IPS ★ ITCS

Industrial Performance Services

Industrial Tubular Catalyst Services

NITROGEN AWARENESS

V:2023.1

Nitrogen Awareness

January 2023

Purpose

The purpose of this procedure is to advise employees in areas where nitrogen is being used and to supply on an awareness level basis about the properties and hazards of nitrogen, general guidelines and training requirements.

Scope

This procedure applies to IPS★ITCS operations where employees whose work activities may involve working with or around nitrogen. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers IPS★ITCS employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

Responsibilities

Managers and Supervisors

- In coordination with the Safety Manager, develop and implement nitrogen awareness training.
- Ensure personnel are aware of work that has the potential of exposure to nitrogen.
- Identify possible locations where nitrogen in the workplace may be used.
- Inform the Safety Manager of upcoming work involving nitrogen, allowing the Safety Manager to provide any necessary monitoring or other required actions.
- Ensure employees comply with the nitrogen awareness requirements.

Safety Manager:

Coordinate annual nitrogen awareness training activities.

Employees:

- Comply with the nitrogen awareness requirements and direct any questions or concerns to the Safety Manager.
- Attend required annual training.

Procedure

Hazards of Nitrogen

Nitrogen is an inert gas, which means that it does not react with other chemicals under most normal circumstances. Nitrogen is often used in industrial settings to displace other gases that are toxic, corrosive, reactive or prevent fire or explosion hazards, making processes safer. Using nitrogen to remove oxygen from process equipment decreases the chances of a fire or explosion, but it also can make the atmosphere in and around the equipment hazardous for humans to breathe.

Hazard Identification

- Oxygen-deficient atmospheres in confined spaces can be deadly in only a few breaths. An oxygen-deficient atmosphere rapidly overcomes the victim. There is no warning before being overcome.
- An oxygen-deficient atmosphere might exist outside a confined space opening.
- Entering oxygen-deficient atmospheres should never be attempted under any circumstances without training and proper air-supplied breathing equipment.
- Pre-job planning and walk downs with the entire work team should emphasize confined space entry restrictions, especially when unsecured confined space access points are in the work area.
- Confined space hazard warnings must be always maintained while the access opening is not secured.
- Pre-job walk downs should accurately identify all equipment where inert gas purging may be venting into the work area.
- Barriers and warnings should be always maintained around open purge vents during purging activities.
- Rescuers must strictly follow safe rescue procedures.

Pre-Job Planning for Nitrogen Related Work

Pre-job planning or a site assessment will be conducted prior to starting work and that the assessment will documented. Documented planning will be conducted for those operations involving potential nitrogen exposure, and this includes anytime an active purge is being applied to a system in or around equipment associated with work. Some planning or assessment elements include:

- All proposed work requires a jobsite visit by the requestor and a unit operator to identify special precautions, equipment status, and personal safety equipment requirements.
- The conditions for marking a “nitrogen purge or inerted” (Yes/No/NA) status box.
- The permit must clearly identify all hazards and special personal protective equipment requirements.
- “Fresh Air” work restrictions apply to “Set up only” permits whenever an IDLH atmosphere is suspected or known to be present in the work area.
- The requirements to maintain posted warnings at all access points to confined space temporary openings.
- Appropriate barricades will be utilized if determined by the site assessment. As determined by the hazard assessment, nitrogen vent / purge points will be labeled and barricaded. Barricades will provide a safe zone of 3' in diameter or greater if determined by oxygen monitoring results. As determined by the hazard assessment, nitrogen vent / purge points will be labeled and barricaded with a 3' diameter or as determined by oxygen monitoring (must be greater than 19.5% outside of the barrier.)

- Appropriate signage will be utilized and adhered to. Appropriate signage will include adequate warning by stating Danger, Inert Gas Present or Possible Oxygen Deficient Environment.

Safe Rescue Awareness

- The powerful human instinct to help someone in distress, especially a friend or co-worker, all too frequently results in multiple confined space incident victims.
- Workers suddenly involved in emergency activities must not allow emotions to override safe work procedures and training. Only qualified and trained personnel equipped with the necessary safety equipment should attempt a rescue.

Cylinder Handling and Storage

- All nitrogen cylinders shall contain an identifying label. Nitrogen cylinders shall contain an identifying label UN1066. See below as an example:

- Proper handling and storage of nitrogen cylinders includes the requirements that the cylinder(s) shall be upright, properly supported and stored outdoors or in a well-ventilated area. Cylinder(s) shall be chained or otherwise secured to prevent movement.
- Data sheets must be available for nitrogen.
- A protective cap must be in place when the cylinder is not in use.

- The correct size and type of trolley or cart should always be used for the safe transportation of gas cylinders.
- Nitrogen must not be used to power pneumatic tools or blowers.
  NOTE: Nitrogen must not be used to power pneumatic tools or blowers except when they are used in an inert atmosphere where the introduction of air/oxygen could create a hazard.

Training

Employees will be trained in nitrogen hazards. IPS★ITCS shall provide training for all affected employees including any IPS★ITCS employee working with or near nitrogen and the training shall emphasize:

- An oxygen-deficient atmosphere rapidly overcomes the victim.
- There is no warning before being overcome.
- An oxygen-deficient atmosphere might exist outside a confined space opening.
- Rescuers must strictly follow safe rescue procedures.

Documentation of training - Nitrogen awareness training shall be documented including dates of training, location of training, employee name and trainer name.

Training records shall be provided upon request all materials relating to the employee information and training program to regulatory agencies.

Revision History

Rev	Rev Date	Rev By	Approved By	Description
1.0	1/3/2022	Shayne Torrans	Shayne Torrans	Initial Procedure
1.1	11/23/2022	Shayne Torrans	Shayne Torrans	Format Revision

Approvals:

Procedure Owner

_____ _____
Print Name Date

_____
Signature

Competency Assessment

No.	Questionnaire	C/NYC
Q1		
A1		
Q2		
A2		
Q3		
A3		
Q4		
A4		
Q5		
A5		

Enclosed Attachments	
Risk Assessment	☑
Environmental Aspect and Impact	☑
Training and Competency	☑
Measure and Evaluation Tools	☑

Competency Checklist

To be filled out by Trainer and signed by Employee, Assessor and Supervisor before being returned to the HSEQT Co-ordinator for recording purposes.

Procedure	Competency	Date	Competent YES / NO	Employee Signature

(Please tick appropriate box)

This employee is competent in performing the job. ☐

This employee has not attained the competency level. ☐ *

* *If the employee has not attained all competency levels, the Regional Manager must assess the action to be taken, provide an extension of training or alternative action as listed below.*

Alternate action to be taken: _____

Signed By

Employee: _____ Date: _____

Trainer: _____ Date: _____

Assessor: _____ Date: _____

Regional Manager: _____ Date: _____

Environmental Aspects and Impacts

Identified Environmental Aspects and Impacts

The following table is a summary of the likely environmental aspects and impacts that may be identified during site inspections. The significance of each impact needs to be assessed using the Risk Assessment Model.

Activity	Aspect	Impact
Purchasing & Administrative Work	Consumption of goods	Conservation of natural resources
	Consumption of energy (eg. Electrical equipment and facilities)	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of waste (eg. Paper)	Consumption of space for waste disposal; Habitat loss
Climate Control	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Habitat loss
	Generation of noise	Disturbance to community; Habitat loss
Cleaning of – offices / vehicles	Storage, use and release of chemicals	Contamination of air, water or soil; Risk to human health
Transport (Fleet vehicles / staff travel)	Consumption of energy	Release of greenhouse gases and atmospheric pollution; Consumption of natural resources; Loss of habitat at all stages of generation; Light pollution
	Consumption of goods (eg. Oil)	Consumption of natural resources; Generation of waste; Habitat loss; Biodiversity impacts
	Generation of waste (eg. Oil)	Consumption of space for waste disposal; Potential contamination of water or soil; Habitat loss
	Exhaust emission	Release of greenhouse gases and atmospheric pollution
	Use of dangerous goods (eg. Batteries)	Potential contamination of air, water or soil; Risk to human health
	Generation of noise	Disturbance to community; Habitat degradation
Operations		

Risk Assessment

Industrial Performance Services Industrial Tubular Catalyst Serv

Risk Assessment // insert name here					
Step No: Logical sequence	**Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps.** Each step should be logical and accomplish a major task.	**Potential Safety & Environmental Hazards/Impacts at the site of the Job** Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.	**Risk Rating** Refer to the risk matrix or HSEQT.PRO. Risk Mgt	**Recommended Corrective Action or Procedure** ***Determine the corrective actions necessary to reduce the risk to as low as reasonably practical (ALARP) refer to HSEQ.PRO.Risk Mgt. The risk must be rediced or controlled to ALARP before work commences.*** Document who is responsible for implementing the controls to manage each hazard identified.	**Risk Rating** refer to th risk matrix or HSEQT.PRO.Risk Mg
1.					
2.					
3.					
4.					
5.					

Audit

Industrial Performance Services ★ Industrial Tubular Catalyst Servi

Process: insert// **Procedure**: Insert //	Date:	Audited by:
	Location of Audit:	Area Mgr/Supervisor:

Item	Question	Evidence Sited	Comments	Conformance Score 0,3,5
1.				
2.				
3.				
4.				
5.				
6.				
7.				

AUDITOR'S SIGNATURE:	CONFORMANCE SCORE: / 25	0 – Non-Conformance 3 – Continuous Improvement Opportunity
SAFETY REP'S SIGNATURE:	CONFORMANCE %:	5 – Total Conformance