

Test results from the grab sampling of ambient air conducted on 18 May returned detectable concentrations of hydrogen sulphide (H₂S) in all samples.

Potential health impacts and odorous properties of H₂S are described in the ESR summary sheet published in October 2019 (<https://www.esr.cri.nz/assets/Hydrogen-Sulphide-Fact-Sheet.pdf>). H₂S is a colourless gas with the characteristic odour of rotten eggs. It is responsible for the characteristic odour associated with geothermal areas.

Some of the H₂S concentrations that have been measured in the ambient air close to the Christchurch Wastewater Treatment Plant are of the same order of magnitude as the Office of Environmental Health Hazard Assessment (California) air quality criteria for potentially causing headache, nausea, and physiological responses to odour (which is 0.059 ppm). However, the concentrations of H₂S measured on 18 May clearly show a decrease in H₂S concentrations with increasing distance from the CWTP, with H₂S concentrations measured in the vicinity of Bromley School (site 10) for example being one quarter of the OEHHA criteria.

Collection of ambient air samples will continue on a weekly basis in the meantime, to establish more information about the range of H₂S concentrations in the suburbs downwind of the Christchurch Waste Water Treatment Plant. Council is now investigating using equipment to monitor for H₂S over longer time periods.

Certificate of Analysis

Te Hononga Civic Offices
53 Hereford Street, Christchurch

Lab reference: 22-0023
Submitted by: Nigel Grant

Kurt Scoringe
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Date received: 18/05/2022
Date analyzed: 18/05/2022
Report date: 19/05/2022
Order No:
Reference: 18th-May-2022

Laboratory ID		22-0023-1	22-0023-2	22-0023-3	22-0023-4	22-0023-5	22-0023-6
Customer ID		Site 1 - Cuthberts/Ruru	Site 2 - Cuthberts Rd. Plant Gates	Site 5 - SH74 by Dam	Site 7 - Pond Inlet	Trickling filter 1	Trickling filter 2
Sampling time		18/05/2022, 10:40	18/05/2022, 10:45	18/05/2022, 10:10	18/05/2022, 09:30	18/05/2022, 09:15	18/05/2022, 09:15

Analyte (CAS)	Unit						
monoterpenes	ppbv	<LOQ	1100	<LOQ	<LOQ	2220	39
decamethylcyclopentasiloxane (541-02-6)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
ethanol (64-17-5)	ppbv	21	14	<LOQ	29	<LOQ	13
heptanes	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
hydrogen sulphide (7783-06-4)	ppbv	23	172	39	368	48	19
pentanes	ppbv	7	<LOQ	<LOQ	<LOQ	<LOQ	9
methane (74-82-8)	ppbv	1934	3063	1835	4842	3221	1977
methanol (67-56-1)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
methyl mercaptan (74-93-1)	ppbv	<LOQ	<LOQ	<LOQ	6	9	<LOQ
styrene (100-42-5)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
xylenes + ethylbenzene	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
benzene (71-43-2)*	ppbv	<LOQ	49	<LOQ	<LOQ	84	<LOQ

Laboratory ID		22-0023-7	22-0023-8	22-0023-9	22-0023-10	22-0023-11	22-0023-12
Customer ID		Site 3a - Shortland St.	Site 4a - Met Site	Site 13 - Energy Plant	Site 6a - Affordable Storage	Site 12 - StJohns/Seascape	Site 10 - Bromley Sch.
Sampling time		18/05/2022, 10:00	18/05/2022, 10:05	18/05/2022, 09:40	18/05/2022, 10:17	18/05/2022, 10:23	18/05/2022, 10:30

Analyte (CAS)	Unit						
monoterpenes	ppbv	<LOQ	25	12	17	11	20
decamethylcyclopentasiloxane (541-02-6)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
ethanol (64-17-5)	ppbv	31	<LOQ	38	6	<LOQ	24
heptanes	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
hydrogen sulphide (7783-06-4)	ppbv	91	<LOQ	461	18	10	14
pentanes	ppbv	<LOQ	17	<LOQ	<LOQ	<LOQ	<LOQ
methane (74-82-8)	ppbv	2146	1449	3438	1900	1648	3589
methanol (67-56-1)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
methyl mercaptan (74-93-1)	ppbv	<LOQ	<LOQ	5	<LOQ	<LOQ	<LOQ
styrene (100-42-5)	ppbv	<LOQ	9	<LOQ	<LOQ	<LOQ	<LOQ
xylenes + ethylbenzene	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
benzene (71-43-2)*	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

Lab reference: 22-0023

Report date: 19/05/2022

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Certificate of Analysis

Laboratory ID	22-0023-13
Customer ID	Site 11- Mem. Cem.
Sampling time	18/05/2022, 10:35

Analyte (CAS)	Unit	
monoterpenes	ppbv	<LOQ
decamethylcyclopenta siloxane (541-02-6)	ppbv	<LOQ
ethanol (64-17-5)	ppbv	49
heptanes	ppbv	<LOQ
hydrogen sulphide (7783-06-4)	ppbv	60
pentanes	ppbv	19
methane (74-82-8)	ppbv	5259
methanol (67-56-1)	ppbv	<LOQ
methyl mercaptan (74-93-1)	ppbv	<LOQ
styrene (100-42-5)	ppbv	<LOQ
xylenes + ethylbenzene	ppbv	<LOQ
benzene (71-43-2)*	ppbv	<LOQ

* - Mass scan results.

Method approver:



Anatoly Chernyshev, PhD
Director

Method Summary

The samples were analysed as received using direct injection – Selected Ion Flow Tube Mass Spectrometry (SIFT-MS) in Mass Scan Mode (reporting limit is 100 ppbv) and Selected Ion Mode (LOQ is 5 ppbv).

Report Notes

The samples were received in acceptable condition. **Wind direction during sampling: NE. New components detected and added to the SIM method: benzene.**

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