

A large industrial facility, possibly a refinery or chemical plant, featuring a prominent vertical cylindrical reactor or distillation column. The reactor is illuminated with a bright green light, creating a strong contrast with the darker, blue-tinted surroundings. The scene is filled with complex piping, valves, and structural elements, suggesting a highly technical and industrial environment. The lighting is dramatic, with a warm glow from the top left and a cool, blue-green glow from the reactor itself.

# IPS ★ ITC

Industrial Performance Services

Industrial Tubular Catalyst Services

## GAS MONITOR PROCEDURE

V:2023.1

# Gas Monitor Procedure

January 2023

## Purpose

To ensure proper use and accuracy of the gas monitors, which will be used on an IPS★ITCS job site where hazardous gases may exist.

## Scope

This section applies to all employees and subcontractors who will be either using a personal gas monitor or performing work on a job site where continuous air monitoring is required.

## Definitions

**Zero (fresh air) Calibration** – This is done in a clean atmosphere of 20.9% oxygen and no detectable VOC, toxic, or combustible gases. It is used to set the zero point for each sensor.

**Span Calibration** – is the set of operations that establish, under specified conditions, the relationship between the values of quantities indicated by a measuring instrument and the corresponding values realized by given standards. Note: Refer to the gas bottle label for specific values.

**Bump Testing** – Ensures that all sensors are reading accurately according to the set values of the gas being applied. Note: Refer to the gas bottle label for specific values.

**STEL** – Short Term Exposure Limit

**TWA** – Time Weighted Average

**LEL** – Lower Explosive Limit

## Zero Calibration

After the gas monitor is turned on in a safe, well ventilated, clean air environment, and is in operation mode, the oxygen sensor should read 20.9%. All other sensors should read 0. If this not the case, zero calibration should be performed. Refer to the manufacturer's reference guide for proper procedure.

## Span Calibration

All monitors shall be calibrated every 30-days. Refer to the manufacturer's reference guide for proper calibration procedure.

## Bump Testing

All monitors shall be bump tested daily or prior to each use. Refer to the manufacturer's reference guide for proper bump testing procedure.

## Alarm Values

Peak, STEL, and TWA values shall be set to meet or exceed the OSHA regulations for the specific gases that are being monitored. Alarm levels for LEL's shall not exceed 10%.

Alarm values shall meet site specific requirements that exceed OSHA regulations.

### **Types of Monitors Used**

- MSA Altair 5X (O2, LEL, H2S, CO, VOC)
- MSA Altair 5X IR (O2, LEL, CO, VOC)
- BW Clip 2 Year H2S Single Gas Detector (H2S)
- BW Honeywell GasAlert MicroClip XL Multi-Gas Monitor
- RKI Eagle 2 (O2, LEL, H2S, CO)

### **Training**

All IPS★ITCS Employees shall be trained on the proper use, calibration, and maintenance of each monitor prior to use. Refer to each manufacturer's reference guide(s) for proper instructions.



# Competency Assessment

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

| Enclosed Attachments            |                                     |
|---------------------------------|-------------------------------------|
| Risk Assessment                 | <input checked="" type="checkbox"/> |
| Environmental Aspect and Impact | <input checked="" type="checkbox"/> |
| Training and Competency         | <input checked="" type="checkbox"/> |
| Measure and Evaluation Tools    | <input checked="" type="checkbox"/> |

# Competency Checklist

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

| Procedure | Competency | Date | Competent<br>YES / NO | Employee<br>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 General 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   |
|--|---|--|
| <b>Purchasing &amp; Administrative Work</b>      | Consumption of goods  | Conservation of natural resources  |
|  | Consumption of energy (eg. Electrical equipment and facilities) | Release of greenhouse gases and atmospheric pollution;<br>Consumption of natural resources; Habitat loss   |
|  | Generation of waste (eg. Paper)                                 | Consumption of space for waste disposal;<br>Habitat loss   |
| <b>Climate Control</b>                           | Consumption of energy   | Release of greenhouse gases and atmospheric pollution;<br>Consumption of natural resources; Habitat loss   |
|  | Generation of noise   | Disturbance to community; Habitat loss   |
| <b>Cleaning of – offices / vehicles</b>          | Storage, use and release of chemicals                           | Contamination of air, water or soil;<br>Risk to human health   |
| <b>Transport (Fleet vehicles / staff travel)</b> | Consumption of energy   | Release of greenhouse gases and atmospheric pollution;<br>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;<br>Potential contamination of water or soil;<br>Habitat loss  |
|  | Exhaust emission  | Release of greenhouse gases and atmospheric pollution  |
|  | Use of dangerous goods (eg. Batteries)                          | Potential contamination of air, water or soil;<br>Risk to human health   |
|  | Generation of noise   | Disturbance to community; Habitat degradation  |
| <b>Operations</b>                                |   |  |
|  |   |  |
|  |   |  |

Sample only.  
To be filled in



# Risk Assessment



Risk Assessment // insert name here

| <p>Step No:<br/>Logical sequence</p> | <p>Sequence of Basic Job Steps documented in the Procedure, Work Instruction and project plans. Break down Job into steps.</p> <p>Each step should be logical and accomplish a major task.</p> | <p>Potential Safety &amp; Environmental Hazards/Impacts at the site of the Job</p> <p>Identify the actual and potential health and safety hazards and the environmental impacts associated with each step of the job.</p> | <p>Risk Rating</p> <p>Refer to the risk matrix or HSEQT.PRO. Risk Mgt</p> | <p>Recommended Corrective Action or Procedure</p> <p><i>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 reduced or controlled to ALARP before work commences.</i></p> <p>Document who is responsible for implementing the controls to manage each hazard identified.</p> | <p>Risk Rating refer to the risk matrix or HSEQT.PRO.Risk Mgt</p> |
|--------------------------------------|--|---|---|---|---|
| 1.                                   |  |   |   |   |   |
| 2.                                   |  |   |   |   |   |
| 3.                                   |  |   |   |   |   |
| 4.                                   |  |   |   |   |   |
| 5.                                   |  |   |   |   |   |

# Audit



| <b>Process:</b> insert//<br><b>Procedure:</b> Insert // |          | Date:                   | Audited by:          |  |
|---|----------|-------------------------|----------------------|--|
|   |          | Location of Audit:      | Area Mgr/Supervisor: |  |
| Item  | Question | Evidence Sited          | Comments             | Conformance Score<br>0,3,5   |
| 1.  |          |                         |                      |  |
| 2.  |          |                         |                      |  |
| 3.  |          |                         |                      |  |
| 4.  |          |                         |                      |  |
| 5.  |          |                         |                      |  |
| 6.  |          |                         |                      |  |
| 7.  |          |                         |                      |  |
| AUDITOR'S SIGNATURE:                                    |          | CONFORMANCE SCORE: / 25 |                      | 0 – Non-Conformance<br>3 – Continuous Improvement Opportunity<br>5 – Total Conformance |
| SAFETY REP'S SIGNATURE:                                 |          | CONFORMANCE %:          |                      |  |