The Challenges of Eliminating PCB—Case Studies

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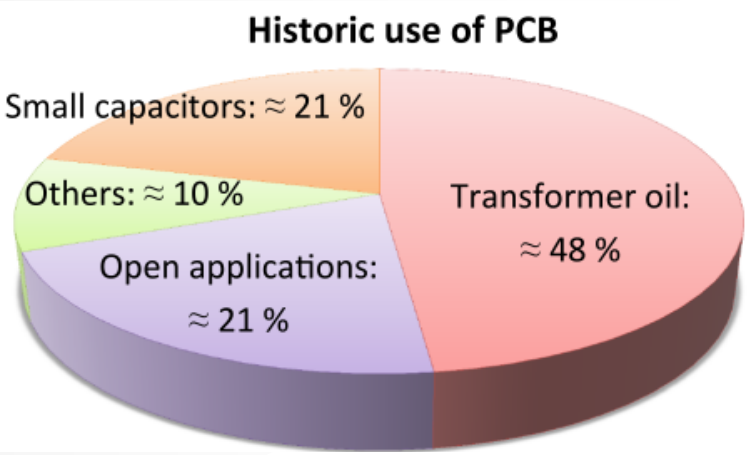
Contents

Status of Polychlorinated Biphenyls (PCBs)

Approx. 1.3 million tonnes of PCBs have been produced 1929 to 1985 (stop) and used in a wide range of closed & open applications.

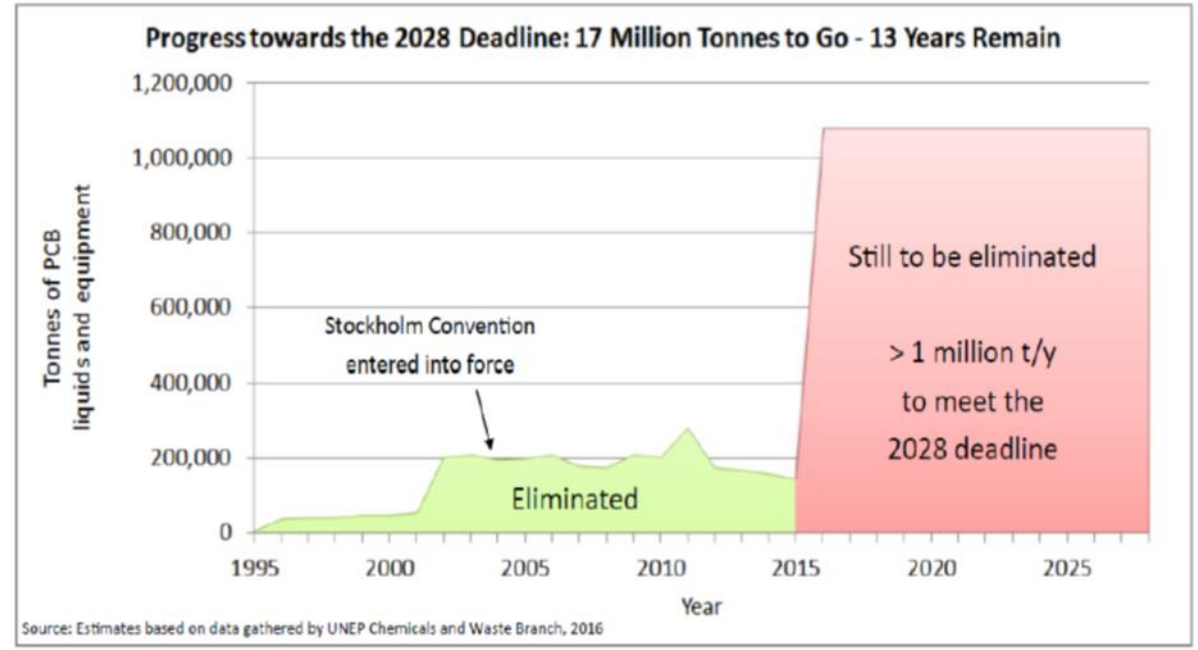
- **Closed applications (e.g. transformer oils, capacitors, hydraulic oils).**
- **Open applications (e.g. sealants, paints, cutting oils).**
- **Since 2004 global attempt by Stockholm Convention to phase out PCBs by 2025 and eliminate PCBs by 2028.**



UNEP/DTIE report: Consolidated Assessment Of Efforts Made Toward The Elimination Of Polychlorinated Biphenyls, 2016

Achievement and Challenge on PCB elimination

It is estimated that ca. 4 million tonnes of equipment and material containing or contaminated with PCB have been eliminated to date- meanwhile, ca. 14 million tonnes remain to be disposed. This is more than 80% of the total.



UNEP/DTIE report: Consolidated Assessment Of Efforts Made Toward The Elimination Of Polychlorinated Biphenyls, 2016

PCB Elimination Challenges in Open Applications

Construction

Farm

Paints

- **PCB-sealants and paints can contaminate construction debris if not removed and surroundings;**
- **German/Swiss assessment 2012-2016: Open applications (paints & sealants), on farms still reason for exceedance of maximum TEQ-levels for meat /food;**

PCB Elimination Challenges -Waste wood in industrial countries

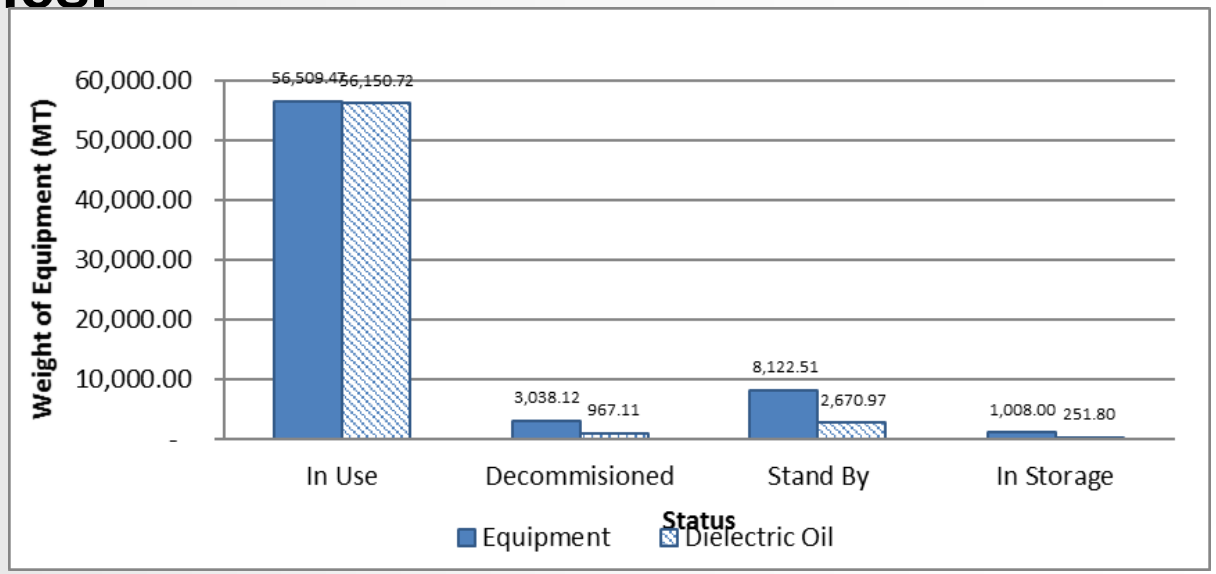
- Wood was/is (partly) treated with PCB paint and other hazardous chemicals (heavy metals; pesticides) in industrial countries.

- PCB and lead painted wood used as animal bedding resulted in the contamination of chicken and chicken eggs in Portugal.

Brambilla et al, 2010 Llerena et al. 2003

PCB Elimination Challenges in Closed Applications

- **The amounts of PCBs with closed applications are still not very specific in some countries.**



PCB Inventory Based on Usage Status in the Philippines

- **A preliminary inventory of PCBs in the Philippines from 657 establishments in 2004 showed that a total of 8,027 equipment containing PCB oil.**
- **As of July 13th 2015, the Project has reviewed and conducted inventory for 869 establishments.**

Challenges in PCB waste disposal—Philippines

Technology limitations

- The UNIDO Non-combustion Facility is designed to treat around 750 tons per year. Hence, the facility can only treat a maximum total of 3,750 tons from 2015 to 2019.
- Non-combustion facility has difficulty treating high levels PCBs and the technology is not cost-effective for treating high-concentration PCBs
- Combustion facility costs a lot.

One country should not be forgotten---DPRK

- DPRK is the only country that still is producing PCBs in the world.
- Only one factory in DPRK still produces PCBs. Before 2006, DPRK produced about 500 tons/year and the production gradually decreased to 150 tons/year during 2006-2015.
- PCBs are mainly used as transformer oils, capacitors and hydraulic oils in the utility and mechanical industries in DPRK.

Substitutes for PCBs in DPRK

- In order to promote implementation of Stockholm Convention and achieve the global goal of PCBs elimination, the competent authorities in DPRK are striving to introduce substitutes for PCBs through import or independent research and development.

- Due to restrictions according to national policy, the importation of substitutes can’t satisfy the needs of some industries.

- Domestic research and development for the production of PCBs alternatives in DPRK has not met with success.

PCB Waste management in DPRK

- There is no action on treatment of PCBs in offline transformers in DPRK.
- Safe storage places are needed to be built to temporarily reserve the offline transformers.

Recommendation for PCB phasing-out

- Disregard the political factors, underdeveloped countries (such as DPRK) should be helped to phase out PCBs;
- Substitute technologies need to be promoted in developing and underdeveloped countries;
- Open application of PCBs should be gradually stopped and find available substitutive technology and products;
- Cost-effective technologies for waste disposal (such as co-process in cement kilns) should be promoted.

THANKS

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