



FREQUENTLY ASKED QUESTIONS ABOUT POLYCHLORINATED BIPHENYLS (PCBs)

What are Polychlorinated Biphenyls (PCBs)?

PCBs are a group of man-made chemicals consisting of 209 individual compounds which do not occur naturally. They are either oily liquids or solids and have no smell or taste. PCBs do not burn easily and are good insulating material. The United States ceased the production of PCBs in 1977 because of evidence of accumulation in the environment. PCBs were used mainly as coolants and lubricants in transformers, capacitors, and other electrical equipment. They were also used in fluorescent lighting fixtures, microscope oil, and hydraulic fluids.

What happens to PCBs when they enter the environment?

In the past, PCBs entered the air, water, and soil during their manufacture and use. Today, PCBs are released into the environment from hazardous waste sites that contain PCBs, illegal or improper dumping of PCB wastes, and leaks from electrical transformers containing PCBs. PCBs do not dissolve easily in water; therefore, high levels of PCBs are not found in water. Sediments at the bottom of bodies of water, such as lakes and rivers, generally act as reservoirs for PCBs allowing the PCBs to remain there for years. PCBs can concentrate in fish and marine organisms and may potentially reach levels several times higher than the levels in water.

How might I be exposed to PCBs?

The two main sources of exposures to PCBs are from the workplace or from the environment. Exposures in the U.S. workplace rarely occur because PCBs are no longer manufactured. Humans may be exposed to PCBs primarily by consuming PCB-contaminated fish, by breathing air that contains PCBs, or by drinking PCB-contaminated well water.

How can PCBs affect my health?

Workers exposed to PCBs in the air for a long period of time have experienced irritation of the nose and lungs, as well as skin irritation such as acne and rashes. Experimental animals that inhaled very high levels of PCBs had liver and kidney damage. In a long-term study, PCBs caused cancer of the liver in animals that ate certain PCB mixtures throughout their lives. It is not known if the effects seen in animals would occur in people. However, the amounts of PCBs that caused health effects in animals are far greater than the levels found in the environment and subsequent levels found in exposed people. No cancer has been found in workers who have been occupationally exposed to levels of PCBs that are higher than those found in the

environment. Some studies in humans have suggested that PCB exposure may cause adverse developmental effects in children and developing fetuses. However, due to study limitations, these findings cannot be viewed as conclusive.

Is there a medical test to show whether I have been exposed to PCBs?

Tests are available to determine if PCBs are in your blood, body fat, and breast milk. These tests cannot show the exact amount or type of PCBs you were exposed to or for how long you were exposed. These tests do not predict whether you will experience harmful health effects. Blood tests are the best method for detecting recent exposures to large amounts of PCBs. Fat biopsies (small amounts of fat taken with a needle and syringe) may be better than blood tests for determining whether you were ever exposed to PCBs. Fat biopsy tests are not routinely available at your doctor's office, because they require special equipment to complete them. Nearly everyone has been exposed to PCBs because these chemicals are found throughout the environment, and nearly all persons are likely to have detectable amounts of PCBs in their blood, fat, or breast milk.

Are there any standards or guidelines to protect people from exposures to PCBs?

The U.S. Occupational Safety and Health Administration (OSHA) recommends that workers not be exposed by inhalation over a period of 8 hours for 5 days per week to more than 1 milligram per cubic meter (mg/m^3) of air containing 42% chlorine PCBs, and $0.5 \text{ mg}/\text{m}^3$ for 54% chlorine PCBs. The U.S. Environmental Protection Agency (EPA) has set a maximum contaminant level (MCL) of 0.5 ppb PCBs in drinking water. The EPA requires that spills or accidental releases into the environment of one pound or more of PCBs be reported to the EPA. The U.S. Food and Drug Administration (FDA) have established PCB tolerances for several foods and food-related items. These generally range from as low as 0.2 parts per million (ppm) in infant foods to as high as 3.0 ppm in red meat. The current PCB tolerance level in edible fish tissue is 2.0 ppm. Fish with PCB contamination levels above 2.0 ppm may not be sold or shipped in interstate commerce. The current VDH guideline for issuing a fish consumption advisory for PCBs is 50 parts per billion (ppb).

What can be done to reduce the health risk from eating fish containing PCBs?

PCB levels can be reduced in fish by following these guidelines:

- Remove the skin, fat (from the belly and top of the fish) and other internal organs where PCBs are most likely to accumulate before cooking the fish.
- Cook the fish by broiling, baking, or grilling so that the fat drains away. By letting the fat drain away, PCBs stored in the fatty tissue of the fish are removed.
- Discard the fats that cook out of the fish.
- Eat smaller, younger fish (within the legal limits). They are less likely to contain harmful levels of PCBs than larger, older fish.
- Avoid or reduce the amount of fish drippings or broth that are used to flavor the meal. These drippings may contain higher levels of PCBs.
- Eat less deep fried fish, since frying seals PCBs into the fatty tissue.

Is there any danger from the water?

In general, there is no danger from the water, because PCBs are only slightly soluble in water. Therefore, recreational use such as boating and swimming would pose no significant health risk.

Where can my physician or I get more information?

If you need further information regarding the health effects of PCBs, please contact the Virginia Department of Health, Division of Environmental Epidemiology, 109 Governor Street, 4th Floor, Richmond, VA 23219, or call (804) 864-8182.

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