

Identifying PCBs in Industrial Settings



This fact sheet is for inspectors of industrial and commercial sites to help them identify PCB-containing equipment. The fact sheet [San Francisco Bay PCBs TMDL – Implementation at Cleanup & Spill Sites](#) contains information on PCBs analytical methods and cleanup strategies.

Description

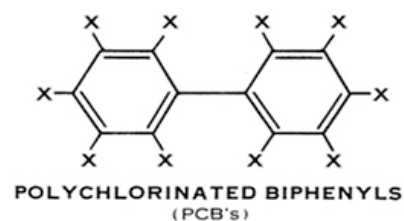
PCBs (polychlorinated biphenyls) are a group of manmade chemicals that were used in a wide range of industrial applications starting around WWII and ending in 1978. PCBs were often added to a wide variety of products to enhance certain properties, such as heat resistance, plasticity, stability (resistance to weathering), etc. Even though PCB production was banned in 1978, equipment and other materials containing PCBs can still be found today. PCBs-containing oils were valued for their stability and persistence; the same qualities that make them last so long in the environment. About 75% of all PCBs produced went into oils used in transformers and other electric equipment. This oil is a blend of PCBs dissolved into a solvent like chlorobenzene. PCBs continue to be generally released through surface spills from leaking equipment (transformers, hydraulic equipment, etc.) or improper storage and disposal. Once in the environment, PCBs attach to the finer particles in soil and can be transported via stormwater runoff to creeks and the Bay. Due to their inherent stability and wide range of uses over a long period of time, PCBs contaminated soil is widespread and is often undetected. By understanding their uses, sources, and characteristics, inspectors can identify areas or materials and products that are likely to be contaminated by PCBs.

Characteristics of PCBs

- Non-curing organic resin
- Oily to tarry texture
- Highly stable molecule
- Not water soluble
- Soluble in oil/fat/solvents
- Very fire retardant
- Does not oxidize
- Primarily used as an additive

Uses of PCBs

- Transformer and Capacitor Oils
- Specialty Hydraulic and Lube Oil
- Plasticizer (Paint, Caulk)
- Inks, Carbon Paper, Casting Wax, Wire Insulation, Other



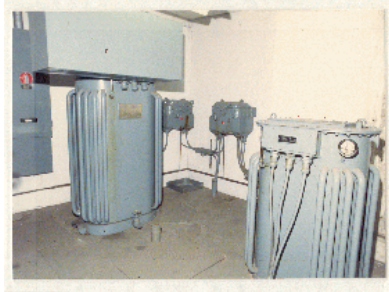
There are 209 specific PCB congeners (chemicals) which were mixed into compounds (often called arochlors) and sold under a variety of trade names listed below.



PCBs were used in insulating fluid inside capacitors.

Potential PCB-Containing Items

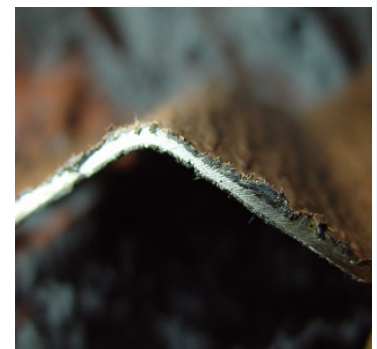
- Pre-1978 Transformers – can be any type and size. Industries with high power requirements are very likely to have PCB transformers in substations or powerhouses, inside, around, or on top of buildings, or in underground vaults.
- Pre 1978 electrical equipment and wire insulation and heat transfer systems
- Electric motors
- Hydraulic systems – such as in heavy equipment and transport vehicles
- Building demolition waste (aging paints, caulking, insulated cable, water proofing, asphalt roofing materials)
- Metal composite siding or roofing material (trade name “Galbestos”)



PCBs were widely used in coolants and insulating fluid in electrical equipment such as transformers.

Potential PCBs Sources and Sites

- Scrap metal recycling
- Auto salvage/crushing yards, auto wreckers
- Auto Repair Shops
- Copper recyclers
- Demolition/salvage companies
- Concrete/asphalt recycling (joint materials and impacted concrete)
- Electrical equipment rebuilders
- Electrical contractors
- Foundries, forges, rolling mills (impacted feedstock, casting wax, hydraulic fluids)
- Shipyards/ locomotive repair, heavy equipment repair
- Dredge spoils



Galbestos roofing/siding was banned in 1973, but can still be found on buildings. Highly aged, it can be a significant source of PCBs in runoff.



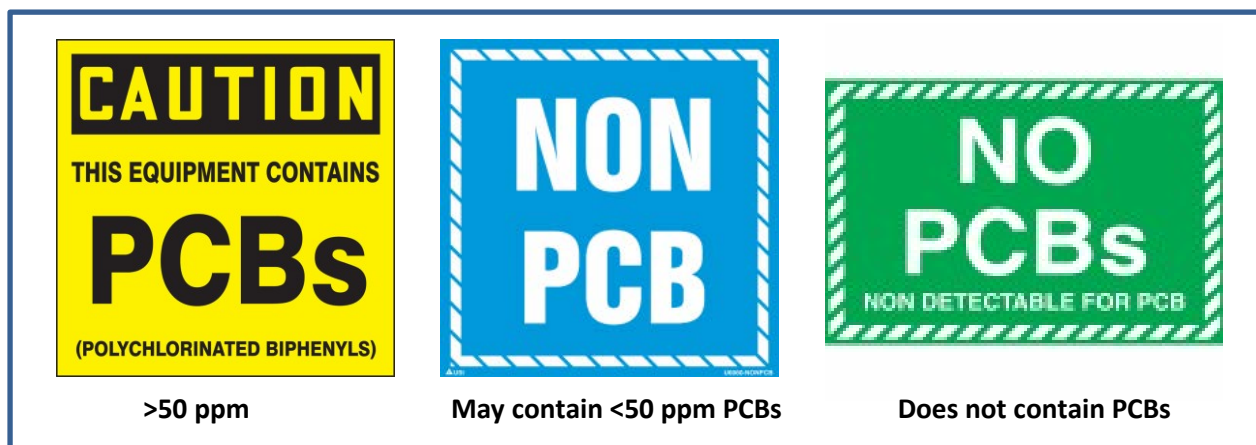
A typical pre-1979 PCB-containing fluorescent light ballast (FLB)



Only magnetic fluorescent light ballasts contained PCBs. A typical non-PCB containing light ballast will have a “No PCBs” marking on the top and the text “electronic ballast.”

PCB Labeling

PCB-containing equipment generally must be properly labelled and registered. A label that says “PCB containing” indicates that PCBs in the equipment are above 50 ppm. A label that says “non PCB containing” means that PCBs may be present, but are below 50 ppm; thus it is reasonable to require PCB sampling where equipment labeled as “non PCB containing” has leaked or spilled. The green “no PCBs” label means that the equipment does not contain PCBs at any concentration.



PCB Trade Names

Aroclor, Askarel, Chlorextol, Dykanol, EED-18, Kennechlor, “Non-flammable Liquid”, Pyranol, Saf-T-Khul, Santotherm. Labels containing any of these trade names indicate that PCBs are likely present.

PCB Inspection Tip

Determining the date of suspect equipment and materials is key to identifying the presence of PCBs. Equipment made post-1978 will not contain PCBs. Most electrical equipment contains an identification label which includes a date of manufacture. If no date is present and the equipment is suspect of being pre-1978 vintage, the manufacturer can confirm if PCBs were used in its manufacture.

Inspection Guidance

1. Ask if the site has an inventory of PCB equipment/items. Are PCB items inspected regularly? Any spills reported? Note any missing or incomplete records.
2. Look for potential PCB-containing items, which are listed above.
3. Are all PCB-containing or formerly PCB-containing equipment and materials labeled? (see labels above)
4. Are all such equipment and materials intact, and in secondary containment structures?
5. Check for spills.
6. If the site is suspected to have PCBs spillage
 - a. Are soils in spill area subject to off-site transport by wind, rain, or vehicular transport?
 - b. Note the locations of all storm drains in the site and the nearest storm drains in the street.

Additional Resources

- PCB Inspection Manual, USEPA, August 2004: <https://www.epa.gov/sites/production/files/2013-09/documents/pcbinspectmanual.pdf>
- Protocol for Conducting Environmental Compliance Audits of Facilities with PCBs, Asbestos, and Lead-based Paint Regulated under TSCA, USEPA, March 2000: <https://www.epa.gov/sites/production/files/documents/apcol-tsca.pdf>
- Learn about PCBs, USEPA: <https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs>
- San Francisco Bay PCBs Total Maximum Daily Load (TMDL): [San Francisco Bay PCBs TMDL Project](#)