

TOWN OF GREENWICH DEPARTMENT OF HEALTH

Polychlorinated Biphenyls (PCB's)

Polychlorinated biphenyls (PCB's) are a mixture of synthetic chlorinated compounds known as congeners. In the United States, many commercial PCB mixtures are known by the trade name Aroclor. PCB's were manufactured in 1929 for hundreds of uses in industrial and commercial applications. Some examples of their use included surface coatings, inks, flame retardants, paints and dielectric fluids in transformers. In 1976 the U.S. Congress banned the manufacture of PCB's and regulated their use and disposal because of evidence of possible harmful health effects and environmental impacts. In 1979 the Environmental Protection Agency (EPA) passed regulations to secure information on all new and existing chemical substances as well as to control any substances that were determined to cause unreasonable risk to public health or the environment.

Prior to 1979 PCB's entered the air, water and soil during their manufacture and use. As a result, PCB contamination occurred worldwide in rivers, streams and oceans. Because of their ability to resist degradation, PCBs remain stable in the environment for long periods of time. They can cycle between air, water and soils and as a consequence, are found all over the world. PCB's are known to bioaccumulate in the body fat of animals and humans along with fish in water. The general population is exposed to PCB's via air, drinking water and food. Although PCB's are no longer made in the United States, people can still be exposed to them. Some pieces of equipment, such as older transformers, may still be in use and contain PCB's. Small amounts of PCB's can be found in almost all outdoor and indoor air, soil, sediments, surface water and animals. The primary exposure for humans appears to be through the consumption of contaminated food, particularly fish, meat and poultry. In 1980 the United States instituted regular monitoring of PCB's in fish, water and sediment. By the early 1990's, PCB's were being monitored in air.

The health effects of exposure to any hazardous substance such as PCB's depend on the dose (how much), the duration (how long) and how you are exposed. Exposure to a substance occurs only when an individual comes in contact with it by breathing, eating or drinking the substance, or by direct skin contact. Some other considerations that must be taken into account when exposed to PCB's are whether other chemicals are present at the time of exposure and personal health status. These factors can be important when determining the cause of illness.

Extensive studies in the animal population clearly indicate that PCB exposure can cause cancer and non-cancer related illness in animals. The severity of the health effects in this population depend on dose, species, PCB mixture, duration or timing of exposure and other factors that may be confounding. In studies that looked at human health effects from PCB exposure, individuals exposed in the workplace and exposures to the general public were analyzed. In both study groups supportive evidence for cancer and

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non-cancer effects of PCB exposure was noted. However, these studies had some shortcomings because they could not establish a clear cut association between PCB exposure and human health. Nevertheless,

studying PCB exposures in animals has provided the best guideline to predict possible health effects in humans, so many health and regulatory agencies agree that PCB's are probable human carcinogens. With respect to levels of PCB exposure, it is believed that people who ingest PCB contaminated fish and other animal products may be more at risk than others who are exposed to working with equipment containing PCB's or those who are exposed to PCB's that are released from a sole source into the air.

Due to the omnipresence of PCB mixtures, all people have background exposure with a certain level of PCB in their body fat, blood or breast milk. These exposure limits are not expected to affect human health on average. However, because of PCB's highly toxic potential, protective measures must be applied to reduce or prevent further exposure. This is best done through source-directed measures. For example, fish advisories warn people about PCB-contaminated fish and fish eating wildlife. These advisories have special restrictions to protect pregnant women, nursing mothers and young children.

Through legislation, the federal government has developed regulations and recommendations to protect public health from hazardous substances. These are often expressed in not-to-exceed levels of such substances in air, water, soil or food. Therefore, when PCB-based waste is over the acceptable level, it needs to be treated as a hazardous waste and disposed of according to regulation and guidelines.

Throughout the entire PCB remediation project, the MISA Building Committee, the Board of Education, its environmental consultants and numerous town officials have worked closely with federal (EPA) and state (Department of Public Health and Department of Energy and Environmental Protection) agencies to identify contaminants on school property. It has also taken all the necessary precautionary measures to protect the public during this process. The Building Committee and the Board have worked collectively with all parties to develop a plan to analyze and remove contaminated soil and followed the guidelines of federal and state agencies. As the project moves forward to secure school fields and parking lots, strategies will be implemented to protect site workers, teachers and students from any harm. The project's work will be carefully monitored as things progress with assurance that the site will remain safe at all times.