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Environmental Protection Authority  
PO Box 131, Wellington  
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## Re Organophosphate and Carbamate Reassessment (APP201045)

### Contents

Introduction .....	1
January 2013 Executive Summary .....	4
Comment on Chlorpyrifos as a spray .....	5
Additional data .....	5
Comment on the general controls .....	5
Comment on the chlorpyrifos risk assessment .....	13

### Introduction

Dow AgroSciences' interest in this reassessment relates only to chlorpyrifos (Applied as a spray) and chlorpyrifos-methyl (imported as a technical for use in export-only substances).

Dow AgroSciences discovered and commercialised chlorpyrifos and its methyl moiety in the 1960's. The predecessor formulations to those currently approved were first registered in NZ about 40 years ago. Chlorpyrifos has a broad spectrum of activity and historically it was commonly used to treat apples, pipfruit, stonefruit, kiwifruit and other horticultural crops, pastures and field crops and ornamentals for caterpillars and other insect pests. Its use has dropped off over the last 20 years and particularly in the last 5 years as growers move to products that fit with "green" spray programs. Despite its widespread use, there have been no reports of chlorpyrifos causing significant long-term health or environmental problems. Exposure to the concentrated product at very high levels and spray mist, is known to cause short term 'hangover' like symptoms but no known long term effects.

Chlorpyrifos has been extensively reassessed for its safety by a number of countries over the last decade. This web site <http://www.chlorpyrifos.com/index.htm> sponsored by Dow AgroSciences gives an overview of those assessments and issues regularly raised by the community.

Dow AgroSciences has made two previous submissions to consultation papers leading up to this application (15 November 2011 and 31 July 2012). An executive summary for each submission are represented in this submission.

## November 2011 Executive Summary

Dow AgroSciences is the original discoverer and developer of chlorpyrifos. This response deals only with chlorpyrifos. Chlorpyrifos has undergone reassessment in North America and the EU. It is currently undergoing a new review in these countries as well as being under review in Australia.

The conclusion from these reviews is that chlorpyrifos can be safely used in outdoor agricultural and horticultural situations. Chlorpyrifos passes tier 2 risk assessments when the appropriate controls on exposure are used.

Chlorpyrifos passes the EPA tier 1 risk assessments for most applicator exposures. Dow AgroSciences has questioned the suitability of the by-sander risk assessment methodology for bystanders. The EU tier 2 ecotoxicity submission filed in 2010 is included to show that tier 2 risk assessments can significantly reduce the risk.

Comment is made on each of the questions asked by the EPA. Dow AgroSciences has read the Market Access Solutionz submission and supports it. Reference is made to sections of that submission in this response so as not to duplicate information already provided to EPA.

The following are Dow AgroSciences comments on the EPA call for information paper. The following numbered sections follow the questions asked in the EPA Call for information document.

### Should Carbamates be included

It would seem sensible to include these as they are also cholinesterase suppressors.

### Substances not used for plant protection

The entry for chlorpyrifos-methyl is a result of the nomination of chemicals present in NZ as of July 2001 and is only used to manufacture substances for export.

### Home garden use

Dow AgroSciences does not support the use of chlorpyrifos in the home garden or for indoor/outdoor domestic or industrial pest control. Dow AgroSciences has voluntarily withdrawn its chlorpyrifos products from these uses globally because of concerns about exposure to children, pets, wildlife and the environment from this type of use. Hence Dow AgroSciences recommends cancellation of these uses in NZ.

### Critical values.

The critical values for chlorpyrifos are laboratory data and appropriate for a tier 1 risk assessment. However, higher tier using field generated data and crop/product specific good agricultural practice to refine risks assessments are more appropriate when the tier 1 risk assessment exceeds the acceptable risk quotient.

Higher tier environmental risk assessments are available for chlorpyrifos and have been provided to the European Union for their ongoing chlorpyrifos review and are included with this submission.

### 5 Use patterns (Confidential).

Dow AgroSciences notes that Market Access Solutionz has compiled an extensive review of uses in horticultural crops. In general over the last 20 years, chlorpyrifos has been largely phased out of horticulture and replaced by more modern products. However, as the Market Access Solutionz survey shows it would be beneficial to retain some use of organophosphates on these crops for future resistance management purposes. Chlorpyrifos would be an ideal candidate as it is used on a wide range of crops to control a wide range of insects generally has a low risk profile for safe use. The primary use is on avocados, grapes, kiwifruit, onions, pipfruit and stonefruit

Confidential information on market size was provided. EPA was reminded that Lorsban 750 WG is more expensive than its liquid counterpart (Lorsban 500) but has lower mammalian toxicity. However, users will choose lower cost over greater safety when given the choice. The HSNO classification for Lorsban 750 WG is 6.1D, 6.8B, 6.9A, 9.1A, 9.2B, 9.3A, 9.4A and Lorsban 50 EC is 3.1D, 6.1C, 6.3B, 6.4A, 6.9A, 9.1A, 9.2B, 9.3A, 9.4A. Other than for field crops the label claims are the same for both products other than field crops is missing off Lorsban 750 WG, but there is no reason these crops could not be added.

#### Aerial use

Dow AgroSciences supports the continued use of chlorpyrifos as an aerial application on some agricultural and horticultural crops. Aerial application is essential when ground machinery cannot put the spray in the region of the insect infestation (eg avocado trees and mature maize cobs). Dow AgroSciences is not aware of any significant regularly occurring issues of spray drift from chlorpyrifos use in agricultural crops. Confidential details of the aerial use of Dow AgroSciences branded product is provided in Appendix 2.

#### Risk Assessment

**Operator exposure.** It is noted that most tier 1 risk assessments for chlorpyrifos are below the critical level of concern (1). It is also noted that some re-entry risk assessments for chlorpyrifos are above the critical level of concern (1). Dow AgroSciences has re-calculated the re-entry risks in Appendix 3 to this response using an alternative set critical endpoint (AOEL rather than CRfD). In situations where the tier 1 risk assessment fails EPA should conduct a refined tier 2 assessment taking in to account crop and product specific work rates

Dow AgroSciences believes that the more appropriate foliar half-life for chlorpyrifos re-entry risk assessment is 3 days rather than 10. The USA EPA is currently undertaking a new reassessment and has released an "Occupational and Residential Exposure Assessment" dated June, 2011. Pages 59-64 contain Tables summarising dislodgeable foliar residue studies conducted by DAS and reviewed by US EPA. The t<sub>1/2</sub> ranges from 0.22 day to 7.94 days with an average of 2.13 days.

### **July 2012 Executive Summary.**

#### **Executive Summary**

This response deals only with chlorpyrifos formulated as an emulsifiable concentrate (EC) and water dispersible granule (WDG) which the EPA has described the WDG as a water soluble granule (WSG). Chlorpyrifos has undergone reassessment in North America and the EU. It is currently undergoing a new review in these countries as well as being under review in Australia.

The conclusion from these reviews is that chlorpyrifos can be safely used in outdoor agricultural and horticultural situations. Chlorpyrifos passes tier 2 risk assessments when the appropriate controls on exposure are used.

In the Dow AgroSciences November 2011 submission questioned the suitability of the by-sander risk assessment methodology and endpoints chosen for bystanders, subsequent discussion has been held with EPA on this matter. Since the November 2011 submission EPA has been supplied with:

- 1) the chlorpyrifos meso/microcosim data that was reviewed by Spain as part of the ongoing chlorpyrifos review by the EU

- 2) the Spanish environmental fate and environmental toxicology report also prepared for the EU review.

These reports show that tier 2 risk assessments can significantly reduce the environmental risks from the use of chlorpyrifos. Hence, these risk assessments coupled with some risk management via label advice can satisfy EPA that chlorpyrifos as an emulsifiable concentrate and water dispersible granule can be safely used for the currently labelled uses as well as many off-label uses.

Risk management recommendations are made for operator (albeit all risk quotients are less than 1) and re-entry safety, the aquatic environment, bird and bee safety. It is recommended that such risk management advice be mandated for inclusion on the product labels so that consistent advice is provided to users of the same products that only differ by trade name.

Comment is not made on each of the scenarios. Instead general comment is made for the questions being asked about chlorpyrifos the EPA and able to be answered by Dow AgroSciences.

### **January 2013 Executive Summary**

Dow AgroSciences is only able to comment on chlorpyrifos uses as a spray and in this context it supports the conclusion of the Consultation Report that “the high level of economic benefit provided by chlorpyrifos outweighs the risks and therefore it is recommended that the decision making committee considers maintaining the approvals for plant protection formulations that contain chlorpyrifos” .

Dow AgroSciences recommends that EPA reconsider the risks to birds based on the extensive field studies provided as the current medium risk has implications for some of the controls being imposed, e.g:

- a) buffer zones for aerial application; and
- b) .spray droplet quality for aerial application.

Dow AgroSciences recommends that EPA consider the issues raised in this response about impact of the proposed controls on the registration details of the substances e.g

- a) Control R-3 (application parameters) potentially requires changes to the registered label that will have to be done data free due to the lack of data protection and the ability of registrants to free-ride on the first registrant to make the necessary label changes. Also ACVMG condition 6 and 8 which allow users to legally apply products off-label will need to be addressed with a suitable label statement about prohibited uses.
- b) Control R-10 (Personal Protective Equipment) modification is recommended for chlorpyrifos used as a spray..

General comments are made on the impracticality of the notification control (R-11) and a recommendation that it is not necessary for chlorpyrifos based on the negligible bystander risks.

General comments are made on the transportation control (R-15) that it is impractical for the transport of the spray mix which it inadvertently seems to include.

### **Comment on Chlorpyrifos as a spray**

Comment on the Application for reassessment of chlorpyrifos as a member of the organophosphate group of chemicals.

### **Additional data**

The Review Consultation Document seeks additional information about exposure modelling and dermal absorption studies. Dow AgroSciences is unable to provide any information on these subjects in addition to that provided in November 2011.

Dow AgroSciences notes that the crop summaries and associated risk assessments for chlorpyrifos as a spray show that the overall risks for operators, re-entry workers, bystanders, aquatic environments and bees to be negligible to low when the relevant additional controls of PPE, buffer zones and avoiding application when bees are foraging are applied. Only the risk to birds is considered as significant (medium). Dow AgroSciences has demonstrated with field studies that chlorpyrifos applied as a spray presents negligible risk to birds compared to the calculated risks. Information on the field studies has been presented to EPA already and is appended again to this application.

### **Comment on the general controls**

In the Review application chlorpyrifos is considered to be a critical use for the following crops: black currents, blueberries, carrots and parsnips, fodder and forage, grapes, kumera, maize, onions, ornamental, pasture, persimmons, pipfruit, potatoes, stonefruit, strawberries, sweet corn, turf and Chinese greens.

EPA has recommended that all current uses of chlorpyrifos as a spray application be retained with additional or amended controls. However, some of the critical uses (crops, insects, use rates) listed in the application are not currently registered and this has implications for the intended controls. Comment on the applicable controls follows.

### **Comment on The controls listed in Appendix G of the Consultation Document.**

No comment has been made for controls which are acceptable as proposed or not applicable to chlorpyrifos applied as a spray.

- 1) R-3 – application parameters. The product label will be required to state:
  - 2 A person must not supply a hazardous substance to any other person unless the substance label shows the following information:
    - a) The maximum application rate;
    - b) The maximum application frequency [if set];
    - c. The minimum application interval [if set].
  - 3 A person who is in charge of a hazardous substance must ensure that the substance label shows the information required by (2)

### **Dow AgroSciences Comment**

A change in the registration will be required to bring the label in to line with the EPA control restrictions. Dow AgroSciences questions how this will occur given that there are many products with the same label in the market place for the same EPA approved substance. Dow AgroSciences recommends that EPA have an arrangement with ACVMG for the necessary label updates to occur data free in situations where no residue evaluation is required.

Dow AgroSciences believes that where the application rate, and or application frequency for existing registered crops is greater than on the registered label; or unregistered crops; it is unlikely that these uses will be added to labels by any registrant. This is due to the lack of data protection for the data generated to allow a residue evaluation to occur. Even the proposed changes to data production for pesticides will not be sufficient to encourage the data to be generated. The only way these uses will be added to labels is if the user industry generates the data.

ACVMG Conditions 6 and 8 (below) would seem to be of particular relevance to this control. It would seem that the labels will have to some statement on them that will prohibit the use other than according to the label (condition 6). Otherwise condition 8 will apply which makes it legal to use rates and application frequencies greater than listed on the label. A suitable statement may be: *“Not to be used for any purpose, or in any manner contrary to this label, other than at reduced application rates, or at a lesser number of applications”*. Application intervals may need to remain consistent with the label as the interval may have been used in the EPA risk assessment.

**Condition 6:**

The product must not be used on any plant or in any manner specifically prohibited in the current registration.

**Condition 8:**

If the product is used on any food producing plant or on or around any plant not used to produce food:

- other than those specified on the current registration; or
- in a manner not specified in the current registration,

the user must ensure that residues of any substance in the product that may occur in plant material produced from the plants treated, or in animal material produced from grazing or direct feeding of the plants treated to food producing animals, do not exceed the lesser of either:

- the specified residue limit in the current New Zealand (Maximum Residue of Agricultural Compounds) Food Standard and any subsequent amendments; or
- the default maximum residue limit in the current New Zealand (Maximum Residue of Agricultural Compounds) Food Standard and any subsequent amendments, when a maximum residue limit for that substance has not been specified.

Interestingly at least one Regional Council Air Quality Plan is inconsistent with Condition 6 and 8, e.g. Northland e.g. “The application is undertaken in a manner that does not exceed any rate, or contravene any other requirement, specified in the label instructions and published application recommendations”.

2) R4-Buffer Zones.

1 The control requires. The person in charge of the application and any person applying the substance shall ensure that a buffer zone is set for each application

2 A buffer zone as referred to in (1) is the area between the downwind edge of a target application area and a sensitive area, where the minimum separation distance between the downwind edge of a target application area and a sensitive area is specified in the following table.

Application method	distance	
	With shelter belt	Without shelter belt
Boom sprayer	2	10
Air blast sprayer	10	30
Aerial application	100	300

The product label will be required to state:

3 A person must not supply a hazardous substance to any other person unless the substance label shows the buffer zone in requirements in accordance with following information:

4 A person who is in charge of a hazardous substance must ensure that the substance label shows the information required by (3)

#### Dow AgroSciences Comment

Dow AgroSciences understands the reason for adopting the NZS 8409 Management of Agrichemicals is due to Regional Council Air Quality Management Plans having adopted this Standard and hence the EPA control has to be consistent. However, NZS 8409 is a dynamic standard and can be amended as new information comes to light. There is currently considerable work being undertaken by the NZ government to investigate options for managing pesticide drift and the results of this will undoubtedly be reflected in the Standard. It is impractical to quickly change all pesticide labels that have the proposed buffer zones listed on them, hence the labels will be inconsistent with the Standard and the Air Quality Management Plans. Dow AgroSciences recommends that the EPA control requires the labels to refer to the Standard, but not to list the buffer distances.

#### 3) R-6 – Droplet size.

1 The control requires. Any person applying the substance shall ensure that the substance only be applied using equipment that produces droplets that are not less than (e.g. coarse) in size (as specified in NZS 8409 Management of Agrichemicals in accordance with British Crop Production Council (BCPC)

2 A person must not supply a hazardous substance to any other person unless the substance label specifies the minimum droplet size for the application method required by (1), and as specified in NZS 8409 Management of AgriChemicals in accordance with BCPC classification.

3 A person who is in charge of a hazardous substance must ensure that the substance label shows the information required by (2)

#### Dow AgroSciences Comment

For chlorpyrifos this control is only required for aerial application. Aerial application risks have been assessed in this reassessment for avocado, arable crops, pasture and maize only. However, the label only has a specific aerial application for avocado, but does not prohibit aerial application in other crops. In order to implement this control EPA requires a specific aerial application for each of these crops including the individual crops included under the arable category under control R-7. It is assumed that EPA will obtain ACVMG approval to make this label change data free for the same reasons as outlined for Control R-3.

In the case of avocado it is probable that a coarse spray will not provide adequate coverage for effective insect control. It appears that this control is related to reducing drift causing bird toxicity. However, this is unlikely to occur given that Dow AgroSciences has demonstrated that there is a low risk of harm to birds from spraying of chlorpyrifos. This information was presented in our July 2012 submission. A summary is presented below. Based on the low risk to birds, Dow AgroSciences requests that EPA consider a medium quality spray be specified for its Lorsban chlorpyrifos products.

#### **Overall conclusions extracted from the attached document.**

The risk assessments are based on product EF-1551 (480 g/L chlorpyrifos as an emulsifiable concentrate).

#### **IIIA 10.1: Effects on Birds**

Tier 1 risk assessments, based on laboratory-derived critical endpoints for toxicity and SANCO default values for exposure, indicate potential acute, short-term and long-term risks to birds associated with a range of agricultural GAPs for chlorpyrifos. However, chlorpyrifos is rapidly dissipated from avian diets and is readily metabolised in the body. A simple toxicokinetic model can be envisaged that shows how these factors would lead to maximum body burden levels below critical threshold levels when feeding is extended throughout the day (essentially, the rise in internal residue levels from ingesting contaminated feed is balanced by simultaneous detoxification and elimination of residues from the body). This model is substantiated by a higher tier risk assessment based measured residue levels (C) and estimates of the proportion of time a bird is likely to spend on the treated crop (PT). The outcome of this refined assessment is the elevation of TER values to levels close to or exceeding those established in Annex VI for a tier 1 risk assessment.

In order to confirm this low risk, 12 major field/semi-field studies have been presented to allow the direct evaluation of the acute and short-term effects on birds associated with chlorpyrifos applications. These studies were conducted on a range of crops under the various agricultural conditions and climates prevalent in Europe and the US. In total, ca 100 separate field applications, to a range of crops, have been made and the bird populations closely monitored by means of detailed surveys (ca. 300 post-application surveys conducted). Of these applications, 35 employed radio-tracking techniques, whereby the survival, health status and behaviour of individual birds known to be frequenting the treatment sites could be monitored during and immediately after application.

In none of these studies was there any significant evidence of a harmful impact - neither at the individual level nor at the population level. In the tracking studies with individually monitored birds, only 1 bird out of a total of 234 tracked was shown to have died, most likely due to predation. Apart from chlorpyrifos residues being detected in/on the occasional carcass (which would be expected for birds frequenting treated areas), there was no evidence to implicate chlorpyrifos exposure in significant bird mortality or abnormal behaviour in any trial. Considering the range of GAPs covered, the findings from these field effect studies are considered to confirm effectively the low acute and short-term risks to birds associated with the proposed uses of chlorpyrifos.

The results from these numerous field trials also support the finding that no wildlife incidents associated with the agricultural use of chlorpyrifos in Europe have been reported to date, even though rates and numbers of applications have been much higher historically than the GAPs being proposed today. An extensive literature and internet survey was conducted, concentrating on citrus, vine, fruit orchard and arable crops, with the finding that despite chlorpyrifos having been introduced ca. 40 years ago throughout the EU, no reports of wildlife incidents have been reported in Europe. Since wildlife incident reporting is not formally conducted outside the UK and Germany, this lack of reported incidents cannot be regarded as conclusive evidence in itself. However, it is useful supporting information given that an estimated 2.7 million "super developed



hectares" were sprayed with chlorpyrifos in Europe in one season alone (2004/2005 data from Agrobases). If major environmental impacts were occurring, it is highly likely there would be some reporting of this in the open literature.

Similarly, for long-term risk, the potential risks indicated at tier 1 are not substantiated when higher tier data are taken into consideration. Extensive generic field studies have been conducted throughout Europe to identify the "focal species" associated with the relevant crops for chlorpyrifos application. As in the acute risk assessment, refinement of actual residue levels (and their dissipation) together with refinement of PT (proportion of time in the treated area) and PD (proportion of contaminated diet) are sufficient to raise TER<sub>LT</sub> values to acceptable levels.

This view of low chronic risk is supported by the specific "worst-case" scenario of citrus production in Europe, where application rates are the highest for all the proposed crops. Chlorpyrifos has been used extensively in Spain, for the control of scale on citrus fruits, for more than 30 years. Every year, chlorpyrifos is applied to virtually every mature citrus grove during a 2-3 week period in May/June and again, to a lesser extent, in September/October. In 2007, for example, approximately 70% (ca. 190,000 ha) of the total citrus area in Spain (ca. 275,000 ha) was treated with chlorpyrifos, and all within a few weeks. It is hard to imagine a greater "worst-case" agricultural scenario than this, given (i) the almost monoculture status of citrus in areas such as Valencia (ii) the simultaneous treatment of large areas and (iii) the high application rates required for this crop (2.4 kg as/ha). Even under these circumstances of simultaneous and extensive use over many years, highly vulnerable insectivores species such as the great tit, *Parus major*, are still found in sufficient numbers to qualify as a "focal species" for study. It is clear that even after more than 30 years of such a use pattern, often at historically much higher application rates than those currently proposed, sustainable populations of a wide range of bird species are being maintained.

#### 4) R-7 – Restriction on Method of Application.

1 The control requires. A person [may only/may not] apply the substance, unless applied in accordance with the following  
[detail specific allowed equipment type for method: e.g. ground-based/non-dispersive ground-based application only. Knapsack application only. Remotely operated fogging-equipment. Treated wheat baits made from the substance must be dyed blue or green]

2 A person must not supply a hazardous substance to any other person unless the substance label specifies the application equipment or techniques that may be used to apply the substance in accordance with (1)

3 A person who is in charge of a hazardous substance must ensure that the substance label shows the information required by (2)

#### Dow AgroSciences Comment

For chlorpyrifos this control is only required for aerial application. Aerial application risk has been assessed in this reassessment for avocado, arable crops, pasture and maize only. However, the label only has a specific aerial application for avocado, but does not prohibit aerial application in other crops. In order to enact this control it is assumed that EPA require a specific aerial application for each of these crops including the individual crops included under the arable category as peer control R-7. It is assumed that EPA will obtain ACVMG approval to make this label change data free for the same reasons as outlined for Control R-3.

5) R-9 – Label warning for effects on bees.

Dow AgroSciences Comment

The statement “This product is highly toxic to bees. Do not apply this product to any plant or tree likely to be visited by bees in areas where bees are foraging” is appropriate to replace the statement that Dow AgroSciences already has on its labels. “VERY TOXIC TO TERRESTRIAL INVERTEBRATES. Do not spray over bees or apply to plants in flower. Do not spray over beneficial predators.”

EPA might consider removing “or trees” from the statement as trees are also plants. See also the interpretation definition.

6) R-10 –Personal Protective equipment.

1 The minimum standard for Full PPE is:  
Chemical resistant coveralls, over long sleeved shirt, long legged trousers  
Chemical resistant gloves  
Chemical resistant footwear plus socks  
Protective eyewear  
Chemical resistant headgear for overhead exposures

Dow AgroSciences Comment

It is noted that this is inconsistent with the Full PPE used in the risk assessment algorithm (Appendix D - page 110 Consultation Document) Coveralls, sturdy footwear, hood and visor and gloves) during mixing, loading and application (excluding respirator).

R-10 seems to be excessive for chlorpyrifos which had negligible risk based on the risk assessment algorithm. Dow AgroSciences recommends that only a single layer of chemical resistant clothing is necessary and will be more comfortable and hence more likely to be worn. The minimum standard “Chemical resistant coveralls, over long sleeved shirt, long legged trousers” would become “Chemical resistant coveralls”.

7) R-11 – Notification.

1 No person may apply, or engage another person to apply, the substance unless that person has given written notice of the proposed application to occupiers and owners of land, dwellings or buildings immediately abutting the application area or buffer zone.

2 the notice referred to in subclause (1) must –

- a) be given at least 2 working days but no more than 4 weeks in advance of each application, and
- b) specify the following;
  - i) the location of application area that the substance will be applied to;
  - ii) the date and approximate duration of each application
  - iii) the steps to be taken by the notified parties to take to avoid exposure;
  - iv) the name of the organisations undertaking the application
  - v) contact details for the person in charge of the application (phone-mail or postal address, including a contact number for immediate contact during application

3 A person must not supply a hazardous substance to any other person unless the substance label shows the notification of affected parties and neighbours, in

accordance with the requirements of (1) and (20, must be carried out in advance of the application.

4 A A person who is in charge of a hazardous substance must ensure that the substance label shows the information required by (3)

#### Dow AgroSciences Comment

- a) Dow AgroSciences considers that this notification control is impractical. The requirement to notify occupier AND owners of all neighbours potentially up to 300 meters (buffer zone for aerial application without shelter) from the boundary of the treated area. In semi rural areas where many horticultural crops are grown there will potentially be a large number of neighbours and where the occupier is not the owner, tracing owners will be difficult. Many may not even reside in NZ.
- b) The control is not consistent with at least one Regional Council Air Quality Management Plan, e.g the Northland Plan mandates the following, but only for applications to public places.

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Where agricultural chemicals will be applied, in accordance with Rule 9.1.9 above, to more than two hundred metres of public road, rail or public place, continuously or intermittently, notice of intention to spray must be given in local newspapers or by door-to-door advice and appropriate street signage, excluding railway verges, to occupiers of properties or premises within 30 metres of the area to be sprayed at least eighteen hours and not more than 14 days before application and must include the following information:

- (a) The property and area to be sprayed;
- (b) The date(s) and general time(s) of the spraying, and in case of poor weather conditions, any alternative dates and general times for spraying;
- (c) The brand name and chemical name to be used;
- (d) Method of application;
- (e) Safety precautions to be taken; and
- (f) The contact name, address and telephone number of the owner/manager of the area to be sprayed.

Vehicles or equipment applying agrichemicals must display a sign stating “agrichemical (herbicide/insecticide/fungicide) application in progress” and name of the contractor. A record of this notification must be kept and made available to the Northland Regional Council on request.

Where agrichemical application is undertaken by either ground based or aerial application, the owner or occupier of the property being sprayed shall notify the owners or occupiers of sensitive areas adjacent to the area that is to be sprayed. For the purpose of this rule, “adjacent to” means contiguous with or separated only by a stream, transport corridor or similar narrow margin not more than 30m wide. Notice shall be given either orally or in writing, not less than eighteen hours and not more than two weeks before the proposed commencement of the work. Notice should include information on where the property spray plan is available.

An annual or seasonal property spray plan shall be prepared, and must include but is not limited to the information described in Appendix 4 of this Plan. Additionally, the annual or seasonal property spray plan shall include the procedures for giving notice of intention to spray as required above.

***Explanation.*** This rule is consistent with the requirement that ground and aerial based operators be registered and trained. GROWSAFE® Certificates have been developed and are readily available in Northland.

*The Code of Practice for the Management of Agrichemicals, which is now a New Zealand Standard, can be an effective means of preventing or minimising the adverse effects of discharges of agrichemicals to air and therefore implementing the best practicable option. Agrichemical applicators should adopt practices recommended by these codes, including the recording of spray diaries and the preparation of property spray plans. The Code also contains a list of areas or places which are considered to be “sensitive”, as well as a Drift Hazard Rating Chart. This enables users to actively select weather conditions, equipment and types of spray to prevent or minimise off-target effects. The application of best practicable option will increase awareness and understanding of the nature of the effects of the discharge on the receiving environment.*

*Notification can allow mitigating steps to be taken by adjacent land users to minimise the potential adverse effects of agrichemical applications. In order for notification to be an effective tool, early consultation and discussions between neighbours in the preparation of documents such as annual spray plans or seasonal spray plans is considered to be good practice.*

*Definitions of the terms domestic user, commercial user, commercial contractor, sensitive areas, ground based application methods and aerial application are detailed in the definitions.*

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- c) Only three Australian states have neighbour notification for specific situations, none for general pesticide use. NSW for pest control (eg termites), Qld if specified on the label and ACT for dangerous poisons. This is because neighbour notification is fraught with difficulty. Even NZ Regional Air Management Plans only require it for treatment of public places.
- d) Dow AgroSciences recommends to EPA that notification may not be necessary based on the negligible risk to bystanders which appears to be the driver for notification.

8) R-13 – Approved Handler.

1 this control appears to be consistent with the current requirement for tracked substances other than handlers involved in transport who comply with land, sea and air dangerous goods requirements will not require an Approved Handler Certificate.

9) R-15 – Transportation.

1 any person may only transport the substance in a vehicle if the substance is contained in:

- a) A sealed, unopened sachet; or
- b) An airtight container.

Dow AgroSciences Comment

This control appears to capture spray mix being transported, and hence is impractical as written. Dow AgroSciences recommends that EPA exclude the substance when prepared for spraying as spray tanks are not air tight. If necessary, perhaps spray mix must be contained in a closed spray tank.

10) Interpretations

- a) Plant or trees likely to be visited by bees. Dow AgroSciences suggests that "trees" is redundant as they are also plants.
- b) Shelter belt. Dow AgroSciences recommends that physical shelters made of shade cloth (or similar material) and at least 3 m high should be acceptable

**Comment on the chlorpyrifos risk assessment**

Page 56 of the Consultation Report – Section 10.3 Chlorpyrifos.

Risks. Risks not commented on below are acceptable taking in to account also the comments made in the general controls section above.

- a) R – 3 – maximum application rate. 1.5 kg ai/ha is acceptable
- b) R-6 – droplet size for aerial application – see comments under the general controls section above.
- c) R10. Use of personal protective equipment (PPE and RPE) required with minimum standards prescribed. The use of RPE is inconsistent with Appendix F which only recommends Full PPE. The Full PPE recommendation is consistent with the risk assessments for the individual crops. Dow AgroSciences notes that the individual crop risk assessments for chlorpyrifos only recommended PPE which is assumed to be Full PPE as defined on Page 110 of the Consultation document. It is further noted that on page 111 there is another definition of Full PPE that appears to be for equipment for RPE.
- d) R-11 - Notification. Dow AgroSciences recommends to EPA that notification may not be necessary for chlorpyrifos applied as sprays based on the negligible risk to bystanders which appears to be the driver for notification.