



Cabinet Makers and Construction Workers: Formaldehyde Exposures from Pressed Wood Products

A report by the Australian Government's National Industrial Chemicals Notification and Assessment Scheme (NICNAS) concluded that occupational exposures to formaldehyde from high formaldehyde emitting pressed wood products can cause health concerns.

This information sheet is applicable to workers who use pressed wood products occupationally.

What is formaldehyde?

Formaldehyde is a colourless gas with a pungent, irritating odour.

It is used in the production of resins that act as glues for wood products, pulp, paper, glasswool and rockwool.

What should I know?

- Formaldehyde is found in resins that act as a glue in the manufacture of pressed wood products.
- Formaldehyde can be released as a vapour, due to off-gassing from products containing formaldehyde-based resins.
- Formaldehyde release is highest in newly manufactured pressed wood products, and decreases over time.
- Conditions of high humidity, heating or agitation (including sawing or grinding) of formaldehyde based products can lead to increased levels of formaldehyde in the air.
- Concentrations of free formaldehyde in resins used in the manufacture of pressed wood products vary.

What pressed wood products contain formaldehyde?

Pressed wood products are sheet materials in which wood is largely in the form of strips, veneers, chips, strands or fibres. The wood particles are bound together by glue which is commonly a formaldehyde based resin.

Pressed wood products include:

- plywood used for paneling, furniture and other products
- particleboard used for shelving, countertops, floor underlay, some laminated flooring, furniture
- Medium Density Fiberboard (MDF) used for cabinets, furniture, doors and some laminated flooring

Pressed wood products are used in the construction of furniture, kitchens and flooring and are commonly used in caravans, mobile homes and demountable buildings.

Pressed wood products can also be used in on site construction applications including structural ramps, overhead protection barriers and runways etc.

Outdoor applications of pressed wood products occur under conditions of good ventilation, and are not likely to give rise to health effects.

Australian standards limit the amount of formaldehyde that can be released from reconstituted wood based panels and flooring (see *For more information* below). Wood products supplied according to these Australian Standards will have the classification of maximum formaldehyde emitted indicated on the label over four ranges of formaldehyde emission (E0 to E3).

Use of wood products labelled in this way will ensure wood products of low formaldehyde release are only used in the workplace. See *For more information* for details on Australian Standards, labelling and certification.

What are the likely health effects?

- Occupational exposures to formaldehyde containing pressed woods are primarily by inhalation (breathing).
- Workers may be exposed by breathing in the fumes from formaldehyde products as a result of off-gassing from unsealed or freshly cut surfaces and the associated dust particles. Exposure can also occur from breathing in dust particles containing formaldehyde.
- Breathing formaldehyde vapour can irritate the eyes and nose, which may cause burning, stinging or itching sensations, a sore throat, watery eyes, blocked sinuses, runny nose, and sneezing.

Other health effects

Formaldehyde has been shown to cause nasal cancers in animals. Limited monitoring data available from Australian wood industry workplaces indicates that formaldehyde levels at the majority of workplaces are less than 0.2 parts per million (ppm), and the nasal cancer risk is very low at these levels. Some human studies have indicated possible association or links between other cancers and formaldehyde exposure.

Recommendations

The primary control measure for occupational exposure is elimination of the source of exposure. Only low formaldehyde-emitting pressed wood products should be used, such as those that meet the Australian Standards for formaldehyde emission limits (E0 and E1). A Material Safety Data Sheet (MSDS) should be requested prior to purchasing any pressed wood products.

For wood surfaces that are to be coated or laminated with vinyl or water resistant coating, the coating or laminate should be applied as soon as practicable, to reduce formaldehyde emissions.

Occupational risks to formaldehyde exposures can be managed by ensuring effective ventilation when these products are used in indoor environments. Handling and storage of pressed wood products should only be undertaken in well ventilated areas.

A key control measure for reducing exposure to formaldehyde when machining pressed wood products, is effective ventilation, preferably by 'on tool' local exhaust ventilation which extracts dusts and vapours at their source.

Some situations involving tool usage require suitable respiratory protective equipment in addition to well designed extraction equipment. In these situations, the use of respiratory protection, complying with Australian Standard 1716, should be considered.

If symptoms of burning, stinging or itching of the eyes and/or nose, sore throat, watery eyes, blocked sinuses, runny nose or sneezing occur workers should cease the activity and move to an area with fresh air.

Occupational Exposure Standards

The current national occupational exposure standard for formaldehyde is 1 ppm 8-hour time weighted average (TWA) and 2 ppm short-term exposure limit (STEL).

The NICNAS report recommends that the occupational exposure standard be lowered to 0.3 ppm TWA and 0.6 STEL based on irritation of the eyes and nose.

This level provides adequate protection against discomfort of irritation, but also provides a high level of protection against cancer.

The Safe Work Australia Council, the agency responsible for setting national occupational exposure standards, is considering the recommended standard.

Workplace hazardous substances regulations

Workplace health and safety regulations exist in each State and Territory for hazardous substances¹. These regulations place duties on people including employers, suppliers and manufacturers in relation to hazardous substances used in the workplace.

You should refer to the occupational health and safety authority in your particular State or Territory to find out the specific requirements (see listing of all State and Territory authorities on page 4).

For more information

NICNAS Priority Existing Chemical Assessment Report No. 28 – Formaldehyde. Sydney, NICNAS (2006), available at: www.nicnas.gov.au/Publications/CAR/PEC/PEC28.asp

Standards Australia (www.standards.org.au/) /Standards New Zealand documents:

- AS/NZS 1859.1:2004: Reconstituted wood-based panels – Specifications – Particleboard
- AS/NZS 1859.2:2004: Reconstituted wood-based panels – Specifications – Dry-processed Fiberboard
- AS/NZS 1860.1:2002: Particleboard flooring – Specifications
- AS/NZS2269.0: 2008: Plywood – Structural Part 0 Specifications²
- AS/NZS 2270:2006: Plywood and blockboard for interior use²
- AS/NZS 2271:2004: Plywood and blockboard for exterior use²
- AS/NZS 2272: 2006: Plywood-Marine²

Australian Standards, labelling and product certification, available at Engineered Wood Products Association of Australasia website at: www.paa.asn.au²

¹ A process is currently under way to ensure uniform adoption of model OHS laws, and enable the development of uniform, equitable and effective safety standards and protections for all Australians.

² Note that standards and labelling codes have been updated since the NICNAS PEC report on formaldehyde was completed.

Australian State and Territory authorities

❖ **Australian Capital Territory**

ACT WorkCover
Level 3, Block B, Callam Offices
Easty Street
WODEN ACT 2606

☎ 02 6205 0200
📄 02 6205 0336
💻 workcover@act.gov.au

❖ **New South Wales**

WorkCover Authority of NSW
92-100 Donnison Street
GOSFORD NSW 2250

☎ 02 4321 5000 or
13 10 50 (WorkCover Assistance Service)
🕒 8:30am- 5:00pm Monday to Friday

❖ **Northern Territory**

Northern Territory Worksafe
GPO Box 1722
DARWIN NT 0801

☎ 1800 019 115
📄 08 8999 5141

❖ **Queensland**

Dept Employment and Industrial Relations
PO Box 820
LUTWYCHE QLD 4030

☎ 1300 369 915
(Workplace Health & Safety Infoline)

❖ **South Australia**

SafeWork SA
Level 3, 1 Richmond Road
KESWICK SA 5035

☎ 08 8303 0400 or 1300 365 255
📄 08 8303 0277

❖ **Tasmania**

Workplace Standards Tasmania
PO Box 56
ROSNY PARK TAS 7018

☎ 03 6233 7657 (Outside Tasmania)
☎ 1300 366 322 (Inside Tasmania)
📄 03 6233 8338
💻 wstinfo@justice.tas.gov.au

❖ **Victoria**

Victorian WorkCover Authority
Advisory Service GPO Box 4306
MELBOURNE VIC 3001

☎ 1800 136 089 or
03 9641 1444

❖ **Western Australia**

Dept Consumer and Employment Protection
1260 Hay Street
PERTH WA 6005

☎ Worksafe Division – 1300 30 78 77
💻 safety@docep.wa.gov.au