

Regulation of 2,4-D Short-Chain Esters - Background Paper

Why is the APVMA reviewing 2,4-D?

The APVMA commenced a review of 2,4-D in 2003. This review was triggered by concerns over toxicological, occupational health and safety and environmental issues (including impacts on waterways, non-target animals and plants). The APVMA undertook interim regulatory action in October 2005 to strengthen spray-drift warning statements and published a [Preliminary Review Findings \(Environment\)](#) report on the ester forms of 2,4-D in April 2006.

Detailed information on the APVMA review process and the 2,4-D review is available on the APVMA website at apvma.gov.au/chemreview/2,4-D.shtml

What is the APVMA decision on 2,4-D High Volatile Esters?

The APVMA took a decision to suspend the registrations and label approvals of 24 products containing high volatile ester (HVE) forms of 2,4-D, namely the ethyl, butyl and isobutyl esters. These suspensions were in effect from 3 October 2006 until 29 April 2007.

The APVMA required active constituent approval holders to provide new data on the physico-chemical properties of high-volatile (short-chain) esters by end of February 2007. The APVMA has assessed the data provided and has decided to extend the suspension period until April 2009. Registrants are now required to generate and provide additional environmental fate and environmental effects data for assessment.

During the period of suspension new instructions for use apply to all products containing 2,4-D ethyl, butyl and isobutyl esters. These directions include:

- the creation of a seasonal no-spray window (only allowing use between 1 May and 31 August)
- removing certain uses (in sugar cane, aquatic applications, on rights-of-way and as a harvest aid and salvage spray in cereal crops)
- limiting maximum application rates to 800 g 2,4-D active equivalents per hectare
- specifying buffer zones; and
- imposing record keeping requirements.

Further information on these regulatory measures can be found on the APVMA website: www.apvma.gov.au/chemrev/2,4-D.shtml.

Why have 2,4-D HVEs been suspended?

The high volatile ester forms of 2,4-D have been suspended because they are likely to have unintended harmful effects on non-target vegetation (non-target crops and native vegetation) and/or aquatic organisms. The HVEs have a comparatively high vapour pressure and readily evaporate (volatilise) under typical Australian climatic conditions.

Even when applied correctly, the chemicals can evaporate several hours or days after application and enter the airstream as a vapour. This vapour can be carried in unpredictable directions and many kilometres by the wind and can settle on whatever is in its path. It is because the potential for unintended harm to non-target vegetation and aquatic organisms is so significant and cannot be mitigated that the APVMA has taken the decision to suspend registration of these products and issue new instructions for use.

Is volatilisation the same as spray drift?

No. The concepts are often confused. Spray drift refers to the physical movement of spray droplets (and their dried remnants) through the air from the nozzle to any off-target site at the time of application. Volatilisation is a process whereby chemical applied to a target site evaporates after application and enters the air stream as a vapour. Once in the airstream, the vapour can be blown in the wind and settle on crops and vegetation many kilometers away.

It is generally accepted that the risks associated with spray drift can be mitigated through the adoption of a number of measures. The risk associated with volatilisation of high-volatile

compounds such as 2,4-D ethyl ester, butyl ester and iso-butyl ester cannot be adequately mitigated because it can occur not only hours but also days after application under Australian climatic conditions.

Are there alternatives to 2,4-D HVEs?

There are many other herbicides registered for the same uses as the high volatile esters including several other forms of 2,4-D. The APVMA has been advised that the high volatile ester forms of 2,4-D are generally cheaper than the alternatives. However, the cost or benefit of chemicals is not a criterion on which the APVMA can make a decision.

The APVMA recognises that the availability of alternatives is important to users. The APVMA has been advised that some manufacturers have low volatile ester products available in the market place as replacement for the high volatile esters.

Will permits to use the 2,4-D HVEs be considered?

The APVMA will consider permits for use of product during the no spray-window in specific circumstances. Such permits will be contingent on relevant State and Territory authority assurance that risks to the environment and off-target crops are minimal.

What is the status of 2,4-D HVE internationally?

The high volatile forms of 2,4-D are no longer available in Europe and North America. Information suggests that they remain registered only in a very limited number of countries.

What is 2,4-D and what is it used for?

Products containing 2,4-D are used for control of broadleaf weeds in an extensive range of crops and non-cropping situations. Aerial, handheld and ground methods of application are used. Major agricultural uses of 2,4-D include pasture, stubble and fallow maintenance, cereal crops (including wheat, oats, barley, rye, triticale), grain crops (including sorghum, millet, maize) and oilseed crops (safflower, canola, rape).

There are a number of different forms of 2,4-D which are formulated in numerous end use products, primarily as a sole active ingredient but also in conjunction with other active ingredients. 2,4-D is commonly formulated as an amine salt in an aqueous solution or as an ester in an emulsifiable concentrate.

The ester forms of 2,4-D have the potential to volatilise, the lower molecular weight esters (2,4-D ethyl ester, butyl ester, and isobutyl ester) being more volatile than the high molecular weight (long chain) esters such as 2,4-D ethylhexyl ester and iso-octyl ester.