Leak Detection and Repair Training (LDAR)
Outline

- Regulatory Overview
  - Clean Air Act
  - Basics of the Air Rules
- Advanced Regulations – HON H
  - Covered Components
  - Monitoring Requirements – M21 & Visual
  - Leak Definitions, Repair Deadlines
  - Sensory Leaks, OELs, PRV Releases
  - Record-keeping Requirements
**Regulatory Overview**

- **Clean Air Act**
  - Goal: to increase regulations and introduce new initiatives to continue improving air quality in the United States.
  - Govt realized that emissions from the chemical and petroleum industries – while small – were quickly adding up to produce high results for air quality.
Regulatory Overview

- **Clean Air Act**
  - Regulatory agencies (both federal and state) developed new regulations
  - Designed to address and reduce the emissions resulting from equipment leaks

- **Major Federal Air Rules**
  - NSPS, HON, NESHAP, RCRA, MON

- **Louisiana Air Rules**
  - 2121, 2122, Consolidated Program
Regulatory Overview

- Purpose of Leak Detection and Repair
  - To identify unintended equipment leaks of volatile organic chemicals and repair them

- Regulatory Structure
  - Applicability
  - Test methods
  - Leak definitions, monitoring frequencies
  - Repair procedures
  - Recordkeeping and Reporting
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Advanced Regulations – HON H

- **Covered Components**
  - Valves, connectors, pumps, compressors, agitators, PRVs, instrumentation systems

- **Leak Definitions**
  - 500ppm: valves, compressors, connectors, PRVs, instrumentation systems
  - 1,000ppm: pumps
  - 10,000ppm: agitators
Monitoring Requirements

- Weekly: visual inspections for pumps
- Monthly: pumps, agitators
- Quarterly: valves
- Annually: connectors, compressors, NDEs, DTM valves

Visual Inspections – Pumps, Agitators

- look for indications of liquids dripping from the seals
- if there are liquids dripping – a leak is detected
Advanced Regulations – HON H

- **Repair Deadlines**
  - First Attempt and Remonitoring in 5 days
  - Repair or DOR in 15 days
  - Light monitoring once within 90 days
  - Pumps only allowed on DOR for 6 mos

- **AVOs – Sensory Leaks**
  - if a leak is detected by audible, visual, or olfactory means: must remove the indication of a leak or monitor M21 and repair under those deadlines
Advanced Regulations – HON H

- Open-Ended Lines (OELs)
  - must be equipped with a cap, plug, blind-flange, or second valve
  - must remain sealed at all times, except:
    » when operations require that process flows through
    » during maintenance or repair
  - subject to very stringent fines if found by LDEQ

- PRV Releases (Pressure Relief Devices)
  - must monitor and repair in 5 days
  - rupture disk must be replaced in 5 days too
Advanced Regulations – HON H

- Record-keeping Requirements
  - List of ID numbers for all covered equipment
  - Leak Tags hanging on all leakers
  - Info on leakers kept in a log, including:
    » tag ID, instrument ID, tech ID, date, all ppm readings, all dates (original leak date and ppm and repair attempt dates and ppm’s)
  - DOR info (Delay Of Repair)
  - Visual inspection dates and results
  - Semi-annual reports on component counts and leak rates
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The following slides pertain to the equipment used to monitor, emissions seams, and types of equipment in the field.
Method 21

- What is Method 21?
- Important Terms
  - Calibration Gas vs. Reference Compound
  - Daily Calibration vs. Precision Calibration
  - Response Factor
  - Response Time
- Equipment Provisions
  - Electrically driven pump, constant flow rate
  - Sample probe with ≤ 0.25” diameter
Method 21

- Calibration Provisions
  - Precision vs Daily

- Source Surveys
  - How and where to monitor various types of components (pictures to follow)

- Separation
  - 0 separation between probe & emission seam
  - Unless: moving part or moisture / foreign material, then no more than 0.5” separation
Monitoring Procedures

What Does Monitoring Look Like?
- You, TVA, Datalogger, Components
- Find 1st component
- Take background reading
- Monitor component along emission seams
- Capture reading in Datalogger
- Move to next component
Monitoring Procedures

What If The Component Is Leaking?

– Perform simple maintenance
– Remonitor
– Record information in Datalogger
– Hang leaker tag
– Follow site-specific protocols
Ball Valve

Valves

Monitor
Stem,
Packing,
and Bonnet
Motor Operated Valves
Needle Valves

If doing connectors
Monitor where stem meets insulation.
Welded Seams

Inline Check Valve

Welded seams. Take no action.

Monitor only bonnet.
Pumps
Connectors

Monitor Tee and Coupling only if doing connectors.

Monitoring seams: Both sides of collar and any screwed endings.

Monitor 3 seams per tee

Hang tag on nipple and monitor separate.
Pressure Relief Valves

When monitoring PRV, monitor the bonnet, the weep hole and the horn. Do not monitor the rupture disk flange or .1 and .2. These are connectors, which are not monitored.

Monitor the "weep hole" - if there is one and you can reach it.

This could be Rupture Disk or Check Valve.
Monitoring Procedures

- Frequently Asked Question’s
  - Why is Tag Maintenance so important?
  - What about background readings?
  - How should the probe and Datalogger be coordinated while monitoring?
  - When should a Leaker Tag be removed?
Questions?