A New Paradigm for Serious Event Prevention

MCE Deepwater Development
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Why is This So Important?

Rate of fatal work injuries, 2006-2011*

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate (per 100,000 full-time equivalent workers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4.2</td>
</tr>
<tr>
<td>2007</td>
<td>4.0</td>
</tr>
<tr>
<td>2008</td>
<td>3.7</td>
</tr>
<tr>
<td>2009</td>
<td>3.5</td>
</tr>
<tr>
<td>2010</td>
<td>3.6</td>
</tr>
<tr>
<td>2011</td>
<td>3.5</td>
</tr>
</tbody>
</table>

OGP HSE Performance Trend Lines
Traditional Safety Triangle is Descriptive

Data from 2008-2009

<table>
<thead>
<tr>
<th>Category</th>
<th>Average Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious Injuries and Fatalities</td>
<td>0.0014</td>
</tr>
<tr>
<td>Restricted and Lost Workday Cases</td>
<td>0.30</td>
</tr>
<tr>
<td>Medical Treatment</td>
<td>0.98</td>
</tr>
</tbody>
</table>

1028 Total Cases Studied
But not *Predictive*

Not all injuries have Serious Injury and Fatality (SIF) potential.

A reduction of injuries at the bottom of the triangle does not correspond to an proportionate reduction of SIFs.
A New Paradigm

A new way of thinking about the Safety Pyramid:
Focus on Prevention of SIFs.

- **Fatalities**
- **Lost Time Injuries**
- **Recordable Injuries**
- **Precursors**
  High-risk situations 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.

**SIF Exposures**
Serious Injury Definition

- A *life-threatening* or *life-altering* work related injury or illness.
  - *Life-altering* is generally viewed to be a case that resulted in a permanent and significant loss of a major body part or organ function that permanently changes or disables that person’s normal life activity. Some examples would include significant head injuries, spinal cord injuries, paralysis, major amputations, catastrophic fractured bones, and serious burns.
Don’t Expect SIF Prevention By Working Outside Of The SIF Triangle.
Headline 2

Recordable Injuries Log Is Misleading When It Comes To SIF Exposure.

Fractured Foot

Case A: (SIF Exposure = No) – Employee suffered a fractured foot when they climbed out of a truck cab, missed the bottom rung of the ladder, and fell 30 inches to the ground. Their foot rolled off a small rock, resulting in a fracture.

Case B: (SIF Exposure = Yes) – Employee suffered a fractured foot when backed over by a forklift truck (PIT). The PIT operator backed up without looking, and the backup alarm was not functioning. This easily could have been a serious (life-threatening or life-altering) injury, or fatality if the employee’s full body had been struck and run over.
There Are Four Things You Must Do:

1. **Educate Senior Leaders on SIF**
   - They need to understand this problem before they can act on it

2. **Provide Visibility to SIF Exposure**
   - Measure and publish

3. **Know Where Your SIF Precursors Hide**

4. **Integrate Interventions into Existing SMS:**
Headline 4

Accident Investigations Are Not As Good As You Think They Are.
### Contribution to the Hierarchy of Controls

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Description</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elimination</strong></td>
<td>Complete redesign of the system to remove the exposure</td>
<td>Exposure eliminated.</td>
</tr>
<tr>
<td><strong>Substitution</strong></td>
<td>Switch out a process step with a less hazardous step; Use low voltage system versus high voltage; replace a toxic material with a non-toxic material</td>
<td>Exposure significantly reduced.</td>
</tr>
<tr>
<td><strong>Engineering Controls/Isolation</strong></td>
<td>Isolate hazard; install guards and/or interlocks; build barriers; use light curtain; develop new tool</td>
<td>Exposure possible during maintenance operations or emergencies.</td>
</tr>
<tr>
<td><strong>Administrative Controls</strong></td>
<td>Post signs and warning; Write procedures and rules; Train employees</td>
<td>Exposure controlled if employees rigorously comply and if culture supports compliance and if leadership maintains commitment to oversight.</td>
</tr>
<tr>
<td><strong>Personal Protective Equipment</strong></td>
<td>Provide protective equipment for Employee (e.g., hard hats, respirators)</td>
<td>Used when hazard is unpredictable or pervasive; control is dependent on proper selection and use.</td>
</tr>
<tr>
<td><strong>Gimmicks; incentives; hollow threats</strong></td>
<td>Employee seen as the cause of exposure and requiring motivation, no change in exposure.</td>
<td>Least effective</td>
</tr>
</tbody>
</table>
The Role for BBS is Significant, and Underutilised.
Headline 6

SIF Events Are Not One-Offs. The Precursors Have Been There All Along.

Our vocabulary and reaction to SIF must change.

The current blindspot is SIGNIFICANT
A New Paradigm

• The causes and correlates of SIFs are different from Non-SIFs.

• Leadership interest and engagement is necessary to impact the top of the triangle.

• A SIF exposure metric is essential.

• Accident investigation narratives are key to understanding the context of an SIF exposure situation.
Thank You

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www.bstsolutions.com/gb/wp-sifhierarchycontrols

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