

Exhibit 26



Polychlorinated Biphenyls (PCBs)—

When you need to know: Whose contamination is it? What is my share? When did it happen?

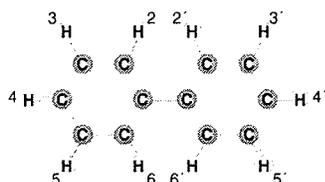
Before PCBs were recognized as an environmental concern in the early 1970s, they were used as fireproof fluids in electrical equipment and heat transfer units, among hundreds of other industrial applications. Evolution of environmental regulations in the 1970s resulted in the federal government phasing out PCBs from commerce starting in July 1979. However, despite decades of restricted use, PCBs still persist in the environment.

The U.S. EPA estimates that approximately 255 sites in the United States are predominantly PCB-contaminated, with remedial costs in the billions of dollars. There are a wide variety of PCB sources to the environment including dielectric fluids for capacitors and transformers, hydraulic fluids, and plasticizers in rubber, paint, caulking, and carbonless paper. In cases where PCB contamination could have originated from multiple party activities, identifying the source(s) of PCB contamination becomes a key question in pursuing site remedial costs. In those cases, environmental forensics can offer an insight to the sources of PCBs.

What are PCBs?

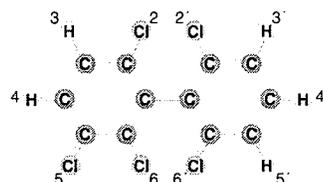
PCBs consist of 209 discrete compounds, called "congeners," in which 1 to 10 chlorine atoms are attached to a biphenyl ring (see Figure 1 for an example congener where the orange spheres represent chlorine atoms). The difference between congeners is the number and locations of the chlorine atoms. A "homologue" includes all congeners with an equal number of chlorines attached to the biphenyl ring.

Biphenyl Ring



A biphenyl ring is made of carbon (C) atoms with 10 possible locations where other atoms, such as chlorine (Cl) may be attached by replacing the hydrogen atoms.

Example congener—
2,2',5,6,6'-Pentachlorobiphenyl



PCB molecule with 5 chlorine substitutions on the phenyl rings.

Figure 1.
Structure of PCB molecule and example of congener 2,2',5,6,6'-Pentachlorobiphenyl

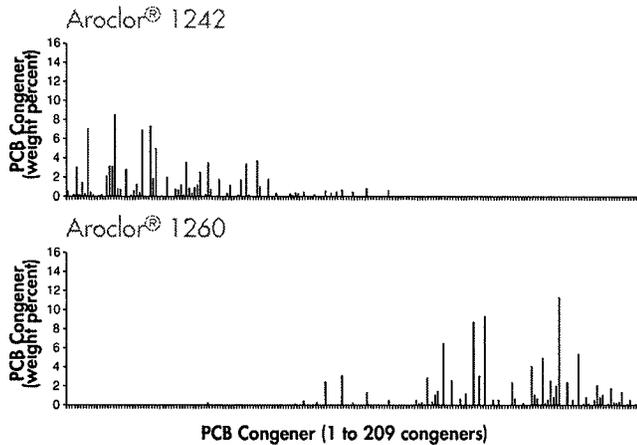
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PCBs were commercially marketed in the United States under the "Aroclor®" trademark by Monsanto Chemical Corporation (an Aroclor® is a mixture of many congeners). Figure 2 shows the example congener composition of two common Aroclors®, Aroclor® 1242 and Aroclor® 1260. This congener composition (with the lowest chlorinated congeners on the left and the highest chlorinated congeners on the right) represents the chemical "profile," or "signature," or the "fingerprint" of the original Aroclor®.



Aroclor® 1242 The last two digits represent the approximate degree of chlorination of the product, that is, Aroclor® 1242 had roughly 42 percent chlorine by weight and Aroclor® 1260 had about 60 percent chlorine by weight.

Aroclor® 1260

Figure 2. Congener composition for Aroclors® 1242 and 1260

Until the early 1970s, PCBs could not be measured reliably in environmental samples. In fact, the regulatory community did not adopt any standard method for PCB analysis in solid wastes until 1980 when the U.S. EPA issued the "SW-846" manual of analytical methods for solid wastes. Presently, the U.S. EPA methods for PCB measurements include method 8082 (analysis of Aroclors® or limited number of congeners, typically fewer than 20), method 680 (homologue analysis), and the high-resolution method 1668A (congener analysis, typically 60 congeners).

What is PCB Fingerprinting and How Can it be Used to Allocate Contamination Liability?

PCB fingerprinting is a set of well-established techniques used to distinguish the sources of contamination to soils and sediments. Techniques vary from simple profile comparisons to more complex methods.

PCB profile comparisons are often used in situations when potentially responsible parties (PRPs) used markedly different Aroclors® in their operations. To determine the contamination sources in these cases, PCB profiles reported in contaminated areas are compared to the PCB profiles used by the different PRPs. PCB profiles in contaminated areas are often a mix of different sources. In those cases, mathematical models can be used to numerically "unmix" the overlaid fingerprints and allocate percent contributions from different sources. Under some environmental conditions, weathering will alter portions of the PCB profiles (typically the lightly chlorinated congeners). These alterations need to be considered for accurate contamination allocation.

In more complex situations, multiple PRPs may have used the same Aroclor® or some PRPs may have used different Aroclors® at different times. In those situations, multiple lines of evidence are needed to allocate contamination to different PRPs. For example, it may be possible to identify marker compounds associated with an Aroclor® batch used by one PRP but not the others (e.g., polychlorinated terphenyls—a group of compounds with characteristics similar to PCBs) or isotope methods may be used for sediment age-dating to identify the approximate period of contaminant release.

Using PCB Fingerprinting in Environmental Litigation—Sediments Near Two Waste Sites on Major East Coast Tributary Rivers

Several recent litigation cases have shown the value of a carefully planned chemical forensics strategy in identifying PCB sources in legal proceedings.

For a confidential client in New York State, Exponent successfully rebutted the claim that the client's facility, located on a river, was a significant contributor to PCBs in the already impacted river sediment. Through PCB congener profile comparisons, examination of concentration gradients, and investigation of other sources, we were able to show that the PCBs in sediments upstream and downstream from the site were very similar, with little evidence of offsite transport of PCBs from the client's facility to the river. Testimony from one of Exponent's experts at an administrative hearing was a major factor in the successful petition for site delisting.

In the second confidential case at a client's facility on a river, our comparison of the onsite PCB fingerprints (of Aroclor® 1254 origin) with the river sediment fingerprints showed some similarities (overlapping fingerprints), but some important differences (additional unique PCB congeners in the river sediments). Consideration of the PCB impacts to the river from other sites upstream of the client's facility revealed a characteristic and distinctive background fingerprint in the river sediment. The effects of weathering (i.e., dechlorination) of the site Aroclor® 1254 profile could not explain the pattern shown in the river samples. Principal component analysis (PCA) was used to condense the complex set of variables in this case—the relative congener concentrations in every sediment sample—down to two surrogate factors that explained much of the variability in the data set. The PCA output illustrated in Figure 3 showed that the client's site samples were grouped together, indicating a similar fingerprint that is different from the river samples. Exponent concluded that any offsite transport from the client's site to the river was minimal and could not be detected or differentiated from background PCBs in the river.

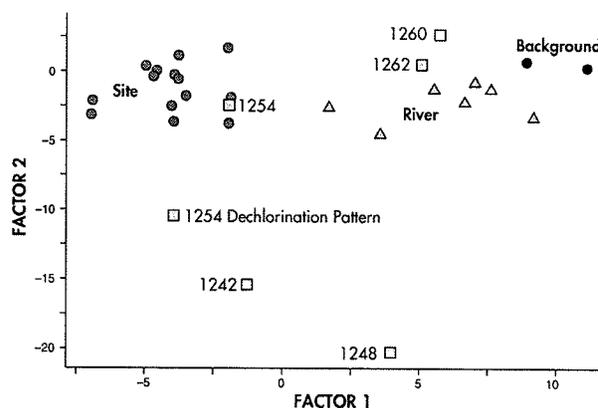


Figure 3. Using principal component analysis (PCA): Grouping of river samples versus site samples confirmed *de minimus* offsite transport

Central to Exponent's environmental expertise is a deep capability in environmental forensics. We have applied our expertise and experience to a wide variety of situations: refineries, former manufactured gas plants, mines, smelters, foundries, pulp and paper mills, wood treatment facilities, pesticide formulation and mixing operations, oil spills, fuel terminals, and many manufacturing facilities with contaminants in air, groundwater, surface water, sediment, and soil. We have more than 30 scientists and engineers

with a variety of experience in environmental forensics. Points of contact for specific chemical classes are Walt Shields (metals and dioxins), Brian Murphy (TCE and other chlorinated solvents and MGP wastes), Paul Boehm (Petroleum, PAHs), Paul Boehm and Tarek Saba (PCBs), Gary Bigham (mercury), and Peter Mesard (perchlorate). Click here for more information on our Environmental Forensics services.

Please contact Tarek Saba at Exponent if you would like additional information on this issue of our Environmental Forensics Notes.