

FACT SHEET • POLYCHLORINATED BIPHENYLS - PCBs

Polychlorinated Biphenyls, or PCBs, are also known as chlorinated biphenyls; chlorobiphenyls; Aroclor; Clorphen; Fenclor; Kanechlor; Phenoclor; Pyralene; Santotherm.

PCBs were once widely used industrial chemicals whose high thermal stability contributed to both their commercial usefulness as dielectric insulators as well as their long-term deleterious environmental and health effects. Commercially available beginning around 1930, industrial grades of polychlorinated biphenyls were usually mixtures of various PCB chlorine formulations and were sold into the 1970s by the Monsanto Company under the trade name Aroclor (1200 series and 1016 series.) Though these Aroclors are no longer marketed, the PCBs remain persistently in the environment and are often times found in foods, especially fish.

Aroclors are characterized by four digit numbers. The first two digits indicate that the mixture contains biphenyls (12), triphenyls (54) or both (25, 44); the last two digits give the weight percent of chlorine in the mixture (e.g., Aroclor 1242 contains biphenyls with approximately 42% chlorine by weight.)

Examples of three Aroclors are described below:

- Aroclor 1242, clear, mobile liquid. Open cup Flashpoint: 348-356°F.
- Aroclor 1254, light yellow, viscous liquid. No open cup flashpoint to boiling.
- Aroclor 1260, light yellow, soft, sticky resin. No open cup flashpoint to boiling.

The toxic effects of PCBs in humans include chloracne, pigmentation of skin and nails, excessive eye discharge, swelling of eyelids, distinctive hair follicles as well as gastrointestinal disturbances. PCB substances may reasonably be anticipated as carcinogens per Fourth Annual Report of Carcinogens (NTP 85-002, 1985, pg. 170).

PCBs have been used in electrical capacitors, electrical transformers, vacuum pumps and gas-transmission turbines. Formerly, PCBs were used in the U.S. as hydraulic fluids, plasticizers, adhesives, fire retardants, wax extenders, dedusting agents, pesticide extenders, inks, lubricants, cutting oils, in heat transfer systems and as an ingredient in the manufacture of carbonless reproducing paper.

Unknown PCB residues are quantitated by comparing them to one or more of the reference Aroclor materials, depending on the chromatographic pattern of the residue. A decision must be made by an experienced chromatographer as to which reference Aroclor, or mixture of reference Aroclors, would produce a chromatogram most similar to that of the residue.



Polychlorinated Biphenyls, or PCBs, can be quantitated as part of a method 608 or 8082 analysis. RI Analytical routinely provides the measurement of these environmental contaminants for clients located throughout greater New England. We would be happy to discuss PCB analysis, or any other analytical requirements you may have, at your convenience.