



DECISION

30 May 2016

Summary

Substance name	Firebird
Application code	APP201977
Application type	A modified reassessment of a hazardous substance under Section 63A of the Hazardous Substances and New Organisms Act 1996 ("the Act")
Applicant	Bayer New Zealand Limited
Purpose of the application	To reassess the herbicide Firebird, a suspension concentrate containing 400 g/L flufenacet plus 200 g/L diflufenican for use at a higher maximum application rate (up to 700 mL/ha) on weeds
Information requests and time waivers	Further information was requested under section 58 of the Act. Consequently, the timeframe for the consideration of this application was waived under section 59 of the Act
Submissions received	Oliver Sutherland - Te Rūnanga o Ngāi Tahu (Ngāi Tahu) Philippa Rawlinson – Federated Farmers of New Zealand (Incorporated)
Considered by	A Decision-Making Committee of the Environmental Protection Authority ("the Committee") Dr Nick Roskruge (Chair) Dr Ngaire Phillips
Decision	Approved with controls for a maximum application rate of 500 mL/ha
HSNO Approval number	HSR100012

Application dates	
Date application received	11 November 2014
Submission period	25 November 2014 – 2 February 2015
Hearing date	7 – 18 April 2016
Consideration date	18 April – 30 May 2016

1. Application context

Background

- 1.1. Firebird is a suspension concentrate that contains flufenacet (400 g/L) and diflufenican (200 g/L) as active ingredients and is used as an agricultural herbicide for the control of annual grass and broad-leaved weeds in winter wheat and barley crops. It was approved for use in New Zealand in June 2009 (approval number HSR100012).

Process and consultation

- 1.2. Grounds for a modified reassessment of Firebird were granted by a Decision-Making Committee of the Environmental Protection Authority (the EPA) on 30 September 2013 (application number APP201872). Consequently, an application for the modified reassessment of Firebird was lodged pursuant to section 63A of the Act and was formally received on 11 November 2014.
- 1.3. The Minister for the Environment, WorkSafe New Zealand, the Ministry of Health, the Department of Conservation, and the Agricultural Compounds and Veterinary Medicines (ACVM) group of the Ministry of Primary Industries were notified of the application and the submission period and were invited to comment. No comments were received.
- 1.4. The application was publicly notified in accordance with section 53 of the Act and was open for submissions from 25 November 2014 until 2 February 2015. Two submissions were received.
- 1.5. Under section 58 of the Act, further information was requested of the applicant on 9 February 2015. The statutory time frame for consideration of the application was waived on 16 March 2015 under section 59 of the Act to allow the applicant time to supply the required information.

Information available for consideration

- 1.6. The information available to the Committee for consideration of this application consisted of:
 - the application form, including confidential material submitted by the applicant;
 - submissions made by Te Runanga o Ngāi Tahu (“Ngāi Tahu”) and Federated Farmers of New Zealand (Incorporated);
 - the EPA Staff Evaluation and Review Report;
 - hearing presentations made by the applicant, staff of the EPA and Ngāi Tahu; and
 - additional information supplied by staff of the EPA.

Hazardous properties of Firebird

- 1.7. The hazard classification of Firebird has not changed since the original application (application number HSR08057) as no new information was available to inform a review of the hazards. The classification is summarised below:

Table 1: Hazard classifications of Firebird

Hazard	Classification
Acute toxicity (oral)	6.1D
Contact sensitisation	6.5B
Target organ or system toxicity	6.9B
Aquatic ecotoxicity	9.1A
Soil ecotoxicity	9.2A
Terrestrial vertebrate ecotoxicity	9.3C

2. Proposed modification to approval

- 2.1. The suite of controls applied to Firebird in the original approval (HSR100012) included the following maximum application rate control, which was applied under section 77A of the Act:

The maximum application rate for Firebird shall be 300 mL/ha, once per season.

- 2.2. In their application, the applicant proposed an increase of the maximum application rate to up to 700 mL Firebird/ha, once per season.

3. Assessment of the proposed modification

Assessment of risks

Risks to human health

- 3.1. The Committee noted in the EPA staff assessment that the proposed increase in maximum application rate to 700 mL/ha Firebird/ha does not result in increased chronic risks to human health. The assessment showed that predicted chronic risks to operators from mixing, loading and application of Firebird are negligible for both active ingredients, as are the risks for re-entry workers and bystanders. The conclusion is the same both with and without the use of Personal Protective Equipment (PPE). The Committee agreed with this assessment and determined the risks to be negligible.

Risks to the environment

- 3.2. The applicant submitted that increasing the maximum application rate to 700 mL/ha, would not pose any additional risks to the environment when used in accordance with appropriate controls.

Aquatic environments

- 3.3. The environmental risk assessment conducted by the EPA calculated that applying Firebird at the proposed rate of 700 mL/ha poses acute risks to algae and aquatic plants, and chronic risks to threatened fish species. It also determined that Firebird poses non-negligible risks to sediment

dwelling organisms due to the active ingredient flufenacet. The EPA staff proposed that these risks could be mitigated by the implementation of buffer zones, as detailed in section 4.

- 3.4. The Committee noted that in their submission, Ngāi Tahu expressed their concern over the risks to aquatic organisms due to spray drift and proposed that if the increase in application rate was approved, a buffer zone should be applied to mitigate this risk.
- 3.5. The Committee considered the proposal to set a buffer zone for water bodies and the information available and determined that applying a buffer zone, in conjunction with appropriate restrictions on spray droplet size, is an appropriate mechanism to mitigate the risks to aquatic organisms.
- 3.6. The Committee also noted that the EPA risks assessment showed that there are negligible risks to groundwater.

Terrestrial plants

- 3.7. The EPA staff assessment identified significant risks to non-target terrestrial plants located in the vicinity of Firebird application, as these plants may be exposed to the substance through drift at the time of application.
- 3.8. The Committee considered the information presented and determined that the risks could be managed to a negligible level by applying a buffer zone, restricting droplet application size and requiring label statements to communicate these controls to users.

Terrestrial animals

- 3.9. The EPA assessment indicated that Firebird applied at 700 mL/ha poses negligible risk to arthropods exposed off-field, but poses significant risks if in-field exposure occurs.
- 3.10. The Committee considered that this risk is acceptable as no effects on the mortality and reproduction of arthropods were observed when tests organisms were exposed to residues on maize for 28 days, and as the application of Firebird is restricted to once per year.
- 3.11. The EPA risk assessment also indicated that the risks to soil-dwelling organisms, bees and birds (through secondary poisoning or direct exposure) are negligible; and the Committee agreed with this assessment.

Risks to Māori and the relationship of Māori to the environment

- 3.12. The applicant elected to consult with Ngāi Tahu as part of the application process and accordingly identified a number of potential risks including risks to non-target plants and aquatic organisms (some of which are food sources) through mechanisms such as spray drift or leaching, and the risk of sensitisation in people collecting flax in the vicinity of application.
- 3.13. In their submission, Ngāi Tahu noted that the application of Firebird poses risks to beneficial insects and that the potential for spray drift and leaching to nearby waterways may result in risks to mahinga kai and to sensitive aquatic and terrestrial ecosystems. In their presentation at the hearing, they emphasised their agreement with comments made by staff of the EPA, namely that the principles of

kaitiakitanga and manaakitanga are not upheld if the increase in application rate means that a substance is allowed to potentially pose a greater risk to people and the environment.

- 3.14. The potential effects of Firebird on the relationship of Māori to the environment were also assessed by the EPA staff in accordance with sections 5(b), 6(d) and 8 of the Act. Under these sections all persons exercising functions, powers and duties under this Act shall: recognise and provide for the maintenance and enhancement of people and communities to provide for their cultural well-being; and, take into account the relationship of Māori and their culture and traditions with their ancestral lands, water, taonga and the principles of the Treaty of Waitangi (Tiriti o Waitangi).
- 3.15. The EPA staff note that Firebird has the potential to cause both direct and indirect impacts on Māori interests. Direct impacts are the positive or adverse effects on culturally significant receptors such as taonga species. Indirect impacts are the consequential effects, that is, how such impacts affect the ability of Māori to express their culture, in particular customary practices and usages associated with the affected taonga species. Such impacts may occur as a consequence of the risks Firebird poses to culturally significant terrestrial or aquatic plants used for food, medicine or weaving, such as pūhā (sow thistle), pōhata (wild turnip), harakeke (flax), and kowhitiwhiti (watercress), and to aquatic organisms including taonga food species such as tuna (freshwater eels) and mohoao (black flounder), or their prey species.
- 3.16. The EPA staff assessment also proposed that adverse effects on soil environments may also have both direct and indirect impacts on Māori interests, as noke / toke (earthworms) are taonga species that are important as a food source for other culturally significant species and as part of the Māori cosmogeny. The Committee notes that this risk is somewhat mitigated as indigenous species of noke/toke are less likely to be present where soil disturbance is high, as on arable land. The ecotoxicity of Firebird in soil environments also poses risks to Papatūānuku (earth mother), who Māori consider to be the origin of all living things and fundamental to Māori creation stories and identity.
- 3.17. The Committee considered these potential risks and noted that the implementation of the proposed controls, in particular, buffer zones to reduce spray drift onto non-target plants and water bodies, will mitigate the risks to terrestrial plants and insects outside the application area, and to aquatic organisms.

Assessment of risks to society, the community and the market economy

- 3.18. The Committee agreed that the modified use of Firebird does not pose risks to society, the community or the market economy.

New Zealand's international obligations

- 3.19. The modified use of Firebird will not affect any international obligations.

Assessment of benefits

- 3.20. The applicant stated that Firebird is a significant tool for the control of weeds in wheat and barley as it is a selective herbicide that targets broadleaf and grass weeds without damaging wheat and barley crops.
- 3.21. At the hearing, the applicant stated that trials have shown better control of important weeds (such as groundsel, ryegrass, cleavers, wireweed and Bromus species) when Firebird is applied at 500 mL/ha compared with when Firebird is applied at a lower rate. The Committee also noted that the applicant presented confidential data on the efficacy of Firebird when applied at different application rates, which supported this statement.
- 3.22. The applicant also proposed that increasing the maximum application rate of Firebird will provide farmers with the option to vary the application rate in situations where problem weeds or high weed populations are expected to emerge, and will therefore allow more robust pre-emergence weed control.
- 3.23. In their submission, Federated Farmers of New Zealand reiterated the value of Firebird as a valuable tool for the control of broadleaf and grass weeds and noted the economic value of arable crops to New Zealand. They stated that increasing the maximum application rate of Firebird will allow it to be used at a higher rate at the discretion of the farmer.
- 3.24. The EPA staff proposed that the control of annual grass and broadleaf weeds in winter barley and wheat will produce economic benefits for those growing or working with these crops, some of whom are Māori; and suggested that Firebird provides an option that agrichemical users can consider as an alternative to other products that are currently available and may help to address the issue of broadleaf weed resistance to other agrichemicals.
- 3.25. The Committee noted that as Māori are beneficiaries of the arable sector, the benefits to the market economy noted above also apply to Māori.
- 3.26. The Committee considered these proposed benefits and agreed that increasing the application rate of Firebird could result in increased benefits to the market economy. However, the Committee noted that it was not possible to determine whether these proposed benefits were retained for uses over and above an application rate of 500 mL/ha. This was considered when the Committee evaluated the maximum application rate that should be set for Firebird (section 5.9).

4. Proposed controls

- 4.1. The EPA staff recommended a series of proposed controls that would mitigate the additional risks posed by increasing the application rate of Firebird from 300 mL/ha to 700 mL/ha. These controls were evaluated by the Committee (section 5) in accordance with the Hazardous Substances and New Organisms (Methodology) Order 1998 (“the Methodology”) to ascertain if the risks arising from the

increased application rate could be found to be negligible, and if the benefits of any increase in application rate would outweigh any costs¹.

Prescribed controls

- 4.2. The hazard classifications of Firebird determine a set of prescribed controls specified by the Hazardous Substances Regulations under the Act. These form the basis of the suite of controls that were applied to Firebird when the substance was first approved.
- 4.3. No changes to the prescribed controls are proposed as part of this modified reassessment.

Original section 77A controls

- 4.4. Section 77A of the Act also allows the EPA to add, vary, substitute, combine or delete controls if such changes are more effective or more cost-effective in terms of managing the use and risks of the substance, or are more likely to achieve their purpose than the prescribed controls.
- 4.5. The original suite of controls for Firebird included additional controls which were applied under section 77A of the Act. Minor changes to two of these controls were proposed, namely that the relevant definitions given in Appendix A apply, and that the wording of the controls be altered, as underlined below. These controls are:
 - *This substance must not be applied onto or into water.*
 - *The method of application of this substance is limited to ground based application only.*
- 4.6. A maximum application rate for Firebird was also set under section 77A of the Act in the initial approval HSR100012. In accordance with the purpose of this modified reassessment, the following maximum application rate controls were proposed:
 - *This substance must not be applied at rates exceeding 700 mL of formulated product/ha per application (equivalent to 280 g flufenacet/ha and 140 g diflufenican/ha).*
 - *This substance must not be applied to the same area more than once per year.*
- 4.7. The Committee considered it was not possible to determine whether the proposed benefits were retained for uses above an application rate of 500 mL/ha and therefore further considered the appropriate maximum application rate in their review of the cost-effectiveness of the controls (section 5).
- 4.8. The Committee noted that Firebird is applied either pre- or post- crop emergence for autumn and winter sown wheat and barley crops, and therefore considered that the terminology 'once per season' in the maximum application rate control can be amended to 'once per year' as this is less ambiguous.

¹ Note that the proposed controls were amended as detailed in section 5; the finalised controls are given in Appendix A.

New section 77A controls

4.9. The following additions to the current controls were recommended to manage the additional risks that arise as a result of increasing the maximum application rate of Firebird to 700 mL/ha, once per year. Relevant definitions are given in Appendix A.

Controls to protect aquatic and sediment-dwelling organisms

4.10. Modelling that was conducted as part of the environmental risk assessment determined that there are significant risks to aquatic and sediment-dwelling organisms. To assist the mitigation of these risks, the following control was proposed by the EPA staff:

- *No person may apply this substance in a manner that results in adverse effects to a water body.*

4.11. The Committee noted that the implementation of buffer zones for water bodies that are downwind of the application site will specifically address the risks to aquatic and sediment-dwelling organisms by minimising their exposure to Firebird. The required buffer zone size depends both on the application rate of Firebird and the size of droplets used to apply the spray². The buffer zone sizes given in Table 2 are appropriate to reduce the potential exposure of aquatic and sediment-dwelling organisms to Firebird such that the risks are mitigated to a negligible level.

Table 2: Proposed downwind buffer zone sizes for water bodies

Application rate of Firebird (mL/ha)	Buffer zone size (when applied as fine droplets) ²	Buffer zone size (when applied as medium droplets) ²	Buffer zone size (when applied as coarse droplets) ²
300	15 m	2 m	2 m
400	25 m	4 m	2 m
500	40 m	8 m	2 m
600	50 m	14 m	4 m
700	60 m	20 m	6 m

4.12. The label for Firebird currently instructs users to apply Firebird using a fine spray. Accordingly, the following mandatory downwind buffer zone control was proposed:

- *For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies:*
 - 60 metres, when the substance is applied at 601 – 700 mL/ha
 - 50 metres, when the substance is applied at 501 – 600 mL/ha
 - 40 metres, when the substance is applied at 401 – 500 mL/ha
 - 25 metres, when the substance is applied at 301 – 400 mL/ha
 - 15 metres, when the substance is applied at ≤ 300 mL/ha

² The quality of the spray is defined according to the American Society of Agricultural & Biological Engineers (ASABE) droplet size classification scheme and is consistent with the British Crop Protection Council (BCPC) classification scheme, as presented in the New Zealand Standard: Management of Agrichemicals (NZS 8409:2004).

4.13. In their review of the cost-effectiveness of this control (section 5.6), the Committee considered that these buffer zone sizes are unlikely to be the most cost-effective way of mitigating the risk to aquatic organisms and thus added a control which requires Firebird to be applied with medium or coarser spray droplets, and reduced the buffer zone sizes accordingly. The Committee noted that applying Firebird with medium/coarse or coarse droplets would also be appropriate as the buffer zones set for medium droplets will provide adequate protection for coarser spray droplets.

Controls to protect non-target plants

4.14. The application of Firebird at rates of up to 700 mL/ha has the potential to cause adverse effects to non-target plants in the vicinity of the application site through either spray drift or leaching of the substance. As part of the environmental risk assessment, it was determined that a buffer zone of 5 m is adequate to mitigate these risks to non-target plants. Accordingly, the Committee proposed the following controls:

- *No person may apply this substance in a manner that results in adverse effects to non-target plants outside the application area.*
- *A five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation.*

4.15. The Committee agreed that these proposed controls were sufficient to manage the risks to non-target plants and imposed these controls on Firebird.

Labelling controls

4.16. Several additional label controls were proposed for Firebird to mitigate the potential effects on the environment associated with the use of this substance. The Committee considered that it is important for these requirements to be stated on the product label and safety data sheet to ensure that they are clearly communicated to users of the substance and for these controls to be more effective with respect to their effect on the management, use and risks of this substance. The following statements to be placed on the label, or words to that effect, were proposed under section 77A of the Act:

- *This substance must not be applied onto or into water.*
- *The method of application of this substance is limited to ground based application only.*
- *Persons applying this substance must not cause adverse effects to:*
 - *any water body, or*
 - *non-target plants outside the application area.*

Maximum application rate

- *This substance must not be applied at rates exceeding 700 mL of formulated product/ha per application (equivalent to 280 g flufenacet/ha and 140 g diflufenican/ha).*
- *This substance must not be applied to the same area more than once per year.*

Management of spray drift

- **DO NOT** apply when wind speeds are less than 3 km/hr or more than 20 km/hr as measured at the application site.
- For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies:
 - 60 metres, when the substance is applied at 601 – 700 mL/ha
 - 50 metres, when the substance is applied at 501 – 600 mL/ha
 - 40 metres, when the substance is applied at 401 – 500 mL/ha
 - 25 metres, when the substance is applied at 301 – 400 mL/ha
 - 15 metres, when the substance is applied at ≤ 300 mL/ha
- To protect non-target plants outside the application area, a five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation.
- Due to local conditions the downwind buffer zones may not provide adequate protection in some circumstances. Persons applying the substance must take into account site-specific conditions at the application site on the day of application and amend the size of the buffer zone as required.

4.17. As part of their presentation at the hearing, Ngāi Tahu expressed concern that the previous label did not include information about controls, such as prohibiting application onto water. The Committee noted that the imposition of this label control addresses this concern.

5. Review of proposed controls

Consideration of risks under proposed controls

- 5.1. The proposed controls address the risks to aquatic and sediment-dwelling organisms by minimising the amount of substance that will enter water bodies. The Committee are satisfied that with the proposed controls in place, the risks to these organisms will be negligible.
- 5.2. Risks to non-target plants outside of the application area can be mitigated by applying the substance in such a way so as to reduce drift onto non-target vegetation. The Committee considered that the proposed controls; namely those which prohibit users from causing adverse effects to non-target vegetation, the buffer zone of five metres, and the corresponding label advice, will reduce the risks to non-target plants to a negligible level.
- 5.3. Firebird also poses risks to Māori and their relationship to the environment through its potential to impact culturally significant and taonga species. The Committee are satisfied that the proposed controls will also mitigate these risks.
- 5.4. The Committee noted that the use of Firebird at rates greater than 500 mL/ha may incur a cost to the applicant, as it understands that further studies may be required before the product can be registered with the ACVM group for use at these rates.

Cost-effectiveness of controls

- 5.5. In accordance with clause 35 of the Methodology and sections 77 and 77A of the Act, the Committee considered the cost-effectiveness of the proposed controls. With the exception of the proposed downwind buffer zone for water bodies and the spray droplet size, the Committee considered that the proposed controls are the most cost-effective in terms of their effect on the management, use and risks of the substance.
- 5.6. The Committee determined that the proposed downwind buffer zone for water bodies of 60 m (for application at 700 mL/ha using fine droplet spraying) is not likely to be the most cost-effective form of this control as they assumed that it may be difficult for farmers to set aside this much land. Accordingly, the Committee considered whether other parameters could be varied to increase the cost-effectiveness of the control, and noted that it is not necessary to apply Firebird using fine droplets as proposed by the applicant. This is because Firebird is intended for application either pre- or post-crop emergence for autumn and winter sown wheat and barley crops and will therefore be applied onto bare ground or emerging seedlings, for which a fine spray is not required. The Committee noted that the proposed downwind buffer zone for water bodies would be reduced, as defined in Table 2, if a requirement for medium or coarser spray droplets is added.
- 5.7. The proposed controls include a range of buffer zone sizes which correspond to the application rate that is used. The Committee noted that this enhances the cost-effectiveness of this control as it allows farmers to maximise their land use according to the application rate required for their situation.
- 5.8. The Committee considered that with these changes in place, this control is the most cost-effective method of mitigating the risks to aquatic organisms for each application rate.

Amendments to proposed controls

- 5.9. The Committee reviewed the benefits associated with applying Firebird at 700 mL/ha and determined that there is insufficient evidence of significant benefits at this application rate. They further noted that the benefits of applying Firebird at 500 mL/ha are increased relative to the previous maximum application rate (300 mL/ha), and accordingly considered that the maximum application rate should be revised to 500 mL/ha, once per year.
- 5.10. Having also reviewed the cost-effectiveness of the proposed controls, the Committee determined that the proposed controls needed to be amended to ensure they were most effective. Therefore the Committee made the following changes to section 77A additional controls; the changes are underlined.

Maximum application rate

- *This substance must not be applied at rates exceeding 500 mL of formulated product/ha per application (equivalent to 200 g flufenacet/ha and 100 g diflufenican/ha).*
- *This substance must not be applied to the same area more than once per year.*

Controls to protect non-target vegetation

- *No person may apply this substance in a manner that results in adverse effects to non-target plants outside the application area.*
- *A five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation.*

Mandatory downwind buffer zone and spray quality controls

- *For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies:*
 - *eight metres, when the substance is applied at 401 – 500 mL/ha*
 - *four metres, when the substance is applied at 301 – 400 mL/ha*
 - *two metres, when the substance is applied at \leq 300 mL/ha*
- *This substance must be applied using a medium or coarser droplet size³.*

Labelling controls

- *This substance must not be applied onto or into water.*
- *The method of application of this substance is limited to ground based application only.*
- *Persons applying this substance must not cause adverse effects to:*
 - *any water body, or*
 - *non-target plants outside the application area.*

Maximum application rate

- *This substance must not be applied at rates exceeding 500 mL of formulated product/ha per application (equivalent to 200 g flufenacet/ha and 100 g diflufenican/ha).*
- *This substance must not be applied to the same area more than once per year.*

Management of spray drift

- ***DO NOT*** *apply this substance when wind speeds are less than 3 km/hr or more than 20 km/hr as measured at the application site.*
- *Spraying equipment must be calibrated to deliver medium or coarser droplets as defined by the American Society of Agricultural and Biological Engineers ASABE Standard (S572) or the British Crop Production Council guideline.*
- *For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies:*
 - *eight metres, when the substance is applied at 401 – 500 mL/ha*
 - *four metres, when the substance is applied at 301 – 400 mL/ha*
 - *two metres, when the substance is applied at \leq 300 mL/ha*

³ The quality of the spray is defined according to the American Society of Agricultural & Biological Engineers (ASABE) droplet size classification scheme and is consistent with the British Crop Protection Council (BCPC) classification scheme, as presented in the New Zealand Standard: Management of Agrichemicals (NZS 8409:2004).

- *To protect non-target plants outside the application area, a five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation.*
- *Due to local conditions the downwind buffer zones may not provide adequate protection in some circumstances. Persons applying the substance must take into account site-specific conditions at the application site on the day of application and amend the size of the buffer zone as required.*

6. Consideration and Decision

- 6.1. Pursuant to section 63A of the Act, the Committee considered this application to amend the approval of a hazardous substance. In doing so, the Committee applied the relevant sections of the Act and clauses of the Hazardous Substances and New Organisms (Methodology) Order 1998.
- 6.2. The Committee considered that, with controls in place, there are negligible benefits, costs and risks associated with the application of Firebird at 700 mL/ha and therefore determined that the benefits of applying Firebird at 700 mL/ha do not outweigh the risks. However, the Committee considered that with controls in place, the risks and costs presented by the application of Firebird at 500 mL/ha are negligible, and are outweighed by the benefits associated with the application of Firebird at this rate.
- 6.3. Therefore, the Committee approved the increase of the maximum application rate of Firebird, to allow application at up to 500 mL/ha, once per year, in accordance with clause 26 and with the controls as listed in Appendix A.



Dr Nick Roskrug

Date: 30 May 2016

Chair, Decision Making Committee
Environmental Protection Authority

Appendix A: Controls applying to Firebird

Please refer to the Hazardous Substances Regulations⁴ for the requirements prescribed for each control.

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

Code	Regulation	Description	Variation
T1	11 – 27	Limiting exposure to toxic substances	No TEL values are set at this time. The following ADE and PDE values are set for flufenacet: ADE = 0.012 mg/kg bw/day PDE_{food} = 0.008 mg/kg bw/day PDE_{drinking water} = 0.002 mg/kg bw/day The following Acute Reference Dose is set for flufenacet: ARfD = 0.017 mg/kg bw/day.
T2	29, 30	Controlling exposure in places of work through the setting of WES values	The EPA adopts as WES values for this substance, and each component of this substance, any applicable value specified in WorkSafe New Zealand's Workplace Exposure Standards and Biological Exposure Indices Document; 7 th Edition; February 2013 ⁵
T4 / E6	7	Requirements for equipment used to handle substances	Controls T4 and E6 are combined.
T5	8	Requirements for protective clothing and equipment	
T7	10	Restrictions on the carriage of toxic or corrosive substances on passenger service vehicles	
E1	32 – 45	Limiting exposure to ecotoxic substances	No EEL values are set at this time and the default EEL values are deleted.
E2	46 – 48	Restrictions on use of substances in application areas	As no EELs have been set, no application rate is required to be set under this control at this time. However, an application rate is set as an additional control under Section 77A (see below).
E5	5(2), 6	Requirements for keeping records of use	
E7	9	Approved handler/security requirements for certain ecotoxic	The following control is substituted for Regulation 9(1) of the Hazardous Substances (Classes 6,8 and 9 Controls)

⁴ The regulations can be found on the New Zealand Legislation website; <http://www.legislation.co.nz>

⁵ Or any subsequent version of this Standard approved or endorsed by the EPA.

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Code	Regulation	Description	Variation
		substances	Regulations 2001: (1) <i>This substance must be under the personal control of an approved handler when the substance is:</i> (a) <i>applied in a wide dispersive manner; or</i> (b) <i>used by a commercial contractor.</i>

Hazardous Substances (Identification) Regulations 2001

Code	Regulation	Description	Variation
I1	6, 7, 32 – 35, 36(1) – (7)	Identification requirements, duties of persons in charge, accessibility, comprehensibility, clarity and durability	
I3	9	Priority identifiers for ecotoxic substances	
I8	14	Priority identifiers for toxic substances	
I9	18	Secondary identifiers for all hazardous substances	
I11	20	Secondary identifiers for ecotoxic substances	
I16	25	Secondary identifiers for toxic substances	
I17	26	Use of generic names	
I18	27	Requirements for using concentration ranges	
I19	29 – 31	Additional information requirements, including situations where substances are in multiple packaging	
I20	36(8)	Durability of information for class 6.1 substances	
I21	37 – 39, 47 – 50	General documentation requirements	
I23	41	Specific documentation requirements for ecotoxic substances	
I28	46	Specific documentation requirements for toxic substances	
I29	51, 52	Signage requirements	
I30	53	Advertising corrosive and toxic substances	

Hazardous Substances (Packaging) Regulations 2001

Code	Regulation	Description	Variation
P1	5, 6, 7(1), 8	General packaging requirements	
P3	9	Criteria that allow substances to be packaged to a standard not meeting Packing Group I, II or III criteria	
P13 P15	19 21	Packaging requirements for toxic and ecotoxic substances	Controls P13 and P15 are combined.
PG3	Schedule 3	Packaging requirements equivalent to UN Packing Group III	
PS4	Schedule 4	Packaging requirements as specified in Schedule 4	

Hazardous Substances (Disposal) Regulations 2001

Code	Regulation	Description	Variation
D4 D5	8 9	Disposal requirements for toxic, corrosive and ecotoxic substances	Controls D4 and D5 are combined
D6	10	Disposal requirements for packages	
D7	11, 12	Information requirements for manufacturers, importers and suppliers, and persons in charge	
D8	13, 14	Documentation requirements for manufacturers, importers and suppliers, and persons in charge	

Hazardous Substances (Emergency Management) Regulations 2001

Code	Regulation	Description	Variation
EM1	6, 7, 9 – 11	Level 1 information requirements for suppliers and persons in charge	
EM6	8(e)	Information requirements for toxic substances	
EM7	8(f)	Information requirements for ecotoxic substances	
EM8	12 – 16, 18 – 20	Level 2 information requirements for suppliers and persons in charge	
EM11	25 – 34	Level 3 emergency management requirements: duties of person in charge, emergency response plans	
EM12	35 – 41	Level 3 emergency management requirements: secondary containment	The following subclauses are added after subclause (3) of regulation 36:

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Code	Regulation	Description	Variation
			<p>(4) For the purposes of this regulation, and regulations 37 to 40, where this substance is contained in pipework that is installed and operated so as to manage any loss of containment in the pipework it—</p> <p>(a) is not to be taken into account in determining whether a place is required to have a secondary containment system; and</p> <p>(b) is not required to be located in a secondary containment system.</p> <p>(5) In this clause, pipework—</p> <p>(a) means piping that—</p> <p>(i) is connected to a stationary container; and</p> <p>(ii) is used to transfer a hazardous substance into or out of the stationary container; and</p> <p>(b) includes a process pipeline or a transfer line.</p> <p>The following subclauses are added at the end of regulation 37:</p> <p>(2) If pooling substances which do not have class 1 to 5 hazard classifications are held in a place above ground in containers each of which has a capacity of 60 litres or less—</p> <p>(a) if the place's total pooling potential is less than 20,000 litres, the secondary containment system must have a capacity of at least 25% of that total pooling potential:</p> <p>(b) if the place's total pooling potential is 20,000 litres or more, the secondary containment system must have a capacity of the greater of—</p> <p>(i) 5% of the total pooling potential; or</p> <p>(ii) 5,000 litres.</p> <p>(3) Pooling substances to which subclause (2) applies must be segregated where appropriate to ensure that leakage of one substance may not adversely affect</p>

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Code	Regulation	Description	Variation
			<p><i>the container of another substance.</i></p> <p>The following subclauses are added at the end of regulation 38:</p> <p>(2) <i>If pooling substances which do not have class 1 to 5 hazard classifications are held in a place above ground in containers 1 or more of which have a capacity of more than 60 litres but none of which have a capacity of more than 450 litres—</i></p> <p>(a) <i>if the place's total pooling potential is less than 20,000 litres, the secondary containment system must have a capacity of either 25% of that total pooling potential or 110% of the capacity of the largest container, whichever is the greater:</i></p> <p>(b) <i>if the place's total pooling potential is 20,000 litres or more, the secondary containment system must have a capacity of the greater of—</i></p> <p style="padding-left: 40px;"><i>(i) 5% of the total pooling potential;</i> <i>or</i> <i>(ii) 5,000 litres</i></p> <p>(3) <i>Pooling substances to which subclause (2) applies must be segregated where appropriate to ensure that the leakage of one substance may not adversely affect the container of another substance.</i></p>
EM13	42	Level 3 emergency management requirements: signage	

Hazardous Substances and New Organisms (Personnel Qualifications) Regulations 2001

Code	Regulation	Description	Variation
AH 1	4 – 6	Approved Handler requirements (including test certificate and qualification requirements)	Refer to control E7

Hazardous Substances (Tank Wagons and Transportable Containers) Regulations 2004

Code	Regulation	Description	Variation
Tank Wagon	4 – 43, as applicable	Controls relating to tank wagons and transportable containers	

Additional controls

Code	Section of the Act	Control
Water	77A	This substance must not be applied onto or into water
Application method	77A	The method of application of this substance is limited to ground based application only. This substance must be applied using medium or coarser spray droplets ⁶ .
Application rate	77A	This substance must not be applied at rates exceeding 500 mL of formulated product/ha per application (equivalent to 200 g flufenacet/ha and 100 g diflufenican/ha). This substance must not be applied to the same area more than once per year.
Spray drift (aquatic)	77A	No person may apply this substance in a manner that results in adverse effects to a water body.
Spray drift (non-target vegetation)	77A	No person may apply this substance in a manner that results in adverse effects to non-target plants outside the application area.
Buffer zone (aquatic)	77A	For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies: <ul style="list-style-type: none"> - eight metres, when the substance is applied at 401 – 500 mL/ha - four metres, when the substance is applied at 301 – 400 mL/ha - two metres, when the substance is applied at ≤ 300 mL/ha
Buffer zone (non-target vegetation)	77A	A five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation.
Label	77A	The following statements, or words to the same effect, must appear on the product label and safety data sheet: <ul style="list-style-type: none"> • The method of application of this substance is limited to ground based application only. • Persons applying this substance must not cause adverse effects to: <ul style="list-style-type: none"> ○ any water body, or ○ non-target plants outside the application area. <p><i>Maximum application rate</i></p> <ul style="list-style-type: none"> • This substance must not be applied at rates exceeding 500 mL of formulated product/ha per application (equivalent to 200 g flufenacet/ha and 100 g diflufenican/ha). • This substance must not be applied to the same area more than once per year. <p><i>Management of spray drift</i></p> <ul style="list-style-type: none"> • DO NOT apply this substance when wind speeds are less than 3 km/hr or more than 20 km/hr as measured at the application site. • Spraying equipment must be calibrated to deliver medium or coarser droplets as defined by the American Society of Agricultural and Biological

⁶ The quality of the spray is defined according to the American Society of Agricultural & Biological Engineers (ASABE) droplet size classification scheme and is consistent with the British Crop Protection Council (BCPC) classification scheme, as presented in the New Zealand Standard: Management of Agrichemicals (NZS 8409:2004).

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		<p>Engineers ASABE Standard (S572) or the British Crop Production Council guideline.</p> <ul style="list-style-type: none"> • For the protection of aquatic organisms, the following buffer zones must be observed from downwind water bodies: <ul style="list-style-type: none"> ○ eight metres, when the substance is applied at 401 – 500 mL/ha ○ four metres, when the substance is applied at 301 – 400 mL/ha ○ two metres, when the substance is applied at \leq 300 mL/ha • To protect non-target plants outside the application area, a five metre buffer zone must be observed for any area which may contain downwind non-target natural or planted vegetation. • Due to local conditions the downwind buffer zones may not provide adequate protection in some circumstances. Persons applying the substance must take into account site-specific conditions at the application site on the day of application and amend the size of the buffer zone as required.
Stationary Container Systems	Schedule 8	The controls relating to stationary container systems, as set out in Schedule 8 of the Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances) Transfer Notice 2004 (Supplement to the New Zealand Gazette, 26 March 2004, No. 35, page 767), as amended, apply to this substance, notwithstanding clause 1(1) of that schedule.

Definitions

Unless defined below, terms used in the controls have the same meaning as defined in the Act or regulations made under the Act.

Term	Definition
a.i	Active ingredient - the biologically active chemical in a pesticide product
Droplet size	The quality of the spray is defined according to the American Society of Agricultural & Biological Engineers (ASABE) droplet size classification scheme and is consistent with the British Crop Protection Council (BCPC) classification scheme, as presented in the New Zealand Standard: Management of Agrichemicals (NZS 8409:2004).
Ground-based application	Ground-based methods of applying pesticides include, but are not limited to, application by ground boom, airblast or knapsack, and do not include aerial application methods.
Water	Means water in all its physical forms, whether flowing or not, and whether over or under ground, but does not include water in any form while in a pipe, tank or cistern or water used in the dilution of the substance prior to application.
Water body	Includes all natural and modified/artificial water courses such as reservoirs, irrigation canals, water-supply races, canals for the supply of water for electricity generation or farm drainage, ditches, streams, rivers, ponds and lakes. For clarity, it excludes fully covered pipes, tanks or other enclosed structures, puddles or groundwater.
Wide dispersive	Refers to activities which deliver uncontrolled exposure - also refer to: http://www.epa.govt.nz/Publications/ER-IS-33-2.pdf