

Abstract Submission

Title:

The Process Safety Execution Gap

Executive Summary:

Despite mature process safety frameworks, execution failures remain a primary source of risk. Sphera's findings show 49% of organizations see a disconnect between leadership intent and frontline reality. Breakdowns occur not due to missing policies, but due to paper-based permits, disconnected systems, and manual handoffs—especially amid workforce changes and system transitions. These gaps lead to missed isolations, poor coordination, and limited visibility of simultaneous operations. Addressing this requires more than procedures or training. Organizations must improve how work is coordinated and how information flows—leveraging digital, integrated systems to enable safer, more reliable execution in real-world conditions.

Abstract:

*The purpose of your abstract is to help the technical committee assess your proposed content and its relevance for Hazards Please tell us in a written abstract of **300–1,000** words:*

- *why your proposed content will be of interest to Hazards delegates*
- *how it will benefit Hazards delegates.*

This presentation examines one of the most pressing challenges in modern process safety management: the widening gap between safety intent and safety execution. Over the past decade, organizations have invested heavily in process safety programs, strengthened governance frameworks, increased leadership attention and expanded the use of digital tools. Yet despite this progress, confidence in the ability to manage major accident hazard risk has not improved accordingly. In several critical areas, it has declined. Drawing on insights from Sphera's 2025 Process Safety Report and lessons from decades of incident investigations, this session explores why that gap persists and what organizations must do to close it.

The presentation begins by unpacking a central and uncomfortable truth: many of the most serious process safety failures do not occur because organizations lack procedures, policies or training. They occur because risk accumulates gradually, quietly and often invisibly in the course of normal work. Small deviations are tolerated, workarounds become routine, maintenance is deferred, temporary conditions remain in

place, and over time these changes begin to redefine what is considered normal. This dynamic — often described as normalization of deviance — has appeared repeatedly across major incidents in different industries and different decades. The mechanism is not ignorance, but drift: a slow movement away from baseline safety assumptions without a corresponding ability to detect that the system has changed.

Using practical examples from refinery and industrial operations, the session highlights where these execution gaps emerge in real work: lockout/tagout activities performed against outdated procedures, handovers that transfer task status but not plant-state context, simultaneous operations that introduce interacting hazards, and safety-critical maintenance shortfalls that leave barriers degraded while risk models still assume they are intact. These are not isolated operational lapses. They are signs of a larger structural problem in how process safety information is organized and used. In most organizations, the relevant data already exists — in maintenance systems, permit systems, management of change records, hazard studies, action trackers and audit findings — but it sits in disconnected systems owned by different functions and reviewed on different cadences. As a result, no one has a complete, real-time view of how risk is stacking up in a given unit, on a given shift, at a given moment.

The presentation also explores the complexity multipliers that make this challenge even harder to manage, including workforce turnover, knowledge loss, digital system transitions, mergers and acquisitions, decentralized operating models and fragmented enterprise transformation. These conditions do not create risk by themselves, but they amplify it by reducing contextual awareness and making convergence harder to see. What appears to be an execution problem is often, in fact, a visibility problem.

To address that problem, the session presents a practical reframing of the solution. Rather than focusing only on more controls, more procedures or more dashboards, organizations need an integrated process safety management architecture that connects fragmented risk signals across hazard studies, control of work and action tracking. The presentation will show how connected systems and AI-enabled analysis can help identify drift from baseline assumptions, detect multi-condition convergence and provide meaningful, human-centered insight at the point of decision. The conclusion is clear: closing the execution gap requires leadership to treat visibility as an operating condition to fix, not simply a compliance issue to monitor.

