



The defence sector's criteria document – chemical substances, chemical products and articles

(This document is the English translation of the Swedish original document 19FMV3315-2:2)

Content

1.1	Introduction.....	2
1.1.1	About the criteria document	2
1.2	Limitations	3
1.3	Exemptions from the criteria	3
1.4	Definitions.....	3
2	Requirements of the criteria document.....	4
2.1	Chemical products	4
2.2	Articles	7
3	Exemptions from the criteria document	8
3.1	General exemptions for certain chemical product groups and substances	8
3.2	Specific exemptions for certain product groups and substances	12
4	Example of substances covered by the restrictions	12
5	Examples of relevant legislation.....	20
5.1	Reach (regulation (EC) no 1907/2006) ¹	20
5.2	CLP (regulation (EC) no 1272/2008) ²	21
5.3	Chemical Hazards in the Working Environment (AFS 2011:19).....	21
5.4	The Chemical Products (Handling, Import and Export Prohibitions) Ordinance (SFS 1998:944)	22
5.5	RoHS 2 (EU directive 2011/65/EU)	22
6	Change log.....	23

Datum	Diarienummer	Ärendetyp
2019-10-28	19FMV3315-5:1	1.8
	Dokumentnummer	Sida
	n/a	2(23)

1.1 Introduction

1.1.1. About the criteria document

The purpose of the criteria document is to restrict the use of substances hazardous to human health and the environment, in chemical products and articles (equipment) used by the authorities of the defence sector (the Swedish Armed Forces, the Swedish Defence Material Administration, the Swedish Defence University, the National Defence Radio Establishment, the Swedish Defence Research Agency and the Swedish Fortifications Agency).

This is part of the defense sector's work to contribute to the achievement of the national environmental quality objectives *A Non-toxic environment*.

The criteria document is a tool for the defence sector authorities to establish work environment and environment requirements on procurement and purchasing of chemical products and articles. This document is intended to be used as a requirement for procurement and purchasing as well as a basis for decisions of replacement of hazardous substances within the defence sector.

The requirements in the criteria document are based on the properties of chemical substances (see table 1). All chemical products and articles delivered to the authorities of the defence sector shall as far as possible be free from substances that are classified as deadly, carcinogenic, mutagenic, toxic for reproduction, organ toxic, allergenic, dangerous for the environment, climate changing and ozone depleting. In addition to the above given properties, there are also several specifically identified substances that are limited (see table 2).

There are also limitations for certain health and environmental threatening substances contained in articles (see table 3).

Chemical products shall be included in the organisation's systematic handling of the working environment, regardless if the chemical products meet the criteria within this document or not, since they may be subjected to requirements of risk assessment concerning chemical hazards in the working environment (e.g. AFS 2011:19).

The basis of the criteria document are the EU regulations REACH¹ and CLP², and the requirements of these regulations. In order to promote the development of chemical products and articles that causes less harmful effects on human health and the environment, the criteria document, in many cases, establishes more far-reaching requirements than current legislation. The criteria document includes a common set of requirements established in a joint cooperation by the authorities of the defence sector. Each authority will then make individual decisions on the application of the criteria document. The criteria document is administrated and updated by the defence sector's chemical group, Ag Kemi. The group is composed of representatives from all authorities in the defence sector.

The latest version and older versions of the criteria document is available on the Swedish Defence Material Administration's external web page, www.fmv.se. Please note that specific agreements

¹ **REACH** (Registration, Evaluation, Authorisation and restriction of Chemicals) is the globally used abbreviation of Regulation (EC) No 1907/2006 concerning the registration, evaluation and restriction of chemicals.

² **CLP** (Classification, Labelling and Packaging) is the globally used abbreviation of Regulation (EC) No 1272/2008 concerning classification, labelling and packaging of substances and mixtures.

may refer to older versions of the criteria document and that the version mentioned in the agreement applies.

1.2 Limitations

The following product groups are not covered by the criteria document:

Pesticides, chemical weapons according to the Chemical Weapons Convention, radioactive substances and medicinal products.

The limitations are justified since these product groups are covered by specific legislation and that the content of hazardous substances is essential for the function of the products.

1.3 Exemptions from the criteria

There are two different types of exemption to the criteria:

1. General exemptions for some substances, products and articles.

Here are some substances and products specified as exemptions, providing substitution is impossible.

2. Specific exemptions for certain chemical products or articles.

If the substance or products is subjected to the criteria, and there are no general exemptions, there is a possibility to apply for a specific exemption.

The exemptions and how they are applied are described more in Section 3 and the flowcharts in Section 2.

1.4 Definitions

A chemical product³ is defined as **a substance** or **a mixture** of two or more substances.

Acetone and urea are examples of chemical products that are substances. Chemical products that are mixtures are for example paints and fuels.

A substance⁴ is defined as a chemical element and its compounds, including any additives necessary to preserve stability and any impurity deriving from the manufacturing process used, but excludes any solvent that may be separated without affecting the stability of the substance or changing its composition.

A mixture⁴ is defined as a mixture or solution composed of two or more substances.

An article⁵ is defined as an object which during its production is given a special shape, surface or design that determines its function to a greater degree than its chemical composition. Examples of articles in the defence sector are different materials such as vehicles, gaskets, tents, windows, desks, computers and pieces of uniforms.

³ The definition of a chemical product is found in the environmental legislation SFS 1998:808, Chap. 14 § 2.

⁴ The definition of a substance and a mixture are found in Title 1, Chapter 2, Article 3.1 and 3.2 in REACH

⁵ The definition of an article is found in Title 1, Chapter 2, Article 3.3 of REACH

2 Requirements of the criteria document

Note that compliance with the criteria document does not relieve any party the responsibility to otherwise comply with both Swedish legislation as well as EU legislation within the chemicals field.

2.1 Chemical products

Table 1 lists the criteria's that apply to chemical products. Chemical products, substances or mixtures that are classified (in accordance with CLP) with listed hazard statements shall not be present.

Table 1. Chemical products that are classified with the following hazard statements shall not be present.

Hazard statement	Hazard pictogram	Signal word
H300 Fatal if swallowed (Hazard category 1 och 2)		Danger
H310 Fatal in contact with skin (Hazard category 1 och 2)		Danger
H317 May cause an allergic skin reaction (Hazard category 1, 1A och 1B)		Warning
H330 Fatal if inhaled (Hazard category 1 och 2)		Danger
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled (Hazard category 1, 1A och 1B)		Danger
H340 May cause genetic defects (Hazard category 1A och 1B)		Danger
H350 May cause cancer (Hazard category 1A och 1B)		Danger
H350i May cause cancer by inhalation (Hazard category 1A och 1B)		Danger
H360FD May damage fertility. May damage the unborn child (Hazard category 1A och 1B)		Danger
H360F May damage fertility (also H360Fd) (Hazard category 1A och 1B)		Danger
H360D May damage the unborn child (also H360Df) (Hazard category 1A och 1B)		Danger
H362 May cause harm to breast-fed children	-	-
H370 Causes damage to organs (Hazard category 1)		Danger
H410 Very toxic to aquatic life with long lasting effects (Hazard category 1)		Warning

Hazard statement	Hazard pictogram	Signal word
H420 Harms public health and the environment by destroying ozone in the upper atmosphere (Hazard category 1)		Warning

Table 2 shows further restrictions on chemical products, at substance level. These substances do not necessarily fall for the criteria of Table 1 but are nevertheless important to limit because of their health and environmental hazard.

Table 2. Additional restrictions in chemical products

Substances with PBT-properties ⁶ shall not be present in concentrations $\geq 0.1\%$
Substances with vPvB-properties ⁷ shall not be present in concentrations $\geq 0.1\%$
Substances on the Candidate List ⁸ should not be intentionally added ⁹
Substances with a GWP-factor ¹⁰ above 2000 (calculated over 100 years) should not be intentionally added
Substances specifically identified by the defence sector ¹¹ - should not be intentionally added <ul style="list-style-type: none"> • Gamma-butyrolactone (GBL) • Gamma-hydroxybutyrate (GHB) • Dichloromethane/Methylene chloride • Propyl paraben and butyl paraben • Bisphenol F och S
The defence sector highlighted substances ¹² – shall be avoided if possible ¹³ <ul style="list-style-type: none"> • Toluene • Styrene

⁶ PBT = Persistent (low degradability), bio accumulative (potential to accumulate in living organisms) and toxic (poisonous).

⁷ vPvB = Very persistent and very bio accumulative. Substances with PBT- and vPvB-properties are defined through criteria in Annex XIII to the REACH regulation.

⁸ The latest version of the Candidate List: <https://echa.europa.eu/en/candidate-list-table>

⁹ Not intentionally added means that substances shall not have been intentionally added to the raw material or product during any stage of the manufacturing process.

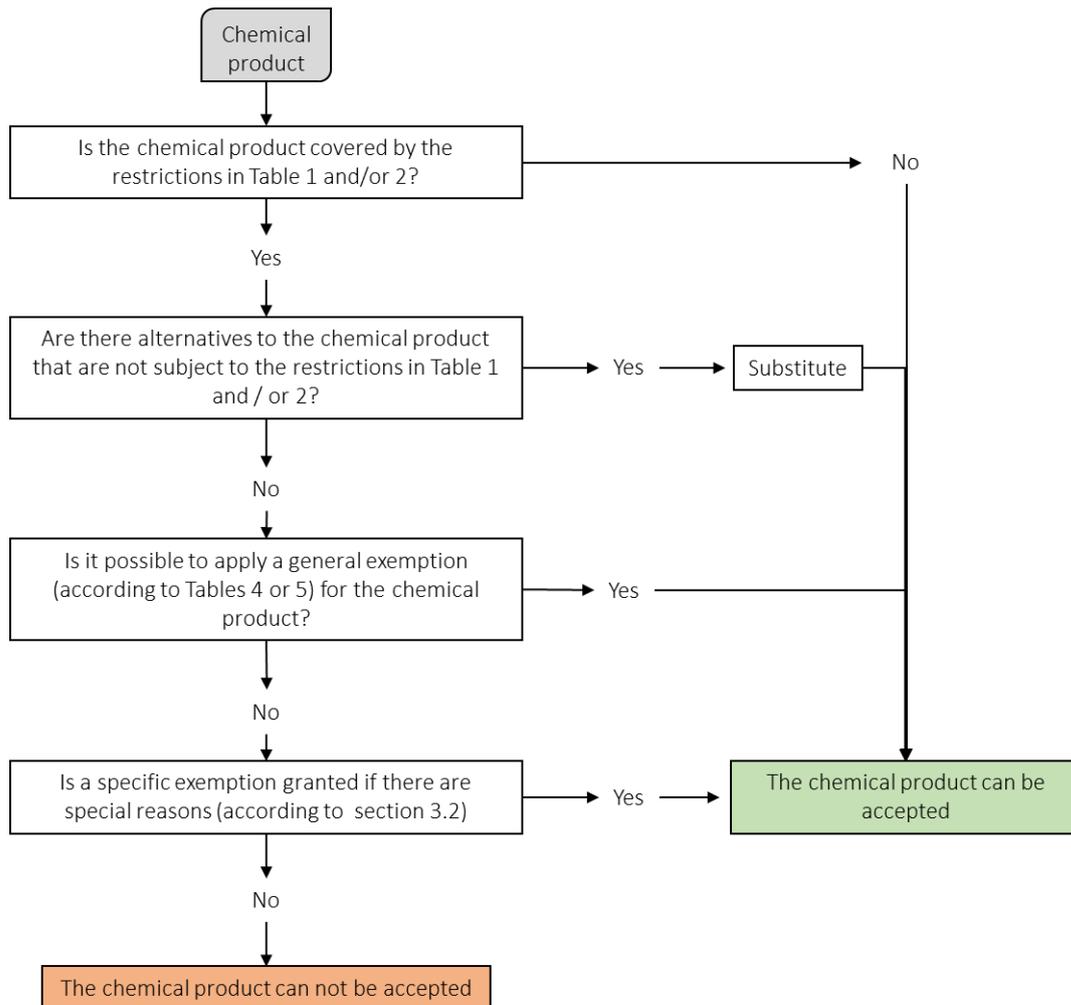
¹⁰ The GWP-factor for a substance is its Global Warming Potential. See GWP-values according to the latest IPCC-report, https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf (appendix 8.A), or equivalent.

¹¹ Especially pointed out because of its dangerous attributes. See Table 6 in the criteria document for the substance's CAS number as well as the reasons why the substance is identified as undesirable.

¹² Exposure to these substances in combination with noise pollution increases the risk of hearing damage. See the Swedish Work Environment Authority's provisions (AFS) on Occupational Exposure Limit Values.

¹³ The presence of toluene and styrene should be avoided if possible but can be accepted in function-critical cases, exemptions need not be sought.

The following flowchart shows how the criteria document shall be applied to chemical products and how to decide whether a chemical product can or cannot be accepted, based in its content/properties.



2.2 Articles

Table 3 shows **restrictions** on substances/groups of substances in articles, based on properties that may cause serious health and environmental effects.

Note that the concentration limit of 0.1 % shall be calculated for each individual article according to REACH (see Section 5 below).

Table 3. Restrictions on substances/groups of substances in articles.¹⁴

Substances with CMR-properties ¹⁵ in category 1A or 1B according to the CLP regulation (EC regulation No 1272/2008) shall not be present > 0.1%
Substances with PBT-properties ¹⁶ shall not be present > 0.1%
Substances with vPvB-properties ¹⁷ shall not be present > 0.1%
Substances on the Candidate List ¹⁸ shall not be present > 0.1%
Substances with a GWP-factor ¹⁹ above 2000 (calculated over 100 years) should not be intentionally added ²⁰
Ozone-depleting substances ²¹ should not be intentionally added
Substances specifically identified by the defence sector ²² - should not be intentionally added <ul style="list-style-type: none"> • Lead and its compounds/salts • Cadmium and its compounds/salts • Mercury and its compounds/salts • Pentabromodiphenyl ether (Penta-BDE) • Polybrominated biphenyls (PBBs) • Polybrominated diphenyl ethers (PBDE) • Propylparaben and butylparaben • Bisphenol F and S (in free form)

¹⁴ In cases where EU legislation specifies a lower restriction limit than 0.1 % in the article (or prohibits the use), the legislative restriction shall apply.

¹⁵ CMR = Carcinogenic, mutagenic (may cause heritable genetic defects) and/or toxic to reproduction (may impair fertility or harm the embryo/foetus). Example of such substances can be found in the Classification List Annex VI, table 3.1 and 3.2 in CLP (EC) No 1272/2008, which contains harmonised and binding classification and labelling for substances and groups of substances.

¹⁶ PBT = Persistent (low degradability), bio accumulative (potential to accumulate in living organisms) and toxic (poisonous).

¹⁷ vPvB = Very persistent and very bio accumulative. Substances with PBT- and vPvB-properties are defined through criteria in Annex XIII to the REACH regulation.

¹⁸ The latest version of the Candidate List: <http://echa.europa.eu/uk/candidate-list-table>

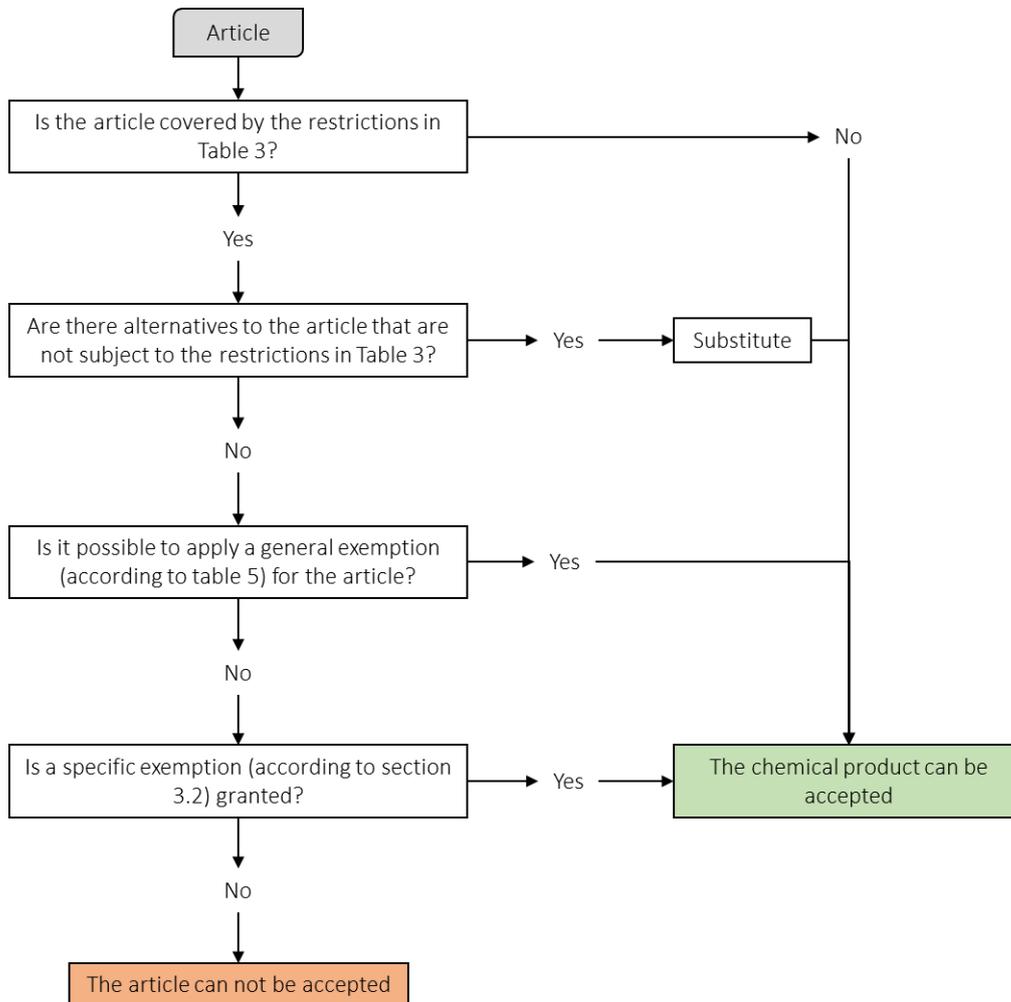
¹⁹ The GWP-factor for a substance is its Global Warming Potential. See GWP-values according to the latest IPCC-report, https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf (appendix 8.A), or equivalent

²⁰ Not intentionally added, means that substances shall not have been intentionally added to the raw material or product during any stage of the manufacturing process. The definition of intentionally added also includes substances from recycled material

²¹ Substances that may endanger the structure or functioning of the stratospheric ozone layer, i.e. fulfils classification criteria H420 (according to CLP (EC) No 1272/2008).

²² Especially pointed out because of its dangerous attributes. See Table 6 in the criteria document for the substance's CAS number as well as the reasons why the substance is identified as undesirable.

The following flowchart shows how the criteria shall apply to articles and how it is determined whether an article can be accepted or not accepted.



3 Exemptions from the criteria document

3.1 General exemptions for certain chemical product groups and substances

The products and substances that generally are accepted, even though they do not meet the criteria are presented in table 4 and table 5.

It is compulsory to provide information regarding substances subjected to general exemptions. The obligation to provide information entails that the defence sector’s authorities shall receive information, if general exemptions are applied, regarding the substance or product group in question, as well as in which article or chemical product the substance is included.

Note that substitution always shall be considered before general exemptions are applied.

Table 4. Accepted exemptions for certain product groups.

Chemical products	Exemptions for use as	Grounds for exemption
Zinc phosphate primer classified as H410	Replacement for chromates in primers.	The risk for the environment will be lower than when using chromates.
Zinc-rich paint classified as H410	Corrosion protection on steel when the zinc-rich paint is included in a colour system and when repairing galvanized constructions.	The environmental impact is considered to be limited. Zinc rich paint has good corrosion protective qualities in combination with very little zinc leakage due to additional layers in the paint system. Very small amounts are used when repairing with zinc-rich paint.
Allergenic products classified as H317 and/or H334 which are handled in accordance with AFS 2011:19 § 37b-g. ²³	Foam sealant, moulding component, sealant, primer, paint, lacquer and adhesives.	The use is regulated by The Swedish Work Environment Authority's provision 2011:19 on occupational health and safety risks (re-written and altered in 2014:43). The risk of health effects is small when using these products, if the regulations are followed.
Products in the Swedish Armed Forces' Product catalogue – Fuels, lubricant and associated products (CD PRKAT Drivmedel M7789-000183 Swedish edition alternatively M7789-000193 English edition). ²⁴	Fuels (i.e. lubricants, hydraulic fluids, brake fluids, antifreeze agents) in the materiel system (vehicles, ships, aircrafts etc.) of the Swedish Armed Forces and the Swedish Defence Material Administration.	The products in the catalogue are evaluated and the management is made clear. A limited assortment reduces the environment impact. New products in the Product catalogue shall be evaluated according to the criteria document.

²³ Exemptions are not permitted for other criteria in table 1.

²⁴ <http://www.fmv.se/en/Our-activities/Fuels-lubricant-and-associated-products1/>

Table 5. Exemptions accepted for certain substances in chemical products or in articles.

Name of the substance	CAS-number	Reasons for limitation ²⁵	Accepted applications
Arsenic and its compounds	Several, e.g. 7440-38-2	May cause cancer, H350 Dangerous for the environment with long-term effects, H410 Authorization List Substance Candidate List Substance	<ul style="list-style-type: none"> Doped semi-conductors in electronics. Brass and other copper-based alloys. NB! Sunset date in accordance with Annex XIV to REACH. ²⁶
Beryllium (metal)	7440-41-7	May cause cancer, H350i	Beryllium in copper alloys.
Beryllium oxide	1304-56-9	May cause cancer, H350i	Electrical components that are encapsulated and specifically marked.
Lead (metal)	7439-92-1	Substance specifically identified by the defence sector. Toxic for reproduction, H360FD May cause cancer, H350	<ul style="list-style-type: none"> Diving weights Ballast Small calibre ammunition incl. pellets. Radiation protection equipment Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive. Batteries where lead-free alternatives are lacking. Lead in solder for soft soldering Brass and aluminium alloys, where alternatives containing <0.1 % lead are lacking.
Lead azide, picrate, styphnate, etc.	Several	Toxic for reproduction, H360Df Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> Ignition in detonators etc., where alternatives are lacking.
Lead oxides	Several	Substance specifically identified by the defence sector. Toxic for reproduction, H360Df May cause cancer, H350 Candidate List Substance	<ul style="list-style-type: none"> Propellant in medium calibre ammunition (>20 mm). Additive in rocket engine propellants. Ignition caps Electrolytic cells
Boric acid	10043-35-3, 11113-50-1	Toxic for reproduction, H360FD Candidate List Substance	<ul style="list-style-type: none"> Electrolytic cells.

²⁵ The column indicates a selection of negative attributes of the substance or substances in the group. Not all attributes apply to all substances in the group.

²⁶ Substances in Annex XIV of REACH are allowed if a permit from the European Commission has been granted (alternatively that the application for a permit has been submitted to the ECHA) for the proper use.

Name of the substance	CAS-number	Reasons for limitation ²⁵	Accepted applications
Halons eg. halon-1211, halon- 1301	Several	Ozone-depleting H420, GWP > 2000	<ul style="list-style-type: none"> Commission Regulation (EU) No 744/2010 applies for halons. Exemptions apply for use of halons that cannot be replaced by another substance or new technology.
1,1,1,3,3,3Hexafluoropropan (HFC 236fa, DeuGenN)	690-31-1	GWP > 2000	<ul style="list-style-type: none"> Fire extinguishing equipment in combat vehicles.
Hexogen	121-82-4	Causes damage to organs, H370	<ul style="list-style-type: none"> Gunpowder
HFC (Hydro fluorocarbons) in the form of: R404a, R410a, R417a och R507	Several	GWP > 2000	<ul style="list-style-type: none"> Refilling of existing equipment
Cadmium and its compounds	Several, e.g. 7440-43-9	Substance specifically identified by the defence sector. May cause cancer, H350 Toxic for reproduction, H360Df Candidate List Substance	<ul style="list-style-type: none"> Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive. Use in systems critical to safety and in applications/components critical to function.
Chromium (VI) compounds	Several, e.g. 11118-57-3, 1333-82-0, 7789-06-2	May cause cancer, H350 May cause genetic defects, H340 Toxic for reproduction, H360FD May cause an allergic skin reaction, H317 Dangerous for the environment with long-term effects, H410 Authorization List Substance and Candidate List Substance	<ul style="list-style-type: none"> Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive. Sealant and surface layer on aluminium and magnesium. NB! Sunset date in accordance with Annex XIV to REACH.
Mercury (metal)	7439-97-6	Substance specifically identified by the defence sector. Dangerous for the environment with long-term effects, H410 Toxic for reproduction, H360	<ul style="list-style-type: none"> Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive. Sources of light
Polybrominated biphenyls (PBB)	Several, e.g. 59536-65-1	Persistent, PBT and vPvB. Candidate List Substance	<ul style="list-style-type: none"> Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive.

Name of the substance	CAS-number	Reasons for limitation ²⁵	Accepted applications
Polybrominated diphenyl ethers (PBDE)	Several	Persistent, PBT and vPvB Candidate List Substance	<ul style="list-style-type: none"> Electrical and electronic equipment that fulfil the requirements of the RoHS directive. Electrical and electronic equipment that is not within the scope of the RoHS directive.
Sulphur hexafluoride	2551-62-4	GWP > 2000	<ul style="list-style-type: none"> Gas insulated mid-voltage switchgear and control equipment within electricity transition lines (≤ 52 kV). Observe that exemptions are only applied to replacement of current switchgear or refilling of gas. As insulating gas in high voltage equipment included in defence material.

3.2 Specific exemptions for certain product groups and substances

If a general exemption is not listed in table 4 or table 5 there is a possibility to apply for a specific exemption for use of a chemical product, or for a substance contained in an article or a chemical product provided that there are extraordinary reasons and that an acceptable substitute is not available. Examples of extraordinary reasons are e.g. the substance is needed to achieve a critical function or the nature of the work requires the use of this substance.

All details about the process for application for specific exemptions are regulated separately within each present agreement or according to other instructions from the relevant authority. In case a specific exemption is rejected by the relevant authority within the defence sector, this entails that the chemical substance or the chemical product must not be used in the specific case.

4 Example of substances covered by the restrictions

Table 6 contains examples of substances not accepted according to criteria in Section 2 as well as the reasons as to why the substance shall be avoided. Examples of uses within the defence sector where these substances may be present are also given in the table.

Exemptions from these restrictions have been granted for certain applications in the defence sector. If such exemptions exist, they are specified in the far right-hand column of the table.

Note that this is not an exhaustive compilation, as the table is intended as a guidance and includes examples of substances relevant for the defence sector.

Classifications given in the table are harmonised within the EU and are given in Annex VI in CLP. In cases where the substance has no harmonised classification, the most commonly reported classifications in the ECHA C&L inventory database are specified. Note that the complete

classification of the substances is usually not specified, but only the classification declaring why the substance is restricted in relation to the criteria given in Section 2.

Table 6. Examples of substances covered by restrictions in Section 2.

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
Acrylamide (monomer)	79-06-1	May cause cancer, H350 May cause genetic defects, H340 May cause an allergic skin reaction, H317 Candidate List Substance	<ul style="list-style-type: none"> Flocculation agent for water purification. Sealant. 	
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffin's)	85535-84-8	Dangerous for the environment with long- term effects, H410 Hard to degrade, PBT and vPvB Candidate List Substance	<ul style="list-style-type: none"> Flame retardant and plasticiser in plastic and rubber industry. 	
Anthracene	120-12-7	Persistent, PBT Candidate List Substance	<ul style="list-style-type: none"> Signal smoke 	
Arsenic and its compounds	Several, e.g. 1303-28-2, 1327-53-3	May cause cancer, H350 Dangerous for the environment with long- term effects, H410 Authorization List Substance and Candidate List Substance	<ul style="list-style-type: none"> Electronics Surface treatment Pressure-impregnated wood. Arsenic is used in certain alloys. Among other things in ammunition. 	Yes (table 5)
Asbestos , several eg. Amosite, Antophyllite, Crocidolite, Chrysotile	Several, e.g. 12172-73-5, 77536-67-5, 12001-28-4, 12001-29-5	May cause cancer, H350	<ul style="list-style-type: none"> Brake linings Building material Thermal insulation Carpets Textile products Asbestos cement products Filters Gaskets, sealings Glue, sealants, fix, paint 	
Benzene	71-43-2	May cause cancer, H350 May cause genetic defects, H340	<ul style="list-style-type: none"> Solvent Gasoline component 	Yes (table 4)
Beryllium and its compounds	Several	May cause cancer, H350i	<ul style="list-style-type: none"> Electronics, radar 	Yes (table 5)

²⁷ The column indicates a selection of negative attributes of the substance or substances in the group. Not all attributes apply to all substances in the group.

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
Bisphenols eg. Bisphenol A Bisphenol F Bisphenol S	1980-05-07, 620-92-8, 1980-09-01	Substance specifically identified by the defence sector. Suspected Endocrine disruptive Chemical Candidate List Substance	<ul style="list-style-type: none"> Epoxy plastic component 	May occur if chemically bound to the material in the article
Lead and its compounds.	Several	Substance specifically identified by the defence sector Toxic for reproduction, H360Df May cause cancer, H350 Candidate List Substance	<ul style="list-style-type: none"> Batteries Electrical and electronic products Ammunition Weights Surface treatment Transport fuels Lubricants 	Yes (table 5)
Lead in colour pigments , eg. lead chromate molybdate sulphate (C.I. Pigment Red 104) Lead chromate sulphate (C.I. Pigment Yellow 34)	Several, e.g. 12656-85-8, 1344-37-2	May cause cancer, H350 Toxic for reproduction, H360Df Dangerous for the environment with long- term effects, H410 Authorization List Substance Candidate List Substance	<ul style="list-style-type: none"> Pigment in paint, especially for anticorrosion protection Military when marking equipment 	
Boron sodium oxide hydrate	12267-73-1	Toxic for reproduction, H360FD Candidate List Substance	<ul style="list-style-type: none"> Used as wood preservative, flame retardant etc. 	
Boric acid	10043-35-3, 11113-50-1	Toxic for reproduction, H360FD Candidate List Substance	<ul style="list-style-type: none"> Raw materials for glass and ceramics. In photo chemicals. Agent for wood protection. Fertilisation Disinfection Flame protection Metal treatment Adhesives 	Yes (table 5)
Boron oxide	1303-86-2	Toxic for reproduction, H360FD Candidate List Substance	<ul style="list-style-type: none"> Additives in fiberglass. Raw material for the manufacture of glass, glassware and ceramics Metal production 	

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
Brominated flame retardants Deca/Octa/Penta-BDE HBCDD (stereoisomers) Polybrominated biphenyls (PBB) Pentabromo-diphenyl ether (PBDE)	Several, e.g. 1163-19-5, 25637-99-4, 134237-50-6, 32536-52-0	Toxic for reproduction, H360 Persistent, PBT and vPvB Authorization List Substance Candidate List Substance	<ul style="list-style-type: none"> Flame retardants 	Yes (table 5)
CFC och HCFC (chlorofluorocarbons)	Several	Ozone-depleting H420 GWP > 2000	<ul style="list-style-type: none"> Refrigerant Propellants. 	
Dimethylacetamide (DMAC)	127-19-5	Toxic for reproduction, H360D Candidate List Substance	<ul style="list-style-type: none"> Solvent Used in repairing car glasses. 	
2,4-Dinitrotoluene	121-14-2	May cause cancer, H350 Dangerous for the environment with long-term effects, H410 Authorization List Substance and Candidate List Substance	<ul style="list-style-type: none"> Included as subject or compound in explosives 	
Phenolphthalein	77-09-8	May cause cancer, H350 Candidate List Substance	<ul style="list-style-type: none"> Laboratory chemical Indicator in chemical analyses. 	
Phthalates DEHP DBP Diisobutyl phthalate BBP	Several, e.g. 117-81-7, 117-82-8, 84-69-5, 85-68-7	Toxic for reproduction, H360FD. Authorization List Substance, Candidate List Substance Suspected Endocrine disruptive Chemical	<ul style="list-style-type: none"> Plasticisers in plastic Additive in colour and glue Fillers Explosives 	
Gamma-butyrolactone (GBL)	96-48-0	Substance specifically identified by the defence sector. (Classified as narcotic)	<ul style="list-style-type: none"> Solvent 	
Gamma-hydroxybutyrat (GHB)	591-81-1	Substance specifically identified by the defence sector. (Classified as narcotic)	<ul style="list-style-type: none"> Solvent 	
Halons eg. halon-1211, halon-1301	Several	Ozone-depleting H420 GWP > 2000	<ul style="list-style-type: none"> Fire extinguishing agents 	Yes (table 5)

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
1,1,1,3,3,3-Hexafluoro-propane (HFC 236fa, DeugenN)	920-66-1	GWP > 2000	<ul style="list-style-type: none"> • Fire extinguishing agents, • Refrigerant. 	Yes (table 5)
HFC (fluorocarbons) R143a, R404a, R410a, R417a, R507	Several, e.g. 420-46-2	GWP > 2000	<ul style="list-style-type: none"> • Refrigerants • Propellants • Fire extinguishers 	Yes (table 5)
Hydrazine	302-01-2, 7803-57-8, 10217-52-4	May cause cancer, H350 Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> • Propellants • Corrosion inhibitor in hot and cold-water systems. 	
Cadmium and its compounds	Several	Substance specifically identified by the defence sector. May cause cancer, H350 Toxic for reproduction, H360	<ul style="list-style-type: none"> • Batteries • Electrical and electronic products • Alloys • Surface treatments 	Yes (table 5)
Cobalt salts	Several	May cause cancer, H350i	<ul style="list-style-type: none"> • Humidity indicator in silica gel. 	
Cobalt dichloride	7646-79-9	Toxic for reproduction, H360F Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> • Corrosion protection 	
Carbon tetrachloride	56-23-5	Ozone-depleting, H420	<ul style="list-style-type: none"> • Solvent 	
Creosote	8001-58-9	May cause cancer, H350	<ul style="list-style-type: none"> • In pressure-treated (preserved) wood. 	
Chromium (VI) compounds Potassium dichromate -Chromium trioxide Sodium dichromate Sodium chromate Strontium-chromate (VI) Zinc chromate(VI)-hydroxide	Several, e.g. 7778-50-9, 1333-82-0, 10588-01-9, 7789-12-0, 7775-11-0, 7789-06-2, 49663-84-5	May cause cancer, H350 May cause genetic defects, H340 Toxic for reproduction, H360FD May cause an allergic skin reaction, H317 Dangerous for the environment with long-term effects, H410 Authorization List Substance Candidate List Substance	<ul style="list-style-type: none"> • Anti-corrosive pigment in paints and lacquers. • coated sheet metal and other articles of metal. • Pigmentation in paints and inks. • Surface treatment of steel and aluminium in e.g. the aviation industry. • Anti-corrosives 	Yes (table 5)

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
			<ul style="list-style-type: none"> • Pressure-impregnated wood. • Electronical products 	
Mercury and its compounds	Several	Substances specifically identified by the defence sector. Dangerous for the environment with long-term effects, H410 Toxic for reproduction, H360	<ul style="list-style-type: none"> • Electrical and electronic products. • Batteries • Alloys 	Yes (table 5)
1-Methyl-2-pyrrolidone (NMP)	872-50-4	Toxic for reproduction, H360D Candidate List Substance	<ul style="list-style-type: none"> • Solvent in paints, lacquers • Detergents • Car care products • Degreasers • Paint removal • Anti-friction lacquers 	
Methylene chloride (dichloromethane)	1975-09-02	Substances specifically identified by the defence sector. May cause cancer, H351	<ul style="list-style-type: none"> • Solvent 	
Sodium borates Disodium tetraborate Tetraboron disodium heptaoxide, hydrate	Several, e.g. 1330-43-4, 12267-73-1	Toxic for reproduction, H360FD Candidate List Substance	<ul style="list-style-type: none"> • Raw material for glass and ceramics. • Wood protection • Fertilisation • Disinfection • Flame protection • Cleaning products • Metal treatment • Photo chemicals • Adhesives 	
Nonylphenol ethoxylates	Several, e.g. 9016-45-9, 68412-54-4, 26027-38-3	Persistent, PBT and vPvB Dangerous for the environment with long-term effects, H410. Suspected Endocrine disruptive Chemical.	<ul style="list-style-type: none"> • Detergents • Washing agents 	

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
4-octylphenol (4-(1,1,3,3-tetramethyl-butyl) phenol)	140-66-9	Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> • Vulcanization agent • regulator of viscosity and complexing agent at manufacturing of polymers and ethoxylates, e.g. adhesive and sealant. • Paints and lacquers • Coatings 	
Parabens Propyl paraben Butyl paraben	94-13-3, 94-26-8	Suspected Endocrine disruptive Chemical	<ul style="list-style-type: none"> • Preservative 	
Pentalead tetraoxide sulphate, Lead sulphate, tetrabasic	Several, e.g. 12065-90-6	Toxic for reproduction, H360D Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> • Stabilizers for PVC • Plastic products 	
Perfluorocarbons	Several	Ozone-depleting H420, GWP >2000	<ul style="list-style-type: none"> • Fire extinguishing agents 	
Perfluoro octane sulfonates and its derivatives (PFOS) C8F17SO2X (X=OH, metal salt (O-M+), halide, amide, and other derivatives including polymers)	Several	Persistent, PBT. Suspected Endocrine disruptive Chemical	<ul style="list-style-type: none"> • Fire extinguishing agents. • Impregnation of e.g. textiles, paper and leather, for dirt protection. 	
Perfluorooctanoic acid (PFOA)	335-67-1	Toxic for reproduction, H360D May cause harm to breast-fed children, H362 Persistent, PBT Candidate List Substance	<ul style="list-style-type: none"> • Fire extinguishing agent, • Impregnation of textiles • Floor wax • Paint 	
Polychlorinated biphenyls (PCB)	Several, e.g. 1336-36-3	Persistent, PBT och vPvB	<ul style="list-style-type: none"> • Dielectric medium in capacitors • Transformers. • In sealants. 	
Sulphur hexafluoride	2551-62-4	GWP > 2000	<ul style="list-style-type: none"> • Insulating medium in high voltage equipment, switches, and transformers. 	Yes (table 5)

Substance/ Group of substances	CAS-number	Reasons for limitation ²⁷	Examples of use	Exemptions for certain applications
Tin Organic Compounds (TBT)	Several, e.g. 56-35-9	Dangerous for the environment with long-term effects, H410. Suspected Endocrine disruptive Chemical and Candidate List Substance.	<ul style="list-style-type: none"> Boat paint for the hull Preservatives in imported goods such as textiles, paper, leather, rubber and polymer materials 	
Triethyl arsenate	15606-95-8	May cause cancer, H350 Dangerous for the environment with long-term effects, H410 Candidate List Substance	<ul style="list-style-type: none"> Electronics 	
1,1,2-Trifluoro-trichloroethane (Freon TF)	76-13-1	Ozone-depleting, H420 GWP > 2000	<ul style="list-style-type: none"> Solvent 	
1,1,1-Trichloroethane	71-55-6	Ozone-depleting, H420	<ul style="list-style-type: none"> Solvent 	
Tri(2-chloroethyl) phosphate	115-96-8	Toxic for reproduction, H360F Authorization List Substance	<ul style="list-style-type: none"> Flame retardant in plastic, paint, lacquer and adhesives. Part of building products, furniture and textiles. 	
Trichloroethylene	79-01-6	May cause cancer, H350 Authorization List Substance Candidate List Substance	<ul style="list-style-type: none"> Degreasing agent for metal Solvent. (Prohibited to use the substance occupationally in Sweden, SFS 1998:944) 	
Trixylyl phosphate (TXP)	25155-23-1	Toxic for reproduction, H360F Candidate List Substance	<ul style="list-style-type: none"> May be present in lubricants and transmission agents. 	

Datum	Diarienummer	Ärendetyp
2019-10-28	19FMV3315-5:1	1.8
	Dokumentnummer	Sida
	n/a	20(23)

5 Examples of relevant legislation

5.1 Reach (regulation (EC) no 1907/2006)¹

REACH is a regulation that came into force across the EU in June 2007, but requirements are being introduced gradually. The regulation deals with registration, evaluation, authorisation and restriction of chemical substances. The requirements on users, manufacturers and importers of chemical products in REACH have no counterpart in previous legislation.

REACH distinguishes between substances, mixtures and articles. REACH primarily regulates substances and mixtures, i.e. chemical products, but some new requirements also apply to the content of articles.

An **article** is defined (REACH article 3.3) as an object that during production is given a special shape, surface or design, which determines its function to a greater degree than its chemical composition. A more thorough assessment of an object's function and properties may be required to establish whether an object fulfils the definition of article under REACH. The European Chemicals Agency (ECHA) has published guidance on requirements for substances in articles²⁸, which, among other things gives guidance on what should be seen as an article and assists suppliers of articles to establish which requirements that must be fulfilled for production, import and supply of articles.

Ammunition and other explosive items are difficult to classify as either an article or chemical product in accordance with REACH. As support concerning the classification of ammunition and explosive items, the European Defence Agency (EDA) have produced the document "EDA Member States Common Position on Ammunition Classification under Reach"²⁹.

One example of an article is the rubber handle of a bicycle. The complete bicycle is a complex article, where several articles (e.g. the rubber handles, the tyres, and the frame) has been assembled to achieve a desired form, function and design. Articles and complex articles that can occur in the defence sector are a wide range of equipment such as ships, camouflage net, armature etc.

REACH has introduced provisions that information on certain articles, which contains substances of very high concern, shall be communicated to professional users (article 33 in REACH). The provision applies if a substance has been identified as particularly hazardous (also known as a SVHC, Substance of Very High Concern) on the Candidate List³⁰, and the concentration in the article is above 0,1 % weight by weight. The supplier of the article shall then provide the recipient of the article with enough information, available to the supplier, to allow safe use of the article including, as minimum, the name of that substance. According to a court order commissioned in 2015 by the EU court of justice, these obligations are applied to sub composite articles if they remain in their specific shape, surface or design, or if they do not become waste. This regulatory

²⁸ Guidance on requirements for substances in articles,

https://echa.europa.eu/documents/10162/23036412/nutshell_guidance_articles2_en.pdf/1e13dcce-b46b-43cb-904e6c4675613e9d

²⁹ EDA Member States Common Position on Ammunition Classification under Reach: <https://www.eda.europa.eu/docs/default-source/brochures/eda-member-states-common-position-on-ammunition-classification-under-reach---adopted.pdf>

³⁰ Substances on the Candidate List as well as examples of applications,

<http://www.kemi.se/files/0b7a5a27e5b840d29a37b24e33c89bc5/amnen-pa-kandidatforteckningen-jan-2017.pdf>

Datum	Diarienummer	Ärendetyp
2019-10-28	19FMV3315-5:1	1.8
	Dokumentnummer	Sida
	n/a	21(23)

interpretation was already applied in Sweden. The content of a specific substance must be calculated as the ratio between the weight of the substance in relation to the weight of the individual separable parts of the complex article.

For a complex article that consists of several parts, this means that the basis for calculating must be the weight of the individual part that contains the substance, not the total weight of the complex article.

When a substance on the Candidate List is listed in Annex XIV³¹ in REACH it means that, from that specific date, the substance is not allowed to be used or placed on the market without authorisation from the EU Commission. Annex XIV specifies the sunset date as of when the substance is not allowed to be used without authorisation, and a deadline for application for authorisation from the ECHA. Substances on Annex XIV remain on the Candidate List and requirement on information applies.

5.2 CLP (regulation (EC) no 1272/2008)²

CLP is a regulation that came into force in January 2009 across the EU. CLP introduces new rules on how to classify, label and package chemical substances and chemical products (substances or mixtures).

All chemicals placed on the European market must be classified with respects to their physical, health and environmental hazards. Information of the hazardous properties of chemical substances and how to protect oneself and the environment shall be provided by the labelling on the package and in a safety data sheet.

The labelling must comply with the classification of the product and include, among other things, hazard pictograms, hazard statements and protective statements. Since June 1, 2019, all older labelling (according to KIFS 2005: 7) of chemical products must be replaced with labelling according to CLP, even within their own operations.

5.3 Chemical Hazards in the Working Environment (AFS 2011:19)

The Swedish Work Environment Authority's regulations on chemical work environment risks (2011:19) specify the requirements for systematic work environment work for workplaces with chemical risks. This includes the obligations to investigate and assess risks, take risk mitigation measures, plan accident preparedness, produce documents and mark containers and pipelines. The purpose of the regulation is to prevent ill-health and accidents caused by chemical risk sources. The regulation contains an attachment with substances that may not be treated (Group-A), and substances that may not be handled without permit from the Swedish Work Environment Authority (Group-B). It is of major concern that substances in Group B are avoided in the activities of the defense sector. The work environment regulations of hygiene limit values (AFS 2018: 1) must also be considered in the systematic work environment work.

³¹ Substances in Annex XIV of REACH: <https://www.echa.europa.eu/sv/addressing-chemicals-of-concern/authorisation/recommendation-for-inclusion-in-the-authorisation-list/authorisation-list>

Datum	Diarienummer	Ärendetyp
2019-10-28	19FMV3315-5:1	1.8
	Dokumentnummer	Sida
	n/a	22(23)

5.4 The Chemical Products (Handling, Import and Export Prohibitions) Ordinance (SFS 1998:944)³²

This Swedish ordinance contains specific prohibitions or other on the handling of:

1. Two-component epoxy adhesives/resins containing bisphenol A or bisphenol A-diglycidyl ether,
2. Cadmium
3. Chlorinated solvents,
4. Mercury,
5. Cadmium and mercury in batteries,
6. Heavy metals in packaging
7. Ammunition that contains lead
8. Cleaning agents that contains phosphates,
9. Certain other chemical products and articles dangerous to health or the environment

5.5 RoHS 2 (EU directive 2011/65/EU)³³

The RoHS Directive aims to replace and limit hazardous chemical substances in electrical and electronic equipment to reduce the risks to human health and the environment. The RoHS directive is also intended to promote profitable and sustainable material recycling from electronic waste. The RoHS directive began to apply in 2006 and has since been implemented step by step for different product categories until July 22, 2019. The number of substances limited by the RoHS directive has been increased and as of July 22, 2019, the presence of mercury, cadmium, lead, hexavalent chromium, two fire protection agents (PBB and PBDE) and four phthalates (DEHP, BBP, DBP and DIBP) in electrical and electronic equipment are also regulated. Please note that there are chemical requirements for electronics in several other regulations and that these requirements apply in parallel with the requirements of the RoHS directive.

Swedish applications are introduced in "Regulation (2012: 861) on hazardous substances in electrical and electronic equipment" and in the Swedish Chemicals Agency's regulations (KIFS 2017: 7) on chemical products and biotechnological organisms.

³² https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-1998944-om-forbud-mm-i-vissa-fall_sfs-1998-944

³³ RoHS 2 (Restriction of Hazardous Substances in Electrical and Electronic Equipment)

6 Change log

Only changes affecting the criteria and application of the requirements or are of other relevance are listed below.

Section or table	Main change	Reason for the change	Affects the criteria	Change introduced
Table 2 och 3	Parabens, as well as bisphenol S and F have been added as specially identified substances.	Suspected endocrine disrupting substances are more clearly identified.	Yes	2019
Table 3	Decabromo diphenyl ether has been removed from the list of specially identified substances.	Candidate List Substance	Yes	2019
Table 3	PBDE has been added as a specially identified substance.	Listed in the RoHS Directive, Annex II.	Yes	2019
Table 4	Extended general exemption for allergy-causing chemical products.	Increased tolerance for products that are handled in a safe manner.	Yes	2019
Table 5	Extended exemption for lead in soft soldering.	Too few available alternatives to lead in soft soldering.	Yes	2019
Table 6	Examples of substances have been updated.	A more relevant list.	No	2019
Table 1 and throughout in text	The concept of avoidance has been changed to shall not be present.	Increased clarity.	No	2019
Table 2 (footnote 13)	The exemption requirement removed for toluene and styrene.	Reduced administration.	Yes	2019