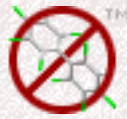


# COPA



The Coalition Opposed to PCB  
Ash in Monroe County, Indiana

CALL (812) 333-8888 FOR MORE INFORMATION OR E-MAIL [info@copa.org](mailto:info@copa.org)

## Library: Reports: EPA

### PCB Hazard Summary

Polychlorinated biphenyls (PCBs) can affect you when breathed in and by passing through your skin. Polychlorinated biphenyls are **CARCINOGENS AND NEED TO BE HANDLED WITH EXTREME CARE.**

#### Cautions

- They may be teratogens and may damage the adult reproductive system.
- Exposure can cause an acne like skin rash (called chloracne).
- They can damage the liver.
- High exposure can damage the nervous system, causing numbness, weakness and tingling ("pins and needles") in the arms and legs.

#### Identification

Polychlorinated biphenyls are a mixture of chemicals that are clear to yellow oily liquids or solids. They are used in insulating fluids of electrical systems.

#### Reason for Citation

- Polychlorinated biphenyls are on the Hazardous Substance List because they are regulated by OSHA and cited by NIOSH, DOT, IARC, NTP, DEP and EPA.
- These chemicals are on the Special Health Hazard Substance List because they are **CARCINOGENS** and **TERATOGENS**.
- Definitions are attached.

#### HOW TO DETERMINE IF YOU ARE BEING EXPOSED

- Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.20.
- If you think you are experiencing any work related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

#### Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is 1 mg/m<sup>3</sup> (42% Chlorine) and 0.5 mg/m<sup>3</sup> (54% Chlorine) averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit is 0.001 mg/m<sup>3</sup> averaged over a 10-hour workshift.

- The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.
- Polychlorinated biphenyls are **PROBABLE CANCER CAUSING AGENTS** in humans. There may be no safe level of exposure to carcinogens, so all contact should be reduced to the lowest possible level.

### **Ways of Reducing Exposure**

- Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- A regulated, marked area should be established where polychlorinated biphenyls are handled, used, or stored as recommended by NIOSH.
- Wear full body protective work clothing.
- Wash thoroughly immediately after exposure to polychlorinated biphenyls and on exit from the work area.
- Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of polychlorinated biphenyls to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

### **Health Hazard Information**

#### **Acute Health Effects**

The following acute (short term) health effects may occur immediately or shortly after exposure to polychlorinated biphenyls:

- Exposure to the vapor can irritate the eyes, nose and throat.
- High exposures can damage the liver.

#### **Chronic Health Effects**

The following chronic (long term) health effects can occur at some time after exposure to polychlorinated biphenyls and can last for months or years:

#### **Cancer Hazard**

- Polychlorinated biphenyls are **PROBABLE CARCINOGENS** in humans. There is some limited evidence that they cause skin cancer in humans and they have been

shown to cause liver cancer in animals.

- Many scientists believe there is no safe level of exposure to a CARCINOGEN. Such substances may also have the potential for causing reproductive damage in humans.

### Reproductive Hazard

- Polychlorinated biphenyls may be TERATOGENS in humans since they have been shown to be teratogens in animals.
- They may be passed to a child through mother's milk.
- Polychlorinated biphenyls can affect the reproductive system of adults.

### Other Long Term Effects

- Repeated exposures can cause liver damage.
- Polychlorinated biphenyls can cause a severe acne like rash (chloracne). This may persist for years.
- High exposures can damage the nervous system, causing numbness, weakness, and tingling ("pins and needles") in the arms and legs.

## Medical

### Medical Testing

Before beginning employment and at regular times after that, the following are recommended:

- Liver function tests.
- Serum triglycerides level.
- Exam of the skin.

If symptoms develop or overexposure is suspected, the following may be useful:

- Blood PCB levels.
- Nerve conduction studies should be considered.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.20.

### Mixed Exposures

Because more than light alcohol consumption can cause liver damage, drinking alcohol can increase the liver damage caused by polychlorinated biphenyls.

## Workplace Controls and Practices

Unless a less toxic chemical can be substituted for a hazardous substance, ENGINEERING CONTROLS are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release.

Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary. in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- Where possible, automatically transfer polychlorinated biphenyls from drums or other storage containers to process containers.
- Specific engineering controls are recommended for this chemical by NIOSH. Refer to the NIOSH criteria document: Occupational Exposure to Polychlorinated Biphenyls #77 225.

Good WORK PRACTICES can help to reduce hazardous exposures. The following work practices are recommended:

- Workers whose clothing has been contaminated by polychlorinated biphenyls should change into clean clothing promptly.
- Do not take contaminated work clothes home. Family members could be exposed.
- Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to polychlorinated biphenyls.
- If there is the possibility of skin exposure, emergency shower facilities should be provided.
- On skin contact with polychlorinated biphenyls, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted polychlorinated biphenyls, whether or not known skin contact has occurred.
- Do not eat, smoke, or drink where polychlorinated biphenyls are handled, processed, or stored, since the chemicals can be swallowed. Wash hands carefully before eating or smoking.
- If solid, when vacuuming, a high efficiency particulate absolute (HEPA) filter should be used, not a standard shop vacuum.

### **Personal Protective Equipment**

Workplace controls are better than personal protective equipment. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

#### **Clothing**

- Avoid skin contact with polychlorinated biphenyls. Wear protective gloves and clothing. Safety equipment suppliers/ manufacturers can provide recommendations on the most protective glove/ clothing material for your operation.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

- Viton is recommended as a good protective material.

### Eye Protection

- Eye protection is included in the recommended respiratory protection.

### Respiratory Protection

- **IMPROPER USE OF RESPIRATORS IS DANGEROUS.** Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.
- At any exposure level, use a MSHA/NIOSH approved supplied air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or helmet in the continuous flow mode, or use a MSHA/NIOSH approved self contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode.

Common Name: Polychlorinated Biphenyls DOT Number: UN 2315

DOT Emergency Guide code: 15

CAS Number: 1336-36-3 Not Rated REACTIVITY Not Found Not Rated

### **Carcinogen: Poisonous Gases are Produced in Fire**

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

#### **Fire Hazards**

- Polychlorinated biphenyls may burn, but do not readily ignite.
- Use dry chemical, CO<sub>2</sub>, water spray, or foam extinguishers.
- **POISONOUS GASES ARE PRODUCED IN FIRE**, including Dioxin and Chlorinated Dibenzofurans.
- If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

#### **Spills and Emergencies**

If polychlorinated biphenyls are spilled or leaked, take the following steps:

- Restrict persons not wearing protective equipment from area of spill or leak until clean up is complete.
- Ventilate the area of spill or leak.
- Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- Collect powdered material in the most convenient and safe manner and deposit in sealed containers.
- It may be necessary to contain and dispose of polychlorinated biphenyls as a **HAZARDOUS WASTE**. Contact your State Environmental Program for specific recommendations.

\* \* \* For large spills and fires, immediately call your fire department. \* \* \*

### **Handling and Storage**

- Prior to working with polychlorinated biphenyls you should be trained on their proper handling and storage.
- Store in tightly closed containers in a cool well ventilated area away from STRONG OXIDIZERS (such as CHLORINE, BROMINE, and FLUORINE).
- Polychlorinated biphenyls should be handled only in an established, controlled, regulated area.

### **First Aid: Poison Information**

#### Eye Contact

- Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

#### Skin Contact

- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

#### Breathing

- Remove the person from exposure.
- Begin rescue breathing if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

### **Physical Data**

Flash Point: 383oF (195oC)

Water Solubility: Slightly soluble

### **Ecological Information**

Polychlorinated biphenyls are complex mixtures of chlorobiphenyls which have been marketed for uses according to the percentage of chlorine in the mixture. The lesser chlorinated PCBs are colorless mobile liquids. Increased chlorination produces more viscous liquids, with further chlorination producing sticky resins or white powders. Because of their heat stability, PCBs were commonly used in electrical capacitors and transformers, and industrial heat transfer applications. PCBs may enter the environment from leakage from industrial and electrical equipment, from industrial discharges, spills, leaching from municipal landfills, and from previously contaminated sediments.

#### **Acute (Short-term) Ecological Effects**

Acute toxic effects may include the death of animals, birds, or fish, and death or low growth rate in plants. Acute effects are seen two to four days after animals or plants come in contact with a toxic chemical substance.

Polychlorinated biphenyls have high acute toxicity to aquatic life. Insufficient data are

available to evaluate or predict the short- term effects of PCBs to plants, birds, or land animals.

### **Chronic (Long-term) Ecological Effects**

Chronic toxic effects may include shortened lifespan, reproductive problems, lower fertility, and changes in appearance or behavior. Chronic effects can be seen long after first exposure(s) to a toxic chemical.

Polychlorinated biphenyls have high chronic toxicity to aquatic life. Insufficient data are available to evaluate or predict the long-term effects of PCBs to plants, birds, or land animals.

### **Water Solubility**

Polychlorinated biphenyls are slightly soluble in water. Concentrations of less than 1 milligram will mix with a liter of water.

### **Distribution and Persistence in the Environment**

The relative distribution of the various PCBs depends on the level of chlorination. Some PCBs will probably be highly persistent in water, with half-lives greater than 200 days. Potential PCB distribution in the various environmental compartments can have the following ranges, depending on degree of chlorination: air, 0-34%; terrestrial soils, 33-52%; water, 0-1.8%; suspended solids, 0.05-0.08%; aquatic biota, 0.02-0.03%; aquatic sediments, 30-50%.

### **Bioaccumulation in Aquatic Organisms**

Some substances increase in concentration, or bioaccumulate, in living organisms as they breathe contaminated air, drink contaminated water, or eat contaminated food. These chemicals can become concentrated in the tissues and internal organs of animals and humans.

The concentration of polychlorinated biphenyls found in fish tissues is expected to be considerably higher than the average concentration of PCBs in the water from which the fish was taken.

SUPPORT DOCUMENT: AQUIRE Database, ERL-Duluth, U.S. EPA., EEB OCB risk document.

[The Cast](#) | [The Tragedy](#) | [The Comedy](#) | [The Ending](#) | [News](#) | [Library](#) | [Seating Plan](#) | [Top](#) | [Home](#) |

**CALL (812) 333-8888 FOR MORE INFORMATION OR E-MAIL [info@copa.org](mailto:info@copa.org)**

The Coalition Opposed to PCB Ash in Monroe County, Inc. is a nonprofit organization.  
205 N. College Ave. - Ste. 713 - P.O. Box 665 - Bloomington, IN 47402-0665 USA  
Voice: +1.812.333.8888 - Fax: +1.812.332.8511 - BBS: +1.812.333.8822

For more info, e-mail [info@copa.org](mailto:info@copa.org). Please send site input to [webmaster@copa.org](mailto:webmaster@copa.org).  
Copyright © 1990-98 COPA, Inc. All rights reserved. See [legal page](#) for terms  
of use and disclaimers. All trademarks belong to their respective owners.  
[Subscribe to the COPA Mailing List](#) and stay informed on PCBs.