

What has been happening?

GPG update

The Ministry for the Environment updated the following guides in late 2016 to help councils meet their obligations to manage air quality under the Resource Management Act (1991). Consent applicants and the public also use the guidelines to help understand air quality issues. The updated reports are:

- **Good practice guide for assessing discharges to air from industry**
- **Good practice guide for assessing and managing odour**
- **Good practice guide for assessing and managing dust.**

Methyl bromide

The recent Environment Court decision concerned an application to discharge methyl bromide from log fumigation of ships' holds, under tarpaulin, within a specified area at the Port of Tauranga. Envirofume Ltd ("Envirofume") appealed the decision by the independent commissioner ("the commissioner") for Bay of Plenty Regional Council to decline resource consent for the proposal. Overall, the Court reached a similar conclusion to that of the commissioner, even though the means of ventilation had been changed. The application did not meet the purpose of Pt 2 of the Act, the RPS or the RAP, and had the potential to impact on the area's mauri. There were significant difficulties with cumulative effects and monitoring that the conditions did not overcome. The commissioner's decision was confirmed and the appeal dismissed.

Air plan update

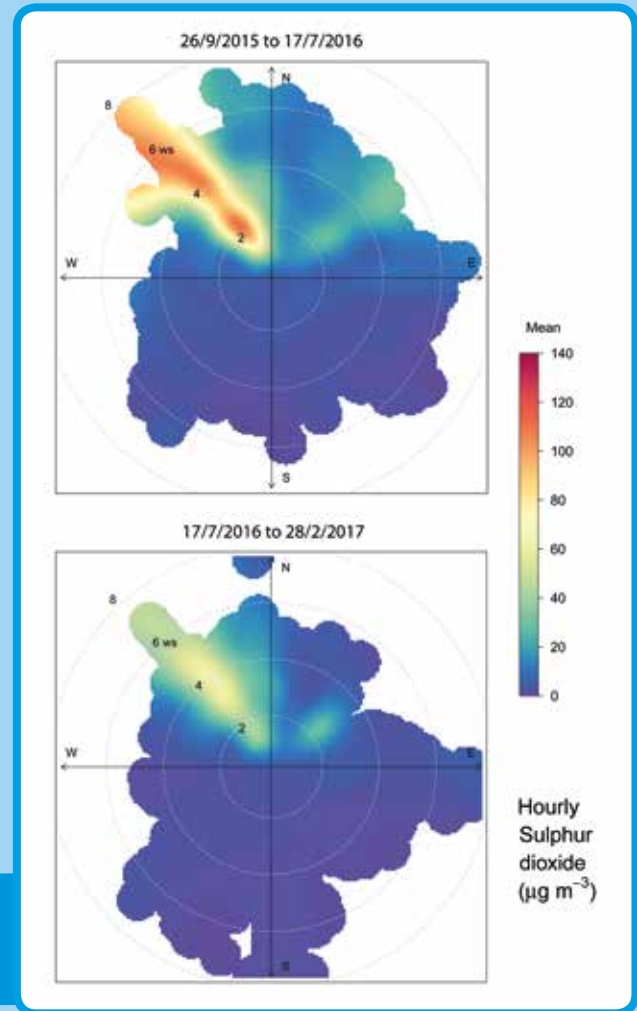
The new Regional Air Plan is at the draft proposed stage, due to be notified about mid-2017. Key issues are Rotorua burners, ban on urban open burning and agricultural spraying. Methyl bromide use at the Port of Tauranga is also expected to attract public attention. The regional council is moving towards a one-plan model that will see the air plan incorporated into the Regional Water and Land Plan as Plan Change 13. This plan will eventually be renamed to reflect its additional content.

Data Services

The council's data services team is busy ensuring particulate monitoring sites in Rotorua, Tauranga and Whakatāne are working well, ahead of the upcoming 2017 heating season.

Key Points

- ✓ Air quality monitoring continues in 2017 at Otumoetai, Tauranga (PM₁₀), Edmund Road, Rotorua (PM₁₀ and PM_{2.5}), King Street, Whakatāne (PM₁₀), Totara Street, Mt Maunganui (SO₂, TSP), Taiaho Place (SO₂, HF, H₂S, TSP) and Tauranga Harbour Bridge Marina (SO₂). Meteorological data is also monitored at all sites.
- ✓ Council staff members are investigating a new monitoring programme at Mt Maunganui. This programme could involve a range of instruments looking at measuring parameters of interest such as particulate matter, SO₂, CH₃Br.
- ✓ The dust work at Mt Maunganui is progressing. A combination approach of dust audits, and site monitoring is being used to determine elevated sources for implementing targeted control measures.



The SO₂ monitoring at Taiaho Place has shown a decrease in SO₂ levels following an upgrade shut at the Ballance Agri Nutrients fertiliser plant.



The 'Good' to 'Excellent' air quality pattern continues for both the Whakatāne and Otumoetai monitoring sites. These sites are located in dense residential areas.

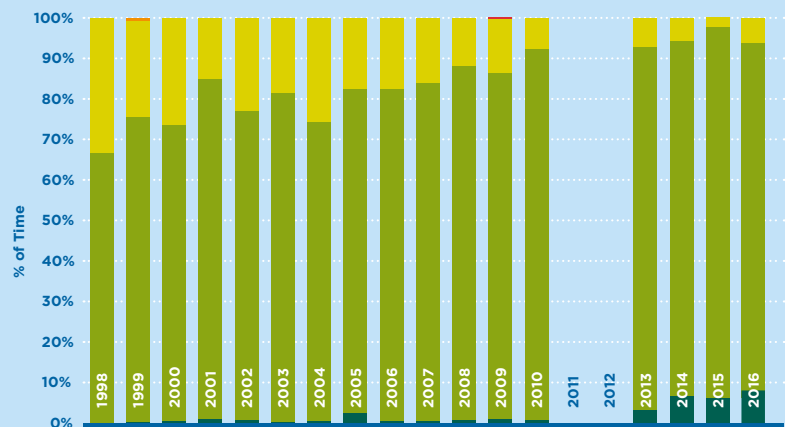
The Rotorua site at Edmund Road (also in a residential area) continues to record exceedances of the National Environmental Standard for PM₁₀. This monitoring record supports the inclusion of tailored rules in the current new draft Air Plan.

Particulate matter (PM₁₀)

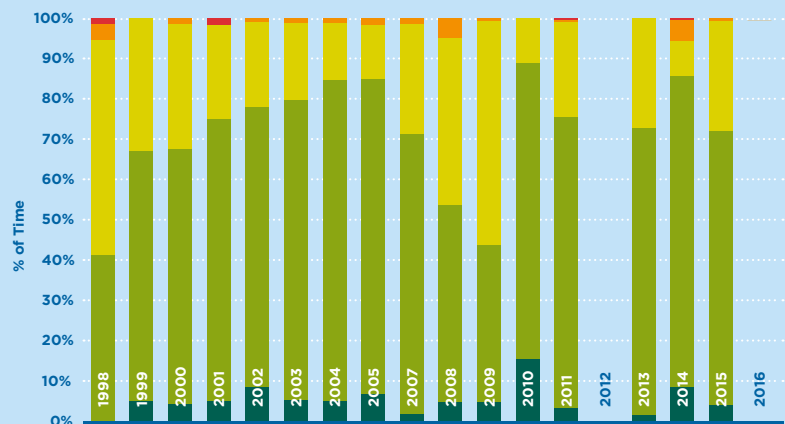
A summary of PM₁₀ data in relation to the NES-AQ and state indicators are presented below.

■ Excellent (<10%)
 ■ Good (10-33%)
 ■ Acceptable (33-66%)
 ■ Alert (66-100%)
 ■ Action (100+%)

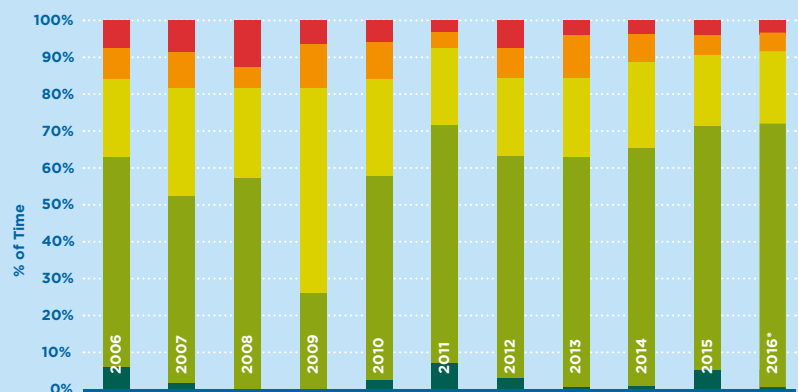
Otumoetai Road, Tauranga



Kopeopeo, Whakatāne



Edmund Road, Rotorua



Number of PM ₁₀ exceedances within the Rotorua Airshed	
Year	Annual total
2006	23
2007	25
2007	37
2009	23
2010	17
2011	7
2012	21
2013	11
2014	12
2015	13
2016	11*

* Due to instrument failure 8 of the exceedances were calculated using PM_{2.5} data and the relationship with PM₁₀

Ultra-low emission burner (ULEB) project

The council will emissions test 10 Tropicair Duo ultra-low emissions burners (ULEBs) in Rotorua homes, with most of the testing to be carried out this winter. Results will be presented in a full scientific and peer-reviewed report containing the methodology, results and discussion of testing. This work will be used to support upcoming changes to the Air Plan rules.



Above - Similar equipment to what will be used in the upcoming ULEB testing programme.

Summary of CHEERS project

Over three years, 1800 Rotorua residents aged 18-65 participated in a study on the effects of long-term exposure to H₂S in Rotorua. Each participant answered questions and underwent tests to check the functioning of their eyes, lungs and nervous system. They also checked for evidence of diabetes and whether participants had allergic reactions to several common substances. In the final step, carried out complex statistical analyses of health information from participants to find out whether the functioning of their eyes, lungs, or nervous systems was affected by their H₂S exposures.

The study found no evidence of reductions in lung function or increased risk of COPD or asthma, from recent or long-term H₂S exposure at the relatively high ambient concentrations found in Rotorua. Suggestions of a reduced risk in the higher exposure areas are consistent with recent evidence that H₂S has signaling functions in the body, including induction of smooth muscle relaxation and reduction of inflammation. The results also provide evidence that chronic H₂S exposure, at the ambient levels found in and around Rotorua, is not associated with impairment of cognitive function.

The papers of this study have been published and can be found here:

<http://ehsdiv.sph.berkeley.edu/cheers/publications.html>

Sea lettuce investigation

The following are results from monitoring of H₂S levels associated with accumulations of sea lettuce in the Tauranga Harbour. Two sites, Ongare Point and Ngakautuakina Point, were selected for monitoring of H₂S based on reported odour issues and health concerns raised by local residents.

When the accumulated sea lettuce material was disturbed, both sites recorded values greater than 200ppm (over-ranging) (~288mg/m³ or 288,000µg/m³). Values recorded ~1m above the surface ranged from 2-10ppm (2.88mg/m³ to 14.4mg/m³).

The following points are raised in relation to the monitoring results:

- a) Due to the low H₂S odour threshold, odour issues will be common in areas where sea lettuce is decomposing.
- b) Accumulations of fresh sea lettuce don't appear to pose an H₂S health risk.
- c) Accumulations of decomposing material generate concentrations of H₂S, which are a health risk.
- d) Points b) and c) are complicated by the fact that fresh sea lettuce often hides decomposing material below.
- e) Monitoring also found locations where H₂S is trapped within harbour sediments (with no or very little surface sea lettuce present) at concentrations that are a health risk.
- f) Those most at risk are:
 - children and animals playing on or near decomposing material.
 - people handling, removing and disposing of the decomposing material.



Above: Fresh on top, decomposing underneath (Ngakautuakina Point).

Te Hau Okiwa keeps Whakātane air clean

“We live in the Whakātane Valley near Ruatoki where the river flows out of the gorges on to the plain. This story concerns Taneatua who was a brother of Toroa, captain of the Mataatua canoe.

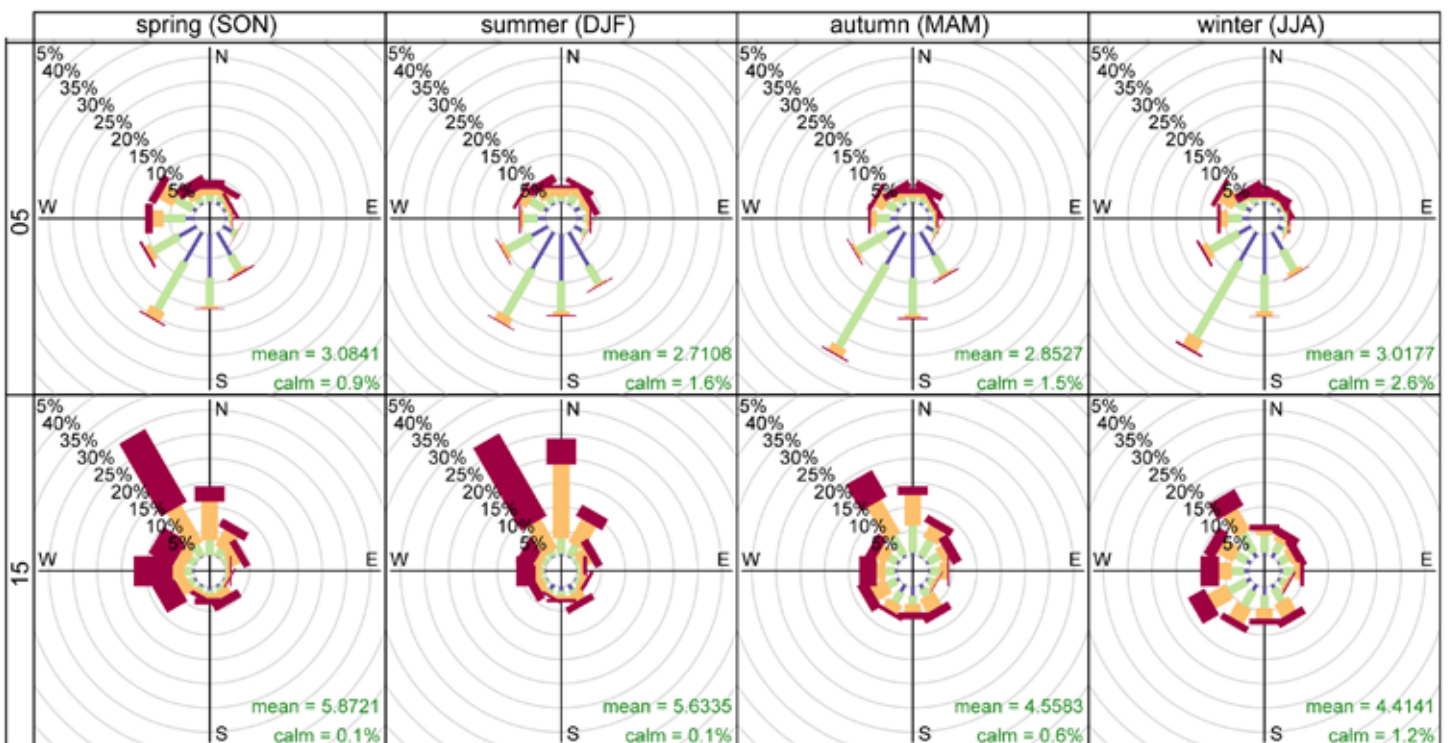
Long ago, Taneatua’s eldest child named Mariko owned a demon dog. Evidently this dog was a tipua with supernatural powers, because it is still known to the people of today. This dog, Okiwa, annoyed a certain man called Irakahau who killed it and threw the body into a pond. Nowadays the pond is invisible but whenever the dog breathes the Okiwa wind blows out of the Whakātane gorge, bringing fog and mist from Ruatoki to Opouriao (near Tāneatua township).

The wind blows only during the hours of darkness, to protect the crops from frost on certain nights. If you are brave enough to camp where this happened, you will hear this dog barking on certain nights.”

Excerpt from A Dog Barks in the Night, written by Mereana of Tawera Māori School and featured in Te Ao Hou, published from 1952-1976 by New Zealand’s Māori Affairs Department.

This wind pattern is shown in the figure below, where the prominence of drainage flows from the south of Whakatāne are evidence on the 5am wind roses recorded at Whakatāne Airport. This generally clears out any domestic heating emissions from the Whakatāne township, unlike other areas in the region where calm conditions can persist and a corresponding build-up of emissions results. Wind patterns at 3pm show a common reversal.

Visit https://niwa.co.nz/sites/niwa.co.nz/files/sites/default/files/import/attachments/maori_climate.pdf for more information on Māori weather-related indicators. This poster shows environmental indicators used by Maori to forecast weather and climate. While the indicators are of most use in their respective localities, many are shared by different iwi in other locations. Often more than one indicator is used to forecast for the day, month, or season ahead. While modern methods of weather and climate prediction have demonstrated significant skill and continue to improve, there are opportunities to enhance our understanding of local weather and climate using traditional Maori knowledge.



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