

Australian Construction

REVIEW

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Volume 2, No. 2

COVER STORY:

Leighton Contractors: building smarter and greener
One One One Eagle St
HQ Development
Green Square

SUSTAINABILITY:

Building in the 'green' era

PLUS:

26 new projects reviewed





COVER STORY

Smarter, green building —
Leighton Contractors' lead the way

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St Mary's Cathedral in Perth was painted with Bauwerk environmentally friendly paint.

Bauwerk Colour, Fremantle

Paint it *green*

Going 'green' applies equally to painting, with a greater range of environmentally friendly plant-based and low toxic paints hit the market and take the risk out of paint fumes.

Next time you paint it is worth considering the environmental impacts of the paints you choose, says Daniel Wurm, president of the GreenPainters Association.

"Painting is still an environmentally friendly thing to do, as it preserves and protects assets, but it has to be done in a way that lessens its impact on natural resources," Mr Wurm said.

"You can have any color as long as it's 'green'." Now there are safer alternatives to conventional paints. Consumers can

choose to keep using the toxic conventional coatings, or they can use more sustainable products, such as natural paints or low-VOC (petroleum-based solvents called volatile organic compounds) acrylics."

Paints, lacquers and varnishes are among the chemical everyday products that have a particularly distinct effect on the environment and health. Solvents, monomers, softening agents, and biocides are only some of the components of these products that present the potential for

serious ecological and toxicological risks during their production, manufacture, application, use, and ultimate disposal.

Hazard watch

Paints are a major source of indoor air pollution. The US Environmental Protection Agency puts paint on its top five list of environmental hazards. Conventional paints can make indoor air a chemical cocktail, even long after they have dried, as they continue to release petroleum-based solvents (VOCs) as they cure. It is estimated that each year in

Australia more than 80,000 tonnes of VOCs are released into the atmosphere, with the paint industry contributing significantly to this amount.

Emission profiles from the EPA in California show that surface coatings are responsible for nine per cent of all VOC emissions.

Studies show that the cumulative VOC emissions from architectural painting operations exceed the combined emissions from a variety of industrial operations. VOCs from solvent and paint emissions contribute to harmful ozone formation and peroxyacetyl nitrate.

According to the Masters Painters Association, ozone from paint emissions irritates eyes, nose, throat and lungs; reduces breathing capacity even in healthy adults and children; increases susceptibility to infection, hospital visits and admissions; and causes damage estimated to cost over millions of dollars a year to crops and buildings.

Typical oil-based paint averages 350 grams per litre of VOCs, or 35-50% of the paint's

volume. Even water-based acrylics, which are much less toxic, still contain 3-7% solvent content.

"The VOC content of paint and the CO₂ emitted during manufacture are key contributors to environmental impact, primarily in the form of air pollution (petrochemical smog) and, to a lesser degree, greenhouse gases," Mr Wurm said.

"Just because a paint label states it has no VOCs does not mean it does not give off hazardous vapours. Other chemicals in conventional paints include glycols, toluene, hydrocarbons, xylene, and ammonia. Mineral turpentine (used as a thinner and solvent) may contain up to 20% benzene, which is a confirmed carcinogen and mutagen in chronically exposed workers.

"Many metal pigments used in paints (such as cadmium) are highly toxic and relatively rare resources.

"In most paints up to 20% of a tin by volume can be the pigment titanium

dioxide, a product that can have a very high environmental impact load."

Safer painting

Acrylic paints are much safer than oil-based paints because they have less hydrocarbon. Solvent content in water-based paints tends to range from 0-200g/L compared with 250-750g/L in 'oil'-based paints. Low VOC paints are up to 16g/L and ultra-low to zero, 0-1g/L. However, acrylic paints typically include a range of biocides to protect the latex, which can include arsenic disulphide, phenol, copper, formaldehyde, carbamates, permethrin and quaternary ammonium compounds.

"While biocide manufacturers' claim that the formaldehyde in these products won't come out, EPA data shows this is not the case," says Mr Wurm.

"Having these chemicals coating our walls and in the air we breathe is surely not desirable."

Another problem with synthetic paints is post-application waste and disposal. The petrochemical paints that currently dominate the market are predominately derived from oil, a non-renewable resource. Waste needs to be specially treated to avoid adverse environmental impacts. It has been estimated that water-soluble gloss paints require dilution of 40 million parts to one to render their entry to the sewerage system harmless.

Low VOC acrylics

The benefits of choosing low or zero VOC paints are obvious — apart from being better for the environment, there are little or no fumes when painting. In 1997 the Australian Paint Approval Scheme began an initiative within the Australian paint industry that aimed to reduce overall VOCs in locally manufactured paint.

"Many of the larger paint companies have produced products which have been certified as 'environmentally friendly', but are still synthetic paints made from petrochemicals, with lower VOC concentrations. However, these products are still a step in the right direction, and should be considered by specifiers and consumers who wish to use acrylic paints," Mr Wurm said.

Plant-based paints

Made from naturally occurring ingredients, plant-based paints do not require high levels of processing. Many of the ingredients are

REMEDY PAINTING
[a non toxic approach]

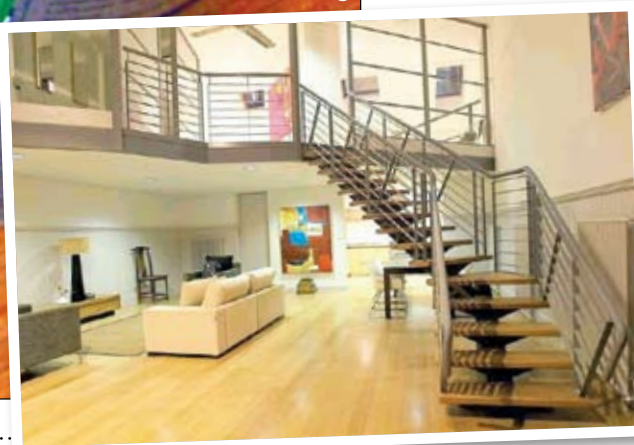
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E remedypainting@optusnet.com.au
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GreenPainters Association



Get on board

Many painters avoid using the new low VOC products because of perceived higher cost and unfamiliarity with them. But by using sustainable and natural paints they will not only help the environment, but also improve their health.

And according to the GreenPainters Association, becoming a GreenPainter they actually gain a marketing advantage. "It's no longer about price; it's about what the consumer wants, and the environment needs," commented association president Daniel Wurm.

The association has launched a national campaign to promote sustainable products and trade practices, targeting painters, architects, builders and consumers.

The GreenPainters Sustainable Painting Programme features DIY sustainable painting workshops (available from selected retail outlets), and seminars designed for architects and builders looking to increase their knowledge of paints and coatings for the green building industry, which is forecast to grow at 4.8 per cent this year.

GreenPainters are also working with Sustainability Victoria, Holmesglen TAFE and Master Painters Association of Victoria to develop an accredited course in sustainable painting, which starts as a pilot scheme mid-year.

made from renewable resources, such as linseed oil and citrus oil. Natural paints use plant-derived solvents and binders instead of synthetic ones, so usually have VOC levels of 0-1%.

Natural paints are generally well-tolerated by humans and the environment. There is no testing on animals. Ingredients used are printed on the label, or on a technical data sheet to establish whether allergic reactions are a risk. Some of the paints are even certified carbon neutral.

Water used for cleaning after using natural paints can be re-used directly on gardens, without harmful effects to any plants, or groundwater contamination.

- GreenPainters Association is a non-profit programme, established to provide advice, knowledge and skills to help the painting industry go green. Visit www.greenpainters.com.au.

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www.australianconstructionreview.com.au

Editor

Anne Cullinan

editor@timespub.com.au

Contributors

Photographs supplied by: Aimee McDonald, respective developers, builders and architects.

Graphic design

David Wright

Advertising design

David Wright, Charlotte Lufino

Advertising sales

National sales manager

Noman Kabir

noman@timespub.com.au

Business development manager

Christian Szczepanik

christian@timespub.com.au

Advertising account manager

Ivy Wan

ivy@timespub.com.au

Advertising account manager

Jugreet Singh

jugreet@timespub.com.au

Advertising account manager

Wayne Davies

wayne@timespub.com.au

Subscriptions & Enquiries

Jamie Lea Simms

reception@timespub.com.au

Publishers

Janice Chantler

Ian Berry

Office manager

Kim Hardaker

Editor (Advanced Safety Magazine)

Anne Cullinan

Editor (Architect & Builder and

Australian Construction Review)

Anne Cullinan

Editor (West Coast Boating)

Mike Brown

National sales manager

Noman Kabir

HEAD OFFICE

Unit 3/7 Day Rd

Rockingham WA

P.O. Box 2153

Rockingham DC 6967

T 08 9529 2599

F 08 9529 2588

PERTH OFFICE

Unit 17a

7 Aberdeen St

Perth

WA 6001

T 08 9221 1466

F 08 9221 4024

www.timespub.com.au

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PUBLISHING GROUP

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