Beyond Compliance: Measuring Effectiveness in Safety Management Systems

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Agenda

• Safety Management System – What is it?
• Importance – Why should we care?
• Compliance – What is compliance? How is it different from effectiveness?
• Measuring Effectiveness – Now what?
• Questions
Safety Management

- **Safety management**
  - The reduction of risk to as low as reasonably practicable (ALARP)
  - Safety = risk
  - Risk = consequence * frequency
  - So safety management = reducing either consequence or frequency
• **Safety management system (SMS)**

  – A systematic series of policies, processes, procedures, and practices that help achieve the desired levels of safety management

  – May be multiple SMS at the same organization

  – Focused on systematically reducing consequence (i.e. PSVs) or likelihood (i.e. operating sequencing)

• Most SMS share the same key components
Safety Management System

Identify

Recommend

Implement

Measure

SMS
SMS: Identify

- Engage stakeholders
- Gather information
- Analyze and Identify Gaps

- Identifying gaps and opportunities for improvement
- Reducing risk and inefficiencies
- Consolidating information
- Helping establish a culture of compliance
SMS: Recommend

- Analyze possible solutions
- Get buy-in from key stakeholders
- Obtain resources
- Looking for most efficient solutions
- Setting priorities
- Engaging workforce directly – operational buy-in
SMS: Implement

- Execute solutions
- Closing gaps to reduce risk and increase safety
- Demonstrating real change – employee buy-in
SMS: Measure

- Measure impact
- Assess improvement opportunities
- Assess performance

- Identifying and reducing inefficiencies in process
- Identifying best practices
- Identifying impact
- Communicating issues/successes to key stakeholders
- Planning for future work
Importance

- Safety management systems found throughout multiple industries under multiple guises:
  - PSM
  - SEMS
  - RMP
  - ISO
  - OSHA
  - ISM
  - CRM
  - ILO
Importance

• Properly structured, safety management systems can:
  – Reduce injuries
  – Reduce operational costs
    • LTA & operational considerations
  – Increase equipment reliability
  – Reduce downtime

• So how do you know if a system is properly structured?
• **Compliance**

- Conformity in fulfilling official requirements
- The effort to ensure that personnel are aware of and take steps to comply with relevant laws and regulations
- The state of being in accordance with established guidelines, specifications, or legislation or the process of becoming so
Measuring Compliance

• The most common way to measure compliance is through regular audits

• Almost always, a checklist approach at heart
  – You need to do “X” → Show me a procedure, process, practice or policy that says you will do “X” and 3 completed “X”’s

• Easy to score

• Objective
Problems with Compliance

• Focuses more on design than effectiveness
  – Audits are usually structured to verify the Safety Management System is compliant with the rule
  – Does not usually assess the quality of information, process, procedure, practice or policy
  – Does not usually verify how well SMS is actually integrated into the daily operational work processes
Problems with Compliance

• High potential to miss latent, low-level or underlying issues
  – Results-based, not performance based
  – Can only identify non-compliances
  – Does not evaluate operational issues
Problems with Compliance

• Not proactive
  – Cannot identify issues until after they have already happened
  – Usually does not help identify causes of issues or non-compliances
  – Data not usually analyzed to determine leading indicators
Effectiveness

- Effectiveness – The ability to produce the desired effect
- Effectiveness = performance + results
  - Good luck is no substitute for good work practices
  - Bad results are not effective
  - Performance = behavior + results
  - Change the behavior, change the performance
Measuring Effectiveness

- Measuring effectiveness is a more holistic approach to measuring performance of the SMS
- Involves many more discussions & interviews
- Reviews human performance
- Reviews organizational interfaces
- Provides a framework, not a Recipe book
Measuring Effectiveness

• Most common methodologies are subjectively objective
  – Involves more frequent uses of surveys, questions and field visits by independent agents
  – Same questions asked repeatedly throughout level to allow for data comparisons
  – Questions tend to be scaled rather than binary
  – Answers evaluated in a variety of ways
# Measuring Effectiveness

## Plant X Leadership Survey

### Questions on the Survey

<table>
<thead>
<tr>
<th>Questions on the Survey</th>
<th>GM</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
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<tbody>
<tr>
<td><strong>1. Core Values</strong></td>
<td></td>
<td>4.82</td>
<td></td>
<td>4.79</td>
<td>4.91</td>
<td>4.93</td>
<td>4.38</td>
<td>4.47</td>
<td>4.85</td>
<td>4.60</td>
<td>5.12</td>
<td>4.37</td>
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<tr>
<td>Use of error reduction tools (procedure use, self checking, and three way communication) is reinforced by my supervisor</td>
<td>380</td>
<td>4.10</td>
<td>1.70</td>
<td>3.86</td>
<td>5.40</td>
<td>2.86</td>
<td>2.89</td>
<td>4.20</td>
<td>3.97</td>
<td>5.83</td>
<td>4.88</td>
<td>3.66</td>
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<tr>
<td>My supervisor reinforces high standards of work performance.</td>
<td>380</td>
<td>6.38</td>
<td>1.08</td>
<td>6.97</td>
<td>6.40</td>
<td>6.50</td>
<td>5.67</td>
<td>6.20</td>
<td>6.34</td>
<td>6.17</td>
<td>6.65</td>
<td>5.82</td>
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<tr>
<td>I am expected to follow established rules and behaviors.</td>
<td>380</td>
<td>4.68</td>
<td>1.59</td>
<td>4.76</td>
<td>5.00</td>
<td>4.64</td>
<td>3.00</td>
<td>4.40</td>
<td>4.48</td>
<td>3.83</td>
<td>4.47</td>
<td>3.95</td>
</tr>
<tr>
<td>Conservative decision making is evident throughout the plant organization.</td>
<td>380</td>
<td>5.65</td>
<td>1.39</td>
<td>5.72</td>
<td>4.60</td>
<td>4.79</td>
<td>5.33</td>
<td>5.20</td>
<td>5.72</td>
<td>5.67</td>
<td>6.24</td>
<td>5.54</td>
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<tr>
<td>Management behaviors align with written policies and procedures.</td>
<td>380</td>
<td>3.92</td>
<td>1.74</td>
<td>3.90</td>
<td>4.40</td>
<td>3.93</td>
<td>3.67</td>
<td>3.60</td>
<td>4.69</td>
<td>4.50</td>
<td>3.06</td>
<td>3.51</td>
</tr>
<tr>
<td>My supervisor ensures that there is appropriate understanding of issues prior to making decisions.</td>
<td>378</td>
<td>4.58</td>
<td>1.63</td>
<td>4.52</td>
<td>4.20</td>
<td>3.43</td>
<td>3.56</td>
<td>4.20</td>
<td>4.58</td>
<td>5.00</td>
<td>5.00</td>
<td>3.90</td>
</tr>
<tr>
<td>I am encouraged to bring forward problems with recommendations.</td>
<td>379</td>
<td>5.05</td>
<td>1.47</td>
<td>5.00</td>
<td>4.80</td>
<td>5.57</td>
<td>3.89</td>
<td>4.60</td>
<td>5.02</td>
<td>5.33</td>
<td>5.24</td>
<td>4.43</td>
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<tr>
<td>Most workers demonstrate buy-in for high standards and management expectations.</td>
<td>335</td>
<td>5.14</td>
<td>1.49</td>
<td>5.16</td>
<td>4.40</td>
<td>5.58</td>
<td>4.63</td>
<td>4.75</td>
<td>4.95</td>
<td>5.00</td>
<td>4.71</td>
<td>4.78</td>
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<tr>
<td>I am comfortable approaching my manager with a concern.</td>
<td>332</td>
<td>5.25</td>
<td>1.29</td>
<td>5.12</td>
<td>5.40</td>
<td>5.55</td>
<td>4.75</td>
<td>4.50</td>
<td>5.25</td>
<td>4.00</td>
<td>5.36</td>
<td>4.83</td>
</tr>
<tr>
<td>I believe that my input is valued by my supervisor.</td>
<td>334</td>
<td>5.00</td>
<td>1.43</td>
<td>5.12</td>
<td>6.00</td>
<td>5.00</td>
<td>4.63</td>
<td>4.25</td>
<td>5.38</td>
<td>5.20</td>
<td>5.36</td>
<td>4.98</td>
</tr>
<tr>
<td>Management and worker conflicts are resolved professionally.</td>
<td>335</td>
<td>4.29</td>
<td>1.74</td>
<td>4.12</td>
<td>3.60</td>
<td>5.08</td>
<td>3.88</td>
<td>3.50</td>
<td>4.03</td>
<td>3.00</td>
<td>4.50</td>
<td>4.41</td>
</tr>
<tr>
<td>Decision making authority for operational decisions is clearly defined.</td>
<td>328</td>
<td>3.78</td>
<td>1.60</td>
<td>3.12</td>
<td>5.00</td>
<td>4.75</td>
<td>3.88</td>
<td>3.00</td>
<td>4.51</td>
<td>3.60</td>
<td>3.36</td>
<td>2.54</td>
</tr>
<tr>
<td>Workers in my group perform activities in accordance with procedures.</td>
<td>333</td>
<td>6.03</td>
<td>0.90</td>
<td>6.38</td>
<td>6.80</td>
<td>6.67</td>
<td>6.63</td>
<td>6.75</td>
<td>6.46</td>
<td>5.40</td>
<td>6.54</td>
<td>5.96</td>
</tr>
<tr>
<td>Use of error reduction tools (procedure use, self checking, and three way communication) is reinforced in training settings.</td>
<td>333</td>
<td>4.45</td>
<td>1.68</td>
<td>4.64</td>
<td>5.80</td>
<td>3.75</td>
<td>3.75</td>
<td>4.50</td>
<td>4.52</td>
<td>4.60</td>
<td>4.50</td>
<td>4.35</td>
</tr>
</tbody>
</table>
Using Existing Tools

• How do we use existing compliance tools to assess effectiveness?
  – Change the questions to be more open-ended
  – Grade the questions on spectrum (or allow respondents too)
  – Compare the data across various work groups and various levels
QUESTIONS

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