environment or its efficacy and, in any case, do not mention the indications ‘low-risk biocidal product’, ‘non-toxic’, ‘harmless’, ‘natural’, ‘environmentally friendly’, ‘animal friendly’ or similar indications.*

The DEFRA guidance also points out that sustainability is a complex concept and there are no definitive methods for measuring it in absolute terms. It thus says that “claims about a product or service being ‘sustainable’ or ‘environmentally sustainable’ should not be made”. It does, however, add the proviso that this guidance does not apply “if ‘sustainable’ is used in the context of a reputable scheme, with specific criteria that underpin its use”. The A.I.S.E. Charter for Sustainable Cleaning <http://www.sustainable-cleaning.com/en.home.orb> is an example of one such scheme relevant to cleaning products, though that scheme similarly tends to avoid making absolute statements about sustainability and uses relative forms of expression e.g. Advanced Sustainability Profile.

Step 2 – Present the claim clearly and accurately

d) Ensure any labels, symbols or pictures are clear and relevant

The A.I.S.E. Charter for Sustainable Cleaning requires the use of a standardized 'Cleanright' information panel on relevant products. This provides clear and easily understood information for consumers covering issues such as the correct amount of detergent to use. Such information is increasingly important as products become more concentrated and compacted. The Cleanright panel aims to encourage consumers to pay close attention to the aspects of the washing process that are ultimately under their control.

Details of the Cleanright panel can be found here:

http://uk.cleanright.eu/index.php?option=com_content&task=view&id=3960&Itemid=4204

The DEFRA Guidance points out that certain imagery (e.g. forests, the earth or endangered animals) can imply a sweeping environmental benefit or otherwise contribute to an environmental claim. The Guidance states that *“the image should bear relevance to the product business activity or environmental impact concerned in the claim”*. Images which might inappropriately imply an environmental benefit which cannot be justified should not be used.

As regards cleaning products, however, it is traditional to use images which involve natural scenes or objects, for example showing pine trees or flower meadows on pine-oil based or floral scented products. These are relevant to key characteristics of the product and should not automatically be construed as implying an environmental benefit as soon as an environmental claim is made. The key, as the guidance states, is not to inappropriately imply a link between the claim and the image if there is none.

A report by the European Chemicals Agency (ECHA) on “Communication of the safe use of chemicals”

http://echa.europa.eu/documents/10162/13559/clp_study_en.pdf, points out that packaging features are an important driver of consumer behaviour in relation to safe use and encourages greater efforts to ensure product appearance and packaging are in line with any hazard classification and labelling.



Step 3 – Check the claim can be substantiated

Step 3 – Check the claim can be substantiated



The DEFRA guidance stresses the importance of ensuring that evidence on which claims are based is objective and able to be traced and referenced. It further emphasizes that a claim should not suggest that its basis is widely accepted if the balance of scientific evidence does not support that.

Improvements that can bring an overall reduction in the life cycle impact of the cleaning process are highly desirable, but can be difficult to substantiate if some impacts are reduced while others increase. In such cases, unless the reductions are major, and the increases minor, it may be easier to base the claim around comparative yet realistic scenarios where one or more impacts reduce while others stay the same.

If claims are made relating to the hazardous properties of ingredients, it is essential firstly to check that those hazards are properly described and scientifically

accepted, especially if the adverse effects that might arise would not be immediately evident e.g. carcinogenic hazards as opposed to corrosive properties. Secondly, as explained in section 1c above, it is important not to imply that harm is likely to arise from such hazardous properties during normal use of the product unless the balance of scientific evidence supports that. There are several authoritative sources (see appendix) that may be useful in establishing the accepted scientific view in relation to such hazards and risks of substances:

Hazardous properties

The accepted regulatory assessment of hazards of a substance is reflected in the formal classification according to the EU Dangerous Substances Directive and latterly the Classification, Labelling and Packaging Regulation. These classifications can be accessed via the EU website <http://esis.jrc.ec.europa.eu/index.php?PGM=cla> and should also be provided on Safety Data Sheets for the substance available from the supplier. Note that hazard descriptions in the text of Safety Data Sheets frequently are all encompassing and err substantially on the side of caution. They are also relevant only to direct exposure to the pure substance. For example, concentrated acetic acid is sometimes described as 'fatal if ingested' yet 5% solutions sold as vinegar are safe enough to use on food.

Where hazards are not recognised in formal classification, it may be that they are unconfirmed suspicions, or minority opinions not supported by the balance of scientific evidence, even if reported in peer-reviewed publications. The DEFRA guidance suggests that where significant uncertainty exists this should be acknowledged or not be made the basis of a claim.

Harmful effects

As explained in Sections 1c and 2, claims even about the established hazards of ingredients used in other products would be misleading if the impression is wrongly given that harm is likely to occur when the products are used as instructed. Useful sources for checking the established scientific assessment are provided in those sections.

Step 3 – Check the claim can be substantiated

a) Claims about achieved environmental performance

The A.I.S.E Charter for Sustainable Cleaning provides a framework of standards and requirements according to which defined levels of achievement in relation to sustainability can be substantiated. These cover both a company's operations and procedures and an increasing range of product types. Further details can be found at <http://www.sustainable-cleaning.com/en.home.orb>

Example: Are the assumptions based on realistic outcomes?		
	Poor practice	Good practice
Claim Example	A product claims it saves water and protects it from pollution because it takes less water to dilute its ingredients in sewage flows after use to levels that are harmless to the environment.	A product claims it offers wider margins of safety for the aquatic environment when discharged after use.
Comments	<p>Water is not 'used' to dilute sewage so water cannot be 'saved' or protected from pollution in this sense.</p> <p>Ingredients from cleaning products become diluted automatically in the large volumes of waste water flowing through sewers.</p> <p>Claims should reflect what happens in practice.</p>	<p>Recognises products are routinely formulated to avoid unsafe levels in the environment and the scope for improvement is in widening safety margins where those are narrower.</p> <p>The claim is supported by calculations of safety margins for each ingredient reflecting the position if the product was widely / universally used.</p>



b) Claims about future aspirations

The A.I.S.E Charter for Sustainable Cleaning, and the associated annual reports of industry performance http://www.sustainable-cleaning.com/en.publicarea_sustainabilityreport.orb may also be useful in providing benchmarks and industry norms against which future aspirations can be described and progress can ultimately be measured.

SECTION 2

Guidance in relation to specific issues

I. Claims related to biodegradability

The following sections deal with some specific issues that sometimes arise in relation to possible claims for cleaning products:

I. Claims related to biodegradability

- Existing legislation currently sets legal requirements for the biodegradability of surfactants. If surfactants simply comply with legal requirements for biodegradability, then it is recommended that no claim should be made. If you simply wish to reassure customers, for example on websites, that the surfactants are biodegradable make it clear that this applies to all products on the market and/or is a legal requirement.
- If you wish to make a claim about the biodegradability of the other ingredients in the product:
 1. Claims should be based upon the biodegradability of the individual ingredients as described in official registers or determined by appropriate test methods (see Background notes in the Annex).
 2. The term 'biodegradable' in a claim should mean 'readily biodegradable' as that is the likely expectation in the context of cleaning products. If an ingredient passes a test for 'inherent biodegradability' but not for 'ready biodegradability', this should be made explicitly clear or the claim should not be made.
 3. The biodegradability of a mixture of disparate ingredients has no real meaning or environmental significance in relation to cleaning products so avoid making claims about the biodegradability of the product as a whole. Vague claims such as "biodegradable" on a cleaning product are unacceptable.
 4. Claims should only be made where the product in question is significantly different to others on the markets in a way that is likely to translate into a meaningful benefit for the environment
 5. While ingredients that are 'readily biodegradable' are preferable as they will not persist in the environment and so are inherently less likely to have any long-term effects, avoid implying either:
 - that ready biodegradability alone is sufficient to ensure environmental safety, or
 - that ingredients which biodegrade more slowly or are removed by other mechanisms (e.g. photodegradation) are intrinsically unsafe or likely to lead to problems
- If a biodegradability claim relates only to the packaging as opposed to the product ingredients, make that quite explicit as otherwise there is a likelihood of confusion.
- Avoid making claims relating to anaerobic biodegradability of surfactants as this characteristic⁵ is assessed as being of little significance for environmental safety.
- If referring to the products of biodegradation of ingredients, describe the ultimate products (for example "biodegrades to water, CO₂ and mineral salts") rather than simply talking about "harmless substances".
- As with all claims about a specific aspect of a cleaning product, consider the significance of an improvement in biodegradability in the context of the whole life cycle impact of the product. Avoid implying a reduction in environmental impact or adverse effects unless this can be specifically demonstrated.

⁵ EU Scientific Committee on Health and Environmental Risks Opinion on Anaerobic Degradation of Surfactants And Biodegradation of Non Surfactant Organic Ingredients http://ec.europa.eu/health/ph_risk/committees/04_scher/docs/scher_o_109.pdf

2. Claims related to hazards of ingredients

2. Claims related to hazards of ingredients

- Claims related to the hazard of ingredients need to be approached with care, as hazards are not themselves impacts. Provided a product is formulated to use ingredients at levels that are safe, and used according to the instructions, no adverse environmental impact will arise from that hazard.
- Unless it can be substantiated that products generally on the market are causing harm when used according to the instructions, a claim to be safer or be less harmful could be misleading as it would imply that most products did cause harm.
- Where a product uses ingredients which have a lower hazard to those commonly used, it may be valid to claim that the product offers greater margins of safety provided the increased safety margin is substantiated and significant. Such an improvement should only be claimed as an improvement in sustainability where other important factors for sustainability, such as performance, and safety margins for other ingredients, are not reduced.



3. 'Natural' and 'chemical' in relation to ingredients and products

3. 'Natural' and 'chemical' in relation to ingredients and products

- Substances obtained from natural sources should not be described as 'natural' in a way that suggests they are not composed of atoms and molecules of the chemical elements like all other substances, that they do not have chemical properties, or that they are not the product of (bio-)chemical reactions within natural processes.
- In addition, substances obtained from natural sources but which have been chemically modified, as is most often the case for beneficial use in cleaning products, should not be described as 'natural' in a way that suggests they have not been so modified.
- Ingredients or products should not be described as 'natural' in a way that implies that their natural origin means they are safer than other comparable ingredients or products unless that can be specifically substantiated (see also guidance re hazards of ingredients).
- Take care not to use the word 'chemical' in a sense that is derogatory or that suggests that all substances are not made of atoms and molecules of the chemical elements.
- When referring to the potential environmental advantages of renewable raw materials, be sure not to suggest the material is from a sustainable source which is being renewed where it is not (yet) being produced sustainably.

ANNEX

Background to Guidance on specific issues

I. Claims related to biodegradability

Background

Biodegradability refers to the breakdown of primarily organic (carbon-based) substances, by microbes, ultimately into simple substances such as carbon dioxide (CO₂), water and inorganic ions (e.g. sodium, sulphate).

The importance of biodegradation is as a key process in removing substances used in cleaning products after disposal down the drain such that they do not reach the aquatic environment in quantities that would give concentrations high enough to cause adverse effects.

Extensive biodegradation takes place in sewage works and septic tanks such that for readily biodegradable substances the concentrations in sewage effluent are a small fraction of the input. Biodegradation will continue in the aquatic environment.

Surfactant biodegradability

Legal requirements on biodegradability of surfactants used in cleaning products were first put in place after problems in the 1950s and 60s where residual amounts of surfactant in sewage effluent were enough to cause occasional foaming on rivers. These requirements related to the 'primary biodegradability' of surfactants i.e. the rate of the initial breakdown of the surfactant molecule into smaller molecules that would not cause foaming and would also be of much lower toxicity. Risk assessments and monitoring exercises demonstrated that residual concentrations released were low enough to cause no adverse effects.

The legal requirements were further strengthened in the EU Detergents Regulation of 2004 to relate to the rate of 'ultimate biodegradation' i.e. to require that surfactants are rapidly and completely biodegradable into water, carbon dioxide and mineral salts.

Biodegradability of ingredients in general

While rapid and complete biodegradability is now the legal norm for surfactants, for cleaning product ingredients in general the key criterion for environmental safety is that removal in sewage works etc is sufficiently good that amounts reaching the aquatic environment only give concentrations well below safe levels. Some ingredients may biodegrade only slowly but are efficiently removed by other mechanisms to below safe levels. Important mechanisms in sewage treatment plants include adsorption to and removal with the sewage sludge. For some ingredients, breakdown in the aquatic environment takes place at first by rapid photodegradation (i.e. by the action of light) to smaller molecules which are then biodegraded by aquatic microbes. Some ingredients are broken down by chemical processes such as hydrolysis or reduction and this can start happening in drains and sewers.

I. Claims related to biodegradability

While ready biodegradability is seen as a preferred characteristic for ingredients for cleaning products as this ensures they will not persist in the aquatic environment which could lead to unexpected effects in the long term, degradation by other mechanisms can give similar levels of safety assurance. Equally, ready biodegradability is not on its own a guarantee of safety: if a substance is toxic enough residual levels could still be high enough to cause adverse effects.

'Biodegradability of products'

It is generally inadvisable and would frequently be misleading to describe a complete cleaning product formulation as "biodegradable". By the time products enter sewers they have ceased to be 'products' and are just a range of substances mixed up with all the other substances in the sewer. In this sense a sewage works or an organism in the aquatic environment never 'sees' a product, only the remnants of the ingredients in a plethora of other substances at low concentrations in water.

It is perfectly possible to put a complete product through a biodegradability test, and results will be obtained, but these results have little meaning in relation to what would happen in a sewage works or in the environment. Biodegradability tests have been designed to evaluate single substances, and passing the test involves achieving certain rates of removal within certain time periods under the conditions of the test. With single substances such tests give reliable indications of the extent of removal of the substance in sewage works and/or the aquatic environment that are generally borne out by environmental monitoring studies. If a whole product were put through such a test, it would be possible to reach the pass level even if the product contained a significant amount of a very poorly biodegradable and environmentally persistent substance.

If you wish to make a claim about the biodegradability of a product, this should thus be made in terms of the biodegradability of each of the ingredients. It would be perfectly meaningful to claim that each ingredient used in the product is readily biodegradable if that has been established, but not to claim that a product is readily biodegradable because a pass result was obtained on test using the whole product.

For the same reasons, tests comparing biodegradability rates of complete products against others are likely to be meaningless and should be avoided.

Establishing biodegradability of ingredients

For many cleaning product ingredients it is now possible to establish their biodegradability from reference sources (see appendix) which record the conclusions of tests already carried out.

Conversely, substances sometimes used in cleaning products that are regarded as 'poorly biodegradable' are listed by AISE and signatories to the Charter for Sustainable Cleaning commit to work to reduce use of these substances. In this context 'poorly biodegradable' means not passing a test that confirms 'inherent biodegradability'. The ingredients may still biodegrade substantially in sewage works and eventually completely in the aquatic environment but do not do this quickly enough to pass the test. Of all the ingredients used in cleaning products, only about 3% are 'poorly biodegradable' organic substances. It is worth bearing in mind that while naturally-occurring organic substances generally biodegrade as part of natural cycles, many do not do this quickly enough to pass the tests for ready biodegradability or for ultimate biodegradability that is the legal norm for surfactants.

I. Claims related to biodegradability

If existing test conclusions cannot be located and a test needs to be performed, it is strongly recommended to follow the hierarchy of tests set out ISO14021. This requires that claims about degradability should only be made in relation to a specific test method that includes maximum level of degradation and test duration.

The selection of test methods should follow, in order of preference,

- (i) International Standards
- (ii) Recognised standards that have international acceptability (eg CEN or BS standards)
- (iii) Methods developed by industry provided they have been subjected to peer review. Modified tests are sometimes essential to reflect true biodegradability as some substances can interfere with the test system at the concentrations used and inappropriately yield negative results.

To substantiate a claim relating to biodegradability, a company should be able to cite an authoritative reference from the list above or provide test results. It would not be necessary to refer to the test method in the actual claim, but the test results should be made available upon request. So claims that rely on confidential information for their verification should be avoided.

The following information should be documented and retained:

- Identification of the relevant standard or test method used;
- Documentary evidence, if verification of the claim cannot be made by testing the finished product. (Note that a claim referring to the product's environmental performance must derive from a consideration of all the individual ingredients);
- Test results, where these are necessary for claim verification;
- Contact details of any independent party carrying out the testing.

Establishing a meaningful benefit

Risk assessments on cleaning product ingredients and formulations are used to establish that ingredients are sufficiently removed from wastewater in sewage works etc that residual concentrations in the environment will be below safe levels and no harm will result.

Given this position, improving biodegradability further can serve only to give extra assurance through wider margins of safety - it can't reduce the life cycle impact of the product. Widening safety margins can clearly be a worthwhile improvement in environmental sustainability, provided the margin is significantly improved and especially where margins are not already wide.

Readily biodegradable ingredients which steadily break down in the aquatic environment are generally preferable for use in cleaning products because that breakdown ensures they cannot persist and lead to unexpected effects in the long term.

I. Claims related to biodegradability

Replacing poorly biodegradable ingredients with readily biodegradable ones that fulfill the same function is thus seen as a significant improvement in sustainability provided a) this does give significantly better removal (i.e. the original ingredient was not being equally well removed by other mechanisms) and b) that there is not a negative impact on other aspects of the life cycle (e.g. by reduced performance) or need for increased dosage etc that might negate the benefit.

The A.I.S.E Charter for Sustainable Cleaning requires signatories to look to reduce the use of poorly biodegradable ingredients where this can be achieved without undermining other aspects of sustainability.

The clearest scope for a claim is where such replacements have no negative impacts on other aspects of the product life cycle. Where there are such negative impacts, it can be difficult to assess the net benefit unless there is a demonstrable need based on risk assessment to widen safety margins in a specific case.

Degradation rates determined in specific biodegradability tests vary markedly depending on the nature and conditions of the test and the method of measurement of degradation. Standard tests assign 'pass' levels which are seen as reliably indicating that the substance falls into the biodegradability category that the test aims to assess (e.g. readily biodegradable, inherently biodegradable). Comparing removal rates obtained in different types of test can be wholly misleading if not expertly assessed and should be avoided as the basis for a claim. Even comparing rates of removal of different ingredients using the same test is difficult because of experimental variability with test systems using living microbes. Such comparisons can be misleading unless the differences in rate are wide and repeatedly obtained in replicate tests. For this reason, claims would be most soundly based on the pass / fail criteria which have been shown to be reliable indicators.

Anaerobic biodegradability

Some important surfactants, while being readily biodegradable in aerobic conditions (sewage works and the environment), are poorly biodegraded when in anaerobic zones (e.g. sewage sludge, sediments). A requirement for anaerobic biodegradability has sometimes been used as a criterion for environmental labeling schemes.

A detailed monitoring exercise and scientific review commissioned by the EU Commission, however, has found that for surfactants which are aerobically biodegradable there is no observed build up in sediments despite decades of use. The review concluded that provided surfactants are aerobically biodegradable (which they must be by law when used in cleaning products) anaerobic biodegradability is not important for environmental safety.

http://ec.europa.eu/enterprise/sectors/chemicals/documents/competitiveness/anaerobic_en.htm

2. Claims related to hazards of ingredients

Toxicity, whether to aquatic life or to people, is not a property that some substances possess while others don't. Everything is toxic given a high enough dose. Some substances are much more toxic than others – they cause harm at very much lower levels or doses.

What matters is whether, for a particular substance, the level or dose is high enough to cause harm.

Substances are formally classified according to their hazards, now according to the EU CLP Regulation (EC 1272/2008). Though toxicity of substances varies on a continuous spectrum, for the purposes of classification and labeling of products substances are grouped into banded hazard classes according to the concentrations or doses at which that hazard could produce a harmful effect. These hazard classes are specified by defined phrases e.g. harmful, toxic, very toxic.

In relation to environmental claims it must be remembered that hazard phrases are simply convenient labels – different phrases indicate a difference only in degree. Further, the banded structure means that the toxicity of a substance in a lower hazard class may be almost 100 times less toxic, or only marginally so. Ingredients not classified (i.e. falling below the level for classification) as hazardous should not be described as 'non-toxic' since even they will exert toxic effects at high enough doses. Basing claims on hazard classes of ingredients can thus easily become misleading and is not advisable. What matters is the safety margin between potential exposure and the level at which a harmful effect might occur.

The EU General Product Safety Directive requires that products should be safe for people when used according to their instructions.

Replacement of ingredients with others which have lower toxicity, whether for aquatic life or for people, should generally be a positive step provided that replacement does not reduce the sustainability of the product in other respects.

3. 'Natural' and 'chemical' in relation to ingredients and products

The nature of materials

All substances and materials, and indeed the whole earth and all forms of life, are composed of atoms and molecules of the chemical elements. All substances possess chemical properties, which govern how they take part in chemical reactions that transform their molecules into molecules of a different substance. Living things grow, live and decay through chemical reactions and all substances arise ultimately as the product of (bio-)chemical reactions.

'Natural' things are often perceived by consumers to be preferable from an environmental point of view, and thus claims related to natural characteristics or origins of products or ingredients are potentially powerful. However, objective advantages related to such naturalness are not easily substantiated and claims can easily become misleading.

Correspondingly, 'chemical' things are often perceived as being intrinsically problematic in terms of the environment. Given that all things are made of atoms and molecules of the chemical elements, differentiating meaningfully between 'natural' and 'chemical' ingredients can thus be difficult.

Few naturally occurring ingredients are able to be used beneficially in cleaning products without some modification, normally by chemical processing, to give them useful functionality. For example, a substantial proportion of the surfactants used in cleaning products are derived from natural oils such as coconut or palm oil. The oils themselves have no surfactant properties and cannot be used as such. To convert these oils into surfactants, the oils have to be 'split' in a chemical process which separates the long 'fatty' chains of carbon atoms from the glycerine molecule to which they are attached in the oil. The 'fatty acids' released may be converted into soaps by neutralization with alkali or they may further react to make other fatty derivatives such as alcohol sulphates, alcohol ethoxylates etc.

The REACH regulation (Chapter 2) provides useful definitions in relation to naturally occurring substances:

- Para 39
Substances which occur in nature: means a naturally occurring substance as such, unprocessed or processed only by manual, mechanical or gravitational means, by dissolution in water, by flotation, by extraction with water, by steam distillation or by heating solely to remove water, or which is extracted from air by any means;
- Para 40
Not chemically modified substance: means a substance whose chemical structure remains unchanged, even if it has undergone a chemical process or treatment, or a physical mineralogical transformation, for instance to remove impurities;

Ingredients which have been obtained from natural sources but have been modified by a chemical process would not meet the above criteria.

Safety

One potential difficulty stems from the misperception that 'natural' substances are safer than 'other' substances, implicitly 'chemical' substances. Some people may find the risks of something natural more acceptable but in reality, the origins of a substance have no systematic bearing on its safety for people or for the environment. It is factually incorrect to say that substances obtained from petrochemical sources (i.e. mineral oil) are inherently more toxic than comparable substances obtained from natural sources.

3. 'Natural' and 'chemical' in relation to ingredients and products

Renewability

Substances obtained from some natural sources such as plants may have environmental advantages where these sources are potentially renewable, in contrast to those obtained from mineral oil where the reserves are finite. The use of renewable sources of ingredients and raw materials is potentially of great benefit, though as always it is important to consider whether there are any increased impacts in other parts of the life cycle, or decreases in performance, which might reduce or negate the benefit.

It is important also to distinguish between materials and ingredients that are in fact obtained from sustainably produced and managed renewable sources and those which are potentially renewable but are not currently from sustainable sources. The example of palm oil is a case in point: palm oil comes from the fruits of palm trees which are a potentially renewable source provided the trees are grown in sustainably managed plantations in appropriate places. Oil from trees grown on land cleared by burning rainforest would not meet this criterion.

It may, of course, be that a potentially sustainable renewable raw material does not become fully sustainable until supply chains, logistics and markets have been developed over several years. Developing such a source may be environmentally very beneficial, especially where use of waste materials are involved, but care should be taken not to imply fully sustainable and renewable production until that has been achieved.

SOURCES OF FURTHER INFORMATION

Risk Assessment of Ingredients

EU Existing Chemicals programme

<http://echa.europa.eu/web/guest/information-on-chemicals/information-from-existing-substances-regulation>

EU Scientific Committee on Consumer Safety (SCCS)

http://ec.europa.eu/health/scientific_committees/consumer_safety/index_en.htm

Human and Environmental Risk Assessment project (HERA)

<http://www.heraproject.com/>

OECD Existing Chemicals database

<http://webnet.oecd.org/hpv/ui/Default.aspx>

International Programme on Chemical Safety (IPCS)

<http://www.inchem.org/>

Life-cycle assessments of detergents and cleaning products

LCA study and environmental benefits for low temperature disinfection process in commercial laundry, 2007.

Eberle, U., Lange, A., Dewaele, J., Schowanek, D.

International Journal of Life Cycle Assessment 12 (2): 127-138

Comparative Life-Cycle Assessment of Laundry Detergent Formulations in the UK, 2003,

Van Hoof, G., Schowanek, D., Feijtel, T.C.J., Tenside, Surfactants, Detergents 40 (5): 266-275.

http://www.scienceinthebox.com/en-UK/Assets/PDF/sustainability/TS_20035Part1.pdf

A Database for the Life-Cycle Assessment of Procter & Gamble Laundry Detergents.

G. Van Hoof, E. Saouter

International Journal of Life cycle Assessment 6 (2001) 1-12

http://www.scienceinthebox.com/en-UK/Assets/PDF/safety/LCA_6_2001_Saouter.pdf

Comparative Life-Cycle Assessment study of 3 cleaning products for Kitchen surfaces

<http://www2.ademe.fr/servlet/getBin?name=FCE50EC429F47B26EE0CC89FD90862D31137594736761.pdf>

Life-Cycle Assessment of Detergent for Brewery Clean in Place Applications.

Margaret Zahller, Daniel Daggett, Duncan Noble

<http://lcacenter.org/lcax/presentations/181.pdf>

Biodegradability of ingredients

Risk assessment sources listed above

Manufacturers' safety data sheets

Dossiers submitted to ECHA under the REACH regulation

<http://apps.echa.europa.eu/registered/registered-sub.aspx>



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