

Atrazine Frequently Asked Questions

What is atrazine?

Atrazine is a selective systemic herbicide that can be used both before and after the emergence of a crop or tree to control grass and broadleaf weeds.

Is atrazine related to organochlorines?

No. Atrazine is a triazine herbicide, which is a different class of chemistry to organochlorine insecticides.

What is atrazine used for?

In Australia, atrazine is used to control weeds in summer crops such as sorghum, maize and sugarcane, and it is also widely used in Western Australia for control of weeds in lupin and Triazine Tolerant (TT) canola. Other uses include control of weeds in lucerne, grass seed, pasture, potatoes and timber plantations (pine and eucalypt). It is widely used for weed control in conservation tillage farming systems, in establishing seed beds prior to planting sorghum, or for maintaining fallow paddocks prior to planting wheat, peas or lupins¹.

Atrazine plays a role in the management of Parthenium weed, a weed of national significance in Queensland, Northern Territory and northern parts of New South Wales².

How does atrazine work?

Atrazine is mainly absorbed through the roots of weeds and then transported to the actively growing tips and leaves. Some absorption through leaves does occur. Atrazine kills the weed by inhibiting photosynthesis. This takes between 14 and 21 days.

How is it applied?

Atrazine can be applied by spraying onto the effected area either via a ground spray rig or agricultural aircraft. The size and topography of the area as well as the distance from waterways or other sensitive areas, type of crop, product label restrictions and available machinery all influence the decision as to what method is used.

How is the safety of atrazine assessed?

Atrazine has one of the most comprehensive and up-to-date safety information packages of any agricultural chemical. It has been assessed and approved for use in specific circumstances detailed on the product label by the Australian Government regulator of agricultural chemicals, the Australian Pesticides and Veterinary Medicines Authority (APVMA). This assessment has included the evaluation of specific scientific data in relation to impacts the product may have on:

- ♦ human health and safety, both to the users of the product plus those exposed to the product
- ♦ the environment, including safety to animals, non-target species of native plants and waterways
- ♦ the export of Australian crops, animals and animal produce.

Information on the registration and chemical review process can be obtained from the APVMA and is found at www.apvma.gov.au/publications/information_sheets.shtml

The APVMA released a second draft final report for atrazine in October 2004. This review found that amongst other things:

- ♦ 'atrazine poses no undue hazard to most users'³
- ♦ 'it appears unlikely that atrazine, when used in accordance with the label recommendations, will contaminate waterways to any extent likely to present a hazard to the environment, or to human beings through the consumption of contaminated drinking water'⁴
- ♦ 'it is unlikely that atrazine is impacting adversely on populations of Australian amphibians at current levels of exposure'⁵
- ♦ 'atrazine is unlikely to be an endocrine disruptor in humans'⁶
- ♦ on the weight of evidence from extensive animal studies, atrazine is not a human carcinogen⁷
- ♦ 'epidemiological data from human exposures also provide support for the absence of a carcinogenic potential for atrazine'⁸

Public comments on the draft review report were invited until February 2005. A copy of the draft report can be found at

http://www.apvma.gov.au/chemrev/atrazine_draftfinal2.pdf

In August 2007, after reviewing additional scientific research and consulting with community representatives, the APVMA concluded that "there is no scientific consensus on the issues raised" (toxicological, occupational exposure and environmental issues), noting that the Authority "has not seen any direct evidence that atrazine is a risk to human health.

In May 2008 the APVMA announced the conclusion of its review into atrazine which supports its continued registration and use in Australia subject to label changes to further reduce the risk of contamination of waterways.

Further information made in the announcement can be found at

<http://www.apvma.gov.au/chemrev/atrazine.shtml>

Does atrazine cause cancer in humans?

No.

The APVMA, US EPA⁹ and the International Agency for Research on Cancer (IARC, 1999) have all concluded that the mechanism acting in the animal studies that originally raised concern over a link to cancer were not relevant to humans. On the weight of evidence, atrazine is not a human carcinogen.

Atrazine has been used in many countries for over 40 years and extensive testing and monitoring during this time by many independent agencies has produced no evidence that atrazine causes cancer in humans.

Is atrazine hazardous to users?

When used in accordance with the label directions, there is no undue health risk to people using atrazine.

Does atrazine cause cancer in Tasmanian Devils?

There is no evidence to link atrazine to the disease affecting Tasmanian Devils.

Should a user follow the label instructions?

Yes. All users should read and comply with the label instructions before handling or using any registered product.

Label directions are set by the APVMA and exist to protect the public and environment.

Does atrazine stay in the soil?

The length of time a herbicide such as atrazine stays in the soil (termed persistence) is expressed as the period of time that it takes for 50 per cent of a herbicide to degrade (half-life).

Atrazine has a median half-life of 41 days¹⁰ depending on microbial populations, soil moisture levels, soil temperature, soil pH and farming practices.

What is the impact of atrazine on waterways?

The key factor that determines the likelihood of atrazine moving into waterways is the vulnerability of the soil to surface runoff. Very dry or wet soils that prevent the absorption (infiltration) of atrazine into the soil surface layer pose some of the greatest risks. Storm events also increase the risk of movement towards waterways.–

The potential risk to groundwater increases where soils are permeable and water tables are shallow. Permeable soils are usually sandy, but can include cracking clay soils and karstic terrain.¹¹.

However, the movement to ground or surface water can be managed with careful use of the product, and the product labels stipulate the following instructions to limit the movement of atrazine into waterways.

- ♦ DO NOT apply this product within 60 m of natural or impounded lakes or dams.
- ♦ DO NOT use in channels and drains.
- ♦ DO NOT apply under meteorological conditions or from spraying equipment which could be expected to cause drift of this product or spray mix onto adjacent areas, particularly wetlands, waterbodies or watercourses.
- ♦ DO NOT contaminate streams, rivers or waterways with the chemical or used containers. This product is very highly toxic to algae and aquatic macrophytes.

The APVMA review of atrazine has found that the following additional environmental protection statements should be added to all atrazine product labels –

- ♦ DO NOT apply product to any drainage line. Drainage lines show evidence of the action of periodically flowing water (for example, gravel, pebble, rock or sand bed, scour hole or nick point) and/or an incised channel at least 30 cm deep.
- ♦ DO NOT handle, mix, apply or conduct testing operations to areas susceptible to runoff where drainage results in rapid entry into waterways. These areas include roads, access tracks, snig tracks and compacted log dumps where no specific action has been taken to prevent runoff into waterways, or areas mounded perpendicular to the contour.

The use of Best Management Practices (BMPs) has a key role to play in reducing chemical losses in runoff, especially in forestry. BMPs are practices or combinations of practices, industrial techniques and good housekeeping principles determined to be the most effective and practical means of preventing or reducing the amount of non-point source pollution. If BMPs are followed for atrazine use, atrazine concentrations in rivers and in groundwater aquifers should be below the relevant water quality guidelines set for drinking water and for the protection of aquatic life.

Has atrazine been documented in the Australian food supply?

No¹².

Has atrazine been found in Australian drinking water?

Atrazine has rarely been found in Australian drinking water supplies. When atrazine has been detected it has been below the National Health & Medical Research Council Australian Drinking Water Guideline level of 0.1 µg/L.

What is the difference between the Drinking Water Guideline and the established Health Guideline of atrazine?

The drinking water guidelines are set at the minimum level of detection. That is to say, the target level of atrazine in drinking water is less than 0.1 µg/L.

The health guideline, however, refers to the level to which the occurrence of an additive in the drinking water may be consumed life-long without risk to health. In the case of atrazine, the “established health guideline” has recently been set at 40 µg/L. This health guideline is set by ‘The Joint Committee of the National Health and Medical Research Council’ and the ‘Agricultural and Resource Management Council of Australia and New Zealand’.¹³

Can atrazine be used for weed control in home gardens or for non-agricultural uses?

No.

The APVMA changed the approved uses in December 1998 and removed the use of atrazine in home gardens, lawns, golf courses, drains and other non-agricultural uses. These changes are reflected on the product label.

Is atrazine used in other countries?

Yes.

In the United States of America atrazine is registered for use to control weeds in crops such as sugarcane, corn, guava, wheat stubble, commercial and residential lawns, bermuda grass, forest plantings and golf courses.

In Canada atrazine can be used for the control of weeds in corn. There are restrictions on application rates and no aerial application is allowed.

In the European Union authorisation of the use of atrazine was withdrawn in September 2004. The reason for this decision was that available monitoring data did not fully address some of the regulators questions. However, limited uses have been retained until 2007 in some member states such as Ireland, the United Kingdom, Spain and Portugal.

Why is atrazine still registered for use in Australia given the overseas situation?

Atrazine is a valuable tool for Australian farmers.

The Australian government has recently completed its own independent review of atrazine, and has taken into account the reviews of peer countries including the European Union, the United States of America and Canada. The APVMA's conclusion is that if the controls specified on the product labels are followed, atrazine can be used safely and with low risk to the environment.

Are there other alternatives to using atrazine in Australia?

Farmers and foresters who use atrazine and follow best management and integrated weed management practices do so in a planned and co-ordinated manner.

Before selecting atrazine as the herbicide most suited to the weed problem, the user will need to make decisions based on the following issues:

- ♦ Have other non-chemical management options been considered?
- ♦ Is the use allowed and listed on the product label?
- ♦ Is atrazine in the appropriate mode of action group to prevent the build up of resistance? (see http://www.croplifeaustralia.org.au/default.asp?V_DOC_ID=1792 for more information on herbicide resistance strategies).
- ♦ Will another product address the weed problems more effectively?

Where can I find out more information?

Australian Pesticides and Veterinary Medicines Authority

www.apvma.gov.au

ph. 02 6272 5158

Commonwealth Department of Agriculture, Fisheries and Forestry

www.daff.gov.au

ph. 02 6272 3933

Commonwealth Department of Environment, Water, Heritage and the Arts

www.environment.gov.au

Ph. 02 6274 1111

Commonwealth Department of Health and Ageing

www.health.gov.au

State/Territory Government departments responsible for environment protection

State/Territory Government departments responsible for health

State/Territory Government departments responsible for primary industries

¹ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004.

² APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004.

³ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p. 9

⁴ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.10

⁵ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.11

⁶ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.11

⁷ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.11

⁸ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.12

⁹ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.17

¹⁰ British Crop Protection Council, *The e-Pesticide Manual, 13th edition, Version 3*.

¹¹ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.70

¹² APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p. 44

¹³ APVMA, *The reconsideration of approvals of the active constituent atrazine, registration of products containing atrazine, and their associated labels. Second draft final review report including additional assessments*, October 2004, p.17