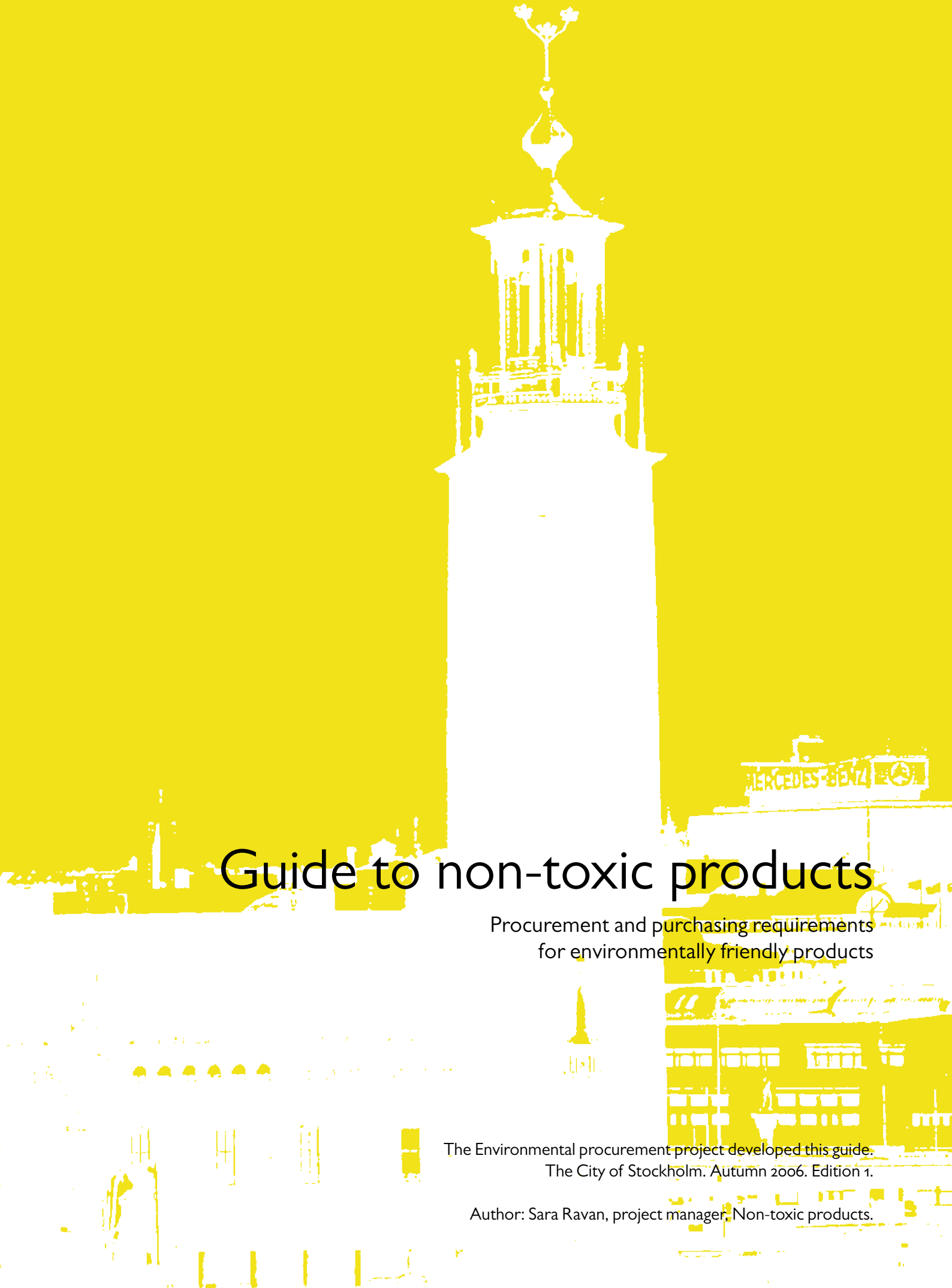

Guide to non-toxic products

Procurement and purchasing requirements
for environmentally friendly products

The Environmental procurement project developed this guide.
The City of Stockholm. Autumn 2006. Edition 1.

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Contents

Introduction

Every year, 30 million tonnes of environmentally hazardous and unhealthy substances are released into Swedish society. Most are used in manufactured products such as computers, textiles, construction materials and plastics. Yet we know frighteningly little about the substances' properties. We are constantly discovering new problems with our use of chemicals. We are finding brominated flame retardants, plastic softeners and waterproofing agents in the human body, even in breast milk.

These industrially produced chemicals do not break down easily; instead, they spread throughout nature. They can affect reproduction in humans and other organisms, interfere with learning, cause deformities, inhibit our immune systems, cause cancer and more. This is not just a health risk; it also leads to significant costs to society for clean-up and medical care.

BENGT HÖGLUND/JOHNÉR

The guide's purpose

The City of Stockholm's environmental programme for 2003–2006 states under its Milestone 2, Safe products:

"The City's administrations and companies must submit plans for how they will purchase the most environmentally friendly chemicals and products."

Consequently, we must find out what chemicals the products contain, and then demand that the most harmful chemicals be removed from the products. The Environmental procurement project developed this guide to facilitate achievement of this goal among the administrations and companies of the City of Stockholm. The guide focuses primarily on environmentally hazardous substances and to a limited degree, on health factors.

How to use this guide

The guide starts with a general section, where you can read about:

- The priority of environmentally hazardous substances. The guide provides a list of the harmful substances that the Environmental procurement project ranks as a high priority for phasing out. The list also shows permitted levels with their respective sources.
- Ranking of product groups. This section describes product groups that are most important to focus on – to avoid spreading priority substances – and what this ranking is based on.

Detailed, practical information follows the general section and addresses how environmental requirements should be set up for each priority product group, where the following is specified:

- The products in the group.
- Proposed environmental requirements besides existing legislation. When using the environmental criteria of the EU flower mark, the Nordic Swan Label or the Swedish Good Environmental Choice label:
  - Retrieve the relevant environmental requirements regarding chemicals from the respective label's criteria.
  - Specify them in the request for quotation.
- Links to further information and other criteria documents for the product group.
- Hints and advice for purchasing.

Appendix I contains more detailed descriptions of chemical substances and symbols. Appendix 2 and 3 contain information on assistance for procurement and important governance documents that can be used to support the environmental requirements during procurement.

Prioritized hazardous substances and product groups within Stockholm

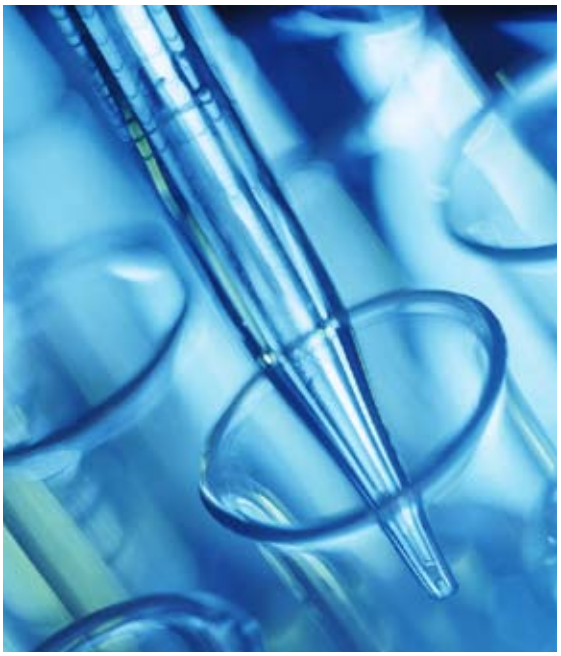
Environmentally hazardous substances

A scientific study entitled A Non-Toxic Environment was done to identify environmentally hazardous substances to be avoided and to rank them in a priority list. The chemicals are selected based on REACH, the EU proposal for chemical legislation. It includes substances that are considered particularly harmful to the environment or that have been found in a range of environments, for example, in the sediment of the Stockholm archipelago, the sludge from sewage treatment plants or other test sites – in quantities not considered consistent with national environmental goals.

The idea is that these environmentally hazardous substances should not be included in products purchased by the City of Stockholm. But it is never possible to say that a product has zero content of a given substance, and it is difficult to prove that a substance is not present, due to limitations in analytical methods etc.

Threshold values were established for all substances, to assist procurers in the City of Stockholm in formulating requirement specifications for suppliers. These threshold values are based on the National Chemicals Inspectorate's regulations on classification and labelling of chemical products, i.e. cosmetics, toiletries and detergents (KIFS 2005:7) and on criteria established in the BASTA project (BASTA, 2006).

For information on the environmental effects of the substances and the scientific references behind them, please refer to the Non-toxic products report produced by the Environmental Procurement project. Refer to www.stockholm.se



ANDREW BROOKES / SCANPIX / CORBIS

TABLE 1.
PROPOSAL FOR PURCHASING CRITERIA FOR HIGH-PRIORITY ENVIRONMENTALLY HAZARDOUS SUBSTANCES IN THE CITY OF STOCKHOLM. *NOT INTENTIONALLY ADDED* MEANS THAT SUBSTANCES ARE NOT INTENTIONALLY ADDED TO THE PRODUCT AT ANY MANUFACTURING STAGE.

SUBSTANCE	**PURCHASING REQUIREMENTS** (Maximum permitted weight percentage and not intentionally added)	**SOURCE**
Alkylphenol ethoxylate, in practice nonylphenol ethoxylate and octylphenol ethoxylate (APE)	< 0.25%[1]	KIFS 2005:7
Butyl benzyl phthalate (BBP)	< 0.25 %[1]	KIFS 2005:7
Cadmium	< 0.01 %	BASTA criteria
Chloroparaffins (CP)	< 0.25 %[1]	KIFS 2005:7
Diethylhexyl phthalate (DEHP[3])	< 0.5 %	BASTA criteria
Dioctyl phthalate (DOP)	< 0.25 %[1]	KIFS 2005:7
Fluorotelomer alcohol (FTOH)	< 0.25 %[1]	KIFS 2005:7
Hexabromocyclododecan (HBCD)	< 0.25 %[1]	KIFS 2005:7
Hexavalent chromium[4]	< 0.1 %	BASTA criteria
Lead[2]	< 0.1 %	KIFS 2005:7
Mercury[5]	< 0.1 %	BASTA criteria
Perfluorooctane sulfonate (PFOS)	< 0.25 %[1]	KIFS 2005:7
Polyaromatic hydrocarbons (PAH)	< 0.25 %[1]	KIFS 2005:7
Polybrominated diphenyl ether (PBDE)	< 0.25 %[1]	KIFS 2005:7
Tetrabromine bisphenol A (TBBPA)	< 0.25 %[1]	KIFS 2005:7
Tributyltin (TBT)	< 0.25 %[1]	KIFS 2005:7
Triclosan	< 0.25 %[1]	KIFS 2005:7

1. These limits are based on the assumption that the procured products will not be classified as environmentally hazardous under R52/53 (harmful to aquatic organisms and may cause long-term adverse effects in the aquatic environment).
2. Except for batteries and lead accumulators.
3. DEHP meets criteria for classification as toxic to reproduction, category 2 (for more information, see footnote 6) and R60-61 (as per KIFS 2005:5), which gives the above limit under the BASTA criteria.
4. Hexavalent chromium meets criteria for carcinogenic, category 2 (for more information, see footnote 6) and R 49 (as per KIFS 2005:5), which gives the above limit under the BASTA criteria.
5. With the exception of electronic light sources.

Product groups

To identify relevant product flows in the City of Stockholm, all products containing the priority substances were reviewed, primarily using purchasing statistics from the procurement unit at the City of Stockholm's Executive Office. The goal was to determine groups that are procured in volumes that are more than marginal. The identification process also involved gathering information on how the priority substances are used in the city and about the substances' environmental status and distribution data.

The rating is based on:

- Risk of the priority substances being:
  - Contained in the product.
  - Spread to the surroundings during the use and disposal of the products, that is, during the time the City of Stockholm is responsible for the products.
- A greater-than-marginal purchase volume of the products.

NICHO SÖDLING / JOHNÉR

To keep this guide simple, product flows were divided into 16 groups, each of which is covered independently in its own section.

TABLE 2.
IDENTIFIED PRODUCT GROUPS THAT ARE SIGNIFICANT REGARDING HIGH-PRIORITY ENVIRONMENTALLY HAZARDOUS SUBSTANCES TO BE AVOIDED IN CITY OF STOCKHOLM PROCUREMENTS.

PRODUCT GROUPS	THE PRODUCT GROUP INCLUDES
Batteries	Disposable, rechargeable and built-in batteries
Building contractors	Building contractors with their suppliers
Cosmetics, toiletries and detergents	Detergents, car care products, chemicals for graffiti clean-up
Construction materials	Wood products, flooring materials, adhesives, construction insulation
Electrical devices	Appliances (including kitchen appliances)
Electrical installations	Electrical installation materials, signs, alarm systems
Electrical light sources	Low-energy light bulbs and fluorescent tubes
Fire-extinguishing materials	Fire-extinguishing materials
Furniture and fixtures	Textiles, AV equipment, archive and storage fixtures etc
Medical care products	Anaesthesia and infusion products, bandaging materials, blood testing products, gloves, syringes and needles
Mobile phones and devices	
Office machines	Computers and other IT products, copiers, AV products
Office supplies	Consumables and toys
Paint and varnish	Paint, varnish and wood stain
Tyres	Car tyres
Uniforms, work clothes and shoes	

Guidance on environmental requirements when procuring

Batteries

PERRY MASTROVITO / SCANPIX

This product group includes disposable (primary) and rechargeable (secondary) batteries. Many devices and products contain built-in batteries, such as electric toothbrushes, toys, household devices and tools.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

During procurement of batteries, these requirements are essential:

- Quoted batteries must meet chemical criteria for Nordic Swan labelling.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- The amount of mercury in rechargeable batteries must not exceed 0.1 ppm.
- The combined content of arsenic, lead and cadmium in rechargeable batteries must not exceed 20 ppm.
- The content of mercury, cadmium and lead in disposable batteries and button cell batteries must not exceed 0.1 ppm, 1.0 ppm and 10 ppm, respectively.
- Packaging material must not contain chlorinated plastics.
- Battery chargers must meet the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive. Refer to www.kemi.se/rohs. All companies must follow the *RoHS directive*, and you can require proof of this from your suppliers.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/

When purchasing

Suggestions

- Environmentally hazardous batteries are marked with a crossed-out dustbin and the chemical symbol of each heavy metal the battery contains.

- Rechargeable batteries and a good charger can save money and benefit the environment. Rechargeable batteries work in most devices.
- Do not use rechargeable batteries in smoke detectors, as the power in them runs out all at once – rather than decreasing gradually as it does in disposable batteries. This poses a danger if you forget to change the batteries in the smoke alarm.

Avoid

- Lead batteries.
- NiCd batteries, which contain a high quantity of cadmium, an environmental toxin. Instead, use metal hydride or lithium ion batteries, which are free from cadmium and mercury.

Fire-extinguishing materials

A&ME PHOTO / JOHNÉR

This product group includes fire-extinguishing materials such as foam.

When procuring

What to avoid in products procured by the City of Stockholm:

■ Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.

■ The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring fire-extinguishing materials, these requirements are desirable:

■ Chemical foam must not contain perfluorooctane sulfonate (PFOS), fluorotelomer alcohol (FTOH) or perfluoro octanic acid (PFOA).

Suggested documentation: Certificate from the manufacturer or supplier.

When purchasing

Suggestions

■ All types of chemical foam contain highly fluorinated surfactants. It is currently unknown what percentage of these may contain PFOS, FTOH or PFOA. Foam in new hand-held fire extinguishers does not include surfactants based on such substances. In contacts with companies, be clear that the product must not contain these substances.

Building contractors

SEAN JUSTICE / JOHNÉR

This prioritised group includes building contractors and their suppliers, plus related product groups; see the "Paint and varnish", "Construction materials" and "Electrical installations" sections.

When procuring

When procuring building contractors, these requirements are desirable:

■ Procured building contractors must:
- Have a system that meets ISO 14001 and ISO 9001 environmental and quality control system requirements.
- Ensure that their suppliers fulfil product-specific requirements; see, for example, the "Paint and varnish" or "Construction materials" sections.

Construction materials

SAMIR SOUDAH / ETSABILD

This product group includes wood products, flooring materials, adhesives and construction insulation.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring construction materials, these requirements are essential:

- The product must comply with the chemical criteria for Nordic Swan labelling.
- The wood products must meet criteria for Forest Stewardship Council (FSC) labelling.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- The product must be free from diethylhexyl phthalate (DEHP), butyl benzyl phthalate (BBP) and dioctyl phthalate (DOP).
- The product must not contain:
  - Alkylphenol ethoxylates (APE).
  - Brominated flame retardants.
  - Chloroparaffins (CPs).
  - Tributyltin (TBT).
- Packaging materials must not contain chlorinated plastics.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- MilaB: www.milab.nu
- BASTA: www.bastaonline.com
- Healthy Buildings: www.sundahus.se
- Byggd miljö (consortium of real estate market players): www.byggdmiljo.se
- Environmental Manual: www.miljomanualen.se
- FSC: www.fsc.org

When purchasing

Avoid

- Plastic floors with PVC, which can give off softeners (phthalates).

Tyres

BENGT OLOF OLOSSON / SCANPIX

This product group includes car tyres.

When procuring

When procuring tyres, these requirements are essential:

■ The tyres must meet chemical requirements for Nordic Swan labelling.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

■ HA oil-free treads and the option of retreaded tyres.

Suggested documentation: Certificate from the manufacturer or supplier.

The Environmental procurement project generated these documents:

■ Guide to requirements for environmentally friendly tyres – Roll Right – for light vehicles. Refer to stockholm.se/handlasmart

■ Guide to requirements for environmentally friendly tyres – Roll Right – for heavy vehicles. Refer to: stockholm.se/handlasmart

For more information and criteria documents, refer to:

■ EKU tool: www.eku.nu

■ Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/

■ Grön Kemi has a list of HA oil-free winter tyres: www.gronkemi.nu

■ The Swedish association of tyre specialists (DRF), retreading section: www.drf.se

When purchasing

Suggestions

■ Tyres without HA oils are a better choice for the environment. HA oils contain high quantities of carcinogenic and environmentally hazardous polyaromatic hydrocarbons (PAH). Tyres, which are free from HA oils, are now marked with the Nordic Swan. The label also means that the tyres meet noise and functionality requirements.

■ All Swedish-retreaded tyres for passenger cars, lorries and buses are free from HA oils in the treads. For the most part, only the old tyre treads are removed in the retreading process, while about 80% of the old tyre is reused. This means that retreading uses only about half the energy as manufacturing a new tyre. Retreaded tyres meet quality requirements of the Swedish Road Administration and the EU, and are often less expensive than regular tyres.

Electrical devices

This product group includes home appliances (refrigerators, freezers, dishwashers and washing machines) and kitchen devices (such as toasters, mixers, coffee makers, kitchen scales, food processors, hand mixers, sandwich grills, electric kettles, and waffle irons).

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO,* the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring electrical appliances, these requirements are essential:

- The product must comply with chemical criteria for environmental labelling with the EU flower mark, the Nordic Swan or the Swedish Good Environmental Choice label.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

If no environmental labelling is available for the desired product, use these requirements:

- The product must comply with the *Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive.* All companies must follow the *RoHS Directive*, and you can demand certification of this from your suppliers. As per the directive, these substances must not exceed the threshold value in newly produced products: lead, mercury, cadmium, hexavalent chromium, PBB and/or PBDE. Refer to www.kemi.se/rohs.
- The product must not:
  - Contain diethylhexyl phthalate (DEHP).
  - Contain tetrabromine bisphenol A (TBBPA) as a free additive, i.e. it may occur chemically bound to the polymer.
  - Include chlorinated plastics (does not apply to recycled parts).
- The product's packaging must not include chlorinated plastics.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- EU flower mark: www.blomman.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- Good Environmental Choice: www.snf.se/bmv

When purchasing

Suggestions

- Modern refrigerators and freezers are much better for the environment as regards energy consumption and chemicals.
- When purchasing old models, ensure that they follow the *RoHS Directive* (went into effect I July 2006).

Electrical light sources

This product group includes low-energy light bulbs and fluorescent tubes.

When procuring

When procuring electrical light sources, these requirements are essential:

- The mercury content in the light source must not exceed 4.0 mg.
- The packaging material must not contain chlorinated plastics.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu

When purchasing

Suggestions

- Modern fluorescent tubes and low-energy light bulbs must contain mercury to work. But the amount of mercury in a full-spectrum fluorescent tube is less than half of that in a limited-spectrum tube. In addition, full-spectrum fluorescent tubes provide the same light effect but have a much longer lifespan. If possible, always select full-spectrum fluorescent tubes or low-energy light bulbs.

Electrical installations

MARTIN BOGREN / SCANPIX

This product group includes electrical installation materials, signs, alarm systems, junction boxes and outlets.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO,* the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring electrical installations, these requirements are essential:

- The product must fulfil *the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive* as regards the occurrence of lead, mercury, cadmium, hexavalent chromium, PBB and/or PBDE. All companies must follow the *RoHS Directive,* and you can demand certification of this from your suppliers. Refer to www.kemi.se/rohs.
- The product must not contain:
  - Chloroparaffins (CPs).
  - Diethylhexyl phthalate (DEHP) or dioctyl phthalate (DOP).
  - Hexabromocyclododecan (HBCD).
  - TBBPA as a free additive, that is, it may occur chemically bound to the polymer.

For more information and criteria documents, refer to:

- Futurloc, collaborative property management in the mid-Swedish county region. www.lg.se/upload/filer_futurloc/riktlinjermiljovanligtinstallationsmaterial.pdf

Suggested documentation: Certificate from the manufacturer or supplier.

When purchasing

Suggestions

- When purchasing old models, ensure that they follow the *RoHS Directive* (went into effect I July 2006).

Paint and varnish

This product group includes paint, varnish and wood stain.

When procuring

What to avoid in products procured by the City of Stockholm:

■ The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring paint and varnish, these requirements are essential:

■ The product must comply with the chemical criteria for environmental labelling with the EU flower mark, the Nordic Swan or the Swedish Good Environmental Choice label.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

■ The product must not be classified as highly toxic, toxic, environmentally hazardous, carcinogenic, toxic to reproduction or mutagenic as per directive 1999/45/EG with the latest amendment, 2004/66/EG.

■ The product must not contain:
- Alkylphenol ethoxylates (APEs).
- Diethylhexyl phthalate (DEHP) or butyl benzyl phthalate (BBP).
- Perfluorooctane sulfonate (PFOS), fluorotelomer alcohol (FTOH) or perfluoro octanoic acid (PFOA).
- These heavy metals or heavy metal compounds: cadmium, lead, hexavalent chromium and mercury.

■ The quantity of free formaldehyde in the product must not exceed 10 mg/kg.

Suggested documentation: Certificate from the manufacturer or supplier. You may request a safety information sheet for all quoted products.

For more information and criteria documents, please refer to:

■ EKU tool: www.eku.nu

■ EU flower mark: www.blomman.nu

■ Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/

■ Good Environmental Choice: www.snf.se/bmv

When purchasing

Avoid

■ Cadmium, a toxic heavy metal, is found for example in yellow and red art paints. It is most common in oil paints but can be found in acrylics and watercolours. Some watercolours can contain up to 45-weight-per-cent pure cadmium. Cadmium-free paints use the words *hue, sub* or *imit* after the name of the colour. Cadmium is forbidden in regular paint.

Chemical products

EMILIO EREZA / SCANPIX

This product group includes detergents, car care products and chemicals for removing graffiti.

When procuring

What to avoid in products procured by the City of Stockholm:

- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring cosmetics, toiletries and detergents, these requirements are essential:

- Cosmetics, toiletries and detergents must meet the chemical criteria for environmental labelling with the EU flower mark, the Nordic Swan or the Swedish Good Environmental Choice label.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- The product must not contain:
  - Alkylphenol ethoxylates (APEs).
  - Perfluorooctane sulfonate (PFOS).
  - Triclosan.
- The product must not be classified as highly toxic, environmentally hazardous, carcinogenic, toxic to reproduction or mutagenic as per directive 1999/45/EG with the latest amendment, 2004/66/EG.

Suggested documentation: Certificate from the manufacturer or supplier. You may request a safety information sheet for all quoted products.

The Environmental procurement project produced these documents in Swedish:

- *Invitation to tender* (ITT) or Request for proposal (RFP), *master contract*/framework agreement, *Cleaning services.* Refer to stockholm.se/handlasmart
- *Environmental requirement specification for graffiti clean-up.* Refer to stockholm.se/handlasmart

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- EU flower mark: www.blomman.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- Good Environmental Choice: www.snf.se/bmv

When purchasing

Suggestions

- Usually preservatives are not used in concentrated or solid products.
- Fabric softeners cause unnecessary strain on the environment and can cause oversensitivity.
- Using microfibre cloths reduces the need for detergents.

Avoid

- No environmentally labelled toothpastes currently exist. Avoid toothpastes that contain triclosan.
- Wherever possible, select products with no scent added.

Office machines

BENGT HÖGLUND / JOHNÉR

This product group includes computers and other IT products, photocopiers and AV products.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO,* the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring office machines, these requirements are essential:

- The products must meet chemical criteria for the Swedish Confederation of Professional Employees (TCO) labelling or Nordic Swan labelling.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- Plastics in the product must be free from diethylhexyl phthalate (DEHP), butyl benzyl phthalate (BBP) and dioctyl phthalate (DOP).
- The product must comply with the *RoHS Directive.* All companies are required to follow this directive, and you can require certification of this from your suppliers. As per the directive, these substances must not exceed set threshold values in newly produced products: lead, mercury, cadmium, hexavalent chromium, PBB and/or PBDE. Refer to www.kemi.se/rohs.
- The product must not contain:
  - Chloroparaffins (CPs).
  - Hexabromocyclododecane (HBCD).
  - TBBPA (as a free additive, that is, it may occur chemically bound to the polymer).
- Varan innehåller inte HBCD (Hexabromcyklododecan).

Suggested documentation: Certificate from the manufacturer or supplier.

The Environmental procurement project developed these documents in Swedish:

- *Chemical requirement specification for AV products.* Refer to stockholm.se/handlasmart
- *Chemical requirement specification for IT accessories.* Refer to stockholm.se/handlasmart
- *Environmental requirements for document production, response form.* Refer to stockholm.se/handlasmart
- *City of Stockholm environmental requirements for computers.* Refer to stockholm.se/handlasmart

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- TCO: www.tcodevelopment.se
- IT Environmental Declaration: www.itforetagen.se

Office supplies

JOHN WILKES / JOHNÉR

This product group includes consumables and toys.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring office supplies, these requirements are essential:

- The product complies with the chemical criteria for environmental labelling with the EU flower mark, the Nordic Swan or the Swedish Good Environmental Choice label.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- Packaging materials must not contain chlorinated plastics.
- Plastics in the product must be free from:
  - Lead additives.
  - Diethylhexyl phthalate (DEHP), butyl benzyl phthalate (BBP) and dioctyl phthalate (DOP) additives.
- The product must be free from:
  - Cadmium.
  - Hexabromocyclododecane (HBCD) and polybromo diphenylether, penta, octa and decabromo dipheny-lether (PBDE).

Suggested documentation: Certificate from the manufacturer or supplier.

Suggested documentation: Certificate from the manufacturer or supplier.

- *City of Stockholm environmental requirements for office and school supplies.* Refer to stockholm.se/handlasmart

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- EU flower mark: www.blomman.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- Good Environmental Choice: www.snf.se/bmv
- Bra Miljöval: www.snf.se/bmv

When purchasing

Suggestions

- Toys made of natural materials, such as wood and fabric, are a better environmental choice.
- Always ask for PVC-free products, especially toys. Soft toys of PVC often contain softeners (phthalates), which are bioaccumulating and can cause cancer. As of 16 January 2007, toys that children can put in their mouths may no longer contain phthalates in Sweden, but ask anyway just to make sure.
- Choose cadmium-free artist paints wherever possible. Toxic heavy metal cadmium is in yellow and red art paints, among other things. It is most common in oil paints but can be found in acrylics and watercolours. Some watercolours can contain up to 45-weight-per-cent pure cadmium. Cadmium-free paints use the words hue, sub or imit after the name of the colour. Cadmium is forbidden in regular paint.

Avoid

■ Buy unvarnished pencils; varnished or painted pencils can contain heavy metals. When purchasing felt-tip or spirit pens, ask for water-based pens, because most contain some type of solvent.

■ PVC plastics may occur in rulers. Use a more environmentally acceptable plastic, such as polypropylene, which has less impact on the environment. Ideally, select natural materials such as wood.

Mobile phones and devices

INGE JOHANSEN / SCANPIX

This product group includes all types of mobile phones and devices.

When procuring

What to avoid in products procured by the City of Stockholm:

■ Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.

■ The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring mobile phones, these requirements are essential:

■ Cords and plastic materials in the quoted equipment cannot contain lead (more than 10 ppm).

■ Plastic components weighing more than 10 g in the quoted equipment cannot contain flame retardant with organically bound chlorine or bromine.

■ Plastic components weighing more than 10 g in the quoted equipment cannot contain brominated or chlorinated plastics.

■ The plastic cannot contain diethylhexyl phthalate (DEHP) or dioctyl phthalate (DOP).

■ Battery chargers must comply with the *RoHS Directive*. All companies must follow the directive, and you can require certification of this from your suppliers. Refer to www.kemi.se/rohs.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information, refer to:

■ TCO: www.tcodevelopment.se

When purchasing

Suggestions

■ No environmentally labelled mobile phones currently exist, but TCO has a list of recommended models. Refer to www.mobilmarkning.nu.

■ The radiation level is defined by the specific absorption rate (SAR) value. This indicates how much radiation is absorbed in the brain tissue and is measured in W/kg. As per TCO Development, the SAR value must not exceed the recommended 0.8 W/kg threshold value.

Furniture and fixtures

SARA DANIELSSON / ETSABILD

This product group includes textiles and furniture, such as office chairs, filing cabinets, storage area fixtures and AV fixtures.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring furniture and fixtures, these requirements are essential:

- The product complies with the chemical criteria for Nordic Swan or TCO environmental labelling.
- The wood in the product complies with the Forest Stewardship Council (FSC) labelling requirements.

(Forest Stewardship Council) märkning.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- Chlorinated plastics must not be used.
- Glass in furniture must not be leaded or crystal. The lead content must not exceed 0.1 weight per cent.
- Plastics must not contain phthalate softeners: butyl benzyl phthalate (BBP), diethylhexyl phthalate (DEHP) or dioctyl phthalate (DOP).
- Surface treatment methods that include the use of chromium, nickel and cadmium are not allowed. Any leather used must not be chromium-tanned.
- Textiles must not emit more than 30 mg formaldehyde per kg for textiles intended for use close to children's skin (ages <24 months), 100 mg/kg for textiles intended for use close to the skin or 300 mg/kg for other textiles.
- The product must:
  - Be free from hexabromocyclododecane (HBCD) and polybromo diphenylether, penta, octa and decabromo diphenylether (PBDE) flame retardants.
  - Not contain tributyltin (TBT).
  - Not have been treated with perfluorooctane sulfonate (PFOS), fluorotelomer alcohol (FTA) or perfluoro octanoic acid (PFA).
- The wood in the product must only be treated with fungicides and insecticides that are approved in Sweden by the National Chemicals Inspectorate. The furniture must not contain waterproofed wood.

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU tool: www.eku.nu
- Nordic Swan Label criteria: www.svanen.nu/Eng/criteria/
- TCO: www.tcodevelopment.se

When purchasing

Suggestions

- Natural materials in furniture are better than plastics and synthetics.
- Use garden furniture with the Nordic Swan label; it is made from materials such as pine.
- Use plastic furniture that is made from recycled plastic.
- Textiles/textile furniture may contain flame retardant, so find out what the product contains. Choose wool fabrics or special weaves that do not require flame retardants.

Suggestion continued

■ By working consciously to prevent risk of fire and to adapt textiles and furniture, we can decrease the need to treat textiles with flame retardants. A retardant-treated product is not immune to burning, but only harder to ignite. The smoke can be more toxic and more harmful than an untreated product.

Avoid:

■ Metal details in furniture should be recyclable metals such as iron, stainless steel and aluminium. Avoid metals that are surface treated with another metal.

■ Wood in furniture should be harvested from forests that meet the Forest Stewardship Council's (FSC) criteria or similar criteria for environmental forestry. Using these criteria guarantees that your purchases do not contribute to destruction of rain forests. Designations such as hard-wood often refer to many tropical wood types that we should avoid buying.

Medical care products

This product group includes anaesthesia and infusion products, bandaging materials, blood testing products, gloves, syringes and needles.

When procuring

What to avoid in products procured by the City of Stockholm:

■ Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.

■ The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO,* the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring medical care products, these requirements are essential:

■ Plastics in the product must be free from:
- Lead additives.
- Diethylhexyl phthalate (DEHP) and dioctyl phthalate (DOP) additives.

■ Packaging material must not contain chlorinated plastics.

■ Plasters, bandages and other materials must not contain silver.

Suggested documentation: Certificate from the manufacturer or supplier.

The Environmental procurement project generated this document in Swedish:

■ *City of Stockholm environmental requirements for consumables*. Refer tostockholm.se/handlasmart

For more information and criteria documents, refer to:

■ EKU tool: www.eku.nu

When purchasing

Suggestions

■ Silver can occur as an antibacterial agent in plasters (bandages). This is considered unnecessary, and Apoteket, the Swedish national pharmacy monopoly, removed these plasters from its inventory.

Uniforms, work clothes and shoes

ALEXANDER CRISPIN / JOHNÉR

This product group includes clothing and shoes.

When procuring

What to avoid in products procured by the City of Stockholm:

- Above all, avoid procuring products that are classified as carcinogenic, allergenic, toxic, harmful to reproduction and environmentally hazardous.
- The products cannot contain substances listed under "substances to be phased out" criteria in *PRIO*, the National Chemicals Inspectorate's priority guide. Refer to www.kemi.se.

When procuring uniforms, work clothes and shoes, these requirements are essential:

- The product must comply with the chemical criteria for environmental labelling with the EU flower mark, the Nordic Swan label or the Swedish Good Environmental Choice label.
- The clothing must comply with requirements for Öko-Tex Standard 100 certification.

Suggested documentation: Copy of the licence from the label or certificate from the manufacturer.

When environmental labelling isn't available for the desired product, use these requirements:

- Plastics in the product must be free from butyl benzyl phthalate (BBP), diethylhexyl phthalate (DEHP) and dioctyl phthalate (DOP) additives.
- Textiles must not emit more than 30 mg formaldehyde per kg for textiles intended for use close to children's skin (ages <24 months), 100 mg/kg for textiles intended for use close to the skin or 300 mg/kg for other textiles.
- The product must:
  - Not contain triclosan.
  - Not contain tributyltin (TBT).
  - Be free from hexabromocyclododecane (HBCD) and polybromo diphenylether, penta, octa and decabromo diphenylether (PBDE) additives.
  - Not have been treated with perfluorooctane sulfonate (PFOS), fluorotelomer alcohol (FTHO) or perfluoro octanoic acid (PFOA).

Suggested documentation: Certificate from the manufacturer or supplier.

For more information and criteria documents, refer to:

- EKU verktyget: www.eku.nu
- EU-blomman: www.blomman.nu
- Svanens kriterier: www.svanen.nu/kriterier
- Bra Miljöval: www.snf.se/bmv
- Öko-Tex 100: www.oekotex.com

When purchasing

Suggestion

- Rainwear made of polyurethane is a better environmental alternative than PVC plastic.

Avoid

- Avoid clothing that requires dry cleaning.
- Heavy metals (primarily chromium) are used in tanning leather. But vegetable-tanned leather goods are available.
- PFOS can occur in all-weather clothing.

Descriptions of chemical substances and properties

APPENDIX 1

Alkylphenol ethoxylates (APE): nonylphenol ethoxylate and octylphenol ethoxylate

These substances are surfactants; see the "Surfactants" section of this appendix.

Degradation of APE causes new stable compounds to form. Nonylphenol ethoxylate forms nonylphenol, which is highly toxic to aquatic organisms, persistent and bioaccumulating. Nonylphenol has oestrogenic effects on organisms, through which their development and fertility may be disrupted.

APE can be found in products such as industrial detergents, sealants, jointing compounds, paint, varnish, and building materials.

ANNA KERN / JOHNÉR

Arsenic

Arsenic (an element) occurs naturally and in varying degrees in bedrock.

Arsenic is a well-known toxin with serious effects from acute and chronic exposure. Arsenic is carcinogenic and after many years of exposure, it may cause skin, lung, bladder or kidney tumours.

Humans are exposed to inorganic arsenic in air, water and soil and to organic arsenic mainly through fish and shellfish.

Arsenic is primarily used as a wood preservative and in taxidermy; in some countries, it is also used in herbicides. In many areas, the ground is contaminated with arsenic due to release of the substance into the environment in the past, mainly from metal, smelting works and wood impregnation plants. Arsenic can also be found in rechargeable batteries. Batteries that require this metal for their function, such as nickel-cadmium batteries, do not qualify for eco labelling. In other batteries, arsenic is only present as a pollutant.

Bioaccumulation

Bioaccumulation refers to the concentration of chemical substances in living organisms. It is usually the result of a combination of effective absorption in organisms and extremely slow excretion and metabolism (degradation by the organism). Bioaccumulation exposes organs of plants and animals to the substance at higher concentrations for longer periods, thus increasing toxic properties.

Brominated flame retardants (BFR)

Brominated flame retardants is a generic term for various chemical compounds that all contain the element bromine. Brominated flame retardants have been used for more than 30 years as additives to plastic or textiles to prevent or deter

fire. About 70 brominated flame retardants are now in use; the five most common are pentabromodiphenyl ether, octabromodiphenyl ether, decabromodiphenyl ether (PBDE), hexabromocyclododecane (HBCD) and tetrabromobisphenol A (TBBPA).

Brominated flame retardants reach the environment through leakage and diffuse release from products and waste. Today they can be found worldwide in soil, sediment, sewage sludge, air, fish and birds and in humans. Very little is known about the impact of these substances on health and the environment. But we know that most BFRs are persistent, bioaccumulating endocrine disruptors, which may even cause behavioural, learning and memory impairment. Some brominated flame retardants have been found in breast milk.

Incineration of certain brominated flame retardants results in brominated dioxins and dioxin-like substances (see the "Dioxins" section of this appendix), which can be extremely hazardous to the environment.

Brominated flame retardants can be found in computer cases and other electronic equipment, printed circuit cards, building materials, cables, upholstery, textiles and in toys such as stuffed animals.

Butyl benzyl phthalate (BBP)

BBP is a phthalate; see the "Phthalates" section. Sometimes used as a plasticiser and fragrance enhancer. The EU will completely ban the substance in toys and child care articles from the 16 January 2007.

BBP can be found in toys, paint, adhesives and cosmetics.

Cadmium

Cadmium is a toxic heavy metal. Almost all cadmium used in Sweden is found in appliances with rechargeable nickel cadmium batteries (NiCd). Cadmium spreads to the natural environment through waste incineration or leaching from landfills. Cadmium is also released during zinc extraction and fossil fuel combustion. Spreading fertilizer and sewage sludge also contributes to increased cadmium levels in soil. Plants readily absorb cadmium, which means humans may consume the substance in foods such as grain products, tubers and vegetables.

Cadmium accumulates in the body and may damage the kidneys, which may impair their ability to purify the blood by filtering metabolites. We all suffer from cadmium poisoning to a greater or lesser extent and in 10% of the population, cadmium levels are sufficiently high to cause adverse effects on the kidneys. In the long term, high cadmium intake also leads to osteoporosis.

Starting 1 July 2006, the *RoHS Directive* restricted use of cadmium; the directive applies to all newly produced electrical and electronic appliances, it does not apply to batteries.

Cadmium can be found in rechargeable batteries, especially in power tools such as electrical drills and circular saws. The substance can also be found in artists' paints.

Chlorinated paraffins

Chlorinated paraffins, also called polychlorinated alkanes (PCA). Many chlorinated paraffins are toxic to aquatic organisms and may cause harmful long-term effects in the aquatic environment. Dioxins form during incineration of chlorinated paraffins (see the "Dioxin" section).

They are used as plasticizers, lubricants and to some extent even as flame retardants and may be found in building materials, electrical installation materials and office equipment.

Diethylhexyl phthalate (DEHP)

DEHP is a phthalate (see the "Phthalate" section) used mainly as a plasticiser. DEHP has been the most commonly used phthalate.

The EU classified DEHP as toxic to human reproduction and banned the substance from cosmetics and hygiene products. Since 1999, Sweden has banned DEHP in toys and products intended to be placed in the mouth by children under age three.

DEHP can be found in many products such as office supplies, electrical appliances, mobile phones, cosmetics, toiletry and detergents, furniture, clothing, building materials and healthcare products.

Dioctyl phthalate (DOP)

DOP is a phthalate (see the "Phthalate" section) used mainly as a plasticiser. DOP is sometimes erroneously used as a synonym for diethylhexyl phthalate (DEHP).

DOP may be found in healthcare products, office supplies, cables and building materials.

Dioxin

Dioxin is a generic term for chemical compounds of a particular structure that contains chlorine (or bromine). The propensity for dioxins to be stored in fatty tissue and the fact that they are difficult to break down make them a problem. Chronic exposure to low doses is worrisome.

Dioxins form as by-products of combustion processes such as waste incineration in the presence of chlorine (e.g. in PVC). They also form during metal recycling. In the past, chlorine bleaching of paper was also a significant source.

Environmental hazard

Environmental hazard is a description of properties pertaining to a substance's toxicity, persistence and propensity to bioaccumulation.

Fluorotelomer alcohol (FTOH)

FTOH comprises a group of chemical substances produced to be grease and water repellent. These substances degrade to PFOA or PFOS (see the "PFOA" and "PFOS" sections). FTOH absorbed by the body can also be metabolised to PFOA.

FTOH can be found in textiles and in coatings of microwave popcorn bags and fast food wrappers.

Formaldehyde

The gas formaldehyde is a basic chemical used for a variety of applications, such as disinfectants and preservatives, and permanent press clothing. Formaldehyde (formalin) mainly causes allergic reactions in humans. The substance was also recently (2004) classified as carcinogenic to humans. Researchers believe that it accumulates in the body and causes nerve, liver and kidney damage. Long-term exposure can also cause lung damage.

The substance can be found in water-based paints and adhesives, textiles for home furnishings and in some imported clothing. Pressed board (e.g. particle board) that contains adhesive with formaldehyde additives emits formaldehyde.

HA oil

See polyaromatic hydrocarbons.

Hexabromocyclododecane (HBCD)

HBCD is a brominated flame retardant. It is stable, fat-soluble and accumulates in the food chain. This bioaccumulating substance has been found in fish, birds and seals in the Baltic Sea. HBCD is also found in humans.

The HBCD imported to Sweden, in chemical form and as an additive in polymer raw materials, is mainly used in building materials, packaging and textiles. In addition HBCD is commonly found in imported goods and products.

Hexavalent chromium

Chromium is a heavy metal that is toxic to humans in high doses. Hexavalent chromium in particular is readily absorbed through the skin and may cause contact allergies. Known toxic effects of hexavalent chromium include skin damage, allergies and lung cancer.

Starting I July 2006, use of hexavalent chromium was restricted by the *RoHS Directive*, which applies to all newly produced electrical and electronic appliances.

Hexavalent chromium is used in many anti-corrosion products and in leather tanning. It can be found in electrical installation materials, anti-corrosion paint, coatings and leather products.

Lead

Lead is a heavy metal that is soft, malleable and corrosion resistant. Lead is toxic to aquatic organisms and may cause harmful long-term effects in the aquatic environment. Foetuses and children are especially at risk for lead poisoning because the brain and nervous system are still developing and high exposure to lead may impair mental development. Lead may also cause serious kidney damage in developing foetuses and children.

Use of lead in electrical and electronic contexts is substantially limited by EU Directive 2002/95/EC, which came into force on I July 2006.

Lead is commonly used as a stabiliser in plastics, a component in solder, electrodes in car batteries and radiation protection in x-ray screens. It can be found in most electrical and electronic contexts, including electrical light sources, installation materials, and equipment that contains printed circuit cards such as computers, radios and televisions. The substance can also be found in pastels, lead crystal and lead shot.

Mercury

Mercury (element) and most compounds that contain mercury are highly toxic to almost all living beings. Mercury is so toxic largely because it has the ability to form strong bonds with sulphur. Sulphur is a constituent of most body proteins and serves an important function in correctly shaping them. With mercury in the picture, the proteins fail to achieve the correct shape, and can no longer function properly. Known toxic effects include impaired brain function.

Starting I July 2006, the *RoHS Directive* restricted use of mercury, which applies to all newly produced electrical and electronic appliances. This directive does not apply to batteries.

Mercury can be found in electrical lights, batteries, thermometers and electronics (relays).

Amalgam fillings contain large amounts of mercury. It is mainly used to produce chlorine and sodium hydroxide.

Perfluorooctane sulfonate (PFOS)

PFOS is the basis for substances that are water and stain repellent or that can provide wrinkle-free textiles. PFOS is extremely persistent in the environment and extremely high concentrations have been measured in top predators, such as arctic polar bears, arctic foxes, bald eagles and mink in the United States and seals in the Gulf of Bothnia – demonstrating the propensity of PFOS to bioaccumulate in the environment. PFOS is also toxic to aquatic organisms, and animal studies showed that repeated exposure in low doses results in reproductive toxicity effects and effects on the liver.

Currently information is very limited on how PFOS and its related substances are released into the environment, how they are dispersed and where they then accumulate. It can be assumed that these substances can be released throughout their life cycle: during production and during and after their use.

PFOS can be found in fire fighting foams, detergents, impregnation agents used in applications such as furniture and clothing, surface coating of metal, paint and varnish additives, production of semiconductors and in hydraulic fluids for aviation.

Perfluoro octanoic acid (PFOA)

PFOA is chemically related to PFOS and has some similar properties. PFOA is extremely persistent in the environment; see the "PFOS" section.

Persistent, bioaccumulating and toxic (PBT) substances

A PBT substance is persistent, bioaccumulating and toxic.

Phase-out substances

Substances with these properties are called phase-out substances in this guide:

- Carcinogenic, mutagenic and reprotoxic (CMR) category I or 2.
- Simultaneously persistent bioaccumulating and toxic (PBT) or simultaneously very persistent and very bioaccumulating (vPvB)
- Endocrine disruptor
- Ozone depleting

Phthalates

Phthalates is a generic term for compounds formed from combining phthalic acid with various alcohols. The properties of the phthalates depend, for example on the chain length of the alcohols and type of branching. Long-chained compounds are mainly used as plasticisers in plastics and similar materials. Short-chained compounds are mainly used as solvents, fragrance enhancers and denaturants.

Phthalates have extensive applications and are some of the most widely used industrial chemicals. About 50 phthalates are used today in the Swedish market.

Phthalates that are mixed into plastics, especially PVC, (sometimes up to 50%) slowly leak from products and waste. They are disseminated through the air. Phthalates are not long-lived in the natural environment, but because they are produced in large quantities and are bioaccumulating, they are still found in animals

and humans. A few phthalates are classified as toxic, reproductive toxins and endocrine disruptors. The EU now prohibits phthalates classified as reproductive toxins and endocrine disruptors in toys.

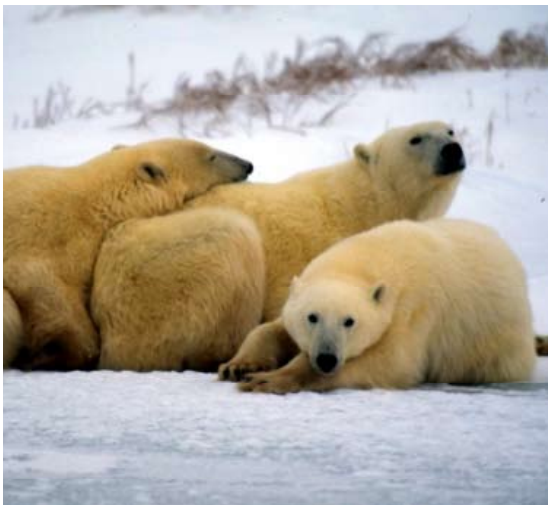
Phthalates can be found in floor covering, wallpaper, cable, foil, coated fabric and healthcare products. In health care, patients are exposed through leaching from plastic tubes and blood bags in procedures such as transfusion or dialysis. Phthalates can also be used as plasticisers in paint and adhesives. Some phthalates can be used as solvents in perfumes and pesticides. Toys made of PVC may contain phthalates.

Polyaromatic hydrocarbons (PAH) and highly aromatic (HA) oil

Polyaromatic hydrocarbons is the generic term for a group of substances, many of which are carcinogenic and toxic to aquatic organisms. In addition, the majority are persistent (biodegrade very slowly) and can bioaccumulate.

HA oils are a by-product of lubricant production. They are used as softeners in rubber tyres. HA oils are classified as toxic and must be labelled as carcinogenic and environmentally hazardous based on their high content of polyaromatic hydrocarbons. One tyre can contain up to a litre of HA oil. The oil is not chemically bonded to the rubber and leaches out over time.

PAH is also released into the environment due, for example, to incomplete combustion processes, aluminium production and used motor oil.



Polybrominated biphenyls (PBB)

PBB was the first group of brominated flame retardants that proved to be hazardous.

The substances have now been well studied, and KemI has proposed that they be banned. As far as we know, PBB is no longer manufactured, but the substances may continue to be found in some products well into the future. PBB is mainly used in more expensive speciality goods in materials, such as polystyrene, and in construction polymers.

Starting I July 2006, use of PBB will be restricted by the *RoHS Directive,* which applies to all newly produced electrical and electronic appliances.

PBB can be found in cases and housing for household appliances, computers and other office equipment, printed circuit card components, electrical switches, relays and fuses.

Polybrominated diphenyl ether; penta-, octa- and decabromodiphenyl ether (PBDE)

PBDE is a group of brominated flame retardants. They are stable fat-soluble substances, but there is currently no clear evidence that they bioaccumulate. Pentabromodiphenyl ether is classified as highly toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

Starting I July 2006, the use of PBDE will be limited by the *RoHS Directive*, which applies to all newly produced electrical and electronic appliances.

PBDE can be found in electrical installation materials, office equipment, textiles and office supplies.

Polymers

Polymers are substances made up of chains or networks of one or two different types of molecules. Polymers comprise the base for plastics, textiles, paint, varnish and adhesives. Cellulose is also a polymer material made up of glucose molecules.

Polyvinyl chloride (PVC)

PVC is a plastic material consisting of polyvinyl chloride and additives. PVC plastic is easy to shape, durable and resistant to many chemicals. PVC itself does not have any toxic properties.

Certain PVC additives, such as phthalates, lead and chlorinated paraffins, pose problems from the standpoint of health and the environment. Persistent toxic chlorine compounds may arise during production of PVC. During fire and waste incineration, PVC forms hydrochloric acid and persistent, highly toxic chlorine compounds such as dioxins (see the "Dioxin" section). These substances may be reproductive toxins, carcinogenic, and impair the immune system.

PVC is used in applications such as drainage piping, window frames, shower curtains, wallpaper, protective gloves, credit cards, food packaging, roofs, gutters, cables, electrical wiring, raincoats, fabric and drug packaging.

Silver

Silver is a frequently occurring element to which we have been exposed for centuries.

According to the Swedish Chemicals Inspectorate, silver is becoming more popular than triclosan as the industry's new anti-bacterial agent. But bacteria can even develop resistance to metals. In health care, silver is becoming increasingly common in bandages and plasters for fighting bacterial infections. Silver thread and silver compounds are used in applications such as refrigerators and telephones, and in sportswear and leisure clothing to prevent odours.

Silver is used in jewellery, the photo industry (silver nitrate), solder material, coins, electrical outlets and in high-capacity batteries (silver-zinc and silver-cadmium). Silver iodide is used to seed clouds with condensation nuclei to produce rain. Silver chloride, which is transparent, can be used as a cement for glass.

Surfactant

Surfactants can be either natural or synthetic. They consist of a fat-soluble portion and a water-solution portion, which makes it possible to reduce surface tension in water and hold particles and drops of non water-soluble liquids suspended in water. One such suspension is water-based paint.

The same mechanism also enables surfactants to dissolve impurities in water. So surfactants are the active ingredient in products such as cleansers and detergents.

There are many types of surfactants and their impact on the environment varies. But they are all more or less toxic to aquatic plants and animals. Their degree of toxicity and persistence determines how hazardous they are to the environment.

Tetrabromobisphenol A (TBBPA)

TBBPA is the most heavily used flame retardant in Sweden. In 2001, sales totalled 203 tonnes, compared with 58 tonnes for hexabromocyclododecane (HBCD). Although not manufactured in Sweden, TBBPA is imported as a separate product and as an additive in various products. The relatively large number of imported electronics products with TBBPA is probably of great significance to the release of TBBPA into the Swedish environment.

TBBPA can be found as an additive used alone and as a compound. The latter cannot be released into the environment. Effects of TBBPA have been poorly studied. They are suspected of being potential endocrine disruptors, but they are not bioaccumulating.

The most common use of TBBPA is in printed circuit cards. It can also be used in housing and electrical equipment cases.

Tributyltin (TBT)

Tributyltin is an organotin compound with antibacterial and odour-inhibiting properties.

TBT is a persistent bioaccumulating environmental toxin. It impairs the immune system and is an endocrine disruptor. In the 1970s, researchers discovered that certain female shellfish developed male genitalia. Use of TBT has caused substantial financial losses for mussel growers in France.

TBT is mainly spread through international maritime shipping. It is used in marine bottom paint to prevent algae from growing on the hull of the vessel. TBT is also used as a preservative in the wood and textile industries. In addition, TBT has been found in common consumer products, such as textiles and rain gear.

Triclosan

Triclosan is an antibacterial agent.

It is a toxic substance that may have long-term adverse effects in the aquatic environment and is persistent in nature. Triclosan has been found in urban air and in fish outside sewage treatment plants. Two tonnes of Triclosan are released each year due to toothpaste sold in Sweden. Triclosan can cause allergies,

Triclosan can be found in deodorants, soap, foot spray, mouth wash and other hygiene products. All in all, sales for these applications are about the same as for toothpaste.

6 Reproductive toxicity category 1: substances may impair fertility in humans or substances may have toxic effects on the human embryo/foetus or child.
Reproductive toxicity category 2: substances suspected of impairing human fertility or substances suspected of having toxic effects on the human embryo/foetus or child.

Information and assistance for environmental requirements during procurement

APPENDIX 2

Below is a summary of and links to tools and aids to use when evaluating environmental characteristics of various products.

BASTA

BASTA is a Swedish acronym that stands for *phasing out very dangerous substances from the construction industry*. The purpose of the system is to phase out use of particularly hazardous substances from chemical products and building supplies. The core of BASTA is a web-based database available to the public.

The system is based on self-declarations in which suppliers enter the building supplies that meet the requirements pursuant to BASTA's criteria. In this system, the suppliers are responsible for gathering information about their products, including chemical contents, and for entering the products into the database. Because the suppliers are responsible for ensuring that products meet requirements, they usually need not reveal the complete composition of these goods.

Besides the properties criteria, which apply to the building supplies, the BASTA system puts the burden of proof on the supplier, who must confirm that products actually meet these criteria. Only products that meet the properties criteria and for which the supplier can satisfactorily prove this may be registered in the system. Random audits are done as per an auditing schedule. Refer to www.bastaonline.com.

Environmental manual

The *Environmental manual* is a tool that consists of a series of fact sheets aimed at systematic environmental adaptation of buildings and facilities throughout their life cycle. The manual provides users with documentation that enables them to take decisions at an early stage and to take appropriate action while considering environmental impact, cost and function in all phases of the life of a building or facility. Currently, WSP Environmental leads and develops the *Environmental manual project.* An editorial committee (comprising the National Fortifications Administration, Locum, Länsförsäkringar, Peab, Skanska, National Property Board, Vasakronan and WSP) discusses development of new fact sheets.

Examples of applications:

- Establishing procurement requirements
- Choosing tailored solutions for various project phases
- Establishing an environmental programme
- Providing guidance to achieve better choices of material and design solutions
- References Refer to www.miljomanualen.se.

Forest Stewardship Council (FSC)

FSC is an independent international membership-based organisation. FSC-labelled forest products are guaranteed to come from economically, environme ntally and socially responsible forest management, regardless of where in the world the products originate. Independent, third-party organisations certify that landowners comply with formulated criteria – in consultation with forest management, environmental organisations and community stakeholders. Refer to www.fsc.org.

Good Environmental Choice

Good Environmental Choice is the eco labelling scheme of the Swedish Society for the Conservation of Nature (SSNC). The SSNC board decides on the focus of the eco label. Products eligible for the label may not contain substances that are harmful to human health or the environment. Such products must meet environmental requirements throughout their life cycles – from raw material to waste. Refer to www.snf.se/bmv.

IT Eco Declaration

The IT Eco Declaration is a system for assessing environmental characteristics of IT products. IT Eco Declaration is owned and administered by ITFöretagen (Association of the Swedish IT and Telecom Industry), a voluntary industry organisation for firms that develop, manufacture and sell IT products and services. The supplier states in a self-declaration whether or not environmental requirements are met, and whether the product was subject to third-party review. But the organisation requires that environmental properties of the products must be reported accurately, with verification available upon request. No special label is issued for declared products. Refer to www.itforetagen.se.

KemI

The Swedish Chemicals Inspectorate (KemI) is a supervisory authority that works to prevent injury to humans and the environment due to chemicals and biotechnological products. Refer to www.kemi.se.

KIFS

Swedish Chemicals Inspectorate's (KemI's) Code of Statutes.

Krav

KRAV is a monitoring organisation for organic farming. The KRAV label can be found on food, production aids (e.g. potting soil) and textiles that are ecologically produced. To obtain certification, production must occur without artificial fertilizers, chemical pesticides or gene-modified organisms, and animals must be well-treated and allowed to roam freely outdoors. Refer to www.krav.se.

MilaB

MilaB stands for environmental assessment of building supplies. This environmental assessment system is intended to help the construction, real estate and contracting sectors to minimise environmental risks in construction. MilaB uses building product declarations or the equivalent to make environmental assessments of building supplies. The criteria were formulated by an expert group, and the assessments are based on a template with a list of substances and groups of substances that should be avoided. The assessments must address the impact of the product on the environment from cradle to grave. Building supplies are assessed as:

- *To be recommended*
- *To be accepted*
- *To be avoided*

An expert group formulated the assessment criteria. Refer to www.milab.nu.

MSC

Marine Stewardship Council (MSC) is an international eco labelling scheme for fish and shellfish. The MSC product label guarantees that over-fishing of fish, shrimp and other aquatic animals does not occur. Other animals may not be harmed when fishing. Refer to www.msc.org.

Nordic Swan

The Swan is a Nordic eco label established by the Nordic Council of Ministers. The Nordic Environmental Label Board co-ordinates the Swan eco label scheme. SIS Miljömärkning AB, which is certified for quality and environmental management, is a non-profit organisation in Sweden that also administers the EU Flower eco label. The Swan eco label is used in many product categories and services. Certification requirements usually consider the entire life cycle and functional and quality standards.
Refer to www.svanen.nu.

Prio

PRIO is the Swedish Chemicals Inspectorate's priority setting guide. The guide gives examples of hazardous substances. The *PRIO* substances were divided into two groups, depending on their inherent properties: phase-out and *risk reduction substances*.

The guide is mainly aimed at environmental managers, procurement officers and product developers. Refer to www.kemi.se.

Reach

The EU is implementing new chemicals legislation called *Registration, evaluation, authorisation and restrictions of chemicals* (REACH). REACH's purpose is to adopt a harmonised approach to the effects of chemicals on human health and the environment. Firms will have clearer responsibility for investigating the health and environmental hazards associated with chemical substances. Firms must evaluate the risks associated with these substances and address how to handle them safely. Particularly hazardous substances may not be used without authorisation. Refer to www.kemi.se.

Restricted substances database

The restricted substances database replaces the old restriction list and is based on the Swedish Chemicals Inspectorate's regulations. It contains information about restrictions of the use of a substance or group of substances. You can search by substance name, CAS7 or by substance group.
Refer to
www.apps.kemi.se/begransningsdatabas

7 Chemical abstract service (CAS) IDs are unique numeric identifiers for chemical compounds, polymers, biological sequences, mixtures and alloys.

SundaHus

Sundahus is a database of environmentally assessed and classified building supplies. New products are evaluated, classified and entered into the continuously updated database. Classification is based on the Swedish Environmental Code and the Swedish Chemicals Inspectorate's (KemI's) Code of Statutes and *PRIO* criteria. The database also offers an extra module with functions for storing information about all building supplies in a specific project.
Refer to www.sundahus.se.

Swedish Environmental Protection Agency

The Swedish Environmental Protection Agency is a regulatory authority that co-ordinates environmental initiatives – nationally, in the EU and internationally. The regulatory authority formulates and communicates information about environmental issues, formulates proposals for objectives, action strategies and policy instruments relating to environmental policy and also implements environmental policy decisions. The Swedish Environmental Protection Agency also follows up and evaluates the environmental situation and environmental initiatives as a basis for continued development of environmental policy. Refer to www.naturvardsverket.se

Swedish instrument for ecologically sustainable procurement (EKU)

EKU is a web-based tool for ecologically sustainable procurement and consists of information, advice and templates with environmental criteria. Refer to www.eku.nu.

TCO Development

TCO Development is a firm owned by the Swedish Confederation of Professional Employees (TCO) – a union for salaried employees. TCO Development works to improve the work environment, and the external environment, through efforts such as the TCO international environment and quality label. The TCO label is mainly used for computer screens but is also available for other IT products and even furniture. Refer to www.tcodevelopment.com.

The EU flower

The EU flower is the European equivalent of the Swedish Swan eco labelling scheme. The requirements are formulated by national organisations in EU member states for the EU commission. SIS Miljömärkning AB, a non-profit organisation, manages the label in Sweden – for the government and the Riksdag, the Swedish parliament.

Like the Swan, certification requirements usually take into account the entire product life cycle and may also include functional and quality standards. As with the Swan label, the EU flower is available for products and services, except for food, beverages, pharmaceuticals and medical device products. Refer to www.blomman.nu.

Öko-Tex 100

Öko-Tex 100 is an international label scheme for textiles that guarantees low levels of chemicals known to be dangerous. Öko-Tex requires fabric manufacturers to allow laboratory tests to be run on textile products – to ensure they are free of chemicals that are hazardous to humans upon direct contact. An independent third-party institution associated with Öko-Tex conducts monitoring procedures. Textiles with the Öko-Tex 100 plus label are also produced under environmentally friendly conditions. Refer to www.oekotex.com.

APPENDIX 3

Overview of governance documentation – use these laws and directives for support when setting environmental requirements

Acts, directives, statutes

- LOU, The Swedish Public Procurement Act, Chapter 1, section 12, Reference to Technical specifications: "The procuring entity may refer to criteria for eco labelling if the criteria for the label were formulated on the basis of scientific information."
- Commission Directive 98/101/EC of 22 December 1998 adapting to technical progress Council Directive 91/157/EEC on batteries and accumulators containing certain dangerous substances.
- Council Directive 91/157/EEC of 18 March 1991 on batteries and accumulators containing certain dangerous substances.
- 1997:645 Swedish Batteries Ordinance.
- Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. This directive prohibits the use of mercury, cadmium, lead, hexavalent chromium and the flame retardants PBB and PBDE in electrical and electronic products put on the market beginning on 1 July 2006.
- Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.
- SFS 2000:208, from 1 July 2001. Ordinance on Producer Responsibility for Filament Bulbs and Certain Luminaries.
- KIFS 1998:8. Provisions of the National Chemicals Inspectorate on Chemical Products and Biotechnical Organisms.
- KIFS 2005:7. Swedish Chemicals Inspectorate's Classification and Labelling of Chemical Products Regulations
- Environmental Code, Chapter 2, section 3, Precautionary Principle. A principle according to which even the threat of negative impact on human health or the environment is associated with an obligation to take protective measures and other precautions.
- Environmental Code, Chapter 2, section 6, "Product choice principle". According to the product choice principle in the Environmental Code, as an operator you are responsible for replacing chemical products that are hazardous to human health and the environment, if products believed to be less dangerous can be used instead.
- You must have knowledge of how environmentally hazardous your chemicals are and you must have current material safety data sheets available for each product.

Swedish Environmental Code (SFS 1998:808): The purpose of the code is to achieve sustainable development and its rules of consideration apply parallel to other legislation unless stated otherwise.

Decision in Stockholm municipal council

Opinion 2003:9 Motion no. 17 for the use of environmentally sound tyres, municipal council 17 March 2003.

The municipal council declared that, in principle, the city shall use environmentally friendly tyres. This principle shall be applied during procurement and in the city's environmental scheme.

Stockholm's environmental programme for 2003 to 2006

The environmental programme is based on management by objectives, and the municipal council decided that the objectives shall constitute a key foundation for all municipal activities. The main purpose of the environmental programme is for Stockholm to develop into a long-term sustainable city. Subsidiary goal two, safe products, says:

"The City shall demand that chemicals and other products and services are environmentally friendly. The City shall set a good example in the environmental demands it places on applications such as building materials, vehicular equipment, electronics and foodstuffs. Our knowledge of the effects of harmful substances on people and the environment must increase, as must households' knowledge of environmentally friendly products and organic food".

"The City's administrations and municipal companies shall present plans detailing how the most environmentally friendly chemicals and products are to be purchased. Refer to www.miljobarometern.stockholm.se".

Sweden's national environmental quality objectives

"Objective 4 – A Non-Toxic Environment"

The Riksdag defined and approved nine interim targets for *a non-toxic environment*. The overall goal is to achieve the major environmental quality target within one generation.

A non-toxic environment means:

"The environment must be free from man-made or extracted compounds and metals that represent a threat to human health or biological diversity." Refer to www.miljomal.nu.

LANCHELES / JOHNÉR

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