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Subject: FW: APP204199 - Reassessment of Diazinon, fenamiphos and methamiphidos
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Importance: High

Tēnā koe

Please find attached our submission to application APP204199 on behalf of Te Rūnanga o Ngāi Tahu.

If you have any queries, please do not hesitate to contact me.

Mauri ora

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Te Rūnanga o Ngāi Tahu

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Te Rūnanga o NGĀI TAHU

ki te

ENVIRONMENTAL PROTECTION AUTHORITY

e pā ana ki te

SUBMISSION ON APP204199

Reassessment of Diazinon, Fenamiphos and Methamidophos

Date: 2/11/21

Authors:



Sponsored by , General Manager Te Ao Turoa, Te Rūnanga o Ngāi Tahu

Mihimihi

This mihimihi is taken from Te Whakatau Kaupapa

He tapa tu a ko i uta
He tapa tu a ko i tai
He tapa tu a Tane
He tapa tu a Tangaroa
He kaha ko i uta
He kaha ko i tai
He kaha a Tane
He kaha a Tangaroa
Hei tapa tu a Tane
Hei tapa tu a Tangaroa

Ko o matou whakaaro ki te whenua
Nga roto, nga awa, te moana
Hei here i a tatou
O nga tuputupunga
o Te Aka O Tu Whenua
Hei whakatō whakatipu
I nga mahinga kai a te iwi

Ko o mātou tūmanako
Te tatu o te mātauranga
O nga whakaaro
Hei here ai a Iwi, a mana
Ka whakapuakina
Ka marino ai te wa
O te whakaaro kotahi
Kia tau ki uta
Tenei waka tūmanako
Tenei waka aroha
Kia tau te Rangimarie

Ko Aoraki te maunga
Ko nga wai huka e rere ana
Ko nga waitapu
Ko Ngāi Tahu te Iwi
Tenei te tangi
O nga whakatupuranga
O Ngāi Tahu Whanui
Kia koutou, nga iwi
O nga marae maha
Kia ora tatou e tau nei

The inland boundaries have been defined
The sea coast has been defined
Tane is responsible for the interior
Tangaroa is responsible for the sea
The inland areas are important
The coastal areas are important
Tane's influence is very strong
Tangaroa's influence is very strong
Tane stands for the land
Tangaroa stands for the sea

Our thoughts are to the land
To the lakes, the rivers and the sea
That bind us together
To preserve the well-being
Of the vines of Tu Whenua
That gave rise to
the people's food gathering places

Our hopes are that
The doors of knowledge
And the doors of thought
That have held or people and our authority
captive, Will be opened
That the waters of the thoughts be calmed and
settled, as one thought
That this canoe of hope
That this canoe of love
May reach shore safely
And that peace may prevail

Aoraki is the mountain
The snow-fed rivers
Are the sacred streams
Ngai Tahu are the people
This is the call
Of the rising generations
Of the Ngai Tahu people
To you, the people
Of the many marae
Greetings to you all

Whakatauki (Proverb)

”Te Toto o te tangata, he kai; te oranga o te tangata e whenua”

While food provides the blood in our veins, our health is drawn from the land

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1 Tāhuhu Korero (Introduction)

Ngāi Tahu HSNO Kōmiti

The Te Rūnanga o Ngāi Tahu HSNO Committee is mandated by Te Rūnanga o Ngāi Tahu. The members of the committee are appointed by Te Rūnanga based on their knowledge and expertise in the areas of hazardous substances and new organisms.

Ngāi Tahu Values

All Te Runanga o Ngai Tahu activities are informed by the following values:

Whanaungatanga (family)

Respect, foster and maintain important relationships within the organisation, within the iwi and within the community.

Manaakitanga (looking after our people)

Respect each other, iwi members and all others in accordance with our tikanga (customs).

Tohungatanga (expertise)

Pursue knowledge and ideas that will strengthen and grow Ngāi Tahu and our community.

Kaitiakitanga (stewardship)

Work actively to protect the people, environment, knowledge, culture, language and resources important to Ngāi Tahu for future generations.

Tikanga (appropriate action)

Strive to ensure that Ngāi Tahu tikanga of is actioned and acknowledged in all of our outcomes.

Rangatiratanga (leadership)

Strive to maintain a high degree of personal integrity and ethical behaviour in all actions and decisions we undertake.

2 Statutory obligations to Ngāi Tahu

This response is made on behalf of Te Rūnanga o Ngāi Tahu (Te Rūnanga). Te Rūnanga is statutorily recognised as the representative tribal body of Ngāi Tahu Whānui and was established as a body corporate on 24th April 1996, under section 6 of Te Rūnanga o Ngāi Tahu Act 1996 (the Act). We note the following relevant provisions of our constitutional documents:

Section 3 of the Act: This Act binds the Crown and every person (including any body politic or corporate) whose rights are affected by any provisions of this Act.

Section 15(1) of the Act: Te Rūnanga o Ngāi Tahu shall be recognised for all purposes as the representative of Ngāi Tahu Whānui.

The Charter of Te Rūnanga o Ngāi Tahu (1993, as amended) constitutes Te Rūnanga as the kaitiaki of the tribal interest.

Te Rūnanga respectfully requests that this response is accorded the status and weight due to the tribal collective, Ngāi Tahu Whānui, currently comprising over 70,000 members registered in accordance with section 8 of the Act.

Under the HSNO Act, the environmental and cultural health and well-being of Māori, and Treaty of Waitangi outcomes and values, must be taken into account when making decisions about introducing and using hazardous substances or new organisms into New Zealand.

Section 5(b) of the Act provides (amongst other things) for the:

“Maintenance and enhancement of the capacity of people and communities to provide for their own economic, social and cultural well-being”.

Section 6(d) of the Act requires that the Environmental Protection Authority of New Zealand (EPA), when exercising functions under the Act, take into account: “The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga”.

Section 8 of the Act requires that all persons exercising functions under the Act take into account: “...the Principles of the Treaty of Waitangi” including the recognition of the special relationship between the Crown and tangata whenua.

3 Description of Application APP204199

This application is seeking an extension for the phasing out of three pesticides: Diazinon, Fenamiphos and Methamidophos. These insecticides were subject to a reassessment in 2013 and the industry was given 10-15 years to seek alternatives. The proposed timeframes sought would extend Diazinon usage to 2038, and Fenamiphos and Methamidophos to 2033. The applicant asserts that no alternatives exist for these chemicals and they are crucial for crop protection programs.

Diazinon is a broad-spectrum insecticide that works by inhibiting nerve function via the acetylcholinesterase pathway, which is found in all vertebrates and invertebrates. It is therefore non-selective in its impact and doesn't distinguish between beneficial insects and pest species. Furthermore, it has been shown to be highly toxic to waterfowl and has significant impacts on human health should exposure occur. Diazinon is highly mobile in soil and persistent in the environment, lasting weeks to months before degradation.¹ Multiple alternatives exist to diazinon: grass grub can be controlled through a mixture of biological (Bioshield) and chemical (seed treatment) options, citrus whitefly can be controlled by Spirotetramat or mineral oil. Spirotetramat also is an effective control for scale, thrips, and mealy bug. Diazinon use is not approved in the EU due to concerns around human health and environmental impacts.

Fenamiphos also is an insecticide that works by inhibiting nerve function via the acetylcholinesterase pathway. It is also a non-specific organophosphate but is primarily used in New Zealand for nematode control. Fenamiphos is highly ecotoxic and breaks down into metabolites which also have a high degree of toxicity². Studies have also shown that Fenamiphos is highly mobile in soil and can leech to groundwater³. Multiple non-chemical control options exist for nematode control, including carbamate oxamyl, crop rotation and good sanitation practises of equipment, and telone C35 (a soil fumigant developed in New Zealand). Fenamiphos is currently being phased out in US and China and there has been a significant reduction in its use in Australia.

Methamidophos is also a non-specific organophosphate that works by inhibiting nerve function via the acetylcholinesterase pathway. It is used as a broad-spectrum insecticide against chewing and sucking insects (e.g. armyworm, aphids, thrips). It is acutely toxic to bees, birds, fish and aquatic invertebrates. Its formulation is water soluble and therefore it is highly susceptible to run-off. In water Methamidophos has a half-life of 309 days, increasing the potential for taonga aquatic species to be exposed. Registration of Methamidophos has been cancelled in the US, EU and has been phased out in Australia.

¹ Burkepille, D. E., Moore, M. T., & Holland, M. M. (2000). Susceptibility of five nontarget organisms to aqueous diazinon exposure. *Bulletin of environmental contamination and toxicology*, 64(1), 114-121.

² EFSA (European Food Safety Authority), 2019. Conclusion on the peer review of the pesticide risk assessment of the active substance fenamiphos. *EFSA Journal* 2019;17(1):5557, 26 pp. <https://doi.org/10.2903/j.efsa.2019.5557>

³US EPA (2001), Fenamiphos Environmental Risk Assessment, https://archive.epa.gov/pesticides/reregistration/web/pdf/fenamiphos_red.pdf

4 Discussion of original reassessment (APP201045)

The reassessment and gradual phasing out of Diazinon, Fenamiphos and Methamidophos was supported by the Ngāi Tahu HSNO Kōmiti when the original reassessment occurred in 2013. This position was based on the risks to native fauna, especially bees and waterfowl. Concerns were raised about the lack of information on the impacts on mahinga kai species. The current HSNO kōmiti shares this position.

5 Position of Te Rūnanga o Ngāi Tahu on Application APP204199

Te Rūnanga o Ngāi Tahu holds concerns over an already widespread and extensive use of toxic agrichemicals in the horticultural and agricultural sectors. The burden that they and their breakdown products place on the terrestrial and aquatic environments is unacceptable. The kōmiti advocates for the removal of older formulas with high toxicity to reduce the overall chemical burden on the environment. The toxicity of organophosphate pesticides makes their use pattern unacceptable given their impact on taonga species, hauora and the ecosystem.

We do not feel that the applicant gives a compelling argument for an extension in the phase out of Diazinon, Fenamiphos, and Methamidophos. The applicant is correct in their statement that many of these more targeted options are less efficacious, but more targeted solutions will always have a “softer” mode of action when compared to the “scorched earth” efficiency of organophosphates.

The applicant also does not provide any new information around the risks or safety of using these chemicals, nor do they suggest a safer use pattern for them. As multiple studies have been conducted around the environmental and human health impacts of organophosphates since the original 2013 risk assessment, we no longer view it as adequate and indeed suspect the risks are higher than initially assessed.

For these reasons, we oppose the reassessment of APP204199. We wish to be heard in support of our application.

6 Reasons for position on application APP204199

We approach this application under a Kaupapa Māori lens, that includes assessment of the effects of biocontrol method in five key areas. These include Te Aō Tūroa, Ōhanga, Hauora, Tikanga ā iwi, Te Tiriti o Waitangi.

Te Ao Tūroa (Environment)

Te Ao Tūroa refers to the natural world, encompassing taonga species, te mana o te wai (all water bodies, ie: sea, freshwater, wetlands, estuaries), ngahere (native forest, bush), ecosystems and biodiversity.

Pesticides are an emerging groundwater contaminant of significance. A recent ESR study into groundwater contaminants found pesticide residues in 32% of the Canterbury wells sampled. Of these samples seven insecticides were detected including Diazinon⁴. Given this, any future risk assessments undertaken should consider the impacts to groundwater and the risk of groundwater contamination.

Broad spectrum insecticides cause irreparable harm to the ecosystem. Many taonga species are reliant on invertebrates for sustenance (native fish are obligate carnivores), and their removal from the food web can have catastrophic impacts on bird and fish populations. Furthermore, the reduction of beneficial insects in the environment can allow for the unchecked growth of pest species, resulting in greater pesticide usage. Many aquatic macroinvertebrates are already threatened due to urban stream syndrome and agricultural runoff making them more susceptible to chemical toxicity. Multiple studies have shown that diazinon has a significant negative impact on beneficial (non-target) insects⁵ and is highly toxic to zooplankton. This is also true for Fenamiphos and Methamidophos as they act on the same pathway.

The original risk assessment conducted by the EPA assumed that aquatic ecology would only be exposed by spray drift and failed to account for runoff and soil motility/erosion. This would have decreased the potential exposure of aquatic species to organophosphates and therefore resulted in a lower perceived risk.

Ōhanga (Economy)

The Ngāi Tahu economy allows for self-determination of Papatipu Rūnanga in the realisation of their aspirations. Specifically, we refer to the farming, forestry, and tourism industries where Ngāi Tahu and Papatipu rūnanga have major share-holding investments and interests.

Diazinon, Fenamiphos and Methamidophos are utilised as crop protection products to prevent economic loss through insect damage of key crops. Given the toxicity of these products, the economic benefits delivered is significantly outweighed by the environmental cost. The whakataukī “Toitū te Marae o Tāne, Toitū te Marae o Tangaroa, Toitū te Iwi” – When land and water are sustained the people will prosper, explains that there is an economic cost to environmental harm.

Hauora (Public Health)

The health and wellbeing of Ngāi Tahu whanau is interconnected with the health of the environment, in that mahinga kai (traditional food), and rongoa (traditional medicine) sources need to be free of toxins. Taonga – tuku – iho are prized resources passed down through the

⁴ ESR (2018) National Survey of Pesticides and EOC's in Groundwater; [National-Survey-of-Pesticides-and-EOCs-in-GW-Report-for-RC-v2.pdf \(esr.cri.nz\)](#)

⁵ Frouz, J. (1999). Use of soil dwelling Diptera (Insecta, Diptera) as bioindicators: a review of ecological requirements and response to disturbance. *Agriculture, ecosystems & environment*, 74(1-3), 167-186.

generations which Nga Papatipu Runanga in particular, continue to access and utilise for mahinga kai, medicinal purposes, for producing woven products and other uses.

The original risk assessment conducted by the EPA does not adequately quantify the risks that organophosphates pose to human health. In 2015 the International Agency for Research on Cancer (IARC) classified diazinon as a suspected carcinogen which has been proven through multiple recent studies⁶. Māori adults have a significantly higher cancer rate (1.25 times the national average), and a cancer mortality rate 1.79 times the national average. Exposure to carcinogens through pesticide residues, spray drift or run-off is therefore of significant concern. The risk of whanau coming into contact with pesticide residues is higher than average as many mahinga kai sites are adjacent to rural agriculture.

Kaitiakitanga (Guardianship)

Kaitiakitanga is about our responsibility as Te Rūnanga o Ngāi Tahu, both tribally and in our communities, to assess the cultural acceptability of a proposed activity. We are a part of the landscape and therefore have a responsibility to ensure its sustenance for this generation and for those to come.

The relationship between kaitiaki and taonga can be layered and complex. Different kaitiaki have different degrees of responsibility for taonga such as the kaitiaki of plants and mātauranga associated with them. The kaitiaki relationship can relate to the sustainability of the taonga itself, or its components within the taonga that make it up, or to species, biota and environment surrounding the taonga.

The degradation of the environment through chemical overburden is of significant concern to the principles of kaitiakitanga as species loss in rural catchments can take multiple generations to restore.

Te Tiriti o Waitangi (Treaty Principles)

The Crown has an obligation to honour the Waitangi Treaty principles of Partnership, Participation and Protection.

The Ngai Tahu Settlement Act explicitly lists flora and fauna that are considered taonga to the iwi. This is not intended to be an exhaustive list, as any organism sourced within Ngai Tahu takiwā may be considered taonga, and at a minimum require some level of consultation.

Consultation with Treaty partner TRONT/ Ngā Papatipu rūnanga in relation to their taonga and the proposed application requires contact in the earliest stages of the application process

⁶ Jones, R. R., Barone-Adesi, F., Koutros, S., Lerro, C. C., Blair, A., Lubin, J., ... & Freeman, L. E. B. (2015). Incidence of solid tumours among pesticide applicators exposed to the organophosphate insecticide diazinon in the Agricultural Health Study: an updated analysis. *Occupational and environmental medicine*, 72(7), 496-503.

Khalili Tanha, G., Barzegar, A., Shokrzadeh, M., Nikbakhsh, N., & Ansari, Z. (2020). Correlation between serum concentration of diazinon pesticide and breast cancer incidence in Mazandaran Province, northern Iran. *Caspian Journal of Environmental Sciences*, 18(3), 197-204.

through to its submission and, if approved, mutual agreement on conditions and ongoing monitoring mechanisms to ensure beneficial outcomes are achieved.

The Ngāi Tahu HSNO kōmiti is disappointed that the applicant did not follow up a request for consultation with Māori, despite lodging this request during the 2020 Christmas period. Furthermore, the application fails to discuss the impact continued use of these chemicals will have on taonga species given the pressures they currently face, but rather relies on a risk assessment conducted eight years prior.

7 Conclusions

We do not support the extension of the phase-out deadlines for diazinon, Fenamiphos and Methamidophos as we believe that suitable alternatives exist to these chemicals for agricultural insect control. Furthermore, we believe that the initial risk assessment and therefore controls on use for these chemicals is no longer sufficient given the new information on environmental and human health impacts.

8 Recommendation

We recommend that this application be declined