Commentary on Sampling Results from 8 June

Test results from the grab sampling of ambient air conducted on 8 June returned detectable concentrations of hydrogen sulphide (H_2S). Ammonia was also detected in some locations again but a lower concentrations that the previous week and Methyl mercaptan was detected in one location. Wind speeds were also lower than the previous week. Samples were only collected from locations downwind of the CWTP and ponds.

The test laboratory reports the measured concentrations in parts per billion (ppb). One ppb is equal to one-thousandth of a part per million (ppm) which is the unit used more commonly in publications. Therefore, the concentrations have been expressed as ppm rather than ppb in this memo.

As well referencing Environmental Health Standards which allow for 24hour exposures, Workplace standards are also referred to in this commentary as to take into account those people who spend less time in the area.

Comments on H_2S sampling results from 8 June

Some of the H_2S concentrations that have been measured in the ambient air downwind of the CWTP exceed the OEHHA air quality criteria for potentially causing headache, nausea, and physiological responses to odour (which is 0.03 ppm). However, the measured concentrations are much lower than the OEHHA acute exposure guideline levels for notable irritation and discomfort (which is 0.75 ppm) or more serious health effects (above 41 ppm). The measured concentrations are also much lower than the NZ Workplace Exposure Standard, which is 5 ppm.

The concentrations of H_2S measured on 8 June continue to show a decrease in H_2S concentrations with increasing distance from the CWTP.

Methyl Mercaptan

Methyl mercaptan was detected in one sample this week - all other samples were below the detection limit of 0.002 ppm.

However it is noted that Methyl mercaptan is odorous at extremely small concentrations. Published odour threshold values for methyl mercaptan vary, but the compound can typically be detected as an odour at a concentration of about 0.0001-0.0005 ppm. The test method that the Council is using can measure methyl mercaptan concentrations down to as low as 0.002ppm, which is higher than the odour threshold - meaning the methyl mercaptan could be present in the ambient air, and causing noticeable odour, and not be able to be detected by the test method.

Ammonia

Ammonia was detected again in some of the samples this week. The concentrations are well below the OEHHA acute air quality criteria (4.6ppm) and the New Zealand Workplace Exposure Standard of 25ppm.

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Certificate of Analysis

Te Hononga Civic Offices
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Lab reference: 22-0030
Submitted by: Tracy Freeman

Date received: 09/06/2022
Date analyzed: 09/06/2022
Report date: 09/06/2022
Order No:
Reference: 8th-June-2022

Laboratory ID		22-0030-1	22-0030-2	22-0030-3	22-0030-4	22-0030-5	22-0030-6
Customer ID		14 Maces Rd	Site 12, St. Johns/Seascape	Site 6a, Affordable storage	Site 5, Pond dam	Value Plus Meats	Dog shelter
Sampling time		08/06/2022, 14:40	08/06/2022, 14:30	08/06/2022, 14:20	08/06/2022, 15:20	08/06/2022, 15:50	08/06/2022, 14:55
Analyte (CAS)	**Unit**						
ammonia (7664-41-7)	ppbv	<LOQ	123	47	<LOQ	62	<LOQ
benzene (71-43-2)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
carbon disulfide (75-15-0)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
carbonyl sulfide (463-58-1)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
dimethyl disulfide (624-92-0)	ppbv	<LOQ	2	<LOQ	<LOQ	<LOQ	<LOQ
ethyl mercaptan + dimethyl sulphide	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
hydrogen sulphide (7783-06-4)	ppbv	<LOQ	13	32	208	34	74
methyl mercaptan (74-93-1)	ppbv	<LOQ	<LOQ	<LOQ	3	<LOQ	<LOQ
styrene (100-42-5)	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
xylenes + ethylbenzene	ppbv	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

Laboratory ID		22-0030-7	22-0030-8	LOQ, estimated, ppbv	Uncertainty, relative, estimated (n=28), %
Customer ID		Linwood Ave	Site 2, CWTP gate, Cuthberts Rd		
Sampling time		08/06/2022, 16:00	08/06/2022, 15:30		
Analyte (CAS)	**Unit**				
ammonia (7664-41-7)	ppbv	60	<LOQ	43	2
benzene (71-43-2)	ppbv	<LOQ	<LOQ	3	8
carbon disulfide (75-15-0)	ppbv	<LOQ	<LOQ	24	6
carbonyl sulfide (463-58-1)	ppbv	<LOQ	<LOQ	13	4
dimethyl disulfide (624-92-0)	ppbv	<LOQ	<LOQ	1	6
ethyl mercaptan + dimethyl sulphide	ppbv	<LOQ	<LOQ	2	10
hydrogen sulphide (7783-06-4)	ppbv	16	41	8	9
methyl mercaptan (74-93-1)	ppbv	<LOQ	<LOQ	2	11
styrene (100-42-5)	ppbv	<LOQ	<LOQ	1	14
xylenes + ethylbenzene	ppbv	<LOQ	<LOQ	2	8

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Certificate of Analysis

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 as in the table).

Report Notes

The samples were received in acceptable condition. **Wind direction during sampling: N/A. No new components detected in the mass scans.**