10 December 2024

METHANE CONTROL FIELD TRIALS DELIVER PROMISING RESULTS

Emerging mineral processing technology company, Zeotech Limited (ASX: ZEO, "Zeotech" or "the Company") is pleased to provide the following update on its Methane Control Program ("Program") at Griffith University ("Griffith"), which is being undertaken in collaboration with Cleanaway Waste Management Limited ("Cleanaway").

HIGHLIGHTS

- Encouraging early-stage results from the simulated landfill configurations indicate that the Company's two zeoteCH_4® products can reduce methane emissions with an average (mean) efficiency of 70-85%.
- Experiments show that the Company's zeolite-based products perform substantially better than the third configuration containing methanotroph inoculum-only, which did not show any capacity to reduce methane emissions.
- Methane is the second most significant greenhouse gas (GHG) with a 100-year global warming potential 28 times greater than carbon dioxide and landfills release just under 1 Gt of atmospheric CO_2-e methane p.a.[1]
- Whilst the results are very promising, the Company recognises the importance of longer-term monitoring and broader datasets. It is considering further monitoring of the configurations for an extended period, while assessing the opportunity of on-site trials at a prospective landfill site in 2025.

Griffith University, School of Environment and Science, Australian Rivers Institute, Dr Chris Pratt commented:

"Griffith University values its technical partnership with Zeotech and the positive outcomes we have achieved over the past two years, culminating in these promising early pilot-scale field results averaging 70-85% methane removal over the September to November period, further validating the potential for zeoteCH_4® technology to control methane emissions.

We look forward to working closely with Zeotech and Cleanaway to progress to the next phase, targeting on-site landfill trials in 2025."

Zeotech, Chief Executive Officer, James Marsh commented:

"We are very excited by these promising early results, which support strong consideration in moving towards on-site landfill trials. Reducing methane by up to 85% on average is a fantastic outcome, and importantly, both zeoteCH_4® products demonstrate that they can remove methane emissions effectively.

Zeotech would like to thank Dr. Chris Pratt and his team at Griffith University for their ongoing focus and dedication, which has delivered these outstanding results."

[1] IPCC. Climate Change (2014): Synthesis Report, IPCC, Geneva, Switzerland

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Summary of recent activities:

Since the Program updates in March[2] and July[3], activities at Griffith has focussed on optimising the three simulated configurations that were commissioned in May, to promote consistent bio-methane production.

Two configurations contain the Company's zeoteCH$_4$® products, which showed constant high oxidation rates in earlier lab-scale activities during the Program. The zeolite-based products are manufactured from the Company's Toondoon kaolin mineral and a coal combustion by-product from a southeast Queensland generator, utilising proprietary processing technology developed in-house by the Company.

The third configuration contains methanotroph inoculum-only, providing a benchmark for the Company's zeolite materials.

Cooler seasonal conditions had inhibited bio-methane generation in the early stages of the Program, which delayed the acclimatisation of the methanogens (the source of methane gas).

As a result of optimisation work and as climatic seasonal factors improved, persistent bio-methane production from the three configurations has been observed since September. This has allowed the Program to collect and analyse data from the three configurations and measure the effectiveness of the Company's technology.

To evaluate the performance of the Company's zeoteCH$_4$® products, regular measurement of methane emissions from the capping soil treated with the zeolite technology was compared with measurements from untreated capping soil (control) from the same configuration.

The overall performance of the zeoteCH$_4$® products is expressed as percentage (%) reduction of methane, relative to the control, and summarised in Table 1.

	zeoteCH$_4$® Product A	**zeoteCH$_4$®** Product B
Methane Reduction Efficiency – Mean (%)	83.7%	73.5%
Methane Reduction Efficiency – Median (%)	87.8%	52.3%

(Table 1) – summary of methane reduction efficiency of the two zeoteCH$_4$® treatments for the period September to November 2024

Based on the results presented in Table 1, early evidence indicates that the Company's two zeoteCH$_4$® products can reduce methane emissions from the simulated landfill configurations with an average (mean) efficiency of 70-85%.

This strong outcome accords with earlier batch experiments that demonstrated that the two zeoteCH$_4$® products achieved continuously high oxidation rates of greater than 70%, following the initial inoculation period[4].

[2] ASX Announcement 27/03/2024 - Methane Control Program Update
[3] ASX Announcement 02/07/2024 - Methane Control Program Update
[4] ASX Announcement 30/01/2024 - Methane Control Trials Advance Infield to Cleanaway Landfill

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The experiments indicate that product A is potentially more effective than product B. However, both the Company's zeoteCH_4® products performed substantially better than the third configuration containing methanotroph inoculum-only, which did not show any capacity to reduce methane emissions.

Early indications are that the Company's zeolite-based technology, and in particular product A, are potentially enhancing methane elimination by:

- having a high surface area that plays an important role by providing greater space for methanotrophs to colonise, grow, and prevent them from being washed away;
- high porosity that improves the soil's ability to retain moisture and maintain favourable environmental conditions for microbial growth;
- the capacity to adsorb methane gas and make it available to the methanotrophs during periods of variable emissions; and
- maintaining soil pH conditions that are more favourable for methanotrophs

(above) simulated landfill configurations located at Griffith University

The results are extremely encouraging. However, it is important to carry out additional monitoring to collect more data to account for seasonal variations, variable environmental conditions and to determine the longevity of the technology.

Therefore, the Company is currently planning to extend the monitoring of the configurations for an additional 3 months, before targeting the opportunity to move to on-site trials at a prospective landfill site.

The Company aims to safeguard possible commercial opportunities that could result from the methane control technology it is advancing, having lodged a provisional patent application titled 'Zeolites for Methane Control' in June 2024 with the Australian Patent Office.

Landfilling of domestic waste is a significant source of methane emissions, releasing just under 1 Gt of atmospheric CO_2-e per annum. Methane is the second most significant GHG, with a global warming potential (GWP) 28 times greater than carbon dioxide over a 100-year period[5].

[5] IPCC. Climate Change (2014): Synthesis Report, IPCC, Geneva, Switzerland

This announcement has been approved by the Board.

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About Zeotech

Zeotech Limited (ASX: ZEO) is a team of dedicated people working together to build a future-focused company, leveraging wholly-owned high-grade kaolin resources to produce advanced materials for greenhouse gas (GHG) mitigation, such as zeolites for fugitive methane control and high-reactivity metakaolin (HRM) for the low-carbon concrete market.

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