

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances.

## For further information, please call your Regional PCB coordinator:

**EPA Region 1** (Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island)  
Boston, MA: Kim Tisa (617) 918-1527

**EPA Region 2** (New York, New Jersey, Puerto Rico, Virgin Islands)  
New York, NY: Dave Greenlaw (732) 906-6817

**EPA Region 3** (Pennsylvania, West Virginia, Virginia, Maryland, Delaware, D.C.)  
Philadelphia, PA: Ed Cohen (215) 814-2147

**EPA Region 4** (Tennessee, Kentucky, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida)  
Atlanta, GA: Stuart Perry (404) 562-8980

**EPA Region 5** (Illinois, Wisconsin, Indiana, Michigan, Minnesota, Ohio)  
Chicago, IL: Tony Martig (312) 353-2291

**EPA Region 6** (New Mexico, Texas, Oklahoma, Arkansas, Louisiana)  
Dallas, TX: Lou Roberts (214) 665-7579

**EPA Region 7** (Nebraska, Kansas, Missouri, Iowa)  
Kansas City, KS: Dave Phillippi (913) 551-7395

**EPA Region 8** (Montana, Wyoming, North Dakota, South Dakota, Utah, Colorado)  
Denver, CO: Dan Bench (303) 312-6027

**EPA Region 9** (California, Nevada, Arizona, Hawaii, American Samoa, Guam)  
San Francisco, CA: Max Weintraub (415) 744-1129

**EPA Region 10** (Washington, Oregon, Idaho, Alaska)  
Seattle, WA: Dan Duncan (206) 553-6693

  
U.S. Environmental Protection Agency  
Region 10  
1200 Sixth Avenue (W/CM-128)  
Seattle, Washington 98101-1128

EPA 910-F-99-001



United States  
Environmental Protection  
Agency

Region 10  
1200 Sixth Avenue  
Seattle WA 98101-1128

# Polychlorinated biphenyls (PCBs)

And you. . .



## What are PCBs?

Polychlorinated biphenyls (PCBs) are synthetic chemical compounds consisting of chlorine, carbon and hydrogen. PCBs belong to a family of organic compounds known as chlorinated hydrocarbons. PCBs may be clear to yellow oily liquids or waxy solids.

Due to public concern over the harmful effects of PCBs on the environment the primary United States manufacturer stopped making them in 1977. The 1976 Toxic Substances Control Act (TSCA Public Law 94-469) prohibited any further manufacture of PCBs in the U.S. Even though PCBs are no longer manufactured in the U.S., small amounts of PCBs continue to be formed in production processes when chlorine, carbon and elevated temperatures or catalysts are present together.

## Where are PCBs found?

PCBs were produced in the United States between 1929 and 1977. PCBs were primarily used in industrial applications as an electrical insulator, but were also used in small amounts in commercial products. They were popular because they were inexpensive, did not conduct electricity, tolerate high temperatures, and last a very long time without degrading. The majority of the PCBs were used as insulating liquids in electrical equipment, including transformers and capacitors. They were marketed under several trade names, including Aroclor, Askarel, Pyroclor, Sanotherm, Kennechlor, Hyvol, Chlorextol, Pyranol. Some other commercial applications of the product were for heat transfer, hydraulic fluids, dye carriers in carbonless copy paper, adhesives, and as a plasticizer in paints. They were also used in electronic devices such as older fluorescent lights, refrigerators and television sets.

## Why are PCBs harmful?

Once PCBs are released into the environment through improper disposal or leakage from PCB transformers and capacitors, they take several decades to slowly decompose. When they are ingested by people and animals, PCBs are stored in the fatty tissue and then are slowly released into the blood stream. Even at low exposure levels, the concentration of PCBs in fatty tissue can accumulate to a high level. This is the process termed bioaccumulation. PCBs accumulate in the fatty tissue of organisms low in a food chain are "magnified" when consumed by the animals in the higher level of the chain. This process is termed biomagnification.

As PCBs bioaccumulate in organisms and biomagnify in the food chain, they create health hazards at all levels. The short term health hazards associated with PCBs exposure for people include irritation to the eyes, nose and throat. High, acute exposures can damage the liver and cause death. Chronic (long term) health effects are often not immediately apparent and may last for months or years. Certain PCBs are probable carcinogens for people. There is some evidence that they cause skin cancer in people and have been shown to cause liver cancer in animals. Some long term effects include liver damage, reproductive problems, a severe acne like rash (chloracne), and damage to the nervous system resulting in numbness, weakness and tingling in the arms and legs.

## How Might I be Exposed?

Exposures to PCBs may come from many areas including:

- workplace practices
- hazardous waste sites where improper disposal of PCBs has occurred
- leakage from PCB transformers and capacitors
- drinking contaminated water
- eating contaminated food, especially seafood
- skin contact with contaminated soil
- breathing contaminated air
- fluorescent light ballasts

The best way to know whether or not you are exposed to PCBs at work is through routine evaluation or a blood test that is available to detect recent large exposures. Evaluation can include personal or work area sampling and analysis. The evaluation only indicates one's exposure to PCBs; it does not predict potential health effects.

A route of both industrial and nonindustrial potential exposure is fluorescent light ballasts (bulbs). Before EPA banned the manufacture of PCBs in 1977, PCBs were commonly used in the manufacture of fluorescent light ballasts. If the ballasts fail, the capacitor, which contains the PCB may break open, releasing the PCBs to contaminate the surrounding tar-like material. It is virtually impossible to determine whether a small capacitor inside a light ballast is leaking since you cannot see the capacitor. The importance is whether or not the ballast itself is leaking. The black potting compound around the capacitor may be PCB-contaminated.

## What to do if you believe you have an exposure problem?

If you believe you are having work related health problems and any other health problems related to PCBs exposure, seek help from a physician who is trained to recognize occupational diseases. Take this information with you.

## How to reduce exposure?

PCBs chemical can be eaten, inhaled, or absorbed via skin. PCBs are probable cancer-causing agents; therefore, all contact should be reduced to the lowest possible level. Many scientists believe there is no safe level of exposure to PCBs. To keep from being exposed, the following steps should be taken:

- In areas where PCBs are handled, processed, or stored, do not eat, smoke, or drink.
- After working in the area, wash hands thoroughly before eating or smoking.
- Wear full body protective clothing when working with the chemical.
- If a possible skin contact occurred, emergency shower facilities should be provided.

## What are the Federal Regulations for PCBs?

The Environmental Protection Agency (EPA) has set a maximum contaminant level for PCBs of 0.0005 milligrams per liter of drinking water (0.0005mg/L). Accidental releases of PCBs into the environment of one pound or more are required to be reported to the EPA. The Food and Drug Administration (FDA) requires that milk, eggs, other dairy products, poultry fat, fish, shellfish, and infant foods contain not more than 0.2-3 parts of PCBs per million parts (0.2-3 p.m.) of food.

## Where to obtain more information?

If there are more concerns or questions please contact your community, state health, or environmental quality department or,

### The Agency for Toxic Substances and Disease Registry (ATSDR)

Division of Toxicology  
1600 Clifton Road NE, Mailstop E-29  
Atlanta, Georgia 30333  
Phone: 1-800-447-1544  
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<http://atsdr1.atsdr.cdc.gov:8080/ToxFAQ.html>