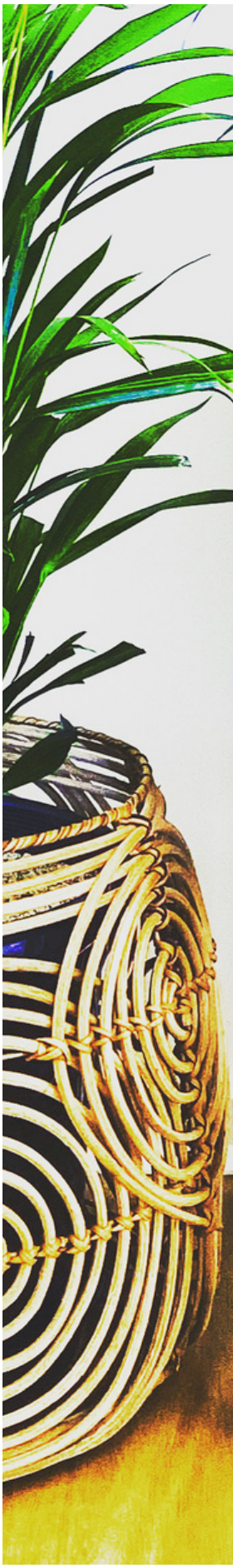
3 ALARMING TOXINS IN YOUR HOME

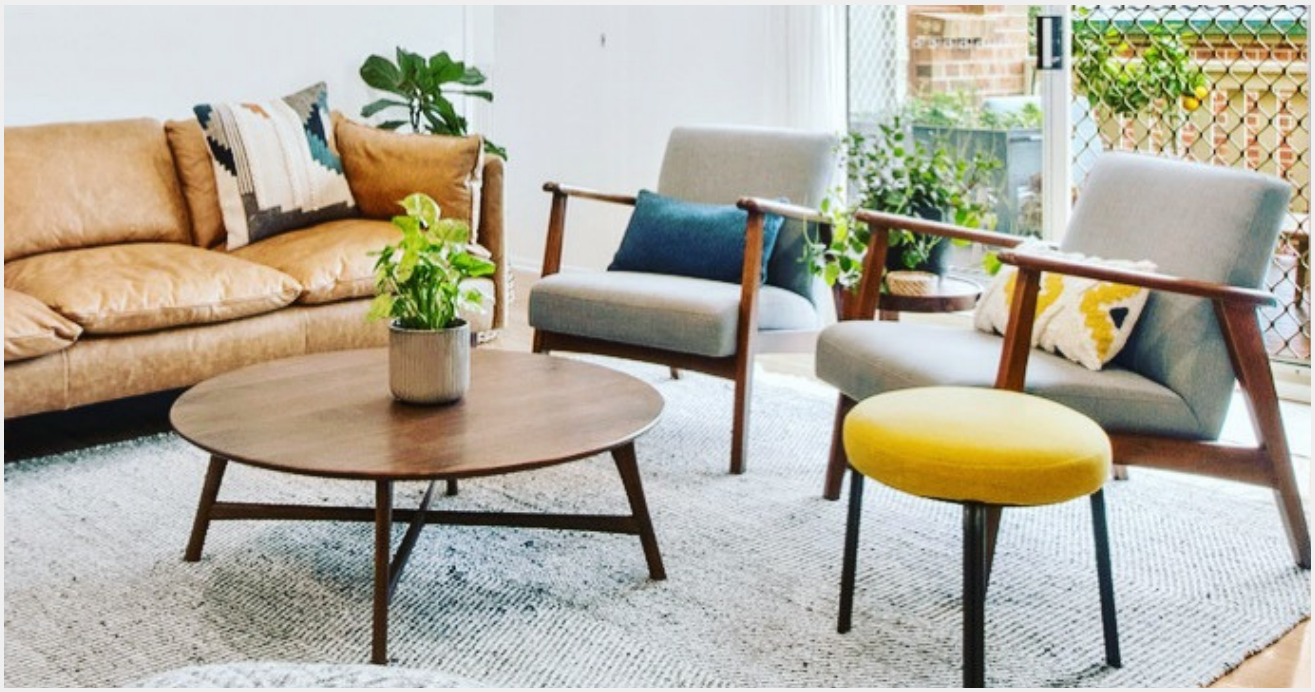
AND HOW TO REDUCE THEM

Sustainable Interior Design
that prioritises your health & wellbeing

THE Paradigm ROOM

Contents





The compromise to yours & your family's health

> Over 100,000 new substances have been incorporated into communities, despite accumulating evidence of their toxicity to human and animal health.

Introduction

You don't work a field for 15 years if you are not passionate about what you do. But greater than passion is purpose. Following a personal health battle after a nasty mould infestation, my path became clear.

The Paradigm Room was established in 2022, with the intention to disrupt traditional design in favour of health and wellbeing, at every step of the design journey.

Now we provide interior design services in Toowoomba and beyond to support your wellness. We consider your wellbeing, through function, form, and flair, in addition to sustainable and health-conscious processes.

> Pushing the boundaries of what's done, to what's best

The following toxins are only 3 of the prevalent, yet harmful, substances worth minimising in your environment.

At The Paradigm Room we ensure these toxins, and many more, are minimised in each and every project.

ASK US HOW WE CAN HELP WITH YOUR PROJECT!

01 TOXIN 1: PHTHALATES

Phthalates are synthetic industrial compounds, formed from phthalic acid esters. They are commonly used in plastics and vinyl products for their malleability and flexibility properties (Wynters & Goldberg, 2012). In various plastic polymers, including some food packaging, they can be utilised in concentrations as high as 40% (Erythropel et al., 2014). They are also widely used in skincare and cosmetics, especially as a carrier compound for synthetic fragrances (Api, 2001).

Where are they commonly found?

- Adhesives
- Paints, waxes & lacquers
- Textiles & faux leather
- Vinyl flooring and wall coverings, including many PVC products
- Window coverings
- Carpet backing
- Synthetic rubber
- Children's toys
- Food packaging
- Artificial "fragrance," including candles
- Medical supplies
- Skincare & cosmetics, including nail polish
- PET plastic & polystyrene

Why are they so toxic to us?

Despite being readily excreted from the human body, consistent exposure can be harmful. They are not chemically bound within products, allowing them to disperse into the air around us. Exposure can occur via ingestion, inhalation and absorbed through the skin (Dutta et al., 2020). In addition, phthalates can wreak havoc on our hormones and reproductive system, and can even cross the placental barrier in the womb, impacting a developing foetus during pregnancy (Lin et al., 2011).

What are the health effects?

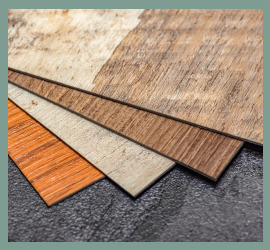
- Allergies & asthma
- Neurological conditions
- Decreased fertility
- Cancer, especially gynaecological
- Early onset of puberty
- Eyesight impairment
- Cardiovascular changes

The toxic release of phthalates can occur at all stages of its life cycle - manufacture, use and even disposal.

Tips to minimise phthalates in your environment

1 Be cautious of PVC and vinyl products

PVC and vinyl products historically can contain phthalates. Look for "phthalate-free" options, especially with flooring & window furnishing products.



2 Minimise plastics, especially when it comes to children

Australia still allows DEHP in children's toys under proportions of 1%. But even 40 minutes a day of exposure to a child can carry the risk of toxic exposure!

3 Be careful of "recycled" plastic content

Be extra cautious when it comes to products and textiles claiming to contain recycled plastic materials. They may contain legacy phthalates.

4 Avoid artificial fragrances

Synthetic fragrances typically utilise phthalates as the carrier compound, but they aren't chemically bound in the product, allowing them to disperse into the air around you

Those most at risk of phthalate exposure are children under the age of 3, due to their developmental stage & wide array of toxic exposure sources

02 TOXIN 2: POLYBROMINATED DIPHENYL ETHERS

Polybrominated diphenyl ethers (PBDEs) are commercial mixtures of brominated flame retardants (BFRs) – a family of compounds commonly added to materials during production, to minimise their combustibility. Some PBDEs are already restricted or prohibited due to increasing concerns of their impact to health and the environment (Turner, 2022). Some materials can contain these toxins to proportions of 5–30% of the overall material's weight (Siddiqi et al., 2003).

The PBDE family consists of 209 chemicals that form various mixtures. The notorious commercial PBDE mixtures are:
-PentaBDE (common in foam in upholstery and furniture),
-OctaBDE (common in plastics),
-DecaBDE (common in electronic surrounds including TVs).

Where are they commonly found?

- Textiles
- Polyurethane foam
- Upholstered furniture
- Mattresses
- Electronics & electrical products
- Carpet backing
- Plastics

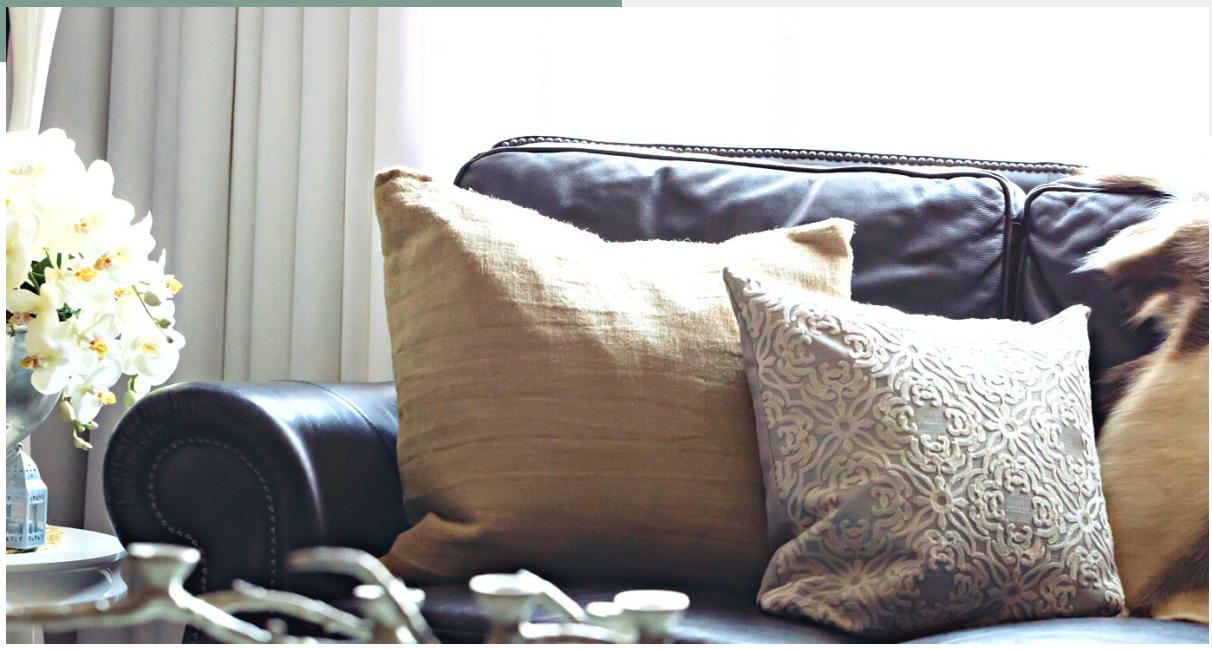
Why are they so toxic to us?

Similar to phthalates, PBDEs can leach out of their source material or product and into the surrounding atmosphere. Ingestion and inhalation of indoor dust has been recognised as one of the leading pathways of exposure to BFRs (Qi et al., 2014). Dietary ingestion can also be a significant source of exposure. Concentrations of the toxicant can be evident in blood, urine and even breast milk, with infants and toddlers carrying 3 to 9 times the body burden than adults (Linares et al., 2015).

What are the health effects?

- Reproductive complications
- Neuro-development issues
- Nervous system implications
- Cancer
- Thyroid malfunction
- Liver disturbances

Australia terminated importation and production domestically of pentaBDE and octaBDE in 2007. Be cautious buying second-hand, prior to then.



Tips to minimise PBDEs in your environment

1 Avoid flammable synthetic materials

Opt for products and materials that are naturally more fire resistant, like wool over polyester and nylon, including for window furnishings

2 Be cautious of polyurethane foam

Consider natural latex mattresses over conventional polyurethane foam.

3 *Be careful of some second-hand items*

Be cautious when purchasing upholstered furniture manufactured before Australia phased out some of the more toxic PBDEs (E.g. 2007 for pentaBDE and octaBDE).

4 Ask for information from manufacturers

When purchasing new furniture, or products treated with fire-resistant properties, ask for details on the specific treatments - does it contain PBDEs?

Indoor dust at home & the workplace are believed to be the most prominent exposure sources, especially through furniture selections & electrical equipment.

03 TOXIN 3: FORMALDEHYDE

Despite formaldehyde being a gas produced through natural processes (E.g. decomposition and combustion), industrially it is also a petroleum-derived synthetic chemical that contains carcinogenic elements, leading it to be prohibited in particular cosmetic and skincare products in some countries (Statham, 2011). However, it is still prevalent in many timber composite products like plywood, particle board and panelling, and woven finishes like carpet and textiles.

Where are they commonly found?

- Adhesives
- Plywood
- Particle board
- MDF and HDF boards
- Paints & lacquers
- Adhesives
- Resin-based paper products
- Fabrics & upholstery
- Window furnishings

Why are they so toxic to us?

The prevalence of formaldehyde within interior environments can occur from multiple sources, accumulating and impacting indoor air quality. High humidity levels and temperatures can further encourage the gaseous toxin to accumulate for months in indoor environments. Inhalation and dermal absorption are the most common pathways of human exposure. It can be rapidly absorbed and metabolises to formic acid, which can cause bodily systemic implications.

What are the health effects?

- Asthma & allergies
- Neurotoxicity & dementia
- 'Sick building syndrome'
- Cancer, including leukaemia
- Reproductive insufficiencies, including sterility and risk of miscarriage
- DNA damage

Formaldehyde is also one of the leading contributors of Volatile Organic Compounds (VOCs), and common in various adhesives and lacquers.

Tips to minimise formaldehyde in your environment

1 Be cautious of your furniture selections

Many pressed timber products (E.g. plywood, MDF, particle board) can off-gas for months. Some, even years.

2 Opt for natural fibre carpets

Many carpets these days have treatments applied. Quality wool alternatives, for instance, are naturally fire resistant, durable, renewable & even stain resistant (of course, red wine isn't good for most surfaces if not cleaned right away).

3 Be careful when purchasing timber flooring

Many composite timber boards (including some bamboo products) may contain formaldehyde as the bonding agent. And this can off-gas for a long time!

4 Go "Zero-VOC"

Select zero-VOC paints, and skip the wallpaper if it cannot be guaranteed as formaldehyde-free.

Formaldehyde levels exceeding as low as 0.1 ppm can lead to acute health symptoms, including allergies & respiratory complications

04 Conclusion and Next Steps

These are only a few toxins that are prevalent in our home and workspace, which The Paradigm Room considers in all of their projects. The truth is, it also extends far beyond what we see and experience in the environment around us.
What is often disregarded is how this impacts the workers, and the physical or natural environment, during both the manufacturing and disposal phases too.

The Paradigm Room is unique in their mission in creating a paradigm shift in the way people think about their interior design, in favour of healthier, sustainable solutions that will last.

We prize your health and wellbeing, while always looking towards to the future, for your family. And for the environment.

We appreciate this knowledge is overwhelming, we have been there ourselves. That is why we have spent the past 8+ years continuously researching the health implications of the built environment, to bring you the most current and evidence-based research and apply it to your project.

Contact us now to see how we can assist in bringing your new home, renovation, or commercial premise to life, without jeopardising your health & wellbeing.

1300 26 22 99
info@theparadigmroom.com.au
www.theparadigmroom.com.au

05 The Journey So Far...

My journey to better health kick-started in 2014

I began to investigate common toxins in conventional products, from shampoo, to toothpaste, cleaning products, and so on. Yes, they are mostly used in small quantities. But when you consider how many of your everyday products contain such toxins, how often you use them, and then consider the cumulative impact of all these toxins combined – what is that really doing to your health?

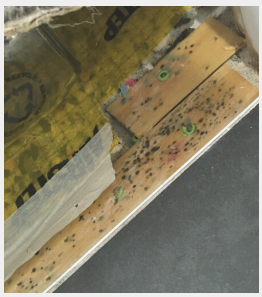
And on top of this, many of these toxic ingredients are known carcinogens, endocrine disrupters, neurotoxins, and more.

I commenced my post-graduate studies in 2015, in Interior Architecture/Design, and focused on the health implications of the built environment through a research-based thesis.

What shocked me, was that many of the toxins I had become aware of through my investigation into everyday products were also prevalent in the built environment – in building materials, finishes, and furnishings.

And then, surmounting that, my new home that I moved into in late 2015 was water-damaged. My perception that "black mould" was really the only concern, like many of us, was also blown out of the water. There were multiple species of moulds and fungi evident, of which I also found out I was allergic to a number of them.

Water damage creates a concoction of fungi, bacteria, mycobacteria, inflammagens, volatile organic compounds (VOCs) and actinomycetes.



And to add to this experience further, tests results also indicated elevated levels of VOCs from paints and coatings, as well as moderate levels of methylene chloride, odorants and fragrances.

In 2022, after nearly 14 years working at a number of award-winning design and architecture firms, I felt I needed to venture beyond traditional design. And, with passion and purpose:

> ... The Paradigm Room was born.

Sam x

Certified Passive House Designer:
Australian Passive House Association

DIA Accredited Designer:
Design Institute of Australia

Master of Philosophy (Arch/IntArch)
University of Curtin 2015-2021

Bachelor of Interior Design
University of Canberra 2011

Advanced Diploma of Interior Design
Canberra Institute of Technology
2009-2010

Diploma of Professional Interior Design
Interior Design Academy 2008

Additional Resources

Department of Climate Change, Energy, the Environment & Water	For further information on Australian chemicals management, national pollutant inventory, air quality, and, waste & recycling, refer to: https://www.dcceew.gov.au/environment/protection
CDC - Centers for Disease Control and Prevention	For further information on Biomonitoring and Chemical Factsheets, refer to: https://www.dcceew.gov.au/environment/protection
Stockhom Convention	For further information on Persistent Organic Pollutants (or, POPs), refer to: http://www.pops.int/TheConvention/Overview/tabid/3351/Default.aspx

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