

Direct Reading Instrumentation Weekly Summary

11/23/16 6:00 – 11/30/16 6:00

Weekly Summary:

The ToxiRAE and MultiRAE instruments are personal monitors and were not deployed for use during this week. The AreaRAE systems were taken offline to address calibration issues and did not report data during this week¹.

RAE Meshgard (505) ammonia sensors continue to report that no ammonia was detected by these sensors.

Gastronics instruments (512) have sensors for NH₃, VOCs, and N₂O. No ammonia was detected by Gastronics instruments. The N₂O sensors on 512 instruments in AP Farm (512A – 512T) were re-calibrated (completed 11/22) and will be observed for a period to determine whether the instruments will hold calibration. The N₂O sensors on the 512 instruments have been difficult to keep in calibration and the calibration procedure for the N₂O sensor/transmitter was modified to correct for transmitter output drift. The N₂O data will remain suspect until the stability of the sensor and calibration can be confirmed. N₂O has not been detected above background levels (0.3 to 0.4 ppm) by spectroscopic instruments around the farm.

One Gastronics VOC sensor was in calibration this week, 512U. It did not report any VOCs above its detection limit. The VOC sensors are overdue for cleaning and maintenance. Replacement sensors have been ordered to switch out existing sensors for cleaning, until this is accomplished only sensors holding their calibration are reported. A total VOC limit of 2 ppm currently is employed by the Industrial Hygiene Program Technical Basis².

November 23rd – November 30th 2016 Observations By Instrument:

HazScanner (501) – The HazScanners, 501A and 501B, have not been calibrated, and work is ongoing to complete their configuration. Therefore no data is presented from these instruments – other than up-time.

AreaRAE (502) – Not reporting during this week.

Table 1. AreaRAE Comments.

Compound (units)	Comment	OEL	Action Level	Detection Range
CO (ppm)	No data reported.	50	25	1 – 500
LEL (%)	No data reported.			0 – 100
NH ₃ (ppm)	No data reported.	25	12.5	1 – 50
Oxygen (%)	No data reported.		<19.5	1 – 30
VOC (ppm)	No data reported.		2	1 – 200

¹ Note that instrument tags (labels) reported in OSI PI and often presented in weekly summary information are captured directly from OSI PI and that all gas monitoring instruments begin with 200-GM, followed by the target analyte (such as NH₃), followed by the instrument type (three digit number), and the instrument unit as sequential letters. For example, "200-GM-NH₃-512C" is an ammonia sensor reporting from Gastronics (denoted as "512") instrument "C".

² RPP-22491, Rev 1, "Industrial Hygiene Chemical Vapor Technical Basis": <http://hanfordvapors.com/wp-content/uploads/2016/10/Industrial-Hygiene-Chemical-Vapor-Technical-Basis-RPP-22491 - Rev 1.pdf>

Direct Reading Instrumentation Weekly Summary

11/23/16 6:00 – 11/30/16 6:00

ToxiRAE (503) – Not used during this week.

Table 2. ToxiRAE Comments.

Compound (units)	Comment	OEL	Action Level	Detection Range
VOC (ppm)	Not in use.	N/A	2	0.1 – 2000

MultiRAE (504) – Not used during this week.

Table 3. MultiRAE Comments.

Compound (units)	Comment	OEL	Action Level	Detection Range
CO (ppm)	A – Not in use. B – Not in use. C – Not in use.	50	25	0 – 500
LEL (%)	A – Not in use. B – Not in use. C – Not in use.	N/A		0 – 100
NH ₃ (ppm)	A – Not in use. B – Not in use. C – Not in use.	25	12.5	1 – 500
Oxygen (%)	A – Not in use. B – Not in use. C – Not in use.		<19.5	1 – 30
VOC (ppm)	A – Not in use. B – Not in use. C – Not in use.	N/A	2	0.1 – 5000

RAE MeshGuard (505) – Ammonia detection instruments located in A Tank Farm (18 sensors) and located in AP Tank Farms (4 sensors).

Table 4. RAE MeshGuard Comments.

Compound (units)	Comment	OEL	Action Level	Detection Range
NH ₃ (ppm)	Instruments reporting: 505A, C, D, F, G, H, I, J, K, M, N, O, P, Q, T, U, V, W, and X <ul style="list-style-type: none"> No ammonia detected. Calibration/check tests³⁴ on: 512A, C, D, F, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, and X 	25	12.5	1 – 50

³ OSHA Calibrating and Testing Direct-Reading Portable Gas Monitors. <https://www.osha.gov/dts/shib/shib093013.html>

⁴ OSHA Technical Manual. https://www.osha.gov/dts/osta/otm/otm_ii/pdfs/otmii_chpt3_directreading.pdf

Direct Reading Instrumentation Weekly Summary

11/23/16 6:00 – 11/30/16 6:00

FIS-Gastronics (512) – Monitor for ammonia, volatile organic compounds, and nitrous oxide. Calibration/check tests performed on: 512H, I, J, K, L, M, N, O, P, Q, R, and S.

Table 5. Gastronics Comments.

Compound (units)	Comment	OEL	Action Level	Detection Range
NH ₃ (ppm)	No ammonia reported on any instrument (other than calibration tests)	25	12.5	1 – 500
VOC (ppm)	<ul style="list-style-type: none"> Instruments in calibration: 512U (see text above) Instruments that reported a maximum value of ≤ 2 ppm: None. Instruments reporting maximum values > 2 ppm: None. 	N/A	2	0 – 1000
N ₂ O (ppm)	N ₂ O sensors reporting from 512A, C, D, E, F, H, I, K, M, N, O, P, T, and U. The N ₂ O sensors on 512I, K, M, and N did not hold calibration and will be reviewed. The N ₂ O data from Gastronics will continue to be reviewed until instruments are determined to function correctly.	50	25	0 – 1000

November 23rd – November 30th 2016 Instrument Operational Status:

Time reporting is calculated using the amount of time during the week sensors report to OSI PI System⁵:

Table 6. HazScanner (501) % Time Reporting by Instrument.

Instrument	% Time Reporting	Instrument	% Time Reporting
501A	0	501B	21.4

Table 7. AreaRAE (502) % Time Reporting by Instrument.

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
502A	0	502D	0	502G	0	502J	0
502B	0	502E	0	502H	0		
502C	0	502F	0	502I	0		

⁵ OSI PI System is a data visualization software package from [OSIsoft](http://www.osisoft.com).

Direct Reading Instrumentation Weekly Summary

11/23/16 6:00 – 11/30/16 6:00

**Table 8. ToxiRAE (503) % Time Reporting by Instrument.
(personal monitors only used when operators are in the field)**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
503A	0	503E	0	503I	0
503B	0	503F	0	503J	0
503C	0	503G	0	503K	0
503D	0	503H	0		

**Table 9. MultiRAE (504) Time Reporting by Instrument.
(personal monitors only used when operators are in the field)**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
504A	0	504B	0	504C	0

Table 10. RAE MeshGuard (505) % Time Reporting.

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
505A	35	505H	47	505O	47	505V	47
505B	0	505I	36	505P	47	505W	47
505C	39	505J	47	505Q	47	505X	47
505D	44	505K	3	505R	0		
505E	0	505L	0	505S	0		
505F	34	505M	44	505T	47		
505G	47	505N	46	505U	47		

Table 11. Gastronics (512) % Time Reporting by Instrument (based on NH₃).

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
512A	81	512H	93	512N	66	512T	95
512B	0	512I	96	512O	90	512U	100
512C	98	512J	0	512P	82	512V	0
512D	83	512K	97	512Q	0	512W	0
512E	98	512L	97	512R	0	512X	0
512F	95	512M	98	512S	0	512Y	0
512G	0						