

FOUR COMMON GAPS in Process Safety - worldwide

Four major gaps that are preventing most companies worldwide from achieving excellent process safety performance.

PROCEDURES

90% accidents have at least one root cause related to procedures

OBJECTIVES

- +95% ACCURACY**
- +80% FORMAT RULES**

HUMAN ERROR 2-10x

CONTENT ACCURACY **FORMAT**

PROBLEMS

DRAFT: Have a user write the first draft of the set of instructions

VALIDATION: Have another user walk-down the first draft in the field. Make a revised draft.

VERIFICATION: Have a technical expert walk-down the revised draft in the field.

PRESENTATION: Follow rules for page format and writing of steps. Issue final draft.

RISK REVIEW: Before using the final procedure. Perform a review of: **Performing a Step Wrong or Skipping a Step***

* This is necessary even if the procedure is perfect because humans do not follow procedures perfectly

PHAS

+80% PS Accidents occur during startup, shutdown, and online maintenance

+80% of companies **DO NOT properly analyze** hazards during non-routine modes

MAIN DEFICIENCIES

MODES OF OPERATION (STEP BY STEP)

DAMAGE MECHANISMS

70% of PHAs **do not cover Damage Mechanisms** in each node

NEAR MISSES

TYPICAL BARRIERS

- 1 Fear of disciplinary action
- 2 Fear of teasing by peers (embarrassment)
- 3 Lack of understanding: Near miss vs Non-incident
- 4 Lack of management commitment and lack of follow-through on reported near misses
- 5 Apparently high level of effort is required to report/investigate Near Misses
- 6 There is no way to investigate the thousands of Near Misses per month
- 7 Disincentives for reporting Near Misses
- 8 Not knowing which accident investigation system to use
- 9 Company discourages Near Miss reporting due to fear of legal liability

SOLUTIONS

- Implement a policy to NOT punish individuals when their errors lead to accidents and Near Misses.
- Ensure that all employees understand the importance of near-miss reporting; demonstrate, through feedback of lessons learned.
- Develop a list of "in-context" examples that illustrate what you consider to be Near Misses and what you consider to be non-incident
- Hold management accountable for achieving a Near-Miss reporting ratio
- Ensure that the data are entered in a database and queried regularly. Share the results with employees so they can see the value of the reported near misses
- Let front-line foremen or supervisors decide if a Near Miss or accident needs to be investigated
- Ensure that goals and incentives are not tied to lower incident rates (since this discourages reporting), but instead provide incentives for high Near-Miss reporting ratios
- Have ONE incident reporting system with ONE approach
- Involve legal on major Near Misses and accidents to ensure the results are protected as much as possible under attorney/client privilege.

HUMAN FACTORS

HUMAN FACTORS CONTROLS TYPICALLY MISSING FROM PROCESS SAFETY

- 1 Best practices for content and format of OP procedures
- 2 Verbal Communication Standard (repeat back, etc.)
- 3 Fitness for duty (fatigue management, etc.)
- 4 Task design to match human (includes work environment)
- 5 Human-System Interface (displays, labels, handheld prompts, etc.)
- 6 Staffing considerations for error reduction

Up to **20x** more errors

Up to **5x** more errors

Closing gaps and finding missing scenarios has **greater than 100:1 payback**