

## *A Practical Guide to a State BB/CC Inspection Program*



The Indiana Department of Environmental Management has conducted numerous RCRA organic air emission inspections over the last 5 years. This program is intended to identify what strategies have worked for the Department and to identify common violations. This opening slide shows an IDEM inspector monitoring a tank vent for organic emissions. Note the variety of tank components potentially subject to monitoring (manway, several vents, blind flange). Also, note safety equipment (climbing harness, hard hat, boots, monitoring instrument)

## *IDEM Approach*

- Identify Universe
  - Surveys (staff and industry)
  - Enforcement data base
  - add category to Notification Form
- Assemble Team
  - Engineer, inspector, health & safety

IDEM identified the potentially regulated universe by conducting surveys of staff and industry and by utilizing an existing enforcement database. Facilities were asked to voluntarily identify RCRA tank systems. The response was moderately successful. Inspectors were also asked to identify known tank systems. An existing database was used to identify facilities which had previously been cited for tank system violations. A universe of approximately 125 tank systems was identified.

IDEM then assembled a team to assure appropriate issues could be addressed. In most cases, the inspection team consisted of an engineer to address structural and process issues, an inspector to coordinate regulatory issues, and a H&S officer to address safety and monitoring issues. The team often consisted of 4 individuals which allowed two-person teams to cover a large facility in a timely manner. A chemist often participated.

## *Health & Safety*

- Heightened Work Surface (over 4 ft)
  - Cages, Railings, Toe Boards
  - Climbing Harness
- Confined Spaces (sumps, secondary containment, enclosures)
- Monitoring/ Hazard Recognition

Safety is the top priority. Safety issues which may be a concern include heightened work surface rules, confined space rules, and general hazard recognition. Safety is of the utmost importance. Safety first. Safety cannot be overemphasized. Did we mention safety is the top priority? Training is an important element of all safety programs. IDEM inspectors are certified “climbers”, certified confined space entrants and attendants, and receive all applicable annual and ongoing safety and health training.



This slide shows an example of a team working in an environment where respirators were required. The room, which contained a tank, served as an enclosure vented to a control device. Continuous monitoring was used to track compliance with pre-established action levels. The facility was not in compliance with RCRA air emission requirements

## *Equipment*

- Monitoring Equipment
  - 2 minimum, preferably FID
- Climbing Harness & related equipment
- Tank Wall Thickness Meter
- Radios
- Laser Pointer
- Ladders
- Digital Camera

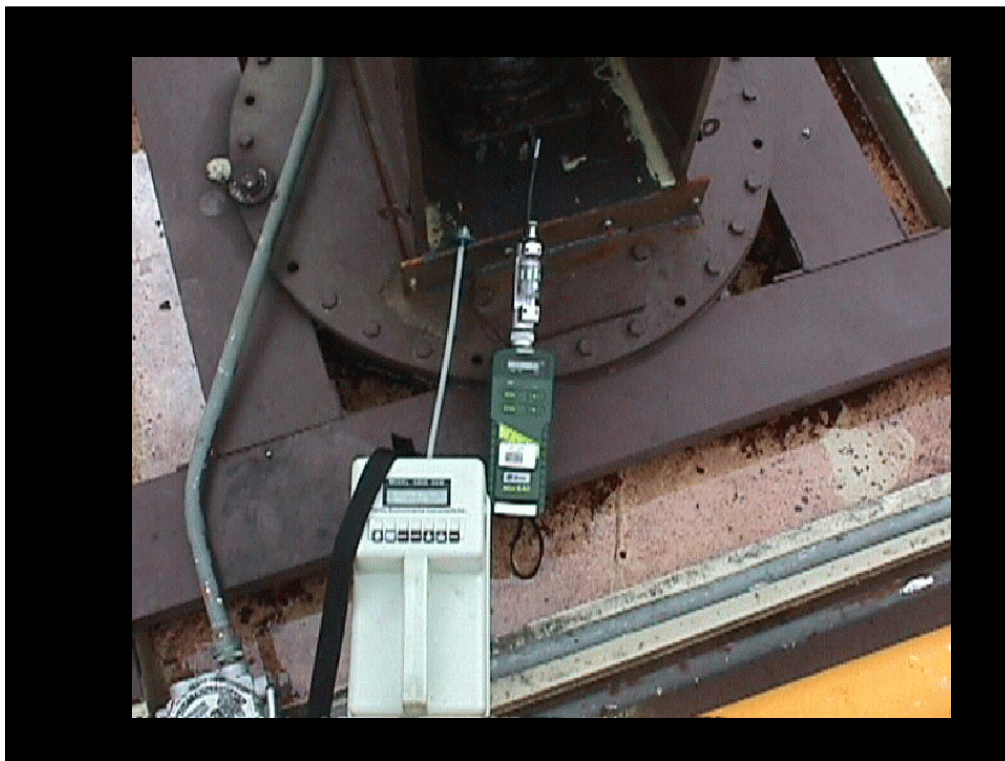
Inspections can be equipment intensive. IDEM has found that despite manufacturer and agency efforts, instrument malfunction is common. Take a back-up. Or two. Did we mention that safety is a priority? Climbing harnesses are often necessary. IDEM conducts tank wall thickness measurements with an ultrasonic meter while we have the team at the site.

Radio's are useful for communicating from tank top to the ground. Laser pointers help personnel follow pipe runs and point out components from a remote location. Both extension ladders and step ladders are useful. Most IDEM inspectors utilize digital cameras during inspections.

## *Monitors*

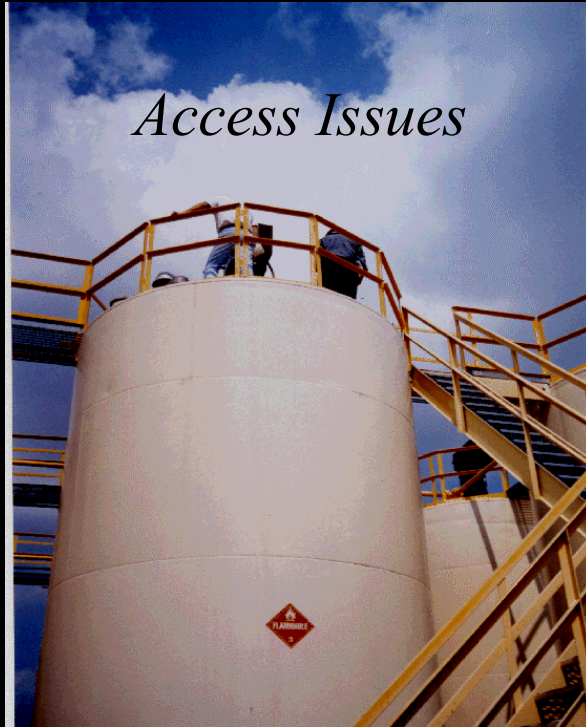
- have a back-up (or two)
- have Cal gas, ability to use it
- background
- batteries
- downloads
- other features
- follow Method 21 protocol

Did we mention that a back-up monitor is a good idea? It is also necessary to have calibration gas and be familiar with Method 21 requirements. Most monitors include download features which provide useful reports. Obtaining background instrument readings can be an issue. Batteries often fail in any and all electronic equipment. Remember Murphy's law.

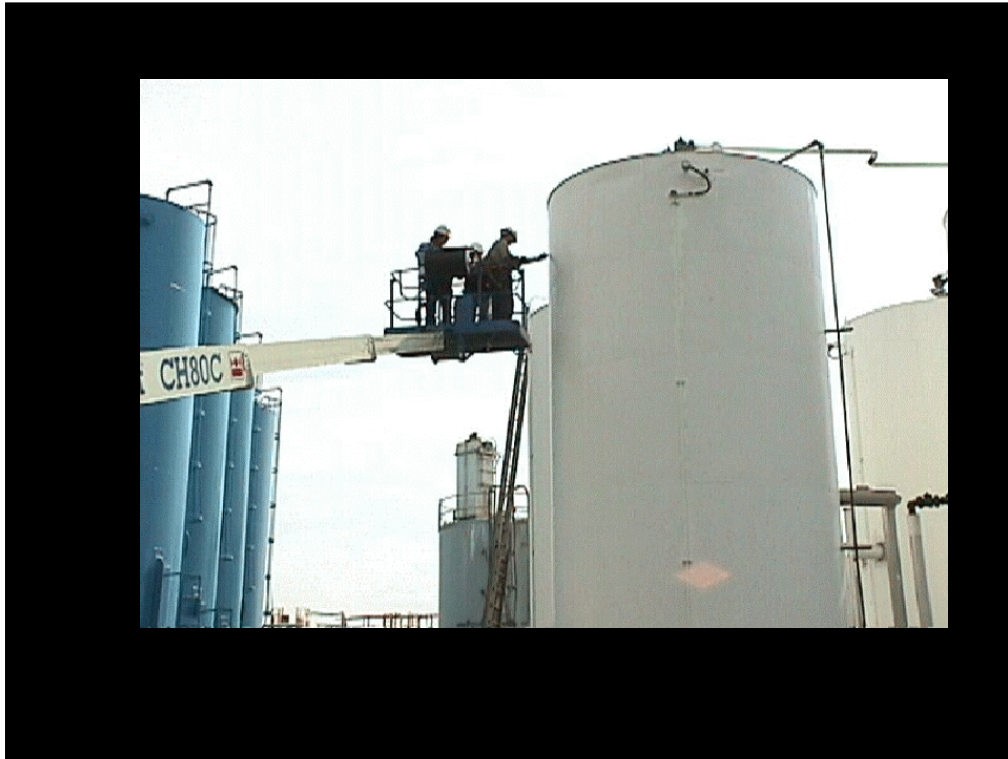


This slide shows a PID (photo ionization detector, small green unit) and a FID (flame ionization detector). Each has pro's and con's. PID is user friendly, but has a limited range. FID tends to flame out, but has wide range.

## *Access Issues*



Access to the tanks themselves can be a challenge. This slide shows an example of a tank with a staircase which provides easy access.



This slide shows IDEM inspectors utilizing a cherry picker which was provided by the facility.



Pretty much a worst case scenario where the only access was the use of a long extension ladder. Not recommended.



Inspector calling in the helicopter for pick-up. Just kidding, but access is sometimes a challenge. This tank had a ladder and climbing cage on the other side. Note rails.



Monitoring components can also be challenging. Here an inspector uses an extension pole with a monitor with a pre-set alarm level to obtain readings from a conservation vent.

## *Most Common Violations*

- Conservation Vents
- Tank Closure Device Gaskets & Seals
- Unlatched Closure Devices
- Mechanical Level Indicators
- Agitators
- Lack of any program

IDEM has identified common violations. Conservation vents often leak in the closed position, when the tank is in stasis. This can often be attributed to defective or worn seals, gaskets or gates in the vent itself. Tank closure devices often leak due to worn or defective seals and gaskets. Closure devices such as manways are often left unsecured. Level indicators and agitators often leak. Many facilities have not implemented any of the RCRA organic air emission requirements. However, IDEM very rarely found any Subpart BB leaks.



This slide shows an agitator. Leaks (10,000 PPM) are often found at the seals where the rotating shaft penetrates the tank wall/roof.



This slide shows an unsecured manway.



Another unsecured manway. The hatch is not “dogged” down.



Another unsecured manway. That's a lot of bolts to turn, and maintenance personnel often take a shortcut. Organic air emissions are often detected from unsecured closure devices.



This slide shows a dome-topped tank with a variety of components. There is an agitator in the back ground, a vent on the left side, and a variety of closure devices (manway, level sensor, blind flange). Note railing and toe board. Did we mention safety is a priority? An IDEM inspector slipped and fell on the curved surface of this tank.

## *Tank Conditions*

- Turn on agitators
- Turn on pumps
- Transfer material
- Be aware of temperature/weather
- Be aware of fill level

It is important to be aware of tank operating conditions during the inspection. IDEM inspectors request that agitators and pumps be activated, and if possible we monitor while tank systems are being filled. Conservation vents may operate due to weather events.



This slide shows a hazardous waste tank system that was damaged in an explosion. It is believed the explosion was caused when a vent system failed. It serves as a reminder that there are potentially serious consequences related to hazardous waste management in tanks.

*TANKS FOR LISTENING!*

