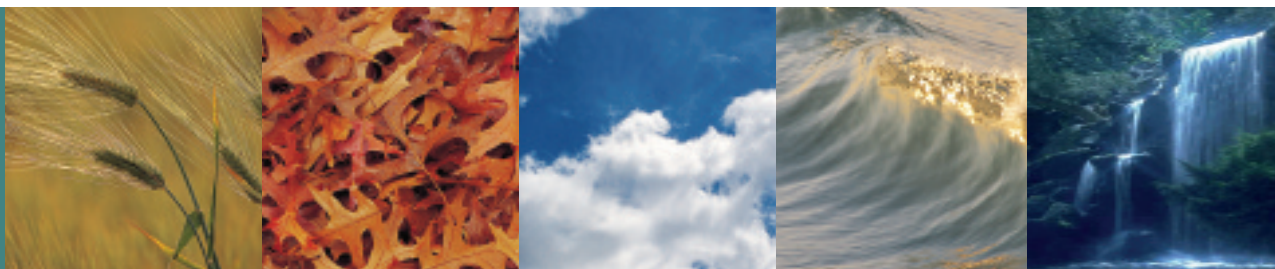


Guidance for Responsible Public Procurement of Cleaning Products



In 2004 the European Commission published a handbook* to give guidance to the Public Sector on procuring “green” products and services. This general guidance is not specific to any one sector and forms one part of the Commission’s “Green Public Procurement” (GPP) initiative.

Also in 2004, the Detergents Regulation* was published setting higher standards for the biodegradability of surfactants and for provision of information on ingredients. This Regulation came into force on 8th October 2005.

Local Authorities are increasingly specifying environmental criteria in tenders for cleaning products. Although done with the best of intentions, some of these criteria are ill-founded, contradictory or technically unfeasible.

After the publication of the EC Handbook, the trade associations BACS* and UKCPI* formed a Task Force to provide guidance on environmental aspects of cleaning product ingredients. The centre pages of this leaflet list the major classes of ingredients, as set out in the Detergents Regulation, and others which often appear in tender documents. These pages cover important environmental aspects of the ingredients and concerns which have been raised about them. They then provide a current scientific assessment and relevant guidance for Green Public Procurement in the UK of cleaning products used in the Industrial and Institutional (I&I) and Janitorial markets.

This guidance, on ingredients, covers only one aspect of the environmental impact of cleaning products. As there are good margins of human and environmental safety in respect of the great majority of ingredients now in use, environmental impacts in other parts of the product life cycle become the key factors determining sustainability.

While producers can control some of the environmental impacts of cleaning products by good product design and manufacturing practice, others are very much under the control of the user. For example, accurate dosing is important to avoid waste of product, and using concentrated products where appropriate can help reduce use of packaging and transport, and reduce packaging waste. The sustainability of cleaning can only be improved by users and producers working together.

Producers are increasingly adopting a variety of environmental management systems to manage the impacts under their control. The AISE Charter for Sustainable Cleaning is a common Europe-wide approach for companies in this industry. Participating companies commit to applying sustainability thinking at all phases of the life cycle, from product design, through manufacturing to use and disposal.

Guidance on sustainability approaches is also available from DEFRA at

www.defra.gov.uk/environment/sustainable/

* Handbook SEC(2004) 1050

* Detergent Regulation 2004/648/EC

* BACS British Association for Chemical Specialities

* UKCPI UK Cleaning Products Industry Association

* A.I.S.E. International Association for Soaps, Detergents and Maintenance Products

No issue for procurement means that there are adequate margins of safety for both humans and the environment. Specifically focusing on these ingredients would not yield any meaningful benefit.

INGREDIENT	FUNCTION AND ISSUES	GUIDANCE FOR GPP
Phosphates	Phosphates are included in cleaning products to soften the water, help disperse and suspend dirt, and inhibit redeposition. Their use allows the use of other ingredients, especially surfactants, to be minimised. Phosphate is an essential nutrient for plant and animal life which must be present in the environment but excessive levels of phosphate in rivers, lakes etc can fuel algal blooms or encourage 'coarse' plants (eutrophication).	The main sources of phosphate entering the aquatic environment are agriculture and human sewage, though the relative contributions vary between regions. Detergents and cleaning products contribute on average around 5-10% of this phosphate, all of which enters via sewage. Where phosphate levels in the environment are locally too high, and sewage flows are an important contributor, treatment at the sewage works (as required by the Urban Waste Water Treatment Directive) removes the small amount of phosphate coming from detergents along with that from the main sources (human sewage, etc). While a review under the Detergents Regulation will further examine whether there are any specific situations where replacing phosphate in detergents with alternative ingredients would help the environment, life-cycle assessments have found that this does not, overall, benefit the environment or improve sustainability. No issue for procurement
Phosphonates	Phosphonates are used in cleaning products as 'chelating agents' which are substances that tie up impurities which interfere with the cleaning process. Many phosphonates are relatively poorly biodegradable. Sometimes, phosphonates have mistakenly been confused with organophosphates used as pesticides for example.	Phosphonates are removed at sewage treatment works, mainly by adsorption to sludge, and are also removed from the environment by photodegradation. Assessments by TCDE and HERA have concluded current uses pose no significant risk for the environment. Phosphonates do not behave like organophosphate pesticides. No issue for procurement
Anionic surfactants Cationic surfactants Amphoteric surfactants Non-ionic surfactants	Surfactants are the active ingredients in cleaning products which provide the foaming and emulsification. In the 1960s poorly biodegradable surfactants produced foaming on rivers and some surfactants (see alkylphenol ethoxylates) had more serious issues.	Surfactants in cleaning products have long been regulated, most recently by the Detergents Regulation 2004/648/EC which requires rapid and complete biodegradation. Many of the surfactants used in cleaning products are also approved under the Cosmetics Directive 76/768/EEC for use in cosmetic and personal care products. No issue providing products are legally compliant
Oxygen-based bleaching agents	Commonly used bleaching agents in laundry detergents. Alternatives to chlorine based bleaching agents and disinfectants for some uses.	Decompose completely in sewers and sewage treatment works. HERA risk assessments for the major substances sodium perborate, sodium percarbonate and hydrogen peroxide confirm no risk to the environment. No issue for procurement
Chlorine-based bleaching agents	Used in detergents, cleaners and disinfectants to help remove stains, break down soils and kill germs. It was suspected that chlorinated organic by-products produced during use might be environmentally harmful.	The chlorinated by-products formed are similar to those produced in drinking water chlorination. They are generally biodegradable and water soluble and studies show no production of dioxins or PBT (Persistent, Bioaccumulative & Toxic) substances. The quantities emitted to the environment are a fraction of those coming from chlorinated tap water. A TCDE assessment concluded there is no risk to the environment. No issue for procurement
EDTA (ethylenediamine-tetraacetic acid) and its salts	EDTA is used as a 'chelating agent' to tie up metal impurities in water, stopping them reducing cleaning efficiency. EDTA is poorly biodegradable and little removed by sewage treatment plants, but degrades steadily, if slowly, in the environment. There has been concern that it could remobilise heavy metals into the aquatic environment, allowing them to enter water supplies or the food chain.	Although the EU Existing Chemicals risk assessment considers EDTA to be poorly biodegradable, it concludes that there is no risk for the aquatic environment from detergent uses that discharge to municipal sewer, nor from remobilisation of heavy metals. Only discharges without adequate treatment after use in large food plants were a potential concern. However, more biodegradable alternatives are now available that perform adequately, and industry has been able to improve sustainability by substituting EDTA in all bar a few specialist applications. Use should be justified for specific applications
NTA (nitrilotriacetic acid) and its salts	Similar to EDTA but chelates metals less strongly. Has superior biodegradability to EDTA so is commonly used as a substitute.	An EU Existing Chemicals Risk Assessment published in December 2005 concluded there was no environmental risk from using the material. No issue for procurement
Phenols and halogenated phenols	Such materials have found limited use as active ingredients of disinfectant preparations in the I&I market. There has been concern that some molecules may be aggressive to human skin, poorly biodegradable or otherwise environmentally harmful.	Use of older molecules such as phenol and cresol that are corrosive to skin was discontinued long ago. Modern types in current use are often sufficiently mild to be used as skin antiseptics. Many are readily biodegradable and of moderate to low aquatic toxicity. The BPD will regulate disinfectant ingredients. Only ingredients that have been 'notified' under the BPD should be used
Paradichlorobenzene (Channel blocks)	Category III carcinogen which was formerly widely used in urinal fragrance blocks.	Less hazardous alternatives have been developed and this ingredient has been largely substituted. An EU risk assessment has concluded there are inadequate margins of safety for use in toilet blocks. Use of alternative ingredients is strongly recommended
Aromatic hydrocarbons	Concerns exist over adverse human health effects with some examples but such materials have never featured significantly in I&I cleaning formulations.	Should only be used where necessary in specialist products, such as glue removers. Use should be justified for specific applications
Aliphatic hydrocarbons	Not widely used in I&I cleaning products except for gases, such as butane, used as aerosol propellants and liquids used in engineering and automotive cleaning. Such chemicals are insoluble in water and thus are poorly biodegraded in sewage treatment plants.	Use in engineering and automotive cleaning industries is declining and is expected to continue to do so. Use should be justified for specific applications
Halogenated hydrocarbons	Various concerns over health hazards and/or effects in the aquatic environment and the atmosphere. Their use is restricted to specialised cleaning applications (dry cleaning, cleaning of electronics).	Handling, use, exposure and disposal in specialised cleaning applications are already strictly managed to minimise health or environmental consequences. These have never been used in significant quantities in I&I cleaning. Use should be justified for specific applications

Guidance highlighted in amber means that there are important choices to be made.
 Guidance highlighted in red means that these ingredients should not be used.

INGREDIENT	FUNCTION AND ISSUES	GUIDANCE FOR GPP
Soap	The first synthetic surfactant - actually a type of anionic surfactant. No environmental or safety issues.	No issue for procurement
Zeolites	Often used with polycarboxylates as an alternative to phosphates in laundry detergent systems. Concerns are sometimes expressed that zeolites are not biodegradable.	As they are inorganic substances, biodegradability (breakdown into inorganic substances) is not a relevant concept. Assessments by TCDE and HERA found no risk for the environment. No real environmental or safety advantage with either the zeolite / polycarboxylate system or phosphates. No issue for procurement
Polycarboxylates	Often used with zeolites as an alternative to phosphates in laundry systems. Poorly biodegradable.	Assessment by TCDE found that polycarboxylates are of low toxicity and extensively removed during sewage treatment by adsorption to sludge, thus posing no risk to the environment. No real environmental or safety advantage with either the zeolite / polycarboxylate system or phosphates. No issue for procurement
Enzymes	Enzymes are biological molecules (proteins) that speed up the breakdown of organic dirt and stains such as fats, egg and sweat. They help get better cleaning out of less detergent. Enzymes are respiratory allergens posing hazards for workers during detergent manufacture. There is a separate perception that enzymes can cause skin irritation in consumers.	Environmentally beneficial due to reduced cleaning temperatures or bleaching agent usage. Encapsulation of enzymes and strict handling procedures during product manufacture avoid risks to workers. Despite the perception, studies consistently show enzymes in detergents do not cause skin irritation in users. No issue for procurement
Disinfectants / biocides	Disinfectants and biocides control and/or destroy harmful organisms that are detrimental to human or animal health. Their nature and mode of action raises instinctive concerns about human safety and environmental fate.	Only biocidal active ingredients approved under EU Biocidal Products Directive (98/8/EC) will be able to be used in disinfectant products. The BPD harmonises the European market for biocidal products and provides a high level of protection for humans and the environment. Only ingredients that have been 'notified' under the BPD should be used
Optical brighteners	Optical Brightening Agents (OBAs) are used in detergents to maintain brightness and counter yellowing of fabrics with age, thus prolonging life. There are concerns that they are poorly biodegradable and little degraded in sewage treatment works. It is sometimes suggested they may be potentially bioaccumulating.	The OBAs used in detergents are partly removed in sewage works by adsorption to sludge. The remainder degrades in the aquatic environment, notably by photodegradation followed by biodegradation of the initial breakdown products. They are water soluble so will not bioaccumulate. Environmental monitoring studies and HERA risk assessments show no risk for the environment. No issue for procurement
Perfumes, including phthalates & musks	Perfumes are used at low levels (<1%) in cleaning products. Concerns are sometimes expressed about the biodegradability, potential bioaccumulation or endocrine disrupting potential of particular ingredients used in such perfumes, including phthalates and musks. Phthalates are used as solvents for other perfume ingredients and musks provide important components of many aromas.	Some components of perfumes are poorly biodegradable and potentially bioaccumulative. Certain ingredients that may pose a risk (e.g. nitro-musks) have been, or are being, phased out. The principal polycyclic musks have been shown by HERA risk assessments and SCCP opinions to be safe for both human health and the environment. Cleaning products account for an extremely small proportion of total phthalate use and exposure. The phthalates used (mainly diethyl phthalate) have been assessed by the SCCP as safe for use in cosmetics and use in cleaning products should pose no significant risks. Nitro-musks in products should be substituted
Alkylphenol ethoxylates (APEs)	A class of nonionic surfactants once used in high volumes (particularly nonylphenol and, to a lesser extent, octylphenol ethoxylates, NPEs and OPEs) in I&I applications. Biodegradation releases alkylphenols which can disrupt hormones in fish (an oestrogenic effect).	Severe restrictions on NP and NPEs for cleaning products and applications under the Marketing & Use Directive 2003/53/EC. UK industry Voluntary Agreement prior to restrictions coming into force to substitute these and not promote OP and OPEs as replacements. Cleaning products containing APEs should not be used
Preservatives	As preservatives are used to control bacterial spoilage, concerns are raised over toxicological properties and environmental fate.	Preservatives are necessary to protect products from spoilage due to natural ageing throughout the declared shelf-life. As with biocides and disinfectants, preservatives must be approved under the Biocidal Products Directive. Only ingredients that have been 'notified' under the BPD should be used
Colouring agents	There are concerns that some dyes and pigments may release carcinogenic materials as they degrade.	Consumers' greatest exposure to these materials will be through textiles with a tiny proportion coming from cleaning chemicals. Colouring agents are a vital form of product recognition and spill identification. The dyes used in cleaning products must be stable for several years which limits choice substantially. Cosmetic, Pharmaceutical and Food colouring agents undergo stricter safety assessment and so should be favoured where a stable material is available. No issue for procurement
VOCs (Volatile Organic Compounds)	VOCs are most commonly used in cleaning products as solvents. Certain VOCs can react with air pollutants (typically from cars) to form more hazardous materials, such as ozone. Concerns are sometimes expressed about effects of VOCs in indoor air on health.	Solvents are used in low quantities in janitorial products and generally limited to ready-to-use products (such as aerosols). Low VOC products should be favoured. Government studies find no evidence of adverse health effects of VOCs from cleaning products in indoor air. Low VOC products should be preferred where possible
Glycol ethers	Used as solvents to help remove oils, fats and grease. Concerns over adverse health effects and their status as VOCs.	Adverse health effects are restricted to particular chemical structures which are not used in cleaning products. EU and HERA risk assessments for one of the main types used in cleaning products finds this poses no risk for health or the environment. No issue for procurement

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Assessments

The guidance set out on the centre pages on the environmental safety of the most important ingredients used today in cleaning products has drawn as far as possible on detailed scientific assessments and opinions which have been undertaken and published by the following:

- The EU Existing Chemicals programme
www.ecb.jrc.it
- The EU Scientific Committee on Consumer Products (SCCP)
www.europa.eu.int/comm/health/ph_risk/risk_en.htm
- The UK's Technical Committee on Detergents and the Environment (TCDE). Papers were published in biennial reports by the Department of the Environment (now DEFRA)
- The Human and Environmental Risk Assessment project (HERA).
www.heraproject.com

Other Acronyms

BPD
Biocidal Products Directive 98/8/EC

GPP
Green Public Procurement

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Natural v. Synthetic

It is a common misconception that an ingredient from a plant derived source will necessarily be superior in terms of human safety, biodegradability, aquatic toxicity and sustainability than one from a petrochemical source.

Although it is becoming increasingly common for green purchasing criteria to specify 'naturally' based materials, each ingredient must be assessed on its individual merit, not simply on whether it is from a plant derived or petrochemical source.

To illustrate:

- Many garden plants contain natural toxins to guard against being eaten and are very poisonous to humans.
- Plants and trees must protect themselves against biodegradation with natural oils and biocides or they would rot in the ground. Many chemicals found in nature would not meet the standards of biodegradability now required of surfactants in cleaning products.
- In terms of sustainability, the energy used in processing and transport must be assessed for each material. The fossil fuel consumed in providing some 'renewable' materials can be very substantial. Plantations to grow palm trees and coconuts, for example, to provide vegetable oil raw materials take a great deal of space. Clearing rainforest to create new plantations can be highly unsustainable and damage biodiversity.

Each ingredient in the centre pages has been considered irrespective of its source. The guidance has been put together based on the best currently available science and may be extended and periodically updated in the light of any new information.