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TITLE: CORPORATE STANDARD PROCEDURE
NATIONAL SEMICONDUCTOR'S LIST OF BANNED AND REPORTABLE
SUBSTANCES

REV	DATE/ECN NUMBER	ORIGINATOR	REVISION HISTORY
A	0303205195	Banks	New Support Document
B	0402096240	Banks	Renamed; Major Revision
C	0403046325	Banks	Change identification of information from CONFIDENTIAL to DECLASSIFIED.
D	0403306429	Banks	Minor text revision; modified Table 1
E	0602278698	Banks	Major Revision to conform with JIG-101
F	08030410859	Banks	General revision to add PFOS and TBBPA and revise tables to JIG-101A
G	09021011636	Banks	Revised to conform to JIG-101.Ed 2.0 list, REACH SVHCs added.
H	09051311857	Banks	Added DMF to Appendix A
I	09121012272	Lee	Added 15 new REACH SVHCs and potential JIG-101 3.0 chems
J	10020112382	Lee	Removed incorrect table reference in SVHC definition. Corrected dimethyl fumarate CAS number and updated threshold level per 2009/251/EC.
K	10071412788	Lee	Added 8 new REACH SVHCs (included 18 June 2010)
L	11041913827	Lee	Added 8 new REACH SVHCs (including 15 December 2010) and changed select PAHs from reportable to banned.

NATIONAL SEMICONDUCTOR BANNED AND REPORTABLE SUBSTANCES

National Semiconductor (National) generally follows [*JIG-101, Joint Industrial Guide \(JIG\), Material Composition Declaration for Electronic Products*](#). This document, [*\(SC\)CSP-9-111S2*](#), contains lists of National's banned and reportable substances, which include JIG-101 substances and other substances restricted by applicable regulatory or customer requirements. Supplier and subcontractor responsibilities concerning banned and reportable substances are found in [*\(SC\)CSP-9-111C1, Supplier Environmental Requirements for Materials and Products*](#).

Banned Substances

Appendix A lists banned substance categories, which shall not be intentionally added to products or materials supplied to National unless exempted by National. Concentrations of banned substance impurities shall not exceed quantitative threshold levels in any homogeneous material. Threshold levels are generally set by laws or regulations, which ban or restrict the use of these substances¹. Some threshold levels are set by customer requirements. Tables A through Q in Appendix C are lists of banned substances and CAS numbers. These lists are not comprehensive, but represent examples of substances with known CAS numbers. Regarding SVHCs, the list of SVHCs will be expanded over time and there may be periods when Table O is incomplete. The ban on SVHCs applies to all SVHCs, and is not limited to those in Table O.

Third-party laboratory analytical reports of direct materials and packing materials are required for RoHS substances to confirm that quantitative threshold levels are not exceeded. Laboratories must be nationally accredited and certified and use USEPA analytical methods or methods meeting the IEC 62321 Standard, as appropriate. ICP is to be used for metals analyses and GC/MS for organic compounds.

Reportable Substances

Appendix B lists categories of reportable substances. Suppliers and subcontractors shall report concentrations of reportable substances if they are greater than 1000 ppm (0.1% w/w). For products consisting of more than one homogeneous material, concentrations of reportable substances are based on the entire product--for example a National Semiconductor integrated circuit assembled by a subcontractor. Chemical analyses are not required for reportable substances. Engineering estimates based on product knowledge are adequate. Tables R through AA in Appendix D are detailed lists of reportable substances and CAS numbers. These lists are not comprehensive, but represent examples of substances with known CAS numbers.

Additional Requirements

The sum total concentration of bromine and chlorine in halogen-free mold compounds shall be less than 1500 ppm (0.15 % w/w), and the concentrations of chlorine, bromine and antimony shall each be less than 900 ppm (0.09% w/w).

Definitions

¹ Refer to the edition of JIG-101 in force for a citation of key laws and regulations governing these substances and examples of their use

Products: Electronic Components, Module or System Level Products (including Engineering Samples thereof) and Evaluation Boards supplied to National.

- Electronic Components: Integrated circuits, discrete devices, semiconductors and similar components
- Module Products: Integrated circuit-like products that typically integrate National die and externally procured passive and/or active components within a single plastic encapsulated package.
- System Level Products: Assembled printed circuit board(s) with or without an enclosure using National components and externally procured passive and/or active components intended for volume production end product sale.
- Evaluation Boards: Assembled printed circuit boards (PCBs) with National components and externally procured passive and/or active components intended for purposes of evaluating or demonstrating the performance of National's products. (Also known as demonstration boards or printed circuit board assemblies or PCBAs).

Materials: Chemical Materials, Direct Materials, and Packing Materials (including Engineering Samples thereof) supplied to National.

- Chemical Material – Substance used directly in the manufacturing process of products manufactured by National. A chemical material may or may not be present in a finished product.
- Direct Material – Material utilized/present in a finished product.
- Packing Material – Material used to contain and protect products during distribution. Also commonly known as packaging material. Examples of packing materials are corrugated cardboard boxes, polyethylene shrink-wrap, tape-and-reel, and rails. Excludes materials used to ship materials, chemicals, and equipment to National or its suppliers.

CAS Number: Registry number of the Chemical Abstracts System (CAS) of the American Chemical Society, which are attributed to all chemical elements and most of their compounds. CAS Numbers are unique for each element and compound and should be used for their identification.

Homogeneous Material: A material that cannot be mechanically disjointed into different materials and is of uniform composition throughout. Most direct materials supplied to National Semiconductor are homogeneous materials. Assembled integrated circuits consist of several homogeneous materials, such as leadframe, lead finish, silver plating, silicon die, die attach adhesive, mold compound and wire.

Intentionally Added: Deliberate use in the formulation of a product or part where its continued presence is desired to provide a specific characteristic, appearance or quality. If listed materials or substances are contained in products or parts purchased by supplier and are incorporated, such materials or substances must be disclosed if the supplier has knowledge, or should have knowledge, of the presence of such materials or substances

Part: A subunit of a product. Generally, if products supplied to National Semiconductor have parts, the parts are homogeneous materials.

PFAS: Perfluoroalkyl sulfonates, including perfluorooctane sulfonates (PFOS), which are PFAS with eight carbons. Note that the ban on manufacturing use does not apply to photolithographic materials such as photoresists and antireflective coatings.

RoHS Substance – A substance restricted by EU Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

SVHC: A substance identified and regulated as a Substance of Very High Concern by the European Chemical Agency (ECHA) in accordance with REACH Articles 7.2 and 33. The list of SVHCs will be expanded over time and there may be periods when the SVHC Table in Appendix C is incomplete. The ban on SVHCs applies to all SVHCs, and is not limited to those in the SVHC Table.

Threshold Level: Concentration level which defines the limit (equal to or) above which the presence of a substance in a product or part is prohibited (if a banned substance) or must be declared (if a reportable substance). If the limit is “intentionally added,” the presence of a substance must be reported when the substance meets the definition of “intentionally added” regardless of concentration.

APPENDIX A

BANNED SUBSTANCES

Material/Substance Category	Example Tables	Threshold Level For Prohibition
Asbestos	Table A	Intentionally added
Cadmium/Cadmium Compounds Direct Materials Packing Materials	Table B	Intentionally added & 100 ppm 100 ppm ⁽¹⁾
Hexavalent Chromium Compounds Direct Materials Packing Materials	Table C	Intentionally added & 1000 ppm 100 ppm ⁽¹⁾
Dibutyltin (DBT) compounds	Table D	Intentionally added
Diocetyl tin (DOT) compounds	Table E	Intentionally added
Dimethylfumarate, CAS # 624-49-7		Intentionally added & 0.1 ppm
Lead/Lead Compounds Direct Materials Packing Materials	Table F	Intentionally added & 1000 ppm 100 ppm ⁽¹⁾
Mercury & Mercury Compounds Direct Materials Packing Materials	Table G	Intentionally added & 1000 ppm 100 ppm ⁽¹⁾
Ozone Depleting Substances	Tables H & I	Intentionally added & cannot be used in manufacturing
Perfluoroalkyl sulfonates (PFAS) with carbon chain lengths of five and higher, and perfluorooctanoic acid (PFOA). Photolithography materials such as photoresist and antireflective coatings are exempt from manufacturing use ban.		Intentionally added & cannot be used in manufacturing
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis (1,1-dimethylethyl)-, CAS # 3846-71-7		Intentionally added
Polybrominated Biphenyls (PBB)	Table J	Intentionally added & 1000 ppm
Polybrominated Diphenyl Ethers (PBDEs)	Table K	Intentionally added & 1000 ppm
Polychlorinated Biphenyls (PCBs) and Terphenyls (PCTs)	Table L	Intentionally added
Polychlorinated Naphthalenes with more than 3 chlorine atoms	Table M	Intentionally added
Radioactive Substances	Table N	Intentionally added
REACH SVHCs	Table O	Intentionally added & 1000 ppm
Tetrabromobisphenol A (TBBPA) in cured plastics, CAS # 79-94-7		1000 ppm

Tributyl Tin (TBT) and Triphenyl Tin (TPT)	Table P	Intentionally added
Polycyclic aromatic hydrocarbons (PAHs), selected Benzo(a)pyrene	Table Q	Intentionally added & 200 ppm ⁽²⁾ 20 ppm

Notes: (1) Sum total concentration of cadmium, hexavalent chromium, mercury, and lead in packing material cannot exceed 100 ppm.
 (2) Sum total concentration of PAHs in Table Q cannot exceed 200 ppm.

APPENDIX B

REPORTABLE SUBSTANCES

Material/Substance Category	Example Tables	Threshold Level For Reporting
Antimony/Antimony Compounds In halogen-free mold compounds	Table R	1000 ppm 900 ppm
Arsenic/Arsenic Compounds other than SVHC	Table S	1000 ppm
Certain Azocolourants and Azodyes ⁽¹⁾	Table T	Intentionally added
Beryllium/Beryllium Compounds	Table U	1000 ppm
Bismuth/Bismuth Compounds	Table V	1000 ppm
Brominated Flame Retardants other than PBBs and PBDEs	Table W	1000 ppm
Fluorinated Greenhouse Gases	Table X	Intentionally Added
Formaldehyde, CAS # 50-00-0		Intentionally Added
Nickel, external applications, CAS# 7440-02-0		Intentionally added
Perchlorates	Table Y	Intentionally added
Certain Phthalates other than SVHC	Table Z	1000 ppm
Selenium/Selenium Compounds	Table AA	1000 ppm
Polyvinyl Chloride (PVC), CAS # 9002-86-2		1000 ppm

APPENDIX C

BANNED SUBSTANCES WITH KNOWN CAS NUMBERS

Table A - Asbestos & Asbestos Materials

Substance	CAS Number
Asbestos	1332-21-4
Actinolite	77536-66-4
Amosite (Grunerite)	12172-73-5
Anthophyllite	77536-67-5
Chrysolite	12001-29-5
Crocidolite	12001-28-4
Tremolite	77536-68-6

Table B - Cadmium/Cadmium Compounds

Substance	CAS Number
Cadmium	7440-43-9
Cadmium oxide	1306-19-0
Cadmium sulfide	1306-23-6
Cadmium chloride	10108-64-2
Cadmium sulfate	10124-36-4
Other cadmium compounds	-

Table C - Chromium (VI) Compounds

Substance	CAS Number
Chromium (VI) oxide	1333-82-0
Barium chromate	10294-40-3
Calcium chromate	13765-19-0
Chromium trioxide	1333-82-0
Lead (II) chromate	7758-97-6
Sodium chromate	7775-11-3
Sodium dichromate	10588-01-9
Strontium chromate	7789-06-2
Potassium dichromate	7778-50-9
Potassium chromate	7789-00-6
Zinc chromate	13530-65-9
Other chromium (VI) compounds	-

Table D - Dibutyltin (DBT) Compounds

Substance	CAS Number
Dibutyltin oxide	818-08-6
Dibutyltin diacetate	1067-33-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6
Other dibutyltin compounds	-

Table E - Dioctyltin (DOT) Compounds

Substance	CAS Number
Dioctyltin oxide	870-08-6
Dioctyltin dilaurate	3648-18-8

Other dioctyltin compounds	-
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Table F - Lead/Lead Compounds

Substance	CAS Number
Lead	7439-92-1
Lead (II) sulfate	7446-14-2
Lead (II) carbonate	598-63-0
Lead hydrocarbonate	1319-46-6
Lead acetate	301-04-2
Lead (II) acetate, trihydrate	6080-56-4
Lead phosphate	7446-27-7
Lead selenide	12069-00-0
Lead (IV) oxide	1309-60-0
Lead (II,IV) oxide	1314-41-6
Lead (II) sulfide	1314-87-0
Lead (II) oxide	1317-36-8
Lead (II) carbonate basic	1319-46-6
Lead hydroxycarbonate	1344-36-1
Lead (II) phosphate	7446-27-2
Lead (II) chromate	7758-97-6
Lead (II) titanate	12060-00-3
Lead sulfate, sulfuric acid lead salt	15739-80-7
Lead sulfate, tribasic	12202-17-4
Lead stearate	1072-35-1
Other lead compounds	-

Table G - Mercury/Mercury Compounds

Substance	CAS Number
Mercury	7439-97-6
Mercuric chloride	33631-63-9
Mercury (II) chloride	7487-94-7
Mercuric sulfate	7783-35-9
Mercuric nitrate	10045-94-0
Mercury (II) oxide	21908-53-2
Mercuric sulfide	1344-48-5
Other mercury compounds	-

Table H - Chlorofluorocarbons/Isomers

Substance	CAS Number
Trichlorofluoromethane (CFC 11)	75-69-4
Dichlorodifluoromethane (CFC 12)	75-71-8
Chlorotrifluoromethane (CFC 13)	75-72-9
Pentachlorofluoroethane (CFC 111)	354-56-3
Tetrachlorodifluoroethane (CFC 112)	76-12-0
Trichlorotrifluoroethane (CFC 113)	354-58-5
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
Dichlorotetrafluoroethane (CFC 114)	76-14-2
Monochloropentafluoroethane (CFC 115)	76-15-3
Heptachlorofluoropropane (CFC 211)	422-78-6 135401-87-5
Hexachlorodifluoropropane (CFC 212)	3182-26-1

Pentachlorotrifluoropropane (CFC 213)	2354-06-5 134237-31-3
Tetrachlorotetrafluoropropane (CFC 214)	29255-31-0
1,1,1,3-Tetrachlorotetrafluoropropane	2268-46-4
Trichloropentafluoropropane (CFC 215)	1599-41-3
1,1,1-Trichloropentafluoropropane	4259-43-2
1,2,3-Trichloropentafluoropropane	76-17-5
Dichlorohexafluoropropane (CFC 216)	661-97-2
Monochloroheptafluoropropane (CFC 217)	422-86-6
Bromochlorodifluoromethane (Halon 1211)	353-59-3
Bromotrifluoromethane (Halon 1301)	75-63-8
Dibromotetrafluoroethane (Halon 2402)	124-73-2
Carbon tetrachloride (Tetrachloromentane)	56-23-5
1,1,1-Trichloroethane (Methyl Chloroform) and its isomers except 1,1,2-trichloroethane	71-55-6
Bromomethane (Methyl bromide)	74-83-9
Dibromofluoromethane	1868-53-7
Bromodifluoromethane	1511-62-2
Bromofluoromethane	373-52-4
Tetrabromofluoroethane	306-80-9
Tribromodifluoroethane	-
Dibromotrifluoroethane	354-04-1
Bromotetrafluoroethane	124-72-1
Tribromofluoroethane	-
Dibromodifluoroethane	75-82-1
Bromotrifluoroethane	421-47-3
Dibromofluoroethane	358-97-4
Bromodifluoroethane	420-47-3
Bromofluoroethane	762-49-2
Hexabromofluoropropane	-
Pentabromodifluoropropane	-
Tetrabromotrifluoropropane	-
Tribromotetrafluoropropane	-
Dibromopentafluoropropane	431-78-7
Bromohexafluoropropane	2252-78-0
Pentabromofluoropropane	-
Tetrabromodifluoropropane	-
Tribromotrifluoropropane	-
Dibromotetrafluoropropane	-
Bromopentafluoropropane	460-88-8
Tetrabromofluoropropane	-
Tribromodifluoropropane	70192-80-2
Dibromotrifluoropropane	431-21-0
Bromotetrafluoropropane	679-84-5
Tribromofluoropropane	75372-14-4
Dibromodifluoropropane	460-25-3
Bromotrifluoropropane	421-46-5
Dibromofluoropropane	51584-26-0
Bromodifluoropropane	-
Bromofluoropropane	1871-72-3
Bromochloromethane	74-97-5

Table I - Hydrochlorofluorocarbons/Isomers

Substance	CAS Number
Dichlorofluoromethane (HCFC-21)	75-43-4
Chlorodifluoromethane (HCFC-22)	75-45-6
Chlorofluoromethane (HCFC-31)	593-70-4
Tetrachlorofluoroethane (HCFC-121)	134237-32-4
1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	354-11-0
1,1,2,2-Tetrachloro-1-fluoroethane	354-14-3
Trichlorofluoroethane (HCFC 122)	41834-16-6
1,2,2-Trichloro-1,1-difluoroethane	354-21-2
Dichlorotrifluoroethane (HCFC 123)	34077-87-7
Dichloro-1,1,2-trifluoroethane	90454-18-5
2,2-Dichloro-1,1,1-trifluoroethane	306-83-2
1,2-Dichloro-1,1,2-trifluoroethane (HCFC 123a)	354-23-4
1,1-Dichloro-1,1,1-trifluoroethane (HCFC 123b)	812-04-4
2,2-Dichloro-1,1,2-trifluoroethane (HCFC 123b)	812-04-4
Chlorotetrafluoroethane (HCFC 124)	63938-10-3
2-Chloro-1,1,1,2-tetrafluoroethane	2837-89-0
1-Chloro-1,1,2,2-tetrafluoroethane (HCFC 124a)	354-25-6
Trichlorofluoroethane (HCFC 131)	27154-33-2; (134237-34-6)
1-Fluoro-1,2,2-trichloroethane	359-28-4
1,1,1-Trichloro-2-fluoroethane	811-95-0
1-Chloro-1-fluoroethane (HCFC-151)	1615-75-4
Dichlorodifluoroethane (HCFC 132)	25915-78-0
1,2-Dichloro-1,1-difluoroethane (HCFC 132b)	1649-08-7
1,1-Dichloro-1,2-difluoroethane (HCFC 132c)	1842-05-3
1,1-Dichloro-2,2-difluoroethane	471-43-2
1,2-Dichloro-1,2-difluoroethane	431-06-1
Chlorotrifluoroethane (HCFC 133)	1330-45-6
1-Chloro-1,2,2-trifluoroethane	1330-45-6
2-Chloro-1,1,1-trifluoroethane (HCFC 133a)	75-88-7
Dichlorofluoroethane (HCFC 141)	1717-00-6; (25167-88-8)
1,1-Dichloro-1-fluoroethane (HCFC 141b)	1717-00-6
1,2-Dichloro-1-fluoroethane	430-57-9
Chlorodifluoroethane (HCFC 142)	25497-29-4
1-Chloro-1,2-difluoroethane (HCFC 142a)	25497-29-4
1-Chloro-1,1-difluoroethane (HCFC 142b)	75-68-3
Hexachlorofluoropropane (HCFC 221)	134237-35-7
Pentachlorodifluoropropane (HCFC 222)	134237-36-8
Tetrachlorotrifluoropropane (HCFC 223)	134237-37-9
Trichlorotetrafluoropropane (HCFC 224)	134237-38-0
Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225)	127564-92-5; (2713-09-0)
2,2-Dichloro-1,1,1,3,3-pentafluoropropane (HCFC 225aa)	128903-21-9
2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC 225ba)	422-48-0
1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225bb)	422-44-6
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca)	422-56-0
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb)	507-55-1
1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC 225cc)	13474-88-9
1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC 225da)	431-86-7
1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC 225ea)	136013-79-1
1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC 225eb)	111512-56-2

Chlorohexafluoropropane (HCFC 226)	134308-72-8
Pentachlorofluoropropane (HCFC 231)	134190-48-0
Tetrachlorodifluoropropane (HCFC 232)	134237-39-1
Trichlorotrifluoropropane (HCFC 233)	134237-40-4
1,1,1-Trichloro-3,3,3-trifluoropropane	7125-83-9
Dichlorotetrafluoropropane	127564-83-4
Chloropentafluoropropane (HCFC 235)	134237-41-5
1-Chloro-1,1,3,3-pentafluoropropane	460-92-4
Tetrachlorofluoropropane (HCFC 241)	134190-49-1
Trichlorodifluoropropane (HCFC 242)	134237-42-6
Dichlorotrifluoropropane (HCFC 243)	134237-43-7
1,1-Dichloro-1,2,2-trifluoropropane	7125-99-7
2,3-Dichloro-1,1,1-trifluoropropane	338-75-0
3,3-Dichloro-1,1,1-trifluoropropane	460-69-5
Chlorotetrafluoropropane (HCFC 244)	134190-50-4
3-Chloro-1,1,2,2-tetrafluoropropane	679-85-6
Trichlorofluoropropane (HCFC 251)	134190-51-5
1,1,3-Trichloro-1-fluoropropane	818-99-5
Dichlorodifluoropropane (HCFC 252)	134190-52-6
Chlorotrifluoropropane (HCFC 253)	134237-44-8
3-Chloro-1,1,1-trifluoropropane (HCFC 253fb)	460-35-5
Dichlorofluoropropane (HCFC 261)	134237-45-9
1,1-Dichloro-1-fluoropropane	7799-56-6
Chlorodifluoropropane (HCFC 262)	134190-53-7
2-Chloro-1,3-difluoropropane	102738-79-4
Chlorofluoropropane (HCFC 271)	134190-54-8
2-Chloro-2-fluoropropane	420-44-0

Table J - Polybrominated Biphenyls

Substance	CAS #
Polybrominated Biphenyls	59536-65-1
Dibromobiphenyl	92-86-4
2-Bromobiphenyl	2052-07-5
3-Bromobiphenyl	2113-57-7
4-Bromobiphenyl	92-66-0
Tribromobiphenyl	59080-34-1
Tetrabromobiphenyl	40088-45-7
Pentabromobiphenyl	56307-79-0
Hexabromobiphenyl	59080-40-9
Hexabromo-1,1-biphenyl	36355-01-8
Firemaster FF-1	67774-32-7
Heptabromobiphenyl	35194-78-6
Octabromobiphenyl	61288-13-9
Nonabiphenyl	27753-52-2
Decabromobiphenyl	13654-09-6

Table K – Polybrominated Diphenyl Ethers

Bromodiphenyl ether	101-55-3
Dibromodiphenyl ether	2050-47-7
Tribromodiphenyl ether	49690-94-0
Tetrabromodiphenyl ether	40088-47-9
Pentabromodiphenyl ether (Commercial grades)	32534-81-9
Hexabromodiphenyl ether	36483-60-0

Heptabromodiphenyl ether	68928-80-3
Octabromodiphenyl ether	32536-52-0
Nonabromodiphenyl ether	63936-56-1
Decabromodiphenyl ether	1163-19-5

Table L - Polychlorinated Biphenyls & Terphenyls (PCBs & PCTs)

Substance	CAS Number
Polychlorinated Biphenyls	1336-36-3
Aroclor	12767-79-2
Clorodiphenyl (Aroclor 1260)	11096-82-5
Kanechlor 500	27323-18-8
Aroclor 1254	11097-69-1
Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)	76253-60-6
Monomethyl-dichloro-diphenyl methane (Ugilec121, Ugilec 21)	-
Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8
Polychlorinated Terphenyls	61788-33-8

Table M - Polychlorinated Naphthalenes

Substance	CAS Number
Polychlorinated Naphthalenes	70776-03-3
Other Polychlorinated Naphthalenes	-

Table N - Radioactive Substances

Substance	CAS Number
Uranium	-
Plutonium	-
Radon	-
Americium	-
Thorium	-
Cesium (Radioactive Isotopes)	-
Strontium (Radioactive Isotopes)	-
Other Radioactive Substances	-

Table O - SVHCs

Substance	CAS Number	EC Number
2,4-Dinitrotoluene	121-14-2	204-450-0
2-Ethoxyethanol	110-80-5	203-804-1
2-Methoxyethanol	109-86-4	203-713-7
4,4'-Diaminodiphenylmethane	101-77-9	202-974-4
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4
Acrylamide	79-06-1	201-173-7
Alkanes, C10-13, chloro (Shortchain chlorinated paraffins)	85535-84-8	287-476-5
Aluminosilicate refractory ceramic fibers	-	-
Ammonium dichromate	7789-09-5	232-143-1
Anthracene	120-12-7	204-371-1
Anthracene oil	90640-80-5	292-602-7
Anthracene oil, anthracene paste, distn. Lights	91995-17-4	295-278-5
Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	295-275-9
Anthracene oil, anthracene-low	90640-82-7	292-604-8
Anthracene oil, anthracene paste	90640-81-6	292-603-2
Butyl benzyl phthalate (BBP)	85-68-7	201-622-7

Bis(2-ethylhexyl)phthalate (DEHP)	117-81-7	204-211-0
Bis(tributyl tin)oxide (TBTO)	56-35-9	200-268-0
Boric acid	10043-35-3	233-139-2 / 234-343-4
Chromic acid	7738-94-5	231-801-5
Oligomers of chromic acid and dichromic acid, Dichromic acid	13530-68-2	236-881-5
Chromium trioxide	1333-82-0	215-607-8
Cobalt dichloride	7646-79-9	231-589-4
Cobalt(II) carbonate	513-79-1	208-169-4
Cobalt(II) diacetate	71-48-7	200-755-8
Cobalt(II) dinitrate	10141-05-6	233-402-1
Cobalt(II) sulphate	10124-43-3	233-334-2
Diarsenic pentoxide	1303-28-2	215-116-9
Diarsenic trioxide	1327-53-3	215-481-4
Dibutylphthalate (DBP)	84-74-2	201-557-4
Diisobutyl phthalate	84-69-5	201-553-2
Disodium tetraborate, anhydrous	1330-43-4	215-540-4
Hexabromocyclododecane & major diastereoisomers	25637-99-4 3194-55-6	247-148-4 221-695-9
Major diastereoisomers: Alpha-hexabromocyclododecane	134237-50-6	
Beta-hexabromocyclododecane	134237-51-7	
Gamma-hexabromocyclododecane	134237-52-8	
Lead chromate	7758-97-6	231-846-0
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8	235-759-9
Lead hydrogen arsenate	1327-31-7	232-064-2
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2	215-693-7
Pitch, coal tar, high temp	65996-93-2	266-028-2
Potassium chromate	7789-00-6	232-140-5
Potassium dichromate	7778-50-9	231-906-6
Sodium chromate	7775-11-3	231-889-5
Sodium dichromate	7789-12-0 10588-01-9	234-190-3
Tetraboron disodium heptaoxide, hydrate	12267-73-1	235-541-3
Trichloroethylene	79-01-6	201-167-4
Triethyl arsenate	15606-95-8	427-700-2
Tris(2-chloroethyl)phosphate	115-96-8	204-118-5
Zirconia aluminosilicate refractory ceramic fibers	-	-

Table P – Certain Tributyl Tins (TBTs) & Triphenyl Tins (TPTs)

Substance	CAS Number
Bis(tri-n-butyltin) oxide	56-35-9
Triphenyltin=N, N'-dimethyldithiocarbamate	1803-12-9
Triphenyltin fluoride	379-52-2
Triphenyltin acetate	900-95-8
Triphenyltin chloride	639-58-7
Triphenyltin hydroxide	76-87-9
Triphenyltin fatty acid salts (C=9-11)	18380-71-7 18380-72-8 47672-31-1 94850-90-5
Triphenyltin chloroacetate	7094-94-2
Tributyltin methacrylate	2155-70-6

Bis(tributyltin) fumurate	6454-35-9
Tributyltin fluoride	1983-10-4
Bis(tributyltin)2,3-dibromosuccinate	31732-71-5
Tributyltin acetate	56-36-0
Tributyltin laurate	3090-36-6
Bis(tributyltin) phthalate	4782-29-0
Copolymer of alkyl acrylate, methylmethacrylate and tributyltin methacrylate (alkyl; C=8)	67772-01-4
Tributyltin sulfamate	6517-25-5
Bis(tributyltin) maleate	14275-57-1
Tributyltin chloride	1461-22-9, 7432-38-3
Tributyltin cyclopentane carbonate mixture	5409-17-2
Mixture of tributyltin 1,2,3,4,4a, 4b,5,6,10,10a-deca-7-isopropyl-1, 4a-dimethyl-1-phenanthrenecarboxylate and its analogs (Tributyltin rosin salt)	26239-64-5

Table Q – Polycyclic Aromatic Compounds

Substance	CAS Number
Benzo(a)pyrene	50-32-8
Benzo(e)pyrene	192-97-2
Benz(a)anthracene	56-55-3
Chrysene	218-01-9
Benz(j)fluoranthene	205-82-3
Benz(k)fluoranthene	207-08-9
Dibenz(a,h)anthracene	53-70-3
Benz(e)acephenanthrylene	205-99-2

APPENDIX D

REPORTABLE SUBSTANCES WITH KNOWN CAS NUMBERS

Table R - Antimony/Antimony Compounds

Substance	CAS Number
Antimony	7440-36-0
Antimony trioxide	1309-64-4
Antimony pentoxide	1314-60-9
Antimony trichloride	10025-91-9
Sodium antimonate	15432-85-6
Other Antimony Compounds	-

Table S - Arsenic/Arsenic Compounds other than SVHC

Substance	CAS Number
Arsenic	7440-38-2
Gallium arsenide	1303-00-0
Calcium arsenate	7778-44-1
Calcium arsenite	27152-57-4
Potassium arsenite	10124-50-2
Potassium arsenate	7784-41-0
Other arsenic compounds	-

Table T - Azocolourants & Azodyes

Substance	CAS Number
Biphenyl-4-ylamine	92-67-1
Benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-aminoazotoluene	97-56-3
5-nitro-o-toluidine	99-55-8
4-chloroaniline	106-47-8
4-methoxy-m-phenylenediamine	615-05-4
4,4'-methylenedianiline	101-77-9
3,3'-dichlorobenzidine	91-94-1
3,3'-dimethoxybenzidine	119-90-4
3,3'dimethylbenzidine	119-93-7
4,4'-methylenedi-o-toluidine	838-88-0
6-methoxy-m-toluidine	120-71-8
4,4'-methylene-bis(2-chloroaniline)	101-14-4
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
4-methyl-m-phenylenediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidine	90-04-0
4-amino azobenzene	60-09-03

Table U – Beryllium/Beryllium Compounds

Substance	CAS Number
Beryllium	7440-41-7
Beryllium-aluminum alloy	12770-50-2
Beryllium chloride	7787-47-5
Beryllium fluoride	7787-49-7
Beryllium hydroxide	13327-32-7
Beryllium oxide	1304-56-9
Beryllium phosphate	13598-15-7
Beryllium sulfate	13510-49-1
Beryllium sulfate tetrahydrate	7787-56-6
Beryl ore	1302-52-9
Other beryllium compounds	-

Table V – Bismuth/Bismuth Compounds

Substance	CAS Number
Bismuth	7440-69-9
Bismuth trioxide	1304-76-3
Bismuth nitrate	10361-44-1
Other bismuth compounds	-

Table W – Brominated Flame Retardants other than PBBs and PBDEs

Substance	CAS Number
Brominated flame retardant, which comes under notation of ISO1043-4 code number FR(14) [aliphatic/alicyclic brominated compounds]	-
Brominated flame retardant, which comes under notation of ISO1043-4 code number FR(15) [aliphatic/alicyclic brominated compounds in combination with antimony compounds]	-
Brominated flame retardant, which comes under notation of ISO1043-4 code number FR(16) [aromatic brominated compounds excluding PBBs and PBDEs]	-
Brominated flame retardant, which comes under the notation of ISO1043-4 code number FR(17) [aromatic brominated compounds excluding PBBs and PBDEs in combination with antimony compounds]	-
Brominated flame retardants, which come under the notation of ISO1043-4 code number FR(22) [aliphatic/alicyclic chlorinated and brominated compounds]	-
Brominated flame retardants, which come under notation of ISO1043-4 code number FR(42) [brominated organic phosphorus compounds]	-
Poly (2,6-dibromo-phenylene oxide)	69882-11-7
Tetra-decabromo-diphenoxy-benzene	58965-66-5
1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7
TBBA, unspecified	30496-13-0
TBBA-epichlorhydrin oligomer	40039-93-8
TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
TBBA carbonate oligomer	28906-13-0
TBBA carbonate oligomer, phenoxy end capped	94334-64-2
TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3

TBBA-bisphenol A-phosgene polymer	32844-27-2
Brominated epoxy resin end-capped with tribromophenol	139638-58-7
Brominated epoxy resin end-capped with tribromophenol	135229-48-0
TBBA-bis(2,3-dibromo-propyl-ether)	21850-44-2
TBBA-bis(2-hydroxy-ethyl-ether)	4162-45-2
TBBA-bis(allyl-ether)	25327-89-3
TBBA-dimethyl-ether	37853-61-5
Tetrabromo-bisphenol S (TBBS)	39635-79-5
TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
2,4-Dibromo-phenol	615-58-7
2,4,6-Tribromo-phenol	118-79-6
Pentabromo-phenol	608-71-9
2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Bis(methyl)tetrabromo-phthalate	55481-60-2
Bis(2-ethylhexyl)tetrabromo-phthalate	26040-51-7
2-Hydroxypropyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
TBPA, glycol-and propylene-oxide esters	75790-69-1
N,N'-ethylene-bis(tetrabromo-phthalimide)	32588-76-4
Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
2,3-Dibromo-2-butene-1,4-diol	3234-02-4
Dibromo-neopentyl glycol	3296-90-0
Dibromo-propanol	96-13-9
Tribromo-neopentyl-alcohol	36483-57-5
Poly tribromo-styrene	57137-10-7
Tribromo-styrene	61368-34-1
Dibromo-styrene grafted PP	171091-06-8
Poly dibromo-styrene	31780-26-4
Bromo-/chloro-paraffins	68955-41-9
Bromo-/chloro-alpha-olefin	82600-56-4
Vinylbromide	593-60-3
Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
Tris-(2,4-dibromo-phenyl) phosphate	49690-63-3
Tris-(tribromo-neopentyl) phosphate	19186-97-1
Chlorinated and brominated phosphate ester	125997-20-8
Pentabromo-toluene	87-83-2
Pentabromo-benzyl bromide	38521-51-6
1,3-Butadiene homopolymer, brominated	68441-46-3
Pentabromo-benzyl-acrylate monomer	59447-55-1
Pentabromo-benzyl-acrylate polymer	59447-57-3
Decabromo-diphenyl-ethane	84852-53-9
Tribromo-bisphenyl-maleinimide	59789-51-4
Brominated trimethylphenylindane	59789-51-4
Other brominated flame retardants	-
Hexabromo-cyclo-dodecane (HBCD), unspecifie	3194-55-6
Tetrabromo-cyclo-octane	31454-48-5
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
TBPA Na salt	25357-79-3
Tetrabromo-phthalic-anhydride (TBPA)	632-79-1

Table X – Fluorinated Greenhouse Gases

Substance	CAS Number
Carbon tetrafluoride	75-73-0
Hexafluoroethane	76-16-4
Octafluoropropane	76-19-7
Decafluorobutane	355-19-7
Dodecafluoropentane	678-26-2
Tetradecafluorohexane	355-42-0
Cyclofluorobutane	115-25-3
Sulfur hexafluoride	2551-62-4
HFC-23	75-46-7
HFC-32	75-10-5
HFC-41	593-35-3
HFC-43-10mee	138495-42-8
HFC-125	354-33-6
HFC-134	359-35-3
HFC-134a	811-97-2
HFC-152a	75-37-6
HFC-143	430-66-0
HFC-143a	420-46-2
HFC-227ea	431-89-0
HFC-236cb	677-56-5
HFC-236ea	431-63-0
HFC-236fa	690-39-1
HFC-245ca	679-86-7
HFC-245fa	460-73-1
HFC-365mfc	406-58-6

Table Y - Perchlorates

Substance	CAS #
Lithium perchlorate	7791-02-0
Other perchlorate compounds	-

Table Z - Phthalates (other than SVHC)

Substance	CAS #
1,2-Benzenedicarboxylic acid diisodecyl ester (DIDP)	26761-40-0
Diisononyl phthalate (DINP)	28553-12-0
Di-n-octyl phthalate	117-84-0

Table AA – Selenium/Selenium Compounds

Substance	CAS Number
Selenium	7782-49-2
Hydrogen selenide	7783-07-5
Sodium selenide	1313-85-5
Selenium dioxide	7446-08-4
Sodium selenate	10112-94-4
Dimethyl selenide	593-79-3
Selenium oxide	12640-89-0
Other selenium compounds	-