CENTER FOR Hydrogen SAFETY
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Safety Culture Spotlight

Abusing ITPM Extensions—Process Procedures

- Increase risk results from extending Inspection, Testing & Preventive Maintenance (ITPM)
- Failure to validate ITPM process with Key Performance Indicators (KPI)
- Extensions voided Safety Integrity Level calculations
- Inadequate check and balances on decision process

BACKGROUND

A facility tracks an overdue ITPM metrics monthly. The values for the facility since the metrics program was established three years ago have been consistently above 99% completed on time.

During an internal audit, the Process Safety Management System (PSMS) Coordinator discovered that dozens of fixed equipment ITPM tasks had not been performed.

These included external inspections of pressure vessels, internal and external inspections of storage tanks, external inspections and thickness measurements piping, and relief valve maintenance tasks had not been performed. However, the missed tasks were omitted from the monthly KPI for overdue ITPM.

WHAT HAPPENED

The reason is that the facility had an ITPM extension procedure that allowed ITPM tasks that were due to be deferred to a later date under certain conditions upon approval of the Maintenance Manager. The PSMS Coordinator found dozens of open extensions, some of which had been in place for over a year. These extensions were excluded from the ITPM KPI data. When this became known, the facility added another KPI based on the number of ITPM tasks with open extensions and their aging and a different picture emerged.

With further study, the Process Safety Coordinator also found that over the past 5 years approximately 50 relief valves whose maintenance had been extended failed their pop test. The Process Safety Coordinator then reviewed the extensions associated with safety instrumented systems and discovered the 65 proof tests for Safety Instrumented Systems (SISs) had been extended over a 5-year period, including 6 proof tests that were currently overdue. The overdue proof tests of SISs voided the Safety Integrity Level calculations for the SISs involved resulting in a higher than allowable risk to exist.

These discoveries caused the facility to review their policy for extending ITPM and to provide limits of the extension periods. The facility also excluded the ITPM of certain types of the equipment from being deferred without Plant Manager approval. What should the Plant Manager have done to address the abuse of the extension/deferral policy?

SAFETY CULTURE FOCUS

- ✓ Safety is everyone's responsibility and must be considered when establishing or changing a process.
- ✓ Strong leadership support is required at all decision levels to have an effective safety culture.
- ✓ Maintaining a questioning environment can help identify risks and unintended results.
- ✓ Mutual trust is paramount in fostering a culture where everyone does what is right.

****Only 51% of those surveyed indicated procedures were a strength in their organization.****

IMPROVING HYDROGEN SAFETY CULTURE

LEARNING OPPORTUNITIES FROM OTHER'S EXPERIENCES

"Safety culture is how the organization behaves…
…when no one is watching."

Safety Culture Framework

- Safety is everyone's responsibility
- Strong leadership support
- Integrated into all activities
- Open, timely, effective communications
- Questioning/learning environment
- Mutual trust
- Continuous improvement

What are the benefits?

- ✓ Eliminates common weaknesses identified as contributing factors to catastrophic events.
- ✓ Promotes trust in the hydrogen energy industry's ability to deliver safe, reliable, quality products and services.
- ✓ Supports a sustainable legacy for companies and the hydrogen industry.
- ✓ Fosters efficiency and productivity in the workplace.

Resources

- ✓ For further information and resources on safety culture, see: https://www.aiche.org/ccps/safety-culture-what-stake
- ✓ For further case studies on safety culture, see: https://h2tools.org

Keywords: weak, poor, minimum, regulations, flammable, chemical, checklists, compliance