

POPs Chemicals

Decabromodiphenyl ether (Commercial mixture, c-decaBDE)

CAS No. 1163-19-5

HS Code: 29093038

Full Name: Decabromodiphenyl ether

Trade Name:

DE-83R, DE-83, Bromkal 82-ODE, Bromkal 70-5, Saytex 102 E, FR1210, Flamecut 110R. FR-300-BA, which was produced in the 1970s, is no longer commercially available (ECA, 2010).

Synonyms:

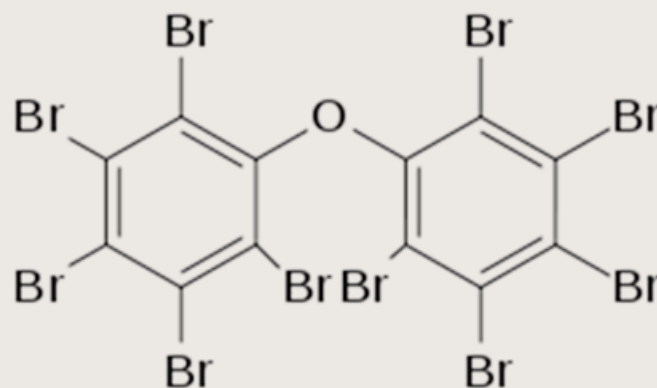
decabromodiphenyl ether; decabromodiphenyl oxide; bis (pentabromophenyl) oxide; decabromo biphenyl oxide; decabromo phenoxybenzene; benzene 1; 1' oxybis; decabromo derivative; decaBDE; DBDPE; DBBE; DBBO; DBDPO

Uses:

Decabromodiphenyl ether (DecaBDE) has been mainly used as an additive flame retardant combining with the material where it is used to inhibit the ignition and slow the rate where flames spread. It has a wide range of applications including in plastics, polymers, composites, textiles, adhesives, sealants, coatings and inks. DecaBDE containing plastics are used in housings of computers and TVs, wires and cables, pipes and carpets. Moreover, it is also used in commercial textiles, mainly for public buildings and transport, and in textiles for domestic furniture.

Hazards and Risks to human health and the environment:

DecaBDE is highly persistent, has a high potential for bioaccumulation and food-web biomagnifications, as well as for long-range transport. DecaBDE can affect reproductive and nervous system as an endocrine disruptor.



Reference

1. Risk profile on decabromodiphenyl ether (commercial mixture, c-decaBDE). Persistent Organic Pollutants Review Committee. 2014; UNEP/POPS/POPRC.10/10/Add.2
2. Risk management evaluation on decabromodiphenyl ether (commercial mixture, c-decaBDE). Persistent Organic Pollutants Review Committee. 2015; UNEP/POPS/POPRC.11/10/Add.1
3. Assessment of additional information on decabromodiphenyl ether (commercial mixture, c-decaBDE) for the further defining of some critical spare parts in the automotive and aerospace industries and on its use in textiles in developing countries. Persistent Organic Pollutants Review Committee. 2016; UNEP/POPS/POPRC.12/11/Add.4
4. Environment and Climate Change Canada. Human Health State of the Science Report on Decabromodiphenyl Ether (decaBDE). Environment and Climate Change Canada. 2012. (<http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=92D49BA9-1>, accessed 16 June)



POPs Chemicals & PIC Industrial Chemicals

Short-chain chlorinated paraffins

CAS No. 85535-84-8;

CAS No. 68920-70-7;

CAS No. 71011-12-6;

CAS No. 85536-22-7;

CAS No. 85681-73-8;

CAS No. 108171-26-2

HS Code: 3824.90

Full Name: Short-chain chlorinated paraffins (SCCPs) with a chlorination degree of more than 48% by weight.

Trade Name:

A 70 (wax); Chloroflo; Adekacizer E; Chlorparaffin; Arubren; Chlorowax; Cereclor; Cloparin; Chlorcosane; Cloparol; Chlorex; Clorafin; Chlorofin; CW; Derminolfett; Derminolol; EDC-tar; Electrofine; Enpara; Hordaflam; Horda-flex; Hordalub; Hulz; Khp; Meflex; Monocizer; Paroil; Poliks; Tenekil; Toyoparax; Unichlor

Synonyms:

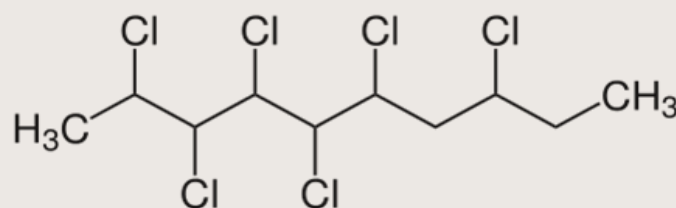
Alkanes, C₁₀₋₁₃, chloro; Chlorinated paraffins with a chlorination degree of more than 48% by weight.

Uses:

Short-chain chlorinated paraffins (SCCPs) have been used as softeners in plastics, paints, coatings and sealants, as flame retardants in rubber, plastics and textiles as well as an extreme pressure lubricant in metal working fluids.

Hazards and Risks to human health and the environment:

SCCPs strongly bonds to soil and sediments, where it can remain during a considerable time and be detected in a wide range of biosphere including freshwater, foods, aquatic and terrestrial mammals. Particularly, they can cause long-term adverse effects in the aquatic environment. SCCPs may cause skin and eye irritation upon repeated application, but do not appear to induce skin sensitization.



Reference

1. Risk profile on short-chain chlorinated paraffins. Persistent Organic Pollutants Review Committee. 2015; UNEP/POPS/POPRC.11/10/Add.2
2. Risk management evaluation on short-chain chlorinated paraffins. Persistent Organic Pollutants Review Committee. 2016; UNEP/POPS/POPRC.12/11/Add.3
3. US Environmental Protection Agency. Short-Chain Chlorinated Paraffins (SCCPs) and Other Chlorinated Paraffins Action Plan. US Environmental Protection Agency. 2009 (https://www.epa.gov/sites/production/files/2015-09/documents/sccps_ap_2009_1230_final.pdf, accessed 9 June 2017).
4. Toxipedia. Chlorinated Paraffins. Toxipedia. 2011. (<http://www.toxipedia.org/display/toxipedia/Chlorinated+Paraffins>, accessed 9 June 2017).
5. Decision Guidance Document on Short-chain chlorinated paraffins. 2016; UNEP/FAO/RC/COP.8/12/Add.1.



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ROTTERDAM CONVENTION



STOCKHOLM CONVENTION



Food and Agriculture
Organization of the
United Nations



POPs Chemicals

Hexachlorobutadiene

CAS No. 87-68-3

HS Code: 2903299090

Full Name: Hexachlorobutadiene

Trade Name:

C-46, Dolen-pur, GP40-66:120, UN2279.

Synonyms:

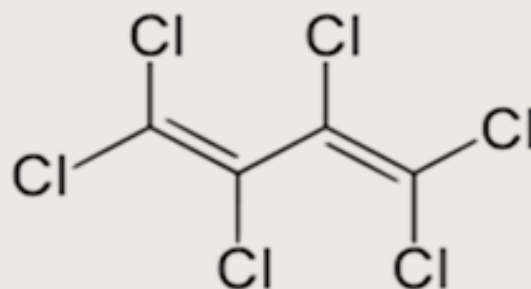
HCBD; perchloro-1, 3-butadiene; perchlorobutadiene;
1,3- hexachlorobutadiene; 1,3-butadiene, 1,1,2,3,4,4-
hexachloro-; 1,3- butadiene, hexachloro-;
hexachlorobuta-1,3-diene;1

Uses:

Hexachlorobutadiene (HCBD) is unintentionally formed and released from the production of certain chlorinated hydrocarbons, magnesium, polyvinyl chloride, ethylene dichloride and vinyl chloride monomer and incineration of acetylene, chlorine residues caused by poor abatement control. Previously, it was intentionally produced or used in the production of lubricants, as a solvent, a heat transfer liquid and hydraulic liquid, yet HCBD is not known to be currently intentionally produced or used.

Hazards and Risks to human health and the environment:

HCBD is long-range transported, persistent and highly toxic to aquatic organisms and birds. It can affect food chain due to its bioaccumulation and persistence. HCBD has been shown to cause irritation, nervous system depression and kidney damage when inhaled at higher levels. It may have an adverse effect to fatty liver degeneration as well. According to the EPA, it is classified as a possible human carcinogen.



Reference

1. Evaluation of new information in relation to the listing of hexachlorobutadiene in Annex C to the Stockholm Convention on Persistent Organic Pollutants. Persistent Organic Pollutants Review Committee. 2016; UNEP/POPS/POPRC.12/11/Add.5
2. Risk management evaluation on hexachlorobutadiene. Persistent Organic Pollutants Review Committee. 2013; UNEP/POPS/POPRC.9/13/Add.2
3. US Environmental Protection Agency Office of Water. Health Effects Support Document for Hexachlorobutadiene. US Environmental Protection Agency. 2003; EPA 822-R-03-002. (https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_hexachlorobutadiene_healtheffects.pdf, accessed 16 June 2017)
4. Risk profile on hexachlorobutadiene. Persistent Organic Pollutants Review Committee. 2012; UNEP/POPS/POPRC.8/16/Add.2



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POPs Chemicals

Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF)

CAS No. 1763-23-1 (PFOS)

CAS No. 307-35-7 (PFOSF)

HS Code: 2904 90

Full Name: Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF)

Trade Name: PFOS; FC-95

Synonyms: heptadecafluoro-1-octane sulfonic acid; heptadecafluorooctane sulfonic acid; perfluorooctane sulfonate;

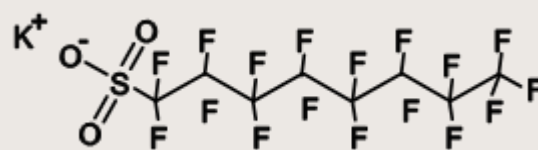
Example of salts: potassium perfluorooctane sulfonate; lithium perfluorooctane sulfonate; ammonium perfluorooctane sulfonate; diethanolammonium perfluorooctane sulfonate; tetraethylammonium perfluorooctane sulfonate; didecyldimethylammonium perfluorooctane sulfonate.

Uses:

Historically, PFOS has been used for a variety of products due to its surface-active properties, surface resistance/repellency to oil, water, grease or soil. PFOS is both intentionally produced and formed by degradation from a large group of related substances, referred to as PFOS-related substances. Intentional uses of PFOS can be found in electric and electronic parts, fire fighting foam, photo imaging, hydraulic fluids, leather, paper and textiles.

Hazards and Risks to human health and the environment:

High bioaccumulation of PFOS have been found in notable concentrations in Arctic animals, such as polar bear, seal, bald eagle and mink, tropical biota, birds and fish. Human toxicity with PFOS affects the liver, kidney, thyroid, fecundity, leading to cancer formation. Due to its long-term persistent accumulation, humans, wildlife and the environment continues to be exposed.



Reference

1. Risk management evaluation on perfluorooctane sulfonate. Stockholm Convention on Persistent Organic Pollutants. 2007. UNEP/POPS/POPRC.3/20/Add.5
2. PubChem. Open Chemistry Database. Perfluorooctanesulfonic Acid. 2005. (https://pubchem.ncbi.nlm.nih.gov/compound/Perfluorooctanesulfonic_acid#section=Top)
3. United States Environmental Protection Agency. EPA. Health Effects Document for Perfluorooctane Sulfonate (PFOS). 2014.



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POPs Chemicals

Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds

CAS No. 335-67-1

HS Code: 29159090

Full Name: Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds

Synonyms:

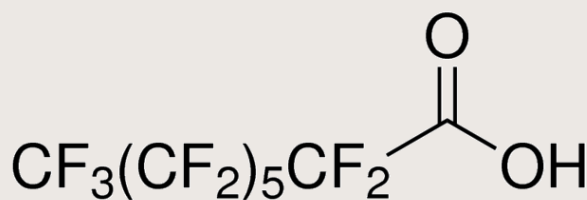
Perfluorooctanoic acid (PFOA), including any of its branched isomers; Its salts; PFOA-related compounds which, for the purposes of the Convention, are any substances that degrade to PFOA, including any substances (including salts and polymers) having a linear or branched perfluoroheptyl group with the moiety (C₇F₁₅)C as one of the structural elements;

Uses:

PFOA, its salts and PFOA-related compounds are used widely in the production of fluoroelastomers and fluoropolymers, for the production of non-stick kitchen ware, food processing equipment. PFOA-related compounds, including side-chain fluorinated polymers, are used as surfactants and surface treatment agents in textiles, paper and paints, firefighting foams. PFOA has been detected in industrial waste, stain resistant carpets, carpet cleaning liquids, house dust, microwave popcorn bags, water, food, and Teflon. Unintentional formation of PFOA is created from inadequate incineration of fluoropolymers from municipal solid waste incineration with inappropriate incineration or open burning facilities at moderate temperatures.

Hazards and Risks to human health and the environment:

PFOA is identified as a substance of very high concern with a persistent, bioaccumulative and toxic structure for the environment and living organisms. PFOA-related compounds are released into the air, water, soil and solid waste, and degrade to PFOA in the environment and in organisms. Major health issues such as kidney cancer, testicular cancer, thyroid disease, pregnancy-induced hypertension, high cholesterol have been linked to PFOA.



Reference

1. Risk management evaluation on perfluorooctanoic acid (PFOA, perfluorooctanoic acid), its salts and PFOA-related compounds. Persistent Organic Pollutants Review Committee. 2017; UNEP/POPS/POPRC.13/7/Add.2
2. Addendum to the risk management evaluation on perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds. Persistent Organic Pollutants Review Committee. 2018; UNEP/POPS/POPRC.14/6/Add.2
3. Toxipedia. PFOA. 2010. (<http://www.toxipedia.org/display/toxipedia/Teflon+-+Sticky+When+It+Comes+to+Health?src=search>)
4. Green Facts. 2017. Hazards and risk associated to Perfluorooctanoic acid (PFOA), its salts and PFOA-related substances. (<https://www.greenfacts.org/en/pfoa-cookware-waterproofing/index.htm>)
5. European Chemicals Agency. ECHA. MEMBER STATE COMMITTEE SUPPORT DOCUMENT FOR IDENTIFICATION OF PENTADECALUOROCTANOIC ACID (PFOA)PFOA). 2013.



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STOCKHOLM CONVENTION



POPs Chemicals

Dicofol

CAS No. 115-32-2

HS Code: 2906299010

Full Name: Dicofol

Trade Name: 1,1-bis(chlorophenyl)-2,2,2-trichloroethanol;
4-chloro- α -(4-chlorophenyl)- α -(trichloromethyl)-; Acarin;
AK-20 HC free; Benzenemethanol; Carbox; Cekudifol; CPCA;
Decofol; Dicaron; Dichlorokelthane; Dicomite; Difol; DTMC;
ENT 23648; FW293; Hilfol; Hilfol 18.5 EC; Kelthane;
Kelthanethanol; Kelthane A; Kelthane (DOT); Kelthane Dust
Base; Kelthane 35; Milbol; Mitigan; p,p'-dicofol; NA2761
(DOT); NCI-C00486

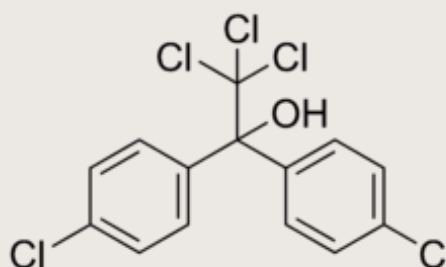
Synonyms: 1,1-bis(4-chlorophenyl)-2,2,2-trichloroethanol and
1-(2-chlorophenyl)-1-(4-chlorophenyl)-2,2,2-trichloroethanol
(p,p'- and o,p'-isomer)

Uses:

Dicofol is an organochlorine miticidal pesticide that has been used in agriculture to control mites on a variety of field crops, fruits, vegetables, ornamentals, cotton, tea.

Hazards and Risks to human health and the environment:

Similar to DDT, dicofol is a toxic concentrated formulation found in the environment and humans with a long persistent and bioaccumulative property. Prolonged or repeated exposure to dicofol can cause skin irritation, hyperstimulation of nerve transmissions along nerve axons. Dicofol is highly toxic in fish, aquatic invertebrates, algae and in birds is tied to eggshell thinning and reduced fertility.



Reference

1. Risk management evaluation on dicofol. Persistent Organic Pollutants Review Committee. 2017; UNEP/POPs/POPRC.13/7/Add.1
2. Extoxnet. Dicofol. 1993. (<http://pmep.cce.cornell.edu/profiles/extoxnet/carbaryl-dicofol/dicofol-ext.html>)
3. ChemService. Pesticides. What is dicofol? 2005. (<https://www.chemservice.com/news/2015/04/what-is-dicofol/>)



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Candidate POPs

Perfluorohexane sulfonic acid (PFHxS),
its salts and PFHxS-related compounds

CAS No. 355-46-4

HS Code: 38220090

Full Name: Perfluorohexane-1-sulfonic acid (PFHxS)

Trade Name: RM70 (CAS No. 423-50-7), RM75 (3871-99-6),
and RM570 (CAS No. 41997-13-1) (PFHxS-related substances
produced by Miteni SpA, Italy)

Synonyms: PFHxS; PFHS

Tridecafluorohexane-1-sulfonic acid, Tridecafluorohexane-1-
sulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-Tridecafluorohexane-1-
sulfonic acid, 1,1,2,2,3,3,4,4,5,5,6,6,6-Tridecafluoro-1-
hexanesulfonic acid

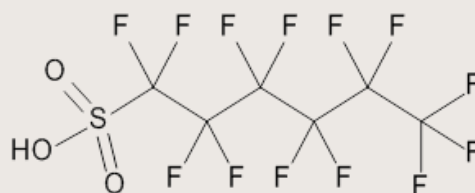
Uses:

PFHxS, its salts and related substances have unique properties
with a high resistance to friction, heat, chemical agents, low
surface energy and used as water, grease, oil and soil repellent.
It is widely utilized in a variety of consumer goods such as
carpets, leather, apparel, textiles, firefighting foam,
papermaking, printing inks, sealants, non-stick cookware.

Hazards and Risks to human health and the environment:

PFHxS are very resistant to chemical, thermal and biological degradation due to their strong carbon-fluorine bonds and a resistance to degradation which makes it persist in the environment. PFHxS concentrations are found in biota and human alike and its elimination takes approximately 8 years.

Effects of PFHxS in humans are found to influence on the nervous system, brain development, endocrine system and thyroid hormone.



Reference

1. Risk profile on perfluorohexane sulfonic acid (PFHxS), its salts and PFHxS-related compounds Persistent. Organic Pollutants Review Committee. 2018; UNEP/POPS/POPRC.14/6/Add.1
2. Proposal to list perfluorohexane sulfonic acid (CAS No: 355-46-4, PFHxS), its salts and PFHxS-related compounds in Annexes A, B and/or C to the Stockholm Convention on Persistent Organic Pollutants. UNEP/POPS/POPRC.13/4. 2017

Open Chemistry Database. Perfluorohexanesulfonic Acid. 2005.
(https://pubchem.ncbi.nlm.nih.gov/compound/Perfluorohexanesulfonic_acid#section=Top)



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STOCKHOLM CONVENTION





Proposed for listing under the Stockholm Convention

Methoxychlor

CAS No. 72-43-5

Full Name: Methoxychlor

Trade Name: ; Dimethoxy-DDT; Dimethoxy-DT; DMDT; Para,para'-DMDT; ENT1716; Higalmetox; Maralate; Marlate; OMS 466; Metox; Methoxy-DDT; Prentox

Synonyms: 1,1-Bis(para-methoxyphenyl)-2,2,2-trichloroethane; 2,2-Bis(para-methoxyphenyl)-1,1,1-trichloroethane; 2,2-Di-para-anisyl-1,1,1-trichloroethane para,para'-dimethoxydiphenyltrichloroethane; 1,1,1-Trichloro-2,2-bis(para-methoxyphenyl)ethane; 1,1,1-Trichloro-2,2-di(4-methoxyphenyl)ethane; 1,10-(2,2,2-Trichloroethylidene)bis(4-methoxy-benzene); Di(para-methoxyphenyl)trichloromethyl methane

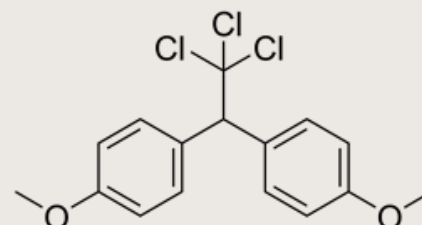
Uses:

Methoxychlor is an organochlorine pesticide originally developed as a replacement for DDT. Methoxychlor has been used as an insecticide combating a wide range of pests including biting flies, houseflies, mosquito larvae, cockroaches, and chiggers. It has commonly been used in both agricultural and veterinary practices, for example for treating field crops, vegetables, fruits, stored grains, livestock, pets, homes, gardens, lakes, and marshes.

Process for listing a new chemical under the Stockholm Convention

Article 8:

- 1) A Party submits a proposal
- 2) The POPs Review Committee examines the proposal against Annex D screening criteria
- 3) If fulfilled, the POPs Review Committee prepares a risk profile based on Annex E information from Parties and observers
- 4) If adopted, the POPs Review Committee prepares a risk management evaluation based on Annex F information from Parties and observers
- 5) If adopted, the POPs Review Committee makes a recommendation on listing



Reference

1. Proposal to list methoxychlor in Annex A to the Stockholm Convention on Persistent Organic Pollutants. Persistent Organic Pollutants Review Committee. 2019; UNEP/POPs/POPRC.15/4



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STOCKHOLM CONVENTION





Proposed for listing under the Stockholm Convention

Dechlorane Plus and its syn-isomer and anti-isomer

CAS No. 13560-89-9; 135821-03-3; 135821-74-8

Full Name: 1,6,7,8,9,14,15,16,17,17,18,18-dodecachloropentacyclo-[12.2.1.16,9.02,13.05,10]octadeca-7,15-dien

Trade Name: Dechlorane Plus 25 (Dech Plus); Dechlorane Plus 35 (Dech Plus-2); DP-515; Dechlorane 605; Dechlorane A; DP; DDC-CO; Escapeflam DK-15

Synonyms: Bis(hexachlorocyclopentadieno)cyclooctane; 1,2,3,4,7,8,9,10,13,13,14,14-Dodecachloro-1,4,4a,5,6,6a,7,10,10a,11,12,12a-dodechydro-1,4,7,10-dimethanodibenzo[a,e]cyclooctene; Dodecachlorododecahydrodimethanodibenzocyclooctene

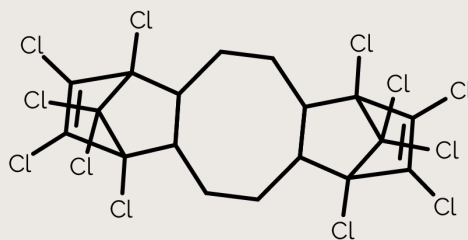
Uses:

As a flame retardant, Dechlorane Plus is used in many polymeric systems. Examples of thermoplastics that may contain Dechlorane Plus include nylon, polyester, acrylonitrile butadiene styrene (ABS), natural rubber, polybutylene terephthalate (PBT), polypropylene, and styrene butadiene rubber (SBR) block copolymer. Dechlorane Plus may be used in thermosets such as epoxy and polyester resins, polyurethane foam, polyethylene, ethylene propylene diene monomer rubber, polyurethane rubber, silicon rubber, and neoprene.

Process for listing a new chemical under the Stockholm Convention

Article 8;

- 1) A Party submits a proposal
- 2) The POPs Review Committee examines the proposal against Annex D screening criteria
- 3) If fulfilled, the POPs Review Committee prepares a risk profile based on Annex E information from Parties and observers
- 4) If adopted, the POPs Review Committee prepares a risk management evaluation based on Annex E information from Parties and observers
- 5) If adopted, the POPs Review Committee makes a recommendation on listing



Reference

1. Proposal to list Dechlorane Plus (CAS No: 13560-89-9) and its syn- isomer(CAS No:135821-03-3) and anti-isomer (CAS No:135821-74-8) in Annexes A, B and/or C to the Stockholm Convention on Persistent Organic Pollutants. Persistent Organic Pollutants Review Committee. 2019;UNEP/POPS/POPRC.15/3



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