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ECHA public consultation

Draft proposal for listing polybrominated dibenzo-p-dioxins and dibenzofurans (PBDD/Fs) and mixed polybrominated/chlorinated dibenzo-p-dioxins and dibenzofurans (PBCDD/Fs) in Annex C to the Stockholm Convention on Persistent Organic Pollutants

Submitted via the ECHA webform

The Health and Environment Alliance (HEAL) supports the EU's proposal to list PBDD/F and PBCDD/F as Persistent Organic Pollutants (POPs) in Annex C (= unintentional production) under the Stockholm Convention.

PBDD/F and PBCDD/F are dangerous unintended degradation products of brominated flame retardants or other brominated aromatics, with clear adverse effects on humans and ecosystems.

BACKGROUND

- Polybrominated dibenzo-p-dioxins and dibenzofurans (PBDD/Fs) and mixed polybrominated/chlorinated dibenzo-p-dioxins and dibenzofurans (PBCDD/Fs) are related groups of halogenated chemicals. PBDD/Fs are the brominated analogues to polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) – a group most known for its most toxic member '2,3,7,8-tetrachlorodibenzo-p-dioxin' (TCDD), the substance that caused the Seveso disaster. The difference between the individual groups lies in the halogen atoms that are part of their chemical structure: in PBDD/Fs the chlorine atoms are completely replaced by bromine atoms, while PBCDD/Fs contains chemicals with different numbers of both chlorine and bromine in their structure. The underlying polyhalogenated dibenzodioxin or polyhalogenated dibenzofuran structure is common to all groups mentioned above.
- PBDD/Fs and PBCDD/Fs are not intentionally manufactured, with the exemption of the production of small quantities for analytical and research purposes. However, the chemicals' are formed unintentionally when materials are heated or burnt in the presence of brominated flame retardants

(BFRs) or other brominated (and chlorinated) aromatics. Furthermore, PBDD/Fs can also be formed as by-products during the production of BFRs such as polybrominated diphenyl ethers (PBDEs). After their formation, the release of PBDD/Fs and PBCDD/Fs from several anthropogenic sources (e.g. waste incinerators and metallurgical facilities) into the environment is documented.

- PBDD/Fs and PBCDD/Fs are being detected in the environment (e.g. in sediments, air and wildlife) and in humans. The general public is exposed to PBDD/Fs via food (e.g. eggs, milk, fish, and meat), indoor dust and consumer products made of recycled plastics (e.g. toys). PBDD/Fs have also been detected in human milk.
- In the EU, PBDD/Fs emissions to air currently have to be monitored once every six months in waste incineration plants. Additionally, the presence in products and the release of several PBDD/Fs are currently already regulated in Germany and the Netherlands, respectively. PCDD/Fs, the polychlorinated dioxins and furans, are part of the 'dirty dozen' initial POPs and are listed in the Stockholm Convention (Annex C) since 2001.

RATIONALE FOR SUPPORTING THE NOMINATION OF PBDD/FS AND PBCDD/FS AS POPS UNDER THE STOCKHOLM CONVENTION

PBDD/Fs and PBCDD/Fs clearly meet the criteria for inclusion in the Stockholm Convention.

Persistence.

Di- to octahalogenated PBDD/Fs and PBCDD/Fs are persistent, based on their predicted half-lives in water and soil. Additionally, PBDD/Fs were found in sediment cores, in layers where they were deposited decades ago, showcasing the compounds' persistence.

Bioaccumulation.

The elimination half-lives of PBDD/Fs in mammals are significantly longer than those of PCDDs, the chlorinated analogue POPs that are already listed in Annex C of the Stockholm Convention, suggesting that the brominated substances are also highly bioaccumulative. The fact that PBDD/Fs have also been detected in species of high trophic levels such as seals, whales and humans underlines their bioaccumulation potential.

Potential for long-range environmental transport.

PBDD/Fs and PBCDD/Fs have the potential for long-range environmental transport, mainly particle-bound in the atmosphere. Due to their occurrence in (recycled) plastics, the chemicals can also reach remote areas embedded in plastic matrices. The detection of PBDD/Fs in pilot whales around the Faroe Islands provides an example of the long-range transport of the chemicals.

Toxicity.

PBDD/Fs and PBCDD/Fs cause adverse effects similar to those of PCDD/Fs, including for example lethality, wasting, immunotoxicity, carcinogenicity, reproductive and developmental toxicity, and thus contribute to the overall dioxin-like exposure of humans and wildlife. The high toxicity of PBDD/Fs and PBCDD/Fs is especially concerning in combination with the potential for bioaccumulation (see above).

In conclusion, building upon the draft risk profile and the arguments highlighted above, we support the nomination of polybrominated dibenzo-p-dioxins and dibenzofurans (PBDD/Fs) and mixed polybrominated/chlorinated dibenzo-p-dioxins and dibenzofurans (PBCDD/Fs) as POPs under the Stockholm Convention due to the chemicals' persistent, bioaccumulative, and toxic properties as well as the well documented global exposure to the pollutants.

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