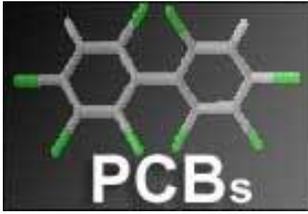


What are PCBs?



PCBs are a class of man-made compounds first manufactured in 1929 and used for a variety of industrial applications; including coolants and lubricants in electrical equipment. Other applications included dust control, pesticides, fire retardants, paints and coatings, printing inks, caulking, and wood treatment. There are no natural sources of PCBs.

New production was banned in 1979 under the Toxic Substances Control Act (TSCA) due to concerns about possible harmful human health effects, although their use in existing equipment was allowed to continue.

Although their current commercial use is restricted in the U.S., they continue to be a common environmental contaminant because they don't break down easily.

Release of PCBs

Prior to their regulation, PCBs were released into the atmosphere, water, and land through sewers, smokestacks, stormwater runoff, spills, and direct application to the environment.

Large volumes have been introduced to the environment through the burning of PCB-containing products, vaporization from PCB-containing coatings and materials, releases into sewers and streams, improper disposal of PCB-containing equipment in non-secure landfill sites and municipal disposal facilities, and by other routes (such as ocean dumping) (ATSDR, 2001).

Current Possible Sources

Sites that were previously contaminated may emit and re-deposit PCBs to the environment via volatilization. In water, PCBs may be re-suspended with sediments in the water column.

Some manufacturing processes may inadvertently generate PCBs. These include production of chlorinated solvents, paints, printing inks, agricultural chemicals, plastics, and detergent bars.

Based on the current regulation, the current primary "new" sources are limited to outdated or illegal landfills and scrap yards and leaks or explosions of electrical equipment and other equipment (such as locomotive transformers) that may still contain PCBs (ATSDR, 2001).

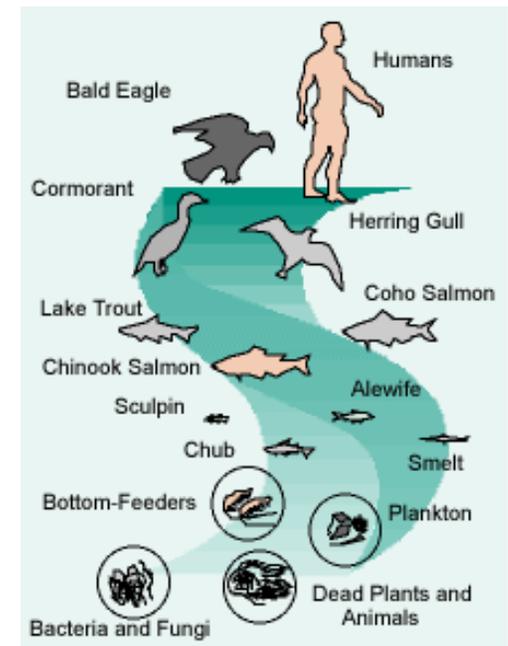


Source: Chesapeake Bay Program

What Happens in the Environment?

In surface waters, PCBs are more likely to adsorb to particles in sediments, like organic matter, clay, and micro-particles that may be suspended or have settled out. They can remain buried in sediments for a long time and be slowly released into the water and evaporate into air.

PCBs tend to build up in living organisms both by uptake from the environment over time (bioaccumulation) and along the food chain (biomagnification). PCBs remain stored in fatty tissues much more than in muscles or other body parts.



Source: Wisconsin Dept. of Natural Resources

Tidal Potomac River PCB TMDL

Section 303(d) of the federal Clean Water Act (CWA) and EPA's implementing regulations direct each state to identify river or stream segments not meeting water quality standards (impairment listing)- known as water quality limited segments (WQLS). For each WQLS, the State is required to either establish a total maximum daily load (TMDL) or demonstrate that water quality standards are being met for a designated use.

TMDL for fish consumption:

The District of Columbia has listed all of the tidal Anacostia and Potomac rivers within District borders (5 segments) for protection of human health related to the consumption of fish and shellfish beneficial use, which is not supported due to elevated levels of PCBs in fish tissue.

The State of Maryland has listed the Potomac River Upper, Middle and Lower Tidal; and the tidal portion of the Anacostia River as impaired due to elevated levels of PCBs in fish tissue and other causes.

Virginia has 19 tidal embayments of the Potomac River listed for fish consumption use due to elevated levels of PCBs in fish tissue.

What is the City Doing?

Implementation of the TMDL is generally carried out through the City's Stormwater Program and MS4 (municipal separate storm sewer system) permit. The City performs the following in support of this effort:

- Standard contaminated land condition for development Special Use Permit's (SUPs) requiring screening for PCBs as part of the site characterization
- Assess municipal properties for sources of PCBs and assign any "high risk" facilities that currently store, or have transferred, transported or disposed of PCBs in a manner that would expose it to precipitation
- Characterize stormwater runoff from "high risk" properties
- Dry weather outfall screening
- Cleanup of the Hume-VEPCO Power Substation

MORE INFORMATION

Virginia Department of Environmental Quality
<http://www.deq.state.va.us/fishtissue/pcbstrategy.html>

VDH Fish Consumption Advisories
<http://www.vdh.state.va.us/epidemiology/dee/publichealthtoxicology/advisories/>

Department of Transportation & Environmental Services
Office of Environmental Quality
www.alexandriava.gov/Environment

PCBs

(Polychlorinated Biphenyls)



Tidal Portions of the Potomac River



ECO-CITY ALEXANDRIA