NATIONAL REGISTRATION AUTHORITY
FOR AGRICULTURAL AND VETERINARY CHEMICALS

PUBLIC RELEASE SUMMARY

ECLIPSE HERBICIDE

(Active Ingredient - Metosulam)

EXECUTIVE SUMMARY

Introduction

The purpose of this document is to provide a summary of the data reviewed and an outline of regulatory considerations for the proposed clearance and registration of the chemical metosulam as a herbicide for the post-emergence control of broadleaf weeds in winter cereals and lupins.

The National Registration Authority for Agricultural and Veterinary Chemicals (NRA) invites public comment before deciding whether to proceed to approve this product for use in Australia.

ECLIPSE HERBICIDE is to be used for post-emergence control of brassica weeds and suppression of several other broadleaf weeds in winter cereals and one variety of lupins in Western Australia, South Australia, Victoria, New South Wales and Queensland.

The NRA has completed an assessment of the data submitted by the applicant in support of this use of metosulam and has provided the following information for public comment:

Agricultural aspects

Metosulam is an acetolactate synthase inhibitor (ALS) which utilises the same mode of action as the sulfonylureas and the imidazolinones. Metosulam will be marketed as the product ECLIPSE HERBICIDE, a water dispersible granular formulation containing 71.4% by weight of the active ingredient.

Cereal and small grain production in Australia are major earners of foreign exchange and contribute significantly to Australia's economy. Lupins are commonly grown as a rotation crop before cereals; 900,000 ha of lupins were grown in 1990-91.

The product is applied in the early stages of the crop growth at specified weed growth stages.

The data package is considered adequate to indicate that ECLIPSE HERBICIDE will control the specified weeds when used according to the directions on the label.

There was no evidence of phytotoxicity to cereals and Danja lupins, the crops which are the subject of this application for label approval. Canola and other brassicas, field peas, beans, medics, lucerne and subterranean clover are

susceptible to damage, but the label specifies adequate plant back periods for these crops.

Advantages of using metosulam in cereal crops and lupins include its selectivity of herbicidal action against broadleafed weeds, particularly *Brassicaceae* and plants belonging to *Fabaceae* and leguminosae, its short residual life and low toxicity to both users and the environment.

Environmental aspects

Metosulam is a herbicide with low persistence and moderate mobility in soil. It will be applied at a low rate to winter cereals and lupins, which are generally grown on a range of soil types and organic matter content. In view of the low application rate, significant environmental contamination is not expected, and it is not expected to reach groundwater.

The main hazard posed by use of metosulam is possible damage to algal and sensitive plant communities exposed to residues through drift. However, in view of the limited persistence, low application rate, flat topography where applied, and infrequency and nature of application, residues reaching waterways are expected to be less than the no-effect levels for the most sensitive species tested, the alga *Scenedesmus subspicatus*.

Metosulam displays many of the characteristics that made the sulphonylurea herbicides ideal candidates for replacing some of the older herbicides that were used in greater quantities. However, recent studies have attributed sulphonylurea drift as the cause of crop losses through disruption of the plant's normal reproductive and/or enzymatic processes. The product label has adequate instructions on how and when to spray which will minimise the effects of spray drift.

Toxicology

Metosulam has very low acute toxicity, no skin irritancy or sensitising potential and only slight eye irritancy potential. Eclipse, the formulated wettable granular product, also has a very low acute toxicity potential commensurate with the content of the active ingredient, but was a moderate eye irritant.

Long-term oral administration of metosulam in animals revealed that the liver, kidney and eyes are the main target tissues for toxic effects at high dose rates. The lowest No-Observable-Effect Level (NOEL) dose rate was 5 mg/kg body wt/day in rats. There was no evidence of a potential to cause birth defects or damage to genetic material (DNA). Prolonged administration of high doses increased the incidence of renal tumours in rats, but not in other species tested. The renal tumours occurred only at doses which produced significant renal injury, suggesting that the tumours were secondary to renal toxicity and that there would be little potential for such effects in humans.

Residues in food commodities

Studies on wheat demonstrated that metosulam has minimal uptake into the plant and undergoes very little metabolism. Analytical methods appropriate to determine potential residues of the parent compound were evaluated. Residue trial data were provided on wheat, cereal rye, barley and lupins. Transfer trials from forage to cattle were also evaluated. These trials were adequate to establish the level of residues which could result from the use of Eclipse Herbicide according to prescribed labels and Good Agricultural Practice. Appropriate Maximum Residue Limits (MRLs) were established.

Based on an assessment of the toxicology and potential dietary intake of the residues, it was considered that there should be no adverse effects on human health.

Occupational health and safety aspects

The formulated product is to be imported into Australia in retail packs and therefore the potential for exposure is greatest for the end-users, who may be exposed to the product when opening packs, preparing and applying spray, entering fields after application of spray and cleaning up spills.

The label gives adequate warning of the precautions needed when using the product.

TABLE OF CONTENTS

INTRODUCTION

The purpose of this document is to provide the public with a summary of the data reviewed and an outline of the regulatory considerations for the proposed post emergence application of the chemical metosulam as a herbicide for the control of broadleaf weeds in winter cereals and lupins, and to seek public comment prior to the chemical product being approved for use in Australia.

Comments should be received by 22 March 1994 and sent to:

Applicant

DowElanco Australia Limited has applied for the clearance and registration of a new herbicide product containing the active constituent, metosulam, an acetolactate synthase inhibitor (ALS) which utilises the same mode of action as the sulfonylureas (eg triasulfuron) and the imidazolinones (eg imazethapyr).

Product details

Metosulam will be marketed as the product Eclipse Herbicide, a water dispersible granular formulation containing 71.4% by weight of the active ingredient. Remaining ingredients, none of which are new, consist of wetting agents, dispersants, disintegrants and fillers.

Metosulam is not formulated locally but imported from New Zealand.

DowElanco intends to market metosulam in Western Australia, South Australia, Victoria, New South Wales and Queensland for the post-emergence control of certain *Brassica* weeds and yellow burrweed, with suppression of volunteer legumes and other broadleaf weeds in winter cereals and lupins.

Overseas registration status

Metosulam is registered for use in cereals in France and Turkey, and applications have been submitted for use in Germany for maize, and UK, Hungary, Greece, Syria, and Italy for cereals.

PROPERTIES OF THE CHEMICAL ACTIVE INGREDIENT

The chemical active ingredient metosulam is manufactured in France and has the following properties:

Common name:	metosulam
Chemical name:	N-(2,6-dichloro-3-methylphenyl)-5,7-dimethoxy-[1,2,4]-triazolo-[1,5a] pyrimidine-2-sulfonamide
Product name:	Eclipse Herbicide
CAS Registry Number:	139528-85-1
Empirical formula:	$C_{14}H_{13}Cl_2N_5O_4S$
Molecular Weight:	418
Physical form:	Powder at 20°C
Colour:	Cream
Odour:	Slight garlic
Melting point:	210-211.5°C
Density:	0.335 g/mL at 24°C
Octanol/water partition coefficient (K_{OW})	1.01 at 20°C
Vapour pressure:	$9x10^{-15}$ mm Hg at 25°C

Structural Formula:

AGRICULTURAL ASSESSMENT

Justification for use

Cereal and small grain production in Australia are major earners of foreign exchange and contribute significantly to Australia's internal economy. The challenge for cereal and small grain farmers is to produce high quality crops in the face of challenge by weeds. Herbicides assist in the production of crops which are profitable for the grower and of quality standards which are acceptable to consumers.

Lupins are commonly grown as a rotation crop before cereals, and have increased several fold in area from less than 100,000 ha in the early 1980's to 900,000 ha in 1990-91. Successful cultivation requires good weed control and an avoidance of severely acid soils.

Advantages of using metosulam in cereal crops and lupins are:

. it gives excellent post-emergent control of wild radish, an agronomically significant weed not well controlled by current commercial herbicides;

. it is herbicidally active against only a narrow spectrum of plants, displaying no activity against grasses and therefore is not likely to damage non-target plants or exert selection pressure to exacerbate annual ryegrass resistance;

. it has a short soil residual life so it is unlikely to impose rotational crop limitations;

. it has a wide application window, offering the farmer flexibility in weed control.

Proposed use pattern

The product is applied by boom spray at 5 or 7 g/ha on wheat, barley, oats, triticale and rye crops at the 2 leaf to first node stage of the crop (Zadoks 12-31). The lower rate is applied when weeds are up to 4 leaf and a maximum of 12 cm diameter, and the higher rate up to 8 leaf and a maximum of 15 cm diameter. Application to the Danja variety of lupins at the 2 to 4 leaf stage (Western Australia) or at the 2 to 8 leaf stage (Vic and NSW) is at the higher rate of 7g/ha. In all situations, only one application per season will be necessary. The label recommends the use of spraying oils and/or non-ionic wetter as appropriate.

Evaluation of efficacy

Trials were started in Australia with liquid formulations of metosulam in 1988 and 1989; a change from liquid formulations to a water dispersible granule was made in 1990 for commercial reasons.

The data package in the submission on efficacy and phytotoxicity has been generated in 92 experiments covering all mainland States. Experiments have generally been 3-4 replicate small plot trials, the majority being laid in a randomised complete block design and the remainder in "grid" trials in conditions typical of those in which the product will be used.

Evaluations of weed control (biomass reduction) were made visually and expressed as percentage control. Depending on growth conditions, evaluations were made periodically from two to fifteen weeks after application, although in the majority of trials the most reliable assessments were taken at 4-10 weeks after application.

The data package is considered adequate to support the claims made on the label for ECLIPSE HERBICIDE.

Phytotoxicity

There was no evidence of phytotoxicity to cereals or Danja lupins. The studies support the claim that when used as per label directions, ECLIPSE HERBICIDE would not be expected to present any hazard to non-target crops and plants. The label recommends that susceptible crops (canola and other brassicas, field peas, beans, medics, lucerne and subterranean clover) should not be planted until 9 months after application of ECLIPSE. There is also a caution on the label to avoid spraying overlaps in lupin crops as slight stunting and yellowing may occur.

Herbicide resistance

The proposed label incorporates a statement regarding the possibility of development of resistance to herbicides, with particular reference to the fact that metosulam is an acetolactase synthase (ALS) inhibiting herbicide which has broadleaf activity but no grassweed activity. The label advises users to discuss resistance management strategies with professional agronomists.

Compatibility of herbicide mixtures

ECLIPSE HERBICIDE was shown to be compatible with STARANE 200 HERBICIDE and bromoxynil and this information appears on the label.

ENVIRONMENTAL ASSESSMENT

Environmental fate

Metosulam is a slightly acidic, water soluble sulphonamide herbicide which adsorbs to humic and clay soil particles. Following application, metosulam is expected to become associated mainly with the soil fraction and is susceptible to microbial breakdown.

Degradation rates

The principal route for degradation appears to be aerobic microbial degradation in soil solution, which proceeds more readily in soils high in organic matter content. Under laboratory conditions, half-lives ranged between 1 and 11 days in a sandy loam and sand respectively whereas half-lives calculated using field data ranged from 6 to 47 days for a loamy silt and silt loam respectively.

The field data suggests that degradation slows in soils high in clay, as binding to clay particles reduces the availability of metosulam to microbes. Metosulam was also observed to undergo transformation under anaerobic conditions, but at a significantly reduced rate. Half-lives of 71 and 109 days were calculated for anaerobic loamy and sandy sediments respectively whereas degradation in anaerobic water was very slow, presumably due to a low microbial biomass. In aerobic water systems metosulam had an average half-life of 84 days.

Metabolites

The structures of the several aerobic metabolites in water were not investigated as they were formed in low amounts totalling no more than 4 percent. However in soil, two metabolites, totalling approximately 25%, formed within 63 days after application. Their structures indicate that they may display similar herbicidal activity and behave in a similar fashion to the parent compound.

However, given that the proposed application rate of 5 g ai.ha^{-1} corresponds to an average of 2.5 ppb in the top 15 cm of soil, individual metabolite levels in Australian soils should remain below 0.6 ppb.

Mobility

Following application, any metosulam not absorbed by the target plants will enter the surrounding soil and water compartments of the environment only. Movement of the chemical into the atmosphere will be unlikely due to its low vapour pressure.

Adsorption/desorption and column leaching tests indicate that metosulam is moderately mobile in soils, but low application rates and the existence of microbial degradation pathways in aerobic soils mean that significant residues are unlikely to occur in deeper soil profiles or groundwater. Only in sandy soils with low contents of organic matter and clay is metosulam likely to reach shallow groundwater systems. Even then, metosulam is not expected to persist for long periods unless in water under anaerobic conditions.

Accumulation in soils

Metosulam will be applied once only at a low rate per annum. Coupled with its relatively fast degradation, moderate mobility, and adsorption to humic and clay particles, soil accumulation of available metosulam is not expected, as demonstrated by the field dissipation studies.

Metosulam's low octanol/water partition coefficient (K_{ow} = 1 in non-buffered systems) of water indicates aquatic bioaccumulation is not likely to occur.

Effects on target and non-target organisms

Avian toxicity

Acute oral and dietary studies on bobwhite quail and mallard duck indicated that metosulam is practically nontoxic to birds.

Aquatic toxicity

Endpoints in 96 hour static studies on fathead minnow, bluegill sunfish and rainbow trout were in excess of 100 ppm, the limiting value reflecting the reduced solubility of metosulam because of the influence of dissolved organic matter and calcium ions in the test medium. Similar results were obtained for the marine species Tidewater silverside and Grass shrimp. The no-effect concentration in 48 hour immobilisation tests with *Daphnia magna* and the EC_{50} in 96 hour growth inhibition tests with eastern oyster were above 100 and 88 ppm respectively. These results indicate negligible toxicity to aquatic fauna. However, metosulam proved very highly toxic to the alga *Scenedesmus subspicatus*, one of the least sensitive of the approved test indicator species (96 hour EC_{50} = 88 ppb; NOEC = 17 ppb).

Non-target Invertebrates

Tests on honey bees, beetles, lacewings, earthworms and soil microorganisms did not reveal any toxic effects of metosulam.

Mammals

Tests conducted on rats and rabbits indicated that the acute mammalian toxicity of metosulam is negligible.

Phytotoxicity

Metosulam has a relatively narrow spectrum of activity, mainly against *Brassicaceae*, *Fabaceae* and leguminosae. Grasses and cereals and some lupin varieties are tolerant of metosulam. The non-target phytotoxicity test results

submitted are based on observations made during field trials applying metosulam at up to 10 g ai/ha to a variety of commercial crops and plants representative of a number of plant families. Metosulam was found to be moderately to highly phytotoxic to several important crops such as legumes, lucerne and sunflowers. Other crops (e.g. cotton & chickpeas), were found to be moderately tolerant although plant vigour could be affected as much as 30 percent.

Metosulam's toxicity to aquatic vegetation was not reported. However, based on its extreme toxicity to freshwater algae and to several terrestrial plant groups, metosulam is predicted to be toxic to a range of aquatic plants.

Possible hazards arising from use

Terrestrial birds, mammals and other vertebrates

Terrestrial wildlife species are not likely to be affected by the application of metosulam to winter cereal and lupin crops. For example, if metosulam was applied to cereal or lupin seed heads, a galah, with a bodyweight of 250 g, would have to ingest 50 tonnes of seed per day in order to reach a level of metosulam in the body of 2000 mg/kg body weight. Given that the acute oral $LD_{50} > 2000$ mg/kg body weight and the 5-day dietary $LC_{50} > 5260$ ppm for ducks and quail, the use of metosulam should not be hazardous to birds.

Aquatic organisms

The exposure of fish and non-vertebrate freshwater and marine fauna to metosulam will most likely be from either direct spraying of a water body or from runoff into water respectively. However, direct spraying of a pond (150 mm deep), at the label rate of 5 g $ai.ha^{-1}$ only gives a maximium concentration (assuming total solubility) of approximately 3.3 ug/L which is 5 orders of magnitude less than the acute oral LC_{50}'s. The greatest toxicity was to oysters where the No-Observable-Effect Concentration (NOEC) was 37,500 ug/L.

In contrast, metosulam is highly toxic to freshwater algae, especially since the test species used is one of the least sensitive of the approved indicator species. However, the worst case scenario involving direct application to 150 mm of standing water, resulting in metosulam residues of 3.3 ug/L, is less than one third that of the NOEC level of 17.3 ug/L. For runoff or drift into waterways, residues around 5% as high as those from direct contamination are usually considered.

While the above considerations indicate potential damage to algal communities, certain aspects of the currently proposed use serve to moderate the hazard. As noted above, residues in surface runoff should be low because cereals and lupins are rain fed crops and infiltration of metosulam into the soil is expected to be rapid when rain occurs. Significant sub-surface water flow is not expected in relatively low slope areas where cereals and lupins will be grown.

Non-target Vegetation

In terrestrial ecosystems, exposure of non-target vegetation may arise through drift in the atmosphere or in subsurface water flow. Spraying should not be done in conditions that would favour the drift of metosulam on to remnant, native vegetation commonly found along fence lines, roadsides and in low-lying or creek areas. Surface runoff is not expected to carry significant metosulam residues as cereals and lupins are cultivated in relatively low slope areas and the high solubility and reasonable sorptive properties of metosulam mean that it will not generally be carried down below 10 cm into the soil profile.

As noted above, the generally flat topography where cereals and lupins are grown will not favour lateral movement of metosulam following application, and only very low concentrations, if any, are expected to reach non-target vegetation. The draft label indicates that residues 9 months after application will not damage the sensitive crops listed on the label, which suggests that damage to some other non-target plants may occur as a result of the very low level soil residues (2.5μg/kg maximum) which result from use of metosulam.

PUBLIC HEALTH AND SAFETY ASSESSMENT

Evaluation of toxicology

The toxicological data base for metosulam, which consists primarily of toxicity tests conducted using animals, is quite extensive. In interpreting these data, it should be noted that animal toxicity tests generally use doses or exposures which are high compared to likely human exposures. The use of high doses increases the likelihood that potentially significant toxic effects will be identified. Toxicity tests should also indicate dose levels at which the specific toxic effects are unlikely to occur. Such dose levels as the No-Observable-Effect Level (NOEL) are used to develop appropriate standards for exposures which can be tolerated by humans.

The acute toxicity of metosulam by oral, dermal and inhalational routes was low. Eye irritation was slight with no skin irritation or sensitisation. While no toxicological studies on ECLIPSE HERBICIDE were submitted, a full range of acute studies and a dermal short-term repeat-dose study were submitted on a related formulation of metosulam (a 750 g/kg water dispersible granule). The relatively small differences in composition should not compromise the interpretation of the acute toxicity of the formulated products. The tested material had low oral, dermal and inhalational toxicity, it did not produce skin irritation or sensitisation, but was a moderate eye irritant.

Absorption of metosulam after oral dosing was high in the rat, but low in the dog and mouse. Metosulam did not accumulate remarkably in tissues, with the exception that it had some affinity for the retina of the eye in dogs. Dogs and goats excreted metosulam almost entirely unmetabolised, while the extent of metabolism was moderate in rats and extensive in mice.

Short-term (up to 90 days) and long-term (1 - 2 years) administration of metosulam to rats, mice, rabbits, monkeys and dogs at doses ranging from 5 to 5000 mg/kg body wt/day indicated that the kidney and, to a lesser extent, the liver, are the main sites for toxic effects in rats and mice, while the kidney and eye were the main sites for toxic effects in the dog. Metosulam did not have any significant toxic effects on reproduction or foetal development.

Effects on the eye were only seen in the dog and only when dosed orally. The effects were consistent with retinal degeneration and detachment and ranged from diminished and absent pupillary light reflexes to frank blindness. The lowest dose level at which these effects were detected was 37.5 mg/kg/d in a 1-year study. No eye effects were seen in Sprague-Dawley rats (which do not have a pigmented retina), Long-Evans rats (which have a pigmented retina), mice, rabbits or monkeys.

The apparent species specificity of ocular lesions may be related to metabolic differences. The dog does not metabolise metosulam while other, non-susceptible species do. Furthermore, metabolic and toxicokinetic studies highlighted the special affinity of the dog retina for metosulam. Since no data on human metabolism were available, the susceptibility on human eyes cannot be assessed. However, irrespective of whether the effects are specific to the dog, there is an adequate safety margin between the levels which cause eye lesions in dogs and the likely levels of human exposure.

The incidence of tumours in the kidney was increased in both sexes of rats, but not in any other species. Incidences were significantly increased at 100 mg/kg/day in both sexes, with males most affected (40% total adenomas/adenocarcinomas) and females were less susceptible (12% incidence). Such tumours occur spontaneously in normal male rats (historical incidence up to 6%) but are more rare in female rats. In males, the tumours spread to other tissues.

An adequate battery of tests established that metosulam does not damage genetic material (DNA). Therefore, it is unlikely that it could initiate tumours by genotoxic mechanisms which are commonly associated with chemically-induced cancer. There was strong evidence that the renal tumours only occurred in association with significant injury to the relevant cells in the kidney, suggesting that tissue degeneration and regeneration plays an important role in the tumour development process. There was confirmatory evidence of enhanced cellular turnover in the affected regions of the kidney and this is a possible mechanism whereby the incidence of spontaneous tumours could be enhanced.

Renal toxicity, but affecting a different region of the kidney, was also seen in the dog, but there was no induction of tumours. In mice there was also evidence of minor kidney damage but the major effects were on the liver. Because of poor absorption, the mouse was able to tolerate much higher doses than the rat or dog.

The lowest NOEL was 5 mg/kg/d in a 2-year rat feeding study and in a 2-generation rat reproduction study. In a 13-week dog study, the NOEL was 5mg/kg/d for kidney effects, but a longer study (1 year) found no effects at 10mg/kg/d. The lowest NOEL for eye effects, was 25 mg/kg/d in dogs. Human exposures through dietary intake would be expected to be insignificant.

Potential for chemical residues in food

Australian residue trial data were submitted on wheat (WA, NSW), barley (NSW, VIC) and lupins (WA, VIC). Other residue data consisted of overseas trials on wheat, cereal rye, and barley, as well as a UK animal transfer study in lactating dairy cows.

Analytical methods with adequate levels of recovery were provided. Using these methods, the limits of determination of unchanged metosulam were 0.1 mg/kg in barley foliage and barley straw; 0.02 mg/kg in barley and wheat grains; 0.01 mg/L in milk; and 0.01 mg/kg in beef fat, liver, kidney and muscle.

These studies were adequate to demonstrate that, at application rates up to 10g a.i./ha (compared with recommended application rates of 3.5-5 g a.i./ha), no determinable residues were found in green foliage sampled after 11-28 days (wheat), after 14-28 days (barley), or after 28 days (lupins); nor in grain sampled after 92-143 days (wheat), after 61-106 days (barley) or after 92-143 days (lupins); nor in straw sampled after 110-139 days (wheat) or after 61-106 days (barley).

The feeding trial with lactating cows showed that residue levels were 0.01 mg/kg or lower in milk, beef fat, liver, kidney and muscle at feeding rates equivalent to 0.1 - 1 mg metosulam/kg body wt/day.

Resulting from the evaluation of these data, the following entries were recommended for incorporation into the MRL Standard:

Compound	**Food**	**MRL** mg/kg
metosulam	Cereal grains	*0.02
	Lupin (dry)	*0.02
	Edible offal (mammalian)	*0.01

	Meat (mammalian)	*0.01
	Milks	*0.01

Compound	Animal Feed Commodity	MRL mg/kg
metosulam	Straw, fodder (dry) and hay of cereal grains and other grass-like plants	*0.1
	Forage of cereal grains and other grass-like plants	*0.1
	Lupin, forage	*0.1

*MRL set at or about limit of analytical determination

Public health standards

The Drugs and Poisons Schedule Standing Committee (DPSSC) of the National Health and Medical Research Council (NHMRC) considered the toxicology of the product and its active ingredient and assessed the necessary controls to be implemented under States' poisons regulations to prevent the occurrence of human poisoning.

The DPSSC recommended that metosulam be added to Schedule 6 of the NHMRC Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP). There are provisions for appropriate warning statements and safety directions on the product labels.

OCCUPATIONAL HEALTH AND SAFETY

The formulated product is to be imported into Australia in retail packs and therefore the potential for exposure is greatest for the end-users.

Users may be exposed to the product when opening packs, preparing and applying spray, entering fields after application of spray and cleaning up spills. The main routes of exposure will be dermal and inhalational. End-users will be involved in mixing the granules with water and spraying the product by boom spray onto winter cereals and lupins for control of broadleaf weeds.

There is a possibility of eye irritation while preparing the product for spraying and therefore the label recommends that a face shield or goggles and elbow-length PVC gloves should be worn. The concentration of metosulam in the spray applied will be 0.005% to 0.014% and use of protective equipment while spraying is not necessary. For end-users the label safety directions are adequate to

minimise exposure in normal use and additional information on the product is contained in the material safety data sheet.

Establishment of a re-entry period, occupational exposure standard or health surveillance requirement is not considered necessary at this time.

SUGGESTED FURTHER READING

Interim Requirements for Clearance of Agricultural and Veterinary Chemical Products (available from the NRA)

Code of Practice for Labelling Agricultural Chemical Products (available from the NRA)

Code of Practice for Labelling Veterinary Chemical Products (available from the NRA)

MRL Standard - Maximum residue limits in food and animal feedstuffs (NHMRC)