Reconsideration of Approvals and Registrations Related to Methamidophos

Review Scope Document

May 2002

National Registration Authority
for Agricultural and Veterinary Chemicals

Canberra
Australia

ISSN No. 1443 2528

This document is published by the National Registration Authority for Agricultural and Veterinary Chemicals (NRA). For further information about the review or the Chemical Review Program, contact:

Manager, Chemical Review
National Registration Authority for Agricultural and Veterinary Chemicals
PO Box E240
Kingston ACT 2604
Australia

Telephone: 61 2 6272 3213
Facsimile 61 2 6272 3551
Email: chemrev@nra.gov.au
NRA web site: http://www.nra.gov

Contents

1. Introduction

The National Registration Authority for Agricultural and Veterinary Chemicals (NRA) is an independent statutory authority with responsibility for the regulation of agricultural and veterinary chemicals in Australia.

The Commonwealth, States and Territories established the National Registration Scheme for Agricultural and Veterinary Chemicals. The NRA is responsible for administering and managing legislation established under the National Registration Scheme on behalf of the Commonwealth, States and Territories.

The NRA operates under two key pieces of legislation:

- *Agricultural and Veterinary Chemicals (Administration) Act 1992*
- *Agricultural and Veterinary Chemical Code Act 1994*.

The Agricultural and Veterinary Chemicals (Administration) Act 1992 established the National Registration Scheme in 1993. It also set out the NRA's role as an independent statutory authority undertaking the Commonwealth's responsibilities under the scheme and provides the NRA with its full range of powers. *The Agricultural and Veterinary Chemicals Code Act 1994* scheduled to the Act details the operaional provisions for registering chemical products.

The NRA's role is to assess the safety and performance of products, determine whether their use is likely to jeopardise trade, and to regulate the supply of agricultural and veterinary chemicals onto the Australian market by approving the active chemical constituents, registering products and approving product labels. The work of the NRA therefore protects the health and safety of people, animals and the environment, and supports Australian agriculture by allowing the supply of only approved crop protection and animal health products.

As well as registering new agricultural and veterinary products, the NRA reviews older chemicals to determine whether they meet contemporary standards and, if necessary, change the conditions of registration or withdraw the chemical from the market.

The NRA monitors agricultural and veterinary chemicals in the marketplace to ensure they are registered and conform to the standards set at registration.

The NRA, in accordance with Section 31 of the Agvet Codes, has decided to reconsider (review) the approval of the active constituent methamidophos, the registration of all products containing methamidophos and the approval of associated labels as part of its Chemical Review Program. This review of methamidophos stems from concerns over human health.

1.1 Purpose of the Review Scope Document

The purpose of the scope document is to outline the reasons for the review and to set the scope of the review.

The review scope document is prepared at the beginning of the review and includes detailed examination of the areas of concern, consideration of the available literature, and general

information available in the public arena. It also includes an agricultural assessment, which is intended to give a clear picture of how the chemical is actually used in the field.

The NRA has a policy of encouraging openness and transparency in its activities and community involvement in decision-making. The publication of this scope document is a part of that process.

All the stakeholders and the community can participate in consultative processes at different stages during the review. Details are presented in Section 5.2.

1.2 The Chemical Review Program

The review of methamidophos is to be carried out as part of the Chemical Review Program of the NRA. The Chemical Review Program has been established to ensure that older chemicals satisfy current standards of safety and that the use patterns and advice on labels is accurate and up-to-date. A significant proportion of the agricultural and veterinary chemicals used in Australia were registered many years ago, some as far back as the 1950s, under earlier arrangements in States and Territories. Since those times, assessment standards have changed as a result of continuing research and experience. The uses of products and application techniques have also evolved and in some cases, current use practice is different to the information on the registered labels. For some of these older chemicals, new information from overseas regulatory agencies brings to light concerns about health and environmental issues.

Under Section 31 of the Agricultural and Veterinary Chemicals Codes, the NRA has statutory powers to reconsider the approval of active constituents, the registration of chemical products or the approval of associated with the products. The basis for initiating a review is whether the NRA is satisfied that the requirements prescribed by the regulations for continued approval or registration are being met. The prescribed requirements are that the active constituent or product:

- should pose no undue hazard to the safety of people exposed to it during handling or using anything containing their residues;
- would not be likely to have an effect that is harmful to human beings;
- would not be likely to have an unintended effect that is harmful to animals, plants, things or to the environment; and
- would not unduly prejudice trade or commerce between Australia and places outside Australia.

2. Reasons for the reconsideration of the approvals and registrations related to methamidophos

The decision to reconsider the approval(s) and registration(s) related to methamidophos stems from concerns over human health.

Methamidophos is an organophosphorus (OP) pesticide with potentially high risk for acute and chronic poisoning. It is classified as highly hazardous by the World Health Organization (WHO), as highly toxic by the US Environmental Protection Agency (US-EPA) and as very toxic by the European Union (EU). It affects the nervous system by inhibiting acetylcholinesterase, an enzyme essential for normal nerve impulse transmission. The chemical can be absorbed following ingestion, inhalation and skin contact.

Worldwide, there have been reports of human poisoning with methamidophos. Reports from China, Hong Kong and Korea indicate that the agricultural use of this compound causes health problems. In the US, methamidophos ranked third-highest among 28 pesticides on measures of occupational hazard. It also had the third-highest ratio of handler poisonings per 1,000 applications in California, and the second-highest overall for field workers. Methamidophos ranked second in percentage of cases displaying symptoms or life-threatening symptoms among occupational Poison Control Center Cases. A study in the US found that between 63 and 97% of 1 – 5 year old children could be receiving methamidophos above the acceptable average daily intake.

Methamidophos is included in the Prior Informed Consent (PIC) procedure because of its acute hazard classification and concern as to their impact on human health under conditions of use in developing countries. The inclusion of specific pesticide formulations in the PIC procedure is based on recommendations from the Food and Agriculture Organisation (FAO) / United Nations Environment Programme (UNEP) Joint Group of Experts on Prior Informed Consent. The objective is to provide relevant information on these individual pesticides included in the PIC procedure and thus to assist governments in deciding whether to allow, restrict or stop future imports of these pesticides.

In Indonesia, registration of methamidophos has not been permitted since 1996, as it is considered to induce harmful effects on human beings and the environment. Kuwait banned the substance in 1980. It is not registered in Samoa since it is thought to pose a significant health hazard to users. Sri Lanka severely restricted the substance in 1995. The import of methamidophos formulations higher than 600 g/L has been prohibited since July 1995.

The European Union is preparing to review methamidophos in all areas except efficacy. The Joint FAO/WHO Meeting of Experts in Pesticide Residues (JMPR) has reviewed residues most recently in 1997 and an evaluation of toxicology is scheduled for 2002. Methamidophos is currently a candidate for a US-EPA's Re-registration Eligibility Decision.

The Therapeutic Goods Administration (TGA), a Commonwealth agency, has advised the NRA that delayed neurotoxicity of methamidophos is a significant concern. Methamidophos appears to be a potent inhibitor of the Neuropathy Target Esterase (NTE), albeit at relatively high doses. Inhibition of this enzyme is most likely responsible for a particular form of delayed neuropathy.

Based on the above, the NRA can no longer be satisfied that all of the requirements prescribed by Section 34 of the *Agricultural and Veterinary Chemicals Code Act, 1994* (the Agvet Codes) are being met. In March 2001 the NRA decided to review the approval of the active constituent methamidophos, the registration of all products containing methamidophos and the approval of associated labels.

3. Use of methamidophos in Australia

To define the scope of methamidophos review, the NRA carried out an agricultural assessment of methamidophos with input from product registrants, State Agricultural authorities, consultants and user groups. This was essential to construct an accurate picture of the way the chemical is used, identify any areas of potential issues, importance to industry, areas of highest concern, and data required to address the concerns.

Registration status

Currently there are two products containing methamidophos registered in Australia by two companies. There is one Australian active constituent approval holder with two sources of technical grade methamidophos approved. For further details of the approvals and registrations, see Tables 1 and 2.

Table 1 The active constituent approvals of methamidophos that are to be reconsidered

Approval number	Name	Approval holder
44179	Methamidophos	Bayer Australia Ltd (Crop Protection)
52337	Methamidophos	Bayer Australia Ltd (Crop Protection)

Table 2 The product registrations of methamidophos that are to be reconsidered

Name	Formulation code	Company	Product code	Pack sizes	Claim
Monitor Insecticide	SC	Aventis Crop Science Pty Ltd	47765	5L,10L,20L, 100L, 200L	For the control of various pests of certain Vegetables, Ornamentals, Peaches & Peanuts.
Nitofol Insecticide Spray	EC	Bayer Australia Ltd (Crop Protection)	33036	1L,10L, 1000L	For control of certain insect pests of Brassicas, capsicums, lupins, ornamentals, peaches, peanuts, potatoes and tomatoes.

Usage

Methamidophos has systemic and residual activity. In Australia, products containing methamidophos have been registered since the early 1970s, as insecticides/acaricides for use on a variety of crops including vegetables, fruit, peanuts, flowers and ornamentals. The crops and corresponding pests as indicated on labels of the registered products containing methamidophos are presented in Table 3.

Table 3. Uses indicated on the labels of currently registered products containing methamidophos.

Situation	Pest
Brassicas, Cabbages, Cauliflower, Chinese white cabbage-Bok choi	Aphids, Cabbage white butterfly, Cabbage-centre grub, Budworms (Heliothis), Cluster caterpillar, Diamondback (Cabbage) moth
Capsicums	Green peach aphid, Potato moth (leafminer), Budworms (Heliothis), Western flower thrips, Eggfruit caterpillar
Cucumbers	Western flower thrips
Lettuce	Western flower thrips
Ornamentals - Nursery Crops	Western flower thrips
Chicory	Western flower thrips
Duboisia	Common brown leafhopper, Aphids
Lupins	Bluegreen aphid, Cowpea aphid, Green peach aphid
Flowers - Tolerant Species	Western flower thrips
Nurseries	Western flower thrips
Gladiolus	Thrips
Peaches	Green peach aphid
Peanuts	Whitefringed weevil
Potatoes	Potato moth (leafminer), Green peach aphid
Rocket (Rucola)	Western flower thrips
Silverbeet	Western flower thrips
Spinach	Western flower thrips
Tomatoes	Budworms (Heliothis) Potato moth (leafminer), Western flower thrips, Green peach aphid, Common brown jassid

It is clear from the data provided by the registrants, and supported by the State and Territory agricultural authorities, that more than 95% of methamidophos use is in vegetables, Approximately 85% of this use is in brassicas, potatoes and tomatoes (Table 4). In the USA, where it is registered for use on potatoes, tomatoes and cotton, 66% of annual methamidophos use is on potatoes and 29% on tomatoes.

Table 4. Usage of methamidophos by crop

Use	Bayer		Aventis		Total active	Use
	*Product (L)	Active (kg)	*Product (L)	Active (kg)	(kg)	%
Brassicas	11,000	6,380	5,340	3,097	9,477	20.9
Potatoes	21,000	12,180	4,470	2,593	14,773	32.6
Tomatoes*	19,000	11,020	6,470	3,753	14,773	32.6
Peas	2,700	1,566			1,566	3.5
Capsicums			5,650	3,277	3,277	7.2
Ornamentals-field grown			2,200	1,276	1,276	2.8
Peaches			210	122	122	0.3
Peanuts			100	58	58	0.1
Gladioli-field grown			0	0	0	
Lupins			0	0	0	
TOTALS	53,700	31,146	24,440	14,176	45,322	100

* Products contain 580 g/L of methamidophos

Methods of application

Aerial Application

The only crop which specifically suggests application by aircraft is lupins. From the usage data supplied by the registrants, it is clear that this is a minor use. It is expected therefore that although the labels carry per hectare rates and specify aerial application as one of the methods of application in the case of lupins, that very little methamidophos is actually applied by air. It should be noted however, that per hectare rates are supplied for capsicums, peanuts and potatoes, which implies that even though specific instructions are not supplied on the label, aircraft could be used since high volume dilute sprays are not specified. Nevertheless, information supplied by the manufacturer suggests that very little methamidophos is applied by air.

Ground application – high volume (dilute) boom spray

This type of application is favoured on vegetable and ornamental field crops, lupins and peanuts. It is by far the most

likely application method for the majority of methamidophos used in Australia. These are high volume sprays during which the chemical is applied to comparatively small areas of vegetables. Although it is possible that in some areas of Australia, broadacre cropping of vegetables such as brassicas, potatoes and tomatoes occurs, most of these crops are grown in smaller areas of 5 – 20 hectares and are treated for pests using high volume boom spray equipment. From the information supplied below it is clear that more than 98% of methamidophos applied would be applied by this method.

Ground application – low volume (concentrate) spray

This method of application is likely to be the method of choice for use in tree crops. However, use in tree crops (peaches) accounts for only 0.3 % of overall methamidophos usage.

Hand wand with trailer / utility mounted tank and pump

This method of application is used in large-scale nurseries and also in field grown ornamentals, where boom sprayers are not used. It is simply a form of hand spraying which does not require the operator to carry the spray solution or hand operate a pump. The label carries a prohibition against using the product in enclosed spaces. It is likely that only minimal amounts of methamidophos are applied in this way

Back pack / knapsack sprayer

There are no specific directions for application of this chemical with this type of equipment, and in Victoria, application via this type of spray equipment is prohibited. It is unlikely that significant quantities are applied in this way in other States.

Efficacy

Methamidophos is an organo-phosphorous chemical. Organo-phosphorous chemicals are valuable both in terms of resistance management and integrated pest management (IPM). They provide different chemistry, which can be applied in a rotation with other chemical groups to extend the useful life of all chemicals.

Rates of methamidophos application vary between 250 – 700 mL/ha, while the high volume (dilute) rates vary between 50 – 200 mL / 100 L water. The directions indicate that application should be repeated as necessary with some pests requiring 3 to 4 applications to achieve control.

Significant quantities of this chemical are used in brassica, potato and tomato production in Australia. This has been attributed by the registrants to the combination of efficacy, lack of resistance and phytotoxicity and comparatively low cost of the products. However, because of its disruption of IPM strategies, it is not a preferred chemical control option, even though it is effective and used for control of sucking insects.

Information available indicates that methamidophos is still efficacious for the purposes claimed. Registrants advise that they do not have any information on any reduction in efficacy and have not received any complaints from users in relation to failure to control nominated pests or of crop safety concerns when using methamidophos. State and Territory agricultural authorities confirm that the chemical was still efficacious for the purposes claimed, while commenting that there appeared to be some indications of a strengthening

preference on the part of growers to use less toxic alternatives (specifically products that are not S7 poisons).

Phytotoxicity

Registrants advise that they have not received reports of phytotoxicity in relation to any of the crops on which it is currently used according to registered use patterns. This accords with reports from overseas where the product is considered to be non-phytotoxic.

Pest resistance to the chemical

Although some resistance has been reported to methamidophos, it is of a low level and only in a limited number of pests. This situation is similar to that reported overseas where resistance in about a dozen pest species is reported in the USA.

4. Scope of the review

4.1 Concern(s) about methamidophos

Most horticultural industries are moving towards an integrated pest management (IPM) approach to control of pests. Considerable research effort continues to be directed towards establishing economic thresholds in various crops, as well as selecting insecticides which will complement as far as possible, natural control of pests. Every effort is therefore made to select insecticides, which control the pest species but have a reduced effect on populations of beneficial insects.

As an organophosphate chemical, methamidophos does not easily fit into current trends of agricultural pest control involving integrated pest management. It is a broad spectrum insecticide which destroys both pests and beneficial species. In this regard, it can be used to bring IPM 'escapes' under control so that the integrated control can be re-established. However, there is some evidence that it may not be as hard on beneficials as other organophosphate insecticides.

There is also some evidence that farmers are moving away from use of methamidophos and other Schedule 7 poisons because of possible health hazards associated with their use. Several alternative chemicals are currently registered for some or all of the registered uses for methamidophos in Australia. These chemicals include trichlorfon, maldison, dimethoate and chlorpyrifos. Their mention here does not necessarily mean that they are safer, or more acceptable than methamidophos. Some of these chemicals are subject to review. Levels of insect resistance to some of these chemicals are also high and phytotoxicity is a problem in some cases as well.

Despite the increasing uptake of IPM strategies, and farmers' preference for less hazardous chemicals, methamidophos still has a substantial place in Australian agriculture, particularly in the production of potatoes and tomatoes where it is useful in the control of potato moth (leaf miner). It also has significant use in the control of pests such as cabbage moth and cabbage white butterfly in brassicas. It appears that, as far as producers are concerned, the utility of methamidophos is related to its comparatively low cost, efficacy and lack of pest resistance to the chemical.

Thus, there is potential for human exposure to methamidophos during use or through the presence of the chemical in food and in the environment. The NRA has concerns for human safety arising from the high acute and chronic risk, and delayed neurotoxicity of methamidophos. Although products containing methamidophos have been registered in Australia since the early 1970s, the risk from methamidophos toxicity has not been characterised adequately. Therefore the NRA is not satisfied that methamidophos would not be likely to have an effect that is harmful to human beings.

4.2 NRA's obligations

If the NRA proposes to reconsider the approval of an active constituent, the registration of a product or the approval of a label, the NRA is required under section 32(2) of the Agvet Codes to notify interested persons (approval holders or registrants) in writing of the proposed reconsideration. In such a notice the NRA is required to request the interested person to submit to the NRA any information of which the interested person is aware and which is relevant to the reconsideration. The NRA may also, under section 32(1) publish a notice of the reconsideration. Such a notice would usually be published in the NRA Gazette.

Once the reconsideration has been conducted, if the NRA is satisfied that continued use of the active constituent or product in accordance with NRA-approved recommendations for use would not be an undue hazard to the safety of people or be likely to have an effect that is harmful to people, animals, plants, things, the environment or Australia's trade, the NRA must, under section 34(1) of the Agvet Codes, notify the interested person in writing affirming the active approval or product registration. If a notice was published in the NRA Gazette under section 32(1) of the Agvet Codes, the NRA must publish a second notice stating that the active approval or product registration has been affirmed.

If the NRA is satisfied that the conditions of registration or approval can be varied so that continued use would not be an undue hazard to the safety of people or be likely to have an effect that is harmful to people, animals, plants, things, the environment or Australia's trade, the NRA must under sections 34(4) and 34(5) of the Agvet Codes vary the conditions of approval or registration and notify the interested person of its decision, giving reasons.

Under section 40 of the Agvet Codes, the NRA may cancel the approval of an active constituent or the registration of a product if it is not satisfied that the conditions of approval or registration can be varied so that continued use would not be an undue hazard to the safety of people or be likely to have an effect that is harmful to people, animals, plants, things, the environment or Australia's trade.

Under section 32(5) of the Agvet Codes, the NRA must take into account any submissions made in response to a notice in the NRA Gazette, or a letter to an interested person.

Under section 59 of the Agvet Codes, information submitted by a registrant or approval holder to the NRA under section 32(2) of the Codes becomes protected information and the NRA must not use the information to support the continued registration of another registrant's product(s) or another approval holder's active constituent(s) without the two parties notifying the NRA that they have agreed to the amount of compensation to be paid, if any.

4.3 Direction and scope of the review

As discussed earlier, the reconsideration of the approval(s) and registration(s) related to methamidophos stems from concerns over human safety.

Humans could potentially be exposed to methamidophos via occupational

use, consumption of food containing residues, residues in the environment or accidental poisoning.

Although, there have been overseas reports of acute poisoning following the consumption of green leafy vegetables, it is strongly suspected that vegetables sprayed with methamidophos were harvested too early before the residue levels had fallen to safe levels. It is believed that use of methamidophos may result in low level residues; but there should be no health hazards if pre-harvest intervals are observed.

The half-life of methamidophos in soil is considered to be relatively short and general population is not expected to be exposed to methamidophos in air or water (http://www.fao.org/ag/agp/agpp/pesticid/PIC/Download/DGDs/metha.doc).

There are overseas reports on methamidophos indicating it may cause health problems during occupational use. While higher occupational exposure may have occurred due to accidents or as a result of incorrect handling, it appears that some poisoning cases occurred in the course of normal agricultural use. An assessment of occupational hazard from methamidophos will require the establishment of toxic end points from toxicity data.

This review will focus on the toxicology of methamidophos. The toxicology database for methamidophos is quite old. The current Australian ADI for the chemical needs to be reviewed using newer chronic toxicity studies. More recent studies on toxicity and neurotoxicity are expected to establish an Acute Reference Dose and clarify the neurotoxicity potential of methamidophos.

The need for a specific assessment of occupational health and safety and/or residues will depend on the findings of the review of toxicology that is currently underway.

As a part of developing this scope document, the registrants of products containing methamidophos were requested to provide a list of all toxicological studies on methamidophos held by them. The NRA will examine these studies as well as published scientific papers, assessments by overseas regulatory bodies and the Therapeutic Goods Administration's archival holdings on this chemical.

4.4 Call for submissions

The NRA has published a notification in the NRA Gazette of April 2002 announcing the reconsideration of approval(s) and registration(s) related to methamidophos. Interested parties are invited to make a submission to the NRA setting out their views on whether or not the approvals and registrations of methamidophos should continue in the present form. Submissions should reach the NRA by 31 May 2002. Submissions can be sent either by email to chemrev@nra.gov.au or by mail to:

Eva Bennet-Jenkins Ph.D.
Acting Manager, Chemical Review
National Registration Authority
P.O. Box E240
KINGSTON ACT 2604

4.5 Data call-in

The NRA will contact the registrants directly to request specific data

(Appendices 3 and 4). Under section 32(2)(b) of the AgVet Codes, the registrants are obliged to provide the data (For details, see Appendix 1). Since the data sets are already identified and acknowledged as available, in consultation with the registrants, it is determined that three months from the date of notice is ample for the registrants to provide the data.

The review process may reveal data gaps that cannot be identified now. Should there be a need for additional data, the registrants will be required to provide defined data. Other stakeholders will also be informed of those data requirements. The review findings will be based on the available data and thus the outcomes of the review will depend on the data in hand.

5. Subsequent review stages

5.1 Data assessment

The toxicity data will be assessed by the Therapeutic Goods Administration (TGA), a consulting agency of the NRA. After assessing the data, the TGA will advise the NRA of the recommendations. It is expected that the assessment process will take up to one year.

The NRA will then assess the use of methamidophos taking into account the TGA assessment, the use profile of the chemical and submissions from stakeholders and the public. It will also draw on the overseas hazard assessments.

After the assessment phase is completed, risk management options, required to implement the outcomes of

the review, will be developed by the NRA through consultation with the relevant stakeholders. It will prepare a draft summary of the outcomes of the review and seek comments from stakeholders.

There are three possible outcomes of a review.

- the NRA is satisfied that the chemical under review continues to meet the prescribed requirements for the initial approval or registration and confirms the approval or registration;

- the NRA is satisfied that the conditions to which the approval or registration is currently subject can be varied in such a way that the requirements for continued approval or registration will be complied with, and varies the conditions of approval or registration; and

- the NRA is not satisfied that the conditions continue to be met and suspends or cancels the approval or registration.

5.2 Consultation

From initiation of the review through to the implementation of the review outcomes, the NRA will consult the relevant stakeholders and interested parties (see Table 5). It will solicit comments from relevant stakeholders and public on the drafts of review scope, and review summary before finalising the documents. It will also seek input from the relevant stakeholders in developing the risk management plan and implementation of the review.

The draft of the review summary along with proposed recommendations and the risk management plan will be made available to the stakeholders and public through the NRA website or direct communication. A period of four weeks will be allowed for the stakeholders and the public to comment on the draft.

5.3 Announcement of the review outcomes

The review document will be finalised after considering the comments, and making suitable amendments to the draft. The outcomes of the review will be announced in the NRA Gazette. Major stakeholders will be notified by direct writing.

5.4 Dissemination of the review outcomes

The review findings and recommendations will also be made available on the NRA website (http://www.nra.gov.au) for a minimum period of two years. The NRA, in consultation with registrants, will prepare and print outcome dissemination material and co-ordinate its distribution by registrants at the point of sale.

Table 5. Stakeholders and topics for consultation

Stakeholder[a]	Mode of communication[b]	Topics for consultation[c]
1. User organisations Potato growers association, Brassica growers association, Horticultural Association of Australia and National Farmers Federation	Direct correspondence, notifications in the NRA Gazette and notifications on the NRA website.	Use patterns of methamidophos, good agricultural practices, alternative control measures, label requirements, impact of the outcomes of the review and risk management and information dissemination
2. Registrants of the chemical Bayer Australia and Aventis	Direct correspondence, notifications in the NRA Gazette and notifications on the NRA website.	Toxicity data, use patterns of methamidophos, sale volume, company's assessments and assessments by overseas regulatory bodies, information dissemination, and label requirements
3. State Government Departments Departments of agriculture in all States and Territories	Direct correspondence	Use patterns of methamidophos, State Govt. mechanisms which regulate the chemical, review scope, label requirements, impact of the outcome of the review and risk management
4. Consulting agencies of the NRA Therapeutic Goods Administration	Direct correspondence	Assessment of methamidophos toxicity, review scope, label requirements, impact of the outcomes of the review and risk management
5. Nominators [d]	Notifications in the NRA Gazette and notifications on the NRA website.	Impact of the outcomes of the review and risk management
6. The public	Notifications in the NRA Gazette and on the NRA website	Any questions and concerns that they wish NRA to consider for the review

a. Consultations include these parties, but are not necessarily limited to them.
b. Where necessary, meetings will be arranged to facilitate effective consultation.
c. While the stakeholders will be consulted about the corresponding topics, the consultations will not necessarily be limited to these topics.
d. Details of the nominators are not for public release.

6. References

1. Bertolazzi, M. *et al* (1991). Interaction of methamidophos with hen and human acetylcholinesterase and neuropathy target esterase. Arch. Toxicol. 65: 580-585
2. http://www.fao.org/ag/agp/agpp/pesticid/PIC/Download/DGDs/metha.doc