

# Air Monitoring Summary Tables

The table below summarize monitoring data collected on using EPA's Viper wireless remote monitoring system.

Project Name: **BioLab Chlorine**

From: **10/1/24**  
5:00 PM

To: **10/2/24**  
5:00 AM



Station 1 - Intersection of VFW Dr and Dogwood Dr							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	449	0	0-0 ppb	0 ppb	9000 ppb 8hr avg
	CO	No	449	0	0-0 ppm	0 ppm	83 ppm 1hr avg
	H2S	No	449	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	449	449	20.90-20.90 %	20.90 %	<19.5 or >23%
	LEL	No	449	0	0-0 %	0 %	0.1
	CL2	Yes	449	283	0-11 ppm	0.74 ppm	0.5 ppm 1hr avg
SPM Flex	HYDROGEN CHLORIDE (HCL)	No	12576	11229	0-7.80 ppm	0.26 ppm	1.8 ppm 1hr avg
SPM Flex	PHOSGENE (COCL2)	No	13842	3939	0-12 ppb	1.10 ppb	300 ppb 1hr avg

Station 2 - Mammy's Kitchen - Intersection of Rockdale Industrial Blvd and Rockbridge Rd							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	448	0	0-0 ppb	0 ppb	9000 ppb 8hr avg
	CO	No	448	12	0-10 ppm	0.12 ppm	83 ppm 1hr avg
	H2S	No	448	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	448	448	20.90-20.90 %	20.90 %	<19.5 or >23%
	LEL	No	448	0	0-0 %	0 %	0.1
	CL2	No	448	258	0-0.20 ppm	0.06 ppm	0.5 ppm 1hr avg
SPM Flex	HYDROGEN CHLORIDE (HCL)	No	13795	0	0-0 ppm	0 ppm	1.8 ppm 1hr avg
SPM Flex	PHOSGENE (COCL2)	No	13794	0	0-0 ppb	0 ppb	300 ppb 1hr avg

Station 3 - ER Trailer - Old Covington Hwy							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	458	14	0-1234 ppb	8.85 ppb	9000 ppb 8hr avg
	CO	No	458	44	0-22 ppm	0.63 ppm	83 ppm 1hr avg
	H2S	No	458	30	0-2.40 ppm	0.06 ppm	0.51 ppm 1hr avg
	O2	No	458	458	20.90-20.90 %	20.90 %	<19.5 or >23%
	LEL	No	458	0	0-0 %	0 %	0.1
	CL2	No	458	17	0-0.30 ppm	0.01 ppm	0.5 ppm 1hr avg

Station 4 - Intersection of Rockbridge Rd and Harvell St							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	149	10	0-2167 ppb	62.51 ppb	9000 ppb 8hr avg
	CO	No	149	7	0-5 ppm	0.17 ppm	83 ppm 1hr avg
	H2S	No	149	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	149	149	20.90-20.90 %	20.90 %	<19.5 or >23%
	LEL	No	149	0	0-0 %	0 %	0.1
	CL2	No	111	1	0-0.20 ppm	0.00 ppm	0.5 ppm 1hr avg

Station 5 - Intersection of Lester Rd and Old Covington Hwy							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	CO	No	452	0	0-0 ppm	0 ppm	83 ppm 1hr avg
	H2S	No	452	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	452	452	20.50-23.90 %	21.44 %	<19.5 or >23%
	LEL	No	452	0	0-0 %	0 %	0.1
	CL2	No	452	0	0-0 ppm	0 ppm	0.5 ppm 1hr avg

Station 6 - Bio Lab Gate							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	452	0	0-0 ppb	0 ppb	9000 ppb 8hr avg
	CO	No	452	0	0-0 ppm	0 ppm	83 ppm 1hr avg
	H2S	No	452	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	452	452	20.90-21.40 %	20.98 %	<19.5 or >23%
	LEL	No	452	0	0-0 %	0 %	0.1

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From: **10/1/24**  
5:00 PM

To: **10/2/24**  
5:00 AM



Station 7 - Intersection of North Main St and Irwin Bridge Rd							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	432	45	0-173 ppb	6.67 ppb	9000 ppb 8hr avg
	CO	No	432	1	0-2 ppm	0.00 ppm	83 ppm 1hr avg
	H2S	No	432	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	O2	No	432	432	14.70-30 %	18.56 %	<19.5 or >23%
	LEL	No	432	0	0-0 %	0 %	0.1
	CL2	No	432	5	0-0.10 ppm	0.00 ppm	0.5 ppm 1hr avg

Station 8 - Iris Drive SW Near Pyro Fireworks							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	354	72	0-7423 ppb	97.80 ppb	9000 ppb 8hr avg
	CO	No	354	1	0-54 ppm	0.15 ppm	83 ppm 1hr avg
	H2S	No	354	1	0-17 ppm	0.05 ppm	0.51 ppm 1hr avg
	O2	No	354	353	0-21.40 %	21.09 %	<19.5 or >23%
	LEL	No	354	1	0-48 %	0.14 %	0.1
	CL2	No	354	155	0-1.20 ppm	0.13 ppm	0.5 ppm 1hr avg

Community Air Monitoring - Roving							
Instrument	Analyte	Action Level Exceedance?	Number of Readings	Number of Detections	Concentration Range	Period Average	Action Level
AreaRAE Pro	VOC	No	41	7 (34 rejected)	20-160 ppb	62.20 ppb	9000 ppb 8hr avg
	CO	No	41	0	0-0 ppm	0 ppm	83 ppm 1hr avg
	H2S	No	41	0	0-0 ppm	0 ppm	0.51 ppm 1hr avg
	CL2	No	41	0 (34 rejected)	0.5-0.7 ppm	0.60 ppm	0.5 ppm 1hr avg

Notes:

- % Percent
- < Less than
- > Greater than
- AEGL Acute Exposure Guideline Levels for Airborne Chemicals
- C/m Counts (ionization events) per minute
- µg/m<sup>3</sup> Micrograms per cubic meter
- min Minute
- PAC Protective Action Criteria
- PEL Permissible exposure limit
- ppb Parts per billion
- ppm Parts per million
- PM Particulate matter
- SOG Standard Operating Guidelines
- SPM Single Point Monitor
- TEEL Temporary Emergency Exposure Limit
- TLV Threshold limit value

Analyte	Definition	Action Level Reference
CL2	Chlorine	AEGL-1 1hr
CO	Carbon Monoxide	AEGL-2 1hr
H2S	Hydrogen Sulfide	AEGL-1 1hr
HYDROGEN CHLORIDE (HCL)	Hydrogen Chloride	AEGL-1 1hr
LEL	Lower Explosive Limit	29 CFR 1910.146, Confined Spaces
O2	Oxygen	29 CFR 1910.146, Confined Spaces
PHOSGENE (COCL2)	Phosgene (COCl <sub>2</sub> )	AEGL-2 1hr
VOC	Volatile Organic Compounds	AEGL-1 1hr

# Air Monitoring Summary Tables – Review

**Project Name: Bio Lab Chlorine**

The EPA uses air monitoring instruments with real-time alerts to track air quality during an emergency response. This air monitoring summary table report is used by EPA and local responders to review the thousands of measurements that can be collected in a single day.

The number of readings per instrument during this period is reduced due to communications issues with the equipment. The live data connections are still active and stable, but frequency of measurements are reduced to 30-60 seconds.

The following is a review of station results for the time period from 5:00pm on 10/1/2024 to 5:00am on 10/2/2024:

- **Station 1:** There were multiple rises and fall events of Cl<sub>2</sub> concentrations
  - 6:40pm to 8:00pm, peak of 11ppm with hourly average up to 2.8ppm (action level is 0.5ppm over 1 hour)
  - 10:00pm to 11:00pm, peak of 0.8ppm with hourly average up to 0.33ppm
  - 12:00am to 1:00am, peak of 2.8ppm with hourly average up to 1.09ppm
  - 1:00am to 3:15am, peak of 6.2ppm with hourly average up to 2.18ppm

There was a sustained measurement from 6:30pm to 8:00pm with a peak of 4.8ppm and a maximum hourly average of 0.84ppm. There was another sustained measurement of HCl from 2:00am to 3:10am with intermittent peaks up to 7.8ppm and an hourly average up to 1.01ppm.
- **Station 2:** No issues observed
- **Station 3:** There were frequent but not sustained measurements of H<sub>2</sub>S throughout the operational period with a maximum concentration of 2.4ppm; the hourly average for H<sub>2</sub>S did not exceed 0.24ppm.
- **Station 4:** No issues observed
- **Station 5:** No issues observed.
- **Station 6:** No issues observed. This instrument lacks a Cl<sub>2</sub> sensor
- **Station 7:** No issues observed. The low and high O<sub>2</sub> measurements resulting in action level exceedances were not sustained conditions; one-time O<sub>2</sub> sensor readings out of range are not uncommon for instruments running for several days.
- **Station 8:** There was a single measurement of 1.2ppm at 6:30pm that was not sustained. From 8:00pm to 12:00am there were sustained measurements of Cl<sub>2</sub> with a peak of 0.4ppm and a maximum hourly average of 0.39ppm.
- **Community Air Monitoring:** Air monitoring was conducted throughout the community overnight at 41 locations. Unfortunately, the instrument being used did not pass calibration upon return and 34 of these results were rejected. The 7 that remain were measured near schools in the area and showed 0ppm for Cl<sub>2</sub>.

# Air Monitoring Summary Tables – Explanation of Tables

**Project Name: Bio Lab Chlorine**

The following information is provided in each report:

- **Station** – at the top of each table is a name and location for each air monitoring station. These are mobile stations that may change over time.
- **Instrument** – this is the model of instrument being used to measure the air. Some stations may use multiple instruments, and some instruments may measure multiple things at once
- **Analyte** – these are the chemicals or other compounds that the instrument is measuring:
  - **VOC**: Volatile Organic Compounds; this is not a specific chemical but includes a long list of possible chemicals, many of which have strong odors
  - **CO**: Carbon Monoxide; this compound is commonly associated with combustion (i.e. fires)
  - **H2S**: Hydrogen Sulfide; this is a default sensor for the instrument and is used for industrial safety
  - **LEL**: Lower-Explosive Limit; this is a default sensor for the instrument and is used for industrial safety
  - **O2**: Oxygen; this is a default sensor for the instrument and is used for industrial safety
  - **Cl2**: Chlorine; chlorine gas is an inhalation hazard with a pungent suffocating odor and is a contaminant of concern for the site
  - **HCl**: Hydrogen Chloride; a corrosive gas with a sharp, pungent odor and is a contaminant of concern for the site
  - **COCl2**: Phosgene; a potential combustion product that EPA monitors for at chemical and industrial fires
- **Action Level Exceedance** – is an easy-to-read determination whether one of the Action Levels in the column on the right *may have* been exceeded. The action levels are based on *averages over time* but this column may say “Yes” whenever a single measurement exceeds that number. This helps responders assess whether further protective measures are needed.
- **Number of Readings** – the number of measurements collected by the sensor, usually collected once every second or every minute.
- **Number of Detections** – the number of measurements greater than zero
- **Concentration Range** – the minimum and maximum measurement that was collected
- **Period Average** – the average measurement for the entire collection period
- **Action Levels** – based on the most protective AEGLs (Acute Exposure Guideline Levels) which are used by emergency responders when dealing with chemical spills or other exposures and describe the human health effects from once-in-a-lifetime, or rare, exposure to airborne chemicals. Further information is available at [EPA.gov/AEGL](http://EPA.gov/AEGL).