ELECTRONIC WASTE CONTAINING POLYCHLORINATED BIPHENYLS (PCBS)

INFORMATION & SAFETY

What are PCBs?

Polychlorinated biphenyls (PCBs) are a group of man-made organic chemicals consisting of carbon, hydrogen and chlorine atoms that contain 209 individual congeners. A PCB congener is any single, well-defined chemical compound in the PCB category.

Polychlorinated biphenyls (PCBs) were domestically manufactured from 1929 until manufacturing was banned in 1979. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

They have a range of toxicity and vary in consistency from thin, light-colored liquids to yellow or black waxy solids.

Where are PCBs?

Because they don't burn easily and are good insulating materials, Polychlorinated biphenyls (PCBs) were used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment.

PBCs in E-Waste

Polychlorinated biphenyls (PCBs) are found mainly in transformers and capacitors manufactured before 1977. Polychlorinated biphenyls (PCBs) are often found in the following e-waste:

Transformers	**Large Capacitors**
Switches	**Voltage Regulators**
Sectionalizers	**Circuit Breakers**
Reclosers	**Motor Starters**
Cable	**Electromagnets**
Lamp Ballasts	**Small Capacitors**

How are Workers Exposed to PCBs in E-Waste Recycling?

Occupational exposure to Polychlorinated biphenyls (PCBs) occurs mainly via inhalation and dermal routes.

PCB Health Concerns

The most commonly observed health effects in people exposed to large amounts of Polychlorinated biphenyls (PCBs) are skin conditions such as acne and rashes. PCB-related health effects may vary based on length of exposure.

Short-Term: Skin conditions & irritations of the eyes.

Long-Term: Respiratory tract symptoms, developmental effects, liver and gastrointestinal effects, neurobehavioral and immunological changes in children, cancer, reduced fertility in women, miscarriage, reduced birth weights of babies exposed as fetuses, high exposure may result in coma and death.

PCB Safety Measures

1: If possible, do not accept Polychlorinated biphenyl (PCB) containing e-waste at your facility. If you accept Polychlorinated biphenyl (PCB) e-waste, follow these safety measures.

2: Identify and label the material. Follow EPA established marking requirements.

3: Properly store the material under cover, in leak-proof metal drums with EPA-standard labelling and place in secondary containment

4: Properly dispose of the material. EPA has disposal requirements for waste with PCB levels > 50 ppm.

5: Record Keeping and Reporting. EPA requires that records be maintained for the storage, transportation, and disposal of Polychlorinated biphenyls (PCBs) for at least three years.

6: Special consideration for PCB-Containing light ballasts: Unless it can be determined to be PCB-free by the manufacturer marking information, it must be treated as PCB-containing waste.

7: If the PCB container is damaged or leaking, avoid skin contact and inhaling vapors and wear Personal Protective Equipment (PPE). Use absorbent to soak up the spill and place in sealed drum. Wash skin thoroughly if exposed.

If you must handle e-waste with Polychlorinated biphenyls (PCBs), it is imperative that workers:

Avoid contact by wearing goggles, chemical protective clothing, and gloves.

Avoid inhalation by wearing a respirator.

Avoid taking the contaminants home: Shower and change clothing before leaving work. Your work clothes should be laundered separately.

Precautionary Measures

Outer protective garments should consist of a disposable zippered coverall with attached hood and draw string, elastic cuffs, gloves, and closure boots. Tyvek® coveralls are recommended for soot exposure and Saranax®-coated Tyvek or Viton®-coated neoprene are recommended if exposure to liquids is anticipated. Gloves and boots should be made of neoprene, nitrile, butyl rubber, or Viton.

E-waste recycling facilities that handle PCB-containing waste should develop and implement a respiratory protection program that complies with OSHA standards.

Respirator type: Half facepiece respirators, full face respirators, or PAPRs depending on exposure level.

Respirator filter: P95/VOC or P100/VOC

Facility Safety

Maintain good air flow.

Clean buildings thoroughly and frequently.

Never put PCB containing materials in recycling shredders.

FOR MORE INFORMATION CALL:

Your local OSHA office, your Regional OSHA PCB Coordinator, or the National OSHA Office Number 1-800-321-6742

Educational materials developed by Harvard T.H. Chan School of Public Health and Boston University School of Public Health.