

Low-Tox Living



What's All the Fuss About Low-Tox Living?

'Low-tox living' is a lifestyle movement that is gaining increasing popularity and your practitioner may have recommended that you adopt some of the lifestyle changes associated with it. Our health is directly linked to the environment in which we live. You may not realise it, but we are exposed to chemicals and toxins in our everyday lives, from the air we breathe, the food we eat, the water we drink, our skin care and cleaning products, as well as our electronic devices.

These toxins/chemicals have been linked to several health conditions, including skin rashes,¹ allergies,² mood changes,^{3,4} blood sugar imbalance,⁵ infertility,^{6,7} Alzheimer's disease,⁸ asthma,⁹ obesity^{10,11} and some types of cancer.^{12,13} Approximately one-quarter of the global disease burden, and more than one-third of the burden among children under the age of five is due to modifiable environmental factors.¹⁴

While we cannot avoid toxins/chemicals entirely, the good news is that minimising our exposure to them is something we can change. Becoming more aware and making educated choices is the best way to reduce our toxic load and improve our health and wellbeing.

What are toxins and how do they affect the body?

Toxins are substances (e.g. chemicals found in cosmetic products, cleaning products, and pesticides) that cause harm or damage to the body by disrupting its normal function.

Toxins can negatively impact our health in a variety of ways, some examples include:¹⁵

- Competing with the minerals our bones require for structure and strength.
- Damaging or interfering with DNA, increasing the rate of cell ageing and organ dysfunction.
- Interfering with normal brain chemical and hormonal balance, leading to 'brain fog', mood disturbances, and reproductive issues, such as infertility.
- Impairing the liver's ability to neutralise, metabolise, and eliminate harmful substances, compromising the detoxification and removal of these substances from the body.

Commonly Encountered Toxins

Phthalates



Chemicals used to make plastic more flexible and commonly found in body wash, haircare products, and nail polish.^{16, 17}

Triclosan



An antimicrobial chemical ingredient used in toothpastes, mouthwashes, and hand sanitisers.¹⁸

Mercury



A heavy metal found in thermometers, amalgam dental fillings, fish, and seafood.²²

Lead



A heavy metal found in mines, lead-based paint, car batteries, LED lights, and drinking water.^{19, 20, 21}

Bisphenol A (BPA)



A chemical used to harden plastic and commonly found in water bottles, food containers, and paper products, including flyers, magazines, envelopes, paper towels, and toilet paper.^{25, 26}

Polycyclic aromatic hydrocarbons (PAHs)



Chemicals produced during the burning of petrol, rubbish, and other organic substances, such as tobacco, and grilled or smoked meats.^{23, 24}

Polychlorinated biphenyls (PCBs)



Industrial and manufacturing chemicals, common in electrical appliances, which remain in the environment (air, water, and soil) for very long periods of time. These types of chemicals are known as persistent organic pollutants (POPs).^{31, 32, 33}

Chlorpyrifos



A chlorinated organophosphate (OP) insecticide used in agricultural practice.³⁴

Perchloroethylene (PERC)



A dry-cleaning solvent.²⁷

Toluene



A liquid solvent present in crude oil, also found in paint, synthetic fragrances, and nail polish.^{28, 29, 30}

Knowledge Is Power

Common exposures and solutions

Food Preparation and Storage

Making changes to the kitchenware you use will have a meaningful impact when reducing toxin exposure.

Low-tox tips for food storage

Microwaving in plastic containers and cling film leaches chemicals like **bisphenol A (BPA)** into heated foods, a chemical known to disrupt hormone balance.^{13,64} Likewise, plastic bottles left in the sun, or a hot car can have similar effects.⁶⁵ Plastic may also be leached into foods from scratched food tins and jar linings.

- 1 Store food in BPA free containers, such as glass or stainless steel, or in tableware bowls with silicone stretch lids.
- 2 Swap plastic cooking utensils (e.g. spatulas, egg flips, serving spoons, soup ladles, etc.) for stainless steel or silicone varieties.
- 3 Swap disposable plastic cutlery for a reusable stainless steel travel cutlery set.
- 4 Use glass instead of plastic containers to microwave/reheat foods in. Avoid microwaving with cling film and plastic coverings.
- 5 Invest in a reusable coffee cup instead of single-use takeaway coffee cups.
- 6 Invest in reusable produce bags instead of plastic grocery store bags.
- 7 Avoid wrapping acidic foods in cling film or aluminium foil to prevent plastic or aluminium from leaching.
- 8 Swap cling film and aluminium foil for beeswax wraps over sandwiches and over produce for storage/refrigeration.
- 9 Avoid buying canned food where possible (e.g. buy passata in a glass bottle instead of canned tomatoes, buy dried legumes instead of canned varieties, and buy corn on the cob instead of canned kernels). Opt for fresh or frozen fruits and vegetables whenever possible.

Low-tox tips for non-stick cookware

Non-stick cooking pans are another source of toxins in the kitchen. Fumes from overheated **polytetrafluoroethylene (PFTE)**, or Teflon®, can cause 'Teflon flu', a type of inhalation fever.⁶⁶

- 1 Use stainless steel, ceramic-coated, or cast-iron cookware rather than pots and pans made with aluminium or non-stick coatings.
- 2 Discard any cookware with non-stick coating that gets scratched or is starting to peel.

Reducing Plastic Exposure





Farm to Plate – Minimising Toxins in Our Food

Commercial farming methods use pesticides to ensure high crop yields. Herbicides (e.g. **atrazine**) and insecticides (e.g. **chlorpyrifos**) are types of pesticides and chemical agents used to control the growth of weeds or insect pests.⁴⁶ Pesticide residues can be found on fruit and vegetable produce, such as apples, pears, peaches, tomatoes, green peppers, etc.⁴⁷ These have been linked to an array of health concerns, negatively impacting our hormones, reproductive, and immune systems.^{48, 49}

Low-tox tips for pesticides

Fortunately, organic produce is certified to be free from pesticides and is becoming more widely available. Likewise, bio-dynamic and non-genetically modified organism (non-GMO) are better food options that offer a holistic, sustainable solution and avoid unnatural genetic modification technology, respectively.^{50, 51, 52}

- 1 Wash all non-organic produce before cooking or consuming. Soak hard skinned fruit and vegetables for 15 minutes in apple cider vinegar (ratio of 50 mL per 500 mL) and baking soda (ratio of 1 tablespoon per 500 mL) with the skin on before rinsing and eating.
- 2 Buy sustainably sourced, certified organic, bio-dynamic and/or non-GMO foods from growers markets, and organic, seasonal produce box delivery services.
- 3 While not certified organic, some farmers will offer 'spray free' produce at farmers markets - keep an eye out at your local markets.

- 4 Choose fruits and vegetables that generally require less pesticide use to grow. Table 1 below lists the worst culprits (Dirty Dozen) and cleaner choices (Clean Fifteen).
- 5 Take up self-sufficient gardening. Plant your own herbs, fruits, and vegetables. Use pots or make your own DIY raised garden bed. Go green and use organic, natural pesticides (e.g. soap sprays, diatomaceous earth, and neem oil) in your home garden instead of commercial chemical-based products.

Table 1. Environmental Working Group (EWG) Dirty Dozen and Clean Fifteen^{53, 54}

Dirty Dozen	Clean Fifteen
Strawberries	Avocados
Spinach	Sweet corn
Nectarines	Pineapple
Apples	Onions
Grapes	Papaya
Cherries	Sweet peas
Peaches	Eggplant
Pears	Asparagus
Bell and hot peppers	Broccoli
Celery	Cabbage
Tomatoes	Kiwi fruit
Kale, collard, and mustard greens	Cauliflower
	Mushrooms
	Honeydew melon
	Cantaloupe/rockmelon

Low-tox tips for additives

Whilst Australia has one of the most conservative approaches in the world to the use of antimicrobials, hormonal growth promotants and antibiotics are still used in livestock farming to an extent.^{55, 56, 57}

- 1 Consume less animal-based foods (i.e. meats, dairy products, poultry, and eggs), to minimise exposure to accumulation of toxins in the fatty tissue of animals. When you are putting meat on your plate, trim the fat from meats, or choose lean cuts from grass-fed meats and free-range poultry.
- 2 Look at the ingredients listed on the back of a food packet and you're likely to find a few preservatives (e.g. sulphur dioxide 220), perhaps even flavour enhancers (e.g. monosodium glutamate [MSG] 621), and/or artificial sweeteners (e.g. aspartame 951).⁵⁸ Food preservatives have been linked to digestive and nervous system disorders, and skin and respiratory problems.⁵⁹
- 3 Read food ingredient labels for additives, especially numbered ingredients.
- 4 Use more wholefoods (i.e. fruits, vegetables, nuts, seeds, legumes, and whole grains). Eat less packaged and refined/processed foods (e.g. cakes, biscuits, lollies, soft drink, chips, bread, pasta, pies, ready-made frozen dinners, etc.) to minimise exposure to food colours.
- 5 Make more home cooked meals with fewer ingredients.

Low-tox tips for fish

Mercury, lead, and **cadmium** are common heavy metals found in fish and seafood due to their prevalence in the marine environment. Research has linked heavy metal toxicity to the onset of Alzheimer's disease.⁸ However, while all fish contain some mercury, only a few species have higher levels. These tend to be bigger fish with longer lifespans (e.g. swordfish and shark/flake). Table 2 below provides guidance on the size and number of portions for these types of fish that can safely be consumed, based on Australian guidelines.

- 1 Choose wild-caught rather than farmed fish and seafood to minimise exposure to added hormones.⁶²
- 2 Choose Atlantic salmon, tuna, herring, mackerel, and sardines when eating fish in moderation for its plentiful health benefits.

Table 2. Weekly Fish Portion Recommendations in Australia⁶³

Children <6 years (1 portion is 75 g)	Women who are pregnant or planning pregnancy (1 portion is 150 g)	Rest of the population (1 portion is 150 g)
1 portion per week of orange roughy (deep sea perch) or catfish and no other fish that week		1 portion per week of shark (flake) or billfish (swordfish/broadbill and marlin) and no other fish that week
or		
1 portion per fortnight of shark (flake) or billfish (swordfish/broadbill and marlin) and no other fish that fortnight		

Note: a packet serving size may not correspond to the portion size in this table, be sure to double check the grams in a serving size and reduce the amount if necessary.



Did you know that artificial food dyes like red 40 (allura red), yellow 5 (tartrazine), and yellow 6 (sunset yellow) are linked to hyperactive behaviour in kids!^{60, 61}



A Spotlight on Skincare and Cosmetics

Many personal care items, hair and makeup products, nail polishes, and perfumes contain sources of toxic chemicals. The average woman uses between nine to fifteen personal care products a day. Combined with the addition of perfumes, women place around five hundred and fifteen individual chemicals on their skin each day through cosmetic use.³⁵

However, minimising exposure to these products does not cost the earth. 'Low-tox living' strategies offer sustainable everyday solutions to better care for your health, and the health of our planet.

Low-tox tips for cosmetics

Phthalates and **parabens** can be hidden in cosmetic skin products, hair products, fragrances, and sanitary tampons, liners, and pads. These are known to disrupt hormonal balance by mimicking the effects of oestrogen within the body.^{36, 37} Making the switch to cleaner alternatives can make a world of difference.

- 1 Do an inventory of your personal care products. This includes all skin lotions, creams, moisturisers, facial cleansers, body wash, soaps, body spray, shampoos, conditioners, treatments, hair dye, deodorants, makeup products, fragrances, and nail polishes and remover you use. Ensure the ingredients are derived from nature not synthetic, or petroleum-based. The less ingredients listed, the better. See the EWG Skin Deep safety database for more information on ingredients you are most likely to find in these products,³⁸ and download the handy Chemical Maze shopping companion app to search for ingredients found in beauty, hair, and skincare products.³⁹ Familiarise yourself with which ingredients are safe (good), and which are chemical additives (bad).
- 2 Choose essential oil-scented body washes instead of ones with synthetic fragrances.
- 3 Choose paraben-free, sulphate-free, and silicone-free shampoos and conditioners.
- 4 Make your own DIY olive oil-based hair mask for dry, damaged, frizzy hair instead of chemical-based hair treatments.
- 5 Make your own DIY sugar-based spritz to use instead of commercial hairsprays, gels, and mousses.
- 6 Use paraben-free, organic, natural mineral makeup products.
- 7 Use essential oils (diluted in carrier oils, e.g. sweet almond oil, fractionated coconut oil, jojoba oil, avocado oil, hemp oil, etc.) instead of synthetic fragrances, perfumes and body sprays.
- 8 Use henna hair dye instead of semi-permanent boxed dyes from the grocery store and chemist. This offers an at-home, chemical-free, plant-based alternative.
- 9 Use aluminium-free deodorants instead of antiperspirants. **Aluminium** is an ingredient found in commercial antiperspirants that makes you sweat less. Using antiperspirants that contain aluminium may increase the risk of breast cancer.⁴⁰ However, there are many available alternatives that provide healthier and safer options.

Make your own DIY natural body wash:

Ingredients:

- 2/3 cup liquid castile soap
- 1/4 cup raw honey
- 2 teaspoons jojoba or sweet almond oil
- 1 teaspoon vitamin E oil
- 50-60 drops essential oils

Instructions

- 1 Measure out the ingredients.
- 2 Combine in a squirt top bottle.
- 3 Shake to mix thoroughly before use.



Make your own DIY natural deodorant paste:

Ingredients:

- 2 1/2 tablespoons unrefined coconut oil
- 2 1/2 tablespoons unrefined shea butter
- 1/4 cup arrowroot starch
- 1 1/2 tablespoons baking soda
- 6 drops lavender essential oil
- 6 drops grapefruit essential oil
- 1 drop tea tree essential oil

Instructions:

- 1 Place coconut oil and shea butter in a glass bowl. Place the bowl inside a medium saucepan to create a bain-marie.
- 2 Add water to the saucepan (enough to surround bowl but not to overflow it). Bring to a boil.
- 3 As the water is heating, stir the coconut oil and shea butter above until it melts.
- 4 Once melted, add in arrowroot starch, baking soda, and essential oils.
- 5 Place in a pot/jar. Allow to cool at room temperature or in the fridge until solid.
- 6 Cover with a lid until use.

Directions for use:

- 1 Slightly wet the underarms with water. This helps with even application of the deodorant paste.
- 2 Scoop out a pea-sized amount with your fingers. Rub to warm and apply directly to the underarms. Reapply as needed.



Low-tox tips for sun protection

Several toxic chemicals are also commonly found in commercial sunscreens. **Homosalate** and **octyl-dimethyl-PABA (OD-PABA)**, both chemical ultraviolet B (UVB) filters, are among these and have been linked to breast cancer.⁴³

- 1 Choose mineral sunscreens with physical blockers (i.e. zinc oxide), which sit on top of the skin, rather than being absorbed into it.⁴⁴
- 2 As recommended in the Cancer Council's SunSmart program, other ways to protect your skin and eyes from UV radiation exposure in the sun are to:⁴⁵
 - Slip on clothing that covers as much skin as possible.
 - Slap on a hat that provides protection to your face, neck, and ears.
 - Seek shade when outdoors. Staying under a tree and umbrella.
 - Slide on some sunglasses that are close fitting, wraparound and cover as much of the eye area as possible.

Low-tox tips for teeth cleaning

Triclosan and **fluoride** can be found in toothpastes and mouthwashes and may disrupt thyroid hormone function.^{41, 42}

- 1 Swap to triclosan and fluoride free natural toothpastes available from health food stores, and online from natural skincare and beauty stores.

Alternate Sun Protection



Better Home and Garden - Low-Tox Solutions

Taking steps to make your home environment and garden cleaner and greener is one of the most effective ways to reduce your exposure to hidden chemicals.

Low-tox tips for deodorising

Phthalates and **paraffins** are also present in household items, like air fresheners and candles, not just cosmetics. Simple swaps can keep your home low-tox and smelling great.

- 1 Cleanse the air with natural essential oil-infused room sprays.
- 2 Swap to naturally scented soy or beeswax candles instead of petroleum-based ones with artificial fragrances.

Low-tox tips for pest management

Insect repellents often contain the active ingredient **N,N-diethyl-meta-toluamide (DEET)**, which has been linked with seizures, agitation, low blood pressure, and skin irritability.⁶⁹

- 1 Use natural citronella-based personal outdoor sprays to ward away mosquitos, flies, and other insects.
- 2 Pesticides and fertilisers applied to lawns can be tracked into homes by people and pets, causing unnecessary exposure, particularly to children. Remove your shoes when you enter your home and ask guests to do the same. This avoids chemical residues from pesticides and fertilisers sprayed on lawns, from being tracked onto carpet and floor surfaces.



Cleanse the air with a natural essential oil-infused room spray or diffuser.

Low-tox tips for clothing

PERC and other chemicals are used to process, clean, and protect clothing fabrics.

- 1 Avoid dry cleaning clothes wherever possible. Avoid water and stain-proofed clothing that harbour repellent chemicals.
- 2 Wear natural fibres and avoid synthetic fabrics and dyes produced from petroleum. Shop for ethical clothing brands instead of fast fashion. Look for labels that use less chemicals with certifications, like OEKO-TEX® Standard 100, which certifies non-hazardous end-products and all of their components, meaning that these have been tested and proven free of toxic substances;⁶⁷ and Global Organic Textile Standard (GOTS), which ensures the organic status of textiles (e.g. cotton) from the harvesting of the raw materials through environmentally and socially responsible manufacturing.⁶⁸
- 3 Wash new clothes before wearing them to reduce residual chemicals (e.g. from dyes). Choose to take a more environmentally sustainable approach to fashion by buying and upcycling second-hand, vintage

clothing. Second-hand clothing has also gone through multiple washes, meaning that the amount of original textile chemicals are reduced, further minimising exposure to toxic substances.

Low-tox tips for cleaning

Many commercial household products, including kitchen, bathroom and laundry detergents and cleaning agents (e.g. bleach, disinfectants, degreaser, surface cleaners, soap scum and mould remover sprays, etc.) contain chemicals too.

- 1 Check the label on cleaning products for warning signs, such as POISON, TOXIC, CAUTION, CORROSIVE or WARNING. Avoid using harsh chemicals that warrant such safety warnings.
- 2 Minimise the use of chemical-based and fragranced household cleaning products. Replace with natural/eco-friendly green cleaning products that are better for people and the planet.

Make your own DIY natural all-purpose cleaner:

Ingredients

- 1 cup vinegar
- 1 cup distilled water
- 1 tablespoon baking soda

10 drops of your choice of essential oils (tea tree, eucalyptus, lemon, lemongrass, lavender, peppermint, grapefruit and/or orange)

Instructions

- 1 Measure out the ingredients.
- 2 Combine in a spray top bottle.
- 3 Shake to mix thoroughly before use.



Create your own unique scent by combining essential oils

Air Quality and Health

City living environments expose us to a range of carbon emissions and airborne pollutants. Car, truck, and bus exhaust fumes contribute to these in the forms of **carbon monoxide, hydrocarbons, nitrogen oxides, particles, volatile organic compounds (VOCs), and sulphur dioxide**, creating air pollution (**smog**), which has been associated with breathing problems, like asthma.⁷³ Residential appliances that burn gas, like water heaters and stoves, are another potential contributor to poor indoor air quality.

In addition, we have become increasingly aware of the negative impact of smoking on our health. Toxins found in cigarettes, including **acetaldehyde, arsenic, benzene, cadmium, formaldehyde, nickel, radioactive polonium-210, PAHs** and tobacco-specific **nitrosamines**, are linked to an exhaustive array of respiratory health conditions and cancers.⁷⁴

Fortunately, there are steps you can take to improve the quality of the air you breathe at home.

Low-tox tips for air quality

- 1 Vacuum regularly, especially carpeted surfaces, to reduce contaminants like microplastics and other contaminants in house dust.⁷⁵ Use a high-efficiency particulate absorbing (HEPA) filter to clean and purify the air.
- 2 Spend time after work and on the weekend outdoors to reap the benefits of better air quality out in nature. Going for a forest bike or bushwalk has positive effects on reducing inflammation and improving immune health and may be especially helpful for those with asthma.^{76, 77}
- 3 Buy house plants that may absorb pollutants to purify the air. Some varieties commonly used for this very purpose are Boston ferns, peace lilies, devil's ivy/pothos, snake plant/mother-in-law's tongues, dwarf date palms, bamboo palms, weeping fig/ficus tree, spider plants, rubber plants, and chrysanthemums.⁷⁸





Common indoor plants, like Pothos help purify the air indoors.

- 4 Avoid areas of exposure to passive smoke, especially indoors. Having a cigarette-free household, and not smoking in or near a home (e.g. at the front door, on balconies, or terraces), will improve the overall quality of the air, whilst also minimising exposure to other people who live there. Quitting smoking is a step in the right direction to reducing toxin exposure. Contact Quitline (call 13 78 48) for help and see the Quitline website for more information:⁷⁹ [<https://www.quit.org.au/>]
- 5 Open windows to allow plenty of fresh air to circulate throughout each room of the home.
- 6 Ensure doors connecting garages to the house are tightly sealed. Minimise running time for vehicle engines in garages connected to the home.
- 7 Install vents (i.e. chimneys, exhaust fans, and range hoods) where necessary and make sure these openings are fully operational, not blocked.
- 8 Avoid using fireplaces to prevent smoke and carbon from being produced and trapped in your home.
- 9 Do not use barbeques (BBQs) or camp stoves indoors.
- 10 Do not use a gas oven/cooker to heat a room.
- 11 Service heating or cooking appliances regularly to ensure they are working properly and are not leaking gases into your home. Never use an appliance if it is damaged or not working properly.

Drink Pure Water

There are more than two hundred and twenty chemicals detectable in Australian drinking water, plus thirty five added wastewater treatment chemicals, including **chlorine, fluoride, and aluminium**.^{70, 71, 72} However, you can reap all the benefits of staying hydrated to flush out toxins by improving the quality of the water you drink.

Low-tox tips for drinking water

- 1 Invest in a water filter (e.g. reverse osmosis, distillation, seven or eight stage ceramic, activated carbon, or alkaline ioniser) to remove impurities from tap water, including sediment, taste and odour, hardness, and bacteria. If installing a filter is not possible, consider a ceramic water purifier that can sit on your kitchen bench.
- 2 Avoid reboiling tap water. While boiled water is fine, reboiling can concentrate harmful chemicals and drive out dissolved gases.
- 3 Invest in a glass or stainless steel water bottle instead of single-use polyethylene terephthalate (PET) and polycarbonate (PC) plastic water bottles. Avoid persistent exposure to plastic containers or bottles left in extreme heat and direct sunlight.



Avoid persistent exposure to plastic containers or bottles left in extreme heat and direct sunlight.

Is Technology Good or Bad for Us?

While our everyday lives have become more dependent on technology, our health doesn't have to suffer because of this. Little changes make big differences when it comes to minimising the impact of devices on our health.

Electronic devices, including mobile phones, laptops, and televisions contain small amounts of **heavy metals, hexavalent chromium, and brominated flame retardants (BFRs)**, including **polybrominated diphenyl ethers (PBDEs)**, and **tetrabromobisphenol A (TBBPA)**, all of which are recognised toxins.⁸⁰ Additionally, dust found on computer monitors and other digital screens contain chemicals linked to negative immune and nervous system health effects.^{81, 82, 83, 84, 85}

Power lines, mobile phones, microwaves, Wi-Fi routers, computers, and other appliances send out a stream of energy waves that are invisible to the eye. These **electric and magnetic fields (EMFs)** are produced anywhere electricity is generated, transmitted, or used, including at home and in the workplace. EMFs have been linked to headaches,⁸⁶ sleep disturbances,⁸⁷ cell damage and oxidative stress/free radical damage,⁸⁸ increased blood pressure,⁸⁹ and negative effects on both male and female fertility.⁹⁰

Low-tox tips for devices



Switch your mobile phone to airplane mode to stop sending and receiving Wi-Fi signals when not in use.



Switch your Wi-Fi modem off overnight to reduce exposure to EMF radiation while you sleep.



Dust devices regularly with a damp microfibre cloth can help to reduce heavy metal exposure.⁹¹



Keep a reasonable distance away from television screens. When shopping for a new television, choose a lower wattage and smaller screen. Basic is better.



Invest in a handheld EMF meter to measure your exposure at home or work



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