



DECISION

Amended under section 67A on 3 February 2016
Original decision 17 December 2014

1. Summary

Substance Name	DDVP Insecticide Strips
Application code	APP202324
Application type	A modified reassessment of a hazardous substance under Section 63A of the Hazardous Substances and New Organisms Act 1996 ("the Act")
Applicant	Ministry of Primary Industries
Purpose of the application	To reassess the definition of a DDVP Insecticide Strip
Date application received	31 October 2014
Considered by	A decision-making Committee of the Environmental Protection Authority ("the Committee") Louise Malone (Chair) Helen Atkins
Consideration date	12 - 17 December 2014
Decision	Approved with controls The proposed changes are accepted.
HSNO Approval number	HSR000126

2. Background

- 2.1. DDVP Insecticide Strips are inert polymer strips impregnated with the volatile insecticide DDVP (which is a trade name for dichlorvos). DDVP is released from the strip over time giving the strip its insecticidal activity. The strips are used in insect traps as part of biosecurity surveillance run by the Ministry for Primary Industries (MPI), formally the Ministry of Agriculture and Forestry. DDVP Insecticide Strips are of particular importance to MPI's fruit-fly monitoring programme.
- 2.2. DDVP Insecticide Strips were approved by the Environmental Risk Management Authority on 7 July 2004. The approval was granted under Section 28 of the Act and has the HSNO Approval Number HSR000126 (application number HSR04011).

- 2.3. The approval (HSR000126) restricts the use of DDVP Insecticide Strips to MPI's fruit fly surveillance programme. The approval also specifies that the strips must weigh 2.6 g and contain a maximum of 22% DDVP by weight. This specification is equivalent to a maximum of 0.572 g of DDVP per strip.
- 2.4. The current specification excludes strips containing up to 0.572 g of DDVP if they weigh more than 2.6 g (i.e. if they contain a larger amount of inert polymer material).
- 2.5. Despite several manufacturers internationally producing DDVP Insecticide Strips, or similar devices with different dimensions, only one product meets the specifications of approval HSR000126. The manufacturer of that product has a minimum production run that exceeds the needs of the New Zealand biosecurity monitoring programme, resulting in more strips being ordered than can be used before their expiry date.
- 2.6. The Ministry for Primary Industries have requested this modified re-assessment to broaden the scope of the approval so that they can purchase alternative brands of strips and use them in any of their biosecurity programmes. In practice the current approval limits MPI to one brand and grade of strip and limits their use to the fruit fly surveillance programme.

3. Proposed changes

- 3.1. The proposed changes to the controls are shown in Table 1.

Table 1: Comparison of original wording and the proposed changes

Original wording	New Wording
[all references to] DDVP Insecticide Strip	DDVP Impregnated Device
[all references to] the Ministry of Agriculture and Forestry	the Ministry for Primary Industries
DDVP Insecticide Strip shall only be imported by the Ministry of Agriculture and Forestry and shall only be used in outdoor insect traps for the fruit fly surveillance programme	DDVP Insecticide- Impregnated Devices must only be imported by the Ministry for Primary Industries and must only be used in outdoor insect traps in biosecurity monitoring programmes.
The size of each DDVP Insecticide Strip shall be restricted to 2.6g with a total dichlorvos content no greater than 22% by weight	The maximum amount of dichlorvos in each DDVP Impregnated Device must not exceed 22% by weight and 0.72 g of dichlorvos.

- 3.2. Note that the proposed changes include changing the name of the substance from DDVP Insecticide Strips to DDVP Impregnated Devices. This document will use the new name for the substance (DDVP Impregnated Devices) from this point forward.

4. Process and consultation

- 4.1. Grounds to reassess the DDVP Impregnated Devices approval were formally established in accordance with section 62 of the Act on 2 July 2014.
- 4.2. The current application to modify the scope of the DDVP Impregnated Devices approval was formally received pursuant to section 63A of the Act on 22 October 2014.
- 4.3. The application was not publicly notified in accordance with section 53 of the Act because the current approval is limited to one importer and one user, MPI, who is the applicant. Therefore no other parties were considered affected by the proposed modifications to the approval and it was not considered of significant public interest.
- 4.4. Section 63A(5) of the Act states that if the Authority does not publicly notify an application for a modified reassessment, then the Authority must:
 - *do everything reasonably practicable on its part to consult with all persons who, in its opinion, may be affected by the reassessment; and*
 - *give those persons a reasonable opportunity to make submissions and comments to the Authority on the reassessment; and*
 - *consider all submissions and comments received.*
- 4.5. The staff did not identify anyone, besides the applicant, that may be affected by the reassessment. However, DDVP Impregnated Devices are intended to be used in a workplace therefore WorkSafe New Zealand was notified of the application on 23 October 2014 and invited to comment by 14 November 2014. No comments were received.

5. Assessment of the proposed changes

Assessment of the classification of the original DDVP Device

- 5.1. The original device was re-classified during the organophosphate and carbamate reassessment (APP201045). However, work completed as part of the ongoing reassessment of dichlorvos, the active ingredient in the devices, recommends the removal of the 9.2 classification for dichlorvos. Therefore the staff reviewed the classification of the original device as part of this reassessment.
- 5.2. The review undertaken indicated that the classification of the strip should be 6.1D (Oral), 6.1E (Dermal), 6.1C (Inhalation), 6.3B, 6.4A, 6.5B, 6.6B, 6.7B, 6.9A (Oral), 6.9B (Dermal), 6.9A (Inhalation), 9.1A, 9.3B, 9.4A. The current and revised classification for DDVP Impregnated Device is shown in Table 2.
- 5.3. The change in classification results in a reduction of the hazard classification from 6.1B (inhalation) to 6.1C (inhalation) and the removal of the 9.2D classification.

- 5.4. The change in classification results in one change in the controls. The substance will change from packing group 2 to packing group 3.

Table 2: Current and revised hazard classifications of DDVP Impregnated Devices

Hazard Endpoint	Original Classification of approval HSR000126	Revised Classification
Acute toxicity (oral)	6.1D	6.1D
Acute toxicity (dermal)	6.1E	6.1E
Acute toxicity (inhalation)	6.1B	6.1C
Skin irritancy	6.3B	6.3B
Eye irritancy	6.4A	6.4A
Contact sensitisation	6.5B	6.5B
Mutagenicity	6.6B	6.6B
Carcinogenicity	6.7B	6.7B
Target organ systemic toxicity	6.9A	6.9A
Aquatic ecotoxicity	9.1A	9.1A
Soil ecotoxicity	9.2D	No
Vertebrate ecotoxicity	9.3B	9.3B
Invertebrate ecotoxicity	9.4A	9.4A

*bold values indicate changes

Human health risk assessment

- 5.5. The proposed change to the scope of the approval increases the maximum amount of dichlorvos in each strip from 0.572 g to 0.72 g.
- 5.6. Due to the properties of DDVP Impregnated Device, which are designed to release a volatile pesticide (dichlorvos) and their proposed use pattern, significant human exposure may occur during placement/replacement of DDVP Impregnated Device in traps. Therefore a quantitative operator exposure assessment was performed.
- 5.7. Due to the restrictive nature of the original approval other individuals are not expected to be exposed to the devices under normal operating conditions. Therefore, no bystander risk assessment was conducted based on the higher level of active ingredient in the proposed controls (0.72 g/strip).
- 5.8. The risk assessment concluded that the operator exposure to dichlorvos via inhalation was acceptable but dermal exposure could be slightly higher than the acceptable operator exposure level (AOEL) (Risk Quotient = 1.2). The risk assessment took into account that operators would be wearing gloves when handling the devices but not the use of other equipment. Of note, control T5 (which is due to come into effect on 1 July 2015, see Appendix A) specifies the use of both gloves and forceps when handling unpackaged DDVP Impregnated Devices. The

Committee was informed that this is currently the applicant's normal handling practice. The staff advised the Committee that the level of operator exposure, with the revised wording of the maximum size and concentration of the devices, will be acceptable if gloves are worn and forceps (or similar equipment) are used to handle DDVP Impregnated Devices.

- 5.9. The human health risk assessment also included a review of the exposure limits and impurities for dichlorvos that may be relevant to DDVP Impregnated Devices.
- 5.10. An acceptable daily exposure (ADE) limit of 0.004 mg/kg (bw)/ day has been set on the current approval for DDVP Impregnated Devices. The risk assessment noted that this limit was revised to 0.001 mg/kg (bw)/ day during the organophosphate and carbonate reassessment (APP201045). The Committee considers that this ADE value is applicable to DDVP Impregnated Devices particularly given that the proposed change will increase the maximum amount of dichlorvos in the devices. Consequently the ADE value is revised, from 0.004 to 0.001 mg/kg (bw)/ day.
- 5.11. Workplace Exposure Standard (WES) values can be set to limit the exposure of people to toxic substances in places of work. The EPA typically adopts WES values listed in WorkSafe New Zealand's Workplace Exposure Standards document (effective from February 2013):

<http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/workplace-exposure-standards-and-biological-exposure-indices/workplace-exposure-standards-and-biological-indices-2013.pdf>

- 5.12. The staff advised the Committee that a WES was not previously set for DDVP Impregnated Devices because insufficient toxicological and industrial hygiene data was available to set a WES value at the time of the original approval. However, WorkSafe has now set a time weighted average (TWA) value for dermal exposure to dichlorvos of 0.1 ppm or 0.9 mg/ m³ which the Committee consider should apply to DDVP Impregnated Devices. Consequently the Committee consider the following control be applied:

WES values have been set for dichlorvos as detailed in the Workplace Exposure Standards document: <http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/workplace-exposure-standards-and-biological-exposure-indices/workplace-exposure-standards-and-biological-indices-2013.pdf>

- 5.13. The staff review of significant and toxicologically relevant impurities in dichlorvos noted that dichlorvos can contain chloral (CAS 75-87-6), which is considered toxicologically relevant and is limited in standards set by the Food and Agriculture Organization of the United Nations. The current controls do not manage the effects of impurities in the active ingredient of the substance. In order to protect users from exposure to toxicologically relevant impurities and to ensure consistency with international standards the Committee considers it appropriate to set an additional control limiting the level of chloral in the dichlorvos component of DDVP Impregnated Devices. Consequently the Committee consider the following control be applied:

The maximum level of chloral (CAS 75-87-6), in the dichlorvos component of this substance must not exceed 5% by weight.

Ecological risk assessment

- 5.14. Exposure of the environment to DDVP Impregnated Devices during the use stage of their lifecycle is expected to be very limited due to the restricted use of the devices, as a biosecurity tool used only by MPI. Therefore quantitative exposure modelling and ecological risk assessment was not performed because environmental risks due to the proposed use pattern of this substance are deemed negligible.
- 5.15. A qualitative assessment of the risks posed by the proposed changes in the controls did not identify an increased risk to the environment and concluded that no other changes to the existing controls were required.

Assessment of the change in target pest

- 5.16. The current approval limits the use of DDVP Impregnated Devices to use in closed container outdoor traps in the fruit fly surveillance programme operated by MPI. However, a variety of insect pests pose a real or potential biosecurity threat to New Zealand. Recent studies, conducted under a containment approval from the EPA, have demonstrated that DDVP Impregnated Devices could be a valuable tool in the control of Brown Marmorated Stink Bug (BMSB), which is considered a threat to horticultural operations here and overseas.
- 5.17. The design and placement of the insect traps used varies depending on the pest targeted. The traps used in current programmes and trials are placed in residential properties (with the occupier's consent), some public areas (e.g. reserves), and commercial/industrial sites.
- 5.18. Traps placed in public places or residential properties could attract the attention of the public. Depending on the size of the strip and the time it has been exposed to air, a DDVP Insecticide Strip could contain a lethal oral dose of DDVP for toddler or small child.
- 5.19. MPI currently uses a range of approaches to prevent children or the public interfering with the traps. For example, MPI uses only closed container traps, and all the traps are labelled with warnings and regularly monitored. Traps placed in public places are located in inconspicuous areas to avoid attracting attention and may be accompanied by warning signs. Traps are only located on residential properties with the informed consent of the occupier who is given information about the hazards of DDVP. To date MPI has had no incidences of people tampering with the traps, or losses due to vandalism.
- 5.20. The Committee notes that prohibiting the use of DDVP Impregnated Devices in residential or public places may unnecessarily restrict future biosecurity programmes, and also acknowledges the need to inform and protect the public. Therefore, it is considered appropriate to apply controls to the design, placement, and labelling of the traps used with DDVP Impregnated Devices and the information provided with them, to minimise the risk of a child or other member

of the public accessing the DDVP Insecticide Strip inside a trap. Consequently, the Committee considers the following controls should be applied:

- *DDVP Impregnated Devices must only be used in closed container insect traps.*
- *Insect traps containing DDVP Impregnated Devices must be labelled. The label must provide:*
 - a. *a warning not to touch or remove the traps,*
 - b. *a statement that the DDVP impregnated device inside is “fatal if swallowed”,*
and
 - c. *a contact phone number, where more information about the traps can be obtained.*
- *Insect traps containing DDVP Impregnated Devices located in public places must be positioned in a way that minimises public interaction with the trap.*
- *When insect traps containing DDVP Impregnated Devices are placed on a residential property the occupier/s of the property must be provided with information about the hazards of DDVP including a warning that the DDVP impregnated device could be fatal if swallowed.*
- *When insect traps containing DDVP Impregnated Devices are located on a residential property or in a public place the trap must be positioned or designed in a way that prevents the DDVP Impregnated Device being accessed by children under 5 years old.*

Other matters

5.21. During the reassessment of organophosphate and carbamate pesticides (APP201045) control OPC-15 was added to DDVP Impregnated Devices which requires them to be contained in a unopened package or sealed container when they are transported. However this control does not come into force until 1 July 2015. As this is current practice the Committee feel that the delay is not required and consequently remove the words “This comes into force on 1 July 2015” from the control.

Minor amendments

5.22. The applicant has proposed the following minor amendments:

- Change the name of the substance from *DDVP Insecticide Strips* to *DDVP Insecticide Impregnated Device*, to reflect the fact that these devices come in a range of shapes and sizes.
- Change the name of the government department specified in the controls from the ‘*Ministry of Agriculture and Forestry*’ to the ‘*Ministry for Primary Industries*’ because the ministry’s name has changed.

5.23. The Committee considers that these changes will have no impact on the risk posed by the substance and will add clarity to users.

6. Proposed changes to the controls

Table 3: Summary of the changes to the controls

Description	Code	Justification	Type of change	New control wording
Change substance name from strip to device	All Controls	Substance name change	Amended	This control only applies to the users of DDVP Impregnated Devices
Remove PG2 (packing group 2) and replace it with PG3 (packing group 3) control	PG2, PG3	Triggered by the change in hazard classification from a 6.1B to a 6.1C	Substitution	Packaging requirements equivalent to UN Packing Group III
Change ADE for dichlorvos from 0.004 mg/Kg bw/day to 0.001 mg/Kg bw/day	T1	Triggered by the human health assessment; revised ADE value	Substitution	The following ADE is set: ADE (dichlorvos) = 0.001 mg/kg bw/day
WES values are set for dichlorvos	T2	Triggered by the human health risk assessment; new WES values	Addition	WES values have been set for dichlorvos as detailed in the Workplace Exposure Standards document: http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/workplace-exposure-standards-and-biological-exposure-indices/workplace-exposure-standards-and-biological-indices-2013.pdf
Updated the name of the government department, increased the scope of the approval	Use	Requested by the applicant	Amended	DDVP Insecticide-Impregnated Devices can only be imported by the Ministry for Primary Industries and can only be used in outdoor insect traps in biosecurity monitoring programmes.
Revised wording of the maximum size and concentration of the devices.	App rate	Request by the applicant, supported by the risk assessment.	Substitution	The maximum amount of dichlorvos in each DDVP Impregnated Device must not exceed 22% by weight and 0.72 g of dichlorvos.
Impurity control	Max Impure	Human health risk assessment	Addition	The maximum level of chloral (CAS 75-87-6), in the dichlorvos component of this substance must not exceed 5% by weight.

Decision on application for a modified reassessment of DDVP Insecticide Strips (APP202324)

Description	Code	Justification	Type of change	New control wording
Change the date on which this control comes into force	OPC R15	This is current practise so there is no need for the time delay.	Deletion	No person shall transport the substance in a vehicle unless the substance is contained in— <ul style="list-style-type: none"> a. a sealed, unopened sachet; or b. an airtight container.
Change the date on which this control comes into force	T5	This is current practise so there is no need for the time delay.	Deletion	(1A) Any person who is handling the substance must meet the following minimum standards for personal protective equipment by wearing the following: <ul style="list-style-type: none"> a. Chemical resistant gloves. b. Use of forceps when handling unpackaged DDVP Impregnated Devices. <p>LABEL STATEMENT</p> <p>(1B) Where PPE is prescribed under (1), a person must not supply a hazardous substance to any other person unless the substance label specifies the PPE required to be used when handling the substance.</p> <p>(1C) A person who is in charge of a hazardous substance must ensure that the substance label shows the information required.</p>
New requirement for use of closed container traps	Use	Used to reduce bystander exposure	Addition	DDVP Impregnated Devices must only be used in closed container insect traps.
Requirement for insect traps to be labelled	Use	Used to reduce bystander exposure and inform the public/bystanders of the risks	Addition	Insect traps containing DDVP Impregnated Devices must be labelled. The label must provide: <ul style="list-style-type: none"> a. a warning not to touch or remove the traps, b. a statement that the DDVP Impregnated Device inside is “fatal if swallowed”, and c. a contact phone number, where more information about the traps can be obtained.

Decision on application for a modified reassessment of DDVP Insecticide Strips (APP202324)

Description	Code	Justification	Type of change	New control wording
Placement of traps that are used in a public place	Use	Used to reduce bystander exposure and inform the public/bystanders of the risks	Addition	Insect traps containing DDVP Impregnated Devices located in public places must be positioned in a way that minimises public interaction with the trap.
Information to be provided to occupiers when traps are used on a residential property	Use	Used to reduce bystander exposure and inform property occupiers of the risks.	Addition	When insect traps containing DDVP Impregnated Devices are placed on a residential property the occupier/s of the property must be provided with information about the hazards of DDVP including a warning that the DDVP Impregnated Device could be fatal if swallowed.
Trap design or placement to prevent access by small children	Use	Used to reduce bystander exposure and access by small children	Addition	When insect traps containing DDVP Impregnated Devices are located on a residential property or in a public place the trap must be positioned or designed in a way that prevents the DDVP Impregnated Device being accessed by children under 5 years old.

7. Assessment of the risks and benefits of the proposed changes

Risks of the proposed changes

Table 4: Qualitative assessment of risks of the proposed changes

Lifecycle	Description	Likelihood	Magnitude	Comment	Level of risk
Human Health	Dermal exposure of operators	Very unlikely	Minor	An increased risk to operators was identified, however with compliance with the controls requiring the use of gloves and tweezers when handling these substances the level of risk is reduced to an acceptable level can be considered negligible. In addition the effects are limited to use by a restricted group of operators who are trained in the hazards associated with this substance and the appropriate precautions that are required.	Negligible
Environment	Increased exposure to the environment	Very unlikely	Minimal	No increased risk to the environment was identified, due to the restricted nature of this approval.	Negligible
Social	Increased impacts on the social environment	Highly improbable	Minimal	No risk to the social environment was identified.	Negligible
Cultural	Increased impacts on Māori culture or traditional relationships and taonga species	Very unlikely	Minimal	No increased cultural risk is anticipated, compared to the current approval, is expected from the proposed changes.	Negligible
Economic	Increased costs or effects on business or the economy	Highly improbable	Minimal	No economic risk is anticipated because the change in controls is not expected to limit the current practices. The staff note that the proposed exposure levels are currently required to be met under WorkSafe New Zealand's health and safety legislation	Negligible

Benefits of the proposed changes

Table 5: Qualitative assessment of benefits of the proposed changes

Aspect	Description	Likelihood	Magnitude	Comment	Level of benefit
Economic, Environmental	An effective biosecurity surveillance programme	Likely	Massive	An effective biosecurity surveillance programme has wide ranging benefits to New Zealand's agricultural and natural environments by preventing pest incursions and limiting the damage done by invasive species. The current pests of concern target a wide range of fruit and vegetable species. This also has a major economic impact on the New Zealand agricultural sector and can potentially have a significant on-going benefit on GDP. The potential cost of a major pest incursion is estimated to be \$4 billion because a pest incursion could result in market restrictions as well as crop losses and increased pest management costs.	High
Social, Cultural	The need for biosecurity programmes to protect valued/ taonga species and mahinga kai, indigenous flora and fauna, and natural habitats and ecosystems	Likely	Major	Protection of native and agricultural ecosystems provides a social benefit to people and communities who use these spaces for recreational and food gathering purposes, and benefit from jobs in the agricultural and tourism sectors. The protection of the integrity of mahinga kai, indigenous flora and fauna, and natural habitats and ecosystems allows Maori to fulfil their kaitiakitanga duty to manage the health and wellbeing of taonga for future generations.	Medium
Economic, Environmental	A reduction in disposal costs	Likely	Minor	The current approval only covers one brand of device and the minimum ordering number means that thousands of devices are disposed of as excess because they cannot be used before they expire.	Low

New Zealand's international obligations

- 7.1. DDVP is an integral part of the New Zealand Fruit fly monitoring programme, which is based on internationally accepted standards, including the use of DDVP. This programme is open to international audits by New Zealand's trading partners, so it must be based on international standards agreed to by trading partners.
- 7.2. DDVP is also internationally accepted as a knockdown and killing agent for the BMSB, which has caused increasing environmental and horticultural damage in the USA.

Overall assessment of the risk and the benefits

- 7.3. The proposed change in the control setting the maximum size and concentration of DDVP in the devices will result in a low risk to operators if gloves are worn when handling the unpackaged product. The current controls specify the use of both gloves and forceps (by 1 July 2015). Such use mitigates this risk to negligible. The proposed changes in the controls to limit bystander exposure will ensure that there is no change in the risks to bystanders. No increase in risk was identified for the environment, or on the social, cultural, or economic environments. However significant environmental, economic, social, and cultural benefits were identified associated with the importance of an effective biosecurity surveillance programme and the integral part the DDVP Impregnated Devices play in New Zealand's biosecurity programme.

8. Consideration and Decision

- 8.1. Pursuant to section 63A of the Act, the Committee has considered this application to modify or amend the approval of a hazardous substance. In doing so, it has applied the relevant sections of the Act and clauses of the Hazardous Substances and New Organisms (Methodology) Order 1998 ("the Methodology") and is satisfied that there is sufficient information to allow a decision to be made on this application.
- 8.2. The Committee is satisfied that it is appropriate to change the name of the substance and hereby change the name of the substance from DDVP Insecticide Strips to DDVP Impregnated Devices.
- 8.3. Having considered the staff advice and the new information provided by the applicant, the Committee is satisfied with the revised hazard classifications and the revised controls identified by the staff in Tables 2 and 3 respectively, and accordingly confers them on DDVP Impregnated Devices.
- 8.4. Accordingly, the application to modify the approval for DDVP Insecticide Strips /DDVP Impregnated Devices is approved with controls as detailed in full in Appendix A.



Louise Malone (chair)

Date: 17 December 2014

Chair, Decision-making Committee

Amendment: December 2015

The following amendments to this approval were made to better reflect the hazards of the substance. The current wording is based on the 6.1B classification of the original approval (before reassessment in December 2014). However, the 6.1B classification is for exposure via inhalation whereas the label statement is intended to warn people of the risks of a pet or child eating a DDVP impregnated device. The acute oral toxicity classification of the substance is 6.1D. The Ministry of Primary Industries requested that the required label statement be changed to better reflect the hazards of the substance.

The controls in Appendix A have been updated to reflect the amended labelling requirements. The amendments are the following:

Current wording of the control

Insect traps containing DDVP Impregnated Devices must be labelled. The label must provide:

- a. a warning not to touch or remove the traps,*
- b. a statement that the DDVP impregnated device inside is "harmful if swallowed", and*
- c. a contact phone number, where more information about the traps can be obtained.*

Revised wording

Insect traps containing DDVP Impregnated Devices must be labelled. The label must provide:

- a. a warning not to touch or remove the traps,*
- b. a statement that the DDVP impregnated device inside is "harmful if swallowed and releases vapours that are harmful if inhaled"*
- c. a contact phone number, where more information about the traps can be obtained.*

These amendments were made under section 67A of the HSNO Act as amendments that were considered to be minor in effect and corrects a technical error.



Dr Louise Malone

Date: 3 February 2016

Chair, Decision-making Committee
Environmental Protection Authority

Appendix A: Controls applying to DDVP Impregnated Devices

The controls listed in this Appendix supersede the controls originally applied to the substance at the conclusion of EPA application HSR04011 and subsequent modifications during the organophosphate and carbonates reassessment. The controls for this substance apply for the indefinite duration of the approval of this substance. Please refer to the Hazardous Substances Regulations¹ for the requirements prescribed for each control.

Table 6: Revised Controls– codes, regulations and variations

Hazardous Substances (Classes 6, 8, and 9 Controls) Regulations 2001

Code	Regulation	Description	Variation
T1	Regs 11 – 27	Limiting exposure to toxic substances through the setting of TELs	The following ADE is set: ADE (dichlorvos) = 0.001 mg/kg bw/day
T2	Regs 29, 30	Controlling exposure in places of work through the setting of WESs.	WES values have been set for dichlorvos as detailed in the Workplace Exposure Standards document: http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/workplace-exposure-standards-and-biological-exposure-indices/workplace-exposure-standards-and-biological-indices-2013.pdf
T3	Regs 5(1), 6	Requirements for keeping records of use	
T4	Reg 7	Requirements for equipment used to handle substances	
T5	Reg 8	Requirements for protective clothing and equipment	(1A) Any person who is handling the substance must meet the following minimum standards for personal protective equipment by wearing the following: <ol style="list-style-type: none"> a. Chemical resistant gloves. b. Use of forceps when handling unpackaged DDVP Impregnated Devices. <p>LABEL STATEMENT</p> <p>(1B) Where PPE is prescribed under (1), a person must not supply a hazardous substance to any other person unless the substance label specifies the PPE required to be used when handling the substance.</p> <p>(1C) A person who is in charge of a hazardous substance must ensure that the</p>

¹ The regulations can be found on the New Zealand Legislation website; <http://www.legislation.co.nz>

Code	Regulation	Description	Variation
			substance label shows the information required.
T6	Reg 9	Approved handler/security requirements for certain toxic substances	This control only applies to the users of DDVP Impregnated Devices
T7	Reg 10	Restrictions on the carriage of toxic or corrosive substances on passenger service vehicles	
E5	Regs 5(2), 6	Requirements for keeping records of use	
E6	Reg 7	Requirements for equipment used to handle substances	
E7	Reg 9	Approved handler/security requirements for certain ecotoxic substances	This control only applies to the users of DDVP Impregnated Devices.

Hazardous Substances (Identification) Regulations 2001

Code	Regulation	Description	Variation
I1	Regs 6, 7, 32 – 35, 36(1) – (7)	Identification requirements, duties of persons in charge, accessibility, comprehensibility, clarity and durability	
I3	Reg 9	Priority identifiers for ecotoxic substances	
I8	Reg 14	Priority identifiers for toxic substances	
I9	Reg 18	Secondary identifiers for all hazardous substances	
I11	Reg 20	Secondary identifiers for ecotoxic substances	
I16	Reg 25	Secondary identifiers for toxic substances	
I17	Reg 26	Use of generic names	
I18	Reg 27	Requirements for using concentration ranges	
I19	Regs 29 – 31	Additional information requirements, including situations where substances are in multiple packaging	
I20	Reg 36(8)	Durability of information for class 6.1 substances	
I21	Regs 37 – 39, 47 – 50	General documentation requirements	
I23	Reg 41	Specific documentation requirements for ecotoxic substances	
I28	Reg 46	Specific documentation requirements for toxic substances	

Code	Regulation	Description	Variation
I29	Regs 51, 52	Signage requirements	
I30	Reg 53	Advertising corrosive and toxic substances	

Hazardous Substances (Packaging) Regulations 2001

Code	Regulation	Description	Variation
P1	Regs 5, 6, 7(1), 8	General packaging requirements	
P3	Reg 9	Criteria that allow substances to be packaged to a standard not meeting Packing Group I, II or III criteria	
P13	Reg 19	Packaging requirements for toxic substances	
PG3	Schedule 3	Packaging requirements equivalent to UN Packing Group III	

Hazardous Substances (Disposal) Regulations 2001

Code	Regulation	Description	Variation
D4	Reg 8	Disposal requirements for toxic and corrosive substances	
D6	Reg 10	Disposal requirements for packages	
D7	Regs 11, 12	Information requirements for manufacturers, importers and suppliers, and persons in charge	
D8	Regs 13, 14	Documentation requirements for manufacturers, importers and suppliers, and persons in charge	

Hazardous Substances (Emergency Management) Regulations 2001

Code	Regulation	Description	Variation
EM1	Regs 6, 7, 9 – 11	Level 1 information requirements for suppliers and persons in charge	
EM6	Reg 8(e)	Information requirements for toxic substances	
EM7	Reg 8(f)	Information requirements for ecotoxic substances	
EM8	Regs 12 – 16, 18 – 20	Level 2 information requirements for suppliers and persons in charge	
EM11	Regs 25 – 34	Level 3 emergency management requirements: duties of person in charge, emergency response plans	

Code	Regulation	Description	Variation
EM13	Reg 42	Level 3 emergency management requirements: signage	

Hazardous Substances (Personnel Qualifications) Regulations 2001

Code	Regulation	Description	Variation
AH 1	Regs 4 – 6	Approved Handler requirements (including test certificate and qualification requirements)	

Additional controls

Code	Regulation	Description	Variation
Water	77A	The substance must not be applied into or onto water.	
App Rate	77A	A maximum application rate is set for this substance.	The maximum amount of dichlorvos in each DDVP Impregnated Device must not exceed 22% by weight and 0.72 g of dichlorvos.
OPC R15	77A	CONTROL R-15: Transportation restriction	No person shall transport the substance in a vehicle unless the substance is contained in— a. a sealed, unopened sachet; or b. an airtight container.
Use	77A	A restriction has been placed on the use of the substance	DDVP Impregnated Devices shall only be imported by the Ministry for Primary Industries and shall only be used in outdoor insect traps in biosecurity monitoring programmes.
Use	77A	A restriction has been placed on the use of the substance	DDVP Impregnated Devices must only be used in closed container insect traps.
Use	77A	A restriction has been placed on the use of the substance	<i>Insect traps containing DDVP Impregnated Devices must be labelled. The label must provide:</i> a. a warning not to touch or remove the traps, b. a statement that the DDVP impregnated device inside is "harmful if swallowed and releases vapours that are harmful if inhaled" c. a contact phone number, where more information about the traps can be obtained. a.
Use	77A	A restriction has been placed on the use of the substance	Insect traps containing DDVP Impregnated Devices located in public places must be

Code	Regulation	Description	Variation
			positioned in a way that minimises public interaction with the trap.
Use	77A	A restriction has been placed on the use of the substance	When insect traps containing DDVP Impregnated Devices are placed on a residential property the occupier/s of the property must be provided with information about the hazards of DDVP including a warning that the DDVP impregnated Device could be "harmful if swallowed and releases vapours that are harmful if inhaled".
Use	77A	A restriction has been placed on the use of the substance	When insect traps containing DDVP Impregnated Devices are located on a residential property or in a public place the trap must be positioned or designed in a way that prevents the DDVP Impregnated Device being accessed by children under 5 years old.
Max Impure	77A		The maximum level of chloral (CAS 75-87-6), in the dichlorvos component of this substance must not exceed 5% by weight.

Appendix B: Standard terms and abbreviations

ai	active ingredient
ALD50	approximate median lethal dose, 50%
AOEL	acceptable operator exposure level
ARfD	acute reference dose
as	active substance
BCF	bioconcentration factor
bfa	body fluid assay
BOD	biological oxygen demand
BSAF	biota-sediment accumulation factor
bw	body weight
c	centi- ($\times 10^{-2}$)
CA	controlled atmosphere
CI	confidence interval
CL	confidence limits
CNS	central nervous system
COD	chemical oxygen demand
DFR	dislodgeable foliar residue
DO	dissolved oxygen
DOC	dissolved organic carbon
DT50	period required for 50 percent dissipation (define method of estimation)
DT90	period required for 90 percent dissipation (define method of estimation)
dw	dry weight
ED50	median effective dose
ERC	environmentally relevant concentration

F	field
F0	parental generation
F1	filial generation, first
F2	filial generation, second
fp	freezing point
G	glasshouse
GAP	good agricultural practice
GC	gas chromatography
GC-EC	gas chromatography with electron capture detector
GC-FID	gas chromatography with flame ionization detector
GC-MS	gas chromatography-mass spectrometry
GC-MSD	gas chromatography with mass-selective detection
GLC	gas liquid chromatography
GLP	good laboratory practice
GM	geometric mean
H	Henry's Law constant (calculated as a unitless value) (see also K)
ha	hectare
Hb	haemoglobin
HCG	human chorionic gonadotropin
Hct	haematocrit
HPLC	high pressure liquid chromatography or high performance liquid chromatography
HPLC-MS	high pressure liquid chromatography - mass spectrometry

I	indoor
I50	inhibitory dose, 50%
IC50	median immobilization concentration or median inhibitory concentration 6
ID	ionization detector
Im	intramuscular
inh	inhalation
ip	intraperitoneal
IPM	integrated pest management
iv	intravenous
IVF	in vitro fertilization
K	Kelvin or Henry's Law constant (in atmospheres per cubic meter per mole) (see also H)
Kads	adsorption constant
Kdes	apparent desorption coefficient
Koc	organic carbon adsorption coefficient
Kom	organic matter adsorption coefficient
kg	kilogram
LC	liquid chromatography
LC-MS	liquid chromatography- mass spectrometry
LC50	lethal concentration, median
LCA	life cycle analysis
LC-MS-MS	liquid chromatography with tandem mass spectrometry
LD50	lethal dose, median; dosis letalis media
LDH	lactate dehydrogenase
LOAEC	lowest observable adverse effect concentration

LOAEL	lowest observable adverse effect level
LOD	limit of detection
LOEC	lowest observable effect concentration
LOEL	lowest observable effect level
LOQ	limit of quantification (determination)
LPLC	low pressure liquid chromatography
LSC	liquid scintillation counting or counter
LSS	liquid scintillation spectrometry
LT	lethal threshold
M	molar
µm	micrometer (micron)
MDL	method detection limit
MFO	mixed function oxidase
µg	microgram
MLT	median lethal time
MLD	median lethal dose
mol	Mole(s)
MOS	margin of safety
mp	melting point
MS	mass spectrometry
MSDS	material safety data sheet
NAEL	no adverse effect level
nd	not detected
NEL	no effect level
ng	nanogram
nm	nanometer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level

NOEC	no observed effect concentration
NOEL	no observed effect level
NR	not reported
OC	organic carbon content
ODP	ozone-depleting potential
OM	organic matter content
Pa	pascal
PEC	predicted environmental concentration
PECS	predicted environmental concentration in soil
PECSW	predicted environmental concentration in surface water
PECGW	predicted environmental concentration in ground water
PHI	pre-harvest interval
pKa	negative logarithm (to the base 10) of the dissociation constant)
PNEC	predicted no effect concentration
POW	partition coefficient between n-octanol and water
ppb	parts per billion (10 ⁻⁹)
PPE	personal protective equipment
ppm	parts per million (10 ⁻⁶)
ppp	plant protection product
ppq	parts per quadrillion (10 ⁻²⁴)
ppt	parts per trillion (10 ⁻¹²)
PTDI	provisional tolerable daily intake
r	correlation coefficient
r²	coefficient of determination
REI	restricted entry interval
Rf	retardation factor

RfD	reference dose
RL50	median residual lifetime
RP	reversed phase
RRT	relative retention time
RSD	relative standard deviation
sc	subcutaneous
SD	standard deviation
se	standard error
SF	safety factor
SIMS	secondary ion mass spectroscopy
SOP	standard operating procedures
sp	species (only after a generic name)
SPE	solid phase extraction
spp	subspecies
SSD	sulphur specific detector
STEL	short term exposure limit
t^{1/2}	half-life (define method of estimation)
TCLo	toxic concentration, low
TER	toxicity exposure ratio
TIFF	tag image file format
TOC	total organic carbon
TWA	time weighted average
UF	uncertainty factor (safety factor)
ULV	ultra low volume
UV	ultraviolet
v/v	volume ratio (volume per volume)
w/v	weight per volume
ww	wet weight
w/w	weight per weight

