



Environmental  
Protection Authority  
*Te Mana Rauhi Taiao*

# Application for the Reassessment of a Group of Hazardous Substances

under Section 63 of the Hazardous Substances and New  
Organisms Act 1996

November 2012



APP201045 – Organophosphate and Carbamate Plant Protection Insecticides

Applicant: Chief Executive, Environmental Protection Authority

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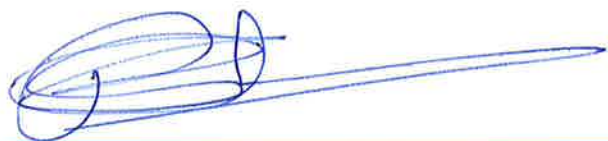
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Chief Executive, Environmental Protection Authority

Date

## Executive Summary

This application requests that the Environmental Protection Authority (EPA) reassess a group of organophosphate and carbamate (OPC) based insecticides used for plant protection purposes. OPCs are widely used for plant protection, veterinary medicines, public health (e.g. for pest control in hospitals, restaurants etc) and industrial purposes (e.g. for warehouse or industrial structure pest control).

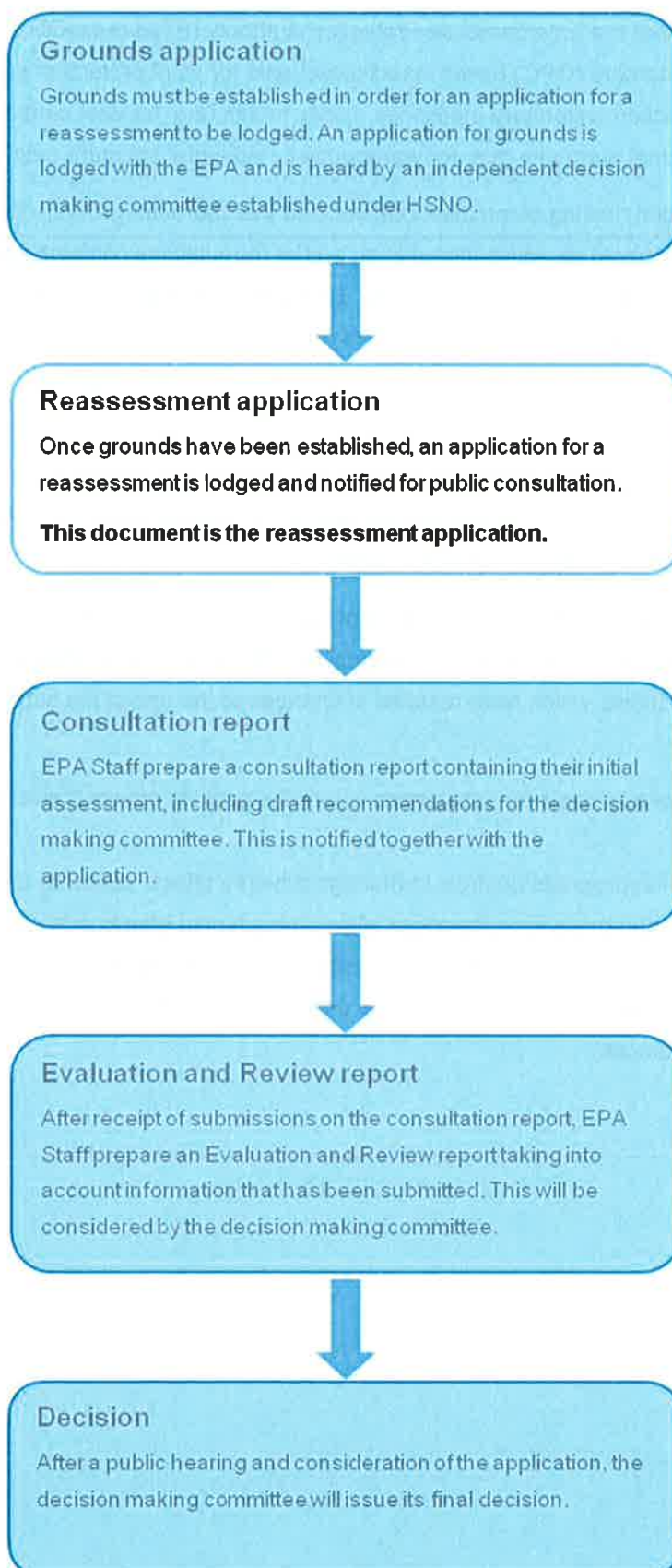
The EPA through its decision making committee, has decided that there are grounds to conduct a group reassessment of OPCs approved as active ingredients, and/or formulations containing OPCs, under the Hazardous Substances and New Organisms Act 1996. This was determined on the basis that there was significant new information available about the effects of the substances on human health and the environment which has led to many overseas regulators reconsidering their approvals in relation to these substances.

In the present application the Chief Executive of the EPA requests a reassessment of OPC active ingredients and formulations which are generally used as plant protection insecticides. These active ingredients and formulations were approved under HSNO.

It is recognised that OPC insecticides provide a range of important benefits for the agricultural industry. This reassessment should consider both the adverse and positive effects of these substances, and take into account the international studies which have resulted in changes to the use of the substances. The proposed outcomes are:

- Continuation of approvals for substances where the positive effects outweigh the adverse effects.
- Introduction of appropriate controls to manage adverse effects posed by specific substances.
- Revocation of approvals for substances where the adverse effects outweigh the positive effects and cannot be managed through the application of controls (including revocation of approvals for registered substances which are not being used, based on the inherent adverse effects posed by OPC substances).

## Overview of the reassessment process



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## Background

Under the Hazardous Substances and New Organisms Act 1996 (HSNO) the Chief Executive of the Environmental Protection Authority (EPA) has the ability to request that previously approved substances be reassessed. The EPA maintains a Chief Executive Initiated Reassessment (CEIR) list which is made up of substances where information suggests there may be a need to review their approvals based on the risks that these substances may present to human health and/or the environment. Public consultation has been undertaken on the CEIR List.

This document is an application to reassess a group of hazardous substances under HSNO. The applicant is the Chief Executive of the EPA. The substances to be reassessed are a group of organophosphate and carbamate active ingredients and formulations (OPCs) approved under HSNO. OPCs are chemicals used for plant protection, veterinary medicine, public health and industrial purposes. This application includes several OPCs which are on the CEIR List (*acephate, benomyl, carbaryl, chlorpyrifos, diazinon, dimethoate, fenamiphos, methamidophos, phorate and pirimiphos-methyl*). It requests a reassessment for the plant protection uses for these and other OPCs, as they are used in a similar way, on similar crops and have similar effects on human health and the environment.

### History of the group reassessment approach

In the past four years, New Zealand's Environmental Protection Authority (EPA) has reassessed three organophosphates. As a result the approval for methyl-parathion was revoked; the approval for a plant protection substance containing trichlorfon was phased out and all approvals for azinphos-methyl and formulations containing it have been or are currently being phased out. Applications for a further four organophosphates – dichlorvos, acephate, methamidophos and diazinon – were notified in 2010 and 2011.

In light of the information received on dichlorvos, acephate, methamidophos and diazinon, the Chief Executive saw merit in conducting a reassessment of the entire group of insecticides that have a similar mode of action to ensure a consistent approach to the control of OPCs in New Zealand. Time waivers put the applications for diazinon, acephate, methamidophos and dichlorvos on hold so that they can be included in this group application for reassessment. Submissions that were made on the applications for diazinon, acephate, methamidophos and dichlorvos will be considered by EPA Staff in their assessment of this group application (unless submitters request for them to be withdrawn).

The rationale for this group application is that:

- Dealing with substances which have similar effects in a single group reassessment will ensure that any risks that may arise from the substitution of one OPC substance for another are properly understood and managed.
- Substance-by-substance reassessments of OPC insecticides may lead to a gradual decrease in the available products. Reassessing these substances as a group will result in greater certainty for industry and government agencies about the tools available to them in future. Certainty about

future availability should help to direct research and development in alternative long-term solutions for pest control.

- An integrated approach will ensure consistent and effective controls to manage risks are put in place across the group of substances.
- The approach is a more efficient use of industry and EPA resources by reducing the number of reassessments being undertaken.
- Reassessing the group of OPC insecticides will allow the EPA to meet the needs of industry and ensure that there are tools for responding to biosecurity events while protecting the health and safety of people and the environment.

EPA staff have engaged with stakeholders including users of OPCs, government agencies, Māori and non-governmental organizations. Feedback during the consultation process has been supportive of a group reassessment approach..

### The engagement process

The engagement process for this application began in 2010/11 with the notification of the reassessments of four organophosphates (diazinon, acephate, methamidophos and dichlorvos). An overview of engagement activities undertaken between those notifications and this current application are captured in the table below.

Date	Activity
November 2010	Reassessment of dichlorvos notified (HRC08004)
January 2011	Reassessment of acephate and methamidophos notified (ERMA200399)
February 2011	Dichlorvos submissions received. Available at <a href="http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=HRC08004#">http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=HRC08004#</a>
March 2011	Acephate and methamidophos submissions received. Available at <a href="http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=ERMA200399#">http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=ERMA200399#</a>
June 2011	Reassessment of diazinon notified (ERMA200398)
July 2011	Diazinon submissions received. Available at <a href="http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=ERMA200398#">http://www.epa.govt.nz/search-databases/Pages/applications-details.aspx?applID=ERMA200398#</a>
Aug 2011-Oct 2012	Contact with stakeholders including phone calls, field trips, presentations and meetings with manufacturers, suppliers, industry representatives, non-governmental organisations, interest groups, Regional Councils, government departments, users, Māori and the public
November 2011	Call for Information from stakeholders circulated

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May 2012	36 Sector Assessments circulated for feedback
October 2012	Grounds for reassessment of 32 organophosphates and carbamates approved
November 2012	The current reassessment of 29 organophosphates and carbamates notified (APP201045)

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### Grounds for this reassessment

In order to proceed with a reassessment, there must be sufficient grounds to reassess the substances.

The EPA through its decision making committee, has decided that there are grounds to reassess OPCs approved as active ingredients under HSNO, as well as formulations containing these active ingredients. The grounds are that there is significant new information now available on the substances.

The reassessment is being conducted in two stages:

- Substances registered for use as plant protection insecticides (not including seed treatments or slug and snail pellets)
- Substances registered as veterinary medicines or for other uses

In total, grounds have been established for 36 organophosphates and carbamates and formulations containing these active ingredients. 29 OPCs are included in this reassessment application.

## Application for reassessment

This application relates to 29 OPC's. The application includes:

- Twelve active ingredients and/or their formulations not approved for use in NZ (or approved for containment and export only). These substances either have HSNO approvals as active ingredients only, or are not included in products that are registered under the ACVM Act as plant protection products in New Zealand (*Bendiocarb, Benomyl, Carbofuran, Carbosulfan, Chlorpyrifos-methyl, Dichlofention, Ethion, Fampur, Isazofos, Omethoate, Phoxim, Pyrazophos*).
- Nine active ingredients and the formulations containing them for which all approvals relate to plant protection (*Acephate, Dimethoate, Fenamiphos, Methamidophos, Oxamyl, Phorate, Pirimicarb, Prothiofos and Terbufos*).
- Eight substances included in formulations that are only used for plant protection, but are also included in other formulations used more broadly than plant protection. Only the plant protection formulations for these active ingredients are included in this application. The active ingredients themselves will be considered when the other uses of the active ingredients are assessed (*Carbaryl, Chlorpyrifos, Diazinon, Dichlorvos, Fenitrothion, Maldison (Malathion), Methomyl and Pirimiphos-methyl*)

The 17 active ingredients (and/or formulations containing these active ingredients) approved for use in NZ and registered in products are used for plant protection purposes other than seed treatments and molluscicides.

Where these substances are also used for other purposes; then the other uses will be the subject of a further application.

### Unequivocal identification of the substances

A full list of the active ingredients and formulations with their approval numbers is listed in Appendix A.

### The physical properties of the substances

Substances containing OPCs come in a range of physical forms including formulations for mixing with liquids (e.g. wettable powders, soluble concentrates, emulsifiable concentrates and suspension concentrates), granules and powders. A small number of formulations are aerosols. Dichlorvos is also impregnated into plastic strips.

Some of the substances have physical hazards. All are toxic and ecotoxic. The hazard classifications for each of the substance approvals are listed in Appendix A. Explanation of the classifications can be found at: <http://www.epa.govt.nz/hazardous-substances/about/what-is-hs/Pages/List-of-classifications.aspx>

## Possible adverse effects of OPCs

OPCs affect the nervous system through the inhibition of the enzyme acetylcholinesterase.

Acetylcholinesterase breaks down acetylcholine, a chemical which transmits nerve signals. Inhibition of acetylcholinesterase results in accumulation of acetylcholine, leading to overstimulation of the nervous system.

For organophosphates, even minor effects on enzyme levels are potentially of concern as it can take up to a few months for normal enzyme function to be restored. This means that a further exposure within this time could lead to a further reduction in cholinesterase enzyme levels, potentially resulting in harmful effects.

Enzyme inhibition by carbamates is more rapidly reversible and so repeat exposures to organophosphate insecticides are generally of greater concern from a human health perspective than carbamate insecticides.

### Acute poisoning in humans

The acute effects of exposure to high levels of OPCs are well established from animal studies and numerous human poisoning incidents.

Short term exposure can result in symptoms including increased sweating and salivation, dizziness, fatigue, runny nose or eyes, nausea, intestinal discomfort, confusion and changes in heart rate. At high levels of exposure more severe effects such as paralysis, seizures, loss of consciousness and death may occur.

### Longer term health effects

As well as acute toxicity from OPC exposure, concerns have been raised over the potential for longer term adverse health effects. These include the potential for chronic health effects following acute poisoning, and for effects as a result of chronic exposure to low levels that do not cause the clinical signs or symptoms of poisoning. Animal and epidemiology studies have reported associations between acute and/or chronic OPC exposure and a number of adverse effects. Examples of the type of effects that have been raised as concerns are:

- Neuropsychological effects e.g. on attention, perception and memory
- Effects on motor function and muscle coordination
- Psychiatric illness e.g. anxiety and depression
- Parkinson's Disease
- Effects on the development of the nervous system following pre-natal or childhood exposure
- Increased risk of cancer
- Increased risk of obesity and diabetes

Research on these aspects is ongoing and it has not yet been possible to draw firm conclusions on whether OPCs really do cause any of these effects.

To date, international regulatory bodies have considered the critical human health effects of OPCs to be neurotoxicity mediated by inhibition of the acetylcholinesterase enzyme, and their risk assessments have

been based on this endpoint. This application has taken the same approach and used the values set by international regulators.

### **Environmental effects**

OPCs are also harmful to the environment. They are very toxic to the aquatic environment and to terrestrial invertebrates (e.g. bees). In general these substances are also toxic to birds. Acute and chronic risks for fish, aquatic invertebrates and birds have been identified for many of the OPCs under review. OPCs tend not to persist or bioaccumulate in the environment.

Incidents of harmful effects on wildlife due to OPCs have been reported overseas. In the USA there have been numerous incidents of bird, fish and/or bee kills associated with a range of OPCs including chlorpyrifos, dichlorvos, diazinon, fenamiphos, phorate, terbufos and carbary.

In New Zealand, an incident of indigenous gamebird deaths in the Westport region was reported in April 2012. Diazinon had been sprayed aurally on neighbouring farmland, and a pathology report confirmed that the deaths were a result of diazinon poisoning. This incident was reported to the EPA by Fish and Game New Zealand, who also stated that they have received numerous complaints over the past decade regarding the poisoning of waterfowl following treatment for Grass grub, a pest commonly controlled with organophosphates.

## Use of the substances

In New Zealand, the approval to import and apply over 30 OPCs were transferred from former chemical management regimes to HSNO in 2004. OPCs are applied for plant protection purposes on a variety of crops including the following:

Arable grain and seed	Kumara
Asparagus	Lettuce and salad leaf
Avocado	Maize
Beans and peas	Mushrooms
Berryfruit (i.e. blueberries, blackcurrants and strawberries)	Onions
Brassicas	Ornamentals
Capsicum	Passion fruit
Carrots and parsnips	Pasture
Citrus	Persimmons
Cucurbits	Pipfruit
Cymbidiums	Potatoes
Feijoas	Stonefruit
Field tomatoes	Sweetcorn
Grapes	Tamarillo
Greenhouse crops	Turf
Home garden	Sweetcorn
Kiwifruit	

They are also applied for biosecurity plant protection purposes including treatment of imported root stocks, and control of pest species new to New Zealand.

## Methods of disposal of the substance

The preferred option for disposal of the substance, is by its use as per the label instructions.

If disposal by use is not possible, the substance may be disposed of in accordance with the Hazardous substances (Disposal) Regulations 2001.

Empty containers should be recycled using the Agrecovery or a similar scheme.

## Relevant reassessments from other jurisdictions

Fourteen of the substances included in this reassessment are no longer approved in the United States, Canada and the European Union, and seven of these are also not approved in Australia. Many other substances have had their approvals restricted by overseas regulators as a result of concerns over their effects on human health and/or the environment. The international status of the 29 OPCs included in this application, including concerns raised by overseas regulators about their effects, is listed in Appendix B.

Examples of overseas regulators' concerns which have led to restrictions on uses or revocations of approvals include:

- Pest Management Regulatory Agency (PMRA), Canada: Human health risks from residential, vegetable and turf use of **carbaryl**. This resulted in the phase-out of domestic class products and residential applications of commercial products.
- United States Environmental Protection Agency (US EPA): Risks to small mammals, birds and fish from **chlorpyrifos** were addressed by reducing application rates, frequencies and total quantities applied per season. Set back areas from water bodies (buffer zones) were also applied.
- European Union (EU): The estimated operator exposure from using **fenitrothion** exceeds the Acceptable Operator Exposure Level (AOEL) in all outdoor scenarios except for field crop spraying with the use of personal protective equipment. Exposure estimates for re-entry workers exceed the AOEL for all activities except harvesting in greenhouses, and exposure estimates for bystanders exceed the AOEL for air assisted spraying in grapes. As a result fenitrothion is not an approved active ingredient in Europe.
- Australian Pesticides and Veterinary Medicines Authority (APVMA): Concerns were identified relating to operator exposures to **dichlorvos**, and for exposure relating to some domestic applications. These resulted in cancellation of the registration of one home garden product, deletion of some specific uses (including use as a grain fumigant) and requirements for revised product labels to include new safety instructions.

## Appendix A: Active ingredients and substances included in the scope of the present reassessment

Table 1: Active ingredients and substances approved under the HSNO Act included in the present reassessment. Hazard classifications assigned to the approvals are also listed.

Substance description	HSNO Approval Number	Hazard Classifications <sup>1</sup>
<b>Acephate (active)</b>	<b>HSR002724</b>	6.1D (All), 6.1D (O), 6.7B , 6.8B , 6.9A (All), 6.9A (I), 6.9A (O), 6.9B (D), 9.1D (All), 9.1D (C), 9.1D (F), 9.3B , 9.4A
Soluble concentrate containing 195 g/litre acephate. Also contains ethylene glycol	HSR000154	6.1D (All), 6.1D (O), 6.3A , 6.4A , 6.7B , 6.8A , 6.8C , 6.9A (All), 9.3C , 9.4B
Water soluble powder containing 750 - 970 g/kg acephate	HSR000155	6.1D (All), 6.1D (O), 6.7B , 6.8B , 6.9A (All), 9.1D (All), 9.1D (C), 9.3B , 9.4A
Emulsifiable concentrate containing 45 g/litre acephate and 8.8 g/litre myclobutanil	HSR000156	6.7B , 6.8B , 6.9B (All), 9.1C (All), 9.1C (C), 9.1C (F), 9.4B
Emulsifiable concentrate containing 45 g/litre acephate and 39 g/litre triforine	HSR000157	3.1D , 6.1E (All), 6.1E (O), 6.3A , 6.4A , 6.7B , 6.8A , 6.8C , 6.9B (All), 9.1D (All), 9.1D (C), 9.3C , 9.4B
Emulsifiable concentrate containing 22.5 g/litre acephate and 19.5 g/litre triforine	HSR000158	6.3A , 6.4A , 6.7B , 6.8A , 6.9B (All), 9.3C , 9.4C
<b>Substances containing bendiocarb as the active ingredient</b>	-	
Wettable powder containing 800 g/kg bendiocarb	HSR000451	6.1B (All), 6.1B (O), 6.1C (I), 6.1D (D), 6.9A (All), 9.1A (All), 9.1A (F), 9.3A , 9.4A
<b>Benomyl (active)</b>	<b>HSR002816</b>	
Wettable powder containing 500 g/kg benomyl	HSR000347	6.3B , 6.4A , 6.5B , 6.6A , 6.8A , 6.9B (All), 6.9B (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B
<b>Substances containing carbaryl as the active ingredient</b>	-	
Dustable powder containing 2 g/kg carbaryl, 20 g/kg maldison and 5 g/kg rotenone	HSR000185	6.7B , 6.8B , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.3C , 9.4C
Wettable powder containing 150 - 200 g/kg carbaryl and 150 - 200 g/kg mancozeb	HSR007696	6.1D (All), 6.1D (O), 6.4A , 6.5B , 6.7B , 6.9B (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1B (F), 9.2C , 9.3C , 9.4B
Suspension concentrate containing 100 g/litre carbaryl	HSR000441	6.1D (All), 6.1D (O), 6.1E (I), 6.4A , 6.7B , 6.9B (All), 9.1B (All), 9.1B (C), 9.1B (F), 9.2D , 9.3C , 9.4B

<sup>1</sup> An explanation of the hazard classification codes under HSNO can be found at <http://www.epa.govt.nz/hazardous-substances/about/what-is-hs/Pages/List-of-classifications.aspx>

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<b>Substance description</b>	<b>HSNO Approval Number</b>	<b>Hazard Classifications<sup>1</sup></b>
Suspension concentrate containing 500 g/litre carbaryl (Substance A)	HSR000450	6.1C (All), 6.1C (O), 6.1E (D), 6.5B , 6.7B , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3B , 9.4A
Wettable powder containing 115 g/kg carbaryl, 250 g/kg copper as copper oxychloride and 284 g/kg sulphur	HSR000594	6.1D (All), 6.1D (O), 6.4A , 6.5B , 6.7B , 6.9B (All), 9.1A (All), 9.1A (C), 9.2D , 9.3C , 9.4B
Suspension concentrate containing 500 g/litre carbaryl (Substance C)	HSR000680	6.1C (All), 6.1C (O), 6.1E (D), 6.7B , 6.9B (All), 9.1A (All), 9.1A (F), 9.2B , 9.3B , 9.4A
Suspension concentrate containing 500 g/litre carbaryl (Substance B)	HSR000681	6.1C (All), 6.1C (O), 6.1E (D), 6.4A , 6.7B , 6.9B (All), 9.1A (All), 9.1A (F), 9.2B , 9.3B , 9.4A
<b>Carbofuran (active)</b>	<b>HSR002928</b>	<b>6.1A (All), 6.1A (O), 6.1B (I), 6.1C (D), 6.3B, 6.4A , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4A</b>
<b>Carbosulfan (active)</b>	<b>HSR003451</b>	<b>6.1B (All), 6.1B (I), 6.1C (D), 6.1C (O), 6.3B , 6.4A , 6.5B , 6.8B , 6.9B (All), 6.9B (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.1C (A), 9.3A , 9.4A</b>
Granular material containing 100 g/kg carbosulfan	HSR000696	6.1D (All), 6.1D (I), 6.1D (O), 6.1E (D), 6.4A , 6.5B , 6.8B , 6.9B (All), 9.1A (All), 9.1A (F), 9.3B , 9.4B
<b>Substances containing chlorpyrifos as the active ingredient</b>		
Granular material containing 100 g/kg chlorpyrifos	HSR000163	6.9B (All), 9.1A (All), 9.1A (F), 9.3C , 9.4A
Wettable powder containing 500 g/kg chlorpyrifos	HSR000165	6.1C (All), 6.1C (D), 6.1C (O), 6.3B , 6.4A , 6.9A (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Granular material containing 50 g/kg chlorpyrifos. Also contains xylene	HSR000170	6.1D (All), 6.1D (O), 6.1E (D), 6.3B , 6.4A , 6.8B , 6.9B (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2C , 9.3B , 9.4A
Emulsifiable concentrate containing 480 g/litre chlorpyrifos	HSR000171	3.1C , 6.1C (All), 6.1C (O), 6.1D (I), 6.1E (D), 6.3B , 6.4A , 6.9A (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Wettable powder containing 56.25 g/kg carbendazim, 93.75 g/kg chlorpyrifos and 400 g/kg mancozeb	HSR000173	6.1D (All), 6.1D (D), 6.1D (O), 6.4A , 6.5B , 6.6A , 6.8A , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2C , 9.3B , 9.4A
Emulsifiable concentrate containing 450 - 500 g/litre chlorpyrifos	HSR000224	3.1D , 6.1C (All), 6.1C (D), 6.1C (O), 6.3B , 6.4A , 6.9A (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A

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<b>Substance description</b>	<b>HSNO Approval Number</b>	<b>Hazard Classifications<sup>1</sup></b>
Emulsifiable concentrate containing 480 g/litre chlorpyrifos. Also contains xylene	HSR000225	3.1C , 6.1C (All), 6.1C (D), 6.1C (O), 6.3A , 6.4A , 6.8B , 6.9A (All), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Solid containing 50 - 55 g/kg chlorpyrifos	HSR007698	6.1D (All), 6.9B (All), 9.1A (All), 9.2C , 9.3B , 9.4A
Liquid containing 250 - 350 g/litre chlorpyrifos	HSR100298	6.1C (All), 6.1C (D), 6.1C (O), 6.3B, 6.4A, 6.9A (All), 6.9A (O), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Rampage	HSR100018	6.1C (All), 6.1C (D), 6.1D (O), 6.3B , 6.4A , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 9.1A (All), 9.1A (M), 9.2C , 9.3B , 9.4A
<b>Chlorpyrifos-methyl (active)</b>	<b>HSR004064</b>	<b>6.1D (All), 6.1D (D), 6.1D (O), 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3C, 9.4A</b>
Liquid containing 500 - 600 g/litre chlorpyrifos methyl	HSR100326	6.1E (All), 6.1E (D), 6.1E (O), 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.1B (A), 9.4A
Liquid containing 400 - 500 g/litre chlorpyrifos methyl	HSR100299	6.1E (All), 6.1E (O), 6.9A (All), 6.9A (O), 8.3A , 9.1A (All), 9.1A (C), 9.1A (F), 9.1B (A), 9.4A
<b>Substances containing diazinon as the active ingredient</b>	-	
Emulsifiable concentrate containing 800 g/litre diazinon (Substance A)	HSR000174	3.1C , 6.1C (All), 6.1C (D), 6.1D (I), 6.1D (O), 6.3A , 6.4A , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.1C (A), 9.2D , 9.3A , 9.4A
Granular material containing 200 g/kg diazinon	HSR000175	6.1D (All), 6.1D (O), 6.1E (D), 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2D , 9.3A , 9.4A
Granular material containing 50 - 54 g/kg diazinon	HSR000176	6.8B , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4A
Wettable powder containing 500 g/kg of diazinon	HSR000177	6.1D (All), 6.1D (D), 6.1D (I), 6.1D (O), 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2D , 9.3A , 9.4A
Emulsifiable concentrate containing 200 g/litre diazinon	HSR000178	3.1C , 6.1D (All), 6.1D (D), 6.1D (I), 6.1D (O), 6.3B , 6.4A , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4A
Emulsifiable concentrate containing 500 g/litre diazinon and 25 g/litre permethrin	HSR000179	3.1C , 6.1D (All), 6.1D (D), 6.1D (I), 6.1D (O), 6.3B , 6.4A , 6.5A , 6.5B , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2D , 9.3A , 9.4A

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<b>Substance description</b>	<b>HSNO Approval Number</b>	<b>Hazard Classifications<sup>1</sup></b>
Emulsion (oil in water) containing 600 g/litre diazinon	HSR007700	6.1D (All), 6.1D (D), 6.1D (O), 6.5B , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.2D , 9.3A , 9.4A
Emulsion (oil in water) containing 500 - 600 g/litre diazinon	HSR000180	6.1D (All), 6.1D (D), 6.1D (I), 6.1D (O), 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.2D , 9.3A , 9.4A
Emulsifiable concentrate containing 800 g/litre diazinon (Substance B)	HSR000181	3.1D , 6.1C (All), 6.1C (D), 6.1D (I), 6.1D (O), 6.3A , 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.2D , 9.3A , 9.4A
Emulsifiable concentrate containing 95 g/litre diazinon	HSR000182	6.1D (All), 6.1D (D), 6.1E (O), 6.3A , 6.4A , 6.5B , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.3A , 9.4A
Emulsifiable concentrate containing 800 g/litre diazinon (Substance C)	HSR000183	6.1C (All), 6.1C (D), 6.1D (I), 6.1D (O), 6.3A , 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.2D , 9.3A , 9.4A
Emulsifiable concentrate containing 600 g/litre diazinon	HSR000184	3.1D , 6.1D (All), 6.1D (D), 6.1D (O), 6.3B , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.2D , 9.3A , 9.4A
Diazamax 800	HSR002481	3.1D , 6.1C (All), 6.1C (D), 6.1D (I), 6.1D (O), 6.3B , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.2D , 9.3A , 9.4A
<b>Dichlofenthion (active)</b>	<b>HSR003685</b>	<b>6.1C (All), 6.1C (O), 6.3A , 6.5B , 6.9B (All), 6.9B (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3B</b>
<b>Substances containing dichlorvos as the active ingredient</b>	-	
DDVP insecticide strip	HSR000126	6.1B (All), 6.1B (I), 6.1D (O), 6.1E (D), 6.5B , 6.7B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (M), 9.3A , 9.4A
J72.03	HSR001757	6.1A (All), 6.1A (I), 6.1C (D), 6.5B , 6.7B , 6.9A (All), 6.9A (I), 6.9A (O), 9.1A (All), 9.1A (C), 9.1B (F), 9.1D (A), 9.3A , 9.4B
<b>Dimethoate (active)</b>	<b>HSR002841</b>	
Emulsifiable concentrate containing 400 g/litre dimethoate	HSR000188	3.1C , 6.1D (All), 6.1D (O), 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Emulsifiable concentrate containing 100 g/litre dimethoate	HSR000191	3.1D , 6.1D (All), 6.1D (O), 6.3B , 6.4A , 6.8B , 6.9A (All), 9.1B (All), 9.1B (C), 9.1B (F), 9.2C , 9.3B , 9.4A
Emulsifiable concentrate containing 500 g/litre	HSR000193	3.1C , 6.1C (All), 6.1C (O), 6.1D (D), 6.3B ,

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dimethoate		6.4A , 6.8A , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Perfekthion S-1	HSR000965	3.1C , 6.1C (All), 6.1C (O), 6.1D (D), 6.4A , 6.8B , 6.9A (All), 6.9A (O), 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Danadim	HSR100129	3.1C , 6.1C (All), 6.1C (O), 6.5A , 6.5B , 6.8B , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 9.1A (M), 9.1B (All), 9.1B (C), 9.2B , 9.3A , 9.4A
<b>Ethion (active)</b>	<b>HSR002985</b>	<b>6.1C (All), 6.1C (D), 6.1C (O), 9.3B</b>
<b>Famphur (active)</b>	<b>HSR002847</b>	<b>6.1B (All), 6.1B (O), 6.1C (D), 6.3B , 6.4A , 6.9A (All), 6.9A (O), 9.3A</b>
<b>Substances containing fenamiphos as the active ingredient</b>		
Emulsifiable concentrate containing 400 g/litre fenamiphos	HSR000198	3.1C , 6.1B (All), 6.1B (O), 6.1C (D), 6.3A , 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1D (F), 9.2B , 9.3A , 9.4A
Nemacur 400EC	HSR000956	3.1D , 6.1B (All), 6.1B (O), 6.1C (D), 6.1C (I), 6.3A , 6.4A , 6.9A (All), 6.9A (O), 9.1A (All), 9.2B , 9.3A , 9.4A
Fenafos 400	HSR002480	3.1D , 6.1B (All), 6.1B (O), 6.1C (D), 6.1D (I), 6.3B , 6.4A , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4A
Nematak 400EC	HSR007769	3.1C , 6.1B (All), 6.1B (O), 6.1C (D), 6.1D (I), 6.3B , 6.4A , 6.9A (All), 6.9A (O), 9.1A (All), 9.2B , 9.3A , 9.4A
Nemacur CS	HSR007894	6.1B (All), 6.1B (O), 6.1D (D), 6.1D (I), 6.4A , 6.9A (All), 9.1A (All), 9.2B , 9.3A , 9.4A
Canyon	HSR100282	3.1C , 6.1B (All), 6.1B (O), 6.1C (D), 6.1D (I), 6.3B , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 8.3A , 9.1A (All), 9.1A (C), 9.1A (F), 9.1A (M), 9.1B (A), 9.2B , 9.3A , 9.4A
<b>Substances containing fenitrothion as the active ingredient</b>		
Emulsifiable concentrate containing 1000 g/litre fenitrothion	HSR000201	3.1C , 6.1C (All), 6.1C (O), 6.1E (D), 6.3A , 6.5B , 6.8B , 6.9A (All), 8.3A , 9.1A (A), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4A

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<b>Substance description</b>	<b>HSNO Approval Number</b>	<b>Hazard Classifications<sup>1</sup></b>
<b>Isazofos (active)</b>	<b>HSR002857</b>	<b>6.1B (All), 6.1B (D), 6.1B (I), 6.1B (O), 6.5B , 6.6B , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4C</b>
<b>Substances containing maldison (malathion) as the active ingredient</b>		
Dustable powder containing 2 g/kg carbaryl, 20 g/kg maldison and 5 g/kg rotenone	HSR000185	6.7B , 6.8B , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.3C , 9.4C
Technical concentrate containing 950 g/litre maldison	HSR000189	6.1D (All), 6.1D (O), 6.1E (D), 6.1E (I), 6.3B , 6.4A , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3B , 9.4A
Emulsifiable concentrate containing 500 g/litre maldison	HSR000190	3.1C , 6.1D (All), 6.1D (O), 6.1E (D), 6.3B , 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.3B , 9.4A
Malathion-treated wheat	HSR100407	6.8B , 6.9B (All), 6.9B (O), 9.1A (All), 9.1A (M), 9.4B
<b>Methamidophos (active)</b>	<b>HSR002863</b>	<b>6.1B (All), 6.1B (D), 6.1B (I), 6.1B (O), 6.4A , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 9.1A (All), 9.1A (C), 9.1D (F), 9.2B , 9.3A , 9.4A</b>
Soluble concentrate containing 600 g/litre methamidophos (Substance B)	HSR000203	3.1C , 6.1B (All), 6.1B (D), 6.1B (I), 6.1B (O), 6.4A , 6.9A (All), 6.9A (D), 6.9A (I), 6.9A (O), 9.1A (All), 9.1A (C), 9.1D (F), 9.2B , 9.3A , 9.4A
Soluble concentrate containing 600 g/litre methamidophos (Substance A)	HSR000226	3.1D , 6.1B (All), 6.1B (D), 6.1B (I), 6.1B (O), 6.4A , 6.9A (All), 9.1A (All), 9.1A (C), 9.1D (F), 9.2B , 9.3A , 9.4A
<b>Substances containing methomyl as the active ingredient</b>		
Soluble concentrate containing 200 g/litre methomyl	HSR000584	3.1B , 6.1C (All), 6.1C (O), 6.1D (I), 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1D (F), 9.2B , 9.3B , 9.4A
Armourcrop Insecticide	HSR007761	6.1D (All), 6.1D (O), 6.4A , 6.8B , 6.9B (All), 6.9B (I), 6.9B (O), 9.1A (All), 9.1A (C), 9.2C , 9.3C , 9.4B
<b>Omethoate (active)</b>	<b>HSR002842</b>	<b>6.1B (All), 6.1B (O), 6.1C (D), 6.4A , 6.8A , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.2D , 9.3A , 9.4A</b>
<b>Substances containing oxamyl as the active ingredient</b>		
Soluble concentrate containing 240 g/litre oxamyl	HSR000791	3.1C , 6.1B (All), 6.1B (O), 6.4A , 6.8B , 6.9A (All), 9.1B (All), 9.1B (C), 9.2B , 9.3A , 9.4A

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Substance description	HSNO Approval Number	Hazard Classifications <sup>1</sup>
<b>Phorate (active)</b>	<b>HSR003058</b>	<b>6.1A (All), 6.1A (D), 6.1A (I), 6.1A (O), 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.1B (A), 9.2A , 9.3A , 9.4A</b>
Granular product containing 200 g/kg phorate	HSR000210	6.1A (All), 6.1A (D), 6.1B (O), 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.2B , 9.3A , 9.4B
<b>Phoxim (active)</b>	<b>HSR003195</b>	<b>6.1D (All), 6.1D (O), 9.1A (All), 9.1A (C), 9.1A (F), 9.3A</b>
Emulsifiable concentrate containing 500 g/litre phoxim	HSR000217	3.1C , 6.1D (All), 6.1D (O), 6.3A , 8.3A , 9.1A (All), 9.1A (F), 9.3A
<b>Substances containing pirimicarb as the active ingredient</b>		
Water dispersible granule containing 500 g/kg pirimicarb (Substance B)	HSR000703	6.1C (All), 6.1C (I), 6.1C (O), 6.3B , 6.4A , 6.5B , 6.9B (All), 9.1A (All), 9.1A (C), 9.3A , 9.4C
Water dispersible granule containing 500 g/kg pirimicarb (Substance A)	HSR000704	6.1C (All), 6.1C (I), 6.1C (O), 6.3B , 6.4A , 6.9B (All), 9.1A (All), 9.1A (C), 9.3A , 9.4C
Piritek	HSR007884	6.1C (All), 6.1C (I), 6.1C (O), 6.4A , 6.5B , 6.9B (All), 6.9B (O), 9.1A (All), 9.3A , 9.4C
Dovetail	HSR008052	3.1D , 6.1D (All), 6.1D (I), 6.1D (O), 6.5B , 6.9B (All), 6.9B (O), 8.2C , 8.3A , 9.1A (All), 9.1A (C), 9.1A (F), 9.2C , 9.3B , 9.4C
<b>Substances containing pirimiphos-methyl as the active ingredient</b>		
Smoke generator containing 225 g/kg pirimiphos-methyl	HSR000186	6.1D (All), 6.1D (I), 6.1E (D), 6.1E (O), 6.3B , 6.4A , 6.8B , 6.9A (All), 9.1A (All), 9.1A (F), 9.1B (C), 9.1D (A), 9.3B , 9.4B
Emulsifiable concentrate containing 25 g/litre permethrin and 475 g/litre pirimiphos-methyl	HSR000187	3.1C , 6.1D (All), 6.1D (O), 6.1E (D), 6.3B , 6.4A , 6.5A , 6.5B , 6.8B , 6.9A (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.1B (A), 9.3A , 9.4A
Emulsifiable concentrate containing 5 g/litre permethrin and 95 g/litre pirimiphos-methyl	HSR000192	3.1C , 6.1E (All), 6.1E (O), 6.3B , 6.4A , 6.5B , 6.8B , 6.9B (All), 9.1A (All), 9.1A (C), 9.1A (F), 9.1B (A), 9.3B , 9.4B
Attack	HSR100602	3.1D , 6.1E (All), 6.1E (D), 6.1E (O), 6.3A , 6.4A , 6.5A , 6.5B , 6.8B , 6.9A (All), 6.9A (O), 6.9B (I), 9.1A (All), 9.1A (M), 9.3A , 9.4A
<b>Substances containing prothiofos as the active ingredient</b>		
Emulsifiable concentrate containing 500 g/litre prothiofos	HSR000200	3.1C , 6.1D (All), 6.1D (O), 6.3A , 6.4A , 6.5B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (F), 9.3B ,

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Substance description	HSNO Approval Number	Hazard Classifications <sup>1</sup>
<b>Substances containing pyrazophos as the active ingredient</b>	-	9.4B
Emulsifiable concentrate containing 300 g/litre pyrazophos	HSR000215	3.1C , 6.1D (All), 6.1D (D), 6.1D (O), 6.3A , 6.4A , 6.8B , 6.9A (All), 6.9A (O), 9.1A (All), 9.1A (F), 9.2D , 9.3B , 9.4A
<b>Substances containing terbufos as the active ingredient</b>	-	
Granular product containing 200 g/kg terbufos	HSR000216	6.1A (All), 6.1A (D), 6.1A (I), 6.1B (O), 6.8B , 6.9A (All), 8.2C , 8.3A , 9.1A (All), 9.1A (C), 9.1A (F), 9.3A , 9.4C

## Appendix B: Overseas status and concerns for substances included in this application

The regulatory concerns identified in this section are the key concerns referred to in completed reviews by major international regulators. The Chief Executive recognises this does not include all concerns which may have been identified, and in particular it does not include concerns identified by recent research which have not yet been addressed in the complete assessments by overseas regulators including the United States' Environmental Protection Agency (US EPA), Australian Pesticides and Veterinary Medicines Authority (APVMA), the European Union's Standing Committee on the Food Chain and Animal Health (EU), and the Canadian Pest Management Regulatory Agency (PMRA).

Jurisdiction	Main uses	Regulatory concern	Reference
<b>Acephate</b>			
US EPA	Cotton, tobacco, cranberries, ornamentals, non-bearing fruit trees, Christmas trees, and cut flowers	Operator (mixer/loader/applicator) Bystander (homeowners, children) Birds, mammals, non target arthropods	US EPA 2006 Reregistration Eligibility Decision for Acephate <a href="http://www.epa.gov/oppsrrd1/REDs/acephate_red.pdf">http://www.epa.gov/oppsrrd1/REDs/acephate_red.pdf</a>
PMRA	Cabbages, celery, corn, potato, berries, tobacco, tomato, sweet pepper, trees and ornamentals	Re entry worker (major residual concern) in 2007 interim measures proposed in the review (2004) were implemented: buffer zones and amended re-entry intervals	Proposed Acceptability for Continuing Registration, Re-evaluation of Acephate, PACR2004-40 <a href="http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_pacr2004-40/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_pacr2004-40/index-eng.php</a>  Acephate, interim measures 2007 <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2007-02/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2007-02/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Consumer exposure Birds, mammals, aquatic organisms, non target arthropods  Overall conclusion: the information available is insufficient to satisfy the requirements set out in Annex II and Annex III Directive 91/414/EEC in	European Commission 2002 Acephate SANCO/3057/99-final 31 May 2002 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>

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		particular with regard to acute consumer exposure and non-target organisms.	
APVMA	Bananas, crucifers, macadamias, ornamentals, potatoes, tomatoes and tobacco	Human health Consumer exposure Acephate has been nominated for review (priority 1).	APVMA, review programme <a href="http://www.apvma.gov.au/products/review/nominated/priority_1.php">http://www.apvma.gov.au/products/review/nominated/priority_1.php</a>
<b>Bendiocarb</b>			
US EPA	Household pests, ornamental plant pests, mosquitoes and fire ants	Bendiocarb has had its registration voluntarily cancelled  the registrants have been granted a 14 month existing stocks provision for products used in or around the home and a 28 month existing stocks provision for other products.	US EPA R.E.D Facts Bendiocarb 1999 <a href="http://www.epa.gov/oppsrrd1/REDs/factsheets/0409fact.pdf">http://www.epa.gov/oppsrrd1/REDs/factsheets/0409fact.pdf</a>
PMRA	No information on uses	No assessment report available	PMRA Bendiocarb under review <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2002-06/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2002-06/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC		PPDB – Bendiocarb <a href="http://sitem.herts.ac.uk/aeru/footer/en/index.htm">http://sitem.herts.ac.uk/aeru/footer/en/index.htm</a>
APVMA	No information on uses	No assessment report available	APVMA Active Registration for Bendiocarb <a href="http://services.apvma.gov.au/PubcrisWebClient/details.do?view=summary&amp;pcode=44467">http://services.apvma.gov.au/PubcrisWebClient/details.do?view=summary&amp;pcode=44467</a>
<b>Benomyl</b>			
US EPA	Almonds, apples, anise, apricots, asparagus, avocado, banana, barley, bean vine, blueberries, brassica (broccoli, brussels sprouts, cabbage, chicory, chinese cabbage, cauliflower, collards, kale, kohlrabi, mustard	Because of the voluntary cancellation decision, USEPA did not complete risk assessments for benomyl  Sale and distribution of	Benomyl RED, 2002 <a href="http://www.epa.gov/oppsrrd1/REDs/benomyl_red.pdf">http://www.epa.gov/oppsrrd1/REDs/benomyl_red.pdf</a>

	greens, rutabagas, and turnips), caneberries (raspberries, blackberries, boysenberries, loganberries, and dewberries), cardoon, carrots, celery, cherries, citrus, conifers, corn, cucurbits (cucumber, melons, pumpkins, and squash), currants, dandelions, dill, figs, grapes, macadamia nuts, mangoes, mushrooms, nectarines, onions, oats, papayas, peaches, peanuts, pears, peas, pecans, peppers, pineapple, pistachio, plums, prunes, rape, rice, rye, soybeans, spinach, strawberry, sugar beets, tomatoes, wheat, and yams	existing stocks of products already in the channels of trade is permitted until December 31, 2002 (period almost 1 year). EPA expects that use of any remaining benomyl products will end in 2003.	
PMRA	There are no products containing benomyl registered for use in Canada	Approval has been discontinued	Propoxur proposed re-evaluation decision 2011 <a href="http://www.oecd.org/chemicalsafety/agriculturalpesticidesandbiocides/1944058.pdf">http://www.oecd.org/chemicalsafety/agriculturalpesticidesandbiocides/1944058.pdf</a>  Pesticide Product Information Database <a href="http://pr-rp.hc-sc.gc.ca/pi-ip/actives-eng.php?p_letter=B">http://pr-rp.hc-sc.gc.ca/pi-ip/actives-eng.php?p_letter=B</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC		Review report for the active substance benomyl, 2002 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=73">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=73</a> <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=73">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=73</a>
APVMA	There are no products containing benomyl registered for use in Australia	Causes birth defects in laboratory animals	Media Release, 2009 <a href="http://www.apvma.gov.au/news_media/our_view/2009/2009-02-04_benomyl.php">http://www.apvma.gov.au/news_media/our_view/2009/2009-02-04_benomyl.php</a>
<b>Carbaryl</b>			
US EPA	Fruit trees, vegetables, pasture	Bystander (toddlers- turf) Operator Non target arthropods (esp. bees)	US EPA, 2007 <a href="http://www.epa.gov/oppsrrd1/REDs/carbaryl_red.pdf">http://www.epa.gov/oppsrrd1/REDs/carbaryl_red.pdf</a> US EPA, 2008 (Amendment):

		<p>Further: vascular cancers in mice, but these are not seen as primary drivers of risk assessment as they are below the US EPA's level of concern</p> <p>The following application methods are prohibited hand, spoon, shaker can, backpack spreaders, power backpack sprayers, tree injection and all handheld foggers, aerial applications</p>	<a href="http://www.epa.gov/oppsrrd1/REDs/carbaryl-red-amended.pdf">http://www.epa.gov/oppsrrd1/REDs/carbaryl-red-amended.pdf</a>
PMRA	Cereals, vegetables, corn, potato, tobacco, pipfruit, stonefruit, berries, trees and ornamentals, turf, poultry, cattle, sheep, horses, goats, hogs	<p>Bystander (vegetable, pick your own operations and turf)</p> <p>Re entry worker</p> <p>Birds, mammals, aquatic organisms, non target arthropods</p> <p>Specific uses of carbaryl do not meet the current standard for health protection and are proposed for phase out. These uses are turf, golf courses and sod farms, residential ornamentals, fruit trees and vegetable gardens, tobacco and pick-your-own orchard operations</p>	<p>PMRA 2009 Consultation document on carbaryl, proposed re-evaluation decision PRVD2009-14</p> <p><a href="http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_prvd2009-14/carbaryl-eng.php">http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_prvd2009-14/carbaryl-eng.php</a></p>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	<p>Human health</p> <p>Birds, mammals, aquatic organisms, non target arthropods</p> <p>information available is insufficient to satisfy the requirements in particular with regard to consumer exposure and toxicity of breakdown products</p>	<p>European Commission 2002, Acephate SANCO/3057/99-final 31 May 2002</p> <p><a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a></p>
APVMA	Tree and vine crops, fruit, vegetables, field crops, pasture and stored grain,	Bystander (domestic use)	APVMA 2012 Carbaryl final review report

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ornamentals

Human health

Review completed August 2012.

[http://www.apvma.gov.au/products/review/docs/carbaryl\\_report\\_1.pdf](http://www.apvma.gov.au/products/review/docs/carbaryl_report_1.pdf)

Uses deleted from approved labels: berry fruits, citrus (excl. oranges, lemons) cherries, kiwifruit, grapes, sunflower, linseed, vegetable crops (excl. potatoes, beetroot, turnip) sweet corn, stored cereal grains

APVMA review programme: carbaryl  
<http://www.apvma.gov.au/products/review/current/carbaryl.php>

Withholding periods have been set for several crops

uses of carbaryl on food-producing plants in the home garden have been deleted

## Carbofuran

US EPA	Control pests in soil and on leaves in a variety of field, fruit, and vegetable crops	USEPA's revocation of carbofuran tolerances became effective on December 31, 2009. USEPA continues to find that dietary exposures to carbofuran from all sources combined are not safe  US EPA allowed 4 year phase out for crops which have moderate benefits to growers	Carbofuran Cancellation Process  <a href="http://www.epa.gov/opp00001/reregistration/carbofuran/carbofuran_noic.htm">http://www.epa.gov/opp00001/reregistration/carbofuran/carbofuran_noic.htm</a>
PMRA	Canola, mustard, sunflower, corn (sweet, field and silage), sugar beet, green pepper, potato, raspberry and strawberry	All products being phased out	Re-evaluation decision for Carbofuran 2010  <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2010-16/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2010-16/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC		PPDB – Carbofuran  <a href="http://sitem.herts.ac.uk/aeru/footprint/en/index.htm">http://sitem.herts.ac.uk/aeru/footprint/en/index.htm</a>
APVMA	Rice, tobacco, sugarcane, wheat and barley, garlic industry.	Concerns for people applying the chemical  With negligible current use and the very limited permit uses coming to an end, the	Nominated for review (priority 2)  <a href="http://www.apvma.gov.au/products/review/nominated/carbo">http://www.apvma.gov.au/products/review/nominated/carbo</a>

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		APVMA will consider the review status of carbofuran in the near future and look at options for formally closing the review	<a href="#">furan_update.php</a>
<b>Carbosulfan</b>			
US EPA	No uses	No records could be found	
PMRA	No registered uses	Carbosulfan degrades to carbofuran	Carbofuran Re-Evaluation Decision, 2010 <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2010-16/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2010-16/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Operator Bystander Birds, mammals, aquatic organisms	Review report for the active substance carbosulfan, 2007 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=131">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=131</a>
APVMA	<b>Citrus fruit</b>	<b>No records could be found</b>	PUBCRIS Active Summary <a href="http://services.apvma.gov.au/PubcrisWebClient/details.do?view=summary&amp;pcode=48828">http://services.apvma.gov.au/PubcrisWebClient/details.do?view=summary&amp;pcode=48828</a>
<b>Chlorpyrifos</b>			
US EPA	Berries, citrus, pipfruit, stonefruit, nuts, grapes, brassicas, onions, cucurbits, asparagus, roots/tubers, corn, lentils, beans, peas, sorghum, tobacco, wheat, alfalfa, peanuts, soybeans, sunflower, cotton, sugar beets, mint, bananas, pasture, cattle ear tags, christmas trees, woodland, timber treatment, ant bait, hard surfaces	Operator Birds, mammals, aquatic organisms Voluntary agreement to withdraw virtually all domestic uses (as at 2006) FIFRA report is under review by the EPA	Reregistration Eligibility Decision for chlorpyrifos 2006 <a href="http://www.epa.gov/oppsrrd1/REDs/chlorpyrifos_red.pdf">http://www.epa.gov/oppsrrd1/REDs/chlorpyrifos_red.pdf</a> FIFRA Scientific peer review of chlorpyrifos for the EPA 2012 <a href="#">SAP Minutes No. 2012-04</a>
PMRA	Cereals, canola, corn, potato, sugarbeet, sunflower, tobacco, fruit and vegetable crops, turf, ornamentals (professional use) around non residential buildings	Human health (possible increased sensitivity to neurotoxic effects of chlorpyrifos)	Reevaluation note, PMRA, 2000 <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2000-05/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2000-05/index-eng.php</a>
EU	Grape vines, cereals, brassicas, berries, ornamentals	Human health (polyneuropathy after acute poisonings) Birds, mammals, aquatic organisms, non target	European Commission 2005, Chlorpyrifos SANCO/3059/99 - rev. 1.5 3 June 2005 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=131">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.ViewReview&amp;id=131</a>

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		arthropods EFSA was requested to review the additional information and the conclusions on the risk assessment for birds and mammals. They concluded that a high acute risk to birds and small herbivorous mammals cannot be excluded. Risk mitigation measures (no spray buffer zones) are needed to protect fish eating birds and mammals.	<a href="http://www.efsa.europa.eu/en/pesticides/public/index.cfm?event=activesubstance_detail">http://www.efsa.europa.eu/en/pesticides/public/index.cfm?event=activesubstance_detail</a> EFSA (2011) Conclusion on pesticide peer review of the pesticide risk assessment of the active substance chlorpyrifos, EFSA Journal 2011; 9(1):1961 <a href="http://www.efsa.europa.eu/en/efsajournal/pub/1961.htm">http://www.efsa.europa.eu/en/efsajournal/pub/1961.htm</a>
APVMA	Cotton, sugarcane, vegetables, pome and stone fruit, pasture, turf, ornamentals	Human health (anticholinesterase agent) Birds  Based on the residue data assessment published August 2009 APVMA recommended to restrict uses.	NRA review, 2000 (Predecessor of the APVMA) <a href="http://www.apvma.gov.au/products/review/current/chlorpyrifos.php">http://www.apvma.gov.au/products/review/current/chlorpyrifos.php</a> Chlorpyrifos: Preliminary review findings report on additional residues data August 2009 <a href="http://www.apvma.gov.au/products/review/docs/chlorpyrifos_prf_sep09.pdf">http://www.apvma.gov.au/products/review/docs/chlorpyrifos_prf_sep09.pdf</a>
<b>Chlorpyrifos-methyl</b>			
US EPA	Stored grain, seed treatment, grain bin and warehouse	Operator The registrants have requested a voluntary cancellation of chlorpyrifos-methyl  Phased out was 3 years and was extended with 1 year recognising the importance for grain storage	Chlorpyrifos-Methyl Facts, 2000 <a href="http://www.epa.gov/oppsrrd1/REDs/factsheets/cpm_fs.htm">http://www.epa.gov/oppsrrd1/REDs/factsheets/cpm_fs.htm</a>
PMRA	No registered uses	No review documents	Health Canada <a href="http://www.hc-sc.gc.ca">www.hc-sc.gc.ca</a>
EU	Grapes and stored grain	Birds and mammals Non-target arthropods	Review report for Chlorpyrifos-methyl, 2005 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance_ViewRevie">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance_ViewRevie</a>

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APVMA	Grain	No review documents	Standard for chlorpyrifos-methyl, 2004 <a href="http://www.apvma.gov.au/products/constituents/standards/standard_chlorpyrifos-methyl.php">http://www.apvma.gov.au/products/constituents/standards/standard_chlorpyrifos-methyl.php</a>
<b>Diazinon</b>			
US EPA	Many fruit, nut, vegetable, forage, and field crops, indoor uses	Operator (handlers, operators, field workers) Birds, mammals, aquatic organisms, non target arthropods Contamination of surface water	US EPA, 2006. Interim Reregistration Eligibility Decisions of Diazinon, July 31 2006 <a href="http://www.epa.gov/oppsrrd1/reregistration/REDs/diazinon_red.pdf">http://www.epa.gov/oppsrrd1/reregistration/REDs/diazinon_red.pdf</a>
PMRA	Pipfruit, stonefruit, berries, vegetables, potato, ornamentals	Operator ( mixer/loader/applicator) Re entry worker Birds, mammals, aquatic organisms, non target arthropods	PRMA, 2007. Proposed Re-evaluation Decision Diazinon, 10 December 2007 <a href="http://turin/sites/felix/pol/1/sdm/AIR/Canada%20Diazinon%20RED.pdf">http://turin/sites/felix/pol/1/sdm/AIR/Canada%20Diazinon%20RED.pdf</a> PMRA, 2009. Re-evaluation Decision Diazinon, 4 November 2009 <a href="http://turin/sites/felix/pol/1/sdm/AIR/Canada%20Diazinon%20Re-evaluation%20Decision.pdf">http://turin/sites/felix/pol/1/sdm/AIR/Canada%20Diazinon%20Re-evaluation%20Decision.pdf</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Bystander Operator Consumer exposure Birds, mammals, aquatic organisms, non target arthropods Further lack of data: on very toxic impurities, a maximum level of these impurities could not be set on fate and behaviour of the substance in the environment and its ecotoxicological properties	EFSA 2006. Conclusion on the peer review of diazinon, Scientific report (2006) 85, 1-73 <a href="http://www.efsa.europa.eu/en/scdocs/doc/s85r.pdf">http://www.efsa.europa.eu/en/scdocs/doc/s85r.pdf</a> EU, 2006. Final, review report for the active substance diazinon, SANCO/10052/06-rev 0 12 September 2006 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>

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APVMA	Bananas, mushrooms, ornamentals, onions and pineapples	Bystanders Operator Re entry worker Birds, mammals, aquatic organisms (esp. invertebrates) , non target arthropods (esp. bees)	APVMA, 2011. consolidation of toxicological hazard assessments of diazinon. <a href="http://www.apvma.gov.au/products/review/docs/diazinon_hh_tox_part_2.pdf">http://www.apvma.gov.au/products/review/docs/diazinon_hh_tox_part_2.pdf</a>  APVMA, 2006. Review of diazinon based on new information and the preliminary findings of Part 2. <a href="http://www.apvma.gov.au/products/review/docs/diazinon_PRF_vol1.pdf">http://www.apvma.gov.au/products/review/docs/diazinon_PRF_vol1.pdf</a>  APVMA, 2003. The reconsideration of registrations of products containing diazinon and their labels , April 2003 <a href="http://www.apvma.gov.au/products/review/current/diazinon.php">http://www.apvma.gov.au/products/review/current/diazinon.php</a>
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**Dichlofenthion**

US EPA	No registered uses	No records found	<b>Dichlofenthion</b> <a href="http://iaspub.epa.gov/apex/pesticides/f?p=CHEMICALSEA:RCH:3:0::NO:1,3,31,7,12,25:P3_XCHEMICAL_ID:2099">http://iaspub.epa.gov/apex/pesticides/f?p=CHEMICALSEA:RCH:3:0::NO:1,3,31,7,12,25:P3_XCHEMICAL_ID:2099</a>
PMRA	No registered uses	No records found	
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No records found	<b>Dichlofenthion status</b> <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	No registered uses	No records found	

**Dichlorvos**

US EPA	Indoor uses, grain	Bystander Birds, mammals and freshwater invertebrates	US EPA, 2006. Interim Reregistration Eligibility Decision for dichlorvos (DDVP), June 2006 <a href="http://www.epa.gov/oppsrrd1/reregistration/REDS/ddvp_red.pdf">http://www.epa.gov/oppsrrd1/reregistration/REDS/ddvp_red.pdf</a>
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			US EPA, 2006. Factsheet dichlorvos, May 2006 <a href="http://www.epa.gov/oppsrrd1/registration/ddvp/ddvp_changes.htm">http://www.epa.gov/oppsrrd1/registration/ddvp/ddvp_changes.htm</a>
PMRA	Indoor and outdoor uses (non residential buildings)	Re-evaluation of dichlorvos is ongoing. PMRA is requiring registrants to make changes to their product labels to limit operator exposure.	PRMA, 2008. Re-evaluation note Dichlorvos Interim Measures, REV2008-04, March 2008 <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2008-04/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2008-04/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Bystander Operator Re entry worker  Uncertainties of the genotoxic and carcinogenic properties of the substance  Indoor use ( using fogging vaporising equipment) only therefore no environmental risk assessment	EU 2006. Review report for the active ingredient dichlorvos, Sanco/10031/2006 final 04 July 2006 <a href="http://ec.europa.eu/food/plant/protection/evaluation/existactive/dichlorvos.pdf">http://ec.europa.eu/food/plant/protection/evaluation/existactive/dichlorvos.pdf</a>  EU 2007. Commission decision dichlorvos, Official Journal of the European Union, 6 June 2007 <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:145:0016:0017:EN:PDF">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:145:0016:0017:EN:PDF</a>  EFSA Scientific report, 2006. Conclusion on the peer review of dichlorvos, 12 May 2006 <a href="http://www.efsa.europa.eu/en/efsajournal/doc/77r.pdf">http://www.efsa.europa.eu/en/efsajournal/doc/77r.pdf</a>
APVMA	Grain, cereals stores	Bystander Operators Consumer exposure  Birds, mammals, aquatic organisms, non target arthropods	APVMA, 2011. Dichlorvos Final review report and regulatory decision, March 2011 <a href="http://www.apvma.gov.au/products/review/docs/dichlorvos_final_2011.pdf">http://www.apvma.gov.au/products/review/docs/dichlorvos_final_2011.pdf</a>  <a href="http://www.apvma.gov.au/products/review/completed/dichlorvos.php">http://www.apvma.gov.au/products/review/completed/dichlorvos.php</a>
<b>Dimethoate</b>			
US EPA	Alfalfa, asparagus, beans, brassicas, celery, cherries, christmas trees,	Bystander	US EPA 2006, Revised interim Reregistration

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	cotton, endive, field corn, grass grown for seed, ornamentals citrus, lettuce, lentils, melons, mustard greens, pears, peas, pecans, peppers, popcorn, potatoes, safflower, sorghum, soybeans, Swiss chard, tangerines, tangelos, tomatoes, turnips, watermelons, wheat, cottonwood grown for pulp	Operators Re entry worker Consumer exposure Birds, mammals	eligibility decisions for dimethoate <a href="http://www.epa.gov/oppsrrd1/REds/dimethoate_ired_revised.pdf">http://www.epa.gov/oppsrrd1/REds/dimethoate_ired_revised.pdf</a>
PMRA	Fruit crops, vegetables, field crops, trees and ornamentals, indoor uses non-residential	Operator Consumer exposure Birds, mammals, aquatic organisms, non target arthropods	PRMA 2011 Proposed re evaluation decision PRVD2011-12, dimehtoate <a href="http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_prvd2011-12/prvd2011-12-eng.php">http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_prvd2011-12/prvd2011-12-eng.php</a>
EU	Sugar beet, lettuce	Operator Consumer exposure Birds, mammals, aquatic organisms, non target arthropods	European Commission 2006, dimethoate, SANCO/10047/2006 final <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	Orchard and field crops (200 registered uses)	Consumer exposure (uses suspended to 5 Oct 2013)	APVMA 2011 dimethoate review in progress <a href="http://www.apvma.gov.au/products/review/current/dimethoate.php">http://www.apvma.gov.au/products/review/current/dimethoate.php</a>
<b>Ethion</b>			
US EPA	Cattle and citrus	Operators (mixing / loading / applying) Aquatic organisms Voluntary cancellation 2004	Ethion Fact Sheet, 2001 <a href="http://www.epa.gov/oppsrrd1/registration/REds/factsheets/ethionfactsheet.pdf">http://www.epa.gov/oppsrrd1/registration/REds/factsheets/ethionfactsheet.pdf</a>
PMRA	No uses	Voluntary cancellation 2001	Re-evaluation Note: Discontinuation of the Organophosphate Insecticide Ethion <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2001-03/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rev2001-03/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No records found	Ethion status <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>

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APVMA	Cattle	No review documents found	List of registered products <a href="http://services.apvma.gov.au/PubcrisWebClient/search.do">http://services.apvma.gov.au/PubcrisWebClient/search.do</a>
<b>Famphur</b>			
US EPA	No uses	No records found	
PMRA	No uses	No records found	
EU	No uses	No records found	
APVMA	No uses	No records found	
<b>Fenamiphos</b>			
US EPA	No uses	Human health (possibly overstimulating the nervous system) Operator Consumer exposure Birds, mammals, aquatic organisms, non target arthropods incl. endangered species	US EPA 2011, Fenamiphos : Amendments to Use Deletion and Product Cancellation Orders: Fenamiphos: <a href="http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2003-0200-0007">http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2003-0200-0007</a>
PMRA	No uses	Not registered. No assessment documents could be found	
EU	Drip irrigation in greenhouses	Human health Birds, mammals, aquatic organisms Further: high potential for ground water contamination by the metabolites of fenamiphos.	EFSA Scientific report, 2006 Conclusion on the peer review of fenamiphos: <a href="http://www.efsa.europa.eu/en/efsajournal/pub/62r.htm">http://www.efsa.europa.eu/en/efsajournal/pub/62r.htm</a> European Commission - Fenamiphos SANCO/10017/2006- rev 3 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	Root vegetables, aloe vera, pineapples, bulbs and corms, vegetables, citrus, grapes, pineapples, strawberries, ornamentals, sugar cane, tobacco and turf	Human health Consumer exposure Environment (leaching) Review ongoing	The Reconsideration of Approvals and Registrations Relating to Fenamiphos: <a href="http://www.apvma.gov.au/products/review/docs/fenamiphos_scope.pdf">http://www.apvma.gov.au/products/review/docs/fenamiphos_scope.pdf</a>
<b>Fenitrothion</b>			
US EPA	Use in bait stations only	Given the containerized ant and roach baits the	US EPA 2006 Reregistration Eligibility Decision for

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		exposure to humans and the environment will be limited	Fenitrothion: <a href="http://www.epa.gov/oppsrrd1/reregistration/REDS/fenitrothion_red.pdf">http://www.epa.gov/oppsrrd1/reregistration/REDS/fenitrothion_red.pdf</a>
PMRA	Forest and woodlands (includes tree nurseries)	PMRA has concluded that the use of fenitrothion and its associated end-use product in accordance with the label does not entail an unacceptable risk of harm to human health or the environment.  (Label: maximum 2 applications per season, buffer zones)	Re-evaluation Decision Document – Fenitrothion (RRD2004-13): <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rrd2004-13/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rrd2004-13/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Bystander Operator Re entry worker Consumer exposure Birds, mammals, aquatic organisms, non target arthropods Further: explosive properties with respect to thermal sensitivity.	EFSA 2006. Conclusion regarding the peer review of the pesticide risk assessment of the active substance Fenitrothion: <a href="http://www.efsa.europa.eu/en/efsajournal/pub/59r_r.htm">http://www.efsa.europa.eu/en/efsajournal/pub/59r_r.htm</a>  European Commission – Fenitrothion SANCO/10026/2006 final <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	Rice, cereals, lucerne, pastures, fruits, vegetables, stored grain, and on structures	Human health Re entry worker Bird, aquatic invertebrates	The reconsideration of approvals of the active constituent fenitrothion, registrations of products containing fenitrothion and their associated labels. DRAFT REVIEW REPORT. March 2004: <a href="http://www.apvma.gov.au/products/review/docs/fenitrothion_2004.pdf">http://www.apvma.gov.au/products/review/docs/fenitrothion_2004.pdf</a> <a href="http://www.apvma.gov.au/products/review/current/fenitrothion.php">http://www.apvma.gov.au/products/review/current/fenitrothion.php</a>
<b>Isazofos</b>			
US EPA	No uses	No records found	

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PMRA	No uses	No records found	
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No records found	Isazofos status <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	No uses	No records found	
<b>Maldison (malathion)</b>			
US EPA	Berries, pipfruit, grapes, brassicas, other vegetables, nuts, citrus, cotton, indoor stored commodity treatment and empty storage facilities for barley, corn, oats, rye, and wheat, ornamentals, hard surfaces	Human health (Immunological effects) Consumer exposure (pick your own activities) Birds, mammals, aquatic organisms, non target arthropods Drinking water and residential bystander risk estimates were revised based on refinements to the assessments and/or mitigation measures, such as reduced maximum application rates and number of applications permitted per year for many use sites. Occupational risks have been mitigated through personal protective equipment or engineering control requirements on the labels and extending re-entry intervals for some sites, and ecological risks have been reduced, but not eliminated, through adding buffer zone and spray drift requirements to the labels, and amending use patterns for many uses.	US EPA, 2009 <a href="http://www.epa.gov/oppsrrd1/REDs/malathion-red-revised.pdf">http://www.epa.gov/oppsrrd1/REDs/malathion-red-revised.pdf</a> US EPA, 2006. <a href="http://www.epa.gov/oppsrrd1/REDs/malathion_red.pdf">http://www.epa.gov/oppsrrd1/REDs/malathion_red.pdf</a>
PMRA	Vegetables, fruit crops, field crops, ornamentals, garden and yards,	Bystander	PMRA, 2010 <a href="http://www.hc-sc.gc.ca/cps-">http://www.hc-sc.gc.ca/cps-</a>

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	standing water, in and around buildings, stored cereals	Operator Birds, aquatic organisms	<a href="http://spc/pest/part/consultations/_prvd2010-18/prvd2010-18-eng.php">spc/pest/part/consultations/_prvd2010-18/prvd2010-18-eng.php</a>
EU	Strawberries, ornamentals	Bystander Operator Re entry worker Consumer exposure Birds, aquatic organisms, non target arthropods	EFSA Scientific report 2009 Peer review of the pesticide risk assessment of the active substance malathion. EFSA report 2009 333.1-118 <a href="http://www.efsa.europa.eu/de/scdocs/doc/333r.pdf">http://www.efsa.europa.eu/de/scdocs/doc/333r.pdf</a> EU 2010. Malathion SANCO/10668/2009 final 14 January 2010 <a href="http://ec.europa.eu/food/plant/protection/evaluation/existactive/list_malathion.pdf">http://ec.europa.eu/food/plant/protection/evaluation/existactive/list_malathion.pdf</a>
APVMA	Aquatic areas, flowers, fruit, vegetables, trees/forests, stored cereals, oil seed crops, ornamentals, lucerne/pasture, citrus, fruit trees, roses, grapevines, animal housing, industrial and home garden situations, non-crop and recreation areas, tobacco	Human health	The Reconsideration of Approvals and Registrations Relating to maldison <a href="http://www.apvma.gov.au/products/review/current/maldison.php">http://www.apvma.gov.au/products/review/current/maldison.php</a>
<b>Methamidophos</b>			
US EPA	No uses (cancelled in 2009)	Operator Re entry worker Birds, mammals, aquatic invertebrates	Interim Reregistration Eligibility Decision for Methamidophos <a href="http://www.epa.gov/oppsrrd1/REDs/methamidophos_red.pdf">http://www.epa.gov/oppsrrd1/REDs/methamidophos_red.pdf</a> US EPA 2009 Methamidophos Final Work Plan for Reregistration review (EPA-HQ-OPP-2008-0842-0011) <a href="http://www.regulations.gov/#!doCKETDetail;rpp=10;po=10;D=EPA-HQ-OPP-2008-0842">http://www.regulations.gov/#!doCKETDetail;rpp=10;po=10;D=EPA-HQ-OPP-2008-0842</a>
PMRA	Brassica, lettuce, potato, canola	Operator Re entry worker Consumer exposure Birds, mammals, aquatic invertebrates	Re-evaluation Note REV2007-11 Preliminary Risk and Value Assessments of Methamidophos <a href="http://publications.gc.ca/collections/collection_2007/hc-">http://publications.gc.ca/collections/collection_2007/hc-</a>

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		Approvals expire end of 2012	<a href="#">sc/H113-5-2007-11E.pdf</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	Human health Birds, mammals	Commission Directive 2006/131/EC of 11 December 2006 amending Council Directive 91/414/EEC to include methamidophos as an active substance <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:349:0017:0021:EN:PDF">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:349:0017:0021:EN:PDF</a> EFSA 2004 the EFSA journal regarding methamidophos <a href="http://www.efsa.europa.eu/en/efsajournal/doc/opinion_ppr06_ej95_methamidophos_en1,2.pdf">http://www.efsa.europa.eu/en/efsajournal/doc/opinion_ppr06_ej95_methamidophos_en1,2.pdf</a>
APVMA	Vegetables, lupins, ornamentals, peaches, peanuts, potatoes, tomatoes	Human health (delayed neurotoxicity of methamidophos)  Voluntary cancellation On 15 June 2012, all approvals of the active constituent methamidophos were cancelled at the request of the approval holder. In addition, registrants have voluntarily cancelled all products containing methamidophos.  A two-year phase out period, ending on 15 June 2014, applies to the supply and use of existing stock of methamidophos products.	APVMA 2002 Reconsideration of Approvals and Registrations Related to Methamidophos Review Scope Document <a href="http://www.apvma.gov.au/products/review/current/methamidophos.php">http://www.apvma.gov.au/products/review/current/methamidophos.php</a> <a href="http://www.apvma.gov.au/products/review/docs/methamidophos_scope.pdf">http://www.apvma.gov.au/products/review/docs/methamidophos_scope.pdf</a> Voluntary cancellation <a href="http://www.apvma.gov.au/products/review/not_required/methamidophos.php">http://www.apvma.gov.au/products/review/not_required/methamidophos.php</a>
<b>Methomyl</b>			
USEPA	Huge ranges of brassicas, other vegetables, citrus, stonefruit, pipfruit, hard surfaces	<ul style="list-style-type: none"> <li>• Operator</li> <li>• Re entry worker</li> <li>• Mammals, aquatic invertebrates</li> </ul>	USEPA RED 1998 Methomyl <a href="http://www.epa.gov/oppsrrd1/REDs/0028red.pdf">http://www.epa.gov/oppsrrd1/REDs/0028red.pdf</a>

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PMRA	Used on a range of different crops  Fly bait (non-residential)	<ul style="list-style-type: none"> <li>• Re entry worker</li> <li>• Birds, mammals, aquatic organisms, non target arthropods</li> </ul> <p>Further: concerns for ground water and surface water</p> <p>Insufficient information available to assess the risks to bystanders from use in public parks</p>	<p>PMRA, 2009 Preliminary Risk and Value Assessments of Methomyl</p> <p>PMRA, 2010. Re-evaluation Note REV2010-08 Methomyl</p>
EU	Cucumber, courgette, tomato, aubergine	<ul style="list-style-type: none"> <li>• Operators</li> <li>• Birds, aquatic organisms, non target arthropods (esp. bees)</li> </ul>	<p>EU Review report for the active substance methomyl, SANCO/5449/2009/final September 2009</p> <p><a href="http://ec.europa.eu/food/plant/protection/evaluation/existactive/list_methomyl_en.pdf">http://ec.europa.eu/food/plant/protection/evaluation/existactive/list_methomyl_en.pdf</a></p> <p>EFSA 2008 Peer review of the pesticide risk assessment of the active substance methomyl, Scientific report 222</p> <p><a href="http://www.efsa.europa.eu/en/efsajournal/doc/222r.pdf">http://www.efsa.europa.eu/en/efsajournal/doc/222r.pdf</a></p>
APVMA	Cereals, cotton, fruit, ginger, legumes, mint, oil seed crops, tobacco, potatoes, vegetables, pastures, peanuts	<ul style="list-style-type: none"> <li>• Human health</li> <li>• Consumer exposure</li> </ul> <p>Methomyl has been nominated for review (priority 1)</p>	<p>APVMA review programme</p> <p><a href="http://www.apvma.gov.au/products/review/nominated/priority_1.php">http://www.apvma.gov.au/products/review/nominated/priority_1.php</a></p>
<b>Omethoate</b>			
USEPA	No uses	No records found	<p>APVMA - The Reconsideration of Approvals and Registrations Relating to Dimethoate and Omethoate, 2004</p> <p><a href="http://www.apvma.gov.au/products/review/docs/dimethoate_scope.pdf">http://www.apvma.gov.au/products/review/docs/dimethoate_scope.pdf</a></p>
PMRA	No uses	No records found	
EU	No uses, not included in Annex I of	No assessment report	<p>Omethoate status</p> <p><a href="http://ec.europa.eu/sanco_pe">http://ec.europa.eu/sanco_pe</a></p>

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	the Directive 91/414/EEC	available	<a href="http://www.epa.gov/pesticides/public/index.cfm?event=activesubstance.detail">sticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	Horticulture, agriculture and home garden	<ul style="list-style-type: none"> <li>Human health</li> </ul>	Omethoate review status <a href="http://www.apvma.gov.au/products/review/current/omethoate.php">http://www.apvma.gov.au/products/review/current/omethoate.php</a>
<b>Oxamyl</b>			
USEPA	Vegetables, fruit, cotton	<ul style="list-style-type: none"> <li>Operator</li> <li>Re entry worker</li> <li>Birds, mammals, aquatic organisms, bees</li> </ul>	USEPA, RED, 2007 <a href="http://www.epa.gov/opp00001/reregistration/REDS/oxamyl_red.pdf">http://www.epa.gov/opp00001/reregistration/REDS/oxamyl_red.pdf</a>
PMRA	Potatoes, raspberry, apple	<ul style="list-style-type: none"> <li>Operators</li> <li>Re-entry workers</li> <li>Aquatic organisms</li> </ul>	PMRA 2008 <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2008-05/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2008-05/index-eng.php</a>
EU	Potatoes	<ul style="list-style-type: none"> <li>Aquatic organisms, bees</li> </ul>	EFSA DAR 2004 <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	Bananas, capsicum, tomatoes	No assessment report available	
<b>Phorate</b>			
US EPA	Potatoes, corn, peanuts, cotton, sugarcane, wheat, soybeans, beans, sorghum, sugar beets, lilies (field grown), daffodils, and radishes grown for seed	<ul style="list-style-type: none"> <li>Re-entry worker (soil contact)</li> <li>Consumer exposure</li> <li>Birds, mammals, aquatic organisms, non target arthropods</li> </ul>	USEPA, 2006 Phorate RED, <a href="http://www.epa.gov/opp00001/reregistration/REDS/phorate_red.pdf">http://www.epa.gov/opp00001/reregistration/REDS/phorate_red.pdf</a>
PMRA	Phased out (2006)	<ul style="list-style-type: none"> <li>Operator (loading)</li> <li>Birds, mammals, aquatic organisms, non target arthropods</li> </ul>	PMRA, 2003 and 2004. Re-evaluation of phorate <a href="http://dsp-psd.pwgsc.gc.ca/Collection/H113-18-2003-1E.pdf">http://dsp-psd.pwgsc.gc.ca/Collection/H113-18-2003-1E.pdf</a> <a href="http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2004-11/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pubs/pest/_decisions/rvd2004-11/index-eng.php</a>
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No assessment report available	
APVMA	Cotton, certain ornamentals and	No assessment report	Nominated for review (priority)

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	certain vegetables	available	2) <a href="http://www.apvma.gov.au/products/review/nominated/priority_2.php#Phorate">http://www.apvma.gov.au/products/review/nominated/priority_2.php#Phorate</a>
<b>Phoxim</b>			
US EPA	No uses	No records found	
PMRA	No uses	No records found	
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No assessment report available	Phoxim status <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	No uses	No records found	
<b>Pirimicarb</b>			
US EPA	No uses	No registered products under FIFRA section 3  US EPA will take separate actions to cancel any remaining FIFRA section 24(c) Special Local Needs registrations with this active ingredient and to propose revocation of any affected tolerances that are not supported for import purposes only	<a href="http://www.epa.gov/oppsrrd1/registration_review/pirimicarb/">http://www.epa.gov/oppsrrd1/registration_review/pirimicarb/</a>
PMRA	Phased out ( 2009)	No assessment report available	
EU	Wheat	<ul style="list-style-type: none"> <li>Human health ( Haematological effects, anaemia, lung tumours in mice)</li> <li>Birds, aquatic organisms</li> </ul>	European Commission – Pirimicarb: <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>  EFSA scientific report 2005. Conclusion regarding the peer review of the pesticide risk assessment of the active substance Pirimicarb: <a href="http://www.efsa.europa.eu/en/efsajournal/pub/43r.htm">http://www.efsa.europa.eu/en/efsajournal/pub/43r.htm</a>
APVMA	Vegetables, fruit crops, cereals, cotton	No assessment report available	

<b>Pirimiphos-methyl</b>			
US EPA	Post-harvest use	<ul style="list-style-type: none"> <li>Operator</li> <li>Birds, aquatic organisms</li> </ul>	US Environmental Protection Agency Office of Pesticide Programs: Reregistration Eligibility Decision for Pirimiphos-methyl  <a href="http://www.epa.gov/oppsrd1/reregistration/REDs/pirimiphos_methyl_red.pdf">http://www.epa.gov/oppsrd1/reregistration/REDs/pirimiphos_methyl_red.pdf</a>
PMRA	No uses	No assessment report available	
EU	Empty cereal stores	<ul style="list-style-type: none"> <li>Operator</li> <li>Consumer exposure</li> </ul>	European Commission Health & Consumer Protection Directorate-General: Review report for the active substance pirimiphos-methyl  <a href="http://ec.europa.eu/food/plant/protection/evaluation/existactive/list1_pirimiphos-methyl_en.pdf">http://ec.europa.eu/food/plant/protection/evaluation/existactive/list1_pirimiphos-methyl_en.pdf</a>  EFSA 2005 Conclusion regarding the peer review of the pesticide risk assessment of the active substance pirimiphos-methyl  <a href="http://www.efsa.europa.eu/en/efsajournal/doc/44r.pdf">http://www.efsa.europa.eu/en/efsajournal/doc/44r.pdf</a>
APVMA	Buildings and stored grain	No assessment report available	
<b>Prothiofos</b>			
US EPA	No uses	No assessment report available	
PMRA	No uses	No assessment report available	
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No assessment report available	
APVMA	Bananas, brassicas, grapes, pears	No assessment report available	
<b>Pyrazophos</b>			
US EPA	No uses	No assessment report available	
PMRA	No uses	No assessment report available	

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		available	
EU	No uses, not included in Annex I of the Directive 91/414/EEC	No assessment report available	Pyrazophos status <a href="http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail">http://ec.europa.eu/sanco_pesticides/public/index.cfm?event=activesubstance.detail</a>
APVMA	No uses	No assessment report available	
<b>Terbufos</b>			
US EPA	Corn, sorghum, sugar beet	<ul style="list-style-type: none"> <li>Operator (even with closed mixing and enclosed cabs)</li> <li>Consumer exposure</li> <li>Birds, aquatic organisms</li> </ul>	US EPA 2001 Terbufos IRED Facts <a href="http://www.epa.gov/oppsrrd1/REDs/factsheets/terbufos_ired_fs.htm">http://www.epa.gov/oppsrrd1/REDs/factsheets/terbufos_ired_fs.htm</a> US EPA 2006 terbufos RED <a href="http://www.epa.gov/opp00001/reregistration/REDs/terbufos_red.pdf">http://www.epa.gov/opp00001/reregistration/REDs/terbufos_red.pdf</a>
PMRA	Phased out 2006	<ul style="list-style-type: none"> <li>All groups of organisms (aquatic and terrestrial), especially for birds</li> </ul>	PRMA 2008. Re-evaluation of terbufos <a href="http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_pacr2003-02/index-eng.php">http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_pacr2003-02/index-eng.php</a>
EU	No uses	No assessment report available	
APVMA	Maize, sunflowers, sorghum and sweet corn, cereals, bananas, peanuts	No assessment report available	Nominated for review (priority 2) <a href="http://www.apvma.gov.au/products/review/nominated/priority_2.php#Terbufos">http://www.apvma.gov.au/products/review/nominated/priority_2.php#Terbufos</a>