

OH&S issues and manufactured boards:

Cabinetwork (Specialised Module 2): Industrial Technology

In this activity you will learn about the environmental and OH&S issues of manufactured boards.

This material addresses aspects of the following syllabus outcome:

5.1.1 A student identifies, assesses and manages the risks and OH&S issues associated with the use of a range of materials, hand tools, machine tools and processes.

Extract from: Stage 4–5 Industrial Technology Syllabus © Board of Studies NSW 2003.

Environmental issues concerned with medium density fibre board (MDF)

Research has shown that a feature of medium density fibre board (MDF) that may well see its use become more popular is its *environmental friendliness*. Presently it is made primarily from plantation grown *Radiata pine*, though it can be successfully made from almost any wood. Recycled paper, recycled scrap wood, bamboo and materials such as carbon fibres, polymers, steel and glass have all successfully been used in its manufacture. MDF is able to utilise young forest thinnings and sawmill off-cuts that would normally be of only limited value. The use of MDF over hardwood is being promoted due to a worldwide shortage of hardwood, and the areas where hardwood exists being identified as areas of conservation value. Adapted from: McCallum, D. (1999) *Medium density fibreboard*, <<http://sres.anu.edu.au/associated/fpt/mdf/starter.html>>, viewed 6/8/03.

Health risks associated with the use of MDF

Although there appear to be some environmental advantages to using MDF there are however, some health risks that have been identified as being associated with the use of MDF.

Activity 1

Visit the following web site and identify some of the health risks associated with using medium density fibreboards:

<http://sres.anu.edu.au/associated/fpt/mdf/glue.html>

Adhesives used in the production of MDF

The trend has been to use *formaldehyde* based resins for MDF, a practice that carried over from particleboard technology. Though *epoxy resins* have superior properties the cost of them makes their use unfeasible. Originally *Urea formaldehyde* was used but this is being replaced as concerns over its health risks and moisture susceptibility grow. The formaldehyde family is still primarily used. The Laminex MDF plant phenol formaldehyde is used.

Extract from: McCallum, D. (1999) *Adhesives used in the production MDF*,
<http://sres.anu.edu.au/associated/fpt/mdf/glue.html>, viewed 6/8/03

Sawdust

Sawdust particles from certain timbers are highly irritant to the lungs and can cause respiratory diseases and/or sensitisation. Some particle board products also release free formaldehyde when sawed or cut, therefore requiring exhaust ventilation for cutting operations. Before using or purchasing material or equipment, consider the health and safety implications by referring to the MSDS for the wood product being used.

Standard dust extraction equipment is applicable for softwoods, but some hardwoods, particle boards, MDF and treated timbers may require additional ventilation or dust extraction equipment.

Exposure to dusts can be minimised by ensuring:

- fixed equipment is connected to a dust extraction system
- protective equipment is provided when needed (disposable face mask, respirator)
- portable equipment has dust collection attachment
- good natural ventilation is provided
- collection of loose sawdust to prevent contamination of other areas, i.e. sweep or vacuum
- minimise use of abrasive papers.

Ensure that cutting edges on powered tools are sharp. Blunt equipment can burn timber, possibly emitting toxic fumes. Always wear eye protection when using cutting equipment.

Special requirements for MDF

MDF and hardboard produce dust which is much finer and more readily dispersed than dust from solid wood, plywood or particle board. MDF **must not** be machined in schools unless all occupational health and safety issues are addressed, including the use of a WorkCover NSW approved extraction system. Schools generally do not have the facilities to control the hazards from the dust created when MDF is machined.

Source: http://detwww.det.nsw.edu.au:80/directorates/properties/chemicals/section3/3341_2.htm

The use of personal protective equipment (PPE) with MDF

If your school does have appropriate extraction devices or you are working at home with MDF then you should be aware of the PPE required when working with MDF whether it is with hand tools or particularly power tools.

Activity 2

List the minimum PPE and any other precautions you would require when using machine tools such as routers on MDF.
