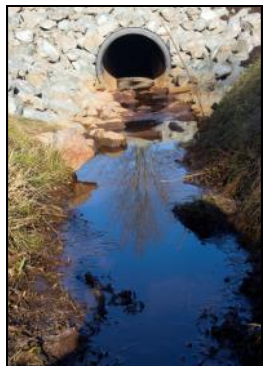


Polychlorinated Biphenyls 101 Fact Sheet

What are PCBs?



Polychlorinated biphenyls (PCBs) are industrial chemicals that do not occur naturally in the environment. First manufactured in 1929, PCBs are non-flammable, chemically stable, and have a high boiling point. Because of these properties, PCBs were used in transformers, electrical equipment, motor oils, plastics, cable insulation, adhesives, oil-based paint, caulking, carbonless copy paper, and other products. The most common trade name for PCBs is Aroclor. The manufacture of PCBs was banned in the US in 1977.



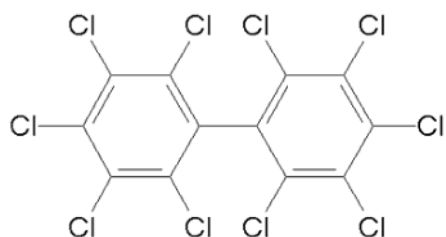
PCB Pollution



PCBs entered the environment during their manufacture in the US and are still released today from poorly maintained hazardous waste sites, illegal or improper dumping of PCB wastes, leaking transformers, or from burning wastes in municipal and industrial incinerators. Once in the environment, PCBs do not readily break down and cycle among animals, air, water and soil. PCBs can be carried long distances and are subsequently found all over the world.



Chemical Structure



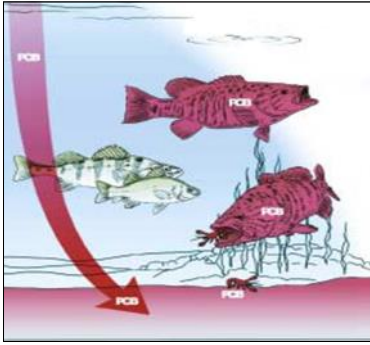
PCBs are composed of two rings of carbon and can have between 1 to 10 chlorine atoms attached to the structure. Each unique combination is called a congener. There are 209 PCB congeners. The more chlorines that are attached, the more stable and persistent the PCB compound. Commercial PCBs are a mixture of several congeners.

Properties of PCBs

PCBs are lipophilic, which means they can dissolve in oils and fats, but not in water. They accumulate in animal tissues and bind readily to sediments. If exposed to high enough temperatures, PCBs can evaporate into the air. PCBs are persistent organic pollutants (POPs).



PCBs Bio-accumulate



PCBs bind to sediments, and the micro-organisms that live in sediment consume the contaminated sediment. Other animals that feed on these microorganisms ingest the PCBs, as well. Because PCBs accumulate in animal fats, they can bio-accumulate up the food chain. Top predators have the most bioaccumulation and therefore have the highest levels of PCBs in their tissues.

Effects on Human Health

The greatest risk for human exposure to PCBs comes from consumption of contaminated fish. Exposure can also occur from PCBs in air and contaminated sediments. PCBs can cause cancer, alter hormone levels, and alter the condition of the skin, liver, and the cardiovascular system. PCBs can also impair the development of the brain and neurological system. PCBs have been found in the breast milk of women in the US and around the world. Exposure of unborn fetuses can cause low birth weight in babies. Studies have shown that babies exposed to PCBs were affected behaviorally and acted "fussier" than unexposed babies. Living in the vicinity of a PCB waste site can also be a source of exposure. Children born before or during dredging of a contaminated river have been shown to have higher umbilical cord PCB levels than children born after dredging.



Effects on Wildlife



Left: The hooked beak of a cormorant. Below: Dolphins: highest PCBs ever recorded in a mammal

Fish, invertebrates, birds, and mammals can be affected by PCB exposure through their food sources. PCBs can cause reproductive failures, developmental impairments, and mortality, causing declines in wildlife populations. Wildlife have concentrations much higher than those found in their environment.

More Information

Visit the following website for more information on PCBs:

US EPA Polychlorinated Biphenyls (PCBs)

<http://www.epa.gov/epawaste/hazard/tsd/pcbs/index.htm>

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