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TECHNICAL ASSISTANCE FOR IMPLEMENTATION OF THE PERSISTENT ORGANIC POLLUTANTS REGULATION IN TURKEY

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DRAFT BY-LAW ON PERSISTENT ORGANIC POLLUTANTS

FIRST SECTION

Aim, Scope and Basis

Aim (Article 1 of Regulation)
ARTICLE 1 - (1) The purpose of this by-law is to protect human health and the environment from the adverse effects of persistent organic pollutants.

Scope (Article 1 of Regulation)
ARTICLE 2 - (1) This By-law covers provisions in relation to persistent organic substances defined in this legislation with respect to
a) prohibition of production, placing on the market and the use,
b) phasing out or restriction of the use as soon as possible,
c) minimizing the release of these substances with a view to eliminate them
d) wastes composed of, containing, or contaminated by any of these substances

(2) Articles 5 and 6 of this By-law shall not apply to wastes composed of, containing or contaminated by any substances listed in AnnexI or Annex II.

Legal Basis
ARTICLE 3 - (1) This By-law is prepared:
a) based on the grounds of the Environmental Law Number 2872 dated 09/08/1983 and the Decree Law Number 644 on Establishment and Duties of Ministry of Environment and Urbanization dated 04/07/2011, the Decree Law Number 663 on Establishment and Duties of Ministry of Health and Related Authorities dated 11/10/2011; the General Hygiene Law Number 1593, dated 24/04/1930; the Decree Law Number 639 on Establishment and Duties of Ministry of Food, Agriculture and Livestock, dated 03/06/2011; the Law Number 5996 on Veterinary Services, Plant Health, Food and Feeding Stuff dated 11/06/2010, and Stockholm Convention on Persistent Organic Pollutants, ratified by Law No.5871 on Ratification of Stockholm Convention on Persistent Organic Pollutants dated April 14, 2009 hereinafter 'the Convention' and Basel Convention on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants which was ratified by Turkish Grand National Assembly by means of Law 3957 dated 28 December 1993 on Long-Range Transboundary Air Pollution on Persistent Organic Pollutants, hereinafter 'the Protocol'
b) in accordance with the provisions of Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC.

SECOND SECTION

Definitions and General Provision

Definitions (Article 2 of Regulation)
ARTICLE 4 - (1) For the purposes of this By-law:
a) ‘article’ means an object composed of one or more substances and/or preparations which during production is given a specific shape, surface or design determining its end use function to agreater extent than its chemical composition does;
b) ‘disposal’ means any of the operations provided for in Annex II of By-law on General Principles of Waste Management published in the Official Journal dated 05/07/2008 numbered 26927;
c) ‘Ministry’ means the Ministry of Environment and Urbanization.
ç) ‘placing on the market’ means supplying or making available to third persons against payment or free of charge. Imports into the customs territory of Türkiye shall also be deemed to be placed on the market;
d) ‘preparation’ means mixtures or solutions composed of two or more substances;
e) ‘recovery’ means any of the operations provided for in Annex II B of By-law on General Principles of Waste Management;
g) ‘substance’ means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the products and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition;
ğ) ‘waste’ means any substance or object in the categories set out in Annex I of By-law on General Principles of Waste Management which the holder discards or intends or is required to discard;
h) “best available techniques” means the most effective and advanced stage during which activities and operating methods showing the feasability of specific techniques are developed so as to provide basis for conditions of emission limit values and other terms of permit designed to prevent as a whole, the impact of emissions on the environment and minimise them in cases where it is impossible;
i) “best environmental practices” means the implementation of the most appropriate combination of environmental control measures and strategies.

Control of production, placing on the market and use (Article 3 of Regulation)
ARTICLE 5 – (1) The production, placing on the market and use of substances listed in Annex I, whether on their own, in preparations or as constituents of articles, shall be prohibited.
(2) The production, placing on the market and use of substances listed in Annex II, whether on their own, in preparations or as constituents ofarticles, shall be restricted in accordance with the conditions set out in that Annex II.

THIRD SECTION

Exemptions, Stockpiles, Reduction, minimisation and elimination of releases

Exemptions from control measures (Article 4 of Regulation)

ARTICLE 6 –(1) Article 5 shall not apply in the case of:

a) a substance used for laboratory-scale researchor as a reference standard;

b) a substance occurring as an unintentional trace contaminant in substances, preparations or articles.

(2) Article 5 shall not apply in respect of substances occurring as a constituent of articles produced before or on the date of entry into force of this By-law until six months after the date of its entry into force.

Article 5 shall not apply in the case of a substance occurring as a constituent of articles already in use before or on the date of entry into force of this By-law.

However, immediately upon becoming aware of articles referred in the first and second subparagraph, Relevant Institution shall inform the Ministry accordingly.

(3) With respect to substances included in Part A, Annex 2, producers, manufacturers and importers shall report in the format set by the Ministry once a year, in the event they produce, use or import the substance under conditions specified in the relevant Annex.

(4) The Ministry, evaluating reports sent under 3rd paragraph shall report to the Convention Secretariat on the exemption.

Stockpiles (Article 5 of Regulation)

ARTICLE 7 – (1) The holder of a stockpile, which consists of or contains any substance listed in Annex I or Annex II, for which no use is permitted, shall manage that stockpile as waste and in accordance with Article 9.

(2) The holder of a stockpile greater than 50 kg, consisting of orcontaining any substance listed in Annex I or Annex II, and the useof which is permitted shall provide the Ministry in which the stockpile is established with informationconcerning the nature and size of that stockpile. Such informationshall be provided within 12 months of the entry into force of thisBy-law and of amendments to Annexes I or II and annually thereafter until the deadline specified in Annex I or II for restricted use.

The holder shall manage the stockpile in a safe, efficient and environmentally sound manner.

(3) Ministry shall monitor the use and management of notifiedstockpiles.

Reduction, minimisation and elimination of releases (Article 6 of Regulation)

ARTICLE 8 – (1) Within two years of the date of entry into force of this By-law, the Ministry and Relevant Institutions shall draw up and maintain release inventories for the substances listed in Annex III into air, water and land in accordancewith their obligations under the Convention and the Protocol.

(2) Ministry shall communicate its action plan on measures to identify, characterise and minimise with a view to eliminating wherefeasible as soon as possible the total releases developed in accordance with its obligations under the Convention, to both the Ministry and the other Relevant Institution as part of its national implementation plan, pursuant to Article 10. The action plan shall include measures to promote the development and,where it deems appropriate, shall require the use of substitute ormodified materials, products and processes to prevent the formationand release of the substances listed in Annex III.

(3) Ministry shall, when considering proposals to construct new facilities or to significantly modify existing facilities using processes that release chemicals listed in Annex III, give priority consideration to actions that have similar uses but which avoid the formation and release of substances listed in Annex III.

FOURTH SECTION

Waste Management

Waste management (Article 7 of Regulation)

ARTICLE 9 – (1) Producers and holders of waste shall undertake all reasonableefforts to avoid, where feasible, contamination of this waste withsubstances listed in Annex IV.

(2) Notwithstanding By-law on control of polychlorinated biphenyls and polychlorinated terphenyls published in the Official Journal dated 27/12/2007 numbered 26739, waste consisting of, containing or contaminated by any substance listed in Annex IV shall be disposed of or recovered, without undue delay and in accordance with Annex V, part 1 in such a way as to ensure that the persistentorganic pollutant content is destroyed or irreversibly transformed so thatthe remaining waste and releases do not exhibit the characteristics of persistent organic pollutants.

In carrying out such a disposal or recovery, any substance listed inAnnex IV may be isolated from the waste, provided that thissubstance is subsequently disposed of in accordance with the first subparagraph.

(3) Disposal or recovery operations that may lead to recovery, recycling, reclamation or re-use of the substances listed in Annex IV shall be prohibited.

(4) By way of derogation from paragraph 2:

a) waste containing or contaminated by any substance listed in Annex IV may be otherwise disposed of or recovered in accordance with the legislation, provided that the content of the listed substances in the waste is belowthe concentration limits to be specified in Annex IV. Those measures, designed to amend non-essential elements of this By-law, shall be adopted in accordance with the regulatoryprocedure with scrutiny referred to in Article 18. Until suchtime as concentration limits are established in accordance with such procedure, the Ministry may adopt or apply concentration limits or specific technical requirements in respect of the disposal or recovery of wasteunder this point.

b) Ministry, in exceptional cases, allow wastes listed in Annex V, part 2 containing or contaminated by any substancelisted in Annex IV up to concentration limits to be specified inAnnex V, part 2, to be otherwise dealt with in accordance with amethod listed in Annex V, part 2 provided that:

1) the holder concerned has demonstrated to the satisfaction of the Ministry concerned that decontamination of the waste in relation to substances listed in Annex IV was not feasible, and that destruction or irreversibletransformation of the persistent organic pollutant content,performed in accordance with best environmental practice or best available techniques, does not represent the environmentallypreferable option and the competent authority has subsequently authorised the alternative operation;

2) this operation is in accordance with the legislation of the Ministry and Relevant Institutions and the conditions laid down in relevant additional measures referred to in paragraph 6; and

3) The Ministry and the Relevant Institution concerned has informed the other ministries and the Ministry of its authorisation and the justification for it.

(5) Concentration limits in Annex V, part 2 shall be established by the Ministry for the purposes of paragraph 4(b) of this Article. Those measures, designed to amend non-essential elements of this By-law, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 18.

Until such time as these concentration limits are established:

a) the Ministry and Relevant Institutions may adopt or apply concentration limits orspecific technical requirements in respect of waste being dealt withunder paragraph 4(b);

b) where waste is being dealt with under paragraph 4(b), the holders concerned shall provide information on the persistent organic pollutant content of the waste to the competent authority.

(6) The Ministry may, where appropriate, and taking into considerationtechnical developments and relevant international guidelinesand decisions and any authorizations granted by a Ministry and Relevant Institutions in accordance with paragraph 4 and Annex V, adopt additional measures relating tothe implementation of this Article. The Ministry shall define a format for the submission of

the information by Relevant Institutions in accordance with paragraph 4(b)(iii). Such measures shall be decided in accordance with the procedure laid down in Article 18.

FIFTH SECTION

Implementation, Monitoring, Information Exchange

Implementation plans (Article 8 of Regulation)
ARTICLE 10 – (1) The Ministry shall, if needed, revise and update the national implementation plan which is prepared to fulfill its obligations under the Convention.
(2) The Ministry shall exchange information about the content the relevant institutions/organizations during review and update of the national implementation plan.
(3) The Ministry shall forward to the relevant organizations the national implementation plan for approval.

Monitoring (Article 9 of Regulation)
ARTICLE 11 – (1) The Ministry, in collaboration with the Relevant Institutions, shall establish, appropriate programmes and mechanisms, consistent with the latest developments, for the regular provision of comparable monitoring data on the substances as identified in Annex III in the environment.

Information exchange and Technical Assistance (Article 10 of Regulation)
ARTICLE 12 – (1) The Ministry and the Relevant Institution shall facilitate and undertake the exchange within the Community and with third countries of information relevant to the reduction, minimisation or elimination, where feasible, of the production, use and release of persistent organic pollutants and to alternatives to those substances, specifying the risks and the economic and social costs related to such alternatives.
(2) The Ministry and Relevant Institution, as appropriate, shall promote and facilitate with regard to persistent organic pollutants:
a) awareness programmes, including relating to their health and environmental effects and their alternatives and on the reduction or elimination of their production, use and release, especially for:
1) policy and decision makers,
2) particularly vulnerable groups;
b) the provision of public information;
c) training, including workers, scientists, educators and technical andmanagerial personnel.
(3) Without prejudice to Right to Information Law published in the Official Journal dated 09/10/2003 and numbered 4982 on public access to information, information on health and safety of humans and the environment shall not be regarded as confidential. The Ministry and Relevant Institution that exchange other information with other institutions shall protect any confidential information as mutually agreed.

SIXTH SECTION

Creating Inventory, Reporting, Chemicals and Waste Advisory Committee

Creating Inventory and Reporting (Article 12 of Regulation)
ARTICLE 14 – (1) Relevant Institution shall every three years forward to the Ministry information on the application of this By-law, including information on infringements and penalties.
(2) Relevant Institution shall provide the Ministry every year with statistical data on the actual or estimated total production and placingon the market of any substance listed in Annex I or II.
(3) Within three years of the date of entry into force of this By-law and every three years thereafter, Relevant Institution shall provide the Ministry with:
a) summary information compiled from the notifications, concerning stockpiles, received pursuant to Article 7(2);
b) summary information compiled from the release inventories drawn up pursuant to Article 8(1);
c) summary information on the presence of dioxins, furans and PCBs as identified in Annex III in the environment, as compiled pursuant to Article 11.
(4) Pursuant to paragraphs 1, 2 and 3, the Ministry shall take necessary actions to create inventory with the the data and information to be provided by the relevant institutions.
(5) Regarding the substances listed in the Convention, the Ministry shall, at intervals to be determined by the Conference of the Parties of the Convention, compile a report on the basis of the information in accordance with paragraph 2 and communicate it to the Secretariat of the Convention.

Penalties (Article 13 of Regulation)
ARTICLE 15 – (1) Relevant Institutions shall lay down the rules on penalties applicable to infringements of the provisions of this By-law and shall take all measures necessary to ensure that they are implemented. The penaltiesprovided for must be effective, proportionate and dissuasive. The Relevant Institutions shall notify those provisions to the Ministry one year after entry into force of this By-law at the latest and shallnotify it without delay of any subsequent amendment affecting them.

Relevant Institutions' Point of Contact (Article 15 of Regulation)
ARTICLE 17 – (1) Each Relevant Institution shall designate a point of contact from their institution who is responsible for the administrative tasks required by this By-law.
(2) It shall inform the Ministry of such designation at the latest threemonths after the entry into force of this By-law.

Chemicals and Waste Advisory Committee (Article 16 and 17 of Regulation)
ARTICLE 18 – (1) The Ministry shall be assisted by the Chemicals and Waste Advisory Committee established by Article 8 of By-law on Classification, Packaging and Labelling of Dangerous Substances and Preparations published in the Official Journal dated 26/12/2008 numbered 27092.
(2) The Chemicals and Waste Advisory Committee shall be composed of authorised representatives of the following Relevant Institutions and private sector institutions:
Ministry of Environment and Urbanization, 3 representatives,
Ministry of Health, 2 representatives,
Ministry of Food, Agriculture and Livestock, 2 representatives,
Other participants invited specific to subject.
(3) This Committee shall support the Ministry for all matters under this By-law including for those relating to waste.

Execution

ARTICLE 19 – (1)This By-law shall enter into force one year after the date it is published.

ARTICLE 20 - (1) Provisions of this By-law shall be administered by the Minister of Environment and Urbanization.

ANNEX I

LIST OF SUBSTANCES SUBJECT TO PROHIBITIONS

Part A – Substances listed in the Convention and in the Protocol as well as substances listed only in the Convention

Substance	CAS No	EC No
DDT (1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane)	50-29-3	200-024-3
Chlordane	57-74-9	200-349-0
Hexachlorocyclohexanes, including lindane	58-89-9 319-84-6 319-85-7 608-73-1	200-401-2 206-270-8 206-271-3 210-168-9
Dieldrin	60-57-1	200-484-5
Endrin	72-20-8	200-775-7
Heptachlor	76-44-8	200-962-3
Endosulfan	115-29-7 959-98-8 33213-65-9	204-079-4
Hexachlorobenzene	118-74-1	200-273-9
Chlordecone	143-50-0	205-601-3
Aldrin	309-00-2	206-215-8
Pentachlorobenzene	608-93-5	210-172-5
Mirex	2385-85-5	219-196-6
Toxaphene	8001-35-2	232-283-3
Hexabromobiphenyl	36355-01-8	252-994-2

Part B — Substances listed only in the Protocol

Substance	CAS No	EC No

ANNEX II

LIST OF SUBSTANCES SUBJECT TO RESTRICTIONS

Part A – Substances listed in the Convention and in the Protocol

Substance	CAS No	EC No	Specific exemption on intermediate use or other specification
Tetrabromodiphenyl ether $C_{12}H_6Br_4O$			1. Article 6 (1)(b) shall apply to concentrations of tetrabromodiphenyl ether equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles. 2. By way of derogation, the production, placing on the market and use of the following shall be allowed: (a) Without prejudice to subparagraph (b), articles and preparations containing concentrations below 0,1 % of tetrabromodiphenyl ether by weight when produced partially or fully from recycled materials or materials from waste prepared for re-use; (b) Electrical and electronic devices within the scope of the EE Directive. 3. Use of articles already in use in the before the date of entry into force of this regulation containing tetrabromodiphenyl ether as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles.
Pentabromodiphenyl ether $C_{12}H_5Br_5O$			1. Article 6 (1)(b) shall apply to concentrations of pentabromodiphenyl ether equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles. 2. By way of derogation, the production, placing on the market and use of the following shall be allowed: (a) Without prejudice to subparagraph (b), articles and preparations containing concentrations below 0,1 % of pentabromodiphenyl ether by weight

			when produced partially or fully from recycled materials or materials from waste prepared for re-use; (b) Electrical and electronic devices within the scope of the EE Directive. Use of articles already in use in the before the date of entry into force of this regulation containing pentabromodiphenyl ether as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles.
Hexabromodiphenyl ether $C_{12}H_4Br_6O$			1. Article 6 (1)(b) shall apply to concentrations of hexabromodiphenyl ether equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles. 2. By way of derogation, the production, placing on the market and use of the following shall be allowed: (a) Without prejudice to subparagraph (b), articles and preparations containing concentrations below 0,1 % of hexabromodiphenyl ether by weight when produced partially or fully from recycled materials or materials from waste prepared for re-use; (b) Electrical and electronic devices within the scope of the EE Directive. Use of articles already in use in the before the date of entry into force of this regulation containing hexabromodiphenyl ether as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles.
Heptabromodiphenyl ether $C_{12}H_3Br_7O$			1. Article 6 (1)(b) shall apply to concentrations of heptabromodiphenyl ether equal to or below 10 mg/kg (0,001 % by weight) when it occurs in substances, preparations, articles or as constituents of the flame-retarded parts of articles. 2. By way of derogation, the production, placing on the market and use of the following shall be

			allowed: (a) Without prejudice to subparagraph (b), articles and preparations containing concentrations below 0,1 % of heptabromodiphenyl ether by weight when produced partially or fully from recycled materials or materials from waste prepared for re-use; (b) Electrical and electronic devices within the scope of the EE Directive. Use of articles already in use in the before the date of entry into force of this regulation containing heptabromodiphenyl ether as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles.
Perfluorooctanoic sulfonic acid and derivatives (PFOS) C8F17SO2X (X = OH, Metal salt (O-M+), halide, amide, or other derivatives including polymers.)			1. Article 6 (1)(b) shall apply to concentrations of PFOS concentration in a substance or mixture is equal to or lower than 10 mg/kg (% 0.001 by weight). 2. Article 6(1)(b) shall apply to concentrations of PFOS in semi-finished products or articles, or parts thereof, if the concentration of PFOS is lower than 0,1 % by weight calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is lower than 1 µg/m^2 of the coated material. 3. Use of articles already in use in the before the date of entry into force of this regulation containing PFOS as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles. 4. If the quantity released into the environment is minimized, production and placing on the market is allowed for the following specific uses: (a) photoresists or anti reflective coatings for photolithography processes; (b) photographic coatings applied to films, papers, or printing plates; (c) mist suppressants for non-decorative hard chromium (VI) plating in closed loop systems;

			(d) hydraulic fluids for aviation. With regards derogations in points (a) to (d), the relevant best available techniques for the prevention and minimization of emissions of PFOS described in the Guide published by the Ministry shall apply. ► M8 6. Once standards are adopted by the European Committee for Standardisation (CEN) they shall be used as the analytical test methods for demonstrating the conformity of substances, preparations and articles to paragraphs 1 and 2. Any other analytical method for which the user can prove equivalent performance could be used as an alternative to the CEN standards.
Polychlorinated biphenyls (PCB)	1336-36-3 and others	215-648-1 and others	Notwithstanding By-law on control of polychlorinated biphenyls and polychlorinated terphenyls published in the Official Journal dated 27/12/2007 numbered 26739, the use of articles in use before the date of entry into force of this regulation is allowed.
Hexabromocyclododecane (HBCDD)	25637-99-4	247-148-4	1. Use of articles already in use in the before the date of entry into force of this regulation containing HBCDD as a constituent of such articles shall be allowed. Article 6(2), third and fourth subparagraphs shall apply in relation to such articles. 2. Use of HBCDD as a constituent in XPS and EPS production for use in building materials is allowed.

Part B –Substances listed only in the Protocol

Substance	CAS No	EC No	Specific exemption on intermediate use or other specification
Hexachlorobutadiene	87-68-3	201-765-5	1. Placing on the market and use of articles produced before or on 10 July 2012 containing hexachlorobutadiene as a constituent of such articles shall be allowed until 10 January 2013. 2. Placing on the market and use of articles already in use before or on 10 July 2012 containing hexachlorobutadiene as a constituent of such articles shall be allowed.

			3. Article 6(2), third and fourth subparagraphs shall apply to articles referred to in paragraphs 1 and 2.
Polychlorinated naphthalenes (Polychlorinated naphthalenes means chemical compounds based on the naphthalene ring system, where one or more hydrogen atoms have been replaced by chlorine atoms.)			1. Placing on the market and use of articles produced before or on 10 July 2012 containing polychlorinated naphthalenes as a constituent of such articles shall be allowed until 10 January 2013. 2. Placing on the market and use of articles already in use before or on 10 July 2012 containing polychlorinated naphthalenes as a constituent of such articles shall be allowed. 3. Article 6(2), third and fourth subparagraphs shall apply to articles referred to in paragraphs 1 and 2.
Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCPs)	85535-84-8	287-476-5	1. By way of derogation, the production, placing on the market and use of substances or preparations containing SCCPs in concentrations lower than 1 % by weight shall be allowed. 2. By way of derogation, the production, placing on the market, and use of SCCPs in the following applications shall be allowed: (a) fire retardants in rubber used in conveyor belts in the mining industry; (b) fire retardants in dam sealants. 3. Placing on the market and use of articles produced before or on 10 July 2012 containing SCCPs as a constituent of such articles shall be allowed until 10 January 2013. 4. Placing on the market and use of articles already in use before or on 10 July 2012 containing SCCPs as a constituent of articles shall be allowed. 5. Article 6(2), third and fourth subparagraphs shall apply to articles referred to in paragraphs 1 and 2.

ANNEX III

Part I. LIST OF SUBSTANCES SUBJECT TO RELEASE REDUCTION PROVISIONS

Substance	CAS No
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)	
Hexachlorobenzene (HCB)	CAS No: 118-74-1
Polychlorinated biphenyls (PCB)	
Polycyclic aromatic hydrocarbons (PAHs) For the purpose of emission inventories, the following four compound indicators shall be used: benzo(a)pyrene, benzo(b) fluoranthene, benzo(k)fluoranthene and indeno(1,2,3-cd)pyrene	
Pentachlorobenzene	CAS No 608-93-5

Part II. Primary Source Categories

Polychlorinated dibenzo-p-dioxins and dibenzofurans, Hexachlorobenzene and Polychlorinated biphenyls are unintentionally formed and released from thermal processes involving organic matter and chlorine as a result of incomplete combustion or chemical reactions. The following industrial source categories have the potential for comparatively high formation and release of these chemicals to the environment:

(a) Waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge;

(b) Cement kilns firing hazardous waste;

(c) Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching;

(d) The following thermal processes in the metallurgical industry:

(i) Secondary copper production;

(ii) Sinter plants in the iron and steel industry;

(iii) Secondary aluminium production;

(iv) Secondary zinc production.

Part III. Various thermal sources:

Polychlorinated dibenzo-p-dioxins and dibenzofurans, Hexachlorobenzene and Polychlorinated biphenyls may also be unintentionally formed and released from the following source categories, including:

(a) Open burning of waste, including burning of landfill sites;

(b) Thermal processes in the metallurgical industry not mentioned in Part II;

(c) Residential combustion sources;

(d) Fossil fuel-fired utility and industrial boilers;

(e) Firing installations for wood and other biomass fuels;

(f) Specific chemical production processes releasing unintentionally formed persistent organic pollutants, especially production of chlorophenols and chloranil;

(g) Crematoria;

(h) Motor vehicles, particularly those burning leaded gasoline;

(i) Destruction of animal carcasses;

(j) Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction);

(k) Shredder plants for the treatment of end of life vehicles;

(l) Smoldering of copper cables;

(m) Waste oil refineries.

Part IV. Definitions

1. For the purposes of this Annex;

(a) “Polychlorinated biphenyls” means aromatic compounds formed in such a manner that the hydrogen atoms on the biphenyl molecule (two benzene rings bonded together by a single carbon-carbon bond) may be replaced by up to ten chlorine atoms; and

(b) “Polychlorinated dibenzo-p-dioxins” and “polychlorinated dibenzofurans” are tricyclic, aromatic compounds formed by two benzene rings connected by two oxygen atoms in polychlorinated dibenzo-p-dioxins and by one oxygen atom and one carbon-carbon bond in polychlorinated dibenzofurans and the hydrogen atoms of which may be replaced by up to eight chlorine atoms.

2. In this Annex, the toxicity of polychlorinated dibenzo-p-dioxins and dibenzofurans is expressed using the concept of toxic equivalency which measures the relative dioxin-like toxic activity of different congeners of polychlorinated dibenzo-p-dioxins and dibenzofurans and coplanar polychlorinated biphenyls in comparison to 2,3,7,8-tetrachlorodibenzo-p-dioxin. The toxic equivalent factor values to be used for the purposes of this Convention shall be consistent with

accepted international standards, commencing with the World Health Organization 1998 mammalian toxic equivalent factor values for polychlorinated dibenzo-pdioxins and dibenzofurans and coplanar polychlorinated biphenyls. Concentrations are expressed in toxic equivalents.

Part V: General guidance on best available techniques and best environmental practices

This Part provides general guidance to Parties on preventing or reducing releases of the chemicals listed in Part I.

A. General prevention measures relating to both best available techniques and best environmental practices

Priority should be given to the consideration of approaches to prevent the formation and release of the chemicals listed in Part I. Useful measures could include:

(a) The use of low-waste technology;

(b) The use of less hazardous substances;

(c) The promotion of the recovery and recycling of waste and of substances generated and used in a process;

(d) Replacement of feed materials which are persistent organic pollutants or where there is a direct link between the materials and releases of persistent organic pollutants from the source;

(e) Good housekeeping and preventive maintenance programs;

(f) Improvements in waste management with the aim of the cessation of open and other uncontrolled burning of wastes, including the burning of landfill sites. When considering proposals to construct new waste disposal facilities, consideration should be given to alternatives such as activities to minimize the generation of municipal and medical waste, including resource recovery, reuse, recycling, and waste separation and promoting products that generate less waste. Under this approach, public health concerns should be carefully considered;

(g) Minimization of these chemicals as contaminants in products;

(h) Avoiding elemental chlorine or chemicals generating elemental chlorine for bleaching.

B. Best techniques

The concept of best techniques is not aimed at the prescription of any specific technique or technology, but at taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions. Appropriate control techniques to reduce releases of the chemicals listed in Part I are in general the same. In determining best techniques, special consideration should be given, generally or in specific cases, to the following factors, bearing in mind the likely costs and benefits of a measure and consideration of precaution and prevention:

(a) General considerations:

(i) The nature, effects and mass of the releases concerned: techniques may vary depending on source size;

(ii) The commissioning dates for new or existing installations;

(iii) The time needed to introduce the best available technique;

(iv) The consumption and nature of raw materials used in the process and its energy efficiency;

(v) The need to prevent or reduce to a minimum the overall impact of the releases to the environment and the risks to it;

(vi) The need to prevent accidents and to minimize their consequences for the environment;

(vii) The need to ensure occupational health and safety at workplaces;

(viii) Comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;

(ix) Technological advances and changes in scientific knowledge and understanding.

(b) General release reduction measures: When considering proposals to construct new facilities or significantly modify existing facilities using processes that release chemicals listed in this Annex, priority consideration should be given to alternative processes, techniques or practices that have similar usefulness but which avoid the formation and release of such chemicals. In cases where such facilities will be constructed or significantly modified, in addition to the prevention measures outlined in section A of Part V the following reduction measures could also be considered in determining best available techniques:

(i) Use of improved methods for flue-gas cleaning such as thermal or catalytic oxidation, dust precipitation, or adsorption;

(ii) Treatment of residuals, wastewater, wastes and sewage sludge by, for example, thermal treatment or rendering them inert or chemical processes that detoxify them;

(iii) Process changes that lead to the reduction or elimination of releases, such as moving to closed systems;

(iv) Modification of process designs to improve combustion and prevent formation of the chemicals listed in this Annex, through the control of parameters such as incineration temperature or residence time.

C. Best environmental practices

The Conference of the Parties may develop guidance with regard to best environmental practices.

ANNEX IV

List of Substances Subject to Waste Management Provisions Set Out in Article 7

Substance	CAS No	EC No	Concentration limit referred to in article 7(4)(a)
Tetrabromodiphenyl ether $C_{12}H_6Br_4O$			
Pentabromodiphenyl ether $C_{12}H_5Br_5O$			
Hexabromodiphenyl ether $C_{12}H_4Br_6O$			
Heptabromodiphenyl ether $C_{12}H_3Br_7O$			
Perfluorooctanoic sulfonic acid and derivatives (PFOS) C8F17SO2X (X = OH, Metal salt (O-M+), halide, amide, or other derivatives including polymers.)			
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)			15 µg/kg (1)
DDT (1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane)	50-29-3	200-024-3	50 mg/kg
Chlordane	57-74-9	200-349-0	50 mg/kg
Hexachlorocyclohexanes, including lindane	58-89-9 319-84-6 319-85-7 608-73-1	210-168-9 200-401-2 206-270-8 206-271-3	50 mg/kg
Dieldrin	60-57-1	200-484-5	50 mg/kg
Endrin	72-20-8	200-775-7	50 mg/kg
Heptachlor	76-44-8	200-962-3	50 mg/kg
Hexachlorobenzene	118-74-1	200-273-9	50 mg/kg
Chlordecone	143-50-0	205-601-3	50 mg/kg
Aldrin	309-00-2	206-215-8	50 mg/kg
Pentachlorobenzene	608-93-5	210-172-5	50 mg/kg
Polychlorinated Biphenyls (PCB)	1336-36-3 and others	215-648-1	50 mg/kg (2)
Mirex	2385-85-5	219-196-6	50 mg/kg
Toxaphene	8001-35-2	232-283-3	50 mg/kg
Hexabromobiphenyl	36355-01-8	252-994-2	50 mg/kg

(1) The limit is calculated as PCDD and PCDF according to the following toxic equivalency factors (TEFs):

PCDD	TEF
2,3,7,8-TeCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0,1
1,2,3,6,7,8-HxCDD	0,1
1,2,3,7,8,9-HxCDD	0,1
1,2,3,4,6,7,8-HpCDD	0,01
OCDD	0,0003
PCDF	TEF
2,3,7,8-TeCDF	0,1
1,2,3,7,8-PeCDF	0,03

2,3,4,7,8-PeCDF	0,3
1,2,3,4,7,8-HxCDF	0,1
PCDD	TEF
1,2,3,6,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDF	0,1
2,3,4,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDF	0,01
1,2,3,4,7,8,9-HpCDF	0,01
OCDF	0,0003

(2) Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

ANNEX V

WASTE MANAGEMENT

Part 1 Disposal and recovery under Article 9(2)

The following disposal and recovery operations, as provided for in Annex IIA and IIB of By-law on General Principles of Waste Management dated 05/07/2008 and numbered 26927, are permitted for the purposes of Article 9(2) when applied in such a way as to ensure that the persistent organic pollutant content is destroyed or irreversibly transformed.
D9 : Physico-chemical treatment,
D10 : Incineration on land, and
R1 : Use principally as a fuel or other means to generate energy, excluding waste containing PCBs.
R4 : Recycling/reclamation of metals and metal compounds, under the following conditions: The operations are restricted to residues from iron- and steel-making processes such as dusts or sludges from gas treatment or mill scale or zinc-containing filter dusts from steelworks, dusts from gas cleaning systems of copper smelters and similar wastes and lead-containing leaching residues of the non-ferrous metal production. Waste containing PCBs is excluded. The operations are restricted to processes for the recovery of iron and iron alloys (blast furnace, shaft furnace and hearth furnace) and non-ferrous metals (Waelz rotary kiln process, bath melting processes using vertical or horizontal furnaces), provided the facilities meet as minimum requirements the emission limit values laid down in Waste Incineration Directive dated 06/10/2010 and numbered 27721, whether or not the processes are subject to that Directive, and without prejudice to the other provisions of the said Directive.

Pre-treatment operation prior to destruction or irreversible transformation pursuant to this Part of this Annex may be performed, provided that a substance listed in Annex IV that is isolated from the waste during the pre-treatment is subsequently disposed of in accordance with this Part of this Annex. Where only part of a product or waste, such as waste equipment, contains or is contaminated with persistent organic pollutants, it shall be separated and then disposed of in accordance with the requirements of this Regulation. In addition, repackaging and temporary storage operations may be performed prior to such pre-treatment or prior to destruction or irreversible transformation pursuant to this part of this Annex.

Pre-treatment operation prior to destruction or irreversible transformation pursuant to this Part of this Annex may be performed, provided that a substance listed in Annex IV that is isolated from the waste during the pre-treatment is subsequently disposed of in accordance with this Part of this Annex. Where only part of a product or waste, such as waste equipment, contains or is contaminated with persistent organic pollutants, it shall be separated and then disposed of in accordance with the requirements of this Regulation. In addition, repackaging and temporary storage operations may be performed prior to such pre-treatment or prior to destruction or irreversible transformation pursuant to this part of this Annex.

Part 2 Wastes and operations to which Article 9(4)(b) applies

The following operations are permitted for the purposes of Article 9(4)(b) in respect of the wastes specified, defined by the six-digit code as classified in By-law on General Principles of Waste Management.
Pre-treatment operations prior to permanent storage pursuant to this part of this Annex may be performed, provided that a substance listed in Annex IV that is isolated from the waste during the pre-treatment is subsequently disposed of in accordance with this part of this Annex. In addition,

repackaging and temporary storage operations may be performed prior to such pre-treatment or prior to permanent storage pursuant to this part of this Annex.

Wastes as classified in By-law on General Principles of Waste Management		Maximum concentration limits of substances listed in Annex IV (1)	Operation
10	Wastes from thermal processes	Aldrin: 5 000 mg/kg; Chlordane: 5 000 mg/kg; Chlordecone: 5 000 mg/kg; DDT (1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane) 5 000 mg/kg; Dieldrin: 5 000 mg/kg; Endrin: 5 000 mg/kg; Heptabromodiphenyl ether (C12H3Br7O); Heptachlor: 5 000 mg/kg; Hexabromobiphenyl: 5 000 mg/kg; Hexabromobiphenyl ether C12H4Br6O; Hexachlorobenzene: 5 000 mg/kg; Hexachlorocyclohexanes, including lindane: 5 000 mg/kg; Mirex: 5 000 mg/kg; Pentabromodiphenyl ether C12H5Br5O; Pentachlorobenzene: 5 000 mg/kg; Perfluorooctanoic sulfonic acid and derivatives (PFOS) (C8F17SO2X) (X = OH, Metal salt (O-M+), halide, amide, or other derivatives including polymers.) Polychlorinated Biphenyls (PCB) (5): 50 mg/kg; Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF) (6): 5 mg/kg; Tetrabromodiphenyl ether C12H6Br4O; Toxaphene: 5 000 mg/kg;	1. Permanent storage allowed only when all of the below conditions are met: – safe, deep, underground, hard rock formations, – salt mines or – a landfill site for hazardous waste(provided that the waste is solidified or stabilized where technically feasible as required for classification of the waste in line with By-law on General Principles of Waste Management) 2. The provisions of By-law on Landfill of Wastes have to be adhered to;
10 01	Wastes from power stations and other combustion plants (except 19)		
10 01 14 *(2)	Bottom ash, slag and boiler dust from co-incineration containing dangerous substances		
10 01 16 *	Fly ash from co-incineration containing dangerous substances		
10 02	Wastes from the iron and steel industry		
10 02 07 *	Solid wastes from gas treatment containing dangerous substances		
10 03	Wastes from aluminium thermal metallurgy		
10 03 04 *	Primary production slags		
10 03 08 *	Salt slags from secondary production		
10 03 09 *	Black drosses from secondary production		
10 03 19 *	Flue-gas dust containing dangerous substances		
10 03 21 *	Other particulates and dust (including ball-mill dust) containing dangerous substances		
10 03 29 *	Wastes from treatment of salt slags and black drosses containing dangerous substances		
10 04	Wastes from lead thermal metallurgy		
10 04 01 *	Slags from primary and secondary production		
10 04 02 *	Dross and skimmings from primary and secondary production		
10 04 04 *	Flue-gas dust		

10 04 05 *	Other particulates and dust		
10 04 06 *	Solid wastes from gas treatment		
10 05	Wastes from zinc thermal metallurgy		
10 05 03 *	Flue-gas dust		
10 05 05 *	Solid waste from gas treatment		
10 06	Wastes from copper thermal metallurgy		
10 08	Wastes from other non-ferrous thermal metallurgy		
10 08 08 *	Salt slag from primary and secondary production		
10 08 15 *	Flue-gas dust containing dangerous substances		
10 09	Wastes from casting of ferrous pieces		
10 09 09 *	Flue-gas dust containing dangerous substances		
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST		
16 11	Waste linings and refractories		
16 11 01 *	Carbon-based linings and refractories from metallurgical processes containing dangerous substances		
16 11 03 *	Other linings and refractories from metallurgical processes containing dangerous substances		
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)		
17 01	concrete, bricks, tiles and ceramics		
17 01 06 *	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing		

	dangerous substances.		
17 05	Soil including excavated soil from contaminated sites, stones and dredging spoil		
17 05 03 *	Inorganic fraction of soil and stones containing dangerous substances		
17 09	Other construction and demolition wastes		
17 09 02 *	Construction and demolition wastes containing PCB, excluding PCB containing equipment.		
17 09 03 *	Other construction and demolition wastes containing dangerous substances		
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FROM INDUSTRIAL USE		
19 01	Wastes from incineration or pyrolysis of waste		
19 01 07 *	Solid wastes from gas treatment		
19 01 11 *	Bottom ash and slag containing dangerous substances		
19 01 13 *	Fly ash containing dangerous substances		
19 01 15 *	Boiler dust containing dangerous substances		
19 04	Vitrified waste and waste from vitrification		
19 04 02 *	Fly ash and other flue-gas treatment wastes		
19 04 03 *	Non-vitrified solid phase		

(1) These limits exclusively apply to a landfill site for hazardous waste and do not apply to permanent underground storage facilities for hazardous wastes, including salt mines.

(2) Any waste marked with an asterisk * is considered as hazardous waste pursuant to By-law on Control of Dangerous Wastes and is subject to the provisions of that By-law.
(3) Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
(4) The limit is calculated as PCDD and PCDF according to the following toxic equivalency factors (TEFs):

PCDD	TEF
2,3,7,8-TeCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0,1
1,2,3,6,7,8-HxCDD	0,1
1,2,3,7,8,9-HxCDD	0,1
1,2,3,4,6,7,8-HpCDD	0,01
OCDD	0,0003
PCDF	TEF
2,3,7,8-TeCDF	0,1
1,2,3,7,8-PeCDF	0,03
2,3,4,7,8-PeCDF	0,3
1,2,3,4,7,8-HxCDF	0,1
1,2,3,6,7,8-HxCDF	0,1
1,2,3,7,8,9-HxCDF	0,1
PCDD	TEF
2,3,4,6,7,8-HxCDF	0,1
1,2,3,4,6,7,8-HpCDF	0,01
1,2,3,4,7,8,9-HpCDF	0,01
OCDF	0,0003

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