

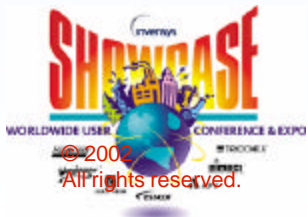


Title V : You aren't paranoid. You're toast.

Invensys Showcase and
Worldwide User Conference &
Expo,
Sept. 8–12, 2002

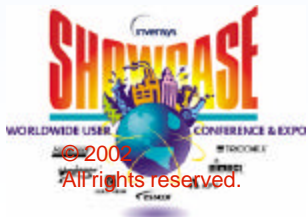
Title V is different

- Companies must demonstrate compliance with permit requirements
- Semi-annual compliance certification and deviation reports with corrective actions **are required**
- **Failure to** record compliance **is defined as** non-compliance



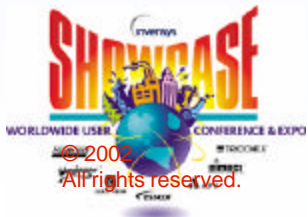
Tolerance for “deviations” is low

- Visualize the headline in the local newspaper if the reporter reads 2450 ‘deviations’ in the semi-annual report.
- Think how the local (or national) environmental activist organization is going to make it sound.
- Think about the corrective action program required for 2450 deviations.
- A poll of environmental managers showed they thought they would be in trouble with site management if the number of deviations was above 20 a month (99.986)
- A plant manager told me the performance was “unacceptable” when an EPA audit found 40 problems out to 500,000 LDAR records audited (99.992)
- The general public, the community and regulators expect 99.99



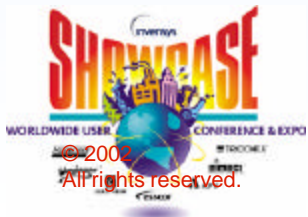
Penalties for non-compliance are high

- Civil
 - **Fines & Penalties**
 - **Capital Investments**
 - **Additional Operating Constraints**
 - **Additional Reporting**
- Criminal
 - **Prison Sentences**
 - **95% Conviction Rate**
- Cost of Defense
 - Legal Fees
 - Staff Time
- Negative impact on Corporate Reputation and community relations
- Impact on individuals' careers



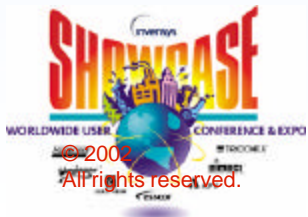
Requirements are complex

- Continuous, hourly, daily, monthly, quarterly, and annual limits
- Volumetric flow, concentration, & mass flows
- Event logs
- Preventive and corrective actions
- Equipment and process inspection
- Calibration and proving



Example Requirements

- NOx Limit on furnace stack
- Report all mal-operation and shutdowns of Continuous Emission Monitoring System (CEMS)
- Unit production less than xx tons per day
- Destruction efficiency of an emission control device
- Opacity control from furnace or flare



Organization and operation is complex

- 7x24x365
- Multidiscipline
- Continuing pressure on staffing levels
- Multiple operating and business priorities
- Multiple regulations and agreements



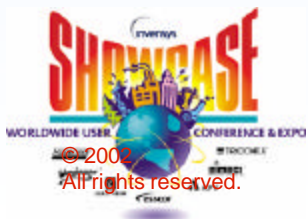
High number of compliance activities.

A typical chemical plant or refinery has 20,000 applicable requirements ¹

Some requirement apply each minute, some hourly, some daily, some quarterly, some annual (On average, they're monthly)

~ 7 activities are needed to meet each requirement

That gives 140,000 activities monthly or 840,000 semi-annually



Conformance rate vs. “deviations”

<u>Conformance Rate, %</u>	<u>Reported “Deviations” *</u>
90	84,000
99	8,400
99.7 ²	2520
99.986	120

* In Semi-annual Compliance Report



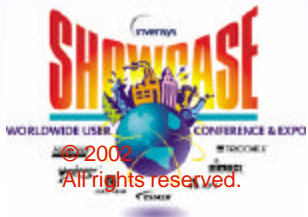
Typical conformance rates

The management methods typically used for most activities give a 80 - 90% conformance rate

Adding audits gives 95 – 98%

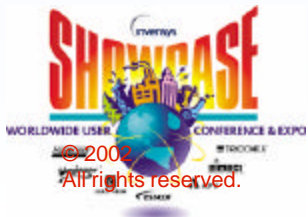
Computerized task management systems give 99%

Triple redundant, hard-wired systems with periodic verification give 99.99%



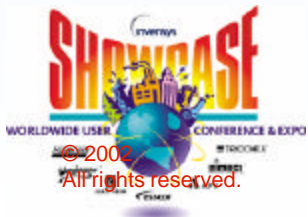
Conclusions

- Conventional compliance assurance processes are inadequate for Title V by several orders of magnitude
- Having an Environmental Management System isn't good enough³
- Incremental changes to conventional methods will not get you there
- A rigorous compliance assurance system is required



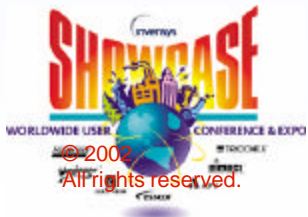
Requirements for 99.99%

- Line responsibility for compliance
- Accountability for results is shared throughout organization
- Templates for implementation of similar requirements
- Consistent methods across organization
- Requirement implementation must be integral with normal work processes not just for environmental
- Excellent documentation of compliance activities
- 100% conformance verification and non-conformance correction system
- Continuous improvement loop



References

- 1) Beath, John M., “Rightsize” Your Environmental Management Information System”, Chemical Engineering Progress, May 2001.
- 2) Typical human error rate: Lorenzo, D.K. A Manager’s Guide to Reducing Human Error, Improving Human Performance in the Chemical Industry. Chemical Manufacturers Association, Inc., July 1990
 - EPA/CMA Root Cause Analysis Pilot Project: An Industry Survey. EPA-305-R-99-001, May 1999, p. 27.



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