

## SAFETY ALERT

# Cleaning solvents and thinners

This safety alert is about the adverse health effects of volatile solvents and thinners. All volatile solvents have the potential to cause a person to lose consciousness, and suffer a cardiac arrhythmia and possibly death when used in an enclosed or poorly ventilated area. Toluene xylene, hexane, methyl ethyl ketone, naphthalene, and other petroleum-based solvents have been implicated in deaths. Other chemicals present in proprietary thinners can greatly increase skin absorption causing or exacerbating toxic effects.

### Background

A young worker died while using a volatile solvent to clean the inside of a boat's hull. The solvent vapours were inhaled and the solvent absorbed through the skin causing the young worker to lose consciousness and die due to cardiac arrhythmias.

### Contributing factors

The solvent was similar to paint thinners. It had a combination of volatile ingredients that made it easy to inhale vapours and the solvent was readily absorbed through the skin.

The boat hull had no ventilation to remove the solvent vapours.

No appropriate personal protective equipment (PPE) was worn, such as a respiratory mask or gloves.

### Additional risks

Vapours from some solvents can create a hazardous atmosphere, which may lead to a fire or explosion if ignition sources are present.

### Action required

A person controlling a business or undertaking (PCBU) must:

- Manage the risk to health and safety associated when using, handling, generating or storing a hazardous chemical at a workplace, as outlined in clause 351 of the *Work Health and Safety Regulation 2011* (WHS Regulation).
- Ensure that information, training and instruction on the risks associated with the use of volatile solvents and thinners is provided to workers, as outlined in clause 39 of the WHS Regulation.
- Ensure that a current safety data sheet (SDS) is readily accessible to any worker who uses a hazardous chemical, as outlined in clause 344 of the WHS Regulation.
- Ensure that no-one at the workplace is exposed to airborne concentrations of hazardous chemicals that exceed the exposure standard, as outlined in clause 49 of the WHS Regulation.
- Provide appropriate PPE, as per the requirements of clauses 44-47 of the WHS Regulation.
- Ensure there are no ignition sources present, such as lighting or electrical equipment that is not designed for safe use in hazardous atmospheres, as outlined in clauses 51, 52 and 355 of the WHS Regulation.
- Follow the requirements outlined in clauses 62-77 of the WHS Regulation if the work is undertaken in a confined space.

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## Risk control measures

- Substitute the solvent-based cleaner with a water-based cleaner.
- Ensure there is enough ventilation to keep the solvent vapours below the Australian Exposure Standard (ES).
- Read the SDS to determine what PPE is necessary to prevent absorption, and what engineering controls are appropriate.
- Train workers on how to use PPE.
- For areas that are enclosed or partially enclosed, stand outside the area and use a long-handled mop to clean the confined area.
- Ensure there are no ignition sources when using solvents in an enclosed or partially enclosed area, as there is potential for creating a hazardous atmosphere.

## Additional information

- AS 2865: *2009 Working in confined spaces*
- AS/NZ 60079.10.1: *2009: Explosive atmospheres – classification of areas – explosive gas atmospheres (IEC 60079-10-1, Ed.1.0 (2008) MOD)*
- AS/NZ 1715: *2009 Selection, use and maintenance of respiratory protective equipment*
- Australian Exposure Standards at [safeworkaustralia.gov.au](http://safeworkaustralia.gov.au)
- WHS Regulation

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