When Did LDAR Begin and Where is it Going?

The Ask The Expert column will give readers the opportunity to have their valve concerns addressed, find out the answers to their pressing valve challenges and ask for feedback on application issues. If you have a questions that you need answered, please feel free to contact s.bradley@kci-world.com with the email subject: Ask The Expert.

If you are an individual with extensive valve expertise that you believe the Valve World readership could benefit from, please contact our Editor-in-Chief to become a future featured Expert.

This month our Experts are Graham E. "Buzz" Harris – Principle Engineer & Global LDAR Subject Matter Expert - Sage Environmental Consulting LP., Bronson Pate – Client Guardian & LDAR Subject Matter Expert - Sage Environmental Consulting LP. & Rodney Roth – Strategic Account Manager – Stationary Equipment - A. W. Chesterton

Q When was the first survey conducted at an actual site?

A The first site survey was performed by Dr. Bernie Steigerwald in 1958. Site surveys were performed at Los Angeles area on behalf of "The Health, Education and Welfare Department."

Q What occurred after the initial surveys were conducted?

A The first phase following these surveys was the "Research Years. The EPA invested in research projects to determine the environmental problems, how they relate specifically to fugitive emissions.

a) One large project went to the Radian Corporation to measure atmospheric emissions from petroleum refineries looking at the following.
   - Instrument monitoring for presence of leaks
   - Correlations equations and emission factors
   - Bagging procedure later formalized by the EPA
b) A second large project went to the Rockwell corporation teaming with Texas A&M University to measure emissions from Oil & Gas production

- Leak detection by soap scoring (monitoring of bubbles with soap liquid applied to leak point).

Q What determinations were made through the "Research Years"?

A - It was known/suspected that most components did not leak significantly
- The method of measuring fugitive mass emission rates is called bagging (encapsulating the leak source with a bag/ enclosure).
- Bagging was too expensive to be used in a shotgun approach, with the potential to most likely measure insignificant leaks (bagging thousands of valves is impractical).
- A tool was needed to identify leaks and roughly categorize them by size and also screen out the non-leakers from more interesting subjects

Q What was decided to be the best approach to move forward?

A - Check all potentially leaking areas with a portable hydrocarbon detector was selected
- This screening method is known today as Method 21 (sometimes called 'sniffing').
- Method 21 now calls for only the recording of maximum readings (stabilized over a relatively short period of time).

Q Were there final conclusions taken from the "Research Years"?

A -Gas and light liquid service components were more likely to leak than heavy liquids
- The maximum screening value shows the best correlation coefficient to mass emissions
- Individual component emissions are small, but in aggregate can be large
- Most components do not leak or leak at very low levels
- The bulk of emissions come from a small percentage of equipment leaking at high volume.

Q What stage came after the "Research Years" were completed?

A - EPA regulations being generally based on three types of standards

a) Emission limits
b) Work practice specifications
c) Equipment modification/standards

Q What's happened during the "Regulatory Years"?

A With regulations being in place for years, LDAR compliance became routine. Additionally, specialized LDAR contractors were developed offering the following;

- Low labor costs and benefits
- Expertise in LDAR
- Turnkey compliance

Q What stage are we in today and is this the stage directly following the "Regulatory Years"?

A Today we are operating in the "Consent Decree Years". The "Consent Decree Years" have followed closely behind the regulatory years.

Q What is meant by "Consent Decree" and what are some of the requirements?

A - Negotiate settlements of alleged violations
- Covers many environmental areas, including LDAR (Leak Detection and Repair)

1) Requires an audit every 1 to 2 years
2) Defines lower leak definitions than current standard
3) Requires extraordinary repair attempt
4) Requires electronic data logging and measurement
5) Includes Low E requirements as part of some of the "Consent Decrees"

Q What is the future of LDAR?

A - Voluntary Low E compliance
- Small number of facilities are now required to upgrade 10% of their valves to Low-E technology at each turnaround

- API testing standards (622 & 624) along with valve specifications (600, 602 and eventually 623, 603 etc.) requiring the valves be certified to Low E will help to eventually bring all industries using API valves to Low E as a standard
- The development of additional testing standards in conjunction with sealing technology advancements will make Enhanced LDAR and Consent Decree compliance much easier as we move forward