## Stockholm Convention and Its Objective

Stockholm Convention on Persistent Organic Pollutants (POPs) was adopted on 23rd May 2001, in Stockholm, Sweden and came into force on 17th May 2004. Its objective is to protect human health and the environment from POPs.

POPs are chemicals that remain intact in the environment for long periods, become widely distributed

geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife.


POPs include some industrial chemicals (such as Polychlorinated biphenyls (PCBs), pesticides (such as DDT) and unintentional by-products of industrial processes (such as dioxins and furans).

Due to global concerns for their dangerous effects on human and environmental well-being, Parties to the Convention are obligated to put in place all necessary measures, to prohibit production, use, import, and export of POPs that are both originally and subsequently listed in the Convention.

The Convention currently lists twenty-eight (28) chemicals as POPs. The list is reviewed, based on set risk profiling criteria as the need arises.

## PCBs and Their Historical Uses

PCBs are aromatic, synthetic chemicals which do not occur naturally in the environment. They consist of the biphenyl structure with two linked benzene rings in which some or all of the hydrogen atoms have been substituted by chlorine atoms.

PCBs were discovered in the late 1800s, became prevalent in the late 1920s and globally produced commercially from 1930s to 1980s. due to their exceptional characteristics.


PCBs are chemically stable, relatively heat-stable, oil-miscible, water-immiscible, have high boiling point, low flammability and good insulating properties, high thermal conductivity and high resistance to thermal degradation. They are practically fire resistant because of their high flash points (170–380°C), but form vapours which are heavier than air, but not explosive. On the basis of these properties, they have been adopted over the last century as 'ideal chemicals' for many different industrial and commercial uses, such as insulator/dielectrics in electrical equipment, heat exchangers and additives in hydraulic equipment, plastics, among others.

However, the unique properties of PCBs are also responsible for their detrimental effects on the environment and public health, thereby necessitating their global ban.

## Registered Trade Names of PCBs

Registered trade names for PCBs include: Aroclor, Chlorinol, Askarel, Dykanol, Pyranol (USA), Pyralene (France), Clophen (Germany), Kannechlor (Japan), Delor (Czechoslovakia), Sovol, Trichlorobiphenyls, Sovtol (USSR).

## Environmental and Human Health Effects of PCBs

Physical and chemical properties of PCBs are such that once released into the environment, they:-

- remain intact for exceptionally long periods of time;
- become widely distributed throughout the environment through natural processes involving soil, water and, most notably, air;
- accumulate in the fatty tissue and liver of living organisms including humans, and biomagnify along the food chain; and
- are toxic to both humans and wildlife.


PCBs exposure risks in humans may manifest in some cancers, skin diseases, damage to reproductive, nervous, endocrine, neurological and immune systems, fatigue, headaches, thyroid problems, increased risks for type 2 diabetes, among others.

## Illicit Uses of PCBs

Due to an ineffective stewardship, booming activities of the informal sector have led to rising cases of illicit uses of PCBs as 'miracle oil' for the cure of arthritis, cosmetic treatment of bodies for soft and bleaching effects and hair conditioner, welding coolant, as well as, adulterating cooking oils.

## Global Control Action on PCBs

Against the background of its negative effects on human and environmental well-being, Parties to Stockholm Convention are required to:-

- stop production & use of PCBs and PCBs-containing equipment by 2025; AND
- ensure sound disposal of waste generated therefrom by 2028.

## Environmentally Sound Management and Disposal of PCBs

- Label electrical devices for easy identification and documentation;
- Install a drip tray under the PCBs-containing device;
- Conduct routine monitoring of PCB-devices for leakage, swelling or deformation. corrosion. etc.,
- Prevent co-stacking of PCBs with inflammable materials;
- Always wear personal protective equipment (PPEs), when handling PCB-devices (gloves, overall, respiration mask, etc.) and ventilate workplace well;
- Take a stock of and present PCBs and PCB-devices, for appropriate disposal/treatment technologies;
- Avoid open burning of PCBs.

## First Aid Treatment

- *Liquid PCBs on the skin.*
  Use water and soap to wash thoroughly.
- *Liquid PCBs in the eyes.*
  Rinse eyes with lukewarm jets of water for 15 minutes, always keeping eyes wide open.
- *Liquid PCBs in the mouth and in the stomach.*
  Rinse mouth with water, do not drink anything else, consult doctor immediately.
- *Highly concentrated vapours of PCBs.*
  Take affected people outside in the open area.

## Emergency Procedures

### Emergency Procedure for Cold Incidents (leakage, dumping during repairs, discharge)

- Call the Health, Safety and Environment (HSE) Officer and the PCBs Project Management Unit (PMU) immediately;
- Call the Fire Service Toll Free on 112 and 08032003557;
- Inform the doctor in charge and equip the response team with PPEs;
- Switch off the power supply to the concerned device and check grounding;
- Stop the source of the leak by using appropriate materials and place a drip-tray under the leak;
- Build dikes to hold and contain PCBs in a small area;
- Avoid pollution of waterbodies in the vicinity.

### Emergency Procedure for Hot Incidents (electric arc, hot temperature in the transformer due to a lack of dielectric oil)

- Call the HSE Officer and PMU immediately;
- Call the Fire Service, immediately;
- Inform the doctor in charge;
- Switch off the power supply;
- Hermetically seal the rooms or the entire building and switch off ventilation systems;
- Evacuate people from the holding facility, and on a larger scale in the direction of the wind.

## Further Information

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# INFORMATION NOTE ON POLYCHLORINATED BIPHENYLS (PCBs)

**Environmentally Sound Management and Disposal of PCBs Project Management Unit**