

## Proposed amendments to the NZ National Environmental Standard (NES) on air quality

<http://www.mfe.govt.nz/news/2010-06-09-air-quality-review.html>

NZ is reviewing its National Environmental Standard (NES) on air quality. Papers and discussion documents are available from the above website. Included is the Cabinet Paper (<http://www.mfe.govt.nz/cabinet-papers/cab-paper-ministerial-review-air-quality-standards.pdf>) which compares the different options.

The preferred policy is Option 4, which reduces benefits by 151 million and costs by 312 million, leading to an increase in the NPV of 161 million. In contrast, Option 3 increases the benefits by 302 million while reducing costs by 242 million, increasing the net present value (NPV) by 546 million. Option 3 would therefore appear to offer much greater public benefit for only marginally increased costs, suggesting it should be the preferred option.

More importantly, if the timeframe for compliance is to be extended to 2018, this should also be the deadline for achieving the PM<sub>2.5</sub> standard. Box 3 of the Technical Advisory Group Report cites the UK Air Quality Expert Group publication in 2005, which concluded: "Particulate matter can affect our health. The available evidence suggests that it is the fine components of PM<sub>10</sub>, which have a diameter of 2.5 µm or less and are formed by combustion, that are the main cause of the harmful effects of particulate matter."

The Cabinet Paper defers consideration of any additional standards until 2011. However, given the importance of setting air quality standards that are as closely linked to the health effects of air pollution, it is not in the community's interest to defer this matter. Far better to aim for the greatest reduction in the pollutant that most affects our health for the least possible cost. This cannot be achieved if the pollutant most closely linked to adverse health outcomes is not even considered.

Submissions, due by July 9, can be made via the web – see <http://www.mfe.govt.nz/survey/x10submpropags.htm>. The information provided in the submission template is shown in brown and black text. Some draft responses are shown in blue.

## Discussion questions

### Problem definition

1. Have the main problems been defined accurately?
2. Are there other problems you can think of that need to be addressed as a priority?
3. Do you agree with the policy objectives?
4. Do air quality standards materially influence industry investment decisions and regional location decisions?

### What are the options?

5. Have the options achieved the policy objectives?
6. Have the options addressed the identified problems?
7. What preferred option do you think should be considered?
8. Are you aware of any other costs or benefits of the options?
9. What current opportunities do you know of that could help reduce your emissions (eg, updating current equipment)? Do you see these opportunities as effective in reducing total emissions within an airshed? What are the costs of these alternative opportunities? What is stopping these opportunities from being introduced now?
10. What costs do stakeholders face when complying with resource consent restrictions required by air quality standards?
11. Is it practical to require mandatory offsets in over-allocated airsheds?
12. What is the scale of the economic impact of mandatory offsets on industry? We are particularly interested in:
  - a. The materiality of these impacts on your business (eg, what proportion of your total operating costs will these comprise and will it materially impact on your profitability)?
  - b. Will these costs impact on current or future investment decisions you are likely to make?
  - c. Any other impacts you see arising from a requirement to offset emissions?
13. Will mandatory offsets for new industries in breaching airsheds encourage industries to adopt cleaner technologies?

14. What costs will councils incur to comply with the proposed mandatory reporting of PM10 monitoring data?

15. How effective are rules at the national level in addressing air quality issues (eg, managing emissions from various sources) compared with providing regional flexibility?

### Costs and benefits

16. Have we accurately reflected the range of costs and benefits arising from the proposals for a national environmental standard and who might bear the costs or receive the benefits?

17. Are there any costs and benefits we have overlooked?

18. Do you have information that you would like to see included in the cost-benefit analysis that will be carried out after the submissions are received and analysed?

## 1. Preferred options

Option4a: Proposed amendments

Increase the permitted number of exceedance of the PM10 standard from one to three exceedances per year.

Exclude exceptional events from counting as exceedances of the PM10 standard.

Extend the timeline for compliance to 2018.

Require mandatory offsets for new industry consents in breaching airsheds after 2018 (ie, do no harm).

Introduce mandatory reporting of PM10 monitoring data.

Use existing ministerial powers under the Resource Management Act 1991 (section 27).

Establish an air quality compliance strategy.

Are you in favour of these amendments?

Yes No

Reason/s

A simple comparison of the costs and benefits of the different options on page 13 of the "Review of the PM10 Air Quality Standards" shows that Option 3 increases the benefits by 302 million and reduces costs by 242 million, increasing the net present value (NPV) by 546 million. In contrast, Option 4 reduces benefits by 151 million, reduces costs by 312 million, leading to an increase in the NPV of 161 million.

Based on the statistics presented, Option 3, which increases the NPV by 546 million, seems to offer much greater benefit for the whole community than Option 4 for which the increase is only 161 million. The difference in costs between Options 3 and 4 is only 70 million, the difference in benefits is 453 million, a benefit cost ratio of 6.47.

I cannot see why any government would want to impose an additional 453 million in health costs to the community that might be avoided by devoting a small additional amount – less than \$18, or less than \$6 per person per year.

Green Party spokesperson on Resource Management, David Clendon summarised the issues:

*"The Health and Air Pollution in New Zealand (HAPINZ) report estimated that 1,100 Kiwis die prematurely each year because of air pollution, and many more children and adults suffer from debilitating asthma and respiratory illness.*

*"Air pollution is estimated to cost our economy over \$1 billion a year. Clean air is essential to our economic and environmental wellbeing. Delaying and lowering standards costs us more in the long run."*

Are there any changes you would like made to these proposed amendments?

Yes No

If yes, what are these changes?

The best and most cost effective way to reduce air pollution is the "polluter-pays" principle. Unless polluters pay some (or perhaps even all) of the costs of their pollution, there is no incentive to for them to reduce emissions.

NZ's Air-Quality Technical Advisory Group (TAG) notes that there are significant weaknesses with the policies currently in place to reduce PM10 levels. Placing the burden of adjustment on industry alone is a solution that doesn't tackle the main source of the PM10 problem.

The TAG report also notes (Box 5): "It is generally accepted, based on the results of epidemiological studies, that there is no identified threshold concentration for PM10. That is, there is no recognised safe level for exposure. This causes difficulties for the setting of a standard for PM10."

Box 3 of the TAG report cites the UK Air Quality Expert Group publication in 2005, which concluded: "Particulate matter can affect our health. The available evidence suggests that it is the fine components of PM10, which have a diameter of 2.5 µm or less and are formed by combustion, that are the main cause of the harmful effects of particulate matter."

Given the expert opinion that PM2.5 are the main cause of the harmful effects of particulate matter, NZ should adopt the World Health Organization Guidelines of 25 µg/m<sup>3</sup> PM2.5 (daily average) and 10 µg/m<sup>3</sup> PM2.5 (annual average) to be achieved at the latest by 2018, and much earlier if possible. This would not only provide some certainty to the issue, but also, by tackling the particles (PM2.5) most closely related to health, increase the benefits relative to the cost of reducing pollution.

The NZ climate change emissions trading scheme was introduced to provide an incentive to reduce our impact on climate change. A similar scheme is needed to reduce health-hazardous PM2.5 emissions in urban areas. The best option would be a polluter-pays tax or levy proportional to the health costs of PM2.5 emissions, with the proceeds used to cover the cost of pollution-reduction measures. Assuming a benefit-cost ratio of 4:1, setting the tax at 25% of the health costs should be adequate to solve the problem. If this is considered too extreme, a smaller levy, e.g. 5-10% of the health costs could be considered. Note that the entire amount raised should be used to fund pollution-reduction schemes.

The Health and Air Pollution in New Zealand (HAPINZ) study can provide all the information necessary to determine local polluter-pays taxes. For example, in Christchurch, according to the HAPINZ pilot study, estimated health costs of domestic emissions (almost entirely wood and coal heating) amount to \$127 million per year. With 46,931 solid fuel heaters in use (Report U0518) the estimated health cost is \$2,700 per heater per year. A levy equal to 10% of the health costs might therefore amount to \$270 per year for an older woodburner emitting more than 1.5 g/kg. All heaters installed after January 2000 have ratings less than 1.5 g/kg, so the higher tax would apply only to heaters over 10 years old, and which must be removed within 15 years of installation. The levy, charged as an increase in the rates payable on the property, could therefore be paid into a fund to cover the cost of a replacement heater. In conjunction with additional "polluter-pays" levies, this may allow the worst polluting woodburners to be replaced before the allotted 15 years. Low-emission woodburners would attract a much lower levy. There would also be generous rebates for low-income householders, to avoid creating problems from cold or damp houses.

A levy of 10% of estimated health costs would serve three very important purposes. First, it provides funds to help solve the problem. Second, it serves as a much-needed educational tool to alert polluters to the health costs of their pollution. Third it provides incentive for polluters to reduce the amount of pollution produced, which will benefit the entire community.

Although the levy might be set initially at 10% of the estimated health costs (or perhaps 5% increasing to 10% over 3 years), the long-term rate should be set by community consultation. Green Party spokesperson on Resource Management, David Clendon said: "The Health and Air Pollution in New Zealand (HAPINZ) report estimated that 1,100 Kiwis die prematurely each year because of air pollution, and many more children and adults suffer from debilitating asthma and respiratory illness. Air pollution is estimated to cost our economy over \$1 billion a year. Clean air is essential to our economic and environmental wellbeing. Delaying and lowering standards costs us more in the long run." See <http://www.scoop.co.nz/stories/PA1006/S00183.htm>

Once the community understands and appreciates the health costs imposed on them by air pollution – the 1,100 premature deaths, as well as increased risk of suffering heart and lung diseases, middle ear infections, cot deaths, with evidence of other serious health effects such as genetic damage in babies and reduce IQ of children (<http://woodsmoke.3sc.net/woodsmoke-health-costs#IQ>), the community may think that a levy of only 10% of estimated health costs is inadequate.

Other solutions to the problem are possible. For example, Montreal has banned the installation of all new woodheaters, and Montreal has freezing cold winters. Daily minimum temperatures average -13C in January; daily maxima average -5C. Despite the cold climate, installation of all new wood stoves was [banned from 28 April 2009](#), to protect people's health.

[California's Healthy Hearths Program](#) also bans all wood burning devices in new buildings and also bans use of all wood burning devices whenever PM2.5 pollution is forecast to exceed the air quality standard. Woodheaters emit more than four times the PM2.5 pollution of all the power plants in the area. Many Californian cities have 'Spare the Air' days; on windless days when use of woodheaters would lead to exceedences of the air quality standards, woodheating is not permitted.

A polluter-pays levy, set according to the type of heater (old, < 1.5 g/kg, < 1 g/kg, < 0.5 g/kg, pellet) and estimated emissions is a more equitable solution, which allows some wood burning, while reminding people of the health costs of their pollution and providing a small incentive to generate the lowest possible emissions.

A similar levy, set according to the estimated emissions, would also apply to PM emitted from transport.

Thus in summary,

- 1) Instead of extending the PM10 timeline to 2018, a new timeline should be introduced to achieve the World Health Organization Guidelines for PM2.5 by 2018. Given the wealth of evidence cited above that PM2.5 are the cause of the harmful effects of particulate matter, Governments have a duty to ensure that New Zealander's air meets the WHO Guidelines as soon as possible. In fact, given that there is no safe level of PM2.5 pollution, further reductions are would be desirable, if the benefits outweigh the costs.
- 2) Introducing a polluter-pays levy of at least 10% of estimated health costs, with rebates where this would cause economic hardship. This will serve three very important purposes. First, it provides funds to help solve the problem. Second, it serves as a much-needed educational tool to alert polluters to the health costs of their pollution. Third it provides incentive for polluters to reduce the amount of pollution produced, which will benefit the entire community.
- 3) Benefit-cost analyses should provide estimates of the cost per kg of PM2.5 emissions in different airsheds to facilitate the introduction of "polluter-pays" levies.
- 4) All areas should establish air quality compliance strategies to ensure they meet the PM2.5 target by 2018, with mandatory reporting of PM2.5 measurements via a web-based interface that provides daily, monthly and annual average PM2.5 readings.

## 1. Preferred options (cont.)

Option 4b: Proposed ammendments

Increase the permitted number of exceedance of the PM10 standard from one to three exceedances per year.

Exclude exceptional events from counting as exceedances of the PM10 standard.

Extend the timeline for compliance to 2018.

Remove all industry consent restrictions.

Introduce mandatory reporting of PM10 monitoring data.

Use existing ministerial powers under the Resource Management Act 1991 (section 27).

Establish an air quality compliance strategy.

Are you in favour of these amendments?

Yes No

Reason/s

Why would anyone in their in their right mind remove all industry consent restrictions? Industry should be required to cover the full health cost of their emissions. The information and research collated for the HAPINZ study should be used to calculate the health costs per kg of PM2.5 emissions, with industry required to pay a levy equal to the estimated health costs. In heavily polluted areas, industry should be allowed the alternative option of offsetting 150% of emissions. So if the an industry to emit 100 kg of PM2.5 per year, they should either pay the health costs of this pollution, or buy offsets (e.g. converting woodburners to less polluting heating) that will reduce annual emissions by 150 kg year, if this is a more financially attractive option.

Are there any changes you would like made to these proposed amendments?

Yes No

If yes, what are these changes?

As well as the reasons noted above, the previous recommendations also apply

- 1) Instead of extending the PM10 timeline to 2018, a new timeline should be introduced to achieve the World Health Organization Guidelines for PM2.5 by 2018. Given the wealth of evidence cited above that PM2.5 are the cause of the harmful effects of particulate matter, Governments have a duty to ensure that New Zealander's air meets the WHO Guidelines as soon as possible. In fact, given that there is no safe level of PM2.5 pollution, further reductions are would be desirable, if the benefits outweigh the costs.
- 2) Introducing a polluter-pays levy of at least 10% of estimated health costs, with rebates where this would cause economic hardship. This will serve three very important purposes. First, it provides funds to help solve the problem. Second, it serves as a much-needed educational tool to alert polluters to the health costs of their pollution. Third it provides incentive for polluters to reduce the amount of pollution produced, which will benefit the entire community.
- 3) Benefit-cost analyses should provide estimates of the cost per kg of PM2.5 emissions in different airsheds to facilitate the introduction of "polluter-pays" levies.
- 4) All areas should establish air quality compliance strategies to ensure they meet the PM2.5 target by 2018, with mandatory reporting of PM2.5 measurements via a web-based interface that provides daily, monthly and annual average PM2.5 readings.

## 2. Costs and benefits

Have we accurately reflected the range of costs and benefits arising from the proposed amendments, and who might bear the costs or receive the benefits?

Yes No

If no, how can the estimates be improved?

Are there any costs and benefits we have overlooked?

Please provide any information that you would like to see included in the cost-benefit analysis that will be carried out after the submissions are received and analysed.

Benefit-cost analyses should provide estimates of the cost per kg of PM<sub>2.5</sub> emissions in different airsheds to facilitate the introduction of “polluter-pays” levies.

### 3. Decision/s you wish the Minister for the Environment to make

Proposed amendments

Increase permitted number of exceedance of the PM<sub>10</sub> standard from one to three exceedances per year.

Exclude exceptional events from counting as exceedances of the PM<sub>10</sub> standard.

Require mandatory offsets for new industry consents in breaching airsheds after 2018 (ie, do no harm).

OR

Remove all industry consent restrictions.

Extend the timeline for compliance to 2018.

Introduce mandatory reporting of PM<sub>10</sub> monitoring data.

Use existing ministerial powers under the Resource Management Act 1991 (section 27).

Establish an air quality compliance strategy.

Investigate the feasibility of funding links (denial of funding in breaching airsheds).

Other proposed amendments you would like the Minister to make.

As already noted, instead of extending the PM<sub>10</sub> timeline to 2018, a new timeline should be introduced to achieve the World Health Organization Guidelines for PM<sub>2.5</sub> by 2018. Given the wealth of evidence cited above that PM<sub>2.5</sub> are the cause of the harmful effects of particulate matter, Governments have a duty to ensure that New Zealander's air meets the WHO Guidelines as soon as possible. In fact, given that there is no safe level of PM<sub>2.5</sub> pollution, further reductions are would be desirable, if the benefits outweigh the costs.

2) As well as requiring mandatory offsets for new industry consents, the existing problem should be addressed by introducing a polluter-pays levy of at least 10% of estimated health costs, with rebates where this would cause economic hardship. This will serve three very important purposes. First, it provides funds to help solve the problem. Second, it serves as a much-needed educational tool to alert polluters to the health costs of their pollution. Third it provides incentive for polluters to reduce the amount of pollution produced, which will benefit the entire community.

3) Benefit-cost analyses should provide estimates of the cost per kg of PM<sub>2.5</sub> emissions in different airsheds to facilitate the introduction of “polluter-pays” levies.

4) All areas should establish air quality compliance strategies to ensure they meet the PM<sub>2.5</sub> target by 2018, with mandatory reporting of PM<sub>2.5</sub> measurements via a web-based interface that provides daily, monthly and annual average PM<sub>2.5</sub> readings.