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Safety Culture Spotlight

Misleading Performance Indicators—Process Metrics

- Failure to identify all tasks important to process safety
- Failure to integrate internal tracking systems
- Failure to investigate negative indicators

BACKGROUND

As the old saying goes, "What gets measured gets managed." Today, reporting and analyzing Key Performance Indicators (KPI) have become a normal business activity. Increasingly, metrics extend to Environment, Health & Safety management and Process Safety Management Systems (PSMS). However, KPI metrics are not just dispassionate data. Collecting, analyzing, and acting on them are very human activities and can be fraught with cultural concerns.

WHAT HAPPENED

A facility included a KPI based on the number of overdue Inspection, Testing, Preventive Maintenance (ITPM) tasks in the Artificial Intelligence/Machine Intelligence element, which many facilities do. The facility defined the KPI as any ITPM task that was overdue in 2 main asset tracking software packages. One software was used to manage rotating equipment, instruments, and electrical equipment, while the other was used to manage fixed equipment pressure vessels, tanks, piping, and relief devices. Upon implementation, this KPI revealed a few items overdue month-to-month, but the value was low, as was the aging of the overdue ITPM tasks. Two years later, during a PSMS audit, auditors found there were other ITPM tasks that were important to process safety that were overdue but were not tracked in either of the two tracking software packages and therefore were excluded from the KPI; those results were much less favorable.

The Fire Chief tracked fire system ITPM in his electronic calendar. The annual fire pump flow tests had not been conducted for two years and the ITPM tasks required by NFPA-25 were not included in the calendar. The Instrument shop supervisor tracked the annual calibration of testing equipment in a spreadsheet and there were ten pieces of test equipment that were overdue for annual calibrations.

Separate ITPM monitoring systems were also maintained for vibration monitoring, electric power distribution equipment, and equipment required for the emergency response plan, and in all systems, many important ITPM tasks tracked by this system were found to be either overdue, missing from the system, or both. The Plant Manager was surprised and upset when these findings were presented at the audit's daily debriefing. When the ITPM KPI was updated to include all the missing data, the performance was much poorer. More importantly, much work and expense were needed to catch up. Failing to include the data from the other sources was found to be an innocent mistake. However, why was the definition of the KPI not reviewed for completeness? Why were positive results not challenged to ensure they reflected reality?

SAFETY CULTURE FOCUS

- ✓ Safety must be integrated with all activities and systems.
- ✓ The optimum safety culture includes a questioning environment to identify and mitigate potential risks.
- ✓ Reviewing existing systems for continuous improvement is essential to a strong safety culture.

****Only 46% of those surveyed indicated employee involvement was a strength in their organization.****

IMPROVING HYDROGEN SAFETY CULTURE

LEARNING OPPORTUNITIES FROM OTHER'S EXPERIENCES

This record is taken from "Essential Practices for Creating, Strengthening, and Sustaining Process Safety Culture," CCPS, ©2018, AIChE and John Wiley & Sons, Ltd.

"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