



TOI TE ORA PUBLIC HEALTH

Bay of Plenty + Lakes Districts



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Air Quality NES Consultation
Ministry for the Environment
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Submission to proposed amendments to the National Environmental Standards (NES) for Air quality: particulate matter and mercury emissions

Introduction

District Health Boards are required by the Public Health and Disability Act 2000 to improve, promote, and protect the health of people and communities, to promote the inclusion and participation in society and independence of people with disabilities and to reduce health disparities by improving health outcomes for Māori and other population groups.

This submission has been prepared by Toi Te Ora Public Health (Toi Te Ora) which is the Public Health Unit for both Bay of Plenty District Health Board and Lakes District Health Board (the DHBs).

Public health approaches wellbeing and health in terms of the social, economic, cultural, environmental and political context and from a “determinants of health” perspective. Many of the factors that determine health are directly influenced by the decisions and activities of Government, which is why it is important New Zealand has fit for purpose legislation for air quality.

Designated officers within Toi Te Ora have responsibilities to reduce conditions within the local community which are likely to cause disease. Given air pollution is known to cause disease, this includes providing input to the Ministry for the Environment on national environmental standards for air quality (NESAQ).

This submission aims to provide objective and independent input to assist with continually improving the guaranteed minimum level of health protection from air pollutants for all of New Zealand.

Scientific understanding and evidence has improved about the health impacts of particular matter. The DHBs welcome this opportunity to inform changes to New Zealand’s air quality standards, including better targeting of controllable sources of air pollution.

The DHBs including designated officers within Toi Te Ora could not gain any financial or other interest in business that may be affected, positively or negatively as a result of the proposed amendments to the NES for Air Quality.

Submission

The quality of the air we breathe is largely beyond the control of individuals and an individual cannot avoid breathing. A person breathes thousands of litres per day at rest and a lot more when physically active.

Ko ahau te taiao, ko te taiao, ko ahau (the ecosystem defines our quality of life). A healthy environment is integral to tāngata whenua. It is a tāonga (treasure) under Article II of Te Tiriti o Waitangi, and needs to be protected as part of Treaty obligations. Iwi, hapū and whānau provide guidance to act as kaitiaki (guardians) to preserve the mauri (life force) of Papatūānuku. Any degradation of the natural environment, especially the quality of the air we breathe, or our relationship with the environment, can weaken this connection and have consequences for Toi Ora (flourishing health and wellbeing for all).¹²

The current air quality management framework has not been working and has failed to protect public health. This is evident locally with another airshed gazetted polluted in the Bay of Plenty recently. The cumulative effect of permitted discharges, insufficient monitoring and the inability to effectively enforce discharges led to this situation. The Medical Officer of Health needed to commission independent monitoring and a health risk assessment to demonstrate an adverse environmental effect. This should not be necessary when regulatory authorities are managing air emissions safely.

For these reasons, every effort must be taken to continuously improve ambient air quality.

Current evidence informs us that the adverse health effects of exposure to elevated short and long-term concentrations of particulate matter are severe (excess mortality), with no safe threshold.

The WHO Air Quality Guidelines represent the most widely accepted and up-to-date assessment of health effects of air pollution. The DHBs' overall position is one of support for the WHO guidelines and the DHBs recommend their direct adoption into the NESAQ. DHBs

¹ Lakes District Health Board, Built Environment position statement 13 March 2020

<http://www.lakesdhb.govt.nz/Resource.aspx?ID=50193> and Bay of Plenty District Health Board, Built Environment position statement, 18 March 2020

https://www.bopdhb.govt.nz/media/63307/20191105_bopdhb_builtenvironmentspositionstatement_final.pdf

² Ministry for the Environment (2015) Māori relationship with the environment. Retrieved from <https://www.mfe.govt.nz/publications/environmental-reporting/environment-aotearoa-2015-ournew-reporting-approach/m%C4%81ori>

also recommend the Ministry for the Environment adopt the WHO guidelines for both daily and annual PM_{2.5} and PM₁₀ as ambient standards in the NESAQ.

It is important to note that the epidemiological evidence indicates that the possibility of adverse health effects remains even if the WHO Air Quality Guideline values are achieved. The DHBs consider it critical and therefore recommend that New Zealand's ambient air quality standards be recognised as a *minimum* acceptable limit; to improve health, ambient concentrations should be reduced as far as practicable.

Introduce PM_{2.5} as the primary regulatory tool to manage particulate matter pollution

Q1. Do you agree the proposed PM_{2.5} standards should replace the PM₁₀ standard as the primary standard for managing particulate matter?

Yes, the DHBs agree in part. Particle size is important because it dictates transport and removal processes in the air, deposition sites and clearance pathway within the respiratory tract and ultimately the type and extent of health impact when inhaled. All particulate matter irrespective of size can harm health. Bearing this in mind, the DHBs agree that PM_{2.5} should be the primary regulatory standard to manage particulate matter, however the DHBs consider it important and recommend that the PM₁₀ standard should also be retained.

The DHBs recommend that clear monitoring and compliance requirements for PM₁₀ be included in the proposed amendments. This will enable the regulatory authorities to have the necessary tools to effectively manage air pollution and protect health.

Q2. Do you agree we should include both a daily and an annual standard for PM_{2.5}?

Yes, the DHBs agree with this proposal because both short and long-term exposure to particulate matter harms health. The 24-hour average provision will mean that health will be protected from elevated acute exposure, which annual averaging alone will not detect. For instance when monitoring against only an annual average; seasonal and short-term exceedances will not be identified. This is particularly relevant when the proposed amendments seek to better target controllable sources of air pollution. The inclusion of both daily and annual standards will also support councils to manage and control both short-term and long-term exposures, and their sources. This will enable councils to effectively manage and enforce the NES through their regional air quality plans.

Therefore, the DHBs support both a daily and an annual standard for PM_{2.5}. However, the DHBs consider this does not go far enough and request:

- i. The existing daily PM₁₀ standard (50 µg/m³ and equivalent to the WHO daily guideline for PM₁₀) be retained; and
- ii. The WHO annual PM₁₀ guideline also be adopted as an ambient standard in the NESAQ.

Q3. Do you agree the standards should reflect the WHO guidelines?

Yes, the DHBs agree. Air pollution is a local and global issue for public health. Addressing air pollution by reflecting world expert evaluation of scientific evidence will lead to the improvement of air quality locally. Adoption of the WHO daily and annual guidelines for PM₁₀

and PM_{2.5} as ambient standards in New Zealand directly supports the purpose of the RMA (safeguarding the life supporting capacity of the air) and the United Nations Sustainable Development Goals (improving climate and preventing environmental degradation).

Q4. Do you consider that your airshed would meet the proposed PM_{2.5} standards? If not, what emissions sources do you expect to be most problematic?

The DHBs have no comment on the achievability of compliance for airsheds in the Bay of Plenty. However, the DHBs do caution the Ministry that achievability should not be a consideration when setting the quantitative value of an ambient air quality standard for the purpose of protection of human health.

Retain the PM₁₀ standard with reduced mitigation requirements

Q5. Do you agree councils should be required to keep monitoring PM₁₀?

Yes, the DHBs agree. Monitoring is required to demonstrate performance against the minimum level of protection guaranteed for the protection of human health in New Zealand.

When there is insufficient or no PM_{2.5} monitoring, PM₁₀ monitoring needs to be continued to enable particulate matter to be managed. The Standards mandate which contaminants may not be discharged at levels that result in concentrations above the ambient standards (with permitted exceedances in Schedule 1).

Q6. What would be the additional costs involved in retaining PM₁₀ monitoring alongside PM_{2.5} monitoring, versus the potential loss of valuable monitoring information?

A loss of monitoring information would inhibit effective compliance and enforcement with the PM₁₀ standard resulting in adverse effects to human health.

Polluted airsheds

Q7. Do you agree an airshed should be deemed polluted if it exceeds either the annual or the daily PM_{2.5} standard?

Yes, the DHBs agree. In doing so the DHBs note that WHO recommended the daily PM_{2.5} guideline of 25 µg/m³ on the basis of 99th percentile of the distribution of daily values (i.e. no more than three exceedances per year, WHO, 2006).³ Further, WHO noted⁴ *meeting the guideline values for 24-hour mean should protect against peaks of pollution that would lead to substantial excess morbidity or mortality.*

Taken together, the proposed annual and daily PM_{2.5} standards provide WHO's scientific consensus on acceptable air quality concentrations for the protection of human health.

³ World Health Organisation, 2006. *Air Quality Guidelines Global Update 2005. Particulate matter, ozone, nitrogen dioxide and sulfur dioxide.* WHO Regional Office for Europe. Copenhagen. Denmark. Available at www.who.int. At page 278.

⁴ (WHO, 2006) *Ibid.* Page 279.

The DHBs also recommends that an airshed be deemed polluted if it exceeds the WHO annual guideline for PM₁₀ of 20 µg/m³ to be adopted as an ambient standard, or the existing daily PM₁₀ standard of 50 µg/m³ with one permitted exceedance in any 12-month period. This is because ambient concentrations of PM₁₀ above these internationally agreed acceptable limits also cause excessive mortality and morbidity.

Q8. If all new resource consent application to discharge PM_{2.5} into a polluted airshed must be offset or declined, how would this affect your activities, or activities in your region?

The DHBs support in part the proposal to cap the level of contamination in a polluted airshed; however, the DHBs consider that this approach does not go far enough.

There is no practical way of treating or cleaning air like we can treat water for drinking and therefore discharges to air are most effectively controlled at source.

Improving air quality in polluted airsheds, in turn, relies on councils having effective regulatory control to manage PM_{2.5} and PM₁₀ discharges to air. However, in the Bay of Plenty not all PM_{2.5} and PM₁₀ discharges require resource consent. Permitted activities may proceed provided no adverse effect on human health occurs. This puts the onus on the regional council to demonstrate an adverse effect has occurred. This approach is not protective of health because the adverse effect (e.g. breach of the ambient PM₁₀ or PM_{2.5} ambient standard) has already occurred. To assess the effects on a site by site basis alone does not allow for council to effectively manage the cumulative impact of discharges in polluted airsheds or prevent other airsheds from becoming polluted.

The DHBs consider that the National Environmental Standards for Air Quality set *minimum* acceptable standards for the protection of health and should not be seen as a target or endpoint. Ambient concentrations of PM₁₀ and PM_{2.5} below the proposed ambient standards will still be harming health.

Because both PM_{2.5} and PM₁₀ harm human health, the proposal to offset or decline discharges needs to include both particle sizes. For example, if only one ambient standard is being breached (i.e. the airshed already exceeds *either* the PM₁₀ or the PM_{2.5} ambient standard) then *either* PM₁₀ or PM_{2.5} discharges must be offset (or consent declined). Alternatively, if both the PM₁₀ and PM_{2.5} ambient standards are being breached then both new PM₁₀ discharges *and* new PM_{2.5} discharges must be offset (or consent declined).

While councils can make more stringent rules to manage discharges in polluted airsheds it is the DHBs' experience that the process is problematic and can take years to bring about change, prolonging harm to human health from a polluted airshed. Specific case examples are available on request.

The DHBs recommend that all (new and existing) discharges, regardless of whether resource consent is required, are managed and the cumulative impacts of multiple discharges in a polluted airshed are also managed to achieve the proposed ambient standards.

Q9. Can you identify a more appropriate, measurable threshold for controlling consented discharges in a PM_{2.5} context?

It is the ambient air quality that is important for the protection of health and the NES set minimum standards (bottom line). The ultimate goal of any control is to ensure that the minimum standards that protect health are not breached.

A practical approach however, could be that offsets are required for any new consented PM_{2.5} discharge that is greater than 5% of existing consented discharges already discharging into that polluted airshed. In this way the threshold shifts to council-controlled discharges (in tonnes/year) as opposed to an ambient concentration (in µg/m³). This could be an approach to prevent breaches rather than react to them.

This provides a path forward for new industry which is consistent with previous intent and approach, and places the responsibility on councils to regulate and manage industrial PM_{2.5} discharges.

This will likely also need a stipulation that in the case of a polluted airshed with no consented discharges, the new consent must be declined. This stipulation would remove an incentive for councils to make all activities permitted or controlled activities. It would also stop new industry going into existing airsheds polluted by only home heating.

Q10. Do you agree that if councils do not have adequate PM_{2.5} data, the airshed's classification under the PM₁₀ standards should apply?

The PM₁₀ standards should apply and must be supported by regulatory controls to enable councils to effectively manage discharges for the protection of human health – irrespective of compliance or otherwise with the proposed PM_{2.5} daily and annual standards.

Domestic solid-fuel burner emissions standard

Q11. Do you agree with the proposal to reduce the emissions standard to no more than 1.0g/kg? If not, what do you think the standard should be?

The DHBs do not agree with the proposal.

On the Ministry for the Environment⁵ website there are 321 wood and pallet burners on the approved burner list that meet the 1.0g/kg emission standard. 254 of the 321 are wood burners. On the same list there are 138 wood and pallet burners that have emission ratings below 0.60g/kg. Of the 138 burners 84 are wood burners that produce less than 0.6g/kg and many have water heating capability.

The DHBs recommend a more stringent emission standard of 0.60g/kg be applied across New Zealand.

⁵ <https://www.mfe.govt.nz/woodburners>

Setting a more stringent emission standard for burners would reduce the range of burners available however there would still be a wide range from multiple brands and price points. A stringent nationwide wood burner standard would further encourage the development of cleaner burners and promote improvement in air quality which in turn improves health for all communities.

Q12. Are there areas where a lower (more stringent) standard could be applied?

Polluted airsheds are areas where a lower standard could be applied. A more stringent standard could be applied throughout New Zealand. Rotorua Airshed emission standard for new and replacement wood burners is 0.60g/kg. Regardless of where a person lives, the wood burner purchased should meet this emission standard because this will promote the sustainable management of air and prevent harm to health before air is polluted and classified as a polluted airshed. On this basis, the DHBs recommend one emission standard of 0.60g/kg for burners throughout New Zealand.

A single, national standard is simpler, clearer and easier to enforce. These are not trivial matters when domestic home heating regulation is across 70 airsheds in 16 different regions. A more stringent, national standard is further consistent with a need to improve public health and not just meet minimum acceptable limits.

All domestic solid-fuel burners covered

Q13. Do you agree the new emissions standard should apply to all new domestic, solid-fuel burners newly installed on properties less than two hectares in size?

The DHBs agree that the new emission standards should apply to all new domestic burners provided the installation is transitional and required when existing burners are due for replacement or a new burner is installed.

Q14. Do the current methods to measure emissions and thermal efficiency need updating or changing? For example, to address any trade-off between thermal efficiency and emissions, or to test other types of burners or burner modifications that seek to reduce emissions?

No comment

Mercury emissions

Q15. Do you support the proposed amendments to the NESAQ to support ratification of the Minamata Convention on Mercury?

Yes, the DHBs support the proposal.

Q16. Do you agree with how these amendments will affect industry?

No comment

Q17. What guidance do you think will be needed to support implementation of the proposed amendments? Will the industry need help to interpret the best practice guidance for the New Zealand context?

No comment

Q18. Do you use any of the manufacturing processes listed in Proposal 9? If so, does this process use mercury?

No comment

Q19. Do you agree with the Government's proposed approach to regulate the source categories in Proposal 10? If not, why not?

Yes, the DHBs agree for the reasons provided in the consultation documentation.

Q20. What air pollution control technologies are currently required for existing source categories listed in Proposal 10?

No comment

Timing, implementation and transitional provisions

Q21. Do you agree that lead-in times are required for starting to monitor PM_{2.5} and for burners that will no longer be compliant? What lead-in times do you suggest and why?

No, the DHBs do not agree there is a need for lead-in times to begin monitoring for PM_{2.5}. Scientific evidence improvements to monitoring particulate matter haven't been known for quite some time providing a significant lead-in period for industry and councils. Ideally, industry operating to best practice should already have implemented these changes.

In relation to burners that will no longer be compliant, the DHBs agree that a lead-in time to remove non-compliant burners from the market is required. The DHBs consider one winter season a sufficient period of time. However, the DHBs consider that for the home owner, replacement of non-compliant burners should only be required when a new or replacement burner is installed.

Q22. Are there any matters you think would require transitional provisions? If so, what?

The DHBs recommend the Ministry for the Environment sets an expectation for regional councils to review existing consents and regional plans to ensure compliance is achieved within a reasonable timeframe. The DHBs recommend that 5 years is a reasonable expectation for a review of existing consents, including permitted activity consents to be completed.

The DHBs note when the NESAQ was introduced in 2004, a one-year transition provided for new wood burner design standards and regulation 17. These seem reasonable interim provisions.

No interim provisions are needed for the ambient standards themselves (Schedule 1) or the provisions required implementing the Minamata Convention.

Other comments

Q23. Do you have any other comments you wish to make?

The proposed amendments seek to better target controllable sources of air pollution after taking into consideration updated information on the health impacts of particulate matter. It is the DHBs' experience that people have a low tolerance to particulate matter and there is no safe level to protect human health for particulate matter. Therefore, to be assured that human health is protected a more proactive approach to preventing harm from the outset is necessary as part of this regulatory review.

The purpose of regulating air quality is to avoid harm will also keep people healthy and improve health. The DHBs recommend that councils be required to manage anthropogenic discharges of particulate matter, particularly from industry and trade premises. The DHBs recommend greater regulatory oversight in an effort to avoid the production and release of contaminants, especially when those contaminants are known to cause adverse health effects and have no safe threshold.

Clean air is a basic requirement for human health and the DHBs wish to thank the Ministry for the opportunity to submit and share our public health perspective on the regulation of particulates and mercury emissions.



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