

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	1 of 6

Brunel Energy, Inc.

Gas Hazards

Contents

1.	Purpose	2
2.	Applicability	2
3.	Definitions	2
4.	Responsibilities	2
5.	Procedure	3
6.	Training	4
7.	Recordkeeping	4
8.	Appendix	4
9.	Reference	4

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	2 of 6

1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, the “Company,” has established a program compliant with OSHA to set the minimum requirements for gas hazard identification, protection, and training.

2. Applicability

- 2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:
 - 2.1.1. On or in, any Company or client property, including parking areas; or
 - 2.1.2. On company time even if off Company premises (including paid lunch, rest periods and periods of being on call).
- 2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

- 3.1. **Hazardous Gas** is any gas at a concentration that is sufficient to pose a toxic hazard.
- 3.2. **Qualified Person** is “One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.”

4. Responsibilities

- 4.1. Manager
 - 4.1.1. Implement, support, and enforce this policy.
 - 4.1.2. Develop a local Hazardous Gas Program.
- 4.2. HSE Supervisor
 - 4.2.1. Assist management in implementing this policy.
 - 4.2.2. Providing guidance during emergency exposure incidents.
- 4.3. Employee(s)
 - 4.3.1. Employees must be aware of and follow all provisions of the site-specific contingency plan.
 - 4.3.2. Attend all Gas hazard awareness training and be familiar with this policy.
 - 4.3.3. Participate in all scheduled and nonscheduled emergency evacuation drills.

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	3 of 6

5. Procedure

- 5.1. The Hazardous Gas Program shall include the following minimum requirements:
 - 5.1.1. Identification of Hazardous Gas locations.
 - 5.1.2. Identification of exposure levels.
 - 5.1.3. Emergency notification and procedures.
 - 5.1.4. Required monitoring and protection equipment.
 - 5.1.5. Safe work procedures.
 - 5.1.6. Training requirements.
 - 5.1.7. Recordkeeping and document retention.
- 5.2. The Company shall ensure that job sites, materials, and equipment are inspected regularly.
- 5.3. The Company shall ensure that the following equipment is installed in locations where Hazardous Gas concentrations exceed, or have been known to exceed, exposure levels:
 - 5.3.1. Gas detection alarm systems.
 - 5.3.2. Valves which will accept a positive means of locking to prevent leak of gas.
 - 5.3.3. Gas compatible material for pipes, manifolds, etc.
 - 5.3.4. Wind direction indicators, such as windsocks.
 - 5.3.5. Warning signs.
 - 5.3.6. Note: This list of equipment is not exhaustive; other equipment may be necessary or required in certain situations and potential concentrations.
- 5.4. The Company shall ensure that only a qualified person is to be allowed to operate the equipment.
- 5.5. The Company shall ensure employees entering high hazardous gas locations are instructed in the recognition and avoidance of unsafe conditions and shall have the following:
 - 5.5.1. Portable personal gas monitor for applicable gases.
 - 5.5.2. 5-minute escape pack.
 - 5.5.3. 1 Self Contained Breathing Apparatus (SCBA) per employee for emergency response.
- 5.6. The gas monitor shall be calibrated per the manufacturer's recommendations and contain a current calibration sticker on the monitor providing the date of calibration.
- 5.7. Bump tests shall be completed at the beginning of each day the monitor is in use as per the manufacturer's guidelines to ensure the monitor is functioning correctly.
- 5.8. Employees shall be aware of the Company's emergency action plan provision including evacuation routes and alarms.
- 5.9. Employees shall participate in emergency evacuation drills and practice rescue procedures.

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	4 of 6

6. Training

- 6.1. Gas hazard awareness training shall be provided before initial assignment and annually thereafter.
- 6.2. Gas hazard awareness training shall include at a minimum:
 - 6.2.1. Locations of alarm stations.
 - 6.2.2. Base monitoring equipment – portable and fixed detection.
 - 6.2.3. Gas alarms.
 - 6.2.4. Gas hazards – characteristics of gas shall include oxygen deficiency, oxygen or nitrogen enrichment, carbon monoxide and hydrogen sulfide at a minimum.
 - 6.2.5. Plant or department specific gases of concern.
 - 6.2.6. Signs and symptoms of overexposure – Appendix 6.2 – Physical Effects of Gases.
 - 6.2.7. Personnel rescue procedures.
 - 6.2.8. Use and care of Self-Contained Breathing Apparatus (SCBA) – shall include donning and emergency procedures.
 - 6.2.9. Evacuation procedures.
 - 6.2.10. Staging areas – both primary and secondary.

7. Recordkeeping

- 7.1. Gas Hazard Awareness training shall be documented and available for review.

8. Appendix

- 8.1. Hazardous Gas Concentrations.
- 8.2. Physical Effects of Gases.

9. Reference

- 9.1. 1910 Subpart H - Hazardous Materials
- 9.2. 1910 Subpart M - Compressed Gas and Compressed Air Equipment

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	5 of 6

HAZARDOUS GAS CONCENTRATIONS

Gas Designation	Name of Gas	Part Per Million (PPM)
CO	Carbon Monoxide	50
CO ₂	Carbon Dioxide	5000
H ₂ S	Hydrogen Sulfide	10
SO ₂	Sulfur Dioxide	2

* The listed gases are considered hazardous above these concentrations and alarm levels shall be set as outlined above.

Version: 24.0	Gas Hazards	
	Effective Date	May 20, 2024
	Page	6 of 6

PHYSICAL EFFECTS OF GASES

CONCENTRATION		HYDROGEN SULFIDE PHYSICAL EFFECTS
Percent (%)	PPM	
0.001	10	Obvious and unpleasant odor. Safe for 8-hour exposures.
0.01	100	Kills smell in 3 to 15 minutes; may sting eyes and throat.
0.02	200	Kills smell shortly; stings eyes and throat.
0.05	600	Dizziness; breathing ceases in a few minutes; need prompt respiration.
0.10	1000	Unconscious at once; followed by death within minutes.

* Caution: Hydrogen Sulfide (H₂S) is a colorless and transparent gas and is flammable. It is heavier than air and may accumulate in low places.

** At 15.00 psia and 60%.

CONCENTRATION		CARBON DIOXIDE PHYSICAL EFFECTS
Percent (%)	PPM	
0.05	5,000	Obvious and unpleasant odor. Safe for 8-hour exposures.
5.0	50,000	Dizziness; cannot breathe; need prompt resuscitation.
10.0	100,000	Unconscious quickly; death will result if not rescued promptly.

* Caution: Carbon Dioxide (CO₂) is a colorless and transparent gas and is non-flammable. It is dangerous because CO₂ is heavier than air and may accumulate in a person's lungs, limiting available space for air, thus suffocating a person.