SERIOUS INJURY AND FATALITY PREVENTION - CAN THEY BE PREVENTED?

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Overview

• Despite declining injury rates, severe incidents continue to occur in the workplace.

• Traditional safety efforts often fail to address serious injuries and fatalities because they're not designed to do so.

• In this session, we will discuss ways to identify where a serious injury or fatality may occur and how to prevent them from happening.
U.S.A. Incident & Fatality Trends

TRIR (per 200,000 hours) vs. Fatality Rate (per 100,000 workers) from 1993 to 2012.

- TRIR (per 200,000 hours)
- Fatality Rate (per 100,000 workers)
SIF Triangle

A sub-set of all reported cases will have SIF exposure.

A reduction of injuries across the bottom of the triangle and working outside of SIF triangle will not correspond to a proportionate reduction of SIFs.
Precursors

SIF Precursor: A high-risk situation in which management controls are either absent, ineffective, or not complied with, and which will result in a serious or fatal injury if allowed to continue.
Our Research

- A BST study of 55 SIF/SIF-Potential cases has confirmed that the SIF precursors, pre-conditions, and exposures that contributed to the occurrence of these incidents would be discoverable through discussions, interviews, and/or observations in 87% of the cases.
  - Example: Work at Height – scaffold, tied off, harness / lanyard

<table>
<thead>
<tr>
<th>BBS Observation</th>
<th>vs.</th>
<th>SIF Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.0 Procedures</strong></td>
<td>Safe</td>
<td>At Risk</td>
</tr>
<tr>
<td>4.1 Lock Out/Tag Out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Confined Space Entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3 Hot Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4.4 Working at Height</strong></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4.5 Communication of Hazards</td>
<td></td>
<td></td>
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</tbody>
</table>
Considerations for SIF Planning and Execution

• SIF potentials – the combination of actual serious injuries and fatalities with less serious injuries that have SIF potential

• Engage employees at all levels, use data analysis to understand sources of precursors, and create sustainable mitigation processes

• Data from significant operational upsets, design flaws, catastrophic fires etc. should inform the strategy
One Piece of the Puzzle: Defining SIF-specific Protection Checklists

Sources:

- Life Saving Rules
- Life Saving Processes
- Permitted Procedures
- Incidents
- BBS Data
- Near Hit Reports

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**SIF Protection Verification Checklist**

Category 4.4: Protection from exposure to falling into moving machinery or from height ≥ 4ft (e.g., ladders, platforms, docks)?

The following behaviors and conditions are critical to preventing falls into moving machinery or from height ≥ 4ft. Absence of these behaviors and conditions lead to incidents that may be severe, life altering or life threatening.

INSTRUCTIONS: For each behavior or condition, mark Protected (P), Exposed (E), or N/O (Not Observed).

<table>
<thead>
<tr>
<th>#</th>
<th>SIF Protection Measure</th>
<th>P</th>
<th>E</th>
<th>N/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall Protection Plan / Risk Assessment / JHA / JSA Posted</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>2</td>
<td>Correct use of PFAS (includes all items below)</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td></td>
<td>5000 lb rated anchor</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td></td>
<td>Lanyard /anchor systems set to prevent contact</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td></td>
<td>PFAS inspection current / in good condition</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td></td>
<td>Body harness worn correctly</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>3</td>
<td>6&quot; Rule used</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>4</td>
<td>OSHA approved barricades (handrail and toe board) or car top handrail system</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>5</td>
<td>Ladders used are approved and designed for use, inspected, safe working condition</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>6</td>
<td>Any floor and wall openings (over 12&quot; x 12&quot; x 4&quot;) are covered</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>7</td>
<td>Employee uses 3 point contact when ascending or descending</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>8</td>
<td>Body stays within rails (no leaning or reaching)</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>9</td>
<td>Machine guarding in place</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
<tr>
<td>10</td>
<td>Scaffold erected, inspected and approved by competent and qualified person</td>
<td>P</td>
<td>E</td>
<td>N/O</td>
</tr>
</tbody>
</table>

Totals:
SIF Interview/Observation Process

**System Elements**
- **Assess and Plan**
  - BBS system
  - SIF Exposure Assessment
  - Id qualified Observers
  - Id SIF Exposure Team
  - Identify goals and objectives
- **Educate and Communicate**
  - Review assessment findings
  - Develop SIF Protection Checklists
  - Plan implementation
- **Implementation**
  - Teach qualified observers to conduct interviews
  - Coach interviewers
  - Define tracking and sustain
- **Review and Sustain**
  - SIF prevention systems
  - Results
  - Report out

**Objectives**
- Enhance BBS system to detect and uncover SIF exposures
- Develop Observers to be SIF Interviewers
- Improve SIF prevention and mitigation systems

**Outcomes**
- SIF exposure reduction
- Improved relationships
- System improvements that impact SIF exposure
- Framework for solving problems collaboratively

**Measures**
- Culture
- Pause work
- LSSR Verification
- SIF exposures mitigated
- Interviewer engagement
- Management System Integrity

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