

SPECIAL REPORT

CLEAR THE AIR

Minimising the toxins in your home is a valuable investment in your health and it's simpler to do than you might expect, writes Sarah Pickette.



"Ensuring your home is as free of toxins as it can be is crucial to any sustainable build," says architect Marc Bernstein, whose 3D rendering of a toxin-free extension is shown here and on page 266. In this image he's included Tom Dixon's Beat Light Fat pendants and Eames DSW dining chairs.

Design rendering by Melbourne Design Studios.

Stop for a moment and ask yourself this question: how much of your day is spent inside buildings? For most Australians, the answer is about 90 per cent and we spend more hours at home than anywhere else. That's why it's vital that your house is as healthy and hazard-free as it can be.

Unfortunately, modern life serves us up a dose of unhealthy synthetic chemicals and pollutants in much of the air we breathe and in so many of the items we use on a daily basis. "At its worst, indoor air can be about 20 times more polluted than the air outside your home," says Jo Immig, coordinator of not-for-profit group the National Toxics Network. "That's because we're often introducing extra pollutants inside our home in the form of chemicals that are emitted from some cleaning products, plastics, paints, carpets and furniture."

But there's no need to be alarmed, says Immig: creating a non-toxic home is achievable. "There's no 'one size fits all' answer but where there's a will, there's a way." Here are some of the key ways to improve the health of your home.

PLAN WISELY

If you're building or renovating, take the opportunity to use as many natural materials as you can, include excellent ventilation and specify materials that are low in volatile organic compounds (VOCs).

"Who wouldn't want their home to be as healthy as it can be?" says Marc Bernstein, architect and director of Melbourne Design Studios, who worked on the case study shown on these pages. "I think it's a duty of all architects to design homes to be as healthy as possible for their occupants and the environment. Unfortunately budgets can derail good intentions, low- or zero-VOC materials aren't always readily available and sometimes builders simply don't follow the specs as they should."

However, homeowners should stick to their guns if they're passionate about protecting their family's health, he says.

FEEL THE FLOW

In an existing home, one of the most effective means of improving the health of your house is the simplest: ventilation. "Let air flow through your house to flush out indoor pollutants and pockets of stagnant air," says Immig. "Pollutants can come from manufactured sources or they can occur naturally; it's important to remember that mould and damp can cause air-quality problems too."

Where you don't have good ventilation, look to a mechanical solution. "If condensation is building up on the walls or windows of your bathroom, it's not adequately ventilated and you could be on your way to mould problems," says Nicole Bijlsma, a building biologist and author of *Healthy Home, Healthy Family* (Joshua Books, \$29.95). It's also vital to flue gas heaters and use a rangehood when operating a gas cooktop, she says.

CHOOSE HEALTHY PAINT

Paint manufacturers have risen to the challenge of eliminating VOCs from household paints – there are many excellent low-VOC and no-VOC paints on the market.

"There's a very strong clinical argument for using low-VOC paint, especially if you have respiratory sensitivities, suffer from asthma, have children or you're pregnant," says Daniel Wurm, managing director of GreenPainters, which operates a national eco-certification program for painting contractors.

Another issue for existing homes is the presence of lead in old paint. Exposure to lead is a health hazard and even small amounts of dust or chips of paint containing lead, which can be generated during minor home repairs, can pose a health risk, says the Federal Government's Department of Sustainability, Environment, Water, Population and Communities.

"If you think you have lead paint in your home, get it tested," says Professor Mark Taylor, an environmental scientist at >

HOME-HEALTH CHECKLIST

Our experts pinpoint what they regard as common toxic offenders room by room:

KITCHEN

- ❖ Gas appliances can be major emitters of indoor air pollutants. *Jo Immig*
- ❖ Avoid plastics for food storage; never heat food in plastic. *Melissa Wittig*
- ❖ Steer clear of insect and fly spray.
- ❖ Avoid cookware with non-stick coatings that contain perfluorinated compounds [PFCs]. *Nicole Bijlsma*

BATHROOM

- ❖ Air fresheners are unnecessary. *Jo Immig*

LIVING ROOM

- ❖ Be aware that some carpets, furnishings and furniture can emit VOCs. *Jo Immig*

BEDROOM

- ❖ Electromagnetic radiation is the biggest issue in bedrooms. Mobile phones, iPads and cordless phones have no place in the bedroom; if you must have one there, keep it at least one metre away from the bed. *Nicole Bijlsma*
- ❖ Steer clear of mothballs and naphthalene in the bedroom. *Jo Immig*

APP HAPPY

Interior designer Melissa Wittig of Healthy Interiors has released an app that allows homeowners to assess the healthiness of their own homes. The app asks a series of questions about the home and provides feedback on the assets and challenges it picks up from the information entered. It also offers a range of tips and links to useful resources. "I would have valued an app like this when I was expecting my children," says Wittig. "I want to help families navigate and understand the interior elements of their homes that can potentially impact on health." The Healthy Home app is available from the App Store for \$1.99.

◀ Macquarie University. "Never sand lead paint. Doing that releases millions of tiny particles that can cause lifelong behavioural and cognitive impairment in children. Instead, call in an expert."

GREEN CLEANING

Australians have been polarised by 'green' cleaning products, says Bridget Gardner, director of Fresh Green Clean, which provides training in eco-friendly cleaning to individuals and organisations. "People either love or hate them," she says. "There is a growing awareness about the need to avoid contact with some of the nastier chemicals in household cleaning products and the impact they can have on children, especially those with asthma."

If you'd like to minimise the amount of solvents, bleach, ammonia and chlorine in your home remember that cleaning with a mild detergent, a little water and a bit of elbow grease is usually as effective as using a supermarket cleaning product, says Gardner. "Microfibre cloths have changed the way we clean. They're great at lifting dirt from surfaces," she says.

A vacuum cleaner with a good-quality high-efficiency particulate air (HEPA) filter is one of the best investments you can make to improve air quality at home, says Immig.

HAS IT BEEN TREATED?

Always ask if furniture or soft furnishings have been chemically treated before you buy, says Wittig, who says she avoids products that claim to be antibacterial, stain resistant, UV resistant or treated with flame retardant. "These chemicals

can break down into household dust and be ingested or inhaled," she says.

Stick to natural fibres where possible and keep your mattress, pillows, cushions and soft furnishings in good

condition by airing them, says Bijlsma. Given the time spent in them, beds are important to get right, she says, and recommends that homeowners look to a natural latex mattress or a spring mattress with a natural latex pillow top.

Furniture made from pressed-wood products can be one of the key sources of VOCs in the home, says Immig. "The resins and glues in plywood, particleboard, laminates and MDF can off-gas formaldehyde for years," she says. Formaldehyde emissions can cause burning eyes and an allergic skin reaction, warns the Australian Competition & Consumer Commission (ACCC).

KNOW YOUR PLASTICS

Many of us worry about the health risks associated with using plastic, especially to hold and store food. Some plastics contain endocrine disrupting chemicals (EDC), which can interfere with the production, action and/or elimination of human hormones. Bisphenol A (BPA) is probably the best known EDC but there are others of concern, too.

"Phthalates, especially diethylhexyl phthalate (DEHP) which is a commonly used plasticiser that's used to make plastics like PVC soft and flexible, should be avoided," says Immig. While scientists, manufacturers and lobbyists continue to debate just how dangerous – or not – plastics are to human health, the World Health Organization has this to say on the topic. "EDCs have the capacity to interfere with tissue and organ development and function, and therefore they may alter susceptibility to different types of diseases throughout life. This is a global threat that needs to be resolved."

Australian regulation of plastics and chemicals is weak, says Immig. "Australia has 38,000 chemicals in use here and only a few have been properly assessed for health," she says. Her advice is to be cautious about plastics. "We're finding out new information all the time. I think the health risks associated with plastics will continue to become clearer." ▶

'CLEANING WITH A MILD DETERGENT, A LITTLE WATER AND BIT OF ELBOW GREASE IS USUALLY AS EFFECTIVE AS USING A SUPERMARKET CLEANING PRODUCT.'

BRIDGET GARDNER, DIRECTOR, FRESH GREEN CLEAN



CASE STUDY

A planned extension to this family home will utilise a range of non-toxic building materials and principles.

Doing everything you can to keep toxins out of your home should be part of building a sustainable home, says Marc Bernstein, director of Melbourne Design Studios. "My clients have a son who is sensitive to allergens and that's what triggered them to commission this non-toxic extension to their home. It will take the form of a 'living timber box', filled with plants and natural materials, and it will be as healthy to live in as it can possibly be."

While this extension hasn't yet been built, it represents a desire to minimise toxicity in the form of VOCs, chemical compounds found in many building materials that vapourise and enter the air.

Perhaps the most striking element of this 120m² extension is the inclusion

of house plants on a significant scale. "We have designed planting boxes that will be built into the floor plates in the living room to remove the minimal levels of toxicity that there might be. The crucial thing about using plants is that you need a certain number of them to effectively filter the air," he says.

Three species of plants will be central to achieving this: money plants, mother-in-law's tongues and areca palms. "Money plants act as a cleanser, taking things like formaldehyde emissions out of the air," he says. "Areca palms filter the air during the day and mother-in-law's tongues do the same thing overnight."

Zero-VOC paint will be specified and solid timber or plywood chosen over MDF for the joinery.



Cross-ventilation is also vital to the design. "The owners will be able to open all sides of the structure to flush the air out. That's good practice in terms of thermal comfort and energy efficiency, but it's also a great way to shift the air and remove any toxins that may be in it."

The extension has been designed so nature can 'flow through', from the north-facing garden to an internal courtyard that draws northern sunlight back into the existing house. The aim is for this extension to embrace passive solar design principles and to be "a truly sustainable building and a happy and healthy natural living environment".

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