

Non-toxic products and materials

BY RAY JONES

In the early 1990s I worked in Germany with 'Baubiologen' – a network of architects who design houses to be free of toxic chemicals and gases. Some clients needed such a house for family members who had severe allergies, so the desire for a healthy house was even more pressing. It was a great experience for me and opened my mind to what is out there.

Today in Australia we are faced with a dazzling array of new products to choose from. Some are expensive while others not so. Some last a long time and give good coverage while others are limited, as people soon discover. Yet while we browse the countless aisles of hardware stores do we stop to consider the health effect of these products? Do we buy products based on their price or based on their effect on us? We feel that we have to weigh up these options unless we suddenly win the Lotto. However, the healthy alternative can be cost competitive.

VOCs

Often a house product will contain volatile organic compounds, (VOCs): highly evaporative chemicals usually derived from petrochemicals. When they vaporise at room temperature they become a toxic fume, most potent initially and reducing in concentration over time.

VOCs have a harmful effect on our health; some are carcinogenic or mutagenic, and can cause allergies and skin disorders, headaches and lethargy. We spend up to 90% of our time indoors so it's worth considering how to mitigate risks.

We can reduce harmful fumes in our home by purchasing products labelled no VOC, zero VOC, VOC free or low

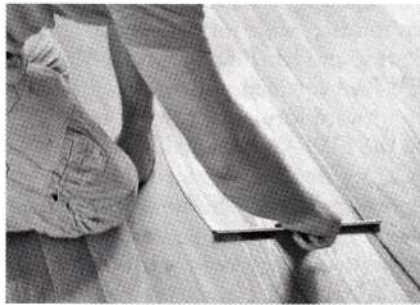


PHOTO: LINDA WILSON

VOC. Another term you will see is E0 (E Zero) or E1, referring to the amount of formaldehyde emissions a product releases after manufacture. There are many health-conscious products out there, and a quick search on the internet will reveal far more than what is covered here.

Sources of VOCs in new buildings include paints, adhesives, carpets, sealants, reconstituted wood products, and new furniture. In existing buildings the sources are cleaning products, printed materials, consumer products, dry cleaned clothing and car exhaust.

Where to find healthy products

There are Australian organisations to assist you in your choices. Both ecospecifier and Good Environmental Choice Australia (GECA) have great websites with considerable information. The GECA label means that the product's company has undergone rigorous testing to ensure environmental standards do apply. The label also shows third party certification for quality control. The ecospecifier GreenTag™ program lists a number of certified healthy products (see TOB 167 Oct/Nov 2011 p.23). Like GECA, GreenTag™ shows the authenticity of the product's claim.

Be wary of greenwash from companies though. For example, a paper described

as 'recyclable' is very different to one that is already 'recycled.'

Paints

Companies whose products are from natural sources and are non-toxic for both inside and outside include ecolour, Ultrast, Rockcote, Bio Paint, Livos, Oikos and Natural Paint. Some major paint companies do advertise non-toxic products but be sure to read the contents and the degree of toxicity before choosing.

Table 1 shows the maximum quantities of VOCs in products that the Green Building Council of Australia will allow for its Star Rated buildings.

Adhesives

Carpets are often glued to a base, so a healthier option is to mechanically fix. The same goes for plasterboard; it doesn't have to be glued, fixing with more nails or screws is an acceptable alternative.

Table 1. VOC quantities

Product	Max. VOC content (gm/l)
Exterior latex undercoat	60
Interior latex undercoat	55
Interior sealer	65
Exterior timber primer	50
Interior gloss	75
Interior semi-gloss	16
Interior low-sheen	16
Interior flat-washable	16
Interior flat ceilings	14
Exterior gloss	75
Exterior semi-gloss	70
Exterior flat and low sheen	50

SOURCE: GREEN BUILDING COUNCIL OF AUSTRALIA



PHOTO: WENDA WILSON

Low VOC adhesives, sealers, grouts and waterproofing are available – again, just look around.

Cleaning products

These are another possible source of toxic chemicals – floor cleaners, window sprays, lubricants, furniture and upholstery cleaners to name a few. Today there are many companies making natural cleaners, so it's worth a few minutes to search the web for what you want. Lanotec has a natural lubricant containing lanolin, also useful around the home as a rust inhibitor. You could try making your own cleaners with ingredients such as vinegar, baking soda or lemon depending on what you want to do. The internet contains many helpful sites.

Furniture and cabinets

MDF and particleboard often use formaldehyde as a binder. In all fibreboards, formaldehyde resins are used to bond together the constituent parts. This is usually urea formaldehyde, but some fibreboard including exterior or marine quality board will use stronger glues such as phenol formaldehyde.

The International Agency for Research on Cancer (IARC), part of the World Health Organization, quotes evidence that even short term exposure to formaldehyde could cause irritation to the eyes, nose and throat. The IARC findings also stated that wood dust is a carcinogen and that 'formaldehyde is probably carcinogenic to humans.' IARC was also concerned about the reproductive hazards of formaldehyde, which can also affect the skin, leading to dermatitis.

Australia has a tighter exposure standard than Britain and warns its workers that formaldehyde is 'a probable carcinogen' and a sensitiser, i.e. it can cause allergic reaction such as asthma. The CFMEU (Construction Forestry Mining & Energy Union) publishes a site safety instruction guide showing

Table 2.
Formaldehyde
emission classes

Emission Class	Formaldehyde Emission Limit (mg/l)
Super E0	Less than or equal to 0.3
E0	Less than or equal to 0.5
E1	Less than or equal to 1.0
E2	Less than or equal to 2.0
E3	Greater than 2.0

how to use MDF board. They advise that any cutting should be done off site.

Testing organizations such as the EWPA (Engineered Wood Products Association of Australasia) provide an industry wide formaldehyde testing and labelling program. All EWPA certified mills are required to forward formaldehyde test samples to the EWPA National Laboratory on a regular basis for formaldehyde emission testing. On the basis of these laboratory tests, certified mills are permitted to brand a formaldehyde emission class on their products as detailed in Table 2.

An alternative in cabinets is solid wood. If you're using MDF, ply or particleboard, healthier low VOC options are available. Look for E0 or E1. Bench counters can also be made from in situ concrete.

Education

Many hardware stores do not stock 'healthy' products, so it's worth looking up the product name to either find a local distributor, or to ask your local hardware to source it for you. In his way, you are educating yourself as well as suppliers and distributors.

The best compliment I have received for an office fit-out was that the new surroundings didn't have that 'new' smell. It was designed to function as a healthy, liveable environment. You may need to ensure such provisions for non-toxic standards are specified and discuss your requirements with your sub-contractors so that they understand your wishes for healthy living.

However, builders are now becoming aware of the hazards, and some are at the forefront of this industry trend, encouraging homeowners and owner builders to use health-conscious products. ■

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- **ecospecifier Australasia**

A knowledge base of over 6000 eco-products, eco-materials, technologies and resources.
www.ecospecifier.com.au

- **Good Environmental Choice Australia**

A not-for-profit organisation promoting the production and consumption of environmentally preferable products and services.

02 6287 3100, www.geca.org.au

- **Your Home Design Guide**

A suite of materials and tools developed to encourage the design, construction and renovation of homes to be comfortable, healthy and more environmentally sustainable.

www.yourhome.gov.au

- **Green Building Council of Australia**

A not-for-profit organisation committed to developing a sustainable property industry for Australia by encouraging the adoption of green building practices.

02 8239 6200, www.gbca.org.au

- **Woodwork forums**

A forum where you can discuss all things timber.

www.woodworkforums.com

- **Austral Plywoods**

Qld manufacturer of premium grade E0 plywood, using 100% plantation grown hoop pine. Chain of Custody certification.

07 3426 8666, www.australply.com.au

- **Facts**

Search for formaldehyde on any of these sites:

www.cancer.gov, www.comcare.gov.au,
www.environment.gov.au

- **VOC information**

www.environment.gov.au >Atmosphere >Air quality >Publications

www.yourhome.gov.au >Technical Manual >Design for Life >The Healthy Home