**FORMALDEHYDE**

### Technical information

<table>
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<tr>
<th>Why is formaldehyde a priority chemical?</th>
<th>The NSW Work Health and Safety Roadmap has a target of a 30 per cent reduction in serious injuries and illnesses by 2022, which comprises a reduction in exposures to hazardous chemicals and materials. An initial list of 100 priority chemicals was developed based on national and international sources. This list was further refined using the following criteria: toxicity rating, exposure potential, estimated quantities used and potential number of workers using these chemicals. Formaldehyde ranked the highest based on these criteria. Formaldehyde is a colourless, irritating and unpleasant smelling gas and is usually found in water based solutions (formalin). Adequate controls for the proper use, handling and storage of formaldehyde reduce the risk of hazardous exposures and prevent illness in the workplace.</th>
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### Sources of exposure

| Formalin is widely used as a preservative in hospitals, pathology and anatomy laboratories and funeral homes for embalming. Large quantities of formaldehyde-based resins are used as glue for manufacturing wood pressed products, such as particleboards and plywood. Healthcare professionals, laboratory staff, embalmers and workers manufacturing pressed wood products may be exposed. Formaldehyde is also used as a disinfectant in growing mushrooms and in the poultry industry. Exposure to formaldehyde gas or liquid solutions can occur from direct contact (eg – splashes with skin or eyes). Gas or vapour can be inhaled. Higher levels of exposure may occur when manually handling products and during work processes which generate vapour such as decanting, mixing in open tanks, cleaning and maintaining equipment, heating and atomising products. | Mushroom growing | Manufacturing pressed wood products | Anatomy laboratory |
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### Health effects

The most common health effects associated with formaldehyde vapour, ranging from 0.4 to 3 ppm, are mild to moderate irritation of the eyes, nose and throat. This may result in itching or stinging sensations, watery eyes and runny noses. Exposure to formaldehyde has been associated with a risk of nasal cancers; however this risk is expected to be low for exposures below the exposure standard. Long term exposure to low levels of formaldehyde vapour can cause asthma like respiratory symptoms. The severity of effects from direct skin and eye contact depend on the concentration of the formaldehyde solutions. Skin contact with relatively low concentrations may cause an allergic skin response in some individuals with more severe reactions on subsequent contact. Higher solution concentrations can cause burns.

### Labelling and Safety Data Sheets

Manufacturers and importers of formaldehyde/formalin need to ensure that hazardous chemicals are labelled, safety data sheets are prepared and provided (cl.330 and 335 WHS Regulation 2017). Suppliers of a hazardous chemical to a workplace must provide current safety data sheets (cl 339).

PCBU*s must correctly label hazardous chemicals used, handled or stored at the workplace, including containers and pipework (cl. 341, 342, 343). The PCBU must also obtain a copy of the safety data sheet and make it readily accessible to workers involved in using, handling or storing the hazardous chemical at the workplace (cl. 344)

*Persons Conducting a Business or Undertaking

### Exposure standards and air monitoring – WHS Regulation 2017

Formaldehyde has a workplace exposure standard of 1 ppm averaged over 8 hours. Formaldehyde also has a secondary 15 minute (time weighted average) exposure standard of 2 ppm. Risks to health and safety from exposures to hazardous chemicals must, so far as is reasonably practicable, be eliminated (cl 35).

PCBUs must ensure that no person at the workplace is exposed to a substance above its exposure standard (cl 49) and must reduce exposures so far as is reasonably practicable.

PCBUs must undertake exposure (air) monitoring for substances with an exposure standard if they are not certain (on reasonable grounds) as to whether or not the exposure standard is exceeded (cl 50). Adjustments to the exposure standards are made for extended work shifts, taking into account the longer daily exposure. Air monitoring results must be readily available to workers and records of results kept for 30 years (cl 50).

A PCBU must review any control measures implemented if a workplace exposure standard for a hazardous chemical has been exceeded (cl 352).

### Health monitoring – WHS Regulation 2017

PCBUs are required to provide health monitoring to workers if there is a significant risk to the worker’s health because of exposure to a hazardous chemical listed in schedule 14 of the WHS Regulation 2017. Formaldehyde is not listed in schedule 14, however there remains a requirement to provide health monitoring if there is a significant risk to the worker, and there are valid techniques to detect effects on workers’ health (cl 368).

In relation to health monitoring, PCBU (cl 369 to 378) duties include:

- Informing workers of the requirements for health monitoring.
- Using a registered medical practitioner with experience in health monitoring.
- Providing details to the medical practitioner.
- Obtaining a copy of the health monitoring report.
- Providing a copy of the health monitoring report to SafeWork NSW if the worker has developed a disease or injury and/or the report contains any recommendations on remedial measures at the workplace.
- Keeping records of health monitoring for 30 years.
Technical information

Control measures
Where risks to health and safety cannot be eliminated the hierarchy of controls must be applied in accordance with cl 36 of the WHS Regulation 2017 to minimise risks. For instance:

- Substitute higher concentration formalin products with lower concentrations
- Ensure adequate engineering controls (eg – local exhaust ventilation, laboratory fume hoods) are in place
- Use appropriate tools to avoid skin contact with formaldehyde solutions
- Use well maintained and appropriate personal protective equipment (PPE) such as respirators, safety goggles and gloves including a program to correctly fit, instruct on the use and ensure regular maintenance of PPE.
- Ensure safety equipment is available (eg – eye wash and showers)
- Follow instructions and controls outlined in safety data sheets and product labels

PCBUs must provide suitable information, training, instruction and supervision to workers using, storing and handling hazardous chemicals; regarding the nature of the work, risks and the controls implemented (cl. 39 and 379).
PCBUs with duties under the WHS Regulation 2017 must review and revise control measures, as necessary, to maintain a work environment so far as is reasonably practicable, that is without risk to health or safety (cl 38).

Where to find more information
Safety Data Sheets
NSW Codes of Practice:
- a. Managing the Risks of Hazardous Chemicals in the Workplace
- b. Preparation of Safety Data Sheets for Hazardous Chemicals
- c. Labeling of Workplace Hazardous Chemicals

Safe Work Australia Guidance Material:
- a. Workplace Exposure Standards for Airborne Contaminants
- c. Health Monitoring for Exposure to Hazardous Chemicals – Guide for persons conducting a business or undertaking
- d. Health Monitoring for Exposure to Hazardous Chemicals – Guide for workers

Australian Standards
- a. AS/NZS 1715:2009 Selection, Use and Maintenance of Respiratory Protection
- b. AS/NZS 2234.8:2014 Safety in Laboratories Part 8 Fume Cupboards

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This publication may contain information about the regulation and enforcement of work health and safety in NSW; it may include some of your obligations under some of the legislation that SafeWork NSW administers. To ensure you comply with your legal obligations you must refer to the appropriate legislation.
Information on the latest laws can be checked by visiting the NSW legislation website www.legislation.nsw.gov.au

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