



Ministry for the  
**Environment**  
*Manatū Mō Te Taiao*

# **Proposed National Environmental Standards for Landfill Gas**

## **Report on Submissions**

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# 1 Introduction

## 1.1 Background

Over the past few years there has been an increasing call from many people in business, local government and the wider community for the Ministry for the Environment to develop national environmental standards. This call was repeated at a series of breakfast meetings the Ministry for the Environment hosted in mid-2002, where there was support in principle for the introduction of standards to provide national consistency and a minimum level of protection for the community.

The Ministry for the Environment then worked closely with regional councils to agree on priorities for national environmental standards. In August 2003, the Government gave the Ministry for the Environment approval to consult on the first suite of national environmental standards. Consequently, in October 2003 the Minister for the Environment proposed a range of national environmental standards. These included a suite of proposed air quality standards, as well as a proposal to require the capture and destruction of landfill gas at landfills over a million tonnes in capacity.

Public notices informing people of the submission period were placed in major papers on 25 October 2003. The notices informed people of:

- the subject matter of the proposed national environmental standards
- the Minister's reasons for considering that the proposals are consistent with the purposes of the Resource Management Act 1991
- how people could make a submission
- the deadline for submissions.

A copy of the public notice is included in Appendix A of this report.

During November 2003 the Ministry for the Environment undertook a comprehensive road show across New Zealand, holding over 30 meetings in 16 regions and talking to over 1000 people. Implementation of the proposed national environmental standards was one of the key topics discussed at the road show meetings. Once again there was support in principle for the development of national environmental standards.

The deadline for submissions was 5 pm on Friday 5 December 2003. Due to concerns expressed by some parties over the short timeframe for comment, submissions were accepted until midday 24 December 2003.

An outline of the proposed standard was published on the Ministry for the Environment's website in a summary fact sheet titled *Proposed Landfill Gas Collection and Destruction Standard*, dated October 2003. The fact sheet is attached as Appendix C of this report.

A suite of proposed national environmental standards covering air quality issues was notified in parallel.

## 1.2 Purpose of this document

This document presents an overview of the submissions received on the proposed national environmental standards for landfill gas. It is intended to provide a concise summary of the views expressed. It is not intended to provide analysis of those views or recommendations in response to the submissions. This will be done in a separate report, which will be presented to Cabinet later this year.

The summary of submissions received on the proposed air quality standards is included in a separate document available from [www.mfe.govt.nz](http://www.mfe.govt.nz).

## 2 Overview of Submissions

### 2.1 Summary of submitters' positions

Eighteen submissions were received, of which 13 supported or conditionally supported the proposal, one opposed the development of the standard, and four gave no specific comment on their position.

Table 2.1 summarises the overall positions of the submitters, expressed as either:

- support
- conditional support
- oppose
- neutral.

**Table 1: Submissions received, and overall position towards the proposals**

No.	Submitter	Company/organisation	Support	Conditional	Oppose	Neither support nor oppose
1	Gary Bedford	Taranaki Regional Council	Y			
2	Simon Collin	Christchurch City Council		Y		
3	Mark Milke	Department of Civil Engineering, University of Canterbury	Y			
4	Carla Wilson	EnviroWaste Services Ltd	Y			
5	John Mandemaker	Environment Bay of Plenty	Y			
6	T Gould	Waste Management NZ Ltd		Y		
7	Marc Fauvel	Rotorua District Council			Y	
8	Jim Sinner	Ecologic Foundation	Y			
9	Andrew Caseley	Hawke's Bay Regional Council	Y			
10	Stephen Parker	Gas Association of New Zealand (Inc)				Y
11	Kevin Mahon	Auckland Regional Council		Y		
12	John Talbot	Environment Canterbury		Y		
13	Brian Turner	Dunedin City Council	Y			
14	David Renouf	Individual				Y
15	Tom Clarkson	NIWA	Y			
16	Faust Bovenlander	EECA				Y
17	Stephen Parker	Gas Association of NZ (Inc)				Y
17	Kevin Duke	NZ Aluminium Smelter	Y			
18	Nicola Shorten	Greater Wellington	Y			

## 2.2 Key themes

The following key themes were identified in submissions:

- There is concern from landfill operators (private and local authority) about the relationship between the standard and climate change mechanisms. There is concern that the collection and destruction of landfill gas for the purpose of compliance with the standard would be treated as “business as usual” and not “additional” for the purposes of climate change project incentive awards and/or emissions trading. This could affect the potential income from the Ministry for the Environment’s emissions reduction programme or sale of carbon credits.
- Some submitters consider that the beneficial use of landfill gas (eg, in electricity production) has, or may have, net environmental benefits in excess of those gained from flaring alone. Therefore, a requirement to demonstrate equivalent or better destruction compared to flaring is considered to be onerous and restrictive.
- There are conflicting views on whether the standard should apply only to municipal solid waste landfills, and not cleanfills or construction and demolition waste landfills. Lack of a definition of “cleanfill” in the standard was raised as an issue, as was the potential need for the standard to apply to large closed landfills, which discharge significant quantities of methane.
- The application of a capacity threshold of 1 million tonnes design capacity was generally supported.
- The application of a flaring standard with a minimum temperature of 750 degrees Celsius and a residence time of 0.5 seconds was generally supported.
- The application of a surface emissions limit was generally supported. However, the proposed value of the limit being higher than current practice was raised as an issue, as were potential difficulties in consistent measurement.
- There were conflicting views on whether meeting the surface emissions limit should be used as an alternative to the installation of a collection and destruction system at some sites.

# 3 Detailed Submission Summary

The following sections summarise the submissions received. Key comments by submitters are summarised under the headings used in the Ministry for the Environment's information sheet *Proposed Landfill Gas Collection and Destruction Standard*, dated October 2003 (see Appendix C).

## 3.1 Proposal

The objective of the proposed standard is to ensure that current best practice landfill gas management for greenhouse gas issues continues. We also aim to provide flexibility to encourage organic waste diversion.

The standard would require landfill gas collection and destruction, with the flaring of gas likely to be the most common option. Beneficial uses of methane such as electricity generation would be permissible provided the landfill owner can demonstrate equivalent or better mitigation of methane gas emissions.

Eighteen submissions were received on the proposed landfill gas collection and destruction standard. Thirteen submitters supported, or conditionally supported, the proposal to develop a standard for the collection and destruction of landfill gas (Taranaki Regional Council, Christchurch City Council, University of Canterbury, Envirowaste, Environment BoP, Waste Management NZ Ltd, Ecologic, Hawke's Bay Regional Council, Auckland Regional Council, Environment Canterbury, NIWA, New Zealand Aluminium Smelters, Greater Wellington).

One submitter (Rotorua District Council) opposed the development of a standard, and four submitters made no specific comment on the development of a standard (Gas Association of New Zealand, Dunedin City Council, David Renouf, EECA).

### Support

The Christchurch City Council supports the concept of a standard and believes that consideration should also be given to large landfills on the brink of closing. However, the Council considers that the requirement for beneficial uses to achieve equivalent or better destruction efficiency, when compared to flaring, is too restrictive. It suggests that some leniency should be provided in respect of the equivalency of methane destruction with flaring for projects that have potential benefits, such as electricity production.

Envirowaste supports the intent of the standard to create a level playing field for all those involved in landfill management and considers it important to encourage certainty and consistency throughout the country. However, Envirowaste is concerned that the standard may effectively render the Government's project for emission reductions redundant for landfill gas projects, because the standard will be used to define business as usual. It states that the standard needs to complement the project by leaving sufficient scope for marginal collection projects to apply for project funding.

Waste Management NZ Ltd supports in principle the concept of a national environmental standard governing landfill gas, but has concerns relating to:

- the impact the requirement that landfill gas be destroyed will have on “additionality” for climate change mechanisms
- the need for a level playing field across the waste management industry in regard to refuse landfill standards.

Waste Management NZ Ltd is opposed to any mandatory requirement to destroy landfill gas. It considers that if destruction is required it will be considered business as usual, and therefore not additional for the purposes of climate change projects’ incentive awards and/or emissions trading. It also states that there are a number of methods of treating landfill gas. Waste Management NZ wants the “destruction” requirement deleted and replaced by the term “treatment”. Alternatively, it seeks clarification of the impact of the standard on claims for additionality.

The Hawke’s Bay Regional Council notes and supports the provision enabling the beneficial use of methane (if collected) such as for electricity production.

The Auckland Regional Council generally supports the standard, but states that there is no definitive answer to whether combusting landfill gas for electricity generation achieves an equivalent, or better, level of destruction of methane than flaring. However, the Council considers that utilisation of gas has a number of net benefits that must be considered, and should not be subject to a process of demonstrating equivalence to destruction.

## **Oppose**

The Rotorua City Council opposes the development of the standard. The reason given is that the Council has a landfill in the over 1 million tonnes category, but is going to manage emissions voluntarily and feels that the introduction of a mandatory standard would result in the loss of value of carbon credits. The Council seeks an extension of the timeframe for implementation to ensure that carbon credits are held locally.

## 3.2 Apply to operational landfills that accept municipal solid waste

The standard would not apply to sites that accept only cleanfill (soil and rubble) or construction and demolition landfill sites – these sites accept negligible amounts of organic matter.

Three submissions addressed the issue of the standard applying only to municipal solid waste landfills. Two (Taranaki Regional Council and New Zealand Aluminium Smelters) support the proposal, and one (Waste Management NZ Ltd) opposes limiting the standard to municipal solid waste landfills and would like to see it extended to other types of landfill.

### Support

The Taranaki Regional Council supports the application of a standard to operational municipal solid waste landfills only, noting that cleanfills and construction and demolition landfills accept negligible amounts of organic material.

New Zealand Aluminium Smelters supports a standard being applied only to operational landfills that accept municipal solid waste.

### Oppose

Waste Management NZ Ltd does not consider that a standard will achieve the objective of creating a level playing field, as the proposal does not apply to cleanfills, or to construction and demolition landfills.

This submitter states that the proposed standard does not contain a definition of “cleanfill”. It is concerned that different regions define “cleanfill” differently and that what is considered cleanfill in some regions may produce landfill gas that should require management.

Waste Management NZ Ltd states that a standard should include a definition of “cleanfill” and that an appropriate definition is that contained in *A Guide to Management of Cleanfills*, published by the Ministry for the Environment in 2002. Waste Management NZ Ltd states that construction and demolition landfills do emit landfill gas and should be subject to the standard in the same way as municipal solid waste landfills if they meet the 1 million tonnes capacity criterion.

### **3.3 Apply to landfills that are designed to accept over 1 million tonnes of refuse throughout their design life**

Installing gas collection systems at landfills smaller than this threshold is not likely to be economically viable.

Seven submissions addressed the issue of a threshold design capacity for the application of the standard. Five (Taranaki Regional Council, Environment BoP, Waste Management NZ Ltd, Auckland Regional Council and New Zealand Aluminium Smelters) support and one (David Renouf) opposes using landfill size alone as the primary measure used for a threshold, and one (University of Canterbury) neither supports nor opposes the application of a threshold.

#### **Support**

The Taranaki Regional Council supports, in particular, the application of the standard only to operational landfills that accept municipal solid waste and that are designed to accept over 1 million tonnes of refuse throughout their design life.

Environment BoP requests that all landfills with a projected capacity of over 1 million tonnes have landfill gas collection and destruction systems as a compulsory requirement of resource consent.

Waste Management NZ Ltd is concerned that an applicant will not be required to collect landfill gas if they can demonstrate that surface emissions will be limited. It states that while some flexibility is desirable, the discretion not to require compliance also creates the potential for inconsistent application of the standard between regions and between projects.

Waste Management NZ Ltd considers that flexibility could be achieved by creating a two-tiered system of application. The standard would be mandatory for all municipal solid waste landfills and construction and demolition waste landfills with a design capacity of over 1 million tonnes. In addition, it seeks the introduction of a “flexible” category (municipal solid waste landfills and construction and demolition waste landfills with a design capacity of between 200,000 and 1 million tonnes) where regional authorities may, or may not, require compliance with the standard, dependent upon satisfying conditions to be specified in the standard.

The Auckland Regional Council believes that, on a best practice principle, it is inappropriate for landfills exceeding 1 million tonnes not to install appropriate collection and destruction systems. The Council wants the standard to require all landfills exceeding 1 million tonnes to install landfill gas collection and destruction systems.

## **Oppose**

David Renouf disagrees with the projected total capacity of over 1 million tonnes for the standard. He states that the production of landfill gas is not entirely based on total capacity and that the volume of gas produced by landfills can, and should, be based on the percentage of organic material. A standard for gas production should mainly be determined by the percentage of organic material in the landfill, not by size. David Renouf also considers that the proposed individual size of 1 million tonnes is too large when there is more than one cell in the landfill area.

## **Neither support nor oppose**

The University of Canterbury submission argues that the economic viability of gas collection is not the issue. It considers that the statement that landfills smaller than 1 million tonnes will not be included in the standard because gas collection is not economically viable is misleading. The point of the standard is to decrease methane emissions in the most cost efficient method possible. The University suggests that the higher cost of collecting methane (per tonne of methane) from smaller landfills should be given as the reason for not including them. Smaller landfills could still need gas control in order to meet health or resource consent conditions.

## **3.4 Apply to sites that are currently operating**

It would not apply to existing closed landfills. It is expected that existing gas management control systems at closed landfills will continue to operate as per existing consent conditions.

Three submissions addressed the issue of applying the standard only to currently operating landfills (Christchurch City Council, Environment Canterbury and Auckland Regional Council), and all were opposed.

## **Oppose**

The Christchurch City Council believes that consideration should be given to large landfills on the brink of closing. It states that big landfills like the Burwood landfill will be producing gas for at least 30 years and that a retrospective requirement for gas extraction would be worthwhile.

Environment Canterbury questions why many closed landfills will not be covered by the standard. It states that, based on information in the 2002 Landfill Review and Audit, there may be fewer open landfills to which the standard will apply when it becomes operational. Environment Canterbury seeks a change to apply the standard to both operating and closed landfills that exceed the 1 million tonnes threshold.

The Auckland Regional Council considers that closed landfills can be a significant source of methane long after closure date and can cause significant issues where residential dwellings are located close to the landfill site. The Council recommends that some form of requirement should be applied to landfill gas collection and destruction systems for closed landfills.

### **3.5 Apply to proposed sites immediately**

Note, however, that in practice gas collection systems are generally not installed until adequate methane generation is occurring. This is dependent on the period of time the refuse has been in place and the total quantity of refuse. This varies but is usually between 80–260 days after refuse placement begins and approximately 200,000 tonnes respectively.

One submission (University of Canterbury) addressed the issue of immediate application to proposed sites, and neither supported nor opposed the proposal.

#### **Neither support nor oppose**

The University of Canterbury argues that the standard would likely lead to changes in the design of proposed landfills. For example, landfill designers will consider installing gas collection for sections of the landfill where gas recovery would not be economically attractive in order to reduce the overall costs.

### **3.6 Apply to existing operational sites after a transitional period of three years if a site does not currently have a landfill gas collection system**

This provides time for the landfill owner to fund, design and install a landfill gas collection system.

One submission (Taranaki Regional Council) addressed the issue of a transition period for the application of the standard, and supports a transition period.

#### **Support**

The Taranaki Regional Council supports a transition period that provides operators of existing landfills time to fund, design and install a landfill gas collection system. However, it suggests that the transition period should be extended from three to five years, as this would minimise the economic consequences and align the transition period with the first benchmark period of the Kyoto Protocol (beginning in 2008).

### **3.7 Specify flaring standards based on international best practice, which would include a minimum flare temperature of 750 degrees centigrade for a resonance time of 0.5 seconds**

Conditions would also address flame arrestors and backflow protection devices to prevent flash back and landfill fires, plus a flame detector with an automatic slam shut valve and blower isolation to prevent unburnt discharges of landfill gas.

Five submissions addressed the issue of flaring standards. Four (Envirowaste, Environment BoP, Auckland Regional Council and NIWA) support and one (Dunedin City Council) neither supports nor opposes the adoption of a flaring standard.

#### **Support**

Envirowaste believes that the flaring limits are generally appropriate and reflect international best practice.

Environment BoP supports the proposed flaring standard as stated.

The Auckland Regional Council notes that, on the principle of best practice, it has required the operation of an enclosed flare and a minimum flare temperature of 750 degrees Celsius for a residence time of 0.5 seconds.

NIWA states that the best practice standard in the corresponding UK documents recommends a higher temperature for best control of NO<sub>x</sub>, and VOCs. (The paper *Guidance on Best Practice Flaring of Landfill Gas in the UK*, attached to the submission, recommends a minimum of 1000 degrees Celsius and 0.3 seconds' retention time.)

#### **Neither support nor oppose**

The Dunedin City Council considers that the landfill gas burner needs to be handled with care. It argues that if you go into too much detail in terms of temperature and time, it can affect other possible uses of the gas, such as gas-engine-driven power generators.

### **3.8 Specify a methane emission limit at the landfill surface and at monitoring points around the landfill**

Gas collection efficiencies are variable and therefore measurements are relatively inaccurate and unreliable. It is therefore not possible for the standard to specify a gas collection system percent efficiency. Measuring methane emissions at the landfill surface and at monitoring points around the landfill is currently common practice in resource consent conditions at major landfills including many recently closed sites. The limit is commonly 1% methane (by volume in air) corresponding to approximately 25% of the lower explosive limit. We recommend that this be adopted as the draft methane emission limit for the consultation process.

Ten submissions addressed the issue of a methane emission limit at the landfill surface. Eight Taranaki Regional Council, University of Canterbury, Envirowaste, Environment BoP, Auckland Regional Council, Environment Canterbury, Dunedin City Council, New Zealand Aluminium Smelters) support and one (NIWA) opposes a methane surface emission limit at the landfill surface.

#### **Support**

The Taranaki Regional Council agrees that gas collection efficiencies are variable and measurements relatively inaccurate and unreliable. It seeks clarification on where surface emission measurements should occur on the landfill, and suggests that the standard will need to provide certainty and consistency throughout New Zealand on how and where methane levels at landfills should be monitored.

The University of Canterbury wishes to keep the standard focused on landfill emissions. It supports the view that a standard based on collection efficiency would be impractical, and states that although it will be expensive and contentious to develop clear methods for assessing methane emission rates, it will be the best way to achieve clear outcomes.

Envirowaste supports the inclusion of the proposed surface methane emission limit as an alternative means of meeting the standard.

Environment BoP and New Zealand Aluminium Smelters support the emission level of 1% methane by volume.

The Auckland Regional Council considers that an appropriate level of monitoring to ensure that surface emissions do not exceed 0.5% (or 1%) is considered best practice and should not be viewed as a substitute for installing collection and destruction systems. The Council highlights the fact that the 0.5% methane surface emission limit placed on the region's landfills is typically considered a trigger level only, and frequent exceedances can occur.

Environment Canterbury notes that a report commissioned by them indicated that regulatory authorities are using a limit of 0.5% (5000 parts per million) methane at the ground surface, not 1%. It seeks a standard of 0.5% methane.

The Dunedin City Council believes that using surface emissions limits for methane seems to be a reasonable approach. However, it considers that a range of landfills needs to be looked at to determine a practical figure, bearing in mind that gas production varies according to moisture, temperature, time of year, barometric pressure, organic content and draw-down of gas. The Council also states that surface emissions should be used to determine whether or not gas bores are worthwhile in older parts of landfills.

## **Oppose**

NIWA argues that methane emission limits are not usefully specified as a concentration, particularly a concentration of a mixture with an undetermined amount of air added. Lower concentrations could be found by choosing suitable times or places to measure, and better emission estimates would come from knowing the mass of organic matter being processed.

### **3.9 There may be situations where a landfill exceeds the refuse quantity threshold of 1 million tonnes but through the effective diversion of organic matter, or shallow landfill cells, methane emissions are below the surface methane emission limit**

In this case effective operation of a methane collection and destruction system may not be warranted or feasible. This could occur at sites with waste quantities close to the proposed threshold, sites with a shallow depth of refuse, dry sites, or those where organic waste diversion has resulted in a reduction in methane generation.

Five submissions addressed the issue of exemption to threshold requirements for some landfills. Two (Taranaki Regional Council and Envirowaste) support and three (Environment BoP, Waste Management NZ Ltd and Auckland Regional Council) oppose an exemption to threshold requirements.

## **Support**

The Taranaki Regional Council strongly supports the standard recognising and taking into account situations where a landfill exceeds the refuse quantity threshold of 1 million tonnes, but where through effective diversion of organic matter, or shallow landfill cells, methane emissions are below the surface methane emission limit. They note that in such cases the effective operation of a methane collection and destruction system may not be warranted or feasible.

Envirowaste supports the inclusion of the proposed surface methane emission limit as an alternative means of meeting the standard. It states that some landfills, like the Fairfield site, have a very long design life and relatively low waste disposal rates, which means that gas production is slow and occurs over a long period. It states that landfill gas collection and destruction is not an appropriate or viable method to manage methane emissions from these sites.

## **Oppose**

Environment BoP is concerned about the provisions allowing landfill operators not to install landfill gas collection and destruction systems where surface methane emissions are less than 1% methane by volume. Its concern relates to the high potential errors in the methods used to determine surface emissions.

Waste Management NZ Ltd does not consider that the objective of creating a level playing field will be achieved if there is uncertainty over the applicability of the standard to landfills with over 1 million tonnes capacity and which claim to achieve “effective diversion of organic matter”, have “shallow landfill cells”, can demonstrate “methane emissions ...below the surface emissions limit” or call themselves “dry sites”.

The Auckland Regional Council considers that an appropriate level of monitoring to ensure that surface emissions do not exceed 0.5% (or 1%) is best practice and should not be viewed as a substitute for installing collection and destruction systems.

## **3.10 Issues not raised on the information sheet**

The following issues were raised by submitters in addition to those addressed on the information sheet.

### **3.10.1 A certificate scheme for resource recovery**

Ecologic proposes a system of transferable certificates to encourage recycling and resource recovery, arguing that this would promote the composting of organic material and thereby reduce the amount of methane produced by landfills. It states that a national standard for landfill gas would complement such a certificate scheme by setting a minimum performance standard for landfills with a capacity in excess of 1 million tonnes.

### **3.10.2 Landfill gas quality**

The Gas Association of New Zealand raised the issue of landfill gas quality in respect of reticulation systems. A key requirement would be to ensure that any gas injected into the existing natural gas distribution network is compatible with the existing supplies.

# Appendix A: Public Notice



(Published in the Waikato Times, Otago Daily Times, Southland Times, New Zealand Herald, Bay of Plenty Times, Christchurch Press and Wellington Dominion.)

In accordance with section 44 of the Resource Management Act (1991), the Minister for the Environment gives notice of her intention to develop national environmental standards (regulations) on the following subject matter:

1. Ambient air quality standards for the following priority contaminants: particles (PM10), carbon monoxide, nitrogen dioxide, sulphur dioxide and ozone.

For each priority contaminant the proposed ambient air quality standards will include: a concentration limit, an allowable number of times per year that this concentration can be exceeded, an absolute maximum concentration limit for the exceedances that triggers enforcement action, and a monitoring method.

These regulations aim to: improve the consistency and certainty with which discharges into New Zealand's air are managed, to safeguard the life supporting capacity of air, and to avoid, remedy or mitigate adverse effects of activities on the environment and people's health and wellbeing.

2. Ban the following activities: deliberate burning of refuse at landfills, burning of tyres in the open, burning of coated wire in the open, burning of bitumen for road maintenance purposes, burning of oil in the open, and new high temperature hazardous waste incinerators.

Require resource consents for the following activities, by 2008: school and hospital low temperature incinerators. These regulations will avoid significant adverse effects caused by these activities on the environment and people's health, and assist in safeguarding the life-supporting capacity of air.

3. Emission design standard for wood and coal burning appliances in houses in urban areas. This design standard means that any new appliances installed into buildings within urban areas must be identical to a unit that is tested in accordance with AS/NZS 4013:1999 entitled 'Domestic solid fuel burning appliances – Method for determination of flue gas emission' and meets an average emissions limit of 1.5 g of particle per kilogram of fuel burned. The emission limit requirement in the standard supersedes the emission limit of 4 g/kg specified in AS/NZS 4013:1999.

This regulation will assist in remedying and mitigating the potential adverse health and environmental effects caused by emissions from new, small heating appliances.

4. Requirement for the collection and destruction of landfill gas, unless surface methane emissions levels are below a specified emission rate. This standard requires operating municipal waste landfills with a total capacity of over 1 million tonnes to install a landfill gas collection and destruction system (eg, landfill gas flaring) unless they can demonstrate that methane surface emissions are less than 1% methane (by volume in air).

This regulation will assist in avoiding methane emissions resulting from the disposal of solid waste.

Further details on these proposals can be viewed at the Ministry for the Environment, 84 Boulcott Street, Wellington and at [www.mfe.govt.nz](http://www.mfe.govt.nz).

Any person can make a submission on the proposed national environmental standards. The submission must be dated, signed by you and include the following information:

1. Your name and postal address, phone number, fax number and email address (if applicable).
2. Details of the standard in respect of which you are making the submission.
3. Whether you support or oppose the standard.
4. Your submission, with reasons.
5. Any changes you would like made to the proposed standard, if any.
6. The decision you wish the Minister for the Environment to make.

**You must forward your submission to the Ministry for the Environment, PO Box 10-362, Wellington, or by email to [standards@mfe.govt.nz](mailto:standards@mfe.govt.nz) in time to be received no later than 5 pm on Friday 5 December 2003.**

**National environmental standards are regulations prescribed by the Governor-General, by Order in Council. For further details on the relevant statutory provisions refer to section 43 and 44 of the Resource Management Act, 1991.**

# Appendix B: Submitters

No.	Submitter	Company/organisation	Address	Group
1	Gary Bedford	Taranaki Regional Council	Private Bag 713, Stratford	Local government
2	Simon Collin	Christchurch City Council	PO Box 237, Christchurch	Local government
3	Mark Milke	Department of Civil Engineering, University of Canterbury	Private Bag 4800, Christchurch 8020	University
4	Carla Wilson	EnviroWaste Services Ltd	Private Bag 92-180, Penrose, Auckland	Business
5	John Mandemaker	Environment Bay of Plenty	PO Box 364, Whakatane	Local government
6	T Gould	Waste Management NZ Ltd	PO Box 2206, Auckland	Business
7	Marc Fauvel	Rotorua District Council	Private Bag 3029, Rotorua	Local government
8	Jim Sinner	Ecologic Foundation	PO Box 756, Nelson	Environmental group
9	Andrew Caseley	Hawke's Bay Regional Council	Private Bag 6006, Napier	Local government
10	Stephen Parker	Gas Association of New Zealand (Inc)	PO Box 10-340, Wellington	Industry association
11	Kevin Mahon	Auckland Regional Council	Private Bag 92-012, Auckland	Local government
12	John Talbot	Environment Canterbury	PO Box 345, Christchurch	Local government
13	Brian Turner	Dunedin City Council	PO Box 5045, Dunedin	Local government
14	David Renouf	Individual	603A Ballantyne Street, Hastings	Individual
15	Tom Clarkson	NIWA	PO Box 14-901, Kilbirnie, Wellington	Research institute
16	Faust Bovenlander	EECA	PO Box 388, Wellington	Crown entity
17	Stephen Parker	Gas Association of NZ (Inc)	PO Box 10-340, Wellington	Industry association
17	Kevin Duke	NZ Aluminium Smelter	Private Bag 90-110, Invercargill	Industry association
18	Nicola Shorten	Greater Wellington	PO Box 11-646, Wellington	Local government

# Appendix C: Proposed Landfill Gas Collection and Destruction Standard – Fact Sheet

October 2003

## Introduction

The Ministry for the Environment is developing a package of national environmental standards. These standards aim to:

- create a level playing field for all those involved in resource management
- provide certainty and consistency throughout New Zealand
- guarantee a level of protection for all New Zealanders.

This information sheet summarises the proposed landfill gas collection and destruction standard and the reason for its development.

## Background

The Government considers that the effects of greenhouse gas emissions on climate change are of national importance and accordingly need to be addressed by national mechanisms. The recently introduced Resource Management (Energy and Climate Change) Amendment Bill proposes changes to the Resource Management Act 1991 to preclude regional councils from applying local controls on the discharge of such gases from industrial and trade premises, except when undertaken to administer or give effect to a related regulation such as a national environmental standard.

The waste industry is a relatively minor methane emitter that currently contributes approximately four percent to New Zealand's overall greenhouse gas emissions. When preparing the Government's preferred policy package on climate change the waste industry was excluded from potential emission charges. Instead, the Government chose to promote best-practice through *The New Zealand Waste Strategy*.

*The New Zealand Waste Strategy* acknowledges the potential that instruments such as national environmental standards offer. A standard controlling the emission of methane from landfills provides the opportunity to set nationally consistent controls throughout the country that will help ensure that the estimated reduction of 5 Mt of CO<sub>2</sub> equivalents from the waste sector is achieved (source: Climate Change – The Government's Preferred Policy Package, April 2002, page 8). As well as reducing the effects on climate change such a standard would address odour and explosive potential related to methane management at landfills.

## Proposal

The objective of the proposed standard is to ensure that current best practice landfill gas management for greenhouse gas issues continues. We also aim to provide flexibility to encourage organic waste diversion.

The standard would require landfill gas collection and destruction, with the flaring of gas likely to be the most common option. Beneficial uses of methane such as electricity generation would be permissible provided the landfill owner can demonstrate equivalent or better mitigation of methane gas emissions. The following summarises features of the draft standard for consultation purposes:

**Apply to operational landfills that accept municipal solid waste**

It would not apply to sites that accept only cleanfill (soil and rubble) or construction and demolition landfill sites – these sites accept negligible amounts of organic matter.

**Apply to landfills that are designed to accept over 1 million tonnes of refuse throughout their design life**

Installing gas collection systems at landfills smaller than this threshold is not likely to be economically viable.

**Apply to sites that are currently operating**

It would not apply to existing closed landfills. It is expected that existing gas management control systems at closed landfills will continue to operate as per existing consent conditions.

**Apply to proposed sites immediately**

Note, however, that in practice gas collection systems are generally not installed until adequate methane generation is occurring. This is dependent on the period of time the refuse has been in place and the total quantity of refuse. This varies but is usually between 80–260 days after refuse placement begins and approximately 200,000 tonnes respectively.

**Apply to existing operational sites after a transitional period of three years if a site does not currently have a landfill gas collection system**

This provides time for the landfill owner to fund, design and install a landfill gas collection system.

**Specify flaring standards based on international best practice. This would include a minimum flare temperature of 750 degrees centigrade for a residence time of 0.5 seconds**

Conditions would also address flame arrestors and backflow protection devices to prevent flash back and landfill fires, plus a flame detector with an automatic slam shut valve and blower isolation to prevent unburnt discharges of landfill gas.

**Specify a methane emission limit at the landfill surface and at monitoring points around the landfill**

Gas collection efficiencies are variable and therefore measurements are relatively inaccurate and unreliable. It is therefore not possible for the standard to specify a gas collection system percent efficiency. Measuring methane emissions at the landfill surface and at monitoring points around the landfill is currently common practice in resource consent conditions at major landfills including many recently closed sites. The limit is commonly 1% methane (by volume in air) corresponding to approximately 25% of the lower explosive limit. We recommend that this be adopted as the draft methane emission limit for the consultation process.

## **There may be situations where a landfill exceeds the refuse quantity threshold of 1 million tonnes but through the effective diversion of organic matter, or shallow landfill cells, methane emissions are below the surface methane emission limit**

In this case effective operation of a methane collection and destruction system may not be warranted or feasible. This could occur at sites with waste quantities close to the proposed threshold, sites with a shallow depth of refuse, dry sites, or those where organic waste diversion has resulted in a reduction in methane generation.

## **Implementation**

Regional councils will be required to place consent conditions requiring the installation of a landfill gas collection and destruction system on any resource consent granted for landfills with a projected total capacity of over 1 million tonnes, unless the applicant can demonstrate that they will be able to limit surface methane emissions below the performance limit specified by this standard.

The standard will require a review of consent conditions for existing landfills that have a proposed total capacity of over 1 million tonnes within three years after the introduction of the standard.

## **Estimated impact of the proposal**

The proposed standard reflects current best practice in New Zealand and other developed countries. This is confirmed for New Zealand through the findings of the Ministry for the Environment's *2002 Landfill Review and Audit*. On this basis we estimate that 20 of New Zealand's 116 currently operating landfills exceed the 1 million tonne threshold. Of these:

- three will be closed within the next three years and therefore under the proposed transitional period would not be required to install a gas collection system
- seven currently collect and destruct landfill gas
- two are planning to install systems but have not yet placed enough waste to generate adequate gas volumes
- three sites are designing systems
- two sites have systems installed that are currently not operating.
- the remaining three landfill sites might be required to design and construct a landfill gas and destruction system, or apply for dispensation through methane surface emission performance, as a result of the standard.

## **Want to know more?**

Contact the Ministry for the Environment by phoning (04) 917 7400, emailing [standards@mfe.govt.nz](mailto:standards@mfe.govt.nz), or see our website: [www.mfe.govt.nz](http://www.mfe.govt.nz).