



Questions and Answers About PCBs at the Osborn Hill Elementary School *Health Significance of Past Exposures*

Question: *What kind of testing was done inside the Osborn Hill School?*

Answer: PCBs were tested for in 3 ways:

1. Items and materials were tested directly to see if they contained PCBs. This “bulk” testing is used to determine the potential sources of PCBs. Bulk testing is not used for health evaluations.
2. Dust was tested in various parts of the school. Dust testing serves 2 purposes.
 - It indicates what parts of the school have been impacted by PCBs and what might be potential sources.
 - It can be used to estimate exposure to students and teachers. Exposure to PCBs via dust can occur if someone touches the dust (skin exposure) or puts hands or food items that have dust on them into the mouth (ingestion exposure).
3. Air samples were taken in many classrooms and areas of the school. Air testing is the most direct way to estimate exposure and risk from PCBs.

Question: *What did the PCB testing find?*

Answer: Bulk test results showed that PCBs are present in a variety of materials including window caulk in some classrooms and insulation in the gym. Bulk test results are expressed in parts-per-million (ppm) or milligrams per kilogram (mg/kg). The EPA standard for bulk materials is 50 ppm. Some of the bulk material test results showed PCBs present at levels greater than the EPA standard of 50 ppm.

Dust test results showed that PCB levels were elevated in some areas, especially in and just outside the gym. Dust test results are expressed in micrograms-per-100 square centimeters ($\mu\text{g}/100\text{ cm}^2$).

Air results from the school were compared with EPA’s public health levels and were found to be elevated in a number of areas. Air results are expressed in nanograms-per-cubic meter (ng/m^3). The greatest exceedance was in the gym, where a level of $2,900\text{ ng}/\text{m}^3$ PCBs was found in the air. Some classrooms also had PCB levels exceeding EPA’s recommended limits. More information about EPA’s air limits is provided in the next paragraph.

Question: *What are the PCB Public Health Levels set by EPA for indoor air in schools?*

Answer: The EPA has set “Public Health Levels for PCBs in Indoor School Air.” These indoor air levels are set at a safe exposure level, not expected to cause harm. These levels take into consideration exposures to PCBs from all other sources that students, teachers and staff

might encounter each day outside of school. They also take into consideration a child's smaller size and other vulnerabilities. This means that the EPA levels are very protective of public health.

The EPA indoor air public health level for elementary schools is 300 ng/m³. This level is protective of children ages 6 to 12. For kindergarteners under the age of 6, the public health level is 100 ng/m³. The public health levels assume a continuous exposure during the course of the school day, and therefore are most appropriate for comparison to air testing results in classrooms where students spend most of their time. Complete documentation for EPA's PCB air levels can be found at <http://www.epa.gov/pcbsincaulk/maxconcentrations.htm>

Question: *What are the potential health effects from PCBs at the levels measured?*

Answer: Low level exposures such as those found at Osborn Hill School have not been proven to cause the health effects listed here. Higher level PCB exposures have been linked to disorders of the endocrine, reproductive, immune and nervous systems. They have also been linked to cancers of the kidney, liver and thyroid.

The EPA public health levels used to evaluate the air measurements in the Osborn Hill School were set based upon the most sensitive health effects seen with PCB exposures in animal studies or human exposures. These effects included impacts on the immune system, ducts lubricating the eye and reproduction. EPA then divided the lowest levels that caused those effects by a safety factor of 300 to set a safe level for schools. Even though some of the measurements in Osborn Hill School are above the EPA public health level we would not expect to see any actual health impact in students, teachers or staff because exposure levels at Osborn Hill School are still well below the levels that caused actual health effects in the PCB animal and human studies. Because there are some uncertainties as to what levels of PCB exposure may cause health effects, it is best to decrease exposure as much as possible using the EPA public health levels as a guideline.

Question: *What about cancer risks?*

Answer: PCBs are classified as probable human carcinogens. This is primarily based on PCBs causing cancer in laboratory animals. Overall, human studies provide limited evidence that PCBs cause cancer in people. Some studies in workers exposed to high levels of PCBs have found increased risks of liver and biliary tract cancers.

Using the highest levels of PCBs measured in the indoor air of the classrooms and the gym, and an exposure duration of 30 years for teachers and 6 years for students, the estimated theoretical lifetime cancer risk for students and teachers is low. The highest risk comes from exposure in the gym because that is the room where indoor air PCB levels were highest. Long term exposure (30 years) to air in the gym has an estimated cancer risk of about 2 in 100,000. This means that if 100,000 people were exposed for 30 years to the highest PCB air level measured in the gym, there would be an estimated 2 additional cancers resulting from that exposure over the course of a lifetime. Estimated cancer risks are much lower for students and teachers spending time in other parts of the school where air PCB levels were lower. In thinking about cancer risks it is important to remember that we are all exposed to PCBs every day from other sources. The likelihood that anyone in

Osborn Hill School has developed or will develop a cancer as a result of this PCB exposure is extremely small.

It is also important to be aware of background cancer rates. According to the American Cancer Society, half of all men and one-third of all women in the US will develop cancer during their lifetime. This means that the estimated 2 additional cancers in 100,000 exposed persons at Osborn Hill School means 2 additional cancers above the 33,000 to 50,000 background cancers that would be expected without any PCB exposure from the school. The high background cancer rate makes it impossible to determine if an individual cancer is related to a specific PCB exposure. Also, cancer is not a single disease. Each cancer type has its own set of risk factors. PCBs do not cause all types of cancer and have only been associated with a few forms of cancer, most notably liver cancer. Cancers caused by chemicals usually take a long time to develop, in the range of 10-40 years after significant and extended exposure occurs.

Question: *How are people usually exposed to PCBs and how much are they exposed to?*

Answer: We are all exposed to low levels of PCBs on a regular basis. Small amounts of PCBs are found in almost all outdoor and indoor air, soil, sediments, animals and food. The major exposure usually comes from food, especially from fish, meat and dairy products. Eating fish on a regular basis can contribute significantly to background exposure levels. For example, eating fish twice a week results in about the same PCB exposure as one would receive at the PCB indoor air levels EPA has set for schools.

Question: *Are there any medical tests that students, teachers and staff from the Osborn Hill Elementary School should have?*

Answer: The short answer is no. Although there are blood tests available for PCBs, the results of such tests cannot easily be interpreted and would be of no medical use for individuals or their doctors. Since we all have background exposures to PCBs, any test would likely find some PCBs in our blood. If your PCB blood levels are higher than background levels, this will clearly demonstrate that you have been exposed to PCB from some source. It cannot tell you if it was from the school or some other source such as eating fish from Long Island Sound.

In addition, blood tests for PCBs cannot predict whether you will develop harmful health effects. If you have concerns about your child's exposure it is best to talk to your physician or with a physician experienced in environmental and occupational medicine. DPH can assist you with finding a physician experienced in environmental and occupational medicine.

Question: *Overall, what do these test results mean for students and teachers in the school?*

Answer: Testing at Osborn Hill School shows that PCB concentrations in some locations inside the school exceed EPA's Public Health Levels. This means that PCB exposures need to be reduced. Many actions are currently underway at the school to reduce exposures. Reducing exposures is the most prudent public health step to take at this time. Although PCB exposures occurred in the past, DPH is confident that past exposure levels were not high enough to cause health impacts.



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