Safeguard

Hazardous Chemicals
Polychlorinated Biphenyls (PCBs)

Government of South Australia
SafeWork SA

Objective

To provide guidance for workers who may come into contact with Polychlorinated Biphenyls (PCBs).

Background

PCBs is the common name for a family of chlorinated organic chemicals that contain many individual compounds with varying levels of toxicity. Because of their insulating and thermal stability properties, PCBs have been widely used as coolants and lubricants in transformers, capacitors and other electrical equipment.

Uses

PCBs became a prohibited import in 1975. Prior to this they were used widely as insulators in electrical capacitors and transformers. Other industrial applications included:

- use as lubricating and hydraulic fluids
- in electric wires and cables
- brake linings
- plasticisers
- paints and inks
- adhesives
- fire retardants
- pesticides
- fluorescent light ballast
- carbonless copy paper.

Risk of exposure

While PCBs are a prohibited import, workers may still be exposed to these hazardous chemicals when dismantling or servicing capacitors and transformers, or involved in cleaning up spills or leaks.

Exposure may also occur from leaking old fluorescent lighting fixtures that may contain PCBs.

Health hazards

PCBs are proven animal carcinogens and probable human carcinogens. They are a serious health problem, due to their potential for chronic or delayed toxicity, their persistence in the environment and their accumulation in human and animal tissues.

A common route of exposure is through skin contact. PCBs are rapidly absorbed through the skin and as a result may be retained in body tissue.

Exposure through inhalation of vapours is not as likely due to the non-volatile nature of PCBs. However, at high temperatures, the risk of vapour inhalation increases.

Exposure to PCBs can cause a range of health problems. These effects increase with the duration of exposure and concentration levels.

Health hazards which may result from exposure to PCBs include:

- liver damage (indicated by jaundice)
- respiratory disorders
- chloracne (a severe skin rash)
- eczema and skin discolouration
- irritation of the eyes and skin
- thyroid gland disorders
- muscle and joint pain, headache, nausea, loss of appetite and abdominal pain
- possible reproductive problems in humans, (pregnant women must avoid PCB-polluted areas).

Risk control measures

It is important that Persons Conducting a Business or Undertaking (PCBUs) are aware of instances where their workers may come into contact with PCBs, and take the appropriate precautions to ensure their workers' health.

Information to assist with the risk assessment and control measures may be found in the Safety Data Sheet (SDS), which is supplied by the PCB manufacturer or supplier.

Spills and leaks

The following procedures should be followed in the event of a spill or a leak of PCBs:

- Prevent contact with PCBs. Eye protection, such as chemical goggles, should be worn. If working where a possible leak onto the face area is possible, a full-face shield should be worn.
- Prevent any skin contact with the PCBs by using appropriate protective gloves. Check the SDS for guidance e.g. neoprene and butyl rubber gloves have excellent chemical resistant properties.
- Discard gloves immediately if any tears or cracks appear.
- Impervious, disposable coveralls and over-boots should be worn.
- Protective gloves and clothing which have come into contact with PCBs are not to be retained for future use. They should be disposed of as outlined below (Safe disposal).
- No smoking should be permitted during the clean-up. Workers handling PCBs should wash their hands thoroughly in warm soapy water immediately after handling PCBs and before eating, drinking, smoking or using amenities.
- If a large spill occurs, form a barrier with absorbent material such as sand, earth or vermiculite, to prevent any escape of PCBs. Clean up and dispose of these materials immediately, as outlined below.
- Under no circumstances should PCBs be permitted to enter the drainage system or watercourses. PCBs are an environmental hazard.
- Good ventilation may prevent the inhalation of vapour. At room temperature PCBs do not readily vaporize. However, hazardous vapour levels can occur in confined spaces and when the material is heated. The vapour from hot PCBs should always be extracted from the work environment by using local exhaust ventilation, otherwise suitable respiratory protection must be worn.
- If working with PCBs in confined spaces, a self-contained or airline breathing apparatus is needed.

Safe disposal

(1) **If spilt**: Soak up the liquid with an industrial absorbent and store the material in a sound steel drum. The drum must be marked and labelled as per the *Work Health and Safety Regulations 2012* (SA) [Chapter 7, Hazardous Chemicals] for easy identification and stored in a separate, secure place.

(2) **If equipment is contaminated with PCBs**: Cleanse with an organic solvent, such as kerosene. The solvent should then be stored as mentioned above. Impervious gloves and eye protection must be worn when cleaning.

(3) If you have PCBs, or material or solvent contaminated by PCBs, ready for disposal, further information can be obtained from the Environment Protection Authority (EPA).

Correct labelling

Electrical equipment, which is known to contain PCBs but is to remain in service, should be identified with prominent labels, which state: 'CAUTION – CONTAINS POLYCHLORINATED BIPHENYL (PCB) – A TOXIC HARMFUL SUBSTANCE. MAY CAUSE CUMULATIVE EFFECTS. ENVIRONMENTAL HAZARD'.

Transporting

PCB material and waste must be transported in accordance with the *Australian Code for the Transport of Dangerous Goods by Road and Rail* and any other legislative requirements under the *Dangerous Substances Act 1979*, *Dangerous Substances Regulations 2002* and the *Dangerous Substances (Dangerous Goods Transport) Regulations 2008*.

Waste should also be transported according to EPA requirements. All workers involved in the transport of PCB wastes should be fully informed of the hazards of PCBs and trained in the correct procedures required for the safe transport of these hazardous materials.

Further information

Work Health and Safety Regulations 2012 (SA) [Chapter 7, Hazardous Chemicals]

Dangerous Substances Act 1979

Dangerous Substances Regulations 2002

Dangerous Substances (Dangerous Goods Transport) Regulations 2008

Australian Code for the Transport of Dangerous Goods by Road and Rail

Workplace Exposure Standards for Airborne Contaminants – Safe Work Australia

Environment Protection Authority – ww.epa.sa.gov.au

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