	Big Ox Energy - Riceville, LLC Safety Management System		RIC.SAFE.POL.140-012.H2S	
			Initial Issue Date	09/01/2016
H2S AWARENESS			Revision Date:	
			Next Revision Date:	09/01/2017
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OBJECTIVE:

The purpose of this program is to establish procedures and requirements for protecting the health and safety of employees in situations where hazardous concentrations of hydrogen sulfide (H2S) may exist.

SCOPE AND APPLICABILITY

This policy applies to all employees, affected contractors and visitors. H2S is a colorless gas that, in even small concentrations, is highly toxic. H2S may have the odor of rotten eggs, is soluble in water and is highly flammable. Overexposure may cause central eye irritation and nervous system depression, which will lead to ceased breathing and death. H2S may be present at or near:

- oil/gas drilling, refining and storage operations,
- Sewer and BioGas Digester operations and storage tanks,
- underground construction/maintenance,
- natural hot springs,
- pump rooms, engine rooms (using methane), wastewater and feedstock transfer facilities
- pulp/paper mills, among others.

The following outlines applicable H2S recognition and exposure levels:


- Odor threshold (when rotten egg odor is noticeable to some people) .01-1.5 ppm
- OSHA ceiling General Industry 20 ppm
- OSHA maximum peak (once per shift, 10 minutes) 50 ppm
- Immediately dangerous to life and health (IDLH) 100 ppm

Responsibilities

The following minimum requirements apply to all employees who are assigned to a workplace where H2S may be present in concentrations that would constitute a health hazard:

- Employees shall have completed acceptable training, as outlined within this standard prior to commencing work.
- Employees shall be in compliance with the corporate respiratory requirements
- At least one (1) member of the employee work group must have current first aid and CPR training certification.
- Employees shall be familiar with site safety policies, alarms and contingency/emergency plans before beginning work

ENGINEERING CONTROLS/WORK PRACTICE

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The following work practices will be used at any workplace where H2S may be present in concentrations that would constitute a health hazard:

- Employees may be assigned to wear a personal H2S monitor with audible and visual alarm capabilities while in the work area. The monitor low alarm shall be set at a maximum of 10ppm and the high alarm at a maximum of 20ppm. Personal H2S monitors must be calibrated and tested according to the manufacturer's recommendations.
- Wind direction indicators will be utilized to remain upwind of potential sources of H2S, as much as is possible.
- Employees shall be familiar with the location of any supplied-air respiratory equipment.
- The 'buddy system', requiring at least one standby person, should be used whenever H2S is known or suspected to exist in concentrations above 10ppm at a workplace.
- Site supervision will be notified before beginning any work that may expose employees to H2S concentrations over 10 ppm.
- Any work required inside tanks, vessels or other confined spaces must also comply with the Confined Space Entry standard.

RESPIRATORY PROTECTION

Supplied-air respirators, either airline with egress cylinder (SAR) or self-contained breathing apparatus (SCBA), will be utilized for any job task that has the potential to expose employees to an unknown concentration of H2S. This includes, but is not limited to, the following:


- Opening or performing a 'first break' on vessels, piping, valves, well site equipment, etc. that may contain residual H2S from previous products.
- Monitoring for gas at shakers, or areas downwind of an emergency release.
- Checking for leaks in operational equipment or piping containing product streams that may carry H2S in solution.

TRAINING

Any employee who may be exposed to an unknown concentration of H2S shall receive acceptable training to familiarize them with the dangers associated with work performed in an H2S environment.

Training shall include each of the following topics

- Physical/chemical properties of H2S
- Sources of H2S
- Target organs/body structures and signs/symptoms of H2S exposure
- Engineering controls
- Safe work practices
- Methods of detection
- Personal protective equipment (PPE)
- Contingency/emergency response/rescue plans
- Area Managers and/or field project Team Leaders shall ensure that employees receive site-specific

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orientation and training for workplaces where H2S may be present.

EMERGENCY PROCEDURES

All employees, contractors and subcontractors should be aware of the owners contingency plan. If an employee's personal H2S monitor, a coworker's personal H2S monitor or a fixed H2S monitor system sounds an alarm, all employees are to assume that H2S is present and take immediate action to protect themselves and others, including but not limited to the following:

- Evacuate the area by the safest route, considering wind direction, which is typically up wind and away from process/production units, or cross-wind and then upwind.
- Make emergency notification to operations or the appropriate supervisor, personally or through other co-workers.
- Notify medical or rescue services as necessary.
- Participate in completing a roll call at the designated rally point, evacuation area or safe briefing area.
- If a co-worker is in distress from possible H2S exposure, employees trained in the use of self-contained breathing apparatus (SCBA) may offer aid after donning the closest operational SCBA.

Following any personal or fixed-system H2S alarm event:

- Only trained and authorized individuals protected by the use of SCBA's will be allowed to re-enter for rescue/emergency response.
- The source of the H2S must be identified and controlled or eliminated.
- Operations will be resumed only after the safety of the area is confirmed by monitoring done by trained employees protected by the use of SCBA's.

OTHER REQUIREMENTS

Insubordination in regards to this standard will be dealt with as per Big Ox Energy – Riceville, LLC's Disciplinary Program.