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MAKE LOW POPS CONTENT LEVELS LOW ENOUGH FOR HEALTH AND ENVIRONMENT PROTECTION: KEEP THE PROMISE, ELIMINATE POPS! A BRIEF FOR DELEGATES.

The Stockholm Convention aims to reduce or eliminate all releases of POPs and includes **measures to reduce or eliminate releases from stockpiles and wastes in Article 6**. This includes establishment of **"low POPs content levels" which are a crucial tool to** control potential releases of POPs due to **improper handling of POPs wastes**. Low POPs Content Levels (LPCLs) define the value at which wastes are considered to be **POPs wastes** and therefore must be ***"Disposed of in such a way that the persistent organic pollutant content is destroyed or irreversibly transformed" (Article 6.1 d ii).*** LPCLs are crucial for defining appropriate methods and options for POPs waste disposal.

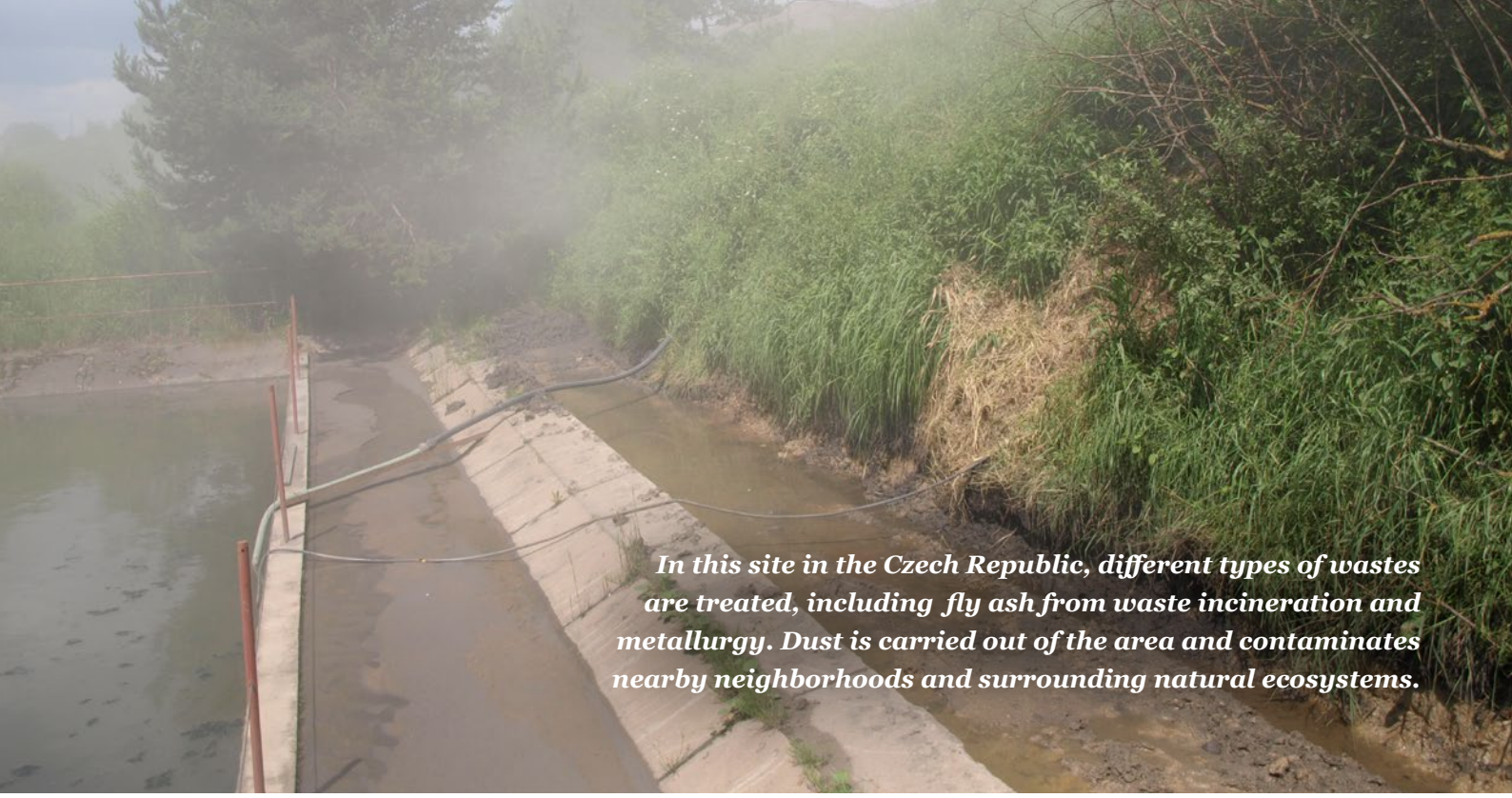
There is now compelling evidence that environmental pollution is a major cause of death in low and middle income countries. These countries are those least able to manage or mitigate such threats because of their lack of technical expertise, limited technological capacity and sparse financial resources. The establishment of Low POPs Content Levels (LPCL) for several POPs are therefore subject to critical decisions which will have significant implications for low and middle income countries as well as more industrialised nations.

Arnika Association gathering samples of waste incineration residues dumped next to fish ponds in Tainan, Taiwan.

The levels set for low POPs content should not be unduly influenced by vested interests to minimise their compliance costs or to facilitate widespread transboundary movements of hazardous wastes contaminated with POPs for profit. For most POPs there are no other limit values set for defining when waste containing those POPs is considered as hazardous waste. The LPCLs adopted will fulfil the role of defining certain wastes as hazardous waste according their content of certain POPs listed in Stockholm Convention. The application of strict LPCLs for dioxin, brominated flame retardants contained in e-waste and other POPs will be *the only global regulatory tool* that can be used to prevent import and export of these contaminated wastes, in many cases from countries with stricter legislation to countries with weaker legislation or control.

If decisions are made to adopt 'weak' LPCLs using the highest proposed levels as a threshold for determining POPs waste, then transboundary movement in POPs contaminated materials such as incinerator residues and contaminated soils will expand and accelerate. The flow of this contaminated material is likely to be from developed countries to developing countries where management costs are lower and regulations weaker. If this is allowed to happen then the objectives of the Stockholm and Basel Conventions will be permanently undermined at the expense of human health and the environment. This effect has already been demonstrated by Breivik, Gioia et al. (2011) due to POPs waste export from developed countries to Africa and Asia. A weak LPCL will enshrine this arrangement and unnecessarily expose new populations to POPs when contaminated materials are shipped as 'construction materials' or other products without restriction.

If the LPCLs for brominated flame retardants (PBDEs, HBCD and others) are strict enough it can help to STOP e-waste transboundary movements. IPEN therefore recommends that the following levels be adopted and LPCLs for specific POPs.



In this site in the Czech Republic, different types of wastes are treated, including fly ash from waste incineration and metallurgy. Dust is carried out of the area and contaminates nearby neighborhoods and surrounding natural ecosystems.

DIOXINS AND FURANS - POLYCHLORINATED DIBENZODIOXINS AND POLYCHLORINATED DIBENZOFURANS (PCDD/DF):

IPEN supports a LPCL of 1 ng WHO-TEQ/g (1 ppb)1 for PCDD/DF wastes based on levels protective of human health and the environment.

Wastes with levels of PCDD/Fs and DL PCBs above 0.05 ng WHO-TEQ/g (0.05 ppb) should be prohibited from any application on surface soils. The current provisional LPCL of 15,000 ng WHO-TEQ/kg (15 ppb), if adopted as final, creates a potential for widespread exposure due to transboundary movement of PCDD/DF and DL PCB contaminated materials. Soil with levels of PCDD/DF concentrations well below the proposed 15 ppb limit have been demonstrated to result in POPs concentrations in poultry eggs that exceed the safe consumption limits (DiGangi and Petrlik 2005).[2]

A recently published study has shown that in several demonstrated cases processing/disposal of **waste containing PCDD/Fs between 20 and 12,000 pg TEQ/g (0.02 and 12 ppb)** led to contamination of the food chain (eggs or poultry meat) up to levels >20-times higher than the suggested EU limit for PCDD/Fs in food (2.5 pg TEQ/g fat) (Katima, Bell et al. 2018), and exceeded levels up to 280-times from reference eggs (background levels). In addition, the last major dioxin contamination incident in Germany was caused by uncontrolled use of waste from biodiesel production containing 123 TEQ pg/g PCDD/Fs (Weber and Watson 2011) for feed production which clearly shows that the existing legislative limits for PCDD/Fs content in wastes are not strict nor protective enough.

BROMINATED POPS – HEXABROMOCYCLODODECANE (HBCD) AND POLYBROMINATED DIPHENYL ETHERS (PBDE):

IPEN strongly recommends that a LPCL of 100 mg/kg for HBCD and 50 mg/kg for PBDEs should be approved as final levels.

The IPEN recommendations are consistent with the conclusions of the extensive report by consultants for the EU (ESWI and BiPRO 2011). The consultants recommended two levels for each of the POPs. The preferred levels were the lower levels (LPCL1). The recommended lower levels for each of the PBDEs (TetraBDE, PentaBDE, HexaBDE and HeptaBDE) was 10 ppm. This meant a total LPCL of 40 ppm for mixtures of the POP BDEs, which is lower than but close to the current recommendation of 50 ppm. There is widespread evidence that brominated POPs are entering the recycling chain for plastics and undermining attempts to transition to a circular economy in which clean plastics can be recycled. POPs BDEs are being translocated from articles and products with limited human exposure into products to which there is widespread exposure among vulnerable populations.

This includes items such as children's toys, body care products, food packaging, household carpet underlay and others (DiGangi, Strakova et al. 2011, Samsonek and Puype 2013, Rani, Shim et al. 2014, DiGangi and Strakova 2016, Guzzonato, Puype et al. 2017, Strakova, Bell et al. 2017, Strakova and Petrlik 2017, Turner and

Filella 2017, Kuang, Abdallah et al. 2018). Production of DecaBDE is accompanied by unintentional creation of vast amounts of very toxic brominated dioxins (PBDD/Fs) which were recently discovered also in children's toys and other products. They were present there in levels comparable to those found in waste incineration ash (Petrlík, Behnisch et al. 2018). This underlines the need to halt further contamination of recycled products by HBCD and PBDEs from WEEE plastics, insulation foams and other primary plastic uses (Guzzonato, Puype et al. 2017). To prevent contamination of the plastics recycling chain with brominated POPs it is essential that delegates adopt the lower LPCL.

Arguments have been made by some that detecting the brominated POPs will be difficult and expensive and therefore a higher LPCL should be set which is easy to detect. However, the use of XRF devices (x-ray fluorescence) have been shown to detect these POPs cheaply and easily at similar detection limit to expensive gas chromatography and certainly at levels which meet the requirements of the lowest proposed LPCL. Advances have also been made in flotation separation techniques which have been used in the developing world among waste pickers to separate brominated plastics from clean plastics with a high level of success (Truc, Lee et al. 2015). This is a very inexpensive separation method which could be further improved to ensure repeatability and efficacy.

One of the sites where waste incineration fly ash is landfilled in Taiwan.

SHORT-CHAIN CHLORINATED PARAFFINS (SCCPS):

IPEN strongly urges delegates to prioritize protection of human health and the environment by supporting a low POPs content limit of 100 ppm for SCCPs.

SCCPs are toxic to aquatic organisms at low concentrations, disrupt endocrine function, and are suspected to cause cancer in humans. According to a recent scientific paper, *"no other persistent anthropogenic chemical has been produced in such quantities [as SCCPs]"* and there is some indication that production is increasing (Xia, Gao et al. 2017). Considering SCCPs' demonstrated long-range transport and ability to accumulate, there is a potential for increases in environmental levels should releases continue or increase. The EU proposal would result in these kinds of increased releases. Our suggestion for LPCL of 100 ppm is based on available science including the report prepared by BiPRO for German Federal Environment Agency (German Federal Environment Agency 2015).

Substance	Limit supported by IPEN	Current limit
Dioxins and furans (PCDD/F)[1]	**1 ppb (1 mg TEQ/kg)**	15 ppb
Hexabromocyclododecane (HBCD)	**100 mg/kg**	1000 mg/kg (Promoted and used by EU and other developed countries)
Polybrominated diphenyl ethers (PBDEs)	**50 mg/kg as a sum of listed PBDEs. Includes: TetraBDE, PentaBDE, HexaBDE HeptaBDE DecaBDE**	1000 mg/kg (Promoted and used by EU and other developed countries)
Short-chain chlorinated paraffins (SCCPs)	**100 mg/kg**	10,000 mg/kg (Proposed by the EU)

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Notes

1. Includes dioxin-like PCBs
2. This level should include also Dioxin Like (DL) PCBs which have not been included in definitions for LPCLs. IPEN suggests to set an LPCL of 1 ng WHO-TEQ/g (1 ppb) for PCDD/Fs and DL PCBs).
3. Currently published case from Poland demonstrated that use of wooden construction material treated with pentachlorophenol contaminated by PCDD/Fs at level of 4 ppb led to serious contamination of soil and chicken eggs exceeding more than 10-times the limit set for eggs in EU. (Piskorska-Pliszczynska et al. 2016) Piskorska-Pliszczynska, J., P. Strucinski, S. Mikolajczyk, S. Maszewski, J. Rachubik and M. Pajurek (2016). "Pentachlorophenol from an old henhouse as a dioxin source in eggs and related human exposure." Environmental Pollution **208, Part B**: 404-412.

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