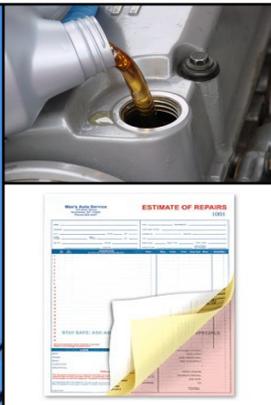




Polychlorinated Biphenyls 101 Fact Sheet

What are PCBs?

Polychlorinated biphenyls (PCB) 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 were banned in 1979.

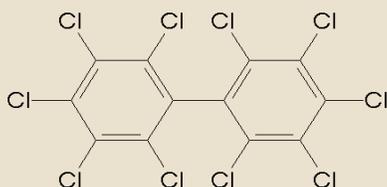


PCB Pollution



PCBs entered the environment during their manufacture in the US and are still released today from poorly maintained hazardous waste sites that contain PCBs, illegal or improper dumping of PCB wastes, leaking transformers, or by 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



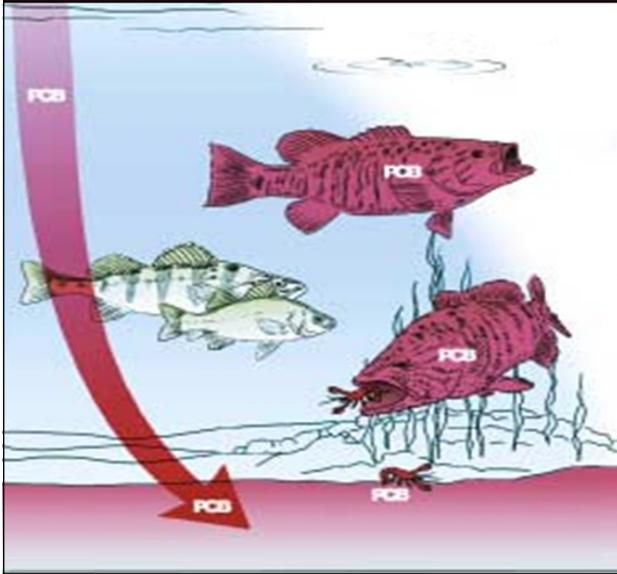
PCBs are composed of two rings of carbon and can have between 1 to 10 chlorine atoms attached to the structure. Each unique combination is called a congener. There are 209 congeners of PCBs possible. The more chlorines that are attached, the more stable and persistent the PCB compound. Commercial PCBs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

Properties of PCBs

PCBs bind more readily to sediments rather than stay suspended in a body of water. If exposed to high enough temperatures, PCBs can evaporate into the air. PCBs are lipophilic, which means they can dissolve in oils and fats, but not in water. They are persistent and can accumulate in animal tissues.



PCBs Bioaccumulate



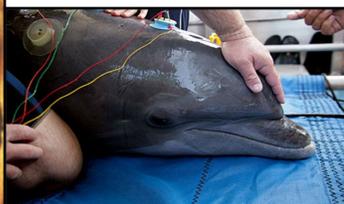
Because PCBs bind to sediments, the microorganisms that live in the sediments consume contaminated sediment. Other animals that feed on these microorganisms ingest the PCBs as well. Because PCBs can accumulate in animal fats, the toxin can bioaccumulate up the food chain. The top predators have the most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

Effects on Wildlife

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



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



Effects on Human Health

The greatest exposure to PCBs for humans occurs through 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, pancreas, and the cardiovascular system. PCBs can also impair the development of the brain and neurological system. Exposure of the unborn fetus can also cause low birth weight babies. PCBs are present in the breast milk of women in the US and around the world. Babies exposed to PCBs can also be behaviorally affected and act “fussier”



than babies that are unexposed. Living in the vicinity of a PCB waste site can also be an important source of exposure. Children born before or during dredging of a contaminated river had higher umbilical cord PCB levels than children born after dredging.

For more information

Visit the following website for more information about PCBs

US EPA Polychlorinated Biphenyls (PCBs)
<http://www.epa.gov/epawaste/hazard/tsd/pcbs/index.htm>

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