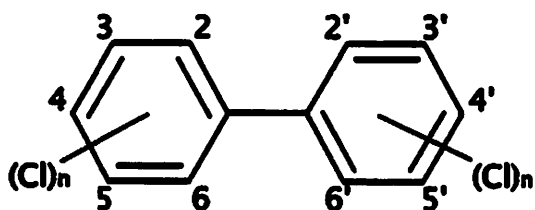


## Medical Aspects of Polychlorinated Biphenyl Exposure

Richard Young, M.D.  
School Medical Advisor  
Branford Public Schools  
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### ***What are PCBs?***

Polychlorinated biphenyls (PCBs) are a family of more than 200 organic chemicals. Between the 1920s and 1970s, more than one billion pounds of PCBs were used in the manufacture of items such as televisions, refrigerators, electrical equipment, and window caulk. Because PCBs cling to soil, the chemical was also sprayed onto roads to reduce construction dust. PCBs were later recognized as toxic and banned by the U.S. Government in 1979.



The two hexagons are phenols leading to the name, biphenyl. The Cl refers to multiple Chlorine atoms (i.e., "polychlorinated").

### ***Why did PCBs become a problem?***

Before 1970, the United States did not have an Environmental Protection Agency. Laws and regulations regarding the use and disposal of chemicals (now known or suspected to be toxic) were considerably more lax than they are today.

When items containing PCBs were historically discarded in landfills or rivers, the PCBs eventually found their way into water, air and the food chain. Because PCBs do not readily break down in nature, PCBs are ingested by "just about anyone who eats meat." (Desroches 2016).

### ***What are the health risks associated with PCBs?***

The adverse effects of PCBs are likely related to the degree and method of exposure. Individuals who are occupationally exposed to large amounts of PCBs can develop skin rashes. They may also have abnormalities of liver, lung and thyroid function. Individuals who accidentally ingest food contaminated by PCBs may develop similar abnormalities.

### ***Are PCBs dangerous to the nervous system?***

PCBs are toxic chemicals. Common sense dictates that exposure to PCBs be minimized. Although, scientific knowledge regarding the effects of PCBs on the nervous system is incomplete, limited studies of both humans and animals exposed to PCBs have been conducted.

Studies in human populations showed that children born to mothers who consumed large amounts of Great Lakes fish (presumably containing PCBs[?]) had “subtle neurobehavioral alterations.” (Faroon, 2000). However, these studies are limited by the fact that the affected mothers may have been exposed to other toxic chemicals commonly found in fish (e.g., mercury).

Studies of monkeys given PCBs at concentrations similar to those found in human breast milk showed learning deficits (Faroon 2000).

### ***What are the potential risks of low-level exposure to PCBs?***

“Potential adverse human health effects of low-level environmental exposure to PCBs are complex and still need further validation.” (ATSDR 2016)

### ***How widespread are PCBs in Connecticut Schools?***

An estimated 100 Connecticut public schools may contain PCBs (Desroches, 2016). The precise number of schools is uncertain, because there is no federal or state requirement to test for the presence of PCBs. However, if PCBs are discovered, EPA requires that the PCBs be contained or removed (Insall, 2015).

### ***Is PCB exposure in schools linked to any specific illness?***

No. Brian Toal, epidemiologist with the Connecticut Department of Public Health states that “most likely, teachers and children in schools probably would not see any effects even if [federal PCB guidance levels] are exceeded” (Desroches, 2016).

In fact, the majority of illnesses associated with PCBs are tied to occupational exposures.

### ***Should I (or my child) be tested for PCBs?***

There are no routine laboratory tests to measure PCB levels. If a person believes he or she is contaminated by PCBs, toxicological laboratories could determine whether the blood level of PCBs is elevated. Most individuals have low levels of PCBs in their blood since exposure to PCBs is nearly universal (ATSDR 2014).

## **SUMMARY**

- 1. PCBs are toxic chemicals which were once widely used in manufacturing. The use of PCBs was banned in 1979.**
- 2. Due to environmental contamination, low levels of PCBs can be found in in the tissues of humans and animals.**
- 3. Occupational exposure to, or, accidental ingestion of, large amounts of PCBs may result in skin rashes and abnormalities in liver, thyroid and kidney function.**
- 4. The effect of low level environmental exposure to PCBs in humans has not been conclusively delineated.**
- 5. No specific illness is linked to low-level PCB exposure in school settings.**

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