

## Chapter 11 - POLYCHLORINATED BIPHENYLS (PCBs)

### A. Reporting PCB Spills

Under the authority of the Toxic Substances Control Act, the Environmental Protection Agency (EPA) requires that spills of polychlorinated biphenyl (PCB) be reported whenever the incident poses a substantial risk to human health or to the environment. PCBs have been shown to cause chronic toxic effects in many species even when they exist in very low concentrations. Well-documented tests show that PCBs cause, among other things, reproductive failures, gastric disorders, skin lesions, and tumors in laboratory animals.

Workers exposed to PCBs may show a number of symptoms and adverse effects including, but not limited to, chloracne and other epidermal disorders, digestive disturbances, jaundice, impotence, throat and respiratory irritations, and severe headaches.

Spills in mines most commonly result from damage to transformers or capacitors containing PCB dielectric fluid. EPA assumes that a transformer or capacitor contains PCBs if: (1) the nameplate indicates it contains PCB dielectric fluid; or (2) the owner or operator has any reason to believe that it contains PCB dielectric fluid. If a transformer or capacitor does not have a nameplate, and there is no information to indicate the type of dielectric fluid in it, the transformer or capacitor is assumed to contain PCB fluid. PCB dielectric fluids may be listed under the following trade names: Askarel, Aroclor, Pydraul, therminal, pyroclor, Santotherm, Pyralene, Pyranol, Inerteen, Asbestol, Chlorextol, Diachlor, Dykanol, Elemex, Hyvol, No-Flamol, Saf-T-Kuhl, Aroclor B, Chlorinol, Chlorphen, and Eucarel.

As a general rule, EPA does not require that spills involving a single capacitor be reported unless PCBs threaten to enter a watercourse. Minor leaks in transformers, such as bushing leaks or weeping, also do not require reporting. However, such spillage or leaking should be stopped and repaired as soon as possible.

If a spill should occur at a mine, the mine operator's first priority should be to control the spread of the spill by damming or diking the leak. Any threat of contamination to water supplies should be given the highest priority. Appropriate personal protection (e.g., impermeable gloves, boots and aprons, goggles, and respirators) must be worn by persons cleaning up spills pursuant to applicable MSHA regulations.

Once the spill is contained, cleanup measures can begin. All materials contaminated with PCBs, including soil and debris, should be collected, stored and disposed of in accordance with EPA regulations. Upon discovery of a PCB spill, the district manager shall be notified immediately.

### B. Hazards of PCBs

1. Polychlorinated biphenyls, or PCBs, have been used as dielectric fluids in transformers and capacitors and in some electric motors.

2. PCBs are highly toxic on inhalation (breathing) or ingestion (swallowing), can cause dermatitis (skin rash), and can be absorbed through the intact skin.
3. When there is exposure of workers because of a leak or broken equipment, precautions must be taken to avoid inhalation of vapors and direct skin contact.

### C. EPA Provisions and Requirements

#### Mining Machinery

1. Mining machinery containing electric motors with PCBs has been banned for use in mining since January 1, 1982. The machinery affected in coal mining were the following:

Joy Model CU43 Continuous Miner  
Joy Model 9CM Continuous Miner  
Joy Model I4BUIO Loader

2. This means that if any of the above equipment with PCB containing motors is in service there is a violation of EPA regulations.
3. If any of the above equipment is in service, and has had the motors rebuilt as non-PCB motors, it is permissible that such equipment remain in service. The motors of such equipment are no longer allowed to be rebuilt. Cutoff date on rebuilding of motors of continuous miners was January 1, 1980, and the cutoff date on rebuilding of motors of loaders was January 1, 1982.
4. This information should be brought to the attention of any mine operators that are using any of the mining machinery listed in Item 1 above.

### D. Control and Cleanup of Spills and Leaks

Control and cleanup of spills and leaks of PCB liquid are the responsibility of the mine operator. The following items are listed to indicate the types of actions that should be given attention when a spill or leak occurs. MSHA supervisory personnel in district and subdistrict offices should be aware of those provisions, so as to advise inspectors and mine operators as necessary.

1. Spills and leaks of PCB liquid (as from a transformer or capacitor) have to be reported to MSHA whenever the incident poses risk to human health. Thus, any spill will be reported when people come into direct and uncontrolled contact with PCBs.
2. When PCB liquid spills or leaks onto land, as onto a mine floor, the cleanup procedure consists primarily of removing the contaminated soil and disposing of it in an EPA-approved chemical waste landfill or in another manner approved by EPA.

3. When a spill or leak of PCB liquid occurs, it is most important for miners to avoid skin contact with the liquid, as by proper tools, protective gloves and clothing, safety glasses or face shields, and other means as appropriate. Next, exposure to air contaminated with the vapors of PCBs and any additive ingredients (such as trichlorobenzene) should be avoided to the extent possible, as by improving mine ventilation.
4. As a first step when a spill occurs, it is recommended that a 103(k) order be placed on the area of the spill. This closes the area to miners (except for corrective work), keeps exposure at a minimum, and allows plans for cleanup to go forward promptly.
5. Prior to cleanup, careful observation of the spill area should be made, and the area from which soil will be removed should be defined in length, width, and depth.
6. Soil removed from the mine floor should be loaded into drums, the drums covered, and the drums disposed of in an approved chemical waste landfill. As an alternative, and with approval of EPA, contaminated soil may be disposed of in a gob area which will be completely sealed off promptly.
7. Following soil removal, it is advisable that the area of the spill, from which soil was removed, be covered with generous quantities of rockdust.
8. During cleanup operations, it is important that ventilation be provided at a higher-than-normal rate to minimize exposure of workers to vapors of PCB's and additive ingredients. Protective clothing including gloves, boots, and safety glasses or face shields should be worn.
9. Contaminated clothing such as gloves and coveralls should be disposed of in the same way as contaminated equipment; that is, packed in steel drums with sawdust or other absorbent material, for disposal in an approved chemical waste landfill (see Item .11 below).
10. Disposal of leaking PCB (askarel) transformers may be carried out as follows:
  - a. Drain liquid PCBs into approved containers;
  - b. Fill transformers with kerosene or fuel oil, and allow to stand for at least 18 hours;
  - c. Drain into approved containers;
  - d. Seal up drained transformers and dispose of in an approved chemical waste landfill; and
  - e. Dispose of liquid in an approved chemical waste landfill incinerator (check with EPA).

11. Disposal of large PCB capacitors must be in an approved chemical waste landfill. Capacitors must be shipped in steel drums, packed with sawdust, dirt, or other absorbent material. Small PCB capacitors have no special disposal requirements.

**E. Additional Advice and Assistance on PCES**

1. When a spill or leak of PCBs occurs at a mine site, either underground or on the surface, the Division of Health (CMS&H), Arlington, Virginia, should be notified if the incident is considered a hazard.
2. MSHA Technical Support, Pittsburgh Health Technology Center, is available for technical assistance in incidents of PCB spills and leaks, including air and soil sampling, and analyses.
3. Further information or technical assistance is available by calling the following EPA telephone numbers:

800-424-9065 (Toll Free)  
202-554-1404 (Washington D.C. area)