

WHAT GOES AROUND

COMES AROUND

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THE NON-TOXIC EDITION

WHAT IS A NON-TOXIC PRODUCT?

Non-toxic products clearly fit into the Green Products definition of "a product or service that has a lesser or reduced affect on human health and the environment when compared with competing products or services that serve the same purpose". Non-toxic products are products with a lower toxicity for that application— even naturally occurring products can be harmful if you ingest large quantities.

Terms you will often hear associated with toxic substances are **Volatle Organic Compounds (VOCs)**, **Ozone Depleting Chemicals (ODCs)**, and **Persistent Organic Pollutants (POPs)**, which are the same as **Persistent Bioaccumulative Toxic chemicals (PBTs)**. Perhaps the most encompassing term is **Persistent Bioaccumulative Toxic Chemicals** - this means the substance falls under one or all of the following categories:

- 1) Persists / fails to biodegrade in the environment
- 2) Bioaccumulates in tissue of humans and animals
- 3) Is harmful to human health and/ or environment.

In this context harmful might mean the substance is capable of causing health problems after exposure to large amounts of the substance or exposure to the substance over a long period of time. Health problems could fall into one of the following categories:

- **Carcinogenic**—capable of causing cancer
- **Mutagenic**—capable of causing gene damage
- **Teratogenic**—capable of causing birth defects
- **Corrosive**—contact can harm surfaces & skin
- **Irritating**—capable of irritating or inflaming skin, eyes & respiratory system
- **Sensitising**—capable of causing allergic reactions even in minute quantities

Non & Low -Toxic products are those that avoid / reduce ingredients falling into above categories.

TOXICITY WARNING SIGNS



Trust your nose: The most obvious sign that a product is potentially toxic is a strong odour. A number of paints, solvents, cleaning & outdoor chemicals are highly irritating to the lungs and should be avoided by people with asthma or chronic heart or lung conditions. Many people experience irritation in their respiratory tract and a rapid onset headache when inhaling these chemicals. Manufacturers often cover up chemical odours with a lemon or 'fresh' scent which unfortunately masks that the product is harmful to inhale. Feedback should be given to building managers so that the toxicity of a product can be investigated and steps can be taken to find an alternative product or improve the Indoor Air Quality (IAQ).

Read the label: Typically, products labelled DANGER or POISON are the most hazardous. Those labelled CAUTION or WARNING pose a medium hazard. This will be followed by a phrase that describes the nature of the hazard, such as "*causes burns*", "*vapours harmful*", or "*highly flammable*."

Get the **Material Safety Datasheet (MSD):** Suppliers are obliged to provide an MSD with every product purchased (many can now be accessed online). MSD sheets will contain Risk Phase code numbers (eg R45 - may cause cancer; R60 - may impair fertility). Print out an easy to read table to interpret these **risk phases** and keep them on hand when consulting MSDs. Other factors must also be taken into account such as dilution and combination with other chemicals. MSDs do not always tell the whole story.

GREEN CLEANING PRODUCT SPECS

A range of specs from across the U.S can be viewed on the **U.S Environmentally Preferable Purchasing website**. P.S Click red text for direct hyperlink to websites-

CLEANING UP YOUR ACT

An array of hazardous chemicals are found in commercial cleaning cupboards. Here are some simple cleaning tips to help reduce your toxin load:

1. Substitution of less toxic products

A number of municipal environmental purchasing programs in America now require suppliers to provide information on a wide range of environmental criteria. They assess products on factors such as:

- Human health impacts (eg free of carcinogens)
- Aquatic toxicity (eg free of phosphates)
- Biodegradability
- Low-VOC / Ozone depleting content (VOC level listed on MDS)

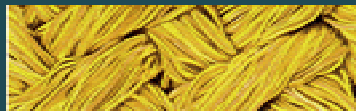
The most environmentally preferred cleaning products are plant based and have reduced petrochemical content. **Eucalyptus**, **Tea Tree** and **Citrus** based commercial cleaning products have the same anti - bacterial qualities as conventional cleaning products. These products are highly degradable and are made from renewable plant products as opposed to non-renewable petroleum products. You may notice that eucalyptus & tea tree have poison on the label this is simply to alert that this naturally occurring substance is poisonous to humans to ingest in its undiluted form—in diluted forms they are used in throat lozengers and other therapeutic preparations.



2. Reduce Use : right combination—correct dilution.

Overuse of disinfectants & antibacterials wastes time and money. Surfaces only need to be disinfected where they come into contact with broken skin or mucous membranes. All that is required to stop bacterial growth is a clean dry surface (can be achieved with detergent, water and a good dry wipe). Many hospitals are now reducing use of disinfectants and antimicrobials due to widespread concern that overuse is producing resistant strains of bacteria. Incorrect dilution of chemicals also results in wastage and increased toxicity for users. Furthermore using certain **chemicals in combination can form toxic compounds**—for example when bleach is used with ammonia it forms chloramine gas which is highly irritating to the lungs causing coughing and choking. It is estimated that cleaners could reduce hazardous chemical use by 13% by using products more appropriately.

3. Use Non- toxic mechanical cleaning alternatives



Close up of microfibre



Chemicals can't substitute for a good surface clean. The objective of cleaning is to remove particles that hold bacteria and viruses. Much of the time cleaners don't effectively remove particles—a superficial spray and wipe over a surface does not ensure bacterial eradication. Disinfectants need to be left on a surface for at least 10 minutes to guarantee effectiveness. Therefore the mechanical removal of particles is an excellent alternative. There are now a wide range of microfibre products on the market. **Microfibre** is an ultra fine polyester fabric woven to create cloth used for hand cleaning and floor cleaning applications. The fine fibres can gather and hold particles without the use of chemical agents. **Research on microfibre** has proven that it remove 99% of bacteria off a surface—it complies with World Health Indoor Air Quality Standards and meets Victorian and South Australian cleaning standards. Cleaning staff will need to be trained to use these products and initial purchase costs may be higher, but the longevity of the product and the reduced chemical use will bring savings. This type of cleaning has numerous environmental and OH&S benefits.

Rotary scrubber and **steam vapour** cleaning are also excellent mechanical alternatives for cleaning large surface areas and outdoor spaces without chemicals.

TEN NASTIES TO AVOID

The State of Massachusetts in USA has tabled a Senate Bill titled "**An Act For a Healthy Massachusetts: Safe Alternatives to Toxic Chemicals**". The Bill discusses the relationship between a range of chronic diseases and increased exposure to a wide range of toxic substances. Ten environmental toxins are identified and users are called to find and employ safer substitutes. The ten toxins are:

- **Formaldehyde:** in furniture glues & cleaning products
- **Trichloroethylene:** a solvent
- **Perchloroethylene:** primarily a dry-cleaning chemical
- **Dioxins and furans:** by-product of waste incineration, metal production and chlorine based industries
- **Lead:** heavy metal in petrol, paints, batteries,
- **Hexavalent chromium:** heavy metal in chrome plating
- **Organophosphate pesticides:** agricultural pesticides
- **Pentabromodiphenyl ether-** flame retardant
- **Phthalate:** (deph) a common plasticiser

WEED OUT THOSE TOXINS

Every year Victorian councils spray thousands of litres of herbicide around roadsides, parks & gardens, golf courses and between pavement on residential streets. While distributors claim their products are harmless to humans & the wider eco-system, people suffering from chemical sensitivities often have severe reactions to them. Leading international medical and environmental organisations have recommended a precautionary approach to herbicide and pesticide use and have said that until society has a more complete understanding of their toxicity, the benefit of the doubt should be given to protecting the environment, the worker and the consumer.

A company by the name of Waipuna has tackled the challenge of **non-toxic weed control** head on. The Waipuna system can substitute the use of conventional herbicides in all grass and weed applications. Applying water at a temperature of 95°C and covering with a foam made from biodegradable corn and coconut sugar literally boils weeds to death. It has also been found to be effective in removing graffiti & chewing gum and cleaning of public areas. The Waipuna Unit can be leased for a three year period. The foam concentrate works out to be cheaper than regular herbicide mixture and the cost of leasing the equipment can be seen as an invaluable investment in non-toxic weed control. This will send a strong message to your ratepayers that your council is taking human and environmental health seriously.

Greater Shepparton City Council has been using this non-toxic weed control method since 1996 and have found it to be an excellent weed and graffiti management tool. Outdoor staff have found the results to be as effective and rapid as conventional herbicide. Press releases and signage were used to inform the public about the foam 'snow' that is visible on the ground for up to 15 minutes after application.



Above: Before and after Waipuna spray. Right: Waipuna Unit in action

BREATH EASY IN THE OFFICE

Last year a NSW Government inquiry estimated that between 40—60% of office environments had unsatisfactory Indoor Air Quality (IAQ), contributing to ill health of occupants, also known as Sick Building Syndrome (SBS). One of the major contributing factors to poor IAQ is the use of products and materials that emit synthetic chemical pollutants (poor ventilation compounds this problem).

Synthetic air pollutants include a range of Volatile Organic Compounds (VOCs) used in paint solvent, textile treatment, wood glue, fire retardant, plastic and vinyl production, indoor pesticides and insecticides. VOCs can 'off-gas' into the indoor environment for up to five years. Chronic VOC exposure has been linked to cancer, birth defects, genetic damage, immune-deficiency, respiratory and nervous system disorders.

THE GOOD NEWS is that manufacturers are responding to market demand and are developing a range of non / low-emitting product alternatives. Many of these products are also biodegradable at end of life (some manufacturers offer end of life take-back) and contain renewable & recycled components.

- **Environmentally friendly wall panels** made from compressed wheat straw & recycled paper are 100% toxin free, provide noise & thermal insulation, strong & impact resistant, fire resistant.
- Pressed wood products, such as **low-emitting particle board** are made with lowest possible formaldehyde content. (Lowest rating (EO) is .5mg/litre or less—Japan has banned products with a higher than 1.5mg/l content)
- **Linoleum flooring, furniture linoleum & bulletin board** is made entirely from non-toxic renewable materials such as linseed oil, rosin, wood flour, limestone pigments and jute—its biodegradable and some say edible!! **Recycled cork flooring** contains 70% recycled cork and is bonded by a rubber polymer thus containing no harmful adhesives.
- **Non-toxic paints, timber treatments, adhesives & glues** are manufactured from plant based ingredients such as oils, waxes, balsams and naturally occurring pigments. All are 100% VOC free.
- **Fuji Xerox** and **Kyocera Mita** are now manufacturing office equipment from low - VOC emitting plastics and use water-based ink blocks which eliminate toner fumes & dust (a classified carcinogen)

Visit RMIT's Centre for Design **Ecospecifier** to find more non-toxic building materials and furnishings.

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A REGISTER OF TOXIC SUBSTANCES?

You can get details on a specific hazardous substances on [The Australian National Occupational Health & Safety Commission](#) search database. The substance information will let you know what type of exposure is harmful and should be avoided. A more user-friendly database for finding information on commonly used chemicals is [The Total Environment Centre's Toxin Information Index](#). Try searching for 'Toulene' - a common ingredient in solvents and adhesives- to gain an insight into the kind of information you can find in these databases.

CLEAN GREEN PRINTING MACHINE

Ever visited a print shop and left feeling high on the fumes? The toxic chemicals are potentially harmful for employees but also the end users and the environment!

Conventional printing discharges large amounts of silver, copper, chromium, solvents and other toxic compounds into the water while producing hard wastes such as photographic and residual chemicals, hydroxide sludge, dye-stuffs and cleaning materials soaked in solvents. The National Occupational Health and Safety Commission has recognised high levels of workplace related illness in the printing industry.

[Finsbury printers](#) decided that meeting current legislative requirements was not enough and have become one of the few Australian printing companies to implement the ISO 14001 Environmental Management System. This means they have reduced chemical, paper, water and energy wastage at every step of the process.

Finsbury employs the following toxicity and waste reduction measures:

- Digital proofing & computer to plate system eliminates the use of film and its associated chemistry from the pre-press process.
- The Green machine has a low alcohol use, low ink wastage and controlled liquid waste disposal.
- The vegetable oil based inks are VOC free.
- They have reduced use of all solvents and alcohol.
- Used solvents and chemicals are recycled for other industrial functions.
- All used and unused film & plates are separated to extract silver & aluminium for recycling.

And of course Finsbury will print on a range of recycled content paper and recycle all their own waste.

BUILD OUT THE PESTS AND GIVE TOXINS THE FLICK?

[Integrated Pest Management \(IPM\)](#) is the new buzz word for a common sense environmentally sensitive approach to pest management. [IPM consultants](#) use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property and the environment.

IPM can be applied to both indoor and outdoor pest control. It is based on a four - step approach:

1) Set Action Thresholds: Sighting a single pest does not always mean control is needed. The level at which pests become a threat is critical to guide pest control decisions.

2) Monitor and Identify Pests: Monitoring and identification removes the possibility that pesticides will be used when they are not really needed or that the wrong kind of pesticide will be used.

3) Prevention: In an outdoor environment this might mean selecting pest-resistant plant varieties and planting pest-free rootstock. In an indoor environment this might mean installing a [termite protection barrier](#) when building and thoroughly sealing all pest entry points.

(4) Control: Once monitoring, identification and action thresholds indicate that pest control is required, IPM is used to evaluate the proper control method both for effectiveness and risk. Effective, less *risky* controls are chosen, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical control, such as trapping or weeding. Targeted spraying of pesticides is then employed, broadcast spraying of non-specific pesticides is a last resort.

ACKNOWLEDGEMENTS

Much of the material in this newsletter has been sourced directly from the following documents or websites. [Environmentally Preferable Purchasing \(US EPA\)](#), [INFORM](#), [INFORM Cleaning for Health strategy](#), [Washington Toxics Coalition](#), [The Commonwealth of Massachusetts](#), [Minnesota Office of Environmental Assistance](#), [WorkCover Tasmania](#), [Environment Australia-Air Toxics](#),