Atmospheric Monitoring

Purpose
The monitoring of atmospheres to ensure the safety of personnel must be done with instruments providing real-time readings. Personnel should be aware of the difference between atmospheric instruments that provide real-time readings and those Industrial Hygiene monitoring instruments that do not provide real-time readings.

Scope
All GIS Holdings, LLC Companies and affiliates including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, LLC., GWIS, Mack Steel, NuWave, Valvemax, Discovery Industries, Inc., Global Inspections, LLC, and EIS, hereafter identified as "Company".

Instructions on how each atmospheric monitoring instrument works must be read and understood by any individual using the equipment.

Atmospheric instruments that can be calibrated must be calibrated before use and the calibration must be documented.

Warning limits or alarm settings on equipment must be consistent with those action levels specified in Table 1-1 and with OSHA permissible exposure limits (PELs). Table 1-1 gives limits for contaminants (Benzene, H2S, LEL, CO) and oxygen (O2) levels typically encountered. If any of these warning limits are exceeded, additional measures must be taken to ensure personnel safety. Additional measures could include the upgrade of PPE (i.e., respirators), venting of the atmosphere, delaying work until levels are below the warning limits.

Specific actions needed based on results of atmospheric monitoring can be found in the Confined Space, Hot Work, H2S, and Excavation Procedures sections of this manual.

If work noises inhibit personnel from hearing the alarms of instruments, special precautions must be taken to ensure the alarms can be heard. This may include the use of earpieces.

Atmospheric instruments that show signs of not working or having expired components must be removed from service until repaired or replaced.

Personnel must test atmospheres in confined spaces or those unknown due to a release of product, before entry. This may require additional tubing, the use of ropes or additional pumps for the sole purpose of atmospheric testing. Consideration should also be given to the striation of gases when testing.

Colorimetric Tubes
Personnel should be aware of specific chemical interference that may affect results of readings of colorimetric tubes.

Colorimetric tubes must be used with pumps made by the same manufacturer who made the tubes.

Each tube has specific instructions on how the tube operates. Personnel must understand and follow the instructions when using colorimetric tubes.

Three and Four Gas Monitors
Most three and four gas monitors require oxygen present at levels above 16% to ensure an accurate lower explosive limit (LEL) reading. If an oxygen deficient atmosphere with a reading of less than 16% is present, LEL readings must not be trusted.

Three and four gas monitors must be calibrated on a monthly basis, even when not in use. Only trained and qualified personnel will do calibration of atmospheric monitors. Refer to manufacturer's specifications on calibration gases for the specific monitor to be calibrated. Calibrations should be recorded on the testing documentation that is a part of this section.

Operational readiness checks or bump tests should be done on every monitor before use. This is to ensure that the monitor is functional. The bump tests should be recorded on the testing documentation that is a part of this section.

Personnel must ensure that calibration gases have not expired. Expired calibration gases should be returned to the manufacturer.

Calibration of three and four gas monitors must be done for all gases the monitor reads.

Three and four gas monitors that are not intrinsically safe must not be used.

Table1-1 Atmospheric Testing and Precaution Guidelines

Contaminant/ O_2 Level	**Atmospheric Instrument**	Warning Limits **(Minimal Levels)**	**Additional Precautions**
Benzene	Colorimetric tubes, specific real time benzene monitors	1 ppm	Respiratory protection necessary
H2S	Colorimetric tubes, three and four gas monitors	10 ppm	Respiratory protection necessary
LEL	LEL meters, three and four gas monitors	10%	Respiratory protection necessary
CO	CO monitors, three and four gas monitors	10ppm	Respiratory protection necessary
Oxygen (O_2)	Three and four gas monitors	< 19.5% or > 23.5%	Respiratory protection necessary

Training
Personnel that have need to use an atmospheric monitor must be trained in the use of, proper care of, bump testing, and calibration of the specific monitor they will be operating, prior to first use of the monitor. This training is completed by a Competent Person.