



Health Aspects



FACT SHEET

What are PCBs?

Polychlorinated biphenyls (PCBs) are a class of chemicals that were in many ways ideal for a number of industrial uses, especially as cooling and insulating fluids for transformers and capacitors. But in 1968, PCBs and other toxic chemicals were accidentally mixed with cooking oil in Japan, causing serious illness in many people. Although later research showed that a highly toxic group of chemicals called polychlorinated dibenzofurans may have played a major role in causing the illness, the event focused public and scientific attention on the dangers of PCBs. Research indicated PCBs put many sectors of the environment at risk and led in 1977 to a North American ban on their manufacture and importation and on most non-electrical uses.

How are humans exposed to PCBs?

Several factors have led to extensive environmental contamination with PCBs and contribute to human exposure.

- PCBs have been widely dispersed in the environment due to improper disposal practices from the 1930s to the 1970s.
- PCBs do not decompose easily and therefore persist for a long time in the environment.
- PCBs can be distributed long distances by air. For example, extensive contamination of the Arctic has been linked directly to long-range airborne transport of PCBs.
- PCBs accumulate in fatty tissue (bioaccumulation) and become progressively more concentrated in animal species that are higher up the food chain (biomagnification). For example, fish-eating birds have higher PCB concentrations than the fish they eat.

As a result of these factors, we are all exposed to "background" concentrations of PCBs, as we are to several other persistent chemicals. The majority of our exposure is through food; minor exposures are through air and water. High concentrations of PCBs have been found in some fish and wildlife and have contributed further to the PCB concentrations in the tissues and breast milk of Canadians. Every man, woman and child in Canada now has PCB in their body fat.

Are PCBs harmful to humans?

It is unlikely that any detectable injury to humans results from short-term, low-level exposure to PCBs.

Some studies have linked sustained, high-level exposure of humans to PCBs to reduced functioning of the immune system, muscle weakness, skin changes, irregular menstrual cycles, and a reduction in fetal size. While cancer has been reported in laboratory animals exposed for a lifetime to PCBs, workers who handled PCBs regularly have had no higher rate of cancer or other PCB-related illness to date.

The health effects associated with long-term exposure to low PCB concentrations are not well known, but may involve effects on reproduction and development of the fetus and infant. These effects are of concern and the subject of considerable research.

Current levels of PCBs in our body fat are not likely to be harmful to health. However, we do not want PCBs to accumulate to any greater extent in human tissue and become a health problem.

Is any danger posed by PCBs that are in storage or still in use?

Handling and storage of PCBs have become strictly regulated. Despite regulations, accidents do occur;

PCBs are occasionally spilled and equipment containing PCBs occasionally catches fire. Uncontrolled fires involving PCBs are a great concern because they lead to rapid distribution of PCBs and their combustion products, the toxic dioxins and furans.

PCBs can be stored safely. However, storage is not a solution. It is an interim measure.

How can the danger posed by PCBs be minimized?

If we are to protect health, we must stop PCBs from entering the environment. Scientists agree that the only long-term solution to the PCB problem is to destroy the remaining volume of the chemical not yet dispersed into the environment. Effective, safe destruction methods include incineration and chemical treatment. Chemical treatment methods are well developed and used commercially for low-level PCB wastes.

The most widely used and proven method for destroying more concentrated PCBs is high temperature incineration. This method has been shown to destroy PCBs at an efficiency of 99.9999 percent. The health risks posed by controlled incineration of PCBs are insignificant; the benefits to the global community are enormous.