



# For the sake of our waterways Think before you spray

## Avoid the following domestic garden pesticides

**Did you know that when you use pesticides\* on gardens, lawns, paths or driveways, some of that pesticide can end up in our waterways?**

Many gardeners would be horrified to learn that what they are using around their homes can have unintended consequences for water based ecosystems, sometimes many kilometres away.

Even miniscule amounts of pesticides, measured in parts per billion, can impact on aquatic life. (One part per billion is equivalent to one drop in the largest size petrol tanker).

Some pesticides remain active years after use and can attach themselves to soil particles, where they can become remobilised into the water column.

Arguably, the worst products are those such as 'Once a Year Path Weeders' which have long half lives, where pesticide residues can continue to wash away long after spraying.

Pesticides can end up in gutters and drains during rainfall or after hosing down. They can also end up in waterways after being illegally poured into drains. From there, the pollution can end up in creeks, rivers and wetlands.

*\*Pesticide is used as a broad term and refers to herbicides, insecticides, fungicides etc.*

Once in waterways, pesticides can impact on aquatic environments. Pesticides can cause deformities in aquatic wildlife and can weaken the immune system creatures such as fish and frogs, making them more prone to predation. Some pesticides kill aquatic plants, algae and zooplankton, the base of the food chain. Polluted stormwater may also impact on initiatives such as stormwater recycling. Who would want to use recycled water if it contains pesticides?

**Arguably, the worst products are those such as 'Once a Year Path Weeders' which have long half lives, where pesticide residues can continue to wash away long after spraying.**

Recent testing for waterways, particularly in Melbourne, has revealed that the herbicide Simazine is the most commonly detected urban pesticide, followed by Atrazine and then desisopropyl-atrazine (which is a metabolite of either Simazine or Atrazine). Atrazine, Simazine and its metabolite amount to ~41% of all detections in Melbourne waterways.

Metalaxyl, Imidacloprid, Terbutryn, Bifenthrin, Prometryn, Propiconazole, Dimethoate and MCPA have also been detected widely throughout Melbourne, with lower amounts of 20 other pesticides. MCPA and Triclopyr have also been recently detected in domestic water supplies in South Australia, with MCPA being detected in the Adelaide Water Supply. Other major cities have also recorded these and other pesticides in water sampling. It is highly likely to pesticides applied to home gardens are contributing to this environmental problem.

## What to look for

**The first step should be to avoid purchasing pesticides. Not only can the environment be impacted, but you and your family's health could also suffer.** There are a host of alternative methods of non-chemical pest control available to gardeners (see links on back page). If you buy a pesticide, read the label carefully. Under the product brand name, you should be able to see the words active constituents, usually in very small lettering. Read this carefully.

Generally speaking pesticides sold over the counter for gardening uses will be more diluted than those sold for agricultural production. Using pesticides not purchased from a hardware store or nursery should be avoided as they may be at higher strength, more suitable for intensive farming. This includes pesticides purchased online. Importantly, labels that come with the pesticide must be adhered to as they are the legal document governing usage. If a label prohibits use in gardens, never use it!

Some brands contain much more active ingredient than others. For instance brand names containing Glyphosate can contain up to 75 times more active constituent (e.g. Roundup PowerMax, Zero Weedkiller Superfast, Advance). Always opt for the brand names with the lowest active constituent. But best of all, refuse to use pesticides!

For information on pesticides, check out Pesticide Action Network: [www.pesticideinfo.org](http://www.pesticideinfo.org)

## How scientists determine the run off potential of pesticides

Assessing pesticide risk to waterways can be complicated and costly. Generally speaking, the following factors apply. A low Koc, high soil half life and high water solubility are important issues to understand.

See here for more information:

[www.npic.orst.edu/ingred/ppdmove.htm](http://www.npic.orst.edu/ingred/ppdmove.htm)

### Koc

Koc is the sorption co-efficient of a pesticide. It measures the tendency of a pesticide to bind to soil particles. *The lower the Koc, the less sorption potential and the higher risk of it washing off a site.*

### Soil Half Life

Measures how persistent a pesticide is in soil, before half of the pesticide is degraded. Non-persistent is <30 days, Moderately persistent is 30-100 days and 100 days is persistent.

### Water Solubility

The amount of pesticide that will dissolve in a known amount of water. The higher the water solubility score, the more likely it will be removed from the soil by runoff.

**The Australian pesticide map shows how extensive pesticide pollution is throughout Australia:** [www.pesticides.australianmap.net](http://www.pesticides.australianmap.net)

*Photo:* Gardiners Creek - Eastern Melbourne. Pesticides recently detected in surface water in Gardiners Creek include: Simazine, Atrazine, Imidacloprid, Terbutryn, Dimethoate, Metalaxyl, Azoxystrobin, Dieldrin and Desisopropylatrazine

The following information pertains to pesticides commonly sold over counter in hardware and supermarkets.

**Try and avoid these products at all times, as they have all been detected in urban waterways.**

*The most problematic are discussed first.*

## Simazine

Herbicide – Used on broadleaf weeds in vegetable and fruit crops, flowers, non-crop areas such as roads, footpaths, aerodromes etc. In a gardening application it is used as a once a year weeder for driveways. One of the most widely detected pesticides in water throughout Australia. Closely related to atrazine.

**Pesticide Movement Rating:** High.

**Soil Half Life:** 60 days. **Water Solubility:** 6.2. **Koc:** 130.

**Human Health:** Developmental/reproductive Toxin, suspected endocrine disruptor.

**Ecological Information:** Highly toxic to phytoplankton, Slightly toxic to crustaceans, fish, insects & zooplankton.

**Common Brand Names:** Path Weeder, Once a Year Path Weeder, Once a Year Path Weed Gun.

See: [www.foe.org.au/sites/default/files/simazinemelbourne.pdf](http://www.foe.org.au/sites/default/files/simazinemelbourne.pdf)

## Deisopropyl Atrazine

Herbicide Metabolite – Parent chemical is Atrazine or Simazine. If you use Simazine, this metabolite will most likely be created as a 'breakdown' by-product.

## Imidacloprid

Insecticide – Used against a number of insects on lawns, turf and some vegetable cropping. A neonicotinoid – very bad for bees!

**Pesticide Movement Rating:** High.

**Soil Half Life:** 997 days. **Water Solubility:** 514. **Koc:** 262.

**Ecological Information:** Very highly toxic to insects. Highly toxic to annelida. Moderately toxic to crustaceans. Slightly toxic to zooplankton.

**Common Brand Names:** Conquer Hose on Lawn Insecticide, Conquer, Confidor Garden Insecticide, Bug Kill, Lawn Grub and Beetle Kill, Confidor Concentrate Insecticide, Confidor Hose on Lawn Insecticide, Confidor Ready to Use Insecticide, Long Guard Garden and Lawn Insecticide, Complete Lawn Grub and Beetle Killer, Complete Bug Spray, Complete Lawn Insect Control (army worm, wireworm etc), Confidor Tablets, Confidor Lawn and Garden Insecticide, Confidor Insecticide, Rose Gun Advanced, QuickBayT

## Bifenthrin

Insecticide – Used against a variety of insects including termites. Most likely enters waterways as a result of termite treatment.

**Pesticide Movement Rating:** Extremely Low. **Soil Half Life:** 26 days. **Water Solubility:** 0.1. **Koc:** 240000.

**Human Health:** Possible carcinogen, developmental/reproductive toxin, suspected endocrine disruptor.

**Ecological Information:** Very highly toxic to fish, insects and zooplankton.

**Common Brand Names:** Blitzem Ant Flea and Tick Killer, Lawn Beetle & Grub Killa, Hose on Lawn Beetle and Grub Killer, Lawn Builder + Grub Insect Control, Antex Granules

## MCPA

Herbicide – Used to control broadleaf weeds (bindii, clover, oxalis, dandelions), Papsulam (grass) in lawns, turf and pathways. Sometimes used with Dicamba, Mecoprop and DSMA.

**Pesticide Movement Rating:** High. **Soil Half Life:** 25 days. **Water Solubility:** 866,000. **Koc:** 20.

**Human Health:** Possible carcinogen.

**Ecological Information:** Slightly toxic to amphibians, fish, molluscs and zooplankton.

**Common Brand Names:** Bin-Die Selective Lawn Killer – Buffalo and other weed, Multireed All Purpose Lawn Weedkiller, Kleen Lawn Selective, Bindi Clover Killer Hose On, Feed n Weed for Lawns Lawn and Turf, Bindii and Clover Kill, Bindi Kill for Lawns, Feed n Weed, Papsulum Kill, Buffalo Master Selective Weedkiller, Paspalum Nutgrass & Clover Killer, Lawnweeder Selective Weedkiller, Lawn Perfect Weeder, Buffalo Pro, Buffalo Pro Bindi and Broadleaf easy to hose on, Bindi and Clover Weedkiller, Double Action Weed n Feed, Weedkiller for Lawns, Weed Killer Buffalo Lawn, Bindi and Clover Killer Hose On, Weedkiller Buffalo on Lawns, Weedkiller for Lawns, Broadleaf Bindi and Clover Selective Herbicide, Dicamba-M

## Triclopyr

Herbicide – Used for control against a variety of woody weeds, particularly Blackberry. Will not kill grasses.

**Pesticide Movement Rating:** Very High. **Soil Half Life:** 46 days. **Water Solubility:** 2,100,000. **Koc:** 20.

**Ecological Information:** Slightly toxic to fish.

**Common Brand Names:** Tree and Blackberry Killer, Tree and Blackberry Killer, Apparent Woody Herbicide, Triclopyr 600 Herbicide

## Pirimicarb

Insecticide – Used primarily against aphids in vegetable and roses and chrysanthemums.

**Pesticide Movement Rating:** Moderate. **Soil Half Life:** 10 days. **Water Solubility:** 2700. **Koc:** 60.

**Human Health:** Carcinogen

**Ecological Information:** Cholinesterase inhibitor. Moderately toxic to fish. Slightly toxic to amphibians.

**Common Brand Names:** Pirimicarb WG

## Trifloxystrobin

Fungicide – Used to control fungal diseases of azaleas, roses and lawns, sometimes with Tebuconazole. Used to control powdery mildew in cucarbit vegetables. Used to control powdery mildew in peas.

**Pesticide Movement Rating:** ? **Soil Half Life:** 7 days. **Water Solubility:** 0.61. **Koc:** 2.377.

**Ecological Information:** Slightly toxic to fish.

**Common Brand Names:** Zaleton Fungicide

## Dicamba

Herbicide – Used to control broadleaf weeds in lawns, turf and pathways. Sometimes used with MCPA.

**Pesticide Movement Rating:** Very high. **Soil Half Life:** 14 days. **Water Solubility:** 400000. **Koc:** 2.

**Human Health:** Developmental/reproductive toxin.

**Ecological Information:** Slightly toxic to fish, zooplankton.

**Common Brand Names:** Multireed All Purpose Lawn Weedkiller, Kleen Lawn Selective, Bindi Clover Killer Hose On, Feed n Weed for Lawns Lawn and Turf, Bindii and Clover Kill, Bindi Kill for Lawns, Feed n Weed, Lawnweeder Selective Weedkiller, Lawn Perfect Weeder, Bindi and Clover Weedkiller, Double Action Weed n Feed, Weedkiller for Lawns, Bidd and Clover Killer Hose On, Weedkiller for Lawns, Broadleaf Bindi and Clover Selective Herbicide, Superway Dicamba-M

## Glyphosate

Herbicide – Broad spectrum, non-selective for annual aquatic and perennial weeds. Has not been detected often in Melbourne waterways.

**Pesticide Movement Rating:** Extremely low. **Soil Half Life:** 7 days. **Water Solubility:** 1,370,000. **Koc:** 24000.

**Human Health:** Probable carcinogen.

**Ecological Information:** Moderately toxic to crustaceans. Slightly toxic to amphibians, fish, zooplankton.

**Only High volume brand names listed:**  
Glyphosate 360 Weed Kill, Glyphosate Weed Kill, Concentrate Advance Roundup Weedkiller, Monsanto Roundup, Monsanto Advance Roundup, Resource Gardening Glypho 360 Weed Kill, Resource Gardening Glyphosate 360 Weedkiller, Roundup Power Max, Zero Weedkiller Superfast, Zero Weedkiller Super Concentrate, Monsanto Advance Roundup, Glyphosate Weed Kill, Apparent Glyphosate Green 360, Grass Valley Potassium Glyphosate 450

## Tebuconazole

Fungicide – Used to control fungal diseases of azaleas, roses and lawns, sometimes with Trifloxystrobin.

**Pesticide Movement Rating:** High. **Soil Half Life:** 597 days. **Water Solubility:** 32. **Koc:** 1000.

**Human Health:** Possible carcinogen, suspected endocrine disruptor.

**Ecological Information:** Highly toxic to zooplankton. Moderately toxic to fish.

**Common Brand Names:** Zaleton Fungicide

## Useful links

*Friends of the Earth does not recommend using pesticides in or around your homes. A host of alternative/chemical free solutions to weed, fungus and insect problems exist and are easily found on the web.*

[www.abc.net.au/gardening/stories/s2607562.htm](http://www.abc.net.au/gardening/stories/s2607562.htm)

[www.faq.gardenweb.com/discussions/2766799/organic-weed-control-methods---boiling-water](http://www.faq.gardenweb.com/discussions/2766799/organic-weed-control-methods---boiling-water)

[www.thisgardenisillegal.com/2006/05/7-deadly-homemade-weed-killers.html](http://www.thisgardenisillegal.com/2006/05/7-deadly-homemade-weed-killers.html)

For more contact Friends of the Earth  
[www.foe.org.au](http://www.foe.org.au) or [ajamis50@gmail.com](mailto:ajamis50@gmail.com)