Australian Government

Australian Pesticides and Veterinary Medicines Authority

2,4-D (2,4-dichlorophenoxyacetic acid)

Final Review Technical Report

September 2020

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PREFACE

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is an independent statutory authority with responsibility for the regulation of agricultural and veterinary chemicals in Australia. Its statutory powers are provided in the Agvet Codes scheduled to the *Agricultural and Veterinary Chemicals Code Act 1994*.

The APVMA has legislated powers to reconsider the approval of an active constituent, registration of a chemical product or approval of a label at any time after it has been registered. The reconsideration process is outlined in sections 29 to 34 of Part 2, Division 4 of the Agvet Codes.

A reconsideration may be initiated when new research or evidence has raised concerns about the use or safety of a particular chemical, a product containing that chemical, or its label. The scope of each reconsideration can cover a range of areas including human health (toxicology, public health, work health and safety), the environment (environmental fate and ecotoxicology), residues and trade, chemistry, efficacy or target crop or animal safety. However, the scope of each reconsideration is determined on a case-by-case basis reflecting the specific issues raised by the new research or evidence.

The reconsideration process includes a call for data from a variety of sources, a scientific evaluation of that data and, following public consultation, a regulatory decision about the ongoing use of the chemical or product. The data required by the APVMA must be generated according to scientific principles. The APVMA conducts scientific and evidence-based risk analysis with respect to the matters of concern by analysing all the relevant information and data available.

About this document

This Technical Report contains a summary of the assessment reports generated in the course of the chemical review of an active ingredient, including the registered product and approved labels. It provides a summary of the APVMA's assessment, which may include details of:

- the toxicology of both the active constituent and product;
- the residues and trade assessment;
- occupational exposure aspects;
- environmental fate, toxicity, potential exposure and hazard; and,
- efficacy and target crop or animal safety.

1 INTRODUCTION

2,4-D (2,4,-dichlorophenoxyacetic acid) is a selective broadleaf chlorphenoxy Group 1 herbicide that has been registered for use in Australia since the 1960s. It works by disrupting the actions of the plant growth hormone auxin. Its use causes uncontrolled growth and eventual death in susceptible plants.

In Australia, 2,4-D is currently registered for post-emergent control of broadleaf weeds in pasture, stubble and fallow maintenance, cereal crops (including wheat, oats, barley, rye, triticale), grain crops (including sorghum, millet, maize), sugar cane, sweetcorn, and oilseed crops (safflower, canola, rape). Other registered agricultural uses for 2,4-D include pre-sowing or pre-emergence use in cotton and peanuts, citrus crops (particularly to inhibit post-harvest abscission of buttons), and control of banana suckers. 2,4-D is also registered and used extensively for weed control in non-cropping situations, including commercial and industrial areas, turf, forestry, aquatic areas and domestic situations.

2 PURPOSE OF REVIEW

The APVMA began its reconsideration of 2,4-D in 2003 because of concerns over toxicological, occupational health and safety and environmental issues. The adequacy of instructions and warnings on product labels was also considered. Of particular concern to the APVMA have been the issues of spray drift and the environmental risks associated with the 2,4-D high volatile (short chain) esters (ethyl ester, butyl ester and isobutyl ester forms of 2,4-D).

To address concerns regarding spray drift the APVMA undertook regulatory actions in 2005, 2013, 2018 and 2019 to strengthen label instructions, label restraints and label warnings in order to reduce the risk of undesirable chemical spray drift. In addition to these actions the APVMA released the 2,4-D preliminary review findings report (environment) part 1, HVE esters summary in 2006. The same year the APVMA suspended the registrations and label approvals of 24 products containing the registrations and label approvals of 24 products containing high volatile ester forms of 2,4-D and issued new instructions for use to allow further data to be generated by registrants. In 2013 the agency published an annex to the preliminary review findings (environment) report and cancelled the active constituent approvals, registrations and associated label approvals for the 24 products containing high volatile ester forms of 2,4-D. In 2013–14, consideration of dioxins impurities in approved 2,4-D active constituents was incorporated into the review. In 2018 and 2019 the APVMA suspended the label approvals of all commercial use products containing 2,4-D and issued new instructions targeted to reduce spray drift occurrences and damage to sensitive off target crops for the 2018–19 summer spray seasons. These label changes were implemented as an immediate priority, rather than waiting to implement all of the proposed label changes at the completion of the review.

The scope of the reconsideration includes the following aspects of active constituent approvals, product registrations and label approvals for 2,4-D:

- Chemistry (dioxin impurities).
- Toxicology, including dioxin impurities.
- Workplace health and safety (WHS).
- Health and safety associated with home garden and domestic pesticide control use.
- Environment.

3 2,4-D PRODUCT CATEGORIES CONSIDERED BY THE REVIEW

Table 1: 2,4-D product groups

Group	2,4-D form*	Concentration*** (g ae/L)	Active 2	Concentration*** (g ac/L)	Active 3	Concentration*** (g ac/L)
1	2,4-D Products containing the IPA salt at a concentration of 225 g ac/L were excluded from the review since there are no currently registered products in this category.					
2	IPA salt	300				
3	IPA salt	450				
4	TIPA	300	Picloram	75		
5	DMA salt	500				
6	DMA salt	625				
7	DMA salt	800 g ae/kg				
8a	DMA salt	720				
8b	DMA/MMA or DEA salts	700				
9a	DMA/DEA salts	625				
9b	DMA/DEA salts	750				
10	DMA/DEA salts	475				
11	DEA salt	500				
12a	DEA/TEA salt	500				
12b	DEA/TEA salt	625				
13**	form not specified	300				
14a	Sodium salt	700				
14b	Sodium salt	800				
15a	Sodium salt	22.8				
15b	DMA salt	100				
16a	DMA/DEA salts Commercial products	80	Mecoprop	336	Dicamba	40
16b	DEA salt	350	Clopyralid	45	Dicamba	45

Group	2,4-D form*	Concentration*** (g ae/L)	Active 2	Concentration*** (g ac/L)	Active 3	Concentration*** (g ac/L)
17	EHE	577	Ioxynil	100		
18	EHE	600				
19a	EHE	680				
19b	EHE	Up to 450				
20a	EHE	421	Pyraflufen-ethyl	2.1		
20b	EHE	300	Florasulam	6.25 g/L		
21	There are two current product approvals that fall into this category (numbers 31209 [2,4-D ethyl ester] and 83795 [2,4-D isobutyl ester]). Use of these products is strictly geographically restricted to Western Australia only and subject to the State's Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979. Accordingly only the human health-associated label elements require updating. The remaining elements of the existing label approvals (approval numbers 31209/117752 and 83795/108986 are considered to be sufficient provided that the products are used in accordance with the Western Australian Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979.					
22a	Granular Home Garden Products	10.3 g ae/kg	Mecoprop	10.3 g ac/kg	Dicamba	0.7 g ac/kg
22b	DMA/DEA salts Home Garden Products	80	Mecoprop	336	Dicamba	40
23	Acid/DEA salts	440				
24	Choline salt	500				

** IPA: Isopropylamine; DMA: Dimethylamine; DEA: Diethanolamine; TEA: Triethanolamine; EHE: Ethylhexyl Ester; MMA: Monomethylamine; TIPA: Triisopropanolamine.*

*** Note: this group can only be used in aquatic use situations (control of water hyacinth and water lettuce) at rates up to 3,000 g ae/ha by knapsack, handgun and sprinklers or up to 1,500 g ae/ha by helicopter. This group has special restraints required to minimise risks.*

**** Concentration of 2,4-D is shown in grams 2,4-D acid equivalent (ae), concentration of other actives is shown in grams active constituent (ac).*

4 CHEMISTRY

The focus for the chemistry review of 2,4-D was potential dioxin content of approved 2,4-D actives. In this report, 'dioxins' is used as a collective term for the polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) chemical families.

Figure 1: General structure of polychlorinated dibenzo-p-dioxins (PCDDs), showing numbering for chlorine atom substituents

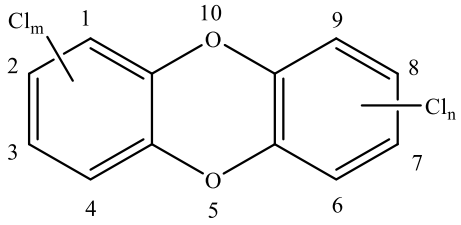
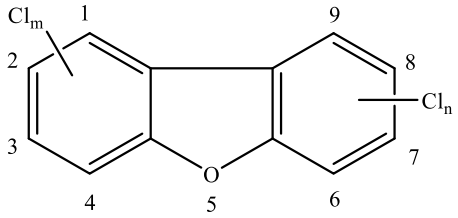
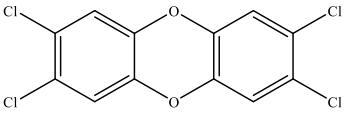
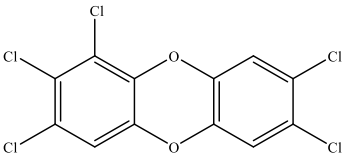
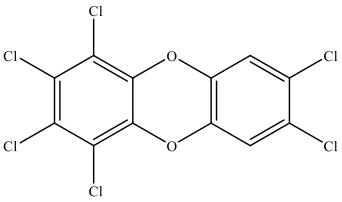
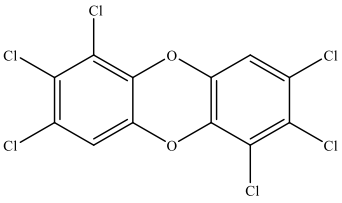
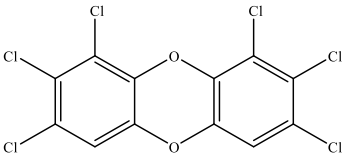
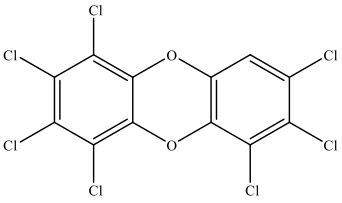
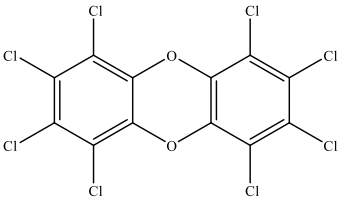


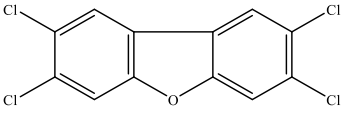
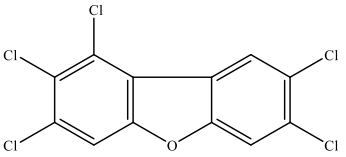
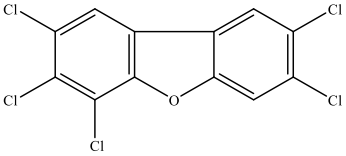
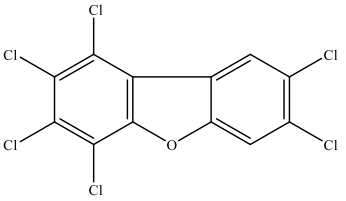
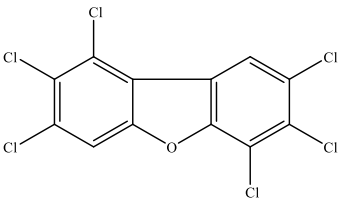
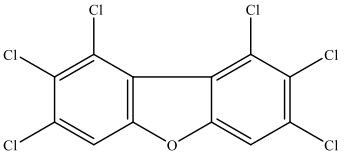
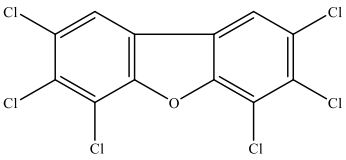
Figure 2: General structure of polychlorinated dibenzofurans (PCDFs), showing numbering for chlorine atom substituents

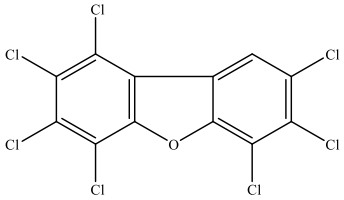
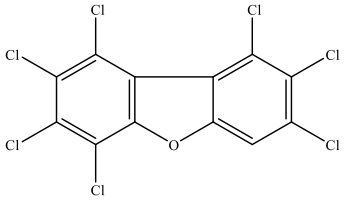
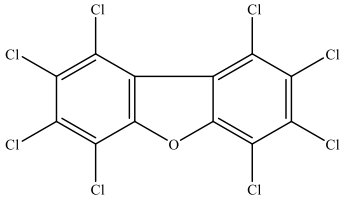


There are 75 possible congeners of PCDDs and 135 possible PCDF congeners. Only those with chlorine atoms in the 2, 3, 7, and 8 positions are of toxicological significance, giving a total of 17 congeners (seven of PCDDs and 10 of PCDFs) of interest. Their structures are tabulated in Table 2, along with their toxicological equivalence factors.

Table 2: The 17 toxicologically significant polychlorinated dibenzodioxin (PCDD) and polychlorinated dibenzofuran (PCDF) congeners

Name	Toxicological equivalence factor (TEF)—2005 WHO values	Structure
Polychlorinated dibenzodioxins (PCDDs		
2,3,7,8-tetrachlorodibenzo-p-dioxin	1	
1,2,3,7,8-pentachlorodibenzo-p-dioxin	1	
1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	0.1	
1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	0.1	
1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	0.1	
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	0.01	
Octachlorodibenzo-p-dioxin	0.0003	

Name	Toxicological equivalence factor (TEF)—2005 WHO values	Structure
Polychlorinated dibenzofurans (PCDFs)		
2,3,7,8-tetrachlorodibenzofuran	0.1	
1,2,3,7,8-pentachlorodibenzofuran	0.03	
2,3,4,7,8-pentachlorodibenzofuran	0.3	
1,2,3,4,7,8-hexachlorodibenzofuran	0.1	
1,2,3,6,7,8-hexachlorodibenzofuran	0.1	
1,2,3,7,8,9-hexachlorodibenzofuran	0.1	
2,3,4,6,7,8-hexachlorodibenzofuran	0.1	

Name	Toxicological equivalence factor (TEF)—2005 WHO values	Structure
1,2,3,4,6,7,8-heptachlorodibenzofuran	0.01	
1,2,3,4,7,8,9-heptachlorodibenzofuran	0.01	
Octachlorodibenzofuran	0.0003	

PCDDs and PCDFs are listed in Annex C of the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention 2017). Quantification of the toxicity of PCDD and PCDF congeners is achieved using Toxic Equivalence Factors (TEFs) to normalise the toxic effects with those of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) (WHO, 2006). Total concentrations of dioxins are thus reported as toxic equivalents (TEQs) of 2,3,7,8-TCDD.

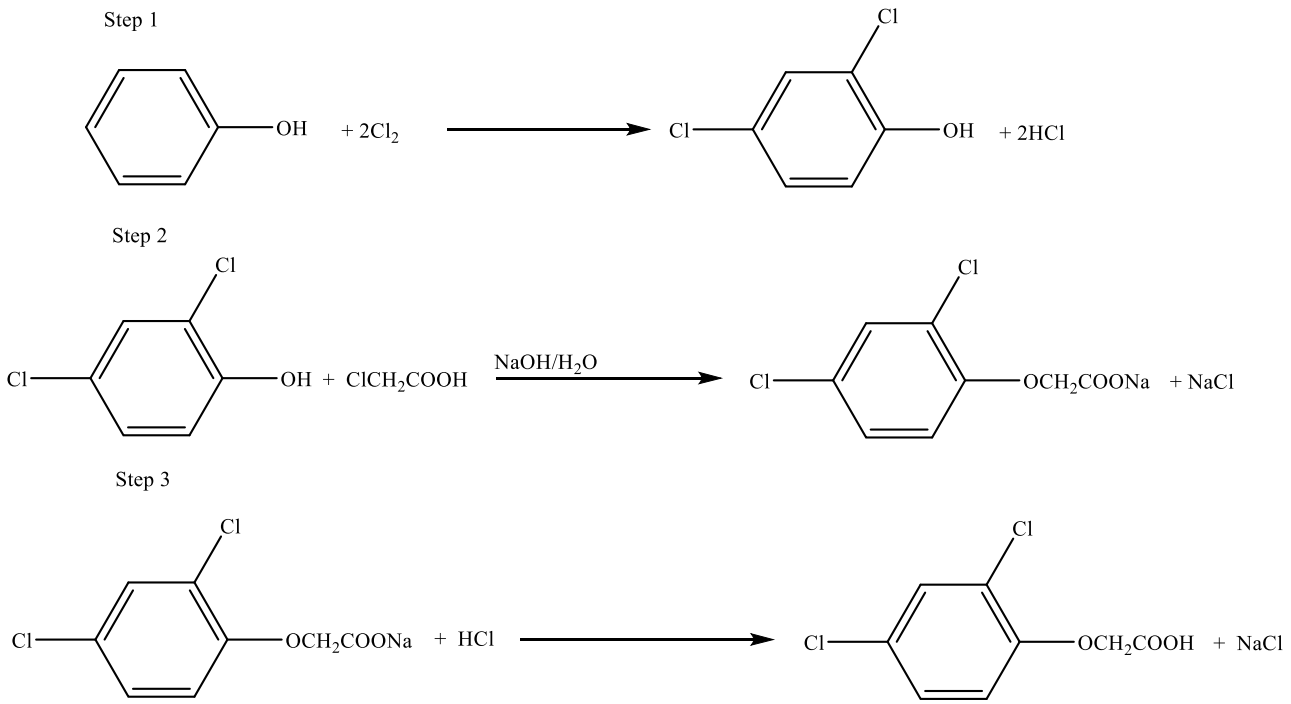
In Australia, biomass combustion (both from prescribed burning and bushfires) contributes approximately 75 per cent of total estimated dioxin emissions (Environment Australia 1998, Department of the Environment and Heritage 2004). This is followed by, in decreasing order, cement production, residential wood combustion, coal combustion, sinter production, industrial wood combustion and lime production. Together, these sources combined account for approximately 95 per cent of total emissions. In Australia, dioxin levels are much lower in remote and agricultural areas compared with those in urban/industrial areas.

4.1 Active constituent

There are currently 12 different chemical forms of 2,4-D present in registered products: the acid; ethyl, isobutyl and ethylhexyl esters; and choline, dimethylamine, diethanolamine, isopropylamine, monomethylamine, sodium, triethanolamine and triisopropanolamine salts. Currently, there are active constituent approvals for sources manufacturing 2,4-D acid, the ethyl, isobutyl and ethylhexyl esters, and the sodium salt, for formulation into end use products. Other salts of 2,4-D are formed during the formulation process by a neutralisation reaction between 2,4-D acid (from an approved source) and the appropriate base.

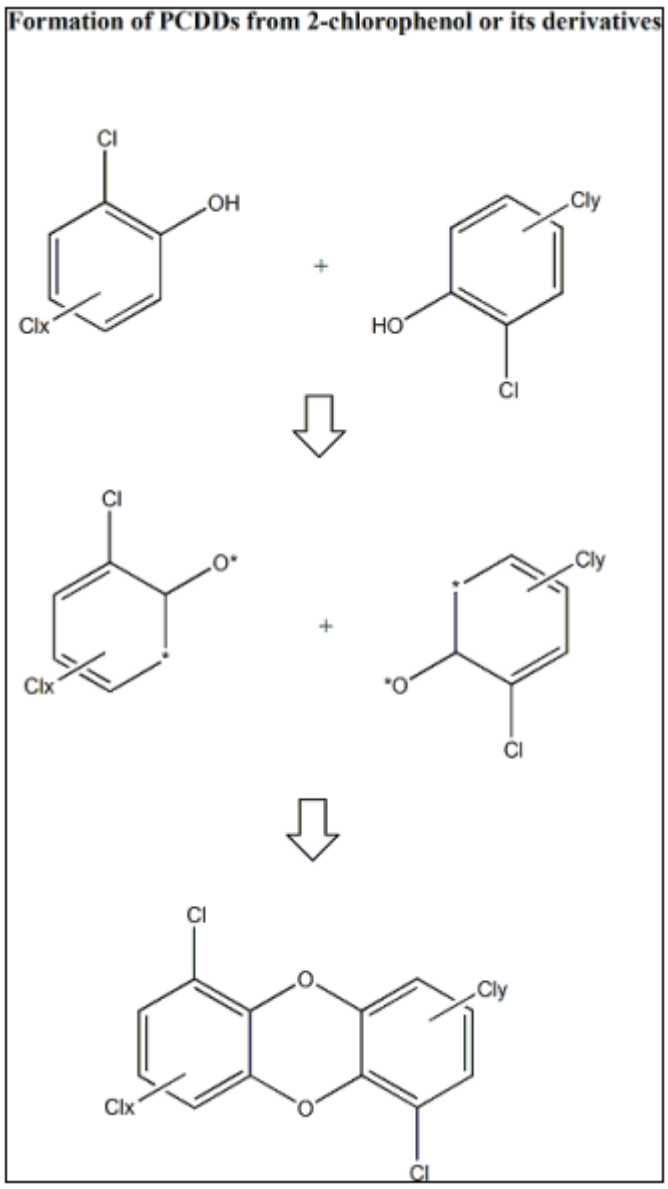
The key step in the manufacture of 2,4-D is a nucleophilic substitution reaction of 2,4-dichlorophenol with chloroacetic acid in the presence of a base (step 2 in Figure 3 below).

Figure 3: Typical manufacturing process for the production of 2,4-D



Polychlorinated dibenzodioxins (PCDDs) are formed as by-products of manufacture of chlorinated phenoxy compounds such as 2,4-D. Their formation proceeds through a condensation reaction of two phenolate ions with chlorine atoms at the ortho position, with elimination of chloride ions as the leaving group. The reaction rate increases rapidly at elevated temperatures, and thus formation of dioxins during manufacture is minimised by good temperature control. Multiple dioxin congeners can be formed during the manufacture of 2,4-D. Formation of polychlorinated dibenzodifurans (PCDF) occurs via a similar reaction.

Figure 4: Formation of PCDDs as a by-product of reactions involving chlorinated phenols



All currently approved 2,4-D active constituents except one have been tested for dioxin content using US EPA method 1613B (US EPA 1994). The approval of the single 2,4-D active constituent that has not been tested is currently suspended pending cancellation. The level of dioxins in all approved and tested 2,4-D active constituents are consistent with the proposed new maximum level for dioxins in the APVMA standards for 2,4-D active constituents.

4.2 Amendment to the APVMA standards for 2,4-D active constituents

The APVMA standard for 2,4-D acid was last updated in 2004 (APVMA 2019). This standard specifies a minimum purity of 960 g/kg, with a maximum concentration of free phenols (calculated as 2,4-dichlorophenol) of 3 g/kg.

There are also standards for 2,4-D esters (which applies to the currently approved esters, the ethyl, isobutyl, and 2-ethylhexyl esters), and the sodium, dimethylamine and isopropylamine salts of 2,4-D.

Based on concerns related to human health exposure resulting from the use of formulated products, and the re-entry into treated areas, approved sources of 2,4-D active constituent must contain no more than one part of total dioxins (ie the sum of the toxic equivalents of the 17 congeners of concern—see Table 2 and the equation below) per billion parts of 2,4-D acid equivalent (no more than one nanogram toxic equivalents of dioxins per gram of 2,4-D acid equivalent; ae). At this level, an adequate margin of safety is maintained when the products are used according to the label instructions.

$$WHO - TEQ\ (2005) = \sum_{i=1} [c_i \times TEF_i]$$

Where c_i is the concentration of congener i, TEF_i is the toxicological equivalence factor of congener i using the 2005 values, and the summation is performed for all 17 toxicologically significant congeners.

This new maximum limit will be applied to the current APVMA standards for 2,4-D, 2,4-D esters, and 2,4-D-sodium active constituents. The standards for 2,4-D dimethylamine salt and 2,4-D isopropylamine salt will be deleted, as there are no current approvals for the manufacture of these salts as active constituents, with these two salts only being manufactured during the formulation process by neutralisation of 2,4-D acid with dimethylamine or isopropylamine respectively. The quality of the 2,4-D (including dioxin levels) in these salt products will be sufficiently controlled by the standard for the 2,4-D acid, as formation of further dioxins during the formulation process is unlikely.

5 TOXICOLOGY

At the time of nomination of 2,4-D for chemical review, the human health-relevant concerns were its potential to cause human birth defects and its possible human-relevant carcinogenicity. The toxicological database for 2,4-D is extensive, and was considered adequate for the purpose of defining the toxicological hazard of 2,4-D. The assessment considered submitted studies, as well as internationally peer-reviewed monographs. Key findings of the 2,4-D human health hazard assessment include: (a) 2,4-D is not a reproductive or developmental toxicant in laboratory animals; and (b) based on weight of evidence 2,4-D does not pose a carcinogenic risk to humans.

5.1 Toxicological properties of 2,4-D

Metabolism and toxicokinetics

Following oral dosing to mice, rats and goats, 2,4-D is rapidly and extensively absorbed and distributed to tissues, with highest concentrations detected in kidney, liver and brain. There was rapid plasma clearance, with extensive urinary and faecal excretion. Except for dogs, metabolism and excretion in animals were adequate models of metabolism in humans. Compared with humans, dogs had more limited renal excretion and this species was not an adequate human-relevant model. Based on dermal absorption studies in rats, rabbits, monkeys and humans and weight of evidence assessment a dermal absorption factor of six per cent was considered appropriate for exposure assessment.

Since 2,4-D salts and esters undergo rapid hydrolysis in vivo their acute toxicity was considered to be a function of the 2,4-D acid equivalent (ae) dose. Accordingly toxicological endpoints are expressed as the equivalent dose of 2,4-D acid, and are expressed in mg/kg bw/d 2,4-D ae, with values for the salts and esters converted incorporating the molecular weights of the various salts and esters.

Acute toxicity

Following oral administration in rats, 2,4-D acid and its salts and esters were of low to moderate toxicity. 2,4-D acid and all salts, esters and products tested were of low acute dermal toxicity in rats and rabbits. 2,4-D salts and esters were of low inhalational toxicity, with the exception of 2,4-D triisopropanolamine (TIPA), which was of moderate acute inhalational toxicity.

Following exposure to the skin for four hours, 2,4-D acid, salts and esters were not irritating to rabbit skin. However, in repeat application irritation studies, irritation was observed for the acid, dimethylamine (DMA) and ethylhexyl ester (EHE). 2,4-D acid, and sodium, TIPA and DMA salts were severe eye irritants, while choline salts were moderate eye irritants and esters were at most slight eye irritants. 2,4-D acids, its salts and esters were negative for skin sensitisation by the Buehler method, with the exception of the choline salt which was a skin sensitiser.

Repeat dose toxicity

Dose-related effects on the kidney were the most common manifestation of systemic toxicity associated with 2,4-D (and related salt and esters) in short-term, subchronic and chronic studies in mice, rats and dogs. Secondary target organs included the liver and thyroid.

Short term studies

Following dermal application of 2,4-D acid, the DMA salt and EHE, progressive skin irritation was seen, and systemic toxicity NOAELs were not established. A NOAEL for local effects was established for 2,4-D DMA at 10 mg/kg bw/d 2,4-D ae due to skin effects. A systemic NOAEL was established for 2,4-D TIPA at 55 mg/kg bw/d 2,4-D ae due to altered skin cells in areas adjacent to the treated sites.

Sub-chronic studies

In sub-chronic studies, effects on eyes, kidney, adrenals, lung, liver, spleen, thyroid, testes, thymus and pituitary were observed in rats and mice, with effects on kidney generally seen at lower doses (dose-related) in all species. In mice and rats, effects on clinical chemistry and increased organ weights were seen at doses above 15 mg/kg bw/d. These effects were correlated with histopathological changes in the kidney, including increased cellular homogeneity, vacuolisation and cytoplasmic swelling. A NOAEL for sub-chronic oral exposure of 2,4-D to mice was established at 15 mg/kg bw/d. Effects of the salts and esters of 2,4-D were similar to those seen with 2,4-D, and at similar doses when adjusted for molecular weight.

Chronic studies

All long-term feeding studies were conducted using 2,4-D acid. In mice and rats, the kidney was the target organ, with dose-related histopathological effects seen at doses at or above 15 mg/kg bw/day. These effects included degeneration of proximal tubules, decreased vacuolisation, mineralisation, multifocal cortical cysts and cytoplasmic homogeneity of tubular epithelium in mice, and mineralisation of the renal pelvis in rats. In mice, no treatment-related effects on clinical chemistry or haematology was seen, while in rats, changes were observed at 15 mg/kg bw/day. Retinal degeneration was also seen in a range of dietary studies in F344 rats with 2,4-D, 2,4-D DMA and 2,4-D EHE, at doses at and above 75 mg/kg bw/day. The chronic toxicity NOAEL in mice were established at 1 and 5 mg/kg bw/day and in rats at 5 mg/kg bw/day.

Long-term feeding studies with 2,4-D in mice and rats revealed no evidence of any carcinogenic potential. No treatment-related tumours were seen in mice, with all incidences being within historical control ranges and were not dose-related nor statistically significant. In rats, increased incidences of tumours of the pituitary, brain, testes, spleen and thyroid were seen, however no dose-response relationship was observed. An increased incidence of astrocytoma of the brain was seen in one study at the highest dose tested; however, this was not replicated in another study at higher doses, and there was no evidence of pre-neoplastic lesion (eg glioma), and was not considered attributable to treatment. Overall, the weight of evidence supports the conclusion that 2,4-D is not carcinogenic to rats of mice.

Genotoxicity studies

The weight of evidence indicates that 2,4-D acid and its salts and esters are not genotoxic.

Reproductive and developmental toxicity

Some effects on reproduction and development were seen with 2,4-D and its salts and esters in rats and rabbits at maternally toxic doses. More severe effects were seen with 2,4-D TIPA than with other salts. In a two-generation study in rats, signs of maternal toxicity including decreased bodyweight and increase relative liver weight were

seen at 5 mg/kg bw/day (the lowest dose tested). A reproductive and offspring NOAEL was established at 20 mg/kg bw/day, based on decreased viability and bodyweight gain of offspring at 80 mg/kg bw/day. An extended one-generation reproduction dietary study had a NOAEL for reproductive effects of 40/30 m/kg bw/day in females/males, and a systemic toxicity NOAEL of 15 mg/kg bw/day based on kidney histopathology. In the offspring, the NOAEL for systemic toxicity was 5 mg/kg bw/day.

Developmental effects were assessed in rats and rabbits using 2,4-D acid and DMA, TIPA and EHE forms. Maternal toxicity in both species was seen at doses between 60 and 130 mg/kg bw/day 2,4-D ae, with NOAELS of between 15 and 75 mg/kg bw/day 2,4-D ae. Developmental toxicity was observed at higher doses (110–325 mg/kg bw/day 2,4-D ae, with NOAELs of between 45 and 110 mg/kg bw/day).

Neurotoxicity

Acute and repeat-dose neurotoxicity studies in rats and dogs were available for 2,4-D, and 2,4-D DMA. Neurotoxicity was seen at relatively high doses in adult animals and following post-natal exposure. No developmental neurotoxicity was seen in a one-generation reproductive study. Most effects were reversible in studies where recovery following cessation of exposure was assessed. A NOAEL of 75 mg/kg bw was established in an acute neurotoxicity study, based on changes in gait, coordination and decreased motor activity following dosing at 250 mg/kg bw. In a one-year rat dietary study, no neurotoxic effects were seen at doses of up to 150 mg/kg bw/day (the highest dose tested). A mechanistic study for neurotoxicity indicated exposure to 70 mg/kg bw/day 2,4-D during prenatal development induced behavioural abnormalities that disappeared in adulthood. Exposure in early post-natal development resulted in effects that were not reversible, including decreased movement, excessive grooming, catalepsy and circling. No NOAEL could be established in this study as it was a limited mechanistic study. In an extended one-generation reproduction study, there were no treatment-related effects on developmental neurotoxicity in pups exposed during gestation and lactation and subsequently through the diet at doses of 40/30 (M/F) mg/kg bw/day.

Endocrine effects

2,4-D causes suppression of thyroid hormone levels in rodents, increases in thyroid gland weight, histopathological changes in the thyroid and decreases in weights of ovaries and testes. The lowest LOAEL for thyroid effects was seen in rats at 1 mg/kg bw/day.

Human toxicity

Assessment of epidemiological studies have concluded that while it is possible that 2,4-D may be associated with certain chronic adverse effects in humans, there is insufficient evidence to support a causal relationship to any specific chemical. Case-control studies have provided little evidence of an association between 2,4-D and soft tissue sarcomas, and while some studies have shown a relationship with Non-Hodgkin's lymphoma, others have been inconsistent. The International Agency for Research on Cancer (IARC) has classified 2,4-D as 'possibly carcinogenic to humans' (Group 2B). In taking this decision, they considered that there was inadequate evidence in humans for the carcinogenicity from 2,4-D exposure and in animal studies there was limited evidence for carcinogenicity, however mechanistic studies indicated strong evidence that 2,4-D induces oxidative stress, and moderate evidence that 2,4-D causes immunosuppression. The proposed human health based guidance values (shown below) are considered to be adequately protective in relation to these effects.

Other studies

Mechanistic studies

The potential to induce peroxisome proliferation in rats following gavage dosing was investigated, and it was concluded that 2,4-D enhanced hepatic peroxisome proliferation via increased oxidation of fatty acids. In a study to investigate thyroid effects, it was concluded that exposure to 2,4-D altered thyroid function in male and female rats, which supports the findings in other evaluated studies which observed effects on thyroid function. 2,4-D, 2,4-D DMA and 2,4-D iso-octyl ester (IOE) (reagent grade) did not induce receptor-mediated oestrogenic effects. In this assay, commercial grade herbicides were positive for these effects, and it was concluded that additives or contaminants in commercial-grade herbicides were responsible for the oestrogen-like effects.

Impurities of toxicological concern

Dioxins

Dioxins are a well-characterised impurity in 2,4-D technical. Dioxins are persistent environmental pollutants that are found throughout the world in the environment, and accumulate in the food chain, mainly in the fatty tissue of animals. Dioxins are generally present as complex mixture of polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) congeners, as well as other dioxin-like compounds such a polychlorinated biphenyls (PCS). Of the 75 dioxin congeners, and 135 furan congeners, only 17 (with chlorine in the 2,3,7 and 8 positions) show toxic effects, with the most toxic being 2,3,7,8 tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). These 17 congeners have been the main focus of academic and regulatory studies, and the World Health Organization has determined Toxic Equivalence Factors (TEFs) which allow the calculation of an effective concentration of dioxins from a toxicological perspective, known as Toxic Equivalents (TEQs). The toxicity of dioxins are well characterised and documented. The new maximum level for dioxins in the standards for 2,4-D active constituents (shown above) is considered to be sufficiently human health protective.

2,4-Dichlorophenol (2,4-DCP)

2,4-DCP is a chemical intermediate used principally in the manufacture of 2,4-D (OCS 1991). It can be present as an impurity in 2,4-D technical. On this basis, the specification established for 2,4-D includes a maximum permitted level of 2,4-DCP as an impurity in 2,4-D at 3 g/kg.

In genotoxicity tests carried out by the US National Toxicology Program, there were equivocal effects. In a number of repeat-dose and carcinogenicity studies, a range of effects, including clinical signs and reduced bodyweight were seen. There was treatment-related bone marrow atrophy at high doses in rats. Liver damage, which was not dose-related, was seen in mice. Kidney effects were also observed in mice at the highest dose. In two-year studies in rats, non-cancer effects were seen in a range of organ systems, however no neoplastic lesions were reported. In treated mice, non-neoplastic effects were alterations of liver cells, with neoplastic effects included malignant lymphomas of the spleen and heart, cancers in the forestomach in males and subcutaneous fibromas. Due to inadequate monitoring in these studies, including a lack of any clinical chemistry evaluation, they were not suitable to establish NOAELS.

In a developmental study, decreased maternal bodyweight gain was seen at all doses. Clinical signs of toxicity were seen in high-dose dams, how no significant abnormalities were seen on pathology examination. In the high-

dose group, there was a slight increase in post-implantation loss with a decrease in viable litter size. An increase in foetal effects related to delayed development was seen at the high dose. There was no NOAEL for maternal toxicity, with effects seen at 200 mg/kg bw/day. The NOAEL for developmental toxicity was 375 mg/kg bw/day. 2,4-DCP is also immunotoxic in rodents.

No acceptable daily intake (ADI) or acute reference dose (ARfD) have been established for 2,4-DCP since human health-relevant exposures via food are not currently anticipated.

Diethanolamine salts

Diethanolamine is used as a counter-ion in 2,4-D formulations. It has also been used as a component of cosmetics and toiletries, however, these uses are prohibited in the European Union and Canada. Occupational exposure to DEA can occur through industrial uses. It is well absorbed following oral administration and is dermally absorbed. DEA concentrates in the blood, liver and kidney following repeat administration, with a half-life of approximately six days, primarily with urinary excretion.

DEA has moderate to low acute oral toxicity, moderate dermal toxicity, and low inhalational toxicity. It is a moderate skin and severe eye irritant, and has also caused upper respiratory tract irritation in rats. It is not a skin sensitiser. In mice, effects were seen in the liver, while in rats the main effects were anaemia and kidney toxicity. In both species, dermal application resulted in ulcerative skin lesions at high doses.

Based on the weight of evidence, DEA was not considered to be genotoxic and is not carcinogenic in rats. No NOAEL could be established in rats due to local and systemic effects at the lowest dose tested in females. In mice, liver neoplasms were seen after long-term dermal exposure, with adenomas and carcinomas from 40 mg/kg bw/day, and hepatoblastomas in males from 80 mg/kg bw/day. Renal tubule adenomas were also seen in males at all doses tested. It has been hypothesised that DEA-induced hepato-carcinogenicity is due to S-adenosyl methionine and choline deficiency, leading to altered gene expression. In mice, chronic stimulation of liver cells can induce spontaneous liver tumours, by a mechanism not relevant to humans. On this basis, the OECD concluded that the liver tumours were related to choline depletion and disturbance of its metabolism, and that a similar mode of action could be responsible for renal tubular adenomas. A recent IARC consideration raised concerns about this argument, based on data gaps on choline levels in mice kidneys as well as the lack of observed effects in rats, which are highly sensitive to choline deficiency. Further, fatty liver is noted as an effect associated with choline deficiency, however this was not seen in rat or mouse carcinogenicity studies. At this time the outcomes of the mouse carcinogenesis studies are of uncertain human relevance and, given the negative genotoxicity findings, are likely to be mediated by a threshold mode of action. The DEA margin of exposure associated with the occupational exposure associated use of 2,4-D DEA containing products is considered to human health-protective of these effects (see the below).

No specific reproduction toxicity and fertility study was available. In rats and mice, developmental toxicity was seen at maternotoxic doses, with effects on pup bodyweight gain and delayed development. In rabbits, no evidence of embryo-foetal toxicity or developmental malformations was seen at maternotoxic doses.

5.2 Health-based guidance values and poisons scheduling

Acceptable daily intake

The acceptable daily intake (ADI) for humans is considered to be the level of intake of a chemical that can be ingested daily over an entire lifetime without any appreciable risk to health. It is calculated by dividing the overall point of departure from a suitable study (typically an animal study) by an appropriate uncertainty factor. The current Australian ADI for 2,4-D as the free acid is 0.01 mg/kg bw/day. This was derived by applying a 100-fold uncertainty factor to the NOAEL of 1 mg/kg bw/d in a two-year rat study, based on abnormal renal morphology at the next highest dose.

The current re-evaluation of this data concluded that the effects seen at 1 mg/kg bw/day were unrelated to treatment. Accordingly, the NOAEL was revised to 5 mg/kg bw/day. This point of departure is supported by a NOAEL of 5 mg/kg bw/day in a second two-year rat study and the offspring NOAEL of 5 mg/kg bw/day in the rat extended one generation reproduction study. On this basis, a proposed new ADI can be established at 0.05 mg/kg bw/d (2,4-D ae), based on a point of departure of 5 mg/kg bw/d from the two-year rat studies using an uncertainty factor of 100 (10× for intraspecies variability, 10× for interspecies uncertainty).

In 2005 the US FDA established a dietary exposure chronic reference dose of 0.005 mg/kg bw/day based on the two-year rat studies but applying a 1000-fold uncertainty factor (100-fold for inter- and intra-species uncertainty with an additional 10-fold safety factor due to toxicological database deficiencies stemming from a lack of a developmental neurotoxicity study and a reproduction study considering endocrine disruption). In the 2019 re-evaluation the APVMA regards the current toxicological database to be sufficient and has thus not used an additional 10-fold safety factor to account for database deficiencies.

While the European Food Safety Authority (EFSA) had established an ADI of 0.05 mg/kg bw/day in 2013 on the same basis as the APVMA, they have recently amended their ADI to 0.02 mg/kg bw/day, based on kidney toxicity in the dog seen in studies on 2,4-DB with a NOAEL of 2.04 mg/kg bw/day. This endpoint was not considered appropriate by the APVMA since the dog is not regarded as a sufficiently human-relevant animal model due toxicokinetic differences.

Acute reference dose

The acute reference dose (ARfD) is the estimate of the amount of a substance in food and/or drinking water, normally expressed on milligram per kilogram bodyweight basis, that can be ingested in a period of 24 hours or less, without appreciable health risk to the consumer, on the basis of all the known facts at the time of the evaluation. No ARfD has previously been established for 2,4-D.

The current review proposes establishing a new ARfD for 2,4-D based on acute neurotoxicological effects (gait/coordination effects and decreased motor activity) in rats (Mattsson et al 1994). The NOAEL for these effects (75 mg/kg bw) was regarded as an appropriate point of departure. Total uncertainty factor of 100 was then applied resulting in the new proposed ARfD 0.8 mg/kg bw/d (2,4-D ae).

In 2005 the US EPA established a dietary exposure ARfD for the general population of 0.067 mg/kg bw. This was based on the same study and point of departure as the proposed new APVMA ARfD. The US EPA applied a total uncertainty factor of 1000 (100-fold for inter- and intra-species uncertainty with an additional 10-fold safety factor

due to toxicological database deficiencies stemming from a lack of a developmental neurotoxicity study and a reproduction study considering endocrine disruption). As noted above, in the current 2019 re-evaluation the APVMA regards the current toxicological database to be sufficient and thus has not used an additional 10-fold safety factor to account for database deficiencies.

EFSA has established an ARfD of 0.3 mg/kg bw, based on development toxicity in rats with a NOAEL of 31.25 mg/kg bw/day, as recommended in the conclusions on 2,4-DB, and applying an uncertainty factor of 100.

Tolerable monthly intake of dioxins

An Australian Tolerable Monthly Intake (TMI) of 70 pg dioxin TEQ/kg bw/month was recommended in 2002 and confirmed as appropriate by the National Dioxins Programme in 2004. This value is essentially the same as the Estimated Human Monthly Intake (EHMI) of 74 pg dioxin TEQ/kg bw/month set by the WHO/FAO Joint Expert Committee on Food Additives and Contaminants (JECFA) (FAO/WHO, 2002). The TMI of 70 pg dioxin TEQ/kg bw/month is considered to be adequately protective of the general population with respect to the effects of dioxin-like compounds.

The amendment to the standard for 2,4-D active constituents will limit potential exposure to dioxins resulting from exposure to 2,4-D at the ADI to 1.5 pg TEQ/kg bw/month which is about 10-fold lower than the overall estimated background exposure to dioxins for adults of 16 pg TEQ/kg bw/month and about 25-fold lower than the overall estimated background exposure to dioxins for children of 38 pg TEQ/kg bw/month.

Poisons scheduling

2,4-D was originally placed in Schedule 5 in 1972, and confirmed in 1988. In 2006, it was agreed to include 2,4-D in Schedule 6 of the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) with a cut-off to Schedule 5 for 2,4-D in preparations containing 20 per cent or less of 2,4-D (ie including 2,4-D and all its salts and esters), after reconsideration of available acute studies data. This Schedule remains appropriate.

Halogenated dibenzodioxins and dibenzofurans are in Schedule 7 of the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) with an Appendix J rider. However, ‘a reference to a substance in [the SUSMP] does not include … any substance present as an impurity in a pesticide, at a concentration at or below the maximum content for that substance, specified for the pesticide in the Standards for Active Constituents, as published by the Australian Pesticides and Veterinary Medicines Authority’. Therefore, dioxins as an impurity in 2,4-D are unscheduled. Given that the establishment of the proposed new dioxin condition for approval of 2,4-D active constituents will adequately limit human exposure to these impurities does not recommend any changes to the SUSMP.

5.3 Recommendations

The toxicological component of the Review Technical Report considered the hazards identified in acute, short-term, chronic, reproduction and developmental toxicity studies, genotoxicity, carcinogenicity and neurotoxicity studies of 2,4-D.

The 2,4-D toxicology component of the Review Technical Report concluded that the active constituents and registration of products containing 2,4-D, its salts and esters:

- Would not be an undue health hazard to the safety of people exposed to it during its handling or people using anything containing its residues.
- Would not be likely to have an effect that is harmful to human beings:
    - The toxicological profiles of the 2,4-D salts and esters evaluated were similar to the free acid. This is most likely due to their bioconversion to the free acid. As such, it was concluded that doses in animal studies could be directly compared using the 2,4-D ae dose.
    - The acceptable daily intake (ADI) for 2,4-D should be revised to 0.05 milligrams of 2,4-D ae per kilogram body weight per day based on a no observed adverse effect level of 5 mg of 2,4-D ae per kilogram body weight per day for renal toxicity occurring at higher doses in two, two-year rat toxicity/carcinogenicity studies and an extended one generation rat reproduction study. The ADI incorporates a 100-fold uncertainty factor to account for inter- and intra-species variation in sensitivity.
    - The acute reference dose (ARfD) for 2,4-D should be revised to 0.8 milligrams of 2,4-D ae per kg body weight based on a no observed adverse effect level of 75 mg per kilogram body weight for acute (single dose) neurotoxicological effects. The ARfD incorporates a 100-fold uncertainty factor to account for inter- and intra-species variation in sensitivity
    - 2,4-D should remain in Schedule 6 of the Standard for the Uniform Scheduling of Medicines and Poisons.

6 OCCUPATIONAL HEALTH AND SAFETY

6.1 Application methods

Most 2,4-D products are diluted with water and applied by spray equipment (either aerial or groundboom). Restrictions on droplet size are needed to limit spray drift. For spot spraying, and application in non-agricultural settings, hand-held spraying equipment, including low- or high-pressure handguns/wands and backpack sprayers may be utilised.

6.2 Exposure during use

Users of 2,4-D can be exposed during mixing, loading and application of the product. Exposure modelling has been undertaken to determine potential systemic exposure during use. For each method of application, 'worst-case' operator exposure has been estimated, assuming the 2,4-D is applied at the maximum registered label application rates to the largest area that could be covered in one workday. Based on these estimates, the highest masses that could be applied range from 182 g to 4500 kg 2,4-D ae per day, depending on the situation of use and application equipment. Once exposure had been assessed using the worst-case scenario, consideration was given the risk posed, and whether this could be mitigated either by the use of personal protective equipment, or through other use restrictions (such as limitations on maximum use rates, or the use of engineering controls).

For mixing/loading for all formulations, the maximum exposure related to use in aerial spray applications, which resulted in a total mass of 4500 kg 2,4-D ae handled per day. For liquid sprays, the mass of 2,4-D ae handled per day was 4500 kg for aerial application (fixed wing), 750 kg for aerial rotary wing (waterways only), 450 kg for groundboom, 6.5 kg for airblast, 13.9 kg for handwand and 4.5 kg for backpack application. For granular formulations used on lawns a maximum use rate of 0.185 kg 2,4-D ae was handled per day.

Dermal and inhalational exposure was estimated using the Pesticide Handlers Exposure Database (US EPA). Risk characterisation was based on calculation of the margins of exposure (MOE) for a 70 kg worker, taking into account the relevant absorption factors (100 per cent for inhalation exposure, six per cent for dermal exposure). The MOEs are shown in Table 3.

For 2,4-D products, except those with 2,4-D DEA, acceptable margins of exposure are attained or exceeded for persons mixing/loading and applying 2,4-D products by aircraft, helicopter, groundboom and hand-held equipment, with the provision of appropriate protective equipment, with the exception of those mixing and loading conventionally packaged soluble powder formulations, where the maximum work rates resulted in unacceptable levels of exposure. For these formulations, either a reduction in work rate or engineering controls are required. In addition, when exposure to dioxins at the maximum level under the proposed condition for approval of 2,4-D active constituents, backpack application produces an unacceptable level of exposure at the maximum work rate of 4.5 kg ae/d. Acceptable exposures are found when the work rate is limited to 4.0 kg ae/day.

On the basis of these modelled exposures, as well as consideration of the acute hazards associated with the formulation, suitable safety directions have been recommended for all approved formulations, and are available in the model labels in section 9.

Table 3: Margins of exposure for mixing, loading and application of 2,4-D products (except for 2,4-D DEA salts)

Activity	Mass handled (kg ae/d)	PPE	Dermal MOE	RPE	Inhalation MOE	Aggregate MOE
Open M/L, dry flowable	4500	G O HFC	141	HFR	1376	127
Open M/L liquid	4500	G O	307	HFR	882	**227**
Closed M/L liquid	4500	G O	820	Nil	1275	**499**
Open M/L powder	4500	G O HFC	72	FFR	244	**56**
Open M/L powder	4500	G O A HFC	280	FFR	244	**130**
Open M/L powder in WSP	4500	O	336	Nil	441	**191**
APP aircraft closed cockpit	4500	O	1410	Nil	1556	**739**
APP helicopter closed cockpit	750	O	22 282	Nil	352 798	**20 958**
APP airblast open cab	6.6	O	13 364	Nil	16 036	**7289**
APP groundboom open cab	450	G O	5040	Nil	1430	**1113**
APP LP handwand	13.5	O	196	HFR	375	**128**
APP HP handwand	13.5	O	1307	Nil	447	**333**
APP backpack	4.5	G O	104	HFR	3205	**100**
APP manual dispersal GR*	0.185	G O	2145	Nil	5574	**1676**
APP GR belly grinder*	0.185	G O	18 450	Nil	41 551	**12 777**
APP GR push spreader*	0.185	G O	134 953	Nil	408 719	**101 454**

*A = Apron, APP = Application, FFR = Full facepiece respirator, G = Chemical resistant gloves, HP = High pressure, HFC = Head and facial covering equivalent to hat and face shield, HFR = Half facepiece respirator, LP = Low pressure, M/L = Mixing/Loading, MOE = Margin of exposure relative to the NOAEL, O = Overalls, PPE = Personal protective equipment, RPE = Respiratory protective equipment, *GR = Granular formulation intended for home garden lawn treatment.*

For products containing 2,4-D DEA salts, additional concerns were identified, both in relation to acute hazards and for the modelled exposures. These concerns have resulted in additional label requirements for products containing 2,4-D DEA, including decreases in the rate of product application in some crops and situations of use, and to

revise product label safety directions to include the use of personal and respiratory protective equipment when preparing and applying 2,4-D DEA products. A major restriction on use is that backpack spraying of 2,4-D DEA formulation is not supported due to occupational safety concerns. Concerns over systemic exposure limit the quantity of 2,4-D DEA which can be handled on a daily basis. Details of the recommendations for amended use restrictions are included in the required label elements in section 9.

Worker exposure resulting from the use of combination products containing 2,4-D along with other actives, except for Group 22b products, were also considered, and suitable first aid and safety directions have been recommended.

Group 22b products are home and garden products containing 80 g 2,4-D/L as the DMA/DEA salt, 336 g/L mecoprop and 40 g/L dicamba. In order to mitigate the human health hazards and risks associated with opening the container and preparing the product for use the following personal protective equipment would be required: protective waterproof clothing, elbow-length chemical resistant gloves, impervious footwear, goggles and half facepiece respirator with organic vapour/gas cartridge or canister. When using the product the following personal protective equipment would be required to mitigate the human health hazards and risks: cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. Due to concerns regarding effectiveness and compliance, this level of personal protective equipment is not regarded as a reliable risk management approach for non-professional, home and garden product use. Accordingly, the APVMA proposed to cancel the registration of these products and to cancel the associated label approvals.

All updated first aid and safety directions will be published in the FAISD Handbook[1].

6.3 Exposure during re-entry

Agricultural workers may also be exposed to pesticide residues when re-entering treated crops to undertake activities such as harvesting, thinning, irrigation or scouting for pests. The main route of exposure is via the skin, through direct contact with treated foliage. Estimate of exposure relies on the use of transfer coefficients, which describe the ratio of re-entry worker exposure to the duration of exposure and the concentration of dislodgeable pesticide residue on foliage contacted by the worker. These values vary depending on the type of activity, the crop species and the stage of crop growth. Dermal exposure of re-entry worker has been estimated using US EPA Re-Entry Interval (REI) calculator, with the following assumptions. It was assumed that there had been a single application of 2,4-D at the maximum approved rate. Default values for dislodgeable foliar residue levels and for initial transferable turf residues were used. The duration of activity was assumed to be eight hours per day for all work activities.

Acceptable margins of exposure for workers performing the most exposure-intensive activities were found for most situations and application rates for all forms of 2,4-D. For hand-harvesting of sugar cane, exposure on the day of application resulted in unacceptable exposure to dioxins at the upper limit of acceptable standards. For this situation, a one day re-entry period would result in acceptable exposure levels, while for all other uses of 2,4-D, acceptable exposure levels are obtained after the spray has dried.

[1] Available at apvma.gov.au/node/26586

6.4 Public exposure

It is possible that members of the public could be exposed to 2,4-D residues by spray drift. This would be most likely to involve dermal contact with residues deposited on vegetation, soil and other surfaces. Under these circumstances, infants and children are potentially the most heavily exposure sector, due to their play behaviour at ground level, patterns of 'hand to mouth' play behaviour, and their high surface area: bodyweight ratio. The risks of exposure were estimated using the US EPA Bystander Exposure Model. For aerial application, it was assumed that a play area was adjacent to a pasture treated once at 9000 g ae/ha, and the child entered the play area on the day of application after the spray had dried. For airblast, it was assumed that the area was adjacent to an orchard treated once with 2,4-D at 200 g ae/ha. The distance between the application site and play area was assumed to be three metres. The dermal transfer coefficient was based on a transfer coefficient of 49000 cm2/h, consistent with the model used. Oral exposure was based on default values of 400 cm2/h. The post application exposure, including via dermal and oral exposures (based on hand to mouth activities) of a child resulted in acceptable MOEs as set out in the following table. There are no significant concerns of toxicological grounds with respect to the incidental exposure of bystanders resulting from agricultural uses of 2,4-D at the highest current label rate.

Table 4: Post application exposure (mg/kg bw) of a child to 2,4-D foliar residues on turf near to pasture treated by aerial or groundboom spray, or a citrus orchard treated by airblast

Exposure route	Dermal	Oral	Aggregate
Exposure (groundboom application)	0.107	0.000438	-
MOE	**9 346**	**11 416**	**5 139**
Exposure (aerial application)	0.894	0.00365	-
MOE	**1 119**	**1 370**	**616**
Exposure (airblast application)	0.0315	0.00013	-
MOE	**31 746**	**38 462**	**17 391**

Public exposure is also possible from recreational use of treated lawns and turf. While adults, infants and children may all be exposed, infants and children have the greatest potential for exposure. Three scenarios were investigated: adults performing recreational activities on treated turf (dermal exposure only), one to two year old children playing on turf following spray application (dermal and oral exposure), and oral exposure of one to two year old children to granular 2,4-D. Estimates were made for exposure on the day of treatment, after spray had dried or after application of the granules. For exposure to turf treated with liquid spray, acceptable margins of exposure were obtained for both adults and children, as set out in Table 5.

Table 5: Post-application exposure to 2,4-D foliar residues on turf treated at 2500 g/ha

Life stage	Exposure Route	Dermal	Oral	Aggregate
Adult	Exposure (mg/kg bw)	0.844	NC	-
	MOE	**1 185**	**NC**	**NC**
Child	Exposure (mg/kg bw)	1.61	0.0332	-
	MOE	**621**	**151**	**121**

For children potentially ingesting granule material after application, it was estimated that the likelihood of ingestion would be minimised by the label instructions for use, which specify that granules are to be watered into the lawn after application. Ingestion is considered to be an accidental event, rather than the result of routine behaviour. It was estimated that ingestion of 300 mg of granule material would result in 2,4-D exposure of around 34 per cent of the acute reference dose, which would not be expected to cause any acute systemic toxicity.

6.5 Recommendations

The worker health and safety component of the Review Technical Report concluded that the APVMA is satisfied the use of 2,4-D does not pose an unacceptable risk to human health provided the following are ensured:

- Label recommendations for suitable combinations of clothing, personal and/or respiratory protective equipment will limit the exposure of workers preparing spray mixture from 2,4-D products or applying 2,4-D by aerial or groundboom spray, orchard airblast and hand-held spray equipment to levels which will pose negligible risks of adverse effects on their health and safety.
- Additional limitations are required on formulations with 2,4-D DEA, including restrictions on use rates and certain equipment, in particular the elimination of use by backpack spray.
- The use of 2,4-D products by backpack spray must be limited to a maximum work rate of 4.0 kg acid equivalent/day to limit potential exposure to dioxins.
- The current uses of 2,4-D (except 2,4-D DEA) on most agricultural crops and in non-agricultural situations do not pose unacceptable exposures or risks of toxicity to workers re-entering and performing inspection, harvesting or maintenance activities in treated areas after the spray has dried. If re-entering treated areas before the spray has dried, workers should wear overalls, elbow-length gloves and water-resistant footwear.
- For hand-harvesting of sugar cane, a re-entry period of one day is required to provide an adequate margin of safety in relation to dioxin exposures.
- When applied by liquid spray at up to the current maximum registered label rate, 2,4-D will not cause adverse effects on the health of bystanders exposed via foliar residues deposited by spray-drift within areas adjacent to application sites.
- When applied to turf in locations such as sports facilities, parks or home gardens at up to the currently registered maximum label rate, 2,4-D poses negligible risk of adverse effects on the health of members of the public during recreational activities.

- The human health risks associated with spray drift exposures are considered to be negligible. Risk mitigation is not required for these exposures.
- Taking into consideration the potential toxicological hazard, the first aid instructions and safety directions on 2,4-D product labels require updating.

Overall, 2,4-D products when used according to the new required label elements shown in section 9 will not cause unacceptable exposures, hazards or risks associated with 2,4-D active constituents. This conclusion also applies to hazards or risks associated with exposure to impurities present in 2,4-D active constituents.

7 ENVIRONMENT

The APVMA published a Preliminary Review Finding (Environment) (Part 1) document in 2006. This PRF contained a preliminary assessment of all forms of 2,4-D (acid, salts and esters) and a refined risk assessment for the high volatile esters. A further report was published in 2013, an annex to the Part 1 PRF, and as result of the PRF and Annex, most of the high volatile ester products were cancelled. This report focuses on the low and non-volatile forms of 2,4-D (acid, salts and EHE).

Following a data call-in in July 2015, 53 new studies were provided on the environmental fate, behaviour and ecotoxicity of 2,4-D acid, salts and EHE. The majority of these were assessed by the European Union and the remainder by the APVMA. This assessment considers the outcomes of the new data to determine whether the information adds to or changes the 2006 conclusions in relation to 2,4-D acid, salts and EHE. In this regard, no new data were provided with respect to high volatile esters (HVEs) so no changes are required for previous assessment relating to these forms of 2,4-D. Since the 2006 assessment of 2,4-D salts and low volatile esters, there have been significant advancements in methodology for aspects of risk assessment.

The environmental assessment characterised the environmental fate and behaviour of 2,4-D, and its effects and associated risks to non-target species associated with 2,4-D product use. The assessment considered dietary exposure of terrestrial vertebrates, direct and indirect exposure of aquatic species, contact and/or oral exposure of non-target arthropods including bees, exposure of soil organisms within the treatment area, and spray drift exposure of non-target terrestrial plants.

7.1 Fate and behaviour

In support of the assessment for the review of 2,4-D, registrants submitted a full range of laboratory environmental fate data for 2,4-D acid and some bridging laboratory data for the EHE and DMA forms of 2,4-D. In addition, a full suite of field dissipation studies were provided for 2,4-D 2-EHE and 2,4-D DMA. No field data were provided for any other ester or amine salt form of 2,4-D. The 2006 PRF and its appendices contain detailed information characterising the environmental fate properties for 2,4-D acid, salts and esters.

In summary, 2,4-D amine salts and 2,4-D esters are not persistent under most environmental conditions including those associated with typical agricultural conditions. 2,4-D amine salt dissociation is expected to be instantaneous (< three minutes) under most environmental conditions. While the data reviewed tend to show de-esterification of 2,4-D EHE to 2,4-D acid under all conditions is not instantaneous, they do tend to demonstrate that 2,4-D esters in normal agriculture soil and natural water conditions are short-lived compounds (< one week). Under these conditions, the environmental exposure from 2,4-D esters and 2,4-D amines is expected to be minimal in both terrestrial and aquatic environments. 2,4-D is more persistent than its esters and amine salts but is still considered not persistent with a geometric mean DT_{50} value of 4.8 days under field conditions. Maximum DT_{50} values for the soil metabolites, 2,4-DCP and 2,4-DCA respectively were 7.3 days and 16 days, respectively.

2,4-D has very high to medium mobility in soil with a mean Kf value of 1.2 L/kg (mean 1/n 0.79); however, modelling has indicated a low risk of migration to groundwater at rates up to 9000 g ae/ha. The major metabolites had mean Kf values of 15 L/kg (2,4-DCP) and 19 L/kg (2,4-DCA), which indicate they are not as mobile as the parent acid in the soil environment. In the aquatic environment, 2,4-D remains largely in the water phase.

7.2 Effects and associated risks to non-target species

Terrestrial vertebrates

2,4-D is moderately toxic to mammals (LD_{50} 485 mg ae/kg bw, *Rattus norvegicus*) and birds (geometric mean LD_{50} 530 mg ae/kg bw, three species). Following long-term dietary exposure in reproductive toxicity studies, reduced offspring viability was observed in mammals at doses as low as 144 mg ac/kg bw/d (NOEL 21 mg ae/kg bw/d, *Rattus norvegicus*), while no adverse effects were observed in birds at the maximum dose tested (NOEL 100 mg ae/kg bw/d). Applying a risk index approach, acceptable risks to terrestrial vertebrates were determined to be acceptable up to a maximum application rate of 4500 g 2,4-D ae per hectare.

Aquatic species

2,4-D has low toxicity to fish (lowest LC_{50} 100 mg ae/L, *Pimephales promelas*), moderate toxicity to aquatic invertebrates (lowest EC_{50} 25 mg ae/L, *Daphnia magna*) and algae (lowest EC_{50} 3.9 mg ae/L, *Navicula pelliculosa*), and high toxicity to aquatic plants (lowest EC_{50} 0.011 mg ae/L, *Myriophyllum spicatum*). The regulatory acceptable level (RAL) for aquatic species is based on the aquatic plant endpoint with an assessment factor of 3 (RAL 3.7 µg ae/L). A hazard statement is required on 2,4-D labels due to its high toxicity to aquatic plants.

A spray drift assessment was conducted according to APVMA's updated approach to spray drift management[2]. Based on the aquatic RAL of 3.7 µg ae/L, it was determined that spray drift risks can be adequately mitigated by the mandatory buffer zones specified in the required label elements shown in section 9.

A runoff assessment was conducted according to APVMA's method to refine estimates of pesticide runoff to waterways[3]. Surface water concentrations due to runoff were predicted for the agricultural uses using several lines of evidence. These include information on soil types, slopes in the growing regions, rainfall in the different regions and hydrology (streamflow). The consequence of this approach is that risk was not considered equally between different regions and specific restraints were determined for some regions but not others. The restraints specified in the required label elements (shown in section 9) are required to ensure the expected surface water concentrations do not exceed the aquatic RAL.

Predicted ground water concentrations following applications up to 4500 g ae/ha are lower than the aquatic RAL and therefore risks due to ground water exposure are considered to be acceptable without mitigation.

Group 13 products can be applied directly to aquatic weeds in natural aquatic systems at rates up to 3000 g ae/ha by knapsack sprayers, hand gun or sprinkler sprayers, and up to 1500 g ae/ha by helicopter. In order to minimise indirect effects of aquatic weed control such as deoxygenation of the water through decaying plants material, only up to 50 per cent of the total surface area should be treated at any one time and a minimum interval of seven days between applications is required. Additional precautionary measures are also required to minimise direct entry of the product into the water.

[2] apvma.gov.au/node/28071
[3] apvma.gov.au/node/15696

Bees

2,4-D has very low toxicity to bees by contact exposure (lowest LD_{50} 98 µg ae/bee) and oral exposure (lowest LD_{50} 78 µg ae/bee). Following dietary exposure of bee larvae, no adverse effects were observed up to the maximum dose tested (NOEL 265 mg ae/kg diet). Due to a low hazard, risks to bees were determined to be acceptable without mitigation.

Other non-target arthropods

Representative SL formulations of 2,4-D salts are not considered to be toxic to beneficial (predatory and parasitic) arthropods. No adverse effects were observed following exposure to fresh-dried residues in tier one (glass plate) tests for both indicator species (LR_{50} >3000 g ae/ha; *Typhlodromus pyri* and *Aphidius rhopalosiphi*). Therefore, 2,4-D acid/salt formulations are considered to be compatible with IPM programs utilising beneficial arthropods.

However, in a tier one laboratory (glass plate) test, fresh-dried residues of a representative EC formulation containing 2,4-D EHE resulted in an LR_{50} somewhere between 28 and 564 g ae/ha for *Aphidius rhopalosiphi*, which is an indicator species for parasitic arthropods. One hundred percent mortality was observed at 564 g ae/ha, while 28 g ae/ha is considered to be harmless (ie, <30 per cent mortality). In the absence of higher tier information on parasitic arthropods, use of 2,4-D EHE formulations at rates higher than 28 g ae/ha cannot be considered compatible with IPM programs, and precautionary measures are required to minimise spray drift to off-crop habitats.

Soil organisms

2,4-D is considered to be moderately toxic to soil macro-organisms such as earthworms (LC_{50} 833 mg ae/kg dry soil, *Eisenia fetida*). Following long-term exposure, reproduction was inhibited in a dose-dependent manner (EC_{10} 21 mg ae/kg dry soil, *Eisenia fetida*). Available data indicate that 2,4-D does not adversely affect soil processes such as nitrification at exaggerated soil concentrations (NOEC 13 mg ae/kg dry soil). Based on the available information, risks to soil organisms were determined to be acceptable at the maximum registered rates without mitigation.

Non-target terrestrial plants

Post-emergent exposure is the most sensitive route for non-target terrestrial plants. Based on a sensitive species distribution (SSD) of data on acid and salt formulations and EHE formulations, the resulting HR_5 values were 18 g ae/ha (salts) and 10 g ae/ha (esters). Applying an assessment factor of 3.1 to account for more sensitive endpoints that were not measured, the RAL for assessing spray drift to non-target terrestrial plants was set at 5.8 g ae/ha for salt formulations and 3.2 g ae/ha for EHE formulations. A spray drift assessment was conducted according to APVMA's updated approach to spray drift management[4]. Based on the RAL values, it was determined that risks to non-target terrestrial plants can be adequately mitigated by the specified mandatory buffer zones in the required label elements shown in section 9.

[4] apvma.gov.au/node/28071

7.3 Recommendations

The environmental assessment concluded that risks to non-target species associated with the use of registered 2,4-D products in Australia at rates up to 4500 g ae/ha are considered to be acceptable, provided 2,4-D products are used in accordance with the new required label elements shown in section 9. Risks to the environment associated with impurities derived from 2,4-D active constituents are considered to be acceptable.

8 RESIDUES

Because of the proposed changes to the 2,4-D health based guidance values a dietary exposure assessment was performed. Publicly available data relevant to animal feeds and animal transfer has been considered to allow for an assessment of appropriate Maximum Residue Limits (MRLs) for animal feeds and animal food commodities. A contemporary dietary exposure and spray drift assessment has also been performed.

Risks to consumer safety associated with dioxins are considered to be acceptable based on negligible exposure from 2,4-D relative to background levels of dioxins in the environment and in food[5].

8.1 Animal feed Maximum Residue Limits

There are currently no Table 4 entries in the APVMA MRL standard for 2,4-D to cover the uses on pasture or other forage crops. The maximum 2,4-D considered was 4500 g ai/ha to pasture and a seven-day grazing withholding period applies to this use.

Data from the USA for pastures have been considered by the 1998 JMPR[6]. The data for 2,4-D applied (as the free acid, DMA salt or EHE) two times at 2200 g ai/ha on pasture seven PHI days recorded residues of 19, 20, 20, 23, 32, 32, 34, 39, 41, 41, 41, 45, 46, 49, 61, 74, 82, 87, 93, 103, 103, 107, 117, 120, 122, 125, 170 mg/kg (fresh weight basis). On a dry weight basis the high residue is 680 mg/kg (assuming a dry matter content of 25 per cent).

The highest application rate for an animal feed is for pasture (4500 g ai/ha). When the high residue is scaled for this application rate then the residue is equivalent to 1388 mg/kg. An MRL of 1500 mg/kg is considered to be appropriate for 2,4-D on primary feed commodities.

Cereal forage and fodder are animal feeds and oaten hay is considered to be a major export commodity. The highest application rate for cereals is 1160 g ai/ha (harvest aid or salvage spray). When the high residue is scaled for this application rate then the residue is equivalent to 360 mg/kg. An MRL of 400 mg/kg is considered to be appropriate for forage and fodder of cereal grains.

8.2 Animal commodity MRLs

A dairy cattle transfer study was evaluated by the 1998 JMPR and involved dosing at 1446 ppm for 28 to 30 days. Highest residues observed in tissues and milk in the study together with estimated residues from feeding cattle on pasture with a HR of 1388 mg/kg are summarised in Table 6.

[5] Food Standards Australia New Zealand, Dioxins in food, Dietary Exposure Assessment and Risk Characterisation foodstandards.gov.au/publications/documents/FINAL%20DEA-RC%20Report%20Dioxin%2024May04final.pdf

[6] Joint Meeting of Pesticide Residues, 1998 evaluation, fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/JMPR/Evaluation98/24deval.pdf

Table 6: Estimated residues in mammalian milk and tissues

Feeding level (ppm)	Milk	Muscle	Fat	Kidney	Liver
	2,4-D residue (mg/kg)				
1446–observed	0.07	0.24	0.51	6.5	0.20
1388–estimated burden	0.07	0.23	0.49	6.2	0.19
Established MRLs	*0.05 (milks)	0.2 (meat)		2 (offal)	
Recommended MRLs	0.1		0.7 (meat in fat)	7 (offal)	

An increase to the established MRLs for 2,4-D in mammalian meat (in the fat), offal and milk is required to support currently registered uses.

8.3 Estimated dietary intake

As discussed in Section 3.2, the acceptable daily intake (ADI) for 2,4-D has been increased from 0.01 mg/kg bw/d to 0.05 mg/kg bw/d. An acute reference dose (ARfD) for 2,4-D has been established at 0.8 mg/kg bw/d.

The chronic dietary exposure to 2,4-D is estimated by the National Estimated Daily Intake (NEDI) calculation encompassing all registered/temporary uses of the chemical and the mean daily dietary consumption data derived primarily from the 2011–12 National Nutritional and Physical Activity Survey. The NEDI calculation is made in accordance with WHO Guidelines and is a conservative estimate of dietary exposure to chemical residues in food. Considering the revised ADI of 0.05 mg/kg bw/d, the NEDI for 2,4-D is equivalent to <15 per cent of the ADI. It is concluded that the chronic dietary exposure of 2,4-D is acceptable.

The acute dietary exposure is estimated by the National Estimated Short Term Intake (NESTI) calculation. The NESTI calculations are made in accordance with the deterministic method used by the JMPR with 97.5th percentile food consumption data derived primarily from the 2011–12 National Nutritional and Physical Activity Survey. NESTI calculations are conservative estimates of short-term exposure (24 hour period) to chemical residues in food. Considering the ARfD of 0.8 mg/kg, the highest acute dietary intake was estimated at <35 per cent of the ARfD (citrus for the two to six year old population). It is concluded that the acute dietary exposure for 2,4-D is acceptable.

8.4 Maximum Residue Limits

Maximum Residue Limits (MRLs) are currently established in the APVMA MRL Standard for approved uses[7]. The following changes are recommended to Tables 1 and 4 of the APVMA MRL Standard. The lupin MRL is to be deleted as there is a pulse crop group MRL established at the same level.

[7] Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2019: legislation.gov.au/Series/F2019L01105

Table 7: MRLs—food

Compound	Food	MRL (mg/kg)
2,4-D		
DELETE:		
MO 0105	Edible offal (mammalian)	2
VD 0545	Lupin (dry)	*0.05
MM 0095	Meat (mammalian)	0.2
ML 0106	Milks	*0.05
ADD:		
MO 0105	Edible offal (mammalian)	7
MM 0095	Meat [mammalian][in the fat]	0.7
ML 0106	Milks	0.1

Table 8: MRLs—animal feed commodity

Compound	Animal feed commodity	MRL (mg/kg)
2,4-D		
ADD:		
	Forage and fodder of cereal grains	400
	Primary feed commodities {except forage and fodder of cereal grains}	1500

8.5 Spray drift

For the spray drift assessment for the protection of international trade for livestock commodities, the Codex MRL of 5 mg/kg for edible offal (mammalian) was considered to determine the Regulatory Acceptable Level (RAL) for 2,4-D residues in pasture of 1112 ppm. Based on the spray drift assessment using this RAL, the knowledge that 2,4-D residues deplete quickly from livestock tissues and that no 2,4-D related trade issues with animal commodities have been identified in the past, it has been determined that mandatory no-spray zones for protection of international trade are not required on 2,4-D product labels.

8.6 Trade

While the maximum use rate of 2,4-D is not increasing, the review of available relevant residues data supports the increase in MRL for mammalian meat (in the fat), offal and milk. No changes are proposed to any other MRLs for

food commodities and the risk to international trade remains unchanged. A consideration of MRLs established for animal commodities overseas is given below:

Table 9: International 2,4-D MRLs for animal commodities

Commodity	MRL (mg/kg)						
	Australia	Codex	EU	Japan	Korea	Taiwan	USA
Edible offal (mammalian)	2 (current) 7 (proposed)	5	5	5	–	–	4 (kidney) 0.3 (meat by-products except kidney)
Meat (mammalian)	0.2 (current) 0.7 (in fat proposed)	0.2	0.2 (muscle) 0.2 (fat)	0.2 (muscle) 0.2 (fat)	0.05 (mammalian meat)	0.05 (muscle)	0.3 (meat) 0.3 (fat)
Milks	*0.05 (current) 0.1 (proposed)	0.01	*0.01	0.01	0.01	0.05	0.05

The proposed Australian MRLs for animal commodities are higher than those established overseas and by Codex. The highest predicted residue from approved uses is 6.2 mg/kg in kidney. In the feeding study summarised by the JMPR an average residue of 24 mg/kg in kidney declined to 0.06 mg/kg after three days on clean feed to give an estimated half-life of 0.35 days. It would take less than one day for the estimated HR of 6.2 mg/kg in kidney to decline to the Codex edible offal (mammalian) MRL of 5 mg/kg based on a half-life of 0.35 days (for other tissues the initial half-life for 2,4-D is 1.1 days in liver, and less than one day for muscle and fat). Given this rapid depuration and because no 2,4-D trade issues with animal commodities have been identified in the past, it is considered unnecessary to recommend an Export Slaughter Interval (ESI) for registered uses of current 2,4-D products.

Oaten hay is currently considered to be a major export commodity and MRL is being proposed at 400 mg/kg for the currently approved use. The proposed MRL is equivalent to the established Codex MRL for hay or fodder (dry) of grasses at 400 mg/kg[8].

8.7 Recommendations

Continued approval of the label use patterns do not pose an undue hazard to the safety of people consuming anything containing foods containing 2,4-D residues, nor are they an undue risk to international trade.

Amendments to the APVMA MRL standard for animal feeds and animal commodities are recommended to align the MRLs with residues expected from current use patterns.

[8] Codex MRLs for 2,4-D: fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/pesticide-detail/en/?p_id=20

Risks to consumer safety associated with impurities derived from 2,4-D active constituents are considered to be acceptable.

9 NEW REQUIRED LABEL ELEMENTS FOR 2,4-D PRODUCT LABELS

9.1 Instructions

To determine which new label elements are required for a given 2,4-D product:

1. take note that the mandatory general label are required for all labels apply to all 2,4-D products and labels, except where specifically noted; then
2. determine the correct product group; then
3. refer to the list of required label elements for the relevant product category.

Table 10: 2,4-D product groups

Group	2,4-D form*	Concentration*** (g ae/L)	Active 2	Concentration*** (g ac/L)	Active 3	Concentration*** (g ac/L)	Page
1	2,4-D Products containing the IPA salt at a concentration of 225 g ac/L were excluded from the review since there are no currently registered products in this category.						48
2	IPA salt	300					49
3	IPA salt	450					52
4	TIPA	300	Picloram	75			55
5	DMA salt	500					58
6	DMA salt	625					61
7	DMA salt	800 g ae/kg					64
8a	DMA salt	720					67
8b	DMA/MMA or DEA salts	700					70
9a	DMA/DEA salts	625					73
9b	DMA/DEA salts	750					77
10	DMA/DEA salts	475					81
11	DEA salt	500					85
12a	DEA/TEA salt	500					88
12b	DEA/TEA salt	625					91

Group	2,4-D form*	Concentration*** (g ae/L)	Active 2	Concentration*** (g ac/L)	Active 3	Concentration*** (g ac/L)	Page
13	form not specified**	300					94
14a	Sodium salt	700					96
14b	Sodium salt	800					99
15a	Sodium salt	22.8					102
15b	DMA salt	100					103
16a	DMA/DEA salts Commercial products	80	Mecoprop	336	Dicamba	40	105
16b	DEA salt	350	Clopyralid	45	Dicamba	45	106
17	EHE	577	Ioxynil	100			107
18	EHE	600					109
19a	EHE	680					112
19b	EHE	Up to 450					115
20a	EHE	421	Pyraflufen-ethyl	2.1			118
20b	EHE	300	Florasulam	6.25 g/L			120
21	2,4-D high volatile esters. There are two current product approvals that fall into this category (numbers 31209 [2,4-D ethyl ester] and 83795 [2,4-D isobutyl ester]). Use of these products is strictly geographically restricted to Western Australia only and subject to the State's Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979.[9] Accordingly only the human health-associated label elements require updating. The remaining elements of the existing label approvals (approval numbers 31209/117752 and 83795/108986 are considered to be sufficient provided that the products are used in accordance with the Western Australian Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979.						121
22a	Granular home garden products	10.3 g ae/kg	Mecoprop	10.3 g ac/kg	Dicamba	0.7 g ac/kg	123
22b	DMA/DEA salts Home garden products	80	Mecoprop	336	Dicamba	40	124

[9]legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_20784.pdf/$FILE/Agriculture%20and%20Related%20Resources%20Protection%20(Spraying%20Restrictions)%20Regulations%201979%20-%20%5B01-b0-07%5D.pdf?OpenElement

Group	2,4-D form*	Concentration*** (g ae/L)	Active 2	Concentration*** (g ac/L)	Active 3	Concentration*** (g ac/L)	Page
23	Acid/DEA salts	440					125
24	Choline salt	500					129

** IPA: Isopropylamine; DMA: Dimethylamine; DEA: Diethanolamine; TEA: Triethanolamine; EHE: Ethylhexyl Ester; MMA: Monomethylamine; TIPA: Triisopropanolamine.*

*** Note: this group can only be used in aquatic use situations (control of water hyacinth and water lettuce) at rates up to 3000 g ae/ha by knapsack, handgun and sprinklers or up to 1500 g ae/ha by helicopter. This group has special restraints required to minimise risks.*

****Concentration of 2,4-D is shown in grams 2,4-D acid equivalent (ae), concentration of other actives is shown in grams active constituent (ac).*

9.2 List of required label elements for each 2,4-D product category

Mandatory general elements required for all labels (except Group 22 home garden products)

Signal Heading[10]:	POISON KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Product Name:	[INSERT HERE]

Constituent Statement:	[INSERT HERE]g/L 2,4-D present as [INSERT HERE] [Applicants if your product contains other scheduled excipients please include these here or delete this text]

Mode of Action:	GROUP I HERBICIDE [INSERT SECOND GROUP HERE IF REQUIRED]

Statement of Claims:	[INSERT HERE] [THE FOLLOWING STATEMENT IS A NEW REQUIREMENT FOR ALL 2,4-D PRODUCT LABELS] THIS IS A PHENOXY HERBICIDE THAT CAN CAUSE SEVERE DAMAGE TO NATIVE VEGETATION AND SUSCEPTIBLE CROPS SUCH AS COTTON, GRAPES, TOMATOES, OILSEED CROPS AND ORNAMENTALS.

Net Contents:	[INSERT HERE]

Restraints:	See 'SPRAY DRIFT RESTRAINTS' and 'GENERAL RESTRAINTS' sections. This can be uploaded as an attachment when submitting a label

Directions For Use:	See 'DIRECTIONS FOR USE' section. This can be uploaded as an attachment when submitting a label

Other Limitations:	[INSERT HERE]

Withholding Period[11]:	PASTURE, CEREAL CROPS: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 7 DAYS AFTER APPLICATION CROP HARVEST WITHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED. [INSERT ADDITIONAL WITHHOLDING PERIOD AS REQUIRED]

General Instructions:	[INSERT HERE]

[10] Group 15a, 15b and 22a products are in Schedule 5 of the Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) and require "CAUTION" as a signal heading.

[11] Group 4, 15a and 17 products require different withholding periods than shown here. See specific label elements for details.

Resistance Warning:	Resistant Weeds Warning [INSERT PRODUCT NAME] herbicide is a member of the PHENOXY Group of herbicides. The product has the disruptors of plant cell growth mode of action. For weed resistance management [INSERT PRODUCT NAME] is a Group I herbicide. Some naturally-occurring weed biotypes resistant to [INSERT PRODUCT NAME] and other Group I herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by [INSERT PRODUCT NAME] or other Group I herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, [INSERTCOMPANY NAME] accepts no liability for any losses that may result from the failure of [INSERT PRODUCT NAME] to control resistant weeds. [INSERT SECOND GROUP HERE IF REQUIRED OR DELETE THIS TEXT]

Precautions:	RE-ENTRY PERIOD If re-entering treated areas before the spray has dried, workers should wear overalls, elbow-length gloves and water-resistant footwear. [INSERT ADDITIONAL PRECAUTIONS AS REQUIRED]
Protection Statements:	PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT Very toxic to aquatic life. DO NOT contaminate wetlands or watercourses with this product or used containers.

Storage and Disposal:	STORAGE AND DISPOSAL [Applicants, please chose from the relevant statements below and delete other text.] Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. [OR] Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. [Refillable containers] Empty contents fully into application equipment. Close all valves and return to [point of supply/designated collection point/other specific collection details] for refill or storage. [Metal drums and plastic containers] Triple-rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable

	vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product. [Paper or cardboard containers and paper material bags] Shake and empty contents into spray tank/water/dip/drench, etc. Do not dispose of undiluted chemicals on site. Break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product. [Plastic and foil bags] Single-rinse or shake remainder into spray tank/water/dip/drench, etc. Do not dispose of undiluted chemicals on site. Puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product. [Containers accompanied by a leaflet If a label leaflet is to be used as part of the label for various containers that have different disposal instructions, the following 'Disposal' statement may be shown on the label leaflet in place of the full disposal instructions:] The method of disposal of the container depends on the container type. Read the 'Storage and disposal' instructions on the label that is attached to the container. [drumMUSTER containers] This container can be recycled if it is clean, dry, free of visible residues and has the drumMUSTER logo visible. Triple-rinse container for disposal. Dispose of rinsate by adding it to the spray tank. Do not dispose of undiluted chemical on site. Wash outside of the container and the cap. Store cleaned container in a sheltered place with cap removed. It will then be acceptable for recycling at any drumMUSTER collection or similar container management program site. The cap should not be replaced, but may be taken separately.

Safety Directions:	[INSERT SPECIFIC SAFETY DIRECTIONS AS REQUIRED]

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply if heavy rains or storms are forecast within 3 days.
DO NOT irrigate to the point of runoff for at least 3 days after application.
DO NOT apply if crop or weeds are stressed due to dry or excessively moist conditions.
DO NOT exceed maximum application rate of [XX L/ha or XX g/ha] (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.
DO NOT exceed the maximum daily application rate by backpack spraying of [XX L/day] (4000 g ae/day).

DO NOT apply by a vertical sprayer.[12]
[Category specific restraints must also be applied and delete this text]

[12] Not applicable to Group 15a or 15b products. Please refer to specific label elements for this group.

SPRAY DRIFT RESTRAINTS[13]

Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone table/s below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometers per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

DO NOT apply by a boom sprayer unless the following requirements are met:

- Spray droplets are not smaller than a VERY COARSE spray droplet size category
- Minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for boom sprayers') are observed.

Buffer zones for boom sprayers - 2,4-D acid and salt formulations (excludes Groups 17-21)

Application rate	Boom height above the target canopy	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 4500 g ae/ha	0.5 m or lower	75 metres	70 metres
	1.0 m or lower	300 metres	275 metres
Up to 3300 g ae/ha	0.5 m or lower	55 metres	50 metres
	1.0 m or lower	160 metres	160 metres
Up to 3000 g ae/ha	0.5 m or lower	50 metres	45 metres
	1.0 m or lower	150 metres	140 metres
Up to 2710 g ae/ha	0.5 m or lower	45 metres	40 metres
	1.0 m or lower	130 metres	130 metres
Up to 2750 g ae/ha	0.5 m or lower	45 metres	45 metres
	1.0 m or lower	130 metres	130 metres
Up to 2250 g ae/ha	0.5 m or lower	40 metres	35 metres
	1.0 m or lower	110 metres	110 metres
Up to 1890 g ae/ha	0.5 m or lower	35 metres	35 metres
	1.0 m or lower	90 metres	90 metres
Up to 1575 g ae/ha	0.5 m or lower	30 metres	30 metres
	1.0 m or lower	80 metres	75 metres

[13] Spray drift restraints are not required for Group 22a products.

Application rate	Boom height above the target canopy	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 1150 g ae/ha	0.5 m or lower	30 metres	25 metres
	1.0 m or lower	60 metres	60 metres
Up to 336 g ae/ha	0.5 m or lower	Not required	Not required
	1.0 m or lower	30 metres	25 metres

Buffer zones for boom sprayers – 2,4-D EHE formulations (Groups 17-20)

Application rate	Boom height above the target canopy	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 4500 g ae/ha	0.5 m or lower	75	150
	1.0 m or lower	Not supported	
Up to 3180 g ae/ha	0.5 m or lower	50 metres	100 metres
	1.0 m or lower	160 metres	375 metres
Up to 1620 g ae/ha	0.5 m or lower	30 metres	45 metres
	1.0 m or lower	80 metres	140 metres
Up to 1150 g ae/ha	0.5 m or lower	30 metres	35 metres
	1.0 m or lower	60 metres	100 metres
Up to 560 g ae/ha	0.5 m or lower	10 metres	25 metres
	1.0 m or lower	40 metres	55 metres

DO NOT apply by aircraft unless the following requirements are met:
Spray droplets are no smaller than a VERY COARSE spray droplet size category
For maximum release heights above the target canopy of 3m or 25% of wingspan or 25% of rotor diameter whichever is the greatest, minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for aircraft') are observed.

Buffer zones for aircraft - 2,4-D acid and salt formulations (excludes Groups 17-21)
Note: Specific buffer zones apply for Group 13 products (aquatic use only products).Group 13 products must only be aerially applied using rotary-wing aircraft.

Application rate	Type of aircraft	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 4500 g ae/ha	Fixed wing	725 metres	675 metres
	Helicopter	350 metres	325 metres
Up to 3640 g ae/ha	Fixed wing	550 metres	525 metres
	Helicopter	300 metres	275 metres
Up to 3300 g ae/ha	Fixed wing	475 metres	450 metres

Application rate	Type of aircraft	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
	Helicopter	275 metres	275 metres
Up to 3000 g ae/ha	Fixed wing	425 metres	400 metres
	Helicopter	250 metres	240 metres
Up to 2250 g ae/ha	Fixed wing	325 metres	300 metres
	Helicopter	200 metres	200 metres
Up to 1120 g ae/ha	Fixed wing	190 metres	180 metres
	Helicopter	130 metres	130 metres
Up to 1080 g ae/ha	Fixed wing	180 metres	180 metres
	Helicopter	130 metres	120 metres
Up to 950 g ae/ha	Fixed wing	170 metres	160 metres
	Helicopter	120 metres	120 metres
Up to 560 g ae/ha	Fixed wing	120 metres	120 metres
	Helicopter	85 metres	80 metres
Up to 325 g ae/ha	Fixed wing	80 metres	80 metres
	Helicopter	60 metres	60 metres

Buffer zones for aircraft – 2,4-D EHE formulations (Groups 17-20)

Application rate	Type of aircraft	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 4500 g ae/ha	Fixed wing	Not Supported	Not Supported
	Helicopter	350 metres	625 metres
Up to 3180 g ae/ha	Fixed wing	Not Supported	Not Supported
	Helicopter	275 metres	400 metres
Up to 1620 g ae/ha	Fixed wing	240 metres	400 metres
	Helicopter	160 metres	240 metres
Up to 1150 g ae/ha	Fixed wing	190 metres	300 metres
	Helicopter	130 metres	190 metres
Up to 560 g ae/ha	Fixed wing	120 metres	170 metres
	Helicopter	85 metres	120 metres

DIRECTIONS FOR USE: [Applicants please add to this table, and highlight the changes made and delete this text]

General weed control

CROP/SITUATION	WEEDS	RATE	WHP	CRITICAL COMMENTS

Weed control at specific crop stages

CROP	CROP STAGE	WEEDS	RATE	WHP	CRITICAL COMMENTS

Weed control at specific weed stages

CROP/SITUATION	WEEDS AND WEED STAGE	RATE	WHP	CRITICAL COMMENTS

Legume tolerance table

LEGUME	RATE	CRITICAL COMMENTS

Weed table

WEEDS CONTROLLED*	RATE	CRITICAL COMMENTS

* The rate tolerated by the crop or pasture limits the range of weeds that can be controlled.

Spot spraying

WEEDS CONTROLLED	RATE	CRITICAL COMMENTS

PLANT BACK INTERVAL DAYS[6]:

CROP/Rates	Up to 350 g ae/ha	Up to 720 g ae/ha	Up to 1060 g ae/ha
Balansa Clover	7	7	10
Barley %	1	1	3
Chickpeas #	7	14	21
Cotton	10	14	21
Faba Beans	7	7	10
Field Peas	7	14	14
Lentils	7	7	10
Linseed	7	7	14
Lucerne	7	7	10
Lupins +	7	14	21
Medic	7	7	10
Narbon beans	7	7	10

Navybean	10	10	14
Oats	3	3	7
Perennial Ryegrass	7	7	10
Persian Clover	7	7	10
Phalaris	7	7	10
Canola / Rapeseed #	14	21	28
Rice	7	7	14
Safflower #	7	14	21
Sorghum @	3	7	10
Soybean	14	14	21
Sub-clover	7	7	10
Sunflower @	7	10	14
Triticale %	1	3	7
Vetch	7	7	10
Wheat %	1	3	7
White clover	7	7	10

[6]Plant back interval days are not applicable to Group 15a 15b or 22a products

IMPORTANT:

WHEN APPLIED TO DRY SOILS AT LEAST 15 mm (1/2 inch) OF RAIN MUST FALL PRIOR TO THE COMMENCEMENT OF THE PLANT BACK PERIOD.

NOTES:

% In Queensland, no rainfall is required to fall prior to commencement of Plant Back Period for Wheat, Barley and Triticale.

In Queensland, planting of Canola/Rapeseed, Chickpeas and Safflower must be delayed for at least 14 days following rainfall of at least 15mm.

@ In Central Queensland, when using 500 g ae/ha or less of [INSERT PRODUCT NAME], the Plant Back Period for Sorghum and Sunflower is 1 day irrespective of rainfall.

+ In WA the Plant Back Period for Lupins at all rates is 28 days.

GROUP 1 (225 G 2,4-D/L AS THE IPA SALT)

2,4-D Products containing the IPA salt at a concentration of 225 g ac/L were excluded from the review since there are no currently registered products in this category. Required label elements are not required.

GROUP 2 (300 G 2,4-D/L AS THE IPA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.

Safety Directions:	Harmful if swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves, goggles and half facepiece respirator with organic vapour/gas cartridge or canister. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 15L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 13.3 L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 2.9L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 3.6L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions

		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 3.7L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 7.5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	11	11	11	11
	New South Wales & ACT	11	11	11	11
	Victoria	1.2	3.5	11	3.5
	Tasmania	1.2	2.6	7.4	3.5
	South Australia	2.4	3.5	11	7.4
	Western Australia	3.5	7.4	11	7.4
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	15	15	15	15
	New South Wales & ACT	15	15	15	15
	Victoria	2.0	4.0	15	7.5
	Tasmania	1.4	3.5	11	6.6
	South Australia	3.0	6.6	15	11
	Western Australia	7.5	10.6	15	11

Table 3: Timing restrictions for spraying SUGARCANE		
Rate (L/ha)	**Region**	**Timing Restriction**
		DO NOT APPLY DURING THE MONTHS
Up to **3.6L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **7.4L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	6.7
	New South Wales & ACT	6.7
	Victoria	5.3
	Tasmania	5.3
	South Australia	5.3
	Western Australia	8.3
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 3 (450 G 2,4-D/L AS THE IPA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.

Safety Directions:	Poisonous if absorbed by skin contact or swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 10 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 8.9 L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.9L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November

		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
FALLOW BAND SPRAY PRIOR TO SOWING Peanuts	Up to 2.5L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	7.1	7.1	7.1	7.1
	New South Wales & ACT	7.1	7.1	7.1	7.1
	Victoria	0.8	2.3	7.1	2.3
	Tasmania	0.8	1.7	4.9	2.3
	South Australia	1.6	2.3	7.1	4.9
	Western Australia	2.3	4.9	7.1	4.9
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	10	10	10	10
	New South Wales & ACT	10	10	10	10
	Victoria	1.3	2.7	10	5
	Tasmania	0.9	2.3	7.1	4.4
	South Australia	2	4.4	10	7.1
	Western Australia	5	7.1	10	7.1

Table 3: Timing restrictions for spraying SUGARCANE		
Rate (L/ha)	**Region**	**Timing Restriction**
		DO NOT APPLY DURING THE MONTHS
Up to **2.4L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **4.9L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	4.4
	New South Wales & ACT	4.4
	Victoria	3.5
	Tasmania	3.5
	South Australia	3.5
	Western Australia	5.6
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 4 (300 G 2,4-D/L AS THE TIPA SALT AND 75G/L PICLORAM) SPECIFIC LABEL ELEMENTS

Withholding Period:	PASTURE, CEREAL CROPS: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 7 DAYS AFTER APPLICATION SUGARCANE: DO NOT HARVEST FOR 8 WEEKS AFTER APPLICATION DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 8 WEEKS AFTER APPLICATION.

Safety Directions:	Harmful if inhaled or swallowed. Will damage the eyes. Will irritate the skin. Repeated exposure may cause allergic disorders. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 15 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 13.3L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 2.9L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 3.6L/ha	Cape York	October and November
		Northern Gulf	October and November

		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 3.7L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 7.5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	11	11	11	11
	New South Wales & ACT	11	11	11	11
	Victoria	1.2	3.5	11	3.5
	Tasmania	1.2	2.6	7.4	3.5
	South Australia	2.4	3.5	11	7.4
	Western Australia	3.5	7.4	11	7.4

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	15	15	15	15
	New South Wales & ACT	15	15	15	15
	Victoria	2.0	4.0	15	7.5
	Tasmania	1.4	3.5	10	6.6
	South Australia	3.0	6.6	15	11

	Western Australia	7.5	11	15	11

Table 3: Timing restrictions for spraying SUGARCANE

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
	Up to 3.2**L/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	No timing restriction
		Northern NSW	No timing restriction

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	6.7
	New South Wales & ACT	6.7
	Victoria	5.3
	Tasmania	5.3
	South Australia	5.3
	Western Australia	8.3

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 5 (500 G/L 2,4-D PRESENT AS THE DMA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	
	Poisonous if inhaled or swallowed. Corrosive to the eyes and skin. Avoid contact with the eyes and skin. Will irritate the nose and throat. Do not inhale vapour or spray mist.
	When opening the container and preparing spray or using undiluted concentrate, wear protective waterproof clothing, elbow-length chemical resistant gloves, impervious footwear and goggles and half face piece respirator with organic vapour/gas cartridge or canister or full facepiece respirator. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water.
	After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 9 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by **backpack spraying of 8 L/day.**
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction** **DO NOT APPLY DURING THE MONTHS**
Broadcast spraying, prior to sowing (peanuts)	Up to 1.8L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.1L/ha	Cape York	October and November

		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	Use not supported
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.2L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 4.5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.7	2.1	6.4	2.1
	Tasmania	0.7	1.6	4.4	2.1
	South Australia	1.4	2.1	6.4	4.4
	Western Australia	2.1	4.4	6.4	4.4
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	9.0	9.0	9.0	9.0
	New South Wales & ACT	9.0	9.0	9.0	9.0
	Victoria	1.2	2.4	9.0	4.5
	Tasmania	0.8	2.1	6.4	4.0

	South Australia	1.8	4.0	9.0	6.4
	Western Australia	4.5	6.4	9.0	6.4

Table 3: Timing restrictions for spraying SUGARCANE		
Rate (L/ha)	**Region**	**Timing Restriction**
		DO NOT APPLY DURING THE MONTHS
Up to **2.2L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **4.4L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	4.0
	New South Wales & ACT	4.0
	Victoria	3.2
	Tasmania	3.2
	South Australia	3.2
	Western Australia	5.0
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 6 (625G/L 2,4-D PRESENT AS THE DIMETHYLAMINE SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if inhaled or swallowed. Corrosive to the eyes and skin. Avoid contact with the eyes and skin. Will irritate the nose and throat. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear protective waterproof clothing, elbow-length chemical resistant gloves, impervious footwear and goggles and half face piece respirator with organic vapour/gas cartridge or canister or full facepiece respirator. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 7.2 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 6.4 L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.7L/ha	Cape York	October and November
		Northern Gulf	October and November

		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.8L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.6L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	5.1	5.1	5.1	5.1
	New South Wales & ACT	5.1	5.1	5.1	5.1
	Victoria	0.6	1.7	5.1	1.7
	Tasmania	0.6	1.2	3.6	1.7
	South Australia	1.2	1.7	5.1	3.6
	Western Australia	1.7	3.6	5.1	3.6
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	7.2	7.2	7.2	7.2
	New South Wales & ACT	7.2	7.2	7.2	7.2
	Victoria	1.0	1.9	7.2	3.6
	Tasmania	0.7	1.7	5.1	3.2
	South Australia	1.4	3.2	7.2	5.1

	Western Australia	3.6	5.1	7.2	5.1

Table 3: Timing restrictions for spraying SUGARCANE

Rate (L/ha)	Region	Timing Restriction
		DO NOT APPLY DURING THE MONTHS
Up to **1.8L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **3.6L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	3.2
	New South Wales & ACT	3.2
	Victoria	2.5
	Tasmania	2.5
	South Australia	2.5
	Western Australia	4.0

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 7 (800 G 2,4-D/KG AS THE DMA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if inhaled or swallowed. Corrosive to the eyes and skin. Avoid contact with the eyes and skin. Will irritate the nose and throat. Do not inhale vapour or spray mist. When opening the container and preparing spray, wear protective waterproof clothing over a layer of normal clothing, elbow-length chemical resistant gloves, impervious footwear and goggles and half face piece respirator with organic vapour/gas cartridge or canister or full facepiece respirator. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

GENERAL RESTRAINTS
DO NOT exceed maximum application rate of 5.6 kg/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5 kg/day.

Table 1: Timing restrictions for spraying peanuts in QLD production horticulture regions

Situation	Rate (kg/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.1 kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.35 kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing		Queensland dryland	No timing restrictions
		Cape York	No timing restrictions

pre-emergence (peanuts)	Up to 1.35 kg/ha	Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 2.8 kg/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage) kg/ha	Queensland & NT	4.0	4.0	4.0	4.0
	New South Wales & ACT	4.0	4.0	4.0	4.0
	Victoria	0.4	1.3	4.0	1.3
	Tasmania	0.4	1.0	2.8	1.3
	South Australia	0.9	1.3	4.0	2.8
	Western Australia	1.3	2.8	4.0	2.8
Pastures (established) kg/ha	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	5.6	5.6	5.6	5.6
	New South Wales & ACT	5.6	5.6	5.6	5.6
	Victoria	0.7	1.5	5.6	2.8
	Tasmania	0.5	1.3	4.0	2.5
	South Australia	1.2	2.5	5.6	4.0
	Western Australia	2.8	4.0	5.6	4.0

Table 3: Timing restrictions for spraying SUGARCANE

Rate (kg/ha)	Region	Timing Restriction
		DO NOT APPLY DURING THE MONTHS
Up to **1.35 kg/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November

	Northern NSW	No timing restriction
Up to **2.79 kg/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (kg/ha) below OR label rate, whichever is LOWEST

	State	Rate (kg/ha)
Turf	Queensland & NT	2.5
	New South Wales & ACT	2.5
	Victoria	2.0
	Tasmania	2.0
	South Australia	2.0
	Western Australia	3.2

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 8A (720 G 2,4-D/L AS THE DMA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if inhaled or swallowed. Corrosive to the eyes and skin. Avoid contact with the eyes and skin. Will irritate the nose and throat. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear protective waterproof clothing over a layer of normal clothing, elbow-length chemical resistant gloves, impervious footwear and goggles and half face piece respirator with organic vapour/gas cartridge or canister or full facepiece respirator. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 6.3 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5.6L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.2L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.5L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November

		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.5L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.1L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.4	4.4	4.4	4.4
	New South Wales & ACT	4.4	4.4	4.4	4.4
	Victoria	0.5	1.4	4.4	1.4
	Tasmania	0.5	1.1	3.1	1.4
	South Australia	1.0	1.4	4.4	3.1
	Western Australia	1.4	3.1	4.4	3.1
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	6.3	6.3	6.3	6.3
	New South Wales	6.3	6.3	6.3	6.3
	Victoria & ACT	0.8	1.7	6.3	3.1
	Tasmania	0.6	1.5	4.4	2.8
	South Australia	1.3	2.8	6.3	4.4
	Western Australia	3.1	4.4	6.3	4.4

Table 3: Timing restrictions for spraying SUGARCANE		
Rate (L/ha)	**Region**	**Timing Restriction**
		DO NOT APPLY DURING THE MONTHS
Up to **1.5L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **3.1L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	2.8
	New South Wales & ACT	2.8
	Victoria	2.2
	Tasmania	2.2
	South Australia	2.2
	Western Australia	3.5
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 8B (700 G 2,4-D/L AS THE DMA/MMA OR DEA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if inhaled or swallowed. Corrosive to the eyes and skin. Avoid contact with the eyes and skin. Will irritate the nose and throat. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear chemical resistant waterproof clothing over a single layer of clothing, elbow-length chemical resistant gloves, impervious footwear and goggles and half face piece respirator with organic vapour/gas cartridge or canister or full facepiece respirator. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 6.4 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5.7L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.2L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.5L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November

		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.6L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.2L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.5	4.5	4.5	4.5
	New South Wales & ACT	4.5	4.5	4.5	4.5
	Victoria	0.5	1.5	4.5	1.5
	Tasmania	0.5	1.1	3.2	1.5
	South Australia	1.0	1.5	4.5	3.2
	Western Australia	1.5	3.2	4.5	3.2
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.9	1.7	6.4	3.2
	Tasmania	0.6	1.5	4.5	2.8
	South Australia	1.3	2.8	6.4	4.5
	Western Australia	3.2	4.5	6.4	4.5

Table 3: Timing restrictions for spraying SUGARCANE		
Rate (L/ha)	**Region**	**Timing Restriction** **DO NOT APPLY DURING THE MONTHS**
Up to **1.5L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **3.2L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
Turf	**State**	**Rate (L/ha)**
	Queensland & NT	2.9
	New South Wales & ACT	2.9
	Victoria	2.2
	Tasmania	2.2
	South Australia	2.2
	Western Australia	3.6
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 9A (625 G 2,4-D/L AS THE DMA/DEA SALTS) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if absorbed by skin contact, inhaled or swallowed. Corrosive to the eyes and skin. Will irritate the nose and throat. Avoid contact with the eyes and skin. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear chemical resistant waterproof clothing over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves, impervious footwear and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with enclosed operator's cab and air filtration or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by boomspray equipment with open operator's cab or hand-held spray equipment wear chemical resistant waterproof clothing over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[14].
DO NOT apply by aircraft at rates exceeding 3.6 L/ha.
DO NOT apply by hand-held spraying equipment at rates exceeding 5.3 L/ha or 530 mL/100 L.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT exceed maximum application rate of 7.2L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November

[14] Manually pressurised backpack sprayer

		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.7L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.8L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.6 L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	5.1	5.1	5.1	5.1
	New South Wales & ACT	5.1	5.1	5.1	5.1
	Victoria	0.6	1.7	5.1	1.7
	Tasmania	0.6	1.2	3.6	1.7
	South Australia	1.2	1.7	5.1	3.6
	Western Australia	1.7	3.6	5.1	3.6

Pastures (established)	State	Summer	Autumn	Winter	Spring
	Queensland & NT	7.2	7.2	7.2	7.2
	New South Wales & ACT	7.2	7.2	7.2	7.2
	Victoria	1	1.9	7.2	3.6
	Tasmania	0.7	1.7	5.1	3.2
	South Australia	1.4	3.2	7.2	5.1
	Western Australia	3.6	5.1	7.2	5.1

Table 3: Timing restrictions for spraying SUGARCANE

Rate (L/ha)	Region	Timing Restriction
		DO NOT APPLY DURING THE MONTHS
Up to 1.7L/ha	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to 3.6L/ha	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	3.2
	New South Wales & ACT	3.2
	Victoria	2.5
	Tasmania	2.5
	South Australia	2.5
	Western Australia	4.0

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)

Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 9B (750 G 2,4-D/L AS THE DMA/DEA SALTS) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Poisonous if absorbed by skin contact, inhaled or swallowed. Corrosive to the eyes and skin. Will irritate the nose and throat. Avoid contact with the eyes and skin. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear protective waterproof clothing over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves, impervious footwear and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with enclosed operator's cab and air filtration or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by boomspray equipment with open operator's cab or hand-held spray equipment wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[15].
DO NOT apply by aircraft at rates exceeding 3.3 L/ha.
DO NOT apply by hand-held spraying equipment at rates exceeding 4.4 L/ha or 440 mL/100 L.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT exceed maximum application rate of 6 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
	Up to 1.2L/ha	Cape York	October and November
		Northern Gulf	October and November

[15] Manually pressurised backpack sprayer.

Broadcast spraying, prior to sowing (peanuts)		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.5L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.2	4.2	4.2	4.2
	New South Wales & ACT	4.2	4.2	4.2	4.2
	Victoria	0.5	1.4	4.2	1.4
	Tasmania	0.5	1.0	3.0	1.4
	South Australia	1.0	1.4	4.2	3.0

	Western Australia	1.4	3.0	4.2	3.0
Pastures (established)	State	Summer	Autumn	Winter	Spring
	Queensland & NT	6.0	6.0	6.0	6.0
	New South Wales & ACT	6.0	6.0	6.0	6.0
	Victoria	0.8	1.6	6.0	3.0
	Tasmania	0.6	1.4	4.2	2.6
	South Australia	1.2	2.6	6.0	4.2
	Western Australia	3.0	4.2	6.0	4.2

Table 3: Timing restrictions for spraying SUGARCANE

Rate (L/ha)	Region	Timing Restriction
		DO NOT APPLY DURING THE MONTHS
Up to 1.4L/ha	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to 3L/ha	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	2.7
	New South Wales & ACT	2.7
	Victoria	2.1
	Tasmania	2.1
	South Australia	2.1
	Western Australia	3.3

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)

Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 10 (475G 2,4-D/L AS THE DMA/DEA SALTS) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if inhaled or swallowed. Corrosive to the eyes. Will damage the skin. Will irritate the nose and throat. Avoid contact with the eyes and skin. Do not inhale vapour or spray mist. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, PVC or rubber apron, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with enclosed operator's cab and air filtration or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by hand-held spraying equipment or boomspray equipment with open operator's cab wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[16].
DO NOT apply by aircraft at rates exceeding 3.4 L/ha.
DO NOT apply by hand-held spraying equipment at rates exceeding 6.9 L/ha or 690 mL/100 L.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT exceed maximum application rate of 9.5 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.8L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions

[16] Manually pressurised backpack sprayer

		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.2L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.3L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 4.7L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	6.7	6.7	6.7	6.7
	New South Wales & ACT	6.7	6.7	6.7	6.7
	Victoria	0.7	2.2	6.7	2.2
	Tasmania	0.7	1.6	4.7	2.2
	South Australia	1.5	2.2	6.7	4.7
	Western Australia	2.2	4.7	6.7	4.7

	State	Summer	Autumn	Winter	Spring
Pastures (established)	Queensland & NT	9.5	9.5	9.5	9.5
	New South Wales & ACT	9.5	9.5	9.5	9.5
	Victoria	1.3	2.5	9.5	4.7
	Tasmania	0.9	2.2	6.7	4.2
	South Australia	1.9	4.2	9.5	6.7
	Western Australia	4.7	6.7	9.5	6.7

Table 3: Timing restrictions for spraying SUGARCANE

Rate (L/ha)	Region	Timing Restriction
		DO NOT APPLY DURING THE MONTHS
Up to **2.3L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to **4.7L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	4.2
	New South Wales & ACT	4.2
	Victoria	3.3
	Tasmania	3.3
	South Australia	3.3
	Western Australia	5.3

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)

Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 11 (500 G 2,4-D/L AS THE DEA SALTS) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if inhaled or swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. When opening the container and preparing spray, using undiluted concentrate or applying by hand-held spraying equipment or boomspray equipment with open operator's cab, wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by boomspray equipment with enclosed operator's cab and air filtration wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat and elbow-length chemical resistant gloves. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[17].
DO NOT apply by aircraft at rates exceeding 3.2 L/ha.
DO NOT apply by hand-held spraying equipment at rates exceeding 5 L/ha or 500 mL/100 L.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT exceed maximum application rate of 9 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.8L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December

[17] Manually pressurised backpack sprayer.

		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.1L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.2L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts) (DO NOT EXCEED 3.2 L/ha by aerial application)	Up to 4.5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.7	2.1	6.4	2.1
	Tasmania	0.7	1.6	4.4	2.1
	South Australia	1.4	2.1	6.4	4.4
	Western Australia	2.1	4.4	6.4	4.4
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	9.0	9.0	9.0	9.0

	New South Wales & ACT	9.0	9.0	9.0	9.0
	Victoria	1.2	2.4	9.0	4.5
	Tasmania	0.8	2.1	6.4	4.0
	South Australia	1.8	4.0	9.0	6.4
	Western Australia	4.5	6.4	9.0	6.4

Table 3: Timing restrictions for spraying SUGARCANE

Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
(DO NOT EXCEED 3.2 L/ha by aerial application)	Up to **2.2L/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	October to November
		Northern NSW	No timing restriction
	Up to **4.4L/ha**	Wet Tropics	October to December
		Burdekin	September to October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Rate (L/ha)**
Turf	Queensland & NT	4
	New South Wales & ACT	4
	Victoria	3.2
	Tasmania	3.2
	South Australia	3.2
	Western Australia	5

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 12A (500 G 2,4-D/L AS THE DEA/TEA SALTS) SPECIFIC LABEL ELEMENTS

Safety Directions:	Harmful if absorbed by skin contact, inhaled or swallowed. Will damage the eyes. Will irritate the skin. Repeated exposure may cause allergic disorders. When opening the container and preparing spray, using undiluted concentrate or applying by hand-held spraying equipment or boomspray equipment with open operator's cab, wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with enclosed operator's cab and air filtration or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user.
DO NOT apply by aircraft at rates exceeding 6.4 L/ha.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT exceed maximum application rate of 9 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3 and 4.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.8L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.1L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions

		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.2L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 4.5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.7	2.1	6.4	2.1
	Tasmania	0.7	1.6	4.4	2.1
	South Australia	1.4	2.1	6.4	4.4
	Western Australia	2.1	4.4	6.4	4.4
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	9.0	9.0	9.0	9.0
	New South Wales & ACT	9.0	9.0	9.0	9.0
	Victoria	1.2	2.4	9.0	4.5
	Tasmania	0.8	2.1	6.4	4.0
	South Australia	1.8	4.0	9.0	6.4
	Western Australia	4.5	6.4	9.0	6.4

Table 3: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
rf	**State**	**Rate (L/ha)**
	Queensland & NT	4.0
	New South Wales & ACT	4.0
	Victoria	3.2
	Tasmania	3.2
	South Australia	3.2
	Western Australia	5.0
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 4: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 12B (625 G 2,4-D/L AS THE DEA/TEA SALTS) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if absorbed by skin contact, inhaled or swallowed. Will damage the eyes. Will irritate the skin. Repeated exposure may cause allergic disorders. When opening the container and preparing spray, using undiluted concentrate or applying by hand-held spraying equipment or boomspray equipment with open operator's cab, wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with enclosed operator's cab and air filtration or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user.
DO NOT apply by aircraft at rates exceeding 5.1 L/ha.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.
DO NOT EXCEED application rates of 7.2 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3 and 4.

Table 1: Timing restrictions for spraying peanuts			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.5L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.7L/ha	Cape York	October and November
		Northern Gulf	October and November

		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.8L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.6L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	5.1	5.1	5.1	5.1
	New South Wales & ACT	5.1	5.1	5.1	5.1
	Victoria	0.6	1.7	5.1	1.7
	Tasmania	0.6	1.2	3.6	1.7
	South Australia	1.2	1.7	5.1	3.6
	Western Australia	1.7	3.6	5.1	3.6
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	7.2	7.2	7.2	7.2
	New South Wales & ACT	7.2	7.2	7.2	7.2
	Victoria	1.0	1.9	7.2	3.6
	Tasmania	0.7	1.7	5.1	3.2
	South Australia	1.4	3.2	7.2	5.1

	Western Australia	3.6	5.1	7.2	5.1

Table 3: Timing restrictions for spraying SUGARCANE			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
	Up to **1.7 L/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	October to November
		Northern NSW	No timing restriction
	Up to 3.5 **L/ha**	Wet Tropics	October to December
		Burdekin	September to October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		Northern NSW	October to November

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	3.2
	New South Wales & ACT	3.2
	Victoria	2.5
	Tasmania	2.5
	South Australia	2.5
	Western Australia	4.0
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 13 (300 G 2,4-D/L FORM NOT SPECIFIED) SPECIFIC LABEL ELEMENTS

Note: These products can only be used for aquatic use situations (control of water hyacinth and water lettuce) at rates up to 3000 g ae/ha by knapsack, handgun and sprinklers or up to 1500 g ae/ha by helicopter. This Group has special restraints required to minimise risks.

Safety Directions:	Harmful if inhaled or swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. Avoid inhaling vapour. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 15 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 13.3L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2 and 3.

For aquatic uses:
REMOVE aquatic weeds as much as possible through mechanical means.
DO NOT apply to bodies of water where weed infestations do not exist.
DO NOT treat more than 50% of the total surface area at any one time.
DO NOT treat areas of the same water body for at least 7 days after previous treatments.
DO NOT treat to the point of runoff.
DO NOT apply directly to water, direct spray onto aquatic weeds.
To the extent possible, only treat plants in water bodies greater than 1m deep.

DO NOT apply by aircraft unless the following requirements are met:

- For application by helicopter only, not for application by fixed-wing aircraft.
- Spray droplets are no smaller than a VERY COARSE spray droplet size category
- For maximum release heights above the target canopy of 3m or 25% of wingspan or 25% of rotor diameter whichever is the greatest, minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for aircraft') are observed.

<u>Buffer zones for aircraft</u>

Application rate	Type of aircraft	Mandatory downwind buffer zones	
		Natural aquatic areas	Vegetation areas
Up to 10 L/ha	Helicopter	250 metres	240 metres
Up to 5 L/ha	Helicopter	160 metres	150 metres

Table 1: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	11	11	11	11
	New South Wales & ACT	11	11	11	11
	Victoria	1.2	3.5	11	3.5
	Tasmania	1.2	2.6	7.4	3.5
	South Australia	2.4	3.5	11	7.4
	Western Australia	3.5	7.4	11	7.4
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	15	15	15	15
	New South Wales & ACT	15	15	15	15
	Victoria	2.0	4.0	15	7.5
	Tasmania	1.4	3.5	11	6.6
	South Australia	3.0	6.6	15	11
	Western Australia	7.5	11	15	11

GROUP 14A (700 G 2,4-D/KG AS THE SODIUM SALT)

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if inhaled or swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. Avoid inhaling dust. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 6.4 kg/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5.7 kg/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (kg/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.3kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.5kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December

		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.6kg/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.2kg/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (kg/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.5	4.5	4.5	4.5
	New South Wales & ACT	4.5	4.5	4.5	4.5
	Victoria	0.5	1.5	4.5	1.5
	Tasmania	0.5	1.1	3.2	1.5
	South Australia	1.0	1.5	4.5	3.2
	Western Australia	1.5	3.2	4.5	3.2
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.9	1.7	6.4	3.2
	Tasmania	0.6	1.5	4.5	2.8
	South Australia	1.3	2.8	6.4	4.5
	Western Australia	3.2	4.5	6.4	4.5

Table 3: Timing restrictions for spraying SUGARCANE

Situation	Rate (kg/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
	Up to 1.6kg**/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	October to November
		Northern NSW	No timing restriction
	Up to **5.2kg/ha**	Wet Tropics	August to December
		Burdekin	August to November
		Mackay/Whitsunday	June to December
		Mary/Burnett	USE NOT SUPPORTED
		Northern NSW	August to January

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (kg/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	2.9
	New South Wales & ACT	2.9
	Victoria	2.3
	Tasmania	2.3
	South Australia	2.3
	Western Australia	3.6
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 14B (800 G 2,4-D/KG AS THE SODIUM SALT)

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if inhaled or swallowed. Will damage the eyes. Avoid contact with the eyes and skin. Avoid inhaling dust. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, PVC or rubber apron, elbow-length chemical resistant gloves and full facepiece respirator with dust cartridge or canister. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear full facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 5. 6kg/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5kg/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.1kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.3kg/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October

		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.4kg/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 2.8kg/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (kg/ha) below OR label rate(kg/ha), whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.0	4.0	4.0	4.0
	New South Wales & ACT	4.0	4.0	4.0	4.0
	Victoria	0.4	1.3	4.0	1.3
	Tasmania	0.4	1.0	2.8	1.3
	South Australia	0.9	1.3	4.0	2.8
	Western Australia	1.3	2.8	4.0	2.8

	State	Summer	Autumn	Winter	Spring
Pastures (established)	Queensland & NT	5.6	5.6	5.6	5.6
	New South Wales & ACT	5.6	5.6	5.6	5.6
	Victoria	0.8	1.5	5.6	2.8
	Tasmania	0.5	1.3	4.0	2.5
	South Australia	1.1	2.5	5.6	4.0
	Western Australia	2.8	4.0	5.6	4.0

Table 3: Timing restrictions for spraying SUGARCANE			
Situation	**Rate (kg/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
	Up to 1.4kg**/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	October to November
		Northern NSW	No timing restriction
	Up to 4.6**kg/ha**	Wet Tropics	August to December
		Burdekin	August to November
		Mackay/Whitsunday	June to December
		Mary/Burnett	USE NOT SUPPORTED
		Northern NSW	August to January

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (kg/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	2.5
	New South Wales & ACT	2.5
	Victoria	2.0
	Tasmania	2.0
	South Australia	2.0
	Western Australia	3.1
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 15A (22.8 G 2,4-D/L AS THE SODIUM SALT)

Signal Heading:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Withholding Period:	DO NOT harvest for 4 weeks after application

Safety Directions:	May irritate the eyes. Avoid contact with the eyes. Repeated exposure may cause allergic disorders. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

SPRAY DRIFT RESTRAINTS

DO NOT apply by a boom sprayer.
DO NOT apply by aircraft.

DO NOT apply by a vertical sprayer unless the following requirements are met:
Spray is not directed above the target canopy
The outside of the sprayer is turned off when turning at the end of rows and when spraying the outer row on each side of the application site.
For dilute water rates up to the maximum listed for each type of canopy specified, minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titles 'Buffer zones for vertical sprayers') are observed.

Buffer zones for vertical sprayers

Type of target canopy and dilute water rate	Mandatory downwind buffer zones	
	Natural aquatic areas	Vegetation areas
2 metres tall and shorter, maximum dilute water rate of 1000 L/ha	Not required	Not required
Taller than 2 metres (not fully-foliated), maximum dilute water rate of 4000 L/ha	15 metres	15 metres
Taller than 2 metres (fully-foliated), maximum dilute water rate of 4000 L/ha	10 metres	5 metres

GROUP 15B (100 G 2,4-D/L AS THE DMA SALT)

Signal Heading:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Safety Directions:	Will irritate the eyes. May irritate the skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or dip, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat. When applying by dip wear protective waterproof clothing, elbow-length chemical resistant gloves and impervious footwear. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

Disposal of post-harvest dip	Unused or spent dips should be disposed of carefully to avoid contamination of wetlands or watercourses. Dispose of dip in an authorised dip disposal facility. If an authorised dip disposal facility is not available, the spent dip should be evenly spread over flat land not exceeding 20,000 L/ha. The disposal site must be dedicated and adequately bunded (soil at least 15 cm high). DO NOT dispose unwanted spent dip in the same place repeatedly, as repeated depositions in one location may, over time, created a contaminated site.

SPRAY DRIFT RESTRAINTS

DO NOT apply by a boom sprayer.
DO NOT apply by aircraft.

DO NOT apply by a vertical sprayer unless the following requirements are met:
Spray is not directed above the target canopy
The outside of the sprayer is turned off when turning at the end of rows and when spraying the outer row on each side of the application site.
For dilute water rates up to the maximum listed for each type of canopy specified, minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titles 'Buffer zones for vertical sprayers') are observed.

Buffer zones for vertical sprayers

Type of target canopy and dilute water rate	Mandatory downwind buffer zones	
	Natural aquatic areas	Vegetation areas
2 metres tall and shorter, maximum dilute water rate of 1000 L/ha	Not required	Not required
Taller than 2 metres (not fully-foliated), maximum dilute water rate of 4000 L/ha	15 metres	15 metres
Taller than 2 metres (fully-foliated), maximum dilute water rate of 4000 L/ha	10 metres	5 metres

GROUP 16A (80 G 2,4-D/L AS THE DMA/DEA SALTS + 336 G/L MECOPROP + 40 G/L DICAMBA) (COMMERCIAL PRODUCT)

Mode of Action:	GROUP I HERBICIDE
Protection Statements:	PROTECTION OF LIVESTOCK DO NOT graze treated turf/lawn; or feed turf/lawn clippings from any treated area to poultry or livestock.

Safety Directions:	Harmful if inhaled or swallowed. Corrosive to the eyes and skin. Will irritate the nose and throat. Repeated exposure may cause allergic disorders. When opening the container and preparing spray or using undiluted concentrate, wear protective waterproof clothing over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves, impervious footwear, goggles and half facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by hand-held spray equipment wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[18].

[18] Manually pressurised backpack sprayer

GROUP 16B (350 G 2,4-D/L AS THE DEA SALT + 45 G/L CLOPYRALID + 45 G/L DICAMBA)

Mode of Action:	GROUP	I	HERBICIDE

Precautions:	RE-ENTRY PERIOD If re-entering treated areas before the spray has dried, workers should wear overalls, elbow-length gloves and water-resistant footwear. Hand weeding and transplanting should not occur for 23 days after spray application unless workers wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves and footwear.
Protection Statements:	PROTECTION OF LIVESTOCK DO NOT graze treated turf or feed grass clippings from treated area to poultry or livestock.

Safety Directions:	Harmful if swallowed. Will damage the eyes. Will irritate the skin. Repeated exposure may cause allergic disorders. Avoid contact with the eyes and skin. Do not inhale spray mist. When opening the container and preparing spray, wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment with open operator's cab or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by hand-held spraying equipment, wear chemical resistant clothing buttoned to the neck and wrist over a layer of normal clothing and a washable hat, elbow-length chemical resistant gloves and full facepiece respirator with organic vapour/gas cartridge or canister. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[19].
DO NOT apply by aircraft at rates exceeding 3.9 L/ha.
DO NOT use open mixing/loading equipment if treating more than 50 hectares in one day.

[19] Manually pressurised backpack sprayer.

GROUP 17 (577 G 2,4-D AS THE EHE + 100 G IOXYNIL/L)

Constituent Statement:	577 g/L 2,4-D present as ETHYLHEXYLESTER 100g/L IOXYNIL present as the OCTANOATE

Mode of Action:	GROUP	C I	HERBICIDE
Withholding Period:	DO NOT harvest Sugarcane for 60 days after application		

Resistance Warning:	Resistant Weeds Warning [INSERT PRODUCT NAME] herbicide is a member of the NITRIL and PHENOXY Group of herbicides. The product has the inhibitors of photosynthesis at photosystem II and disruptors of plant cell growth mode of action. For weed resistance management [INSERT PRODUCT NAME] is a Group C and Group I herbicide. Some naturally-occurring weed biotypes resistant to [INSERT PRODUCT NAME] and other Group C and I herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by [INSERT PRODUCT NAME] or other Group C and I herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, [INSERTCOMPANY NAME] accepts no liability for any losses that may result from the failure of [INSERT PRODUCT NAME] to control resistant weeds.

Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.

Safety Directions:	Harmful if swallowed. Will damage the eyes. Will irritate the skin. Avoid contact with the eyes and skin. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed the maximum daily application rate by backpack spraying of 6.9 L/day.
Additional USAGE restrictions apply in some states and seasons, see restriction table 1.

Table 1: Timing restrictions for spraying SUGARCANE			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
	Up to **1.5L/ha**	All	No timing restriction
	Up to **2L/ha**	Wet Tropics	No timing restriction
		Burdekin	No timing restriction
		Mackay/Whitsunday	October to November
		Mary/Burnett	October to November
		Northern NSW	No timing restriction

GROUP 18 (600 G 2,4-D/L AS THE EHE)

Protection Statements:	PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT Very toxic to aquatic life. DO NOT contaminate wetlands or watercourses with this product or used containers. INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.

Safety Directions:	Harmful if swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves, goggles and half face piece respirator with organic vapour/gas cartridge or canister. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 7.5 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 6.7L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.5L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions

		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 1.8L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.9L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.8L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate (L/ha), whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	5.3	5.3	5.3	5.3
	New South Wales & ACT	5.3	5.3	5.3	5.3
	Victoria	0.6	1.7	5.3	1.7
	Tasmania	0.6	1.3	3.7	1.7
	South Australia	1.2	1.7	5.3	3.7
	Western Australia	1.7	3.7	5.3	3.7

	State	Summer	Autumn	Winter	Spring
Pastures (established)	Queensland & NT	7.5	7.5	7.5	7.5
	New South Wales & ACT	7.5	7.5	7.5	7.5
	Victoria	1.0	2.0	7.5	3.8
	Tasmania	0.7	1.8	5.3	3.3
	South Australia	1.5	3.3	7.5	5.3
	Western Australia	3.8	5.3	7.5	5.3

Table 3: Timing restrictions for spraying SUGARCANE

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
	Up to **1.3L/ha**	All	No timing restriction
	Up to **2.7L/ha**	Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	August to December and April to May
		Northern NSW	No timing restriction

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	3.3
	New South Wales & ACT	3.3
	Victoria	2.6
	Tasmania	2.6
	South Australia	2.6
	Western Australia	4.2

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 19A (680 G 2,4-D/L AS THE EHE)

Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.
Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.
Safety Directions:	Harmful if swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves, goggles and half face piece respirator with organic vapour/gas cartridge or canister. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 6.6 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 5.9L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.3L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May

	Up to 1.6L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 1.6L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 3.3L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	4.7	4.7	4.7	4.7
	New South Wales & ACT	4.7	4.7	4.7	4.7
	Victoria	0.5	1.5	4.7	1.5
	Tasmania	0.5	1.1	3.3	1.5
	South Australia	1.1	1.5	4.7	3.3
	Western Australia	1.5	3.3	4.7	3.3
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	6.6	6.6	6.6	6.6
	New South Wales & ACT	6.6	6.6	6.6	6.6

	Victoria	0.9	1.8	6.6	3.3
	Tasmania	0.6	1.5	4.7	2.9
	South Australia	1.3	2.9	6.6	4.7
	Western Australia	3.3	4.7	6.6	4.7

Table 3: Timing restrictions for spraying SUGARCANE			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
	Up to **1.2L/ha**	All	No timing restriction
	Up to **2.4L/ha**	Wet Tropics	No timing restriction
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	August to December and April to May
		Northern NSW	No timing restriction

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	2.9
	New South Wales & ACT	2.9
	Victoria	2.3
	Tasmania	2.3
	South Australia	2.3
	Western Australia	3.7
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 19B (UP TO 450 G 2,4-D/L AS EHE)

Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.

Safety Directions:	Harmful if swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. When opening the container and preparing spray or using undiluted concentrate, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves, goggles and half face piece respirator with organic vapour/gas cartridge or canister. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, goggles, respirator (and if rubber wash with detergent and warm water) and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 10 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 8.9 L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3, 4 and 5.

Table 1: Timing restrictions for spraying peanuts

Situation	Rate (L/ha)	Region	Timing Restriction
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.9L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May

	Up to 2.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.5L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 5L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	7.1	7.1	7.1	7.1
	New South Wales & ACT	7.1	7.1	7.1	7.1
	Victoria	0.8	2.3	7.1	2.3
	Tasmania	0.8	1.7	4.9	2.3
	South Australia	1.6	2.3	7.1	4.9
	Western Australia	2.3	4.9	7.1	4.9
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	10	10	10	10
	New South Wales & ACT	10	10	10	10

	Victoria	1.3	2.7	10	5.0
	Tasmania	0.9	2.3	7.1	4.4
	South Australia	2.0	4.4	10	7.1
	Western Australia	5.0	7.1	10	7.1

Table 3: Timing restrictions for spraying SUGARCANE			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
	Up to **1.7L/ha**	All	No timing restriction
	Up to 3.6**L/ha**	Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	August to December and April to May
		Northern NSW	No timing restriction

Table 4: Application restrictions for TURF		
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST		
	State	**Rate (L/ha)**
Turf	Queensland & NT	4.4
	New South Wales & ACT	4.4
	Victoria	3.5
	Tasmania	3.5
	South Australia	3.5
	Western Australia	5.6
If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.		

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 20A (421 G 2,4-D/L AS EHE + 2.1G/L PYRAFLUFEN-ETHYL)

Constituent Statement:	421g/L 2,4_D present as Ethylhexyl ester 2.1g/L Pyraflufen

Mode of Action:	GROUP	G I	HERBICIDE

Resistance Warning:	Resistant Weeds Warning [INSERT PRODUCT NAME] herbicide is a member of the phenylpyrazole and PHENOXY Groups of herbicides. The product has the disruptors of plant cell growth mode of action and of membrane disruption, which is initiated by the inhibition of the enzyme protoporphyrinogen oxidase. For weed resistance management [INSERT PRODUCT NAME] is a Group G and I herbicide. Some naturally-occurring weed biotypes resistant to [INSERT PRODUCT NAME] and other Group G and I herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by [INSERT PRODUCT NAME] or other Group G and I herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, [INSERTCOMPANY NAME] accepts no liability for any losses that may result from the failure of [INSERT PRODUCT NAME] to control resistant weeds.

Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.

Safety Directions:	Harmful if inhaled or swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. Do not inhale vapour. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT exceed maximum application rate of 11 L/ha (4500 g ae/ha).
DO NOT exceed the maximum daily application rate by backpack spraying of 9.5L/day.
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2 and 3.

Table 1: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Summer	Autumn	Winter	Spring
Pastures (prior to sowing, conservation tillage)	Queensland & NT	7.6	7.6	7.6	7.6
	New South Wales & ACT	7.6	7.6	7.6	7.6
	Victoria	0.8	2.5	7.6	2.5
	Tasmania	0.8	1.9	5.3	2.5
	South Australia	1.7	2.5	7.6	5.3
	Western Australia	2.5	5.3	7.6	5.3
	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (established)	Queensland & NT	11	11	11	11
	New South Wales & ACT	11	11	11	11
	Victoria	1.4	2.9	11	5.3
	Tasmania	1.0	2.5	7.6	4.7
	South Australia	2.1	4.7	11	7.6
	Western Australia	5.3	7.6	11	7.6

Table 2: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	Rate (L/ha)
Turf	Queensland & NT	4.8
	New South Wales & ACT	4.8
	Victoria	3.7
	Tasmania	3.7
	South Australia	3.7
	Western Australia	5.9

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 3: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	Risk mitigation measures
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 20B 300G/L 2,4-D (EHE) WITH UP TO 6.25G/L FLORASULAM SPECIFIC LABEL ELEMENTS.

Resistance Warning	THE PRODUCT contains members of the phenoxy and triazolopyrimidine sulfonanilide group of herbicides. The product has the disrupters of cell growth and acetolactate synthase (ALS) inhibitor modes-of-action. For herbicide resistance management, the product is a Group I + Group B herbicide. Some naturally occurring weed biotypes resistant to the product and other Group I and/or Group B herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by this product or other Group I or Group B herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use the holder accepts no liability for any losses that may result from the failure of the product to control resistant weeds. Strategies to minimise the risk of herbicide resistance are available. Contact your farm chemical supplier, consultant or local Department of Agriculture. The herbicide is a broadleaf herbicide with no grass weed activity and exerts no selection pressure on annual ryegrass.
Precautions	RE-ENTRY Do not allow entry into treated areas until the spray has dried when conducting low exposure activities such as hand weeding unless wearing cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use. Do not allow entry into treated areas for 13 days when conducting medium exposure activities such as scouting unless wearing cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use.
Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.
Safety Directions:	Repeated exposure may cause allergic disorders. Sensitive workers should use protective clothing. Avoid contact with skin When opening the container and preparing the spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing). In addition, when mixing and loading, wear elbow-length chemical resistant gloves. Wash hands after use. After each day's use wash gloves and contaminated clothing.
First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS
DO NOT apply by aircraft.

The decision on 2,4-D products containing high volatile esters including isobutyl ester (IBE) and the ethyl ester (EE) was actioned in 2013.[20] There are two current product approvals that fall into this category (numbers 31209 [2,4-D ethyl ester] and 83795 [2,4-D isobutyl ester]). Use of these products is geographically restricted to Western Australia and subject to the State's Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979.[21] Accordingly only the human health-associated label elements require updating. The remaining elements of the existing label approvals (approval numbers 31209/117752 and 83795/108986 are considered to be sufficient provided that the products are used in accordance with the Western Australian Agriculture and Related Resources Protection (Spraying Restrictions) Regulations 1979.	
Safety Directions:	Harmful if inhaled or swallowed. Will irritate the eyes and skin. Avoid contact with the eyes and skin. Do not inhale vapour. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and face shield or goggles. When using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat and elbow-length chemical resistant gloves. If applying by hand wear half facepiece respirator with organic vapour/gas cartridge or canister. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water, face shield or goggles and contaminated clothing.
Protection Statements:	INTEGRATED PEST MANAGEMENT Toxic to beneficial arthropods. Not compatible with integrated pest management (IPM) programs utilising beneficial arthropods. Minimise spray drift to reduce harmful effects on beneficial arthropods in non-crop areas.
First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

GROUP 21 800 G/L 2,4-D PRESENT AS HIGH VOLATILITY ESTERS SPECIFIC LABEL ELEMENTS

RESTRAINTS

DO NOT USE in any state or territory except WA.

Product MUST BE USED in accordance with relevant WA legislation and regulations. **NOTE: Refer to Department of Agriculture and Food for state restricted spray areas** agric.wa.gov.au.

DO NOT apply by aircraft or ground-based misters

DO NOT apply this product:

- in aquatic situations
- to rights of way
- as a harvest aid/salvage spray

DO NOT apply more than 560g ae/ha (700mL of this product per ha) (ae=active equivalent).

SPRAY DRIFT RESTRAINTS

[20] apvma.gov.au/node/12351

[21] legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_20784.pdf/$FILE/Agriculture%20and%20Related%20Resources%20Protection%20(Spraying%20Restrictions)%20Regulations%201979%20-%20%5B01-b0-07%5D.pdf?OpenElement

DO NOT apply within 2km of potentially sensitive or susceptible aquatic areas, town sites or non-target vegetation. The latter includes commercial seedling and plant nurseries, horticultural crops, grapevines, tomato crops, intensive agricultural operations and wildflower processing crops, national parks, nature reserves, areas and aquaculture operations.

GROUP 22A (10.3 G 2,4-D/KG + 10.3G/KG MECOPROP + 0.7G/KG DICAMBA) HOME GARDEN PRODUCTS

Note: Label elements must adhere to the home garden and domestic pest control products section of the Agricultural Labelling Code.

Signal Heading:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Constituent Statement:	10.3g/kg 2,4-D as Acid 10.3 g/kg Mecoprop 0.7 g/kg Dicamba

CAUTION	DO NOT feed grass clippings from treated areas to poultry or other animals. DO NOT allow spray to contact or drift onto plants you do not want killed. DO NOT allow chemical containers or spray to get into drains, sewers, streams or ponds

STORAGE AND DISPOSAL:	Store in the closed, original container in a cool, dry place out of the reach of children. Do not store in direct sunlight. Dispose of empty container by wrapping in paper, placing in plastic bag and putting in garbage.

Safety Directions:	Will irritate the eyes. May irritate the skin, nose and throat. Avoid contact with the eyes and skin. Avoid inhaling dust. When opening the container and using the product, wear long-sleeved shirt, long pants shoes and socks, safety glasses and rubber gloves. If product in eyes, wash it out immediately with water. Wash hands after use. After each day's use wash gloves goggles or safety glasses and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

GROUP 22B (80 G 2,4-D/L AS THE DMA/DEA SALT + 336 G/L MECOPROP + 40 G/L DICAMBA) (HOME GARDEN PRODUCTS)

Group 22b products are home and garden products containing 80 g 2,4-D/L as the DMA/DEA salt, 336 g/L mecoprop and 40 g/L dicamba. In order to mitigate the human health hazards and risks associated with opening the container and preparing the product for use the following personal protective equipment would be required: protective waterproof clothing, elbow-length chemical resistant gloves, impervious footwear, goggles and half facepiece respirator with organic vapour/gas cartridge or canister. When using the product the following personal protective equipment would be required to mitigate the human health hazards and risks: cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves.

Due to concerns regarding effectiveness and compliance this level of personal protective equipment is not regarded as a reliable risk management approach for non-professional, home and garden product use. Accordingly the APVMA is proposing to cancel the registration of these products and to cancel the associated label approvals.

Accordingly label elements have not been provided.

GROUP 23 (440 G 2,4-D/L AS ACID/ THE DEA SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD DO NOT hand harvest sugar cane for at least 1 day after application.

Safety Directions:	Poisonous if inhaled or swallowed. Corrosive to the eyes. Will damage the skin. Repeated exposure may cause allergic disorders. Will irritate the nose and throat. Avoid contact with the eyes and skin. Do not inhale vapour or spray mist. When opening the container and preparing spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, PVC or rubber apron, elbow-length chemical resistant gloves, goggles and half facepiece respirator with organic vapour/gas cartridge or canister. If applying by boomspray equipment or aerial spraying equipment, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and elbow-length chemical resistant gloves. If applying by hand-held spray equipment wear chemical resistant clothing buttoned to the neck and wrist and a washable hat, elbow-length chemical resistant gloves and half facepiece respirator with organic vapour/gas cartridge or canister. If clothing becomes contaminated with product remove clothing immediately. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, respirator and if rubber wash with detergent and warm water and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply by spraying equipment carried on the back of the user[22].
DO NOT treat more than 50 hectares in one day if using open mixing/loading equipment.
DO NOT exceed maximum application rate of 10 L/ha (4500 g ae/ha).
Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2, 3 and 4.

Table 1: Timing restrictions for spraying peanuts

Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 2.0L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October

[22] Manually pressurised backpack sprayer

		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.4L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.5L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 5.1L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December
		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Summer**	**Autumn**	**Winter**	**Spring**
Pastures (prior to sowing, conservation tillage)	Queensland & NT	7.2	7.2	7.2	7.2
	New South Wales & ACT	7.2	7.2	7.2	7.2
	Victoria	0.8	2.4	7.2	2.4
	Tasmania	0.8	1.8	5.0	2.4
	South Australia	1.6	2.4	7.2	5.0
	Western Australia	2.4	5.0	7.2	5.0
	State	**Summer**	**Autumn**	**Winter**	**Spring**

Pastures (established)	Queensland & NT	10	10	10	10
	New South Wales & ACT	10	10	10	10
	Victoria	1.4	2.7	10	5.1
	Tasmania	1.0	2.4	7.2	4.5
	South Australia	2.0	4.5	10	7.2
	Western Australia	5.1	7.2	10	7.2

Table 3: Timing restrictions for spraying SUGARCANE

Rate (L/ha)	**Region**	**Timing Restriction**
		DO NOT APPLY DURING THE MONTHS
Up to 2.5 **L/ha**	Wet Tropics	No timing restriction
	Burdekin	No timing restriction
	Mackay/Whitsunday	October to November
	Mary/Burnett	October to November
	Northern NSW	No timing restriction
Up to 5 **L/ha**	Wet Tropics	October to December
	Burdekin	September to October
	Mackay/Whitsunday	August to December
	Mary/Burnett	April to January
	Northern NSW	October to November

Table 4: Application restrictions for TURF

DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST

	State	**Rate (L/ha)**
Turf	Queensland & NT	4.5
	New South Wales & ACT	4.5
	Victoria	3.6
	Tasmania	3.6
	South Australia	3.6
	Western Australia	5.7

If applying to golf courses in Tasmania, DO NOT apply to fairways adjacent to natural water bodies.

Table 5: Risk mitigation measures for Dryland cropping, pre-emergent uses

Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)

Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

GROUP 24 (500 G 2,4-D/L AS CHOLINE SALT) SPECIFIC LABEL ELEMENTS

Precautions	RE-ENTRY PERIOD Do not enter treated areas until the spray has dried for low exposure activities (such as hand weeding) for the days indicated below, unless wearing cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use:

Crop	Earliest day for re-entry for low exposure activities
Wheat	2
Oats	0
Triticale, cereal rye	2

Do not enter treated areas until the spray has dried for medium exposure activities (such as scouting) for days indicated below, unless wearing cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use.

Crop	Earliest day for re-entry for low exposure activities
Barley	27
Wheat	27
Oats	24
Triticale, cereal rye	27

Safety Directions:	Harmful if swallowed. Will irritate the eyes. May irritate the skin. Repeated exposure may cause allergic disorders. Avoid contact with eyes and skin. When opening the container and preparing and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing), elbow-length chemical-resistant gloves and face shield or goggles. If applying by aerial spraying equipment, wear elbow-length chemical-resistant gloves. When preparing spray for boomspray equipment, wear cotton overalls, over normal clothing, buttoned to the neck and wrist, a washable hat elbow-length chemical-resistant gloves and face shield or goggles. If product or spray in eyes, wash it out immediately with water. Wash hands after use. After each day’s use, wash gloves, face shield or goggles and contaminated clothing.

First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766.

RESTRAINTS

DO NOT apply using hand held equipment

DO NOT apply using equipment carried on the back of user

DO NOT use open mixing/loading systems

DO NOT use product on cotton crops

DO NOT apply as a spot spray

Ground boom application MUST be performed using closed cabs

Additional USAGE restrictions apply in some crops, states and seasons, see restriction tables 1, 2 and 3.

Table 1: Timing restrictions for spraying peanuts			
Situation	**Rate (L/ha)**	**Region**	**Timing Restriction**
			DO NOT APPLY DURING THE MONTHS
Broadcast spraying, prior to sowing (peanuts)	Up to 1.8 L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	September to December
		Mary/Burnett	October to November
		SE Queensland	August to May
	Up to 2.1 L/ha	Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	October
		Mackay/Whitsunday	August to December
		Mary/Burnett	September to November
		SE Queensland	**Use not supported**
Band spraying, post-sowing pre-emergence (peanuts)	Up to 2.2 L/ha	Queensland dryland	No timing restrictions
		Cape York	No timing restrictions
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	No timing restrictions
		Burdekin	No timing restrictions
		Mackay/Whitsunday	No timing restrictions
		Mary/Burnett	No timing restrictions
		SE Queensland	October to January
Broadcast spray, post-sowing pre-emergence (peanuts)	Up to 4.5 L/ha	Queensland dryland	June to August
		Cape York	October and November
		Northern Gulf	October and November
		Northern Territory	October and November
		Wet Tropics	October to December
		Burdekin	September and October
		Mackay/Whitsunday	August to December

		Mary/Burnett	April to January
		SE Queensland	**Use not supported**

Table 2: Application and timing restrictions for application to pastures					
DO NOT apply above maximum rate (L/ha) below OR label rate, whichever is LOWEST					
Pastures (prior to sowing, conservation tillage)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	6.4	6.4	6.4	6.4
	New South Wales & ACT	6.4	6.4	6.4	6.4
	Victoria	0.7	2.1	6.4	2.1
	Tasmania	0.7	1.6	4.4	2.1
	South Australia	1.4	2.1	6.4	4.4
	Western Australia	2.1	4.4	6.4	4.4
Pastures (established)	**State**	**Summer**	**Autumn**	**Winter**	**Spring**
	Queensland & NT	9.0	9.0	9.0	9.0
	New South Wales & ACT	9.0	9.0	9.0	9.0
	Victoria	1.2	2.4	9.0	4.5
	Tasmania	0.8	2.1	6.4	4.0
	South Australia	1.8	4.0	9.0	6.4
	Western Australia	4.5	6.4	9.0	6.4

Table 3: Risk mitigation measures for Dryland cropping, pre-emergent uses	
Situation	**Risk mitigation measures**
Dryland cropping, Preparatory spray	Only apply in no-till farming systems (Tasmania, South Australia)
Winter cereals, pre-emergence uses	Only apply in no-till farming systems (Tasmania, South Australia, Western Australia)
Summer cereals, pre-emergent uses	Only apply in no-till farming systems (Tasmania, South Australia)

Appendix

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