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Environmental  
Protection Authority  
*Te Mana Rauhi Taiao*

## SUBMISSION FORM

Once you have completed this form

Send by post to: Environmental Protection Authority, Private Bag 63002, Wellington 6140

OR email to: [submissions@epa.govt.nz](mailto:submissions@epa.govt.nz)

Once your submission has been received the submission becomes a public document and may be made publicly available to anyone who requests it. You may request that your contact details be kept confidential, but your name, organisation and your submission itself will become a public document.

<b>Submission on application number:</b>	APP202142
<b>Name of submitter or contact for joint submission:</b>	Greg Mitchell
<b>Organisation name (if on behalf of an organisation):</b>	DuPont (New Zealand) Limited
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I wish to keep my contact details confidential

The EPA will deal with any personal information you supply in your submission in accordance with the Privacy Act 1993. We will use your contact details for the purposes of processing the application that it relates to (or in exceptional situations for other reasons permitted under the Privacy Act 1993). Where your submission is made publicly available, your contact details will be removed only if you have indicated this as your preference in the tick box above. We may also use your contact details for the purpose of requesting your participation in customer surveys.

The EPA is likely to post your submission on its website at [www.epa.govt.nz](http://www.epa.govt.nz). We also may make your submission available in response to a request under the Official Information Act 1982.

- 
- I support the application
- I oppose the application
- I neither support or oppose the application

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**The reasons for making my submission are<sup>1</sup>:**

To provide input to the EPA on the proposed non-contact periods for oxamyl and methomyl.

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- I wish to be heard in support of my submission (this means that you can speak at the hearing)
- I do not wish to be heard in support of my submission (this means that you cannot speak at the hearing)

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**I wish for the EPA to make the following decision:**

Include meaningful controls that support Good Agricultural Practice of insecticide use in respective crops.

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<sup>1</sup> Further information can be appended to your submission, if you are sending this submission electronically and attaching a file we accept the following formats – Microsoft Word, Text, PDF, ZIP, JPEG and JPG. The file must be not more than 8Mb.



DuPont New Zealand

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16 September 2014

Environmental Protection Authority  
Private Bag 63002,  
Wellington 6140  
New Zealand

Attention: Mr M Allen

Dear Matthew,

**Re: Reassessment of certain OPC substances – APP202142**

The purpose of this correspondence is to make a submission to the Environmental Protection Authority [EPA], on the reassessment of certain OPC substances (APP202142). More specifically, to provide input on the proposed non-contact periods for methomyl and oxamyl.

The applicant (EPA) proposes the following non-contact periods for methomyl and oxamyl;

Active ingredient component	Non-contact period (Days)
Methomyl	8
Oxamyl	10

The following is offered in response;

*Methomyl*

DuPont (New Zealand) Limited [DuPont] is aware that “Industry” will be making a separate submission to EPA and cover the “positive effects” around the use of DuPont Lannate® L insecticide (methomyl). This information will not be represented in DuPont’s submission.

As in our previous submissions to the EPA on OPC’s, in line with DuPont’s stewardship principles we will only support labelled uses of our product portfolio and **do not** support the use of products off-label. In the future, Lannate® L will be a foliar applied insecticide for use in outdoor vegetable production and strawberries, as well as greenhouse (indoor) vegetable uses. There are a number of currently labelled uses (cereals, grapes, maize/sweetcorn, pasture, bush/cane fruit, tobacco) which will be withdrawn, and will no longer be supported.

DuPont’s understanding is that the only field crop(s) that may be impacted by the non-contact period for methomyl is strawberries. Attached is a DuPont position paper that has been prepared with the information known about methomyl. The position paper references two DuPont semi-field studies that have not previously been lodged in New Zealand. The two studies are enclosed, and are considered **commercial-in-confidence** and should not be published on the EPA website. The position paper also critiques a 1973 study, on which the EPA has based the proposal of the 8-day non- contact period.

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It's estimated the largest volume of Lannate® L used in New Zealand is by the glasshouse industry. Advice DuPont has received, is that the glasshouse industry utilises bumble bees specifically reared, and purchased to undertake pollination. Therefore there is minimal (if any) impact on honey bees from the use of Lannate® L in glasshouses.

*Oxamyl*

Ongoing the only registered use of Vydate® L will be for in-furrow application to seedling carrots during planting. All other labelled uses (pipfruit, ryegrass seed crops or pasture, black currant) are to be removed from the label i.e. registration cancelled, as previously advised to the EPA.

In the field, honey bees will not be present during soil application. Honey bees will not be exposed to oxamyl residues in carrot flowers because plants rapidly metabolise oxamyl to non-toxic metabolites, and carrots will be harvested before flowering. The label states no drift is allowed, so no exposure to off-crop habitats is anticipated. Therefore, the proposed non-contact period of 10 days is not required for Vydate® L in-furrow application to seedling carrots during planting.

The foliage residue toxicity study with Vydate® L and honey bees (referenced in Appendix B) is a standard USEPA study where honey bees are exposed to alfalfa leaves after spray application. The objective is to determine the field aging period required after application to reduce mortality to 25% (LR<sub>25</sub>). The 1 lb a.s./Acre spray application was made in 45 gallons of water, resulting in a spray concentration of 2665 ppm. Leaf residue drying times were 3, 8, 24, 48, 96, 120, 144, and 168 hrs. Residue concentrations on leaves 24 hrs after application ranged from 28 to 55 ppm. Leaves are put in small containers and honey bees are added. Bees are exposed by contact and oral ingestion to the spray residues.

The exposure scenario is extreme worst case and does not reflect the NZ exposure scenario for the at-planting soil application to carrots where the spray concentration is 10 ppm and no bees are present. No foliage will be treated.

In summary, DuPont does not support non-contact periods in the current form. DuPont proposes that the risk to bees can be addressed for methomyl by appropriate wording around spray application timing, while wording for oxamyl is not considered relevant for the ongoing registered use patterns.

Enclosed are;

1. A completed submission form
2. A position paper for methomyl
3. Copies of two semi-field studies (DuPont-4446, DuPont-5470)

DuPont requests to reserve the right to speak at the public hearing. A decision to speak/not speak will be made closer to the time of the hearing.

Should the EPA have any further questions then please feel free to contact me, and I will help where possible.

Yours faithfully,

DuPont (New Zealand) Limited



**GREG MITCHELL**

Registration & Regulatory Affairs Manager - ANZ

Crop Protection Products

# **POSITION PAPER RESPONDING TO THE REASSESSMENT OF ORGANOPHOSPHATE OR CARBAMATE PLANT PROTECTION SUBSTANCES, IN ORDER TO PROTECT BEES, AND OTHER INSECT POLLINATORS, AGAINST ADVERSE EFFECTS ARISING FROM POST APPLICATION EXPOSURE**

## **SUMMARY**

In this paper, DuPont presents methomyl data from two semi-field studies that showed mortality similar to controls when allowing at least a 3-day re-entry period for bees into treated flowering fields. In addition, a 1973 publication used by NZ EPA to justify a 8 day re-entry period for bees is critiqued. It is requested that the data from the two semi-field studies be used to conduct a bee risk assessment of Lannate against the New Zealand use pattern, along with the proposed label statements to prevent any honey bee incidents from the use of methomyl products.

## **USE PATTERN OF LANNATE L**

Lannate is a formulation of the insecticide active ingredient methomyl. Open field Lannate L uses include application to beans, cabbage and cauliflower, lettuce, strawberries, and tomato. However, DuPont understands from the NZ Horticultural industry that the only use pattern likely to be primarily affected by the EPA's proposal is the use in strawberry crops over flowering. The other crops either do not flower or the product is not used over flowering (e.g. tomatoes). The highest single application rate for field uses on strawberries is 480 g methomyl/ha dissolved in 1000 L of water (resulting in a spray solution concentration of 480 mg methomyl/L).

## **BEE TOXICITY DATA AVAILABLE FOR LANNATE FORMULATIONS AND METHOMYL ACTIVE INGREDIENT**

As an insecticide, methomyl is toxic to bees when tested under laboratory conditions. The potential for affecting bees can be managed to acceptable levels provided that bees, or areas where bees are actively foraging, are not sprayed directly. By removing bee hives from areas immediately in the vicinity of fields where Lannate L will be applied and waiting at least 3 days for their reintroduction, it is expected that any potential risks will be within acceptable levels.

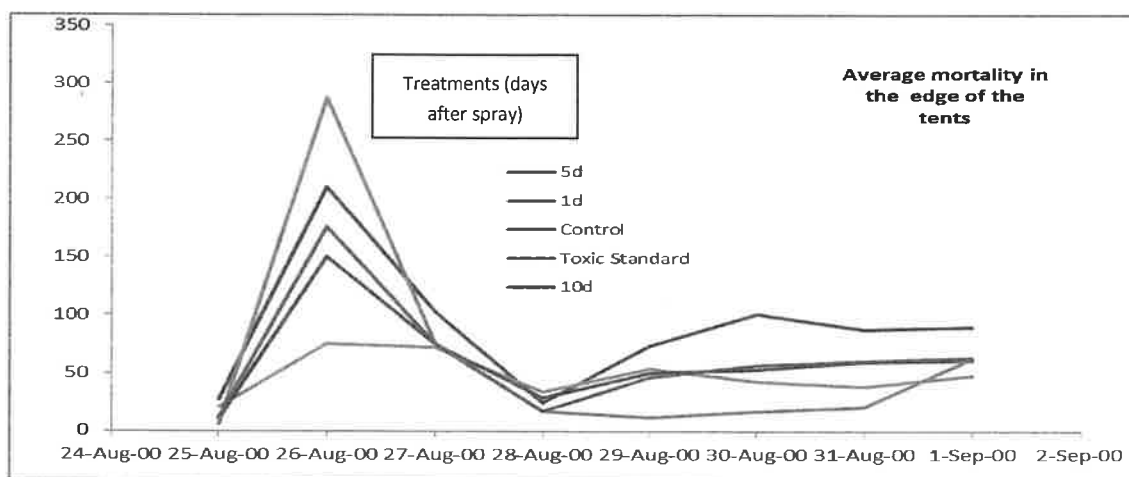
The reduction in toxicity when bees are removed from the area to be treated and the re-introduction of bees to the area after at least 3 days is shown by two semi-field studies. DuPont-4446 conducted in Germany in 2000, and an additional study (DuPont-5470) undertaken in Spain in 2001.

The studies were conducted with applications of methomyl to *Phacelia* (a flowering plant), which is extremely attractive to bees. When used to represent a worst case scenario, the studies over predict the response that would be seen from Lannate<sup>®</sup> L use in NZ commercial fruit and vegetable production.

After application, the crop is subdivided into several mesh tunnels where small hives are placed and therefore bees are constrained to solely visit plants that received a given treatment. The study design consists of introducing bees post treatment (at 1, 5, and 10 days after treatment) and then assessing the hives for approximately a week. Each hive has a trap to collect all dead bees removed from within the colony. In addition, daily counts of dead bees, flight activity and abnormal behavior was performed along the edge of the mesh tents. Brood development assessments were also conducted periodically.

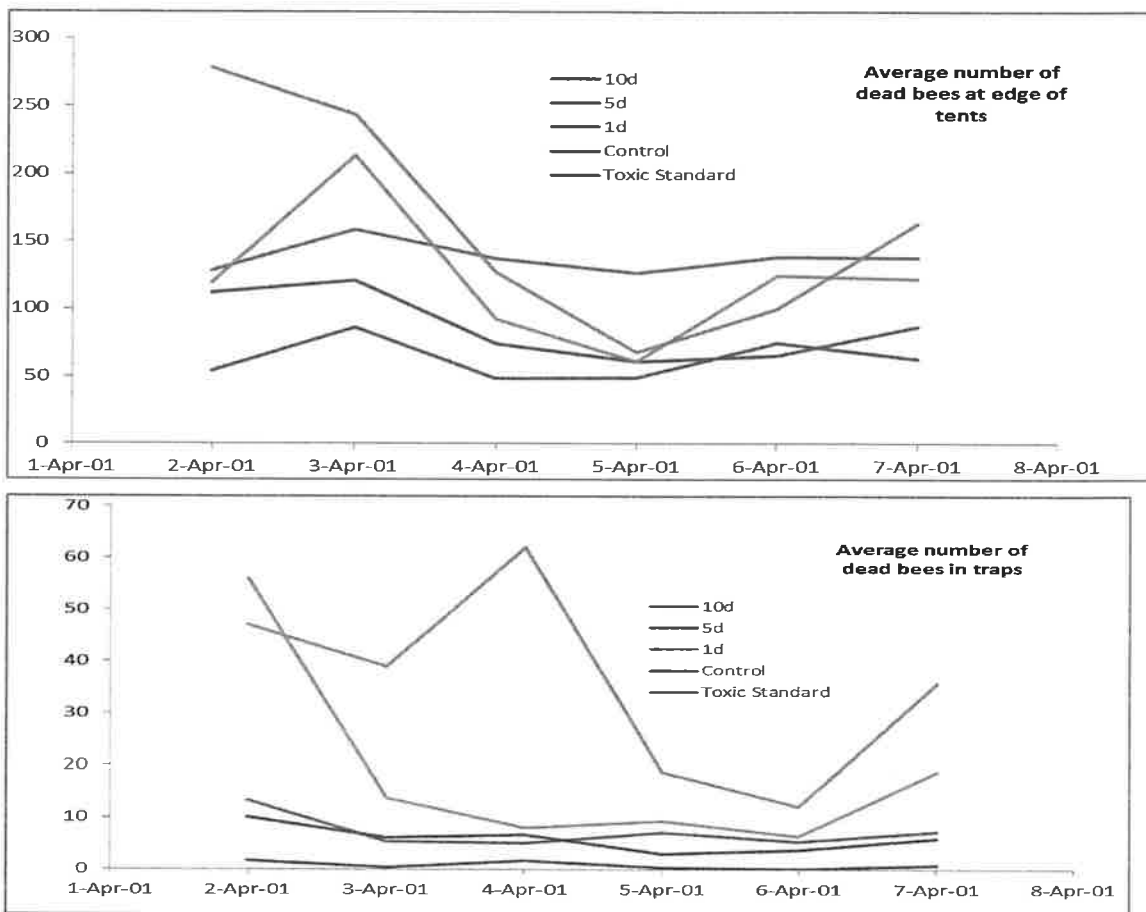
**Summary of semi-field studies**

DuPont-4446



DuPont-4446 showed no clear trend in mortality. Mortality in the test item group after 1 day of treatment (1d) was lower than that in the Control group during most of the period. The study concluded no harmful effects on foraging honey bees, if exposed to spray deposits 1, 5, and 10 days after application to flowering plants in a semifield tunnel system (application rate of 450 g a.s./ha Methomyl 20SL; spray solution concentration of 1500 mg methomyl/L). No test substance related mortality, and other endpoints (e.g., abnormal behavior, flight activity) were observed. No incidence for abnormal development of the bee brood was observed.

DuPont-5470



DuPont-5470 concluded temporary harmful effects on honey bees, 1 day after treatment with 450 g a.s./ha Methomyl 20SL at the start of flowering (worst case). However, similar numbers of dead bees were also noted 10 days after treatment, indicating that other factors may be affecting bees. On Day 3 of evaluation effects were not apparent. A slight decrease of the foraging activity and flight intensity of the bees was observed 1 and 5 days after application. No abnormal behaviour and no incidence for abnormal development of the bee brood were observed.

The EFSA conclusion related to these studies was at most inconclusive, although it failed to state that no clear trend that would suggest a dose-effect relationship was observed. For example, the control mortality was higher in DP-4446 after 1 day of the test than the mortality of the 1-day treatment group, which is supposed to have a much higher exposure than the 5- and 10-day treatment groups. In the DuPont-5470 study, mortality of the control group at the edge of tents was similar to the 5-day treatment group, but lower than the 10-day group.

DuPont also reviewed the publication used by the Environmental Protection Authority (EPA) to establish a bee reintroduction interval of 8 days (Clinch et al., 1973). In summary, the study design used by Clinch et al. (1973) does not allow a proper determination of the bee safety of methomyl when used according to the proposed recommendations in the label. Specific comments include:

1. Application of methomyl to the experimental plot occurred while the experimental apiary consisting “of 10 hives was alongside” the plot “sprayed with methomyl.” Application to a field adjacent to the apiary means that exposure to bees may not have occurred solely *via* methomyl residues on the treated plants within the field, but also from direct exposure of the hive to spray solution drift. The potential for toxicity from direct exposure to the spray solution was likely increased given the high concentration of methomyl in the spray solution used (3000 mg/L, or about six times the concentration prescribed in the New Zealand label for the highest rate used on strawberries). Interestingly, the paper reports smaller than expected effects from dicrotophos, which was applied to the experimental plot located 400 m from that experimental apiary.
2. The study did not reintroduce bees at different intervals post-application (as the DuPont studies conducted in Europe did). Instead, the authors “sampled” the treated plots (using a “vacuum bee collector”) for bees every day after treatment and then placed the collected bees for 24 hours inside a cage on top of the hives before determining the percent mortality.  
As such, bees collected during any of these days may have been exposed during a fraction or the entire period after application (including exposure whilst inside the hive, see above).
3. Application of methomyl to the treated plot adjacent to the apiary commenced at 7:30 PM on December 9, 1971. Sunset in this location occurs at 7:43 PM on that date. Bees are known to fly well past sunset, especially when returning to their hives. The fact that, contrary to the proposed bee safety label statement, beehives were not removed from the vicinity of the treated plot, and that in fact the treated area was adjacent to the apiary makes the direct exposure of bees still returning to the hive highly likely.

## CONCLUSIONS

The data available suggest that undesirable effects on bees are not likely to occur at the highest application rate of methomyl registered in New Zealand for strawberries (480 g a.s./ha in high water volume). The two higher tier studies (DuPont-4446 and DuPont-5470) showed only transient effects after 1d of treatment to flowering crops at application rates of 450 g a.s./ha. Furthermore, DuPont is proposing to include in the label direct instructions aimed at ensuring potential risks to bees are within acceptable levels. Specifically, the proposed label language is: *“Toxic to bees. Do not use in the presence of bees. In order to protect bees and other pollinating insects, do not apply this product to crops that are flowering when they are actively being visited by bees”*.



## REFERENCES

- Clinch, PG, Palmer-Jones, T, and Forster IW. 1973. Effect on honey bees of dicotophos and methomyl applied as sprays to white clover. NZ J Exp Agr, 1:(97-99).
- DuPont-4446. Schur, A. 2001. Methomyl (DPX-X1179) 20L: A semi-field test in Germany to evaluate the effects on the honey bee, *Apis mellifera carnica*. (Hymenoptera:Apidae). Arbeitsgemeinschaft GAB Biotechnologie GmbH & IFU Umweltanalytik GmbH.
- DuPont-5470. Schur, A. 2001. Methomyl (DPX-X1179) 20L: A semi-field test to evaluate the effects on the honey bee, *Apis mellifera* (Hymenoptera:Apidae) in apples in Spain in 2001. Arbeitsgemeinschaft GAB Biotechnologie GmbH & IFU Umweltanalytik GmbH.