



# Standard Manual for Management of Chemical Substances Contained in Parts and Materials

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Sharp Corporation

## Revision History

No.	Revision Date	Revised Content	Details
1.0	Dec. 2019	First edition	
2.0	Feb. 2022	Chapter 2 Revamped substance list	<p>Added</p> <ul style="list-style-type: none"> <li>• <b>Banned substances</b> <ul style="list-style-type: none"> <li>- Pentachlorothiophenol (PCTP)</li> </ul> </li> <li>• <b>Substances banned depending on the application</b> <ul style="list-style-type: none"> <li>- Isopropylphenyl phosphate (PIP(3:1))</li> <li>- Hexachlorobutadiene (HCBD)</li> <li>- 2,4,6-tris(tert-butyl)phenol (2,4,6-TTBP)</li> <li>- 4,4'-isopropylidenediphenol (Bisphenol A)</li> <li>- 4,4'-sulfonyldiphenol (Bisphenol S)</li> <li>- Halogenated flame retardant</li> </ul> </li> </ul>
		Chapter 2 Revamped criteria (values)	<ul style="list-style-type: none"> <li>▪ Change in Check point (Criteria) <ul style="list-style-type: none"> <li>- Perfluorooctane sulfonate (PFOS)</li> <li>- Tris (2-chloroethyl) phosphate (TCEP)</li> <li>- Tris (1,3-dichloro-2-propyl) phosphate (TDCPP)</li> </ul> </li> </ul> <p>Update of EU RoHS directive exempted applications</p>

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**This standard manual is issued for external use as the simplified version of the “Survey Manual for Chemical Substances Contained in Parts and Materials-Ver.12.0” and its “Supplementary Volume Ver.12.0” for survey of chemical substances contained in parts and materials that are used by the Sharp Group.**

# Chapter 1: Survey of Chemical Substances Contained in Parts and Materials

## 1. Purpose

The Sharp Group (hereinafter referred to as “Sharp”) promotes green procurement from suppliers who are constructively engaged in environmental preservation activities to ensure user safety and to protect the environment at the time a product is finally disposed of.

Green procurement at Sharp encompasses two aspects: an “Environmental Management Evaluation” that evaluates efforts aimed at protecting the environment by the supplier’s organization as a whole, and a “Delivered Goods Evaluation” to assess the reduction in environmental impact of parts and materials purchased from the supplier (including materials, general components, finished and semi-finished products, and indirect materials). The objectives of this standard manual is not only to confirm legal compliance but also to contribute to reduction in environmental impact and to ensure safety of users by disclosing to our supplier’s organizations the criteria and the survey methods for chemical substances contained in products mentioned in the “Delivered Goods Evaluation”.

The Delivered Goods Evaluation consists of two processes: a Report on Chemical Substances Contained in the Product and a Content Survey.

Survey	Description	Remarks
Report on Chemical Substances Contained in the Product	A prescribed document attached to delivery specifications and submitted to Sharp that indicates whether substances banned by Sharp are contained in delivered goods.	Posted on the Sharp Green Procurement website < <a href="https://global.sharp/corporate/eco/supplier/g_procure/">https://global.sharp/corporate/eco/supplier/g_procure/</a> >
Content Survey	Survey done via the Sharp SCOPE procurement portal site on the amounts of chemical substances contained in delivered goods.	Disclosed only to our supplier’s organizations The responding method is explained in the “Survey Manual for Chemical Substances Contained in Parts and Materials”.

## 2. Applicable Scope<sup>1</sup>

This survey applies to all parts and materials purchased new by Sharp. Specifically, it applies to the following items.

- (1) Parts, materials, units incorporated in the product
- (2) Indirect materials used in production and incorporated into the product (solder, oil, grease, tape, marking ink [marker pens], etc.)
- (3) Finished products purchased for sale, optional equipment, supplies, etc.
- (4) Printed matter and accessories (user manuals, cables, remote control units, etc.) enclosed with the product
- (5) Packaging materials enclosing or holding the product

The following parts and materials may contain chemical substances that are subject to this survey. Check thoroughly whether they are present.

- Lubricants, such as grease
- Flame retardants in resin materials
- Polyvinyl chloride, flame retardants, and stabilizers in lead wire insulation
- Special metals (alloys) for lubrication of electrical contacts, etc.
- Additives (plasticizers) in rubber for belts, rollers, bushings, tubing, etc.
- Marking paints for color codes, pigments, etc.

<sup>1</sup> For indirect materials in (2) above and for packaging materials in (5) above, the applicable scope for the Report on Chemical Substances Contained in the Product differs from that of the Content Survey. For details, refer to the “Remarks” column under section “6. (1) List of Documents to Be Submitted”.

### 3. Definition of Terms

Chemical substance	An element or its compound that is formed naturally or can be obtained in any manufacturing process. (JIS Z 7201: 2012)
Mixture	Mixture can be obtained by mixing two or more chemical substances. (JIS Z 7201: 2012) [Note] Examples of mixtures include paint/coating agent, ink, alloy ingot, solder, resin pellet, etc.
Article	Refers to an item with a specific shape, appearance or design that is given during production which substantially determines the functions of the item in final use rather than its chemical composition. (JIS Z 7201: 2012) [Note] Examples of articles include paints, metal plates, gear wheels, integrated circuits, electrical products, transport machineries, etc.
Contain	Refers to a state where a chemical substance is contained in products, parts, materials, and ingredients used in them. Regardless of intentional addition or non-intentional addition (including impurities, residuals/adhesion/contamination, etc. created in the process of manufacturing and transport), it is regarded as “contained” if the content rate of the chemical substance exceeds the Sharp’s reference value (threshold).
Intentional addition	Refers to addition performed in the aim of providing a specific property to parts and materials. For example, hexavalent chromium for rust-proofing, brominated flame retardants to improve fire retardancy of plastic cabinets, etc. are applicable.
Impurities	Refers to materials that are contained in natural materials and cannot technically be removed in the refining process, materials that are created in the synthesis reaction process and cannot technically be removed, and materials that are unintentionally contained in recycled materials.
Homogeneous material	Refers to one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.
Delivery Prohibition Date	Refers to the day on which delivery to Sharp is prohibited <ul style="list-style-type: none"> <li>• Immediately ... immediately prohibition of use.</li> <li>• (Designated date: Day__ Month__ Year__ ) Delivery after the designated date is prohibited.</li> </ul>
RoHS RoHS Directive	Refers to EU RoHS Directives 2011/65/EU and the related amended Directive

#### 4. Sharp Chemical Substance Management Categories

As shown in the table below, chemical substances contained in the parts and materials purchased by Sharp are managed by classifying them into (1) Banned substances, (2) Substances banned depending on the application, and (3) Managed substances.

Chemical substance category	Explanation	Remarks
(1) Banned substances	<p>Substances that cannot be used for any purpose. If contained in a part or material, immediately discontinue and eliminate their use.</p> <p>In principle, Sharp will not purchase parts and materials containing these substances.</p>	<ul style="list-style-type: none"> <li>• <b>Substances whose inclusion in products is currently regulated or is expected to be regulated in the future under laws and regulations and on environmental labels in Japan or overseas.</b></li> </ul>
(2) Substances banned depending on the application	<p>Substances regarded as banned by Sharp depending on the application (excluded applications).</p> <p>In excluded applications, these substances shall be treated as Managed substances.</p>	<ul style="list-style-type: none"> <li>• <b>Substances that Sharp regulates on its own initiative in advance of global trends because it is widely known that their environmental impact is high and alternative substances exist.</b></li> </ul>
(3) Managed substances	<p>Substances for which it is necessary to ascertain whether the specified substance is present, the amount contained, and so on.</p>	<ul style="list-style-type: none"> <li>• <b>Substances for which disclosure of information on their usage status in products is required, or is expected to be required in the future, under laws and regulations and on environmental labels in Japan or overseas.</b></li> <li>• <b>Substances for which customers have requested, or for which there is a possibility of being requested, that their usage status information in products be disclosed.</b></li> <li>• <b>All Sharp-specific survey-targeted chemical substances that do not fall under the category of “Sharp-banned substances” shall be treated as Managed substances.</b></li> </ul>

## 5. Classification of Items Procured by Sharp

### (1) Classification of Items Procured by Sharp

At Sharp, parts and materials used in products are classified from the standpoint of biosafety into “specified items” (A, B, C) and “general items”, as indicated in the table below.

Item		Classification/Definition	Examples of Procured Items
Specified Items	<b>Specified Item A</b> (Items with large social responsibility)	1. Sharp-developed procured item • Procured item developed by Sharp, or that uses chemicals specified by Sharp • Procured item bearing the Sharp brand	Procured items for copiers (toner, developer, ink, etc.), ink ribbon, ink roll, air purifier filter, vacuum cleaner bag, Sharp custom-order product (procured items with Sharp-designated model number), etc.
		2. Procured item in powder, liquid, or gas form • Sharp-developed procured item to which users and other organisms are directly exposed to	Sharp-designated cleaning agent (for air conditioners, washing machines, etc.), base material for composters, etc.
	<b>Specified Item B</b> (Items that come into contact with food or eating utensils, or that use special chemicals)	1. Procured item that has the possibility of coming into direct contact with food or utensils during cooking or storage	Parts for the internal compartments of refrigerators and microwave ovens, etc.
		2. Procured item that has been given functions such as antibacterial, antimold, and insect repellency via chemicals	External parts such as cabinets with antibacterial, antimold, or insect repellent functions
	<b>Specified Item C</b> (Items with which users come into contact for a long period of time)	Procured item that can be expected to enter or attach to the human body; or to which bodily parts other than fingers and hands constantly come into contact during product use	Ear pads on headphones, blood pressure cuff, electric carpet, etc.
	General Items	Procured item other than specified item	Procured items other than the above

## 6. Documents to Be Submitted

### (1) List of Documents to Be Submitted

The table below specifies the documents to be submitted and the format for submission.

Document	Format	Method of Submission	Chemical Substances Targeted in Survey <sup>2</sup>	Remarks
Report on Chemical Substances Contained in the Product	Report on Chemical Substances Contained in the Product <sup>3</sup>	Submitted by attaching to specifications for newly adopted parts and materials	Sharp-banned substances <b>•Banned substances</b> <b>•Substances banned</b> depending on the application ⊕ For Device Groups <sup>4</sup> , add banned substances <sup>5</sup>	Range of applicable packaging materials: <b>•Also covers packaging materials at the time of parts and materials delivery.</b> Also report chemical substances contained in packaging materials under the same criteria. <b>•However, packaging materials that will clearly be disposed of at Sharp bases <sup>6</sup> and for which there is no risk of migration or contamination by targeted substances from the packaging materials into parts or materials are not subject to the survey.</b>
Content Survey	chemSHERPA Article Tool <sup>7</sup>	Upload to SCOPE system <sup>8</sup>	chemSHERPA Managed substances <sup>9</sup> ⊕ For Communication BU and Device Groups, add Sharp-specific survey-targeted chemical substances	Range of applicable packaging materials: <b>•Packaging materials are not subject to the survey at the time of parts or materials delivery.</b> <b>•However, packaging materials cannibalized for use as packing for servicing parts are subject to the survey.</b> Range of applicable indirect materials: <b>•Indirect materials and ancillary members used in the manufacturing process and that do not remain in products/parts are excluded from the survey, (e.g., solvents, detergents, foaming agents, etc.)</b>
Analysis Data of RoHS Target Substances	Actual measurement data (May be substituted by other material, for which RoHS compliance can be confirmed <sup>10</sup> )	Submitted by attaching to specifications for newly adopted parts/materials	The ten substances regulated under RoHS (lead, mercury, cadmium, hexavalent chromium, PBB, PBDE, DEHP, DBP, BBP, DIBP)	—
Composition Table, SDS <sup>11</sup>	Industry standards		—	—
Food Sanitation Act Test Data	Certificate of analysis, etc.		—	—
Safety Evaluation Data	Evaluation data from analysis laboratories, etc.		Refer to “Criteria for Safety Evaluation Data” (p6) in the “(2) Documents to Be Submitted for Each Item” section.	—

<sup>2</sup> Chemical substances subject to the survey may be changed or added depending on trends in regulations and customer requests. We may ask you to survey other substances as well depending on the business unit or base in the Sharp Group.

<sup>3</sup> The Report on Chemical Substances Contained in the Product will be posted on the Sharp Green Procurement website ([https://global.sharp/corporate/eco/supplier/g\\_procure/](https://global.sharp/corporate/eco/supplier/g_procure/)).

<sup>4</sup> Device Group includes Sharp Sensing Technology Corporation (SSTC), Sharp Display Technology Corporation (SDTC), Sharp Semiconductor Innovation Corporation (SSIC) and Sharp Fukuyama Laser Co., Ltd. (SFL).

<sup>5</sup> The banned substances may vary among Product Group, Device Group, and Communication Business Unit.

Commercial Goods Group includes Smart Appliance & Solutions Business BU (SAS), Smart Business Solutions BU (BS), Smart Display Systems BU (SDS), Sharp Energy Solution Corporation (SESJ), Global Brand-Products BU.

<sup>6</sup> “Bases” refers to Sharp plants and service bases in Japan and overseas.

<sup>7</sup> The chemSHERPA Article Tool is available from the chemSHERPA website < <https://chemsherpa.net/english> >.

<sup>8</sup> SCOPE system (<<https://www.scope.sharp.co.jp/>>).

<sup>9</sup> For information on chemSHERPA Managed substances, refer to *Explanation of chemSHERPA Declarable Substances* (posted on <<https://chemsherpa.net/english>>).

<sup>10</sup> Refer to the Sharp Green Procurement website <[https://global.sharp/corporate/eco/supplier/g\\_procure/](https://global.sharp/corporate/eco/supplier/g_procure/)>.

<sup>11</sup> SDS: Safety Data Sheet



## (2) Documents to Be Submitted for Each Item

Information to be submitted for each category of items that Sharp procures is given in the table below. Beyond this table, we may ask you to provide additional information to comply with laws and regulations, and/or industry standards and norms.

(● = Required; ▲ = Submit if possible; — = Not required)

		Specified Items				General Items
		Specified Item A	Specified Item B-1	Specified Item B-2	Specified Item C	
Report on Chemical Substances Contained in the Product		●	●	●	●	●
Content Survey		●	●	●	●	●
Analysis Data of RoHS Target Substances		●	●	●	●	●
Composition Table, SDS <sup>12</sup>		●	—	● <sup>13</sup>	—	—
Food Sanitation Act Test Data		—	●	—	—	—
Safety Evaluation Data <sup>14</sup>	1) Acute toxicity (oral intake)	●	—	—	●	—
	2) Skin irritancy <sup>15</sup>	●	—	—	●	—
	3) Eye/mucous membrane irritancy <sup>16</sup>	●	—	—	●	—
	4) Mutagenicity test (Ames test)	● <sup>17</sup>	—	—	● <sup>18</sup>	—
	5) Mutagenicity test, chromosomal aberration test	▲	—	—	▲	—
	6) Mutagenicity test, micronucleus test	▲	—	—	▲	—

### Criteria for Safety Evaluation Data

Test Item	Hazard Identification Criteria	(Reference) Test Method (OECD test no.) <sup>19</sup>
1) Acute toxicity (oral intake)	Oral: Lethal dose 50% (LD50>2000 mg/kg (Rat))	423, 425
2) Skin irritancy	Primary irritation index (PII ≥ 2)	404
3) Eye/mucous membrane irritancy	Present	405
4) Mutagenicity test (Ames test)	Positive	471
5) Mutagenicity test, chromosomal aberration test	Positive	473
6) Mutagenicity test, micronucleus test	Positive	474

<sup>12</sup> Submit when there is the possibility of exposure.

<sup>13</sup> Submit SDS for antibacterial and antimold agents.

<sup>14</sup> Submit when there is the possibility of exposure.

<sup>15</sup> Not necessary if no direct exposure to skin, eyes, or mucosa.

<sup>16</sup> Not necessary if no direct exposure to skin, eyes, or mucosa.

<sup>17</sup> Also submit as much other genotoxicity data as possible in addition to tests in 5) and 6).

<sup>18</sup> Also submit as much other genotoxicity data as possible in addition to tests in 5) and 6).

<sup>19</sup> OECD Guidelines for the Testing of Chemicals located at:

<http://www.oecd.org/chemicalsafety/testing/oecdguidelinesforthetestingofchemicals.htm>

## Chapter 2: Chemical Substances Subject to the Survey, Criteria (Common to All Business Units)

### 1. List of Chemical Substances Subject to the Survey

Chemical substances contained in parts and materials purchased by the Sharp Group (hereinafter referred to as “Sharp”) are managed by classifying them into three categories: (1) Banned substances, (2) Substances banned depending on the application, and (3) Managed substances.

Further, there may be cases where the banned substances or managed substances are added by some Business Units, etc.

#### (1) Banned substances

The substances shown in Table 2-1-1 are banned at Sharp and cannot be used for any purpose. If contained in a part or material, their use must be immediately discontinued. In principle, Sharp will not purchase parts and materials containing these banned substances.

**Table 2-1-1: Banned substances**

Category	No.	Substance (Group)	Criteria (Value)
RoHS-related chemical Substances	1	Hexavalent chromium compounds	See Table 2-2-1
	2	Polybrominated biphenyls (PBBs)	
	3	Polybrominated diphenylethers (PBDEs)	
Other	4	Tributyl tin oxide (TBTO)	
	5	Tri-substituted organostannic compounds	
	6	Beryllium oxide (BeO)	
	7	Polychlorinated biphenyls (PCBs) and specific substitutes	
	8	Polychlorinated terphenyls (PCTs)	
	9	Polychlorinated naphthalenes (having 1 to 8 chlorine atoms)	
	10	Asbestos	
	11	2-(2H-1,2,3-benzotriazol-2-yl)-4, 6-di-tert-butylphenol	
	12	Dimethyl fumarate	
	13	Diarsenic pentoxide	
	14	Hexabromocyclododecane (HBCDD) and all major diastereoisomers	
	15	Short-chain chlorinated paraffins(SCCPs) (C10–C13)	
	16	Cobalt dichloride (COCl <sub>2</sub> )	
	17	Aluminosilicate, refractory ceramic fibers	
	18	Zirconia aluminosilicate, refractory ceramic fibers	
	19	Dibutyltin (DBT) compounds	
	20	Pentachlorothiophenol (PCTP)	
	21	Ozone-depleting substances	

## (2) Substances Banned Depending on the Application

The substances shown in Table 2-1-2 are treated by Sharp as substances banned depending on the application. They are permitted for use only in the exempted applications listed in the table. In exempted applications, these substances are treated as Managed substances.

**Table 2-1-2: Substances Banned Depending on the Application**

Category	No.	Substance (Group)	Exempted Applications
RoHS-related chemical Substances	1	Cadmium and its compounds	See Table 2-2-1
	2	Lead and its compounds	
	3	Mercury and its compounds	
	4	Bis(2-ethylhexyl)phthalate (DEHP), dibutyl phthalate (DBP), butylbenzylphthalate (BBP), Diisobutyl phthalate (DIBP) <sup>20</sup>	
Other	5	Nickel and its compounds	See Table 2-2-2
	6	Diocetyl tin (DOT) compounds	
	7	Beryllium and its compounds (except beryllium oxide)	
	8	Perfluorooctane sulfonate (PFOS)	
	9	Fluorinated greenhouse gases (HFC, PFC, SF <sub>6</sub> )	
	10	Polyvinyl chloride (PVC) and its copolymer <sup>21</sup>	
	11	Azo colorants and azo dyes that form certain aromatic amines	
	12	Radioactive substances	
	13	Formaldehyde	
	14	Phthalate esters other than phthalates DEHP, DBP, BBP and DIBP (listed No.4 above)	
	15	Diarsenic trioxide	
	16	Arsenic and its compounds (except diarsenic trioxide and diarsenic pentoxide)	
	17	Boric acid	
	18	Disodium tetraborate, anhydrous	
		Tetraboron disodium heptaoxide, hydrate	
	19	Perfluorooctanoic acid (PFOA) and its salts and PFOA-related substances	
	20	Chlorinated flame retardants	
	21	Tris(2-chloroethyl) phosphate (TCEP)	
	22	Tris(2-chloro-1-methylethyl) phosphate (TCPP)	
	23	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	
	24	Polycyclic aromatic hydrocarbons (PAHs) <sup>22</sup>	
	25	Red phosphorus <sup>23</sup>	
	26	Isopropylphenyl phosphate (PIP(3:1))	
	27	Hexachlorobutadiene (HCBd)	
28	2,4,6-tris(tert-butyl)phenol (2,4,6-TTBP)		
29	4,4'-isopropylidenediphenol (Bisphenol A)		
30	4,4'-sulfonyldiphenol (Bisphenol S)		
31	Halogenated flame retardant <sup>24</sup>		

<sup>20</sup> The four types of phthalates (DEHP, DBP, BBP and DIBP) are mainly used as plasticizers for soft resins, and have the property of being transferred from other products by contact (migration). Since there is a possibility of transfer from packaging to parts and materials, please report the substances containing in the packaging with the same standard (threshold).

<sup>21</sup> Even though reporting under chemSHERPA is not required because they do not fall in the category of chemSHERPA declarable substances, we ask that you report their content status anyway in the Sharp "Report on Chemical Substances Contained in the Product". However, for Communication and Device Groups, handle them as Sharp-specific survey-targeted chemical substances and use chemSHERPA to respond.

<sup>22</sup> Applies to all the following CAS RN®: 50-32-8, 192-97-2, 56-55-3, 218-01-9, 205-99-2, 205-82-3, 207-08-9, and 53-70-3.

<sup>23</sup> Even though reporting under chemSHERPA is not required because they do not fall in the category of chemSHERPA declarable substances, we ask that you report their content status anyway in the Sharp "Report on Chemical Substances

<sup>24</sup> Halogenated flame retardant' means a flame retardant that contains any halogen.

(3) Managed substances

Managed substances cover all chemical substances (groups) that do not fall into the category of Sharp-banned substances and which fit the categories listed in Table 2-1-3 for relevant management criteria under chemSHERPA. For Managed substances, you must ascertain whether the specified substance is present, the amount contained, and so on.

**Table 2-1-3: chemSHERPA Management Criteria**

Relevant Criteria ID	Covered Laws & Regulations, Industrial Criteria
LR01	Japan Chemical Substances Control Act Class I specified chemical substance
LR02	USA Toxic Substances Control Act (TSCA): Section 6; prohibited or restricted substances
LR03	EU ELV directive 2011/37/EU
LR04	EU RoHS directive (EU) 2015/863, Annex II
LR05	EU POPs regulation (EU) 2021/277, Annex I
LR06	EU REACH regulation (EC) No. 1907/2006 Candidate List of SVHC for Authorisation and Annex XIV
LR07	EU REACH regulation (EU) 2021/57, Annex XVII
LR08	EU MDR (Medical Device Regulation)
IC01	Global Automotive Declarable Substance List (GADSL)
IC02	IEC 62474 DB Declarable substance groups and Declarable substances

• **Criteria for Providing Composition Information for Managed substances**

Criteria for Providing Composition information for Managed substances given in Table 2-1-4 are as listed under the “Reporting Threshold” column.

Criteria for Providing Composition information for Managed substances other than for Managed substances listed in Table 2-1-5 shall conform to the chemSHERPA Criteria for Providing Composition Information.

Note: In the case of Device Groups and Communication BU, there may be cases where “Criteria for Providing Composition Information” has additionally been defined.

**Table 2-1-4: Managed substances**

Substance (Group)	SNNo. <sup>25</sup>	Reporting Threshold
Bromine-based flame retardants (PBB, PBDE, or except HBCDD)	SN0015	<ul style="list-style-type: none"> <li>• Total amount of bromine contained in plastic material is 1,000 ppm or more.</li> <li>• Total amount of bromine contained in multilayer printed circuit boards is 900 ppm or more.</li> <li>• <b><u>Has been intentionally added.</u></b></li> </ul>

<sup>25</sup> Serial number set by chemSHERPA. Enter this number in the “CAS No.” field under composition information in chemSHERPA.

## 2. List of Criteria for Banned Substances

### (1) Banned substances

Table 2-2-1: Criteria (Reference Values) of Banned substances

CAT	No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition
RoHS-related chemical Substances	1	Hexavalent chromium compounds	①Pigments and dyes used in plastics (including rubber) ②Pigments, paints, inks ③Rust-preventive plating treatments ④Batteries ⑤All uses including catalysts ⑥Leather products/components that come into contact with the human skin ⑦Packaging materials, packaging components	Content is 1,000 ppm or less.  Less than 3 ppm per total dry weight of leather  See Table 2-2-3	Immediately
	2	Polybrominated biphenyls (PBBs)	①All uses including flame retardants for plastics	Content is 1,000 ppm or less.	Immediately
	3	Polybrominated diphenylethers (PBDEs)	①All uses including flame retardants for plastics	Content is 1,000 ppm or less.	Immediately
Other	4	Tributyl tin oxide (TBTO)	①All uses including paints, inks, preservatives, and mold inhibitors	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	5	Tri-substituted organostannic compounds	①All uses including paints, inks, preservatives, and mold inhibitors	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	6	Beryllium oxide	①All uses	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	7	Polychlorinated biphenyls (PCBs) and specific substitutes	①All uses including insulating oils and lubricating oils	Not intentionally added.	Immediately
	8	Polychlorinated terphenyls (PCTs)	①All uses	Content is 50 ppm or less. Not intentionally added.	Immediately
	9	Polychlorinated naphthalenes (having 1 to 8 chlorine atoms)	①All uses including lubricating oils and paints	Not intentionally added.	Immediately
	10	Asbestos	①All uses including insulation materials and filling agents	Not intentionally added.	Immediately
	11	2-(2H-1,2,3-benzotriazol-2-yl)-4,6-di-tert-butylphenol	①All uses	Not intentionally added.	Immediately
	12	Dimethyl fumarate	①All uses	Content is 0.1 ppm or less. Not intentionally added.	Immediately

CAT	No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition
Other	13	Diarsenic pentoxide	①All uses	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	14	Hexabromocyclododecane(HBCDD) and all major diastereoisomers	①All uses	Content is 100 ppm or less. Not intentionally added.	Immediately
	15	Short-chain chlorinated paraffins(SCCPs) (C10-C13)	①All uses including pigments, paints, inks, lubricants, and plasticizers	Not intentionally added.	Immediately
	16	Cobalt dichloride (COCl <sub>2</sub> )	①All uses	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	17	Aluminosilicate,refractory ceramic fibers	①All uses	Not intentionally added.	Immediately
	18	Zirconia aluminosilicate,refractory ceramic fibers	①All uses	Not intentionally added.	Immediately
	19	Dibutyltin (DBT) compounds	①All uses	1,000 ppm or less as elemental tin in material.	Immediately
	20	Pentachlorothiophenol (PCTP)	①All uses	Content is 1wt% or less.	Immediately
	21	Ozone-depleting substances	①All uses	Not intentionally added.	Immediately

## (2) Substances Banned Depending on the Application

As for the chemical substances covered under EU RoHS, the delivery prohibition date has been set in accordance with the following policy:

The SHARP's policy of delivery dates to SHARP and EU RoHS exemption's due date.

- 1) In principle, SHARP set up delivery prohibition date to SHARP as "six month" before the due date of EU RoHS exemption.  
Example) If the deadline of RoHS Exemption is "21 July 2021," the delivery prohibition date to SHARP is "21 Jan. 2021".
- 2) If the deadline of RoHS Exemption is changed after issuance of this manual, in principle, the delivery prohibition date to SHARP will be six months before the changed deadline.
- 3) It is based on information on the exemption deadline of the EU RoHS Directive at the time of issuance of this manual.

**Table 2-2-2-1: Exempted Applications for Substances Banned Depending on the Application and Their Criteria (Reference Values) [RoHS-related chemical Substances]**

No.	Substance (Group)	Applications	RoHS Exemption <sup>26</sup>	Criteria (Value)	Date of Abolition		
1	Cadmium and its compounds	<b>Banned</b> ① Stabilizers, pigments, and dyes used in plastics (including rubber) ② Pigments, paints, inks ③ Surface treatments (plating, etc.), coatings ④ Small fluorescent lamps, straight-tube fluorescent lamps ⑤ All applications except those in the Declarable category	-	Content is 100ppm or less.	Immediately		
			⑥ Packaging materials, packaging components	-	See Table 2-2-3		
			<b>Declarable</b> ① Used for electrical contacts (a) Circuit breakers (b) Thermal sensing controls (c) Thermal motor protectors (excluding hermetic thermal motor protectors) (d) AC switches rated at 6A and more at 250V AC and more, or 12A and more at 125V AC and more" (e) DC switches rated at 20A and more at 18V DC and more" (f) Switches for use at voltage supply frequency >= 200 Hz	8(b)-I	-	(Under deliberation for exemption on renewal in EU) <sup>27</sup>	
				② Used in striking optical filter glass types, excluding applications falling under point 39 of EU RoHS directive annex III	13(b)-(II)	-	
				③ Used in white glass used for an optical purpose	13(b)-(III)	-	
				④ Using exemptions listed in EU RoHS directive other than above and having permission from adoption decision.	-	-	※ <sup>28</sup>
		⑤ Batteries		-	In compliance with EU battery directive	-	

<sup>26</sup> Nos. of the exempted applications in the RoHS Directive Annex III are shown.

<sup>27</sup> An application for extension of exemption was accepted in the EU, and it is under deliberation at the time of issuance of this manual. This exemption is valid during deliberation. When the deadline is decided, delivery prohibition date to SHARP will be six months before the deadline.

<sup>28</sup> In principle, SHARP set up delivery prohibition date to SHARP as "six month" before the due date of EU RoHS exemption.

No.	Substance (Group)	Applications	RoHS Exemption	Criteria (Value)	Date of Abolition
2	Lead and its compounds				
	Banned	① Stabilizers, pigments, and dyes used in plastics (including rubber) (AC adapters, power cords, connection cables, etc.) ② Pigments, paints, inks ③ Balancer weights ④ Lead solder (solder for component mounting, terminal plating, etc.) ⑤ Consumer products designed or intended primarily for children age 12 and younger and used at 0.01 wt% or more in exterior parts ⑥ Parts and materials for toy applications, 0.009% or more used per unit in surface coatings such as paint ⑦ All applications except those in the Declarable category	-	Contained at less than below: ① In resins: 300 ppm ② Other: 1,000 ppm	Immediately
		⑧ Packaging materials, packaging components	-	See Table 2-2-3	
	Declarable	① Used in high-melting point solder (lead-based alloys containing 85 % by weight or more lead)	7(a)	-	(Under deliberation for exemption on renewal in EU) <sup>27</sup>
		② Used in electrical and electronic components in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound	7(c)-I	-	
		③ Used less than 0.2% by weight in glass of fluorescent tubes	5(b)	-	
		④ Contained as an alloying element		-	
		(a) Used less than 0.35% by weight in steel alloy for machining purposes	6(a)-I	-	
		(b) Used less than 0.4% by weight in aluminium alloy for machining purposes	6(b)-II	-	
		(c) Used less than 4% by weight in copper alloy	6(c)	-	
		⑤ Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies (a) A semiconductor technology node of 90 nm or larger (b) A single die of 300 mm <sup>2</sup> or larger in any semiconductor technology node (c) Stacked die packages with die of 300 mm <sup>2</sup> or larger, or silicon interposers of 300 mm <sup>2</sup> or larger	15(a)	-	
		⑥ Used in white glass used for an optical purpose	13(a)	-	
		⑦ Used in ion coloured optical filter glass types	13(b)-(I)	-	
		⑧ Used in glazes used for reflectance standards	13(b)-(III)	-	
	⑨ Used in dielectric ceramic used in a capacitor with rated voltage of 125V AC or 250V DC or larger	7(c)-II	-		
	⑩ Using exemptions listed in EU RoHS directive other than ① to ⑨ above and having permission from adoption decision	-	-	✖ <sup>29</sup>	
	⑪ Batteries	-	In compliance with EU battery directive	-	

<sup>29</sup> In principle, SHARP set up delivery prohibition date to SHARP as "six month" before the due date of EU RoHS exemption.



No.	Substance (Group)	Applications	RoHS Exemption	Criteria (Value)	Date of Abolition
3	Banned	① Stabilizers, pigments, and dyes used in plastics (including rubber) ② Pigments, paints, inks ③ Mercury batteries ④ Relays, switches, and sensors using mercury ⑤ All applications except those in the Declarable category	-	Content is 1,000 ppm or less.	Immediately
		⑥ Packaging materials, packaging components	-	See Table 1-2-3	
	Declarable	① Use in cold cathode fluorescent lamps (CCFL) and external electrode fluorescent lamps (EEFL) for special purposes not exceeding (per lamp):	-	-	(Under deliberation for exemption renewal in EU) <sup>9</sup>
		(a) Short length ( $\leq 500$ mm): 3.5 mg per lamp	3(a)	-	
		(b) Medium length ( $> 500$ mm and $\leq 1,500$ mm): 5 mg per lamp	3(b)	-	
		(c) Long length ( $> 1,500$ mm): 13 mg per lamp	3(c)	-	
		② Metal halide lamps (MH)	4(e)	-	
		③ Other discharge lamps for special purposes not specifically mentioned above	4(f)	-	
		④ Exempted applications specified under the EU RoHS Directive other than ① to ③ above, and permission obtained from the adopting department	-	-	
		⑤ Batteries	-	In compliance with EU battery directive	
4	Banned	① Used in the case of parts/materials used in the product that is " <u>Not</u> subject to regulated EU RoHS Directive" or "Children's toy or child care article".)	-	① Total content of 4 substances is 1000ppm or less.	Immediately
		② All applications other than above ① (Used in the case of parts/materials used in the product that is both "regulated EU RoHS Directive" and "other than Children's toy or child care article".)		② Content of DEHP, DBP, BBP and DIBP is 1000ppm or less respectively.	
	Declarable	① All applications except those in the Banned category	-		-

**Table 2-2-2-2: Exempted Applications for Substances Banned Depending on the Application and Their Criteria (Reference Values) [Other]**

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition	
5	Nickel and its compounds	Banned	①Applications with prolonged contact with human skin	Not intentionally added.	Immediately
		Declarable	①All applications except those in the Banned category	-	-
6	Diocetyl tin (DOT) compounds	Banned	①Two-component room temperature vulcanization molding kits (RTV-2 molding kits)	1,000 ppm or less as elemental tin in material.	Immediately
		Declarable	①All applications except those in the Banned category	-	-
7	Beryllium and its compounds (except beryllium oxide)	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
		Declarable	①Alloys, ceramics, glass, and semiconductors	-	-
8	Perfluorooctane sulfonate (PFOS)	Banned	①All applications except those in the Declarable category	Not intentionally added and - 10 ppm or less in substance/mixture. - 1,000 ppm or less in sub-product/article etc. except substance/mixture - 1 µg/m <sup>2</sup> or less in coating agent.	Immediately
		Declarable	①Mist suppressants for non-decorative hard chromium (VI) plating and wetting agents for use in electroplating systems	-	-
9	Fluorinated greenhouse gases (HFC, PFC, SF <sub>6</sub> )	Banned	①All applications except those in the Declarable category	Not intentionally added.	Immediately
		Declarable	①HFC used for the refrigerant and/or the thermal insulator	-	-
10	Polyvinyl chloride (PVC) and its copolymer	Banned	①Packaging materials/parts (for packaging Sharp products)	Not intentionally added.	Immediately
		Declarable	①All applications except those in the Banned category	-	-

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition
11	Azo colorants and azo dyes that form certain aromatic amines			
	Banned	①Used in a part of a product* in direct human body contact manufactured based on the premise that the product will be in continuous contact with the human body and which may produce amines when decomposed *Products such as electric carpets, electric blankets, earphones, headphones, straps, and the like.	Not produce carcinogenic amine over 30ppm when decomposed.	Immediately
	Declarable	①All applications except those in the Banned category (used for parts not in continuous contact with the human body)	-	-
12	Radioactive substances			
	Banned	①All applications other than those in the Declarable category	Not intentionally added.	Immediately
	Declarable	①Thorium used in the magnetron of a microwave oven ②Krypton 85 used in the electric bulb of an LCD projector	-	-
13	Formaldehyde			
	Banned	①Wooden parts ②Used in a fabric part of a product* in direct human body contact manufactured based on the premise that the product will be in continuous contact with the human body *Products such as electric carpets, electric blankets, earphones, headphones, straps, and the like.	①Atmospheric concentration of 0.1 ppm or less in an airtight test chamber having a volume of at least 10 m <sup>3</sup> (chamber method) ②According to the Japanese Act on Control of Household Products Containing Harmful Substances (75 ppm or less)	Immediately
	Declarable	①All applications except those in the Banned category	-	-
14	Phthalate esters other than phthalates DEHP, DBP, BBP and DIBP (No.4 above)			
	Banned	①Diisononyl Phthalate: DINP, Diisodecyl phthalate: DIDP or Di-n-octyl phthalate: DNOP is used in parts/materials that is used in products that are children's toy or child care article that can be placed in a child's mouth.	Total content of three substances 1,000 ppm or less	Immediately
	Declarable	①All applications except those in the Banned category	-	-
15	Diarsenic trioxide			
	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	Declarable	①Glass of the lamp of an LCD projector	-	-

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition
16	Arsenic and its compounds (except diarsenic trioxide and diarsenic pentoxide)			
	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	Declarable	①Exempted components* *Semiconductors, photosensitizers, magnet filters, copper foil, and batteries	-	-
17	Boric acid			
	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	Declarable	①Polarizers (made of PVA) ②Glass ③Adhesives	-	-
18	Disodium tetraborate, anhydrous; Tetraboron disodium heptaoxide, hydrate			
	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
	Declarable	①Polarizers (made of PVA) ②Glass ③Adhesives ④Fiber	-	-
19	Perfluorooctanoic acid (PFOA) and its salts and esters			
	Banned	①All applications except those in the Declarable category	The following (1) and (2) are to be satisfied in the Mixture or Article. <sup>30</sup> (1) PFOA (including its salt): Content is less than 25ppb. (2) Combination of one or multiple PFOA-related substances: Total content is less than 1000ppb (1ppm).	Immediately
	Declarable	①Photo-lithography processes for semiconductors or in etching processes for compound semiconductors. ②Photo coating used in printing plates, film, and documents. ③Exemptions listed in EU POPs regulation Annex I Part A other than above and having permission from adoption decision.	-	-

<sup>30</sup> Total of the substances having these CAS RN®.: 335-67-1, 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2, 3108-24-5

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition	
20	Chlorinated flame retardants	Banned	①All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	-
		Declarable	①Difficult to substitute, and permission obtained from the adoption decision department within Sharp	-	-
21	Tris (2-chloroethyl) phosphate (TCEP)	Banned	①Products for children age 12 and younger, and home furnishings covered with fiber, etc. ②All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
		Declarable	①Used in motor vehicles or replacement parts or replacement equipment for motor vehicles. ②Used in commercial or residential building insulation or wiring that otherwise complies with the Construction Codes Supplement, set forth in Title 12 of the District of Columbia Municipal Regulations ③Used in desktop and laptop computers, audio and video equipment, calculators, wireless telephones, game consoles, handheld devices incorporating a screen that are used to access interactive software and their associated peripherals, and cables, adaptors, and other similar connecting devices; or. ④Used in storage media, such as compact discs, for interactive software, such as computer games.	-	-
22	Tris (2-chloro-1-methylethyl) phosphate (TCPP)	Banned	①Products for children age 12 and younger, and home furnishings covered with fiber, etc.	Content is 1,000 ppm or less. Not intentionally added.	Immediately
		Declarable	①All applications except those in the Banned category	-	-
23	Tris (1,3-dichloro-2-propyl) phosphate (TDCPP)	Banned	①Products for children age 12 and younger, and home furnishings covered with fiber, etc. ②All applications except those in the Declarable category	Content is 1,000 ppm or less. Not intentionally added.	Immediately
		Declarable	①Used in motor vehicles or replacement parts or replacement equipment for motor vehicles. ②Used in commercial or residential building insulation or wiring that otherwise complies with the Construction Codes Supplement, set forth in Title 12 of the District of Columbia Municipal Regulations ③Used in desktop and laptop computers, audio and video equipment, calculators, wireless telephones, game consoles, handheld devices incorporating a screen that are used to access interactive software and their associated peripherals, and cables, adaptors, and other similar connecting devices; or. ④Used in storage media, such as compact discs, for interactive software, such as computer games.	-	-

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition	
24	Polycyclic aromatic hydrocarbons (PAHs) <sup>31</sup>	Banned	①Rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity	Content concentration of less than 1 ppm for each targeted PAH	Immediately
		Declarable	①All applications except those in the Banned category	-	-
25	Red phosphorus	Banned	① Resin or rubber	Content is 1,000 ppm or less. Not intentionally added.	Immediately
		Declarable	①All applications except those in the Banned category ② Falls under the category of Banned, but is difficult to substitute and permission obtained from the adoption decision department within Sharp	-	-
26	Isopropylphenyl phosphate (PIP(3:1))	Banned	①All applications except those in the Declarable category	Not intentionally added.	Immediately
		Declarable	①Used in adhesives or sealants and a permission from the adoption decision department in Sharp was obtained. ②Used in lubricants or greases. ③Used in products or articles made of plastic recycled from products or articles containing PIP (3:1), where no new PIP (3:1) was added during the production of the products or articles made of recycled plastic. ④Using exemptions listed in USA TSCA SECTION 6 PBT-chemicals other than above and having permission from adoption decision.	-	①Prohibited after 6 Jan. 2024
27	Hexachlorobutadiene (HCBD)	Banned	①All applications except those in the Declarable category	Not intentionally added.	Immediately
		Declarable	①Unintentional production of HCBD as a byproduct in the production of chlorinated solvents	-	-
28	2,4,6-tris(tert-butyl)phenol (2,4,6-TTBP)	Banned	①All applications except those in the Declarable category	Not intentionally added.	Immediately
		Declarable	①Used in articles	-	-
29	4,4'-isopropylidenediphenol (Bisphenol A)	Banned	①Used in thermal paper	Used less than 0.02% by weight	Immediately
		Declarable	①All applications except those in the Banned category	-	-

<sup>31</sup> Substances having these CAS RN®.: 50-32-8, 192-97-2, 56-55-3, 218-01-9, 205-99-2, 205-82-3, 207-08-9, 53-70-3

No.	Substance (Group)	Applications	Criteria (Value)	Date of Abolition
30	4,4'-sulfonyldiphenol (Bisphenol S)			
	Banned	①All applications except those in the Declarable category	Used less than 0.02% by weight	Immediately
	Declarable	①Used for other than thermal paper ②Used in thermal paper and used for products with a limited destination and having permission from adoption decision.	-	-
31	Halogenated flame retardant			
	Banned	①Used in enclosure and stand of electronic displays including televisions, monitors and digital signage displays with a screen area over 100cm <sup>2</sup> .	Total content of halogen elements attributed to the halogenated flame retardants in the homogeneous material is 0.1wt% or less.	Immediately
	Declarable	①All applications except those in the Banned category	-	-

**Table 2-2-3: Criteria for Content of Heavy Metals (Cadmium, Lead, Mercury, Hexavalent Chromium) in Packaging Materials and Components**

Categories	Applications	Criteria (Value)	Date of Abolition
Banned	①Materials and components for product packaging (cardboard, bags, cushioning materials, sheeting, tape, staples, binding bands, labels, cushions, paint, ink, etc.) ②Packaging materials for servicing parts (cardboard, bags, cushioning materials, sheeting, tape, staples, binding bands, labels, cushions, paint, ink, etc.)	Total content 100 ppm or less in each component, ink, or paint that makes up the package	Immediately
Declarable	①Packaging materials and components used for delivered parts and materials	-	-



### 3. List of main reference laws

#### Presence of banned substances in the product

Category	No.	Substances	Main reference laws etc.
RoHS-related chemical Substances	1	Hexavalent chromium compound	EU RoHS directive, EU REACH regulation Annex XVII
	2	Polybrominated biphenyls (PBBs)	EU RoHS directive, EU REACH regulation Annex XVII
	3	Polybrominated diphenyl ethers (PBDEs)	Japan CSCL, EU RoHS directive, EU REACH regulation Annex XVII, USA TSCA
Other	4	Tributyl Tin Oxide (TBTO)	Japan CSCL
	5	Tri-substituted organostannic compounds	Japan CSCL, EU REACH regulation Annex XVII
	6	Beryllium and its compound	-
	7	Polychlorinated biphenyls (PCBs) and specific substitutes	Japan CSCL, EU POPs regulation Annex I
	8	Polychlorinated Terphenyls (PCTs)	EU REACH regulation Annex XVII
	9	Polychlorinated naphthalenes	Japan CSCL, EU POPs regulation Annex I
	10	Asbestos	Japan Industrial Safety and Health Act, EU REACH regulation Annex XVII
	11	Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)	Japan CSCL
	12	Dimethyl fumarate	EU REACH regulation Annex XVII
	13	Arsenic and its compound	(EU REACH regulation) <sup>32</sup>
	14	Hexabromocyclododecane (HBCDD)	Japan CSCL, EU POPs regulation
	15	Short chain chlorinated paraffin	EU REACH regulation Annex XVII, EU POPs regulation Annex I
	16	Cobalt dichloride	(EU REACH regulation)
	17	Refractory Ceramic Fibers, Aluminosilicate	(EU REACH regulation)
	18	Refractory Ceramic Fibers, Zirconia Aluminosilicate	(EU REACH regulation)
	19	Dibutyltin (DBT) compounds	EU REACH regulation Annex XVII
	20	Pentachlorothiophenol (PCTP)	USA TSCA
	21	Ozone-depleting substances	Montreal Protocol, USA Chlorofluorocarbon tax

<sup>32</sup> "(EU REACH regulation)" means the substance which was listed in Authorisation List of SVHC.

Presence of banned substances depending on application

Category	No.	Substances	Main reference laws etc.
RoHS-related chemical Substances	1	Cadmium and its compound	EU RoHS directive, EU REACH regulation Annex XVII
	2	Lead and its compound	EU RoHS directive, EU REACH regulation Annex XVII, USA CPSIA
	3	Mercury and its compound	EU RoHS directive, EU REACH regulation Annex XVII
	4	Bis(2-ethylhexyl)phthalate (DEHP), Dibutyl phthalate (DBP), Bis(butylbenzyl) phthalate (BBP), Diisobutyl phthalate (DIBP)	EU RoHS directive(EU COMMISSION DELEGATED DIRECTIVE 2015/863), EU REACH regulation Annex XVII, USA CPSIA
Other	5	Nickel	EU REACH regulation Annex XVII
	6	Diocetyl tin (DOT) compounds	EU REACH regulation Annex XVII
	7	Beryllium and its compound	<Sharp own forbiddance>
	8	Perfluorooctane sulfonate (PFOSs)	Japan CSCL, EU POPs regulation Annex I, Canadian Environmental Protection Act
	9	Fluorinated greenhouse gases (HFC, PFC, SF6)	EU F-Gas Regulation(517/2014)
	10	Polyvinyl Chloride and its copolymer	<Sharp own forbiddance>
	11	Azo colorants	EU REACH regulation Annex XVII
	12	Radioactive substances	Act on Prevention of Radiation Hazards due to Radioisotopes, etc., Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors
	13	Formaldehyde	Germany Chem Verbots V, Denmark formaldehyde regulations
	14	Phthalates	EU REACH regulation Annex XVII, USA CPSIA
	15	Arsenic and its compound	(EU REACH regulation)
	16	Arsenic and its compound	(EU REACH regulation)
	17	Boric acid	(EU REACH regulation)
	18	Disodium tetraborate, anhydrous, Tetraboron disodium heptaoxide, hydrate	(EU REACH regulation)
	19	Perfluorooctanoic acid (PFOA) and its salts and PFOA-related substances	EU REACH regulation Annex XVII
	20	Chlorinated flame retardants	<Sharp own forbiddance>
	21	Tris (2-chloroethyl) phosphate (TCEP)	USA VT Act85, (EU REACH regulation)
	22	Tris(2-chloro-1-methylethyl) phosphate (TCPP)	USA VT Act85
	23	Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	USA VT Act85
	24	Polycyclic aromatic hydrocarbons (PAHs)	EU REACH regulation Annex XVII
	25	Red phosphorus	<Sharp own forbiddance>
	26	Isopropylphenyl phosphate (PIP(3:1))	USA TSCA
	27	Hexachlorobutadiene (HCBD)	USA TSCA
	28	2,4,6-tris(tert-butyl)phenol (2,4,6-TTBP)	USA TSCA
	29	4,4'-isopropylidenediphenol (Bisphenol A)	EU REACH regulation Annex XVII, Swiss Chemical Risk Reduction Ordinance, US CT Public Act No.11-222
	30	4,4'-sulfonyldiphenol (Bisphenol S)	Swiss Chemical Risk Reduction Ordinance
	31	Halogenated flame retardant	EU 2019/2021 (ecodesign requirements for electronic displays)

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