

Air Quality Report

This report has been compiled utilizing data provided by San Diego County HAZMAT/ San Diego City Fire Rescue HAZMAT and Haley & Aldrich, Inc.

The information obtained from these sources has been carefully analyzed and incorporated to ensure the accuracy and reliability of the findings.

**SDG&E Battery Fire
571 Enterprise Street
Start 9/5/2024 12:09
Repopulate 9/7/2024 12:00**

Air quality monitored by San Diego County HAZMAT

- Three types of monitoring units
- First reading taken at 14:30 on 9/5/2024
- Final reading taken at 18:32 on 9/6/2024

Air monitoring equipment (SD HAZMAT)

1. EAGLE 2 CGI

Last calibrated on 8/30/2024 and was “zeroed” prior to use on incident.

Standard 4 gas monitor which measures:

Lower Explosive Limit -**LEL**

Oxygen -**O2**

Hydrogen Sulfide-**H2S**

Carbon Monoxide-**CO**

2. RedWave XplorIR

Self-Calibrates at device startup.

Identifies over 5,500 gases at low part per million (ppm) concentrations

3. MultiRAE Pro

Last calibrated on 8/30/2024 and “zeroed” prior to use on the incident.

Monitors both chemical threats and gamma radiation and is the only multi-threat monitor with parts per billion

Gases monitored

1. **PH3 (Phosphine)**
2. **Cl2 (Chlorine)**
3. **H2S (Hydrogen Sulfide)**
4. **CO2 (Carbon Dioxide)**
5. **HCN (Hydrogen Cyanide)**
6. **CO (Carbon Monoxide)**
7. **HF (Hydrofluoric Acid)**

Hazmat Exposure Terms

1. TWA (Time-Weighted Average)

- **Definition:** TWA refers to the average exposure to a hazardous substance (usually airborne) over a standard workday, typically 8 hours, and a 40-hour workweek.
- **Purpose:** It is used to assess the cumulative exposure a person may experience and is compared against permissible limits to ensure safety over long-term exposure.

2. STEL (Short-Term Exposure Limit)

- **Definition:** STEL is the maximum concentration to which a person can be exposed to a chemical substance for a short period, typically **15 minutes**, without suffering adverse effects like irritation, chronic or irreversible tissue damage, or narcosis.
- **Purpose:** It helps control exposure to hazardous substances during short bursts of high exposure within a workday.

3. PEL (Permissible Exposure Limit)

- **Definition:** PEL is the maximum amount or concentration of a substance that a person can be exposed to under OSHA (Occupational Safety and Health Administration) regulations over an 8-hour work shift (TWA) or a 40-hour workweek.
- **Purpose:** These are legally enforceable limits to protect workers from the harmful effects of hazardous chemicals and substances in the workplace.

4. REL (Recommended Exposure Limit)

- **Definition:** REL is a recommended exposure limit set by NIOSH (National Institute for Occupational Safety and Health) that suggests maximum allowable concentrations for exposure to substances over a workday or workweek.
- **Purpose:** These limits are non-enforceable but serve as guidelines for employers and regulators to ensure worker safety. They are typically more stringent than PELs.

5. IDLH (Immediately Dangerous to Life or Health)

- **Definition:** the maximum concentration of a chemical in the air to which a person can be exposed for **30 minutes** without suffering life-threatening health effects or death.
- **Purpose:** Determines when workers need to wear protective equipment, such as respirators, and **when emergency evacuation is necessary**. It is critical for ensuring worker safety in hazardous environments.

Summary:

- **TWA** refers to the average exposure over time.
- **STEL** refers to the limit for short-term exposures.
- **PEL** is a legally enforceable limit by OSHA.
- **REL** is a recommended limit by NIOSH (often more conservative than PEL).
- **IDLH** refers to the maximum level of a toxic substance in the air that a person can be exposed to for 30 minutes without experiencing life-threatening effects or being unable to escape.

OSHA and NIOSH exposure limits

1. Phosphine (PH₃):

- OSHA PEL: 0.3 ppm (TWA)
- NIOSH REL: 0.3 ppm (TWA) / 1 ppm (STEL)
- IDLH 50 ppm

2. Chlorine (Cl₂):

- OSHA PEL: 1 ppm (TWA) 3 ppm (STEL)
- NIOSH REL: 0.5 ppm (TWA) / 1 ppm (STEL)
- IDLH 10 ppm

3. Hydrogen Sulfide (H₂S):

- OSHA PEL: 20 ppm (TWA) / 50 ppm (STEL)
- NIOSH REL: 10 ppm (TWA) / 15 ppm (STEL)
- IDLH 100 PPM

4. Carbon Dioxide (CO₂):

- OSHA PEL: 5,000 ppm
- NIOSH REL: 5,000 ppm (TWA) / 30,000 ppm (STEL)
- IDLH 40,000 ppm

5. Hydrogen Cyanide (HCN):

- OSHA PEL: 10 ppm (TWA)
- NIOSH REL: 4.7 ppm (not to be exceeded)
- IDLH 50 ppm

6. Carbon Monoxide (CO):

- OSHA PEL: 50 ppm (TWA)
- NIOSH REL: 35 ppm (TWA) / 200 ppm (STEL)
- IDLH 1,200 ppm

7. Hydrofluoric Acid (HF):

- OSHA PEL: 3 ppm (TWA) 6 ppm (STEL)
- NIOSH REL: 3 ppm (TWA) 6 ppm (STEL)
- IDLH 30 ppm

SD County Hazmat Readings in Parts Per Million (PPM)

Location	Distance from Incident (ft)	Time	PH3	CL2	H2S	CO2	HCN	CO
Main Gate	315	14:30	0	0	0	0	0	0
Venture and Simpson	784	14:35	0	0	0	0	0	0
State St (All Enterprise and Auto Park)	1447	14:36	0	0	0	0	0	0
Enterprise Gate	776	18:15	0	0	0	0	0.5	0
Venture and Simpson	262	18:16	0	0	0	18	2	0
Venture and Simpson	784	18:21	0	0	0	0	0.5	0
Venture and State	1108	18:22	0	0	0	0	0.5	0
Market and Auto Park	2227	18:25	0	0	0	0	0	0
Vinewood and Industrial	2280	18:27	0	0	0	0	0.5	0
Andreasen and Simpson	2522	18:29	0	0	0	0	0.5	0
1287 Simpson	3943	18:32	0	0	0	0	0.5	0

*****Above readings are the peak (highest detected) readings during the entire incident*****

***** CO2 sensors are calibrated to account for typical atmospheric CO2 levels, which generally range between 400-420ppm. This ensures that variations above normal levels are easily detectable*****

*****Negative reading on Fluoride paper at all locations. Non detect for Hydrofluoric Acid (HF) at all sites*****

***** All readings taken were well below acceptable exposure limits and considered expected readings during a routine structure fire*****

Air quality monitored by SDG&E

- Via 3rd party contractor; Haley & Aldrich, INC.
- Two types of monitoring units
- First reading taken at 20:30 on 9/5/2024
- Final reading taken at 21:36 on 9/6/2024

Air monitoring equipment

1. RAE Systems MultiRAE with P2P
Calibrated on 9/5/2024.
Multi-threat chemical detector and gas monitor
2. TSI 7575-x Indoor air quality monitor utilizing the TSI 982 Sensor probe
Monitor calibrated on 8/29/2024.
Probe calibrated on 3/11/2024.
Used to monitor indoor air quality

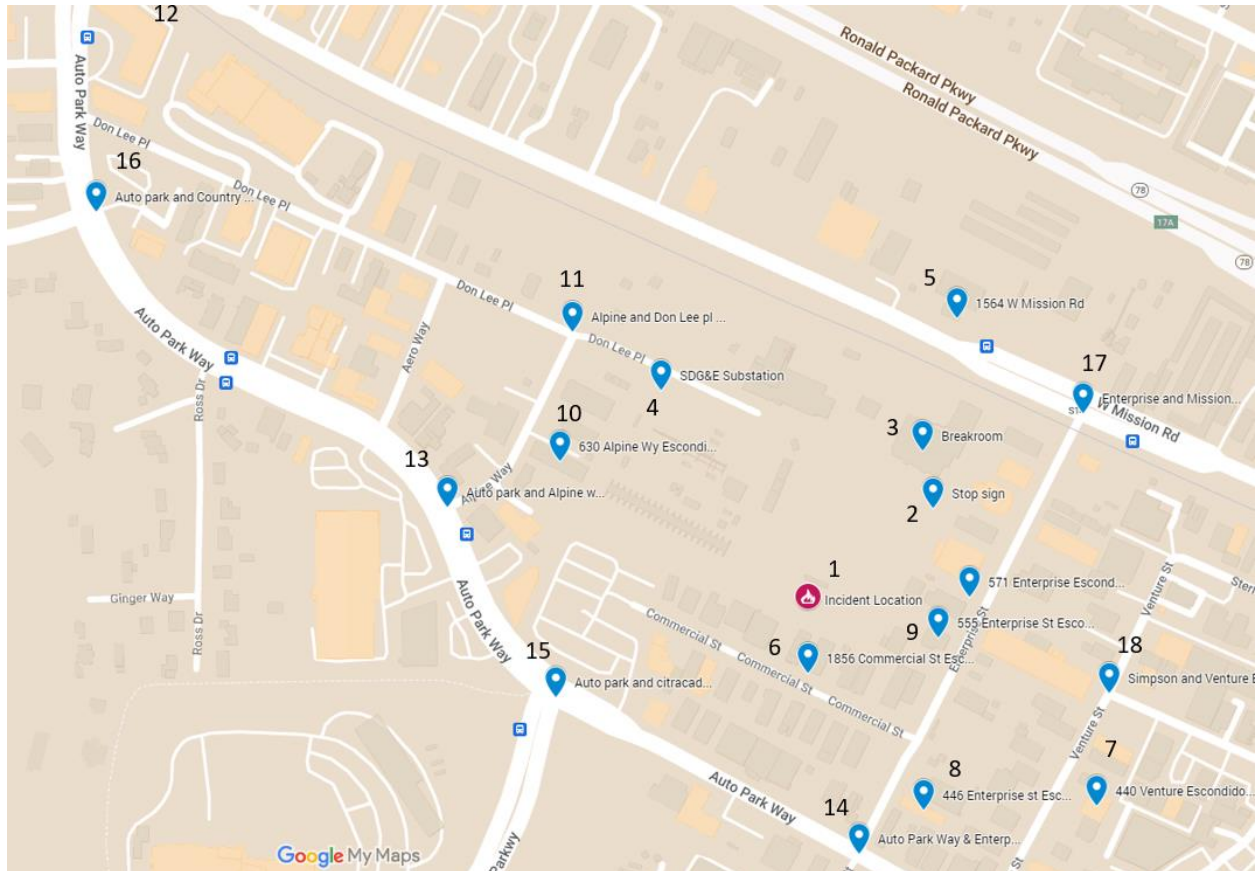
Gases Monitored

- LEL (Lower Explosive Limit)
- HCN (Hydrogen Cyanide)
- CO (Carbon Monoxide)
- H₂S (Hydrogen Sulfide)
- O₂ (Oxygen)

***** Only Carbon Monoxide (CO) levels were detected and had readings above 0 but remained well below acceptable exposure limits. Elevated CO readings are expected result during a structure fire*****

*****Carbon monoxide (CO) levels may be detected in the environment due to various sources of incomplete combustion, including vehicle emissions*****

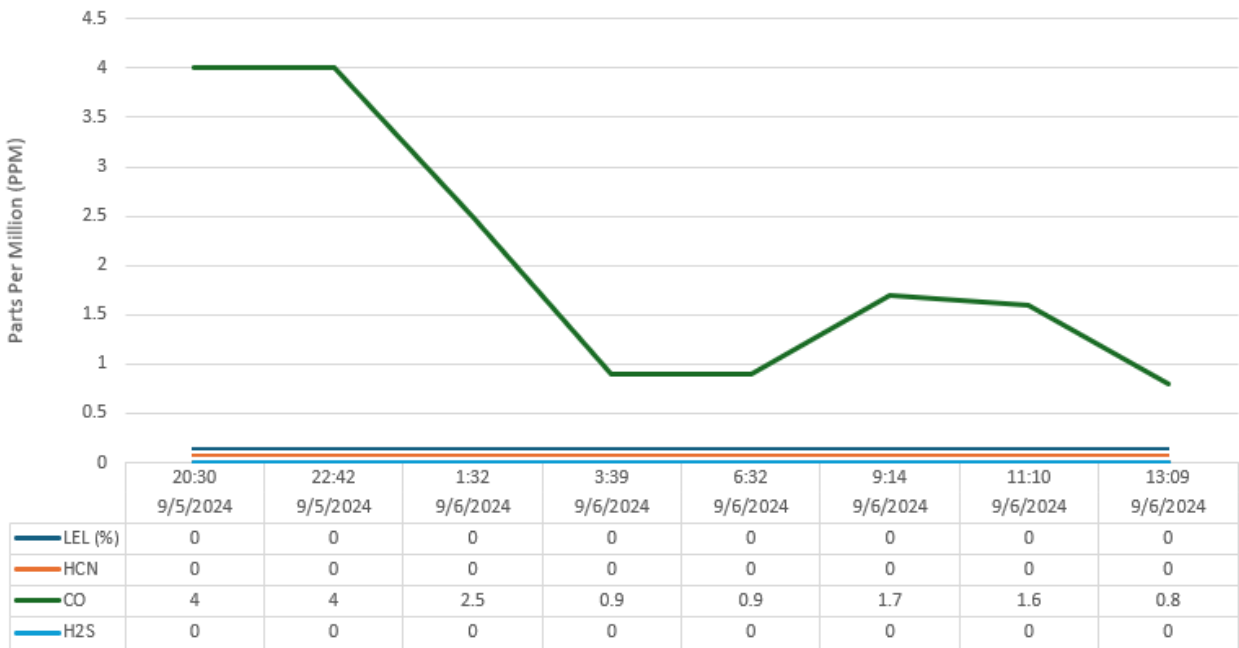
Haley & Aldrich, INC (SDG&E) Monitoring locations denoted in blue



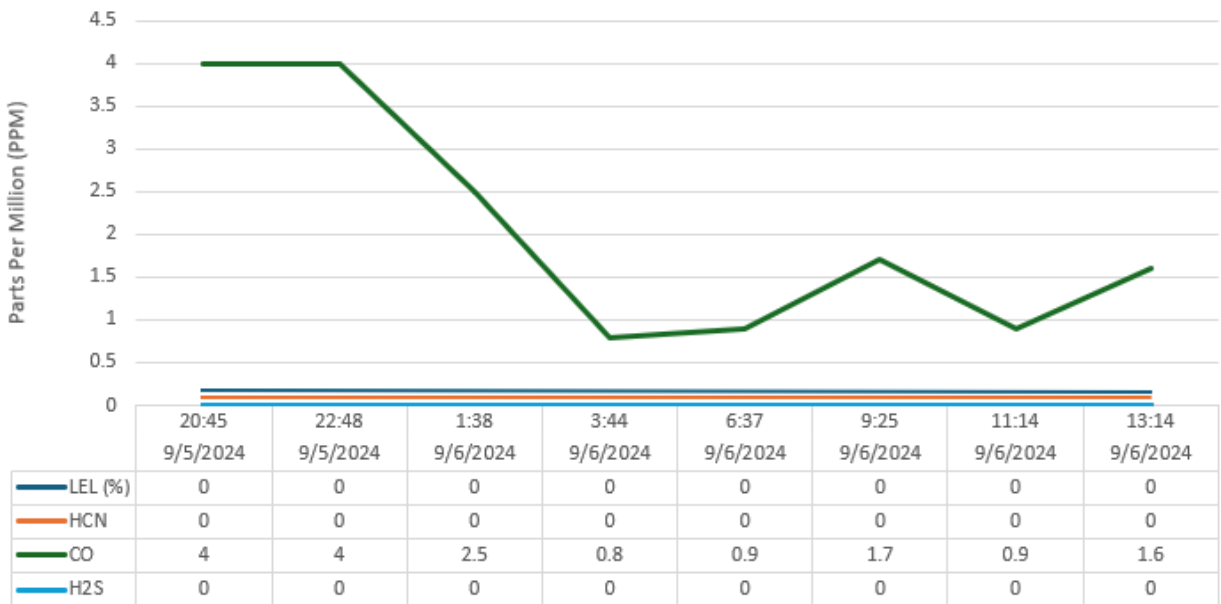
Monitoring Locations

1. **Incident location:** 571 Enterprise St South side of property
2. 571 Enterprise St: Stop sign in equipment yard
3. 571 Enterprise St: Breakroom
4. 571 Enterprise St: Substation
5. 1564 Mission Rd
6. 1856 Commercial St
7. 440 Venture
8. 446 Enterprise St
9. 555 Enterprise St
10. 630 Alpine Wy
11. Alpine Wy and Don Lee
12. Auto Park and Mission Rd
13. Auto Park and Alpine Wy
14. Auto Park and Enterprise
15. Auto Park and Citracado
16. Auto Park and Country Club Dr
17. Enterprise St and Mission Rd
18. Simpson Wy and Ventrure St

1. Air monitoring at SDG&E site location

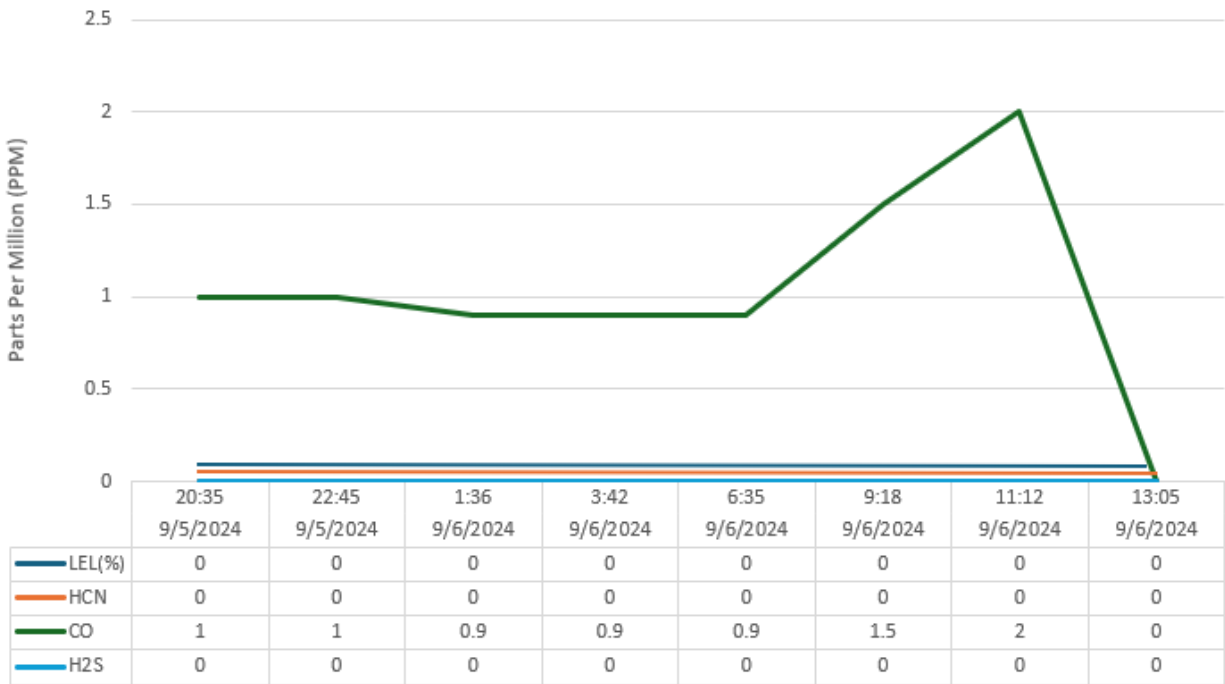


2. Air monitoring at Stop Sign NE corner of Equipment Storage yard

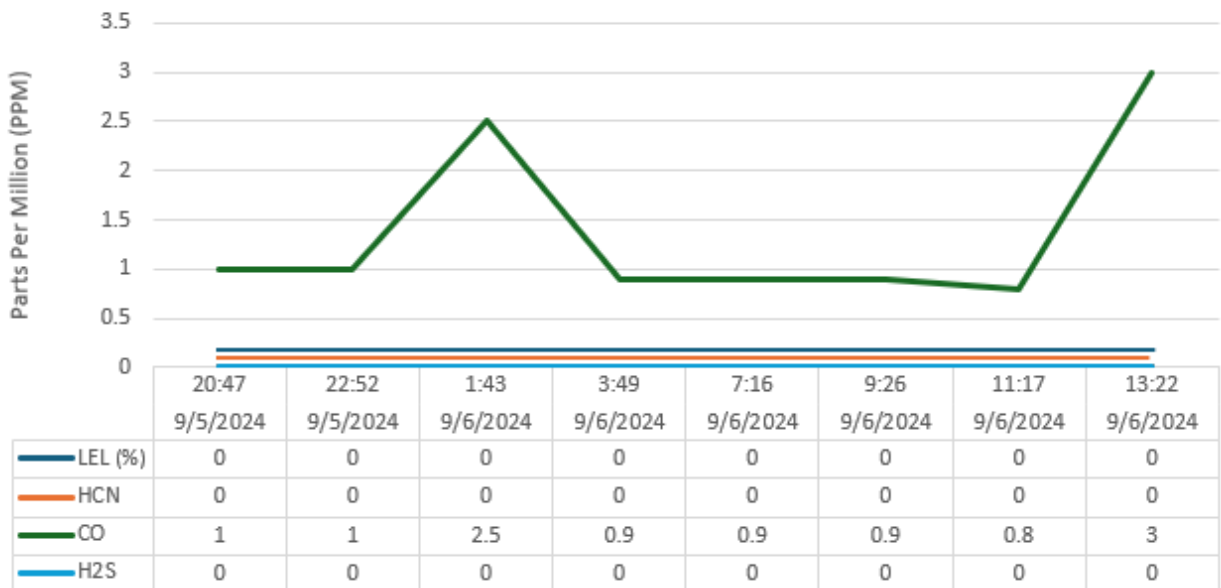


****Urban CO levels are typically higher than in rural areas due to vehicle emissions and industrial processes. Although average concentrations are low (0.5 to 5 ppm), they can increase near heavy traffic or industrial sites, especially during rush hours. The concentrations shown on the graphs remained significantly below harmful thresholds and do not pose any significant health risks ****

3. Air monitoring at SDG&E Breakroom

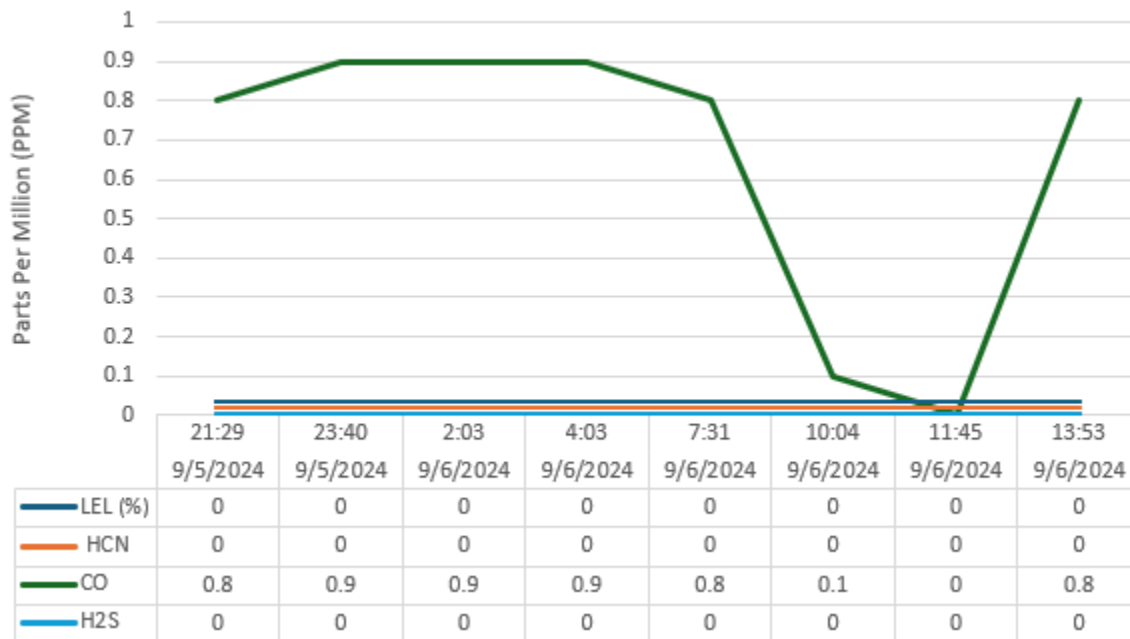


4. Air Monitoring at North SDG&E substation

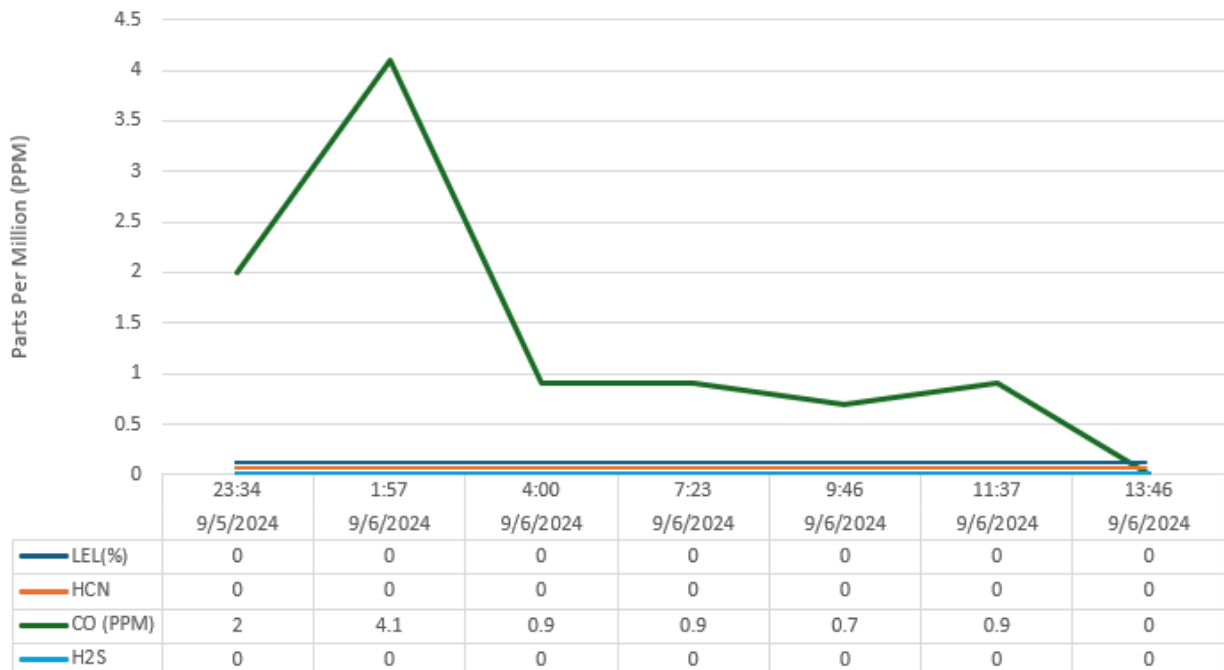


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5. Air monitoring at 1564 Mission Rd

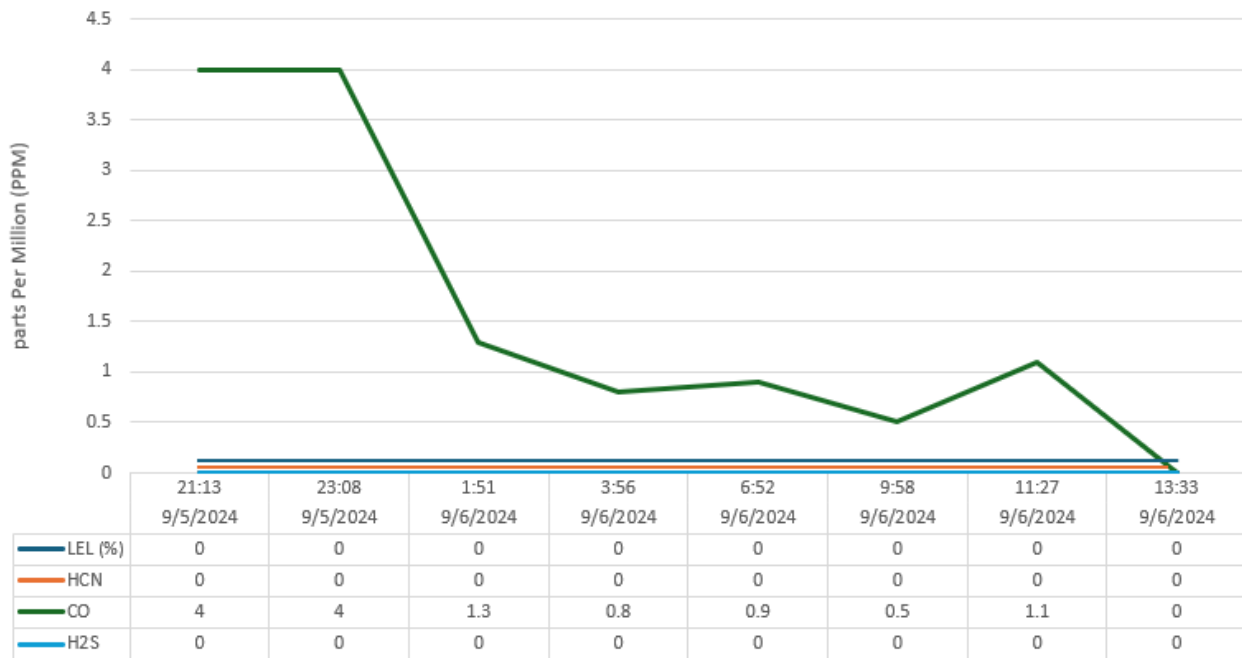


6. Air monitoring at 1856 Commercial St

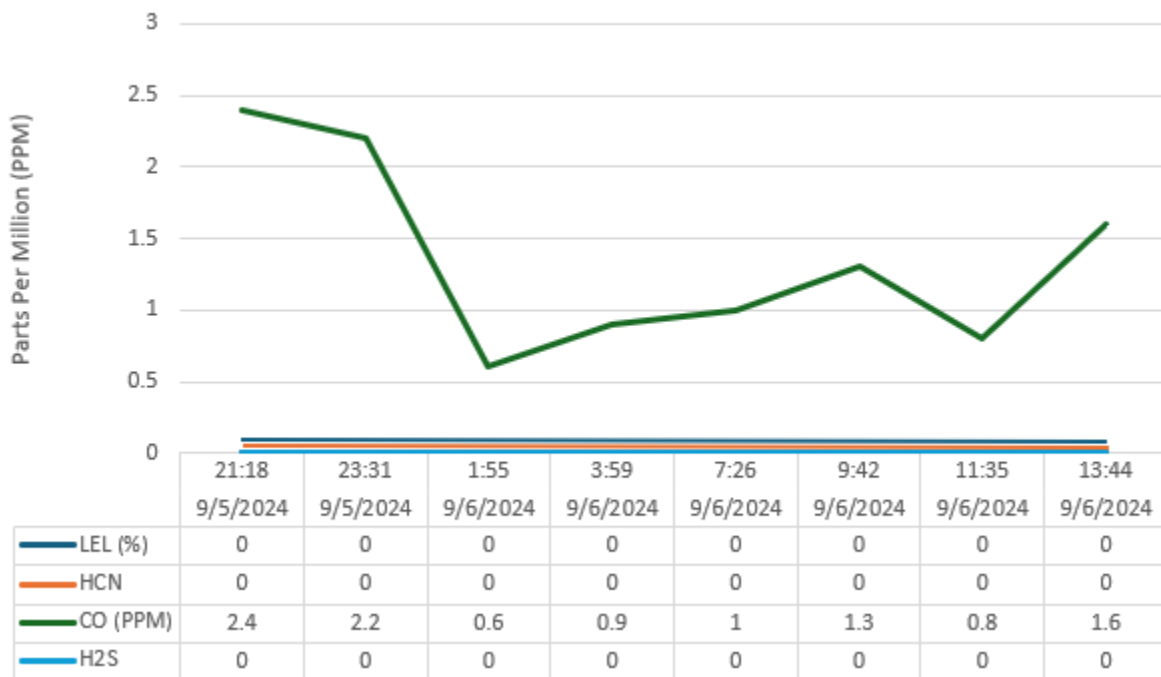


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7. Air monitoring at 440 Venture Rd

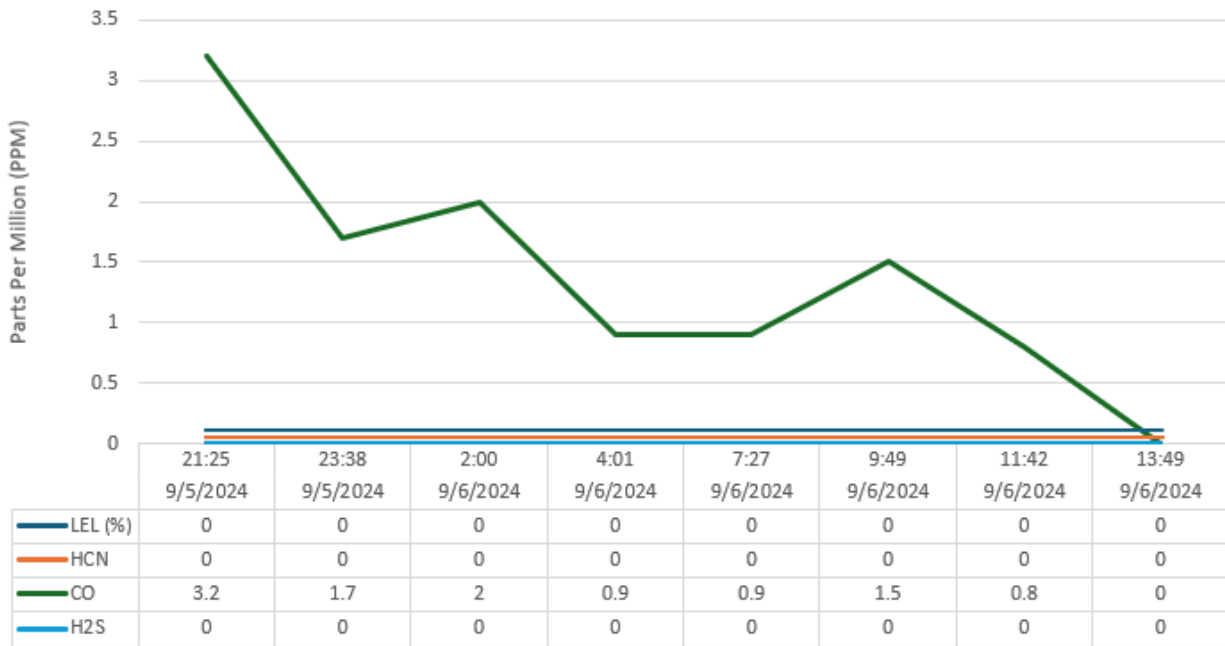


8. Air monitoring at 446 Enterprise

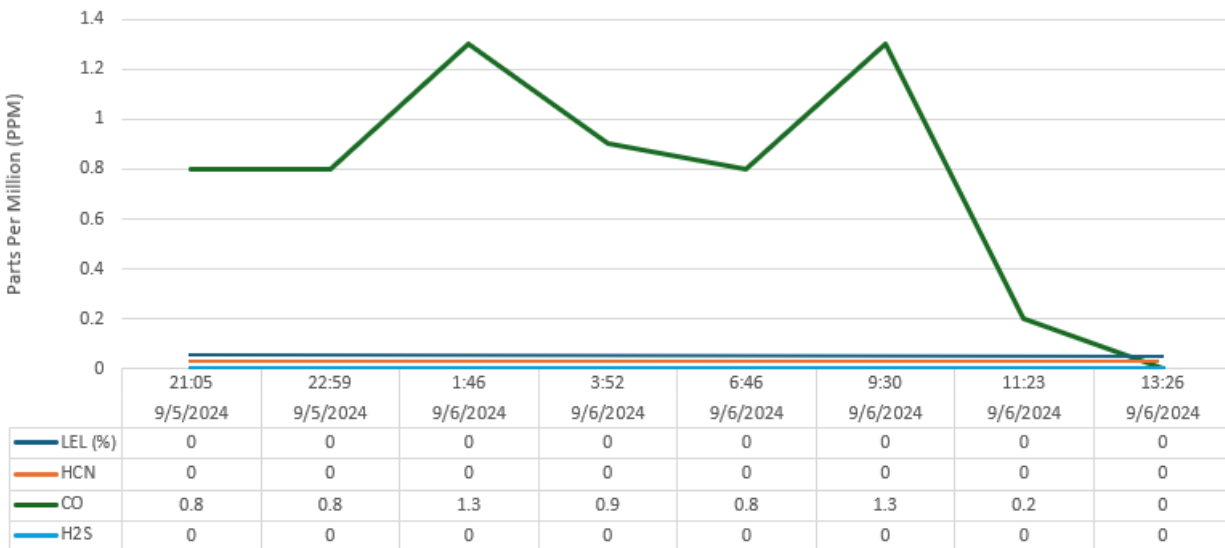


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9. Air monitoring at 555 Enterprise St

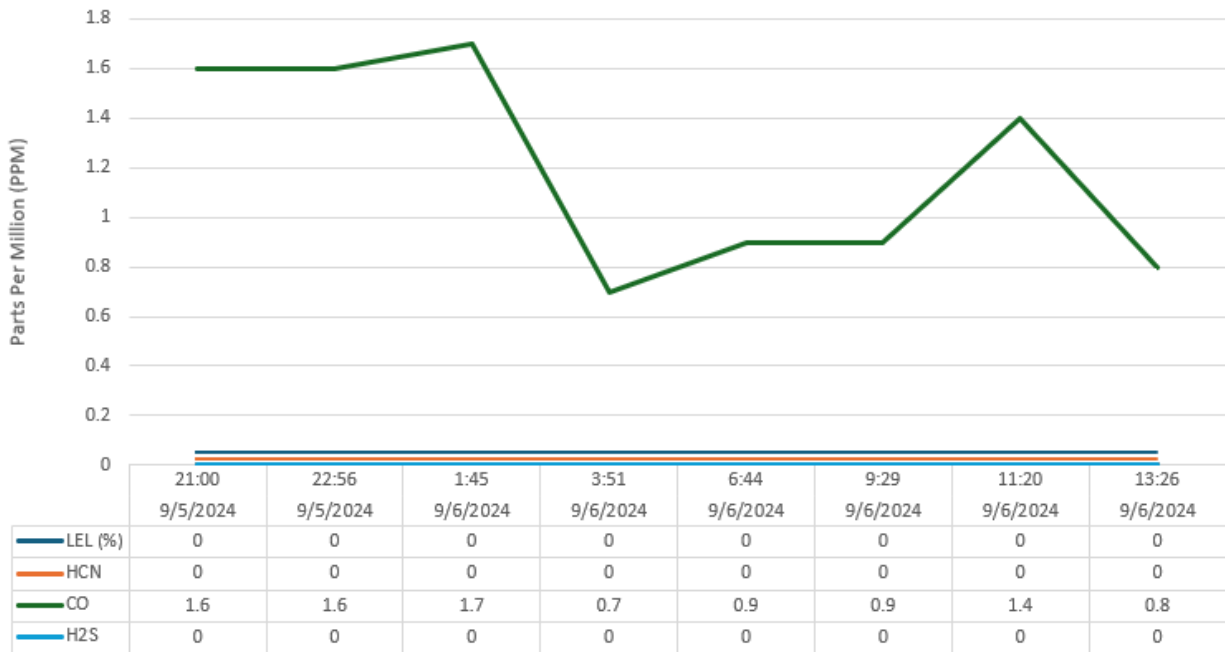


10. Air monitoring at 630 Alpine Wy

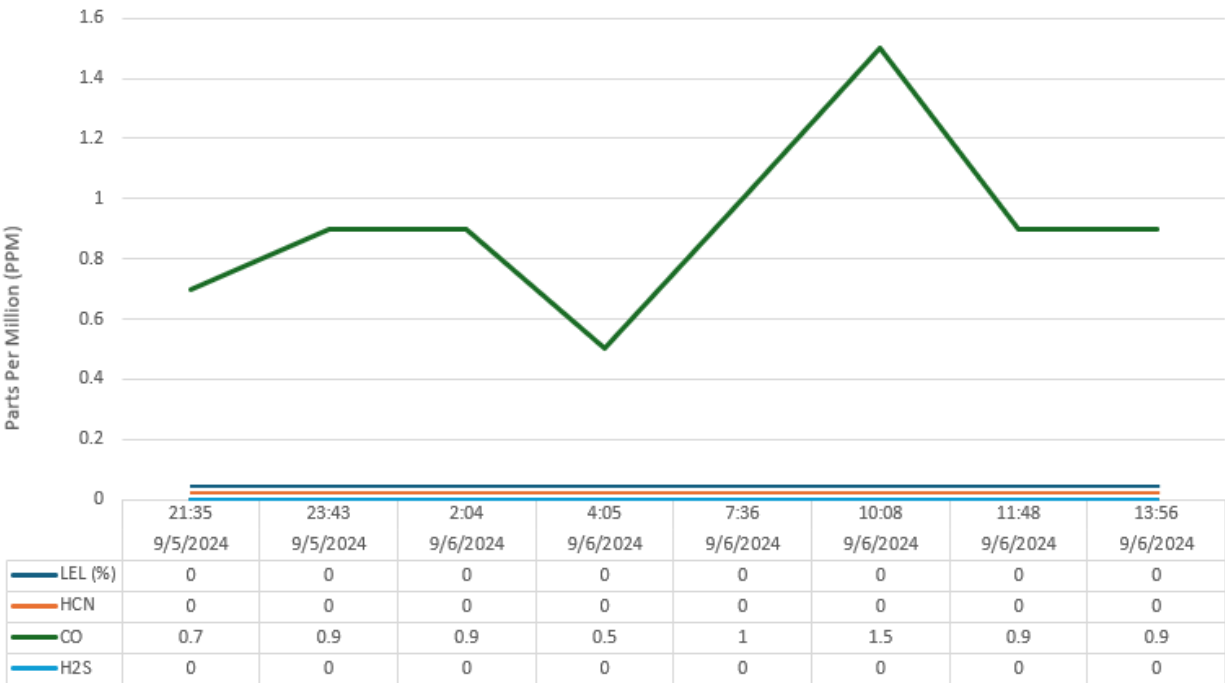


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11. Air monitoring at Alpine Wy and Don Lee

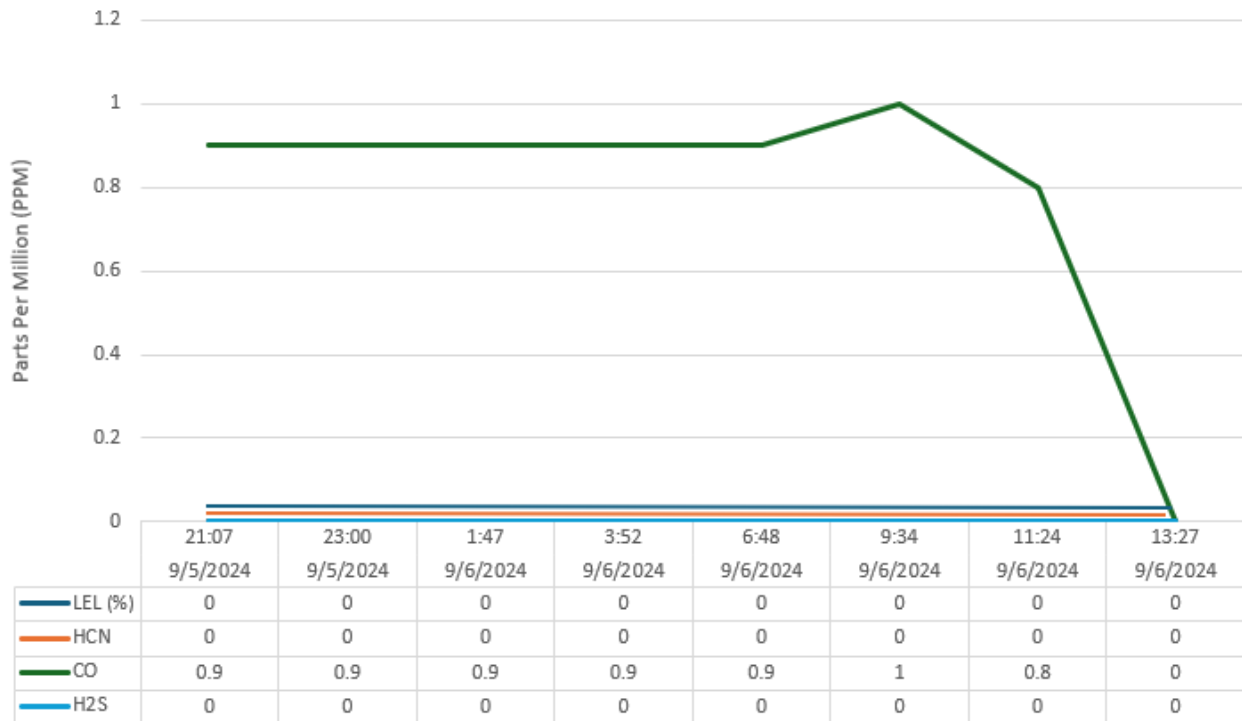


12. Air monitoring at Auto Park Way and Mission Rd

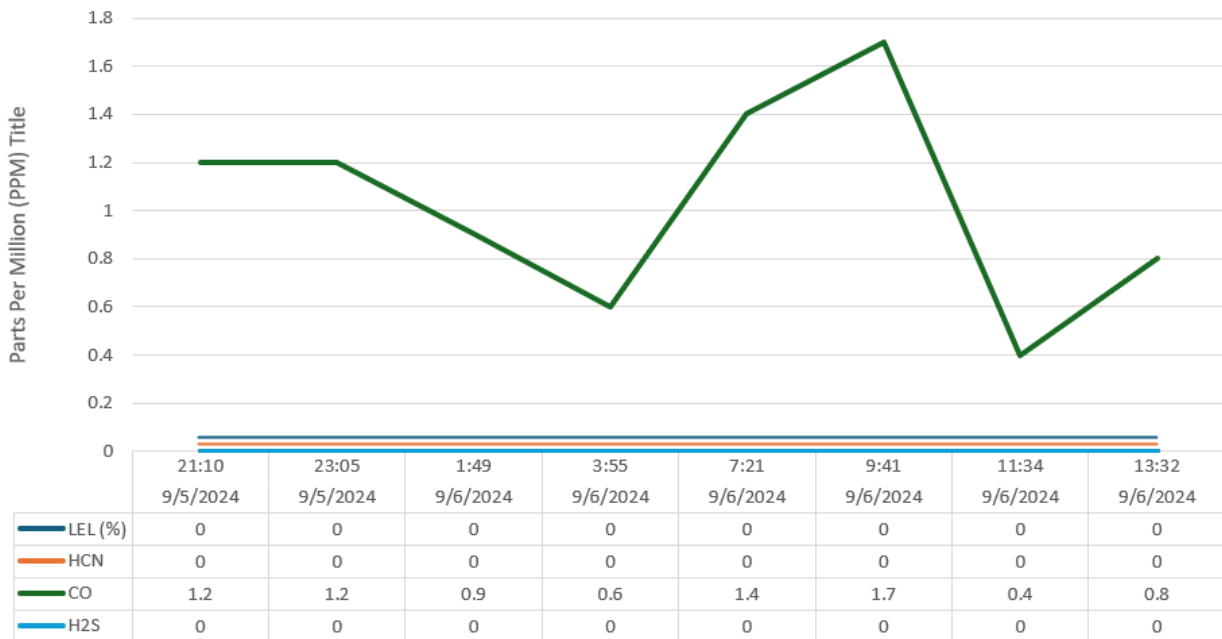


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13. Air monitoring at Auto Park and Alpine Wy

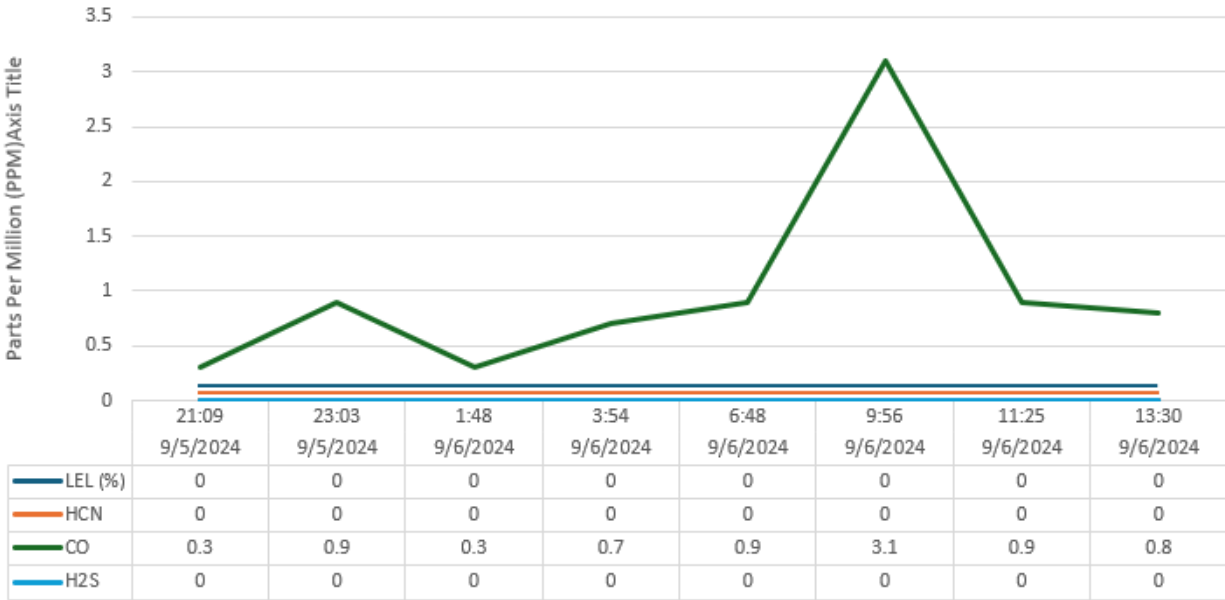


14. Air monitoring at Auto Park and Enterprise St

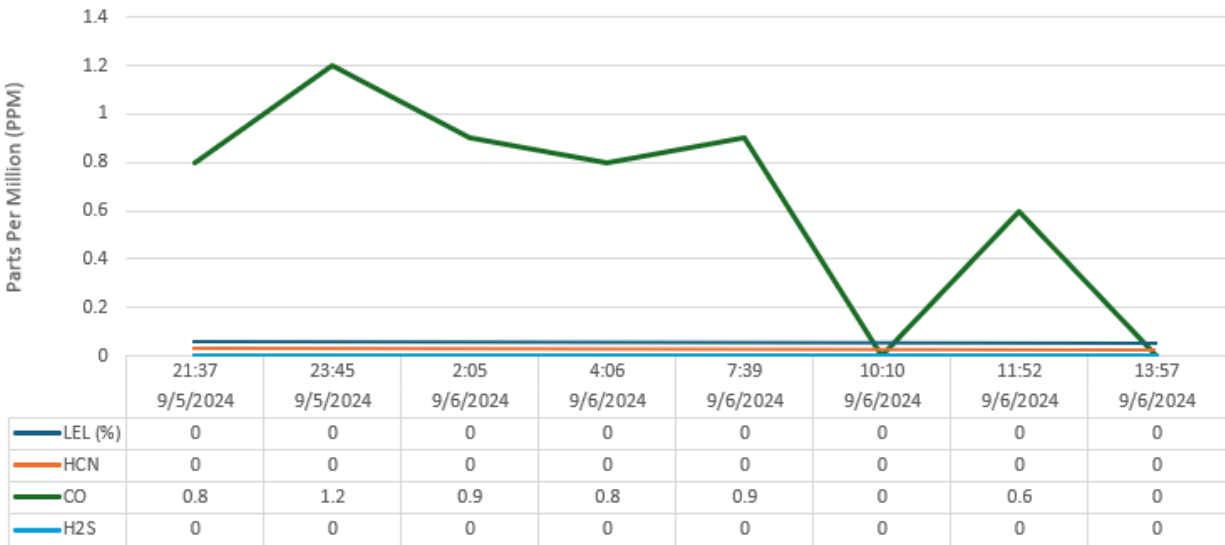


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15. Air monitoring at Auto Park and Citracado

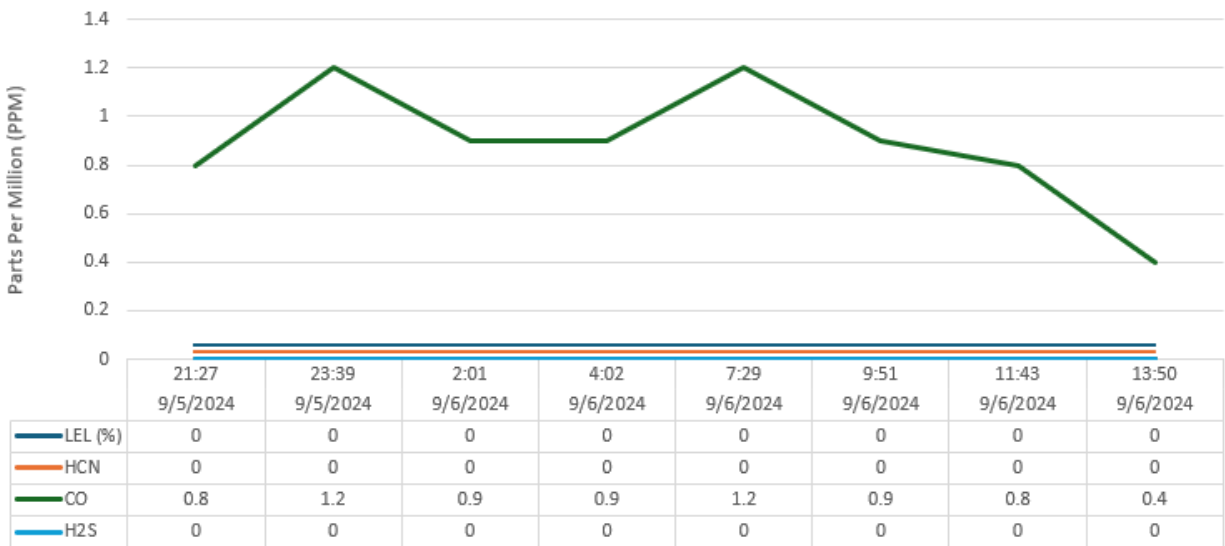


16. Air monitoring at Auto Park Way/Country Club Dr

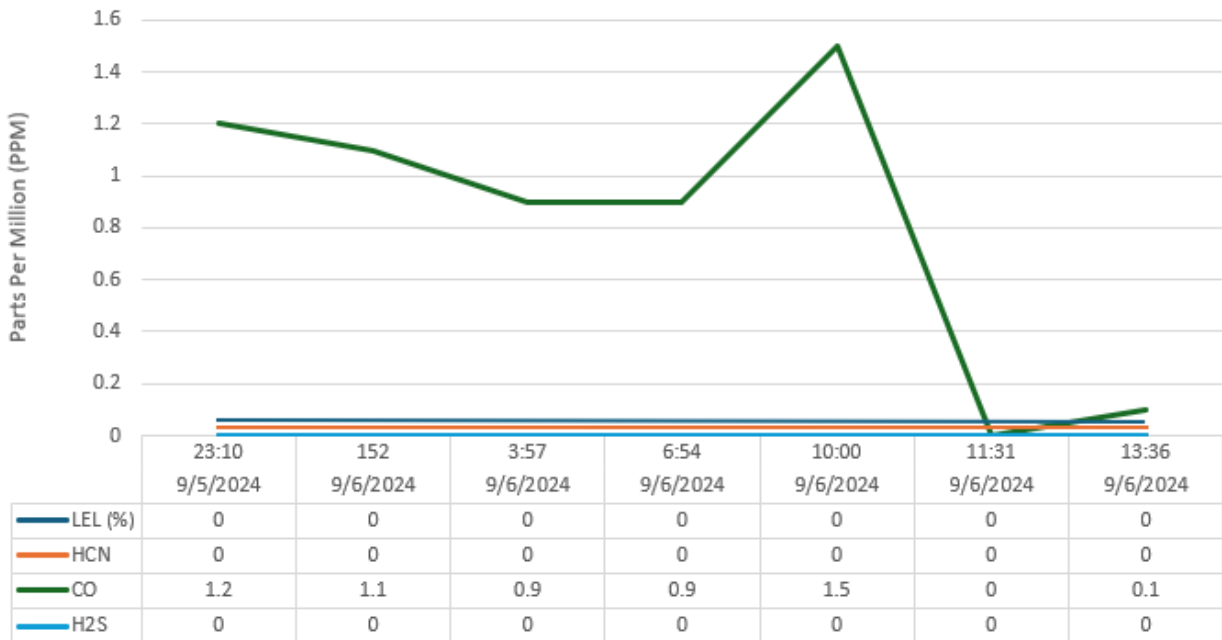


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17. Air monitoring at Enterprise and Mission



18. Air monitoring at Simpson and Venture



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Findings:

On September 5 at 12:09, units from the Escondido Fire Department responded to a fire at the SDG&E battery storage facility at 571 Enterprise Street. Upon arrival, crews found an active fire in a Lithium-Ion battery bank. Due to the specific hazards of such fires, a defensive strategy was employed, focusing on protecting adjacent structures containing additional batteries by applying water to those adjacent structures. Evacuations of the surrounding area began at approximately 13:00 on September 5 and remained in effect until September 7. San Diego County Hazmat arrived to conduct air monitoring from 14:30 to 18:30 at which time only normal products combustion of a structure fire were detected and at levels considered by NIOSH and OSHA to be well below exposure thresholds. Haley & Aldrich Inc., SDG&E's third-party contractor, began air quality monitoring later that evening and concluded on September 7. The fire was fully extinguished at 01:10 on September 6, with precautionary air monitoring continuing for an additional 12 hours into the afternoon of September 7. At no time during the incident did the levels of Oxygen deviate from 20.9 percent which is considered normal atmospheric level. Any decrease in the percentage of Oxygen would indicate that there was some unknown gas in the atmosphere that was not able to be detected by monitoring equipment. Fortunately, no such deviation was detected. The use of Fluoride reactive test strips was negative at all locations. Additionally, Hydrofluoric acid was not detected at any of the sampling locations.

Information Requests:

San Diego County HAZMAT/ San Diego City Fire Department HAZMAT
(619) 595-4633

San Diego Gas & Electric/ Haley & Aldrich INC
(877) 866-20266