

## **PCB -- Background:**

Polychlorinated biphenyls (PCBs) are chemicals that were used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. PCBs are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. PCBs were subsequently banned by Congress in 1979. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

Before being banned, PCBs entered the environment during their manufacture, use, and disposal. They also entered the environment from accidental spills during their transport and from leaks or fires in products containing PCBs. PCBs can still be released to the environment from hazardous waste sites, illegal or improper disposal of industrial wastes and consumer products, leaks from old electrical transformers containing PCBs, and burning of some wastes in incinerators. PCBs do not readily break down in the environment and thus may remain there for very long periods of time. In water, PCBs mostly stick to organic particles and bottom sediments. PCBs also bind strongly to soil. PCBs are taken up by small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs can accumulate in fish and marine mammals, reaching levels that may be many thousands of times higher than in water.

Much of what is known about health effects associated with exposure to PCBs comes from either animal studies or exposure in occupational settings. Because PCBs are known to cause liver cancer in animals, they are presumed to also cause cancer in humans. The US EPA, as well as the International Agency for Research on Cancer (IARC), classify PCBs as probably carcinogenic to humans.

Tests exist to measure levels of PCBs in your blood, body fat, and breast milk, but these are not routinely conducted. Most people normally have low levels of PCBs in their body because nearly everyone has been environmentally exposed to PCBs. The tests can show if your PCB levels are elevated, which would indicate past exposure to above-normal levels of PCBs, but cannot determine when or how long you were exposed or whether you will develop health effects. While there are tests that can be done to detect PCBs in your blood, body fat and breast milk, no one knows what any given level found means. These tests also cannot determine the source(s) of exposure to PCBs.

PCBs are regulated by the US EPA, the FDA, as well as by OSHA. They were banned in the US primarily because they are hazardous to humans and the environment, they do not break down easily in the environment (they are very persistent) and they are known to accumulate in the food chain. A number of states, including South Carolina, have posted fish advisories for waters of the state where PCBs have been measured in fish above certain thresholds.

### **Current Issue:**

Through routine sampling, three Upstate publicly-owned treatment works (POTWs) learned that substances containing polychlorinated biphenyls (PCBs) were illegally introduced into the wastewater collection systems of each of the POTWs: Spartanburg Sanitary Sewer District (SSSD), Renewable Water Resources (ReWa), and the Town of Lyman. A subsequent report revealed PCBs were also present in a grease trap in Richland County.

Thirty years ago, thousands of American cities dumped their raw sewage directly into the nation's rivers, lakes, and bays. Through regulation of this dumping, local governments are now required to treat wastewater. The POTWs treatment of wastewater to remove contaminants produces effluent water and a solid waste byproduct. POTWs recycle biosolids as fertilizer or dispose of it in a landfill. POTWs in this case determined that PCBs were primarily captured in the solid waste byproducts. The byproducts containing the PCBs are being segregated into on-site holding basins or tanks for cleanup. At this time, there are no indications that users downstream from POTWs or local drinking water customers have been affected.

After treatment and processing, solid waste byproducts can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. POTWs provide the solid waste byproducts to farmers for land application, instead of sending them to landfills or other disposal facilities. EPA issues guidelines for applying biosolids to land that farmers use along with nutrient requirements for crops. Biosolids are often provided without charge, recycling valuable nutrients. Nationally, about 50% of all biosolids are being recycled to land. These biosolids are used on less than one percent of the nation's agricultural land.

POTWs that recycle solid waste byproducts must test the material annually to ensure they do not contain high levels of PCBs. EPA guidelines for land application do not, however, contemplate biosolids with consistent, moderate levels of PCBs and, accordingly, make no provision for biosolids below 50 parts per million (ppm) PCB content.

### **DHEC Response:**

- 1) DHEC believes PCBs are being illegally dumped into manholes and grease traps at restaurants and grocery stores. DHEC suspended the license of one waste hauler when an inspection revealed PCBs on equipment and at the business location. An

investigation further revealed the waste contractor failed to maintain accurate records involving the pumping, hauling, and disposal of wastewater, sewerage, and septage, including unaccounted for loads of septage. DHEC is currently investigating other potential suspects of illegal dumping.

- 2) DHEC is issuing an emergency regulation prohibiting the land application of sewage sludge, industrial sludge, and/or grease trap waste with detected PCBs. DHEC is also requiring the collection of representative sludge samples for PCB levels at least quarterly. Any PCBs detected in the sludge must be reported to the Department within five days.
- 3) DHEC is issuing a Be On the Lookout (BOLO) through the State Law Enforcement Division to heighten awareness among law enforcement of illegal dumping and solicit the help of local law enforcement agencies.
- 4) DHEC is providing guidance to restaurants and grocers to aid in the investigation, security, and proper disposal of material containing PCBs illegally dumped in grease traps.
- 5) DHEC is also directing landfills to require a new waste profile for all sludge material prior to receiving waste to ensure proper disposal of material containing PCBs.

###