ERROR TRAPS: FINDING YOUR NEXT FAILURE

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Introduction

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Session Objectives

• To discuss **human error** and its effect on occupational safety.

• To identify the role of **error traps** in human error.

• To identify how an organization can identify and eliminate error traps to **prevent incidents**.

• To review **case studies** involving human error.
Case Study #1 – Another Ladder Accident

Employee replacing a street sign falls off of a ladder (approximately 12’):

• Immediate Result – Broken ribs and vertebrae.
• Direct Cause – Employee likely leaned out while on ladder, causing the ladder center of gravity to shift.
• OSHA investigated, no citation issued (“Employee Error”).
• Corrective Action – Name, Blame, Shame, and Retrain.
Heinrich Warned Us About This!

- Unsafe Acts: 88%
- Unsafe Conditions: 10%
- "Acts of God": 2%
Perhaps its more complicated?

Source: DOE (2007)
Case Study #1 - Lets Look Deeper

- Company had no effective job hazard analysis or hazard correction programs.
- Safety programs/culture was reactive, rather than proactive (safety was an afterthought).
- Employee was called in to work at the last minute.
  - On his day off
  - On the day he was leaving for vacation to Las Vegas
  - On his 25th wedding anniversary
Knowing what we know now...

Could we have predicted that an incident was more likely to happen?
Thinking about human error

- People make mistakes!
- Blaming someone for being human (i.e. making an honest mistake) isn’t helpful.
  - Especially if the error is predictable and preventable

“Human error is a symptom of trouble deeper in the system.”
- Sidney Dekker
Case Study #2 – The Downside of Consistency
What is an Error Trap?

- Violates operator expectations.
- Requires performance beyond what an employee can deliver.
- Induces fatigue.
- Provides inadequate facilities or information for the operator.
- Is unnecessarily difficult or unpleasant.
- Is unnecessarily dangerous.
Error Traps have many sources

Task Demands
- Time Pressure
- Unclear goals

Work Environment
- Distractions
- Confusing displays or controls

Individual Capabilities
- Task unfamiliarity
- Illness or fatigue

Human Nature
- Complacency
- Mental shortcuts/biases
Case Study #3 – Recent Events
Case Study #3 – Open and Shut Case

• The train engineer admitted he was nodding off. His lawyer said it was a case of “highway hypnosis.”
• “Most people are leaning towards human error” – A union official.
Case Study #3 – Some Questions

• Is it likely that a human being will get bored and distracted in an environment where they are required to passively monitor a system?
  • If yes, does the rail industry not know about it?

• What systems are in place to get an engineer’s attention when a safety critical task is coming up?

• Is there technology available that automatically slows trains if not done so manually when there is a significant change in speeds at a safety critical point (e.g. “autopilot”)?
It’s the people in the system

The people

The system

IT’S BOTH
Dealing with error traps

We have to understand that people will be people!

- Make it easy for employees to do the right thing.
- Make it hard for employees to do the wrong thing.
- Make it so that when they do the wrong thing it doesn’t lead to catastrophe.

*Make the system conform to the people, not the other way around!*
Remember the Hierarchy

- Elimination
- Substitution
- Engineering Controls
- Warnings
- Administrative Controls
- PPE
We need a balance

Consider the automobile industry’s approach to your safety.
Case Study #4 – Going Up or Down?

- Turnaround (maintenance shutdown) activities at a local chemical plant.
- “Critical path” was at one process vessel where employees would climb 20’-30’ ladders routinely to access scaffold.
- Turnaround scheduled in winter months, rain was expected.
- Employees may be wearing PPE to protect against chemical hazards at times, reducing dexterity.
We built an elevator
Take Aways

• Human’s make mistakes.

• To prevent incidents involving human error in your organization:
  • Stop blaming the workers
  • Start looking for the error traps

• Create an environment where:
  • It’s easy to do the right thing.
  • It’s hard to do the wrong thing.
  • Doing the wrong thing doesn’t lead to catastrophe.
Finding Error Traps

- As part of facility audits
- In the management systems
- As part of a JHA process
- In the design process (PtD)
QUESTIONS?

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Slides available at our website: http://www.scm-safety.com