Mercer ORC Task Forces: What’s Hot and What’s Not- 2

Stephen Newell
Principal
Mercer ORC Networks
2. Alternative Performance Metrics
Other than Frustration – Why Care About Metrics ??!!

1. The OSHA data suck as a global performance metric and we all know it

2. Performance excellence – you can’t manage (or improve) what you don’t measure (effectively)

3. Empowerment and the quest for our share of shrinking resources
   – We occupy the moral high ground
   – But…to be *empowered* in today’s business world you need to drive and demonstrate:
     - Performance
     - Value
     - Industrial hygienists and safety professionals have problems doing both

➢ Ongoing economic pressures increasing scrutiny on all parts of the business
Problem Statement: Current approaches for measuring and benchmarking safety and health performance are seriously flawed

1. Continuous improvement: Current global measures have limited value for driving continuous improvement
   a. Use of a single trailing metric does not provide insights needed to drive continuous improvement
   b. Although industry uses leading indicators in other parts of the business, and the safety and health profession recognizes their value, no S&H leading indicators have wide acceptance, either for prevention or for comparative purposes.

2. Benchmarking: Wide variations exist in global data that severely limit their value for benchmarking and comparative purposes.
   a. Accuracy of the trailing metric in use is suspect – especially when used globally
      i. OSHA-based criteria for determining work relationship and the seriousness/significance of the case contribute to inconsistent recording
   b. Ability to audit the data is limited
Our Dilemma

- It is extremely hard to move companies off the current paradigm
- Company leaders still seem to believe that comparing OSHA injury and illness data is a valid exercise
- Leaders are suspicious when we (individually) suggest an alternative approach
- So….as a profession we keep feeding the beast….  
  - even though we know the data are suspect
  - even though misuse of the data often distorts priorities and diverts attention away from more important safety and health matters
Alternative Metrics Task Force Objectives

- Develop and promote a **balanced approach** to S&H performance measurement that includes:
  - *Leading indicators* for activities and programs that *address significant risk*
  - *Leading indicators* to assess key *OHS management system* elements
  - A suite of trailing (outcome) measures that can form the basis of a new global standard for benchmarking OHS performance

**Work Streams**


➢ *Working towards a January 1, 2012 pilot test date.*
Development Strategy – Iterative Process
Leveraging Broad Mercer HSE Network Membership

• Summer 2010 -- 11 Member Planning Committee convened to discusses “need”
• Broad Task Force Formed – 50+ members respond to “call”
• 3 work teams identified
• Teams met during 2010 and 2011; broad membership surveyed to identify candidate measures
• Membership surveyed again to assess candidates; begin prioritizing process
• Members review revised list of candidates – identify “critical few” for benchmarking purposes
• Metrics package revised based on comments received
• Roll out at November OSH/WOSH meeting

➤ Three pilot tests scheduled for 2012
Pilot Test Number One: Developing and Implementing A New Global Trailing Metric

We can't solve problems by using the same kind of thinking we used when we created them.

Albert Einstein
Global Outcome Metric Team Objective: To Develop a suite of OHS Trailing Metrics that:

1. Effectively support *continuous improvement*, and
2. Are more suitable for *global benchmarking* purposes

Team Approach: Three Levels of Reporting

- Level One: Comprised of the most consistent data; cases with a clearer connection to work than current data that are reasonably serious and/or significant to the injury/illness prevention process
  - Level Two: Will include data from existing systems; primarily cases recorded under the current OSHA-based criteria
  - Level Three: Will include near misses that could have resulted in Level One cases
Guiding Principles: Level One Data Should Be:

- Capable of producing injury and illness data on a global basis that is:
  - Accurate, reliable, consistent and repeatable
  - Related to safety management (has value for prevention purposes)
  - Comparable among different corporations, business units and sites in different regions and countries

- Based on criteria (definitions and requirements) that are:
  - Simple and straight forward
  - Easy to understand (logical and intuitive) across countries

- Captured from existing data systems with minimal additional effort,

- Minimally impacted by differences in country specific regulations, treatment regimes, return to work policies, etc.
Guiding Principles: Level One Data Should Be:

- Focused on cases with a meaningful connection to work
- Able to distinguish among case categories based on the severity of the case and/or significance to the injury/illness prevention process
- Void of labels that cause unnecessary controversy without adding any real value to the decision making process
  - For example, differences of opinion no doubt exist on what constitutes a “serious” or “minor” case in many situations.
  - Categories of cases can be distinguished effectively for prevention purposes without these labels

> **Significantly better than existing trailing metrics and appropriate for benchmarking among Mercer HSE network member companies on a domestic US and global basis.**
Key Issues for Identifying Useful Trailing Metrics

1. Determining whether or not cases are work related
2. Determining whether or not cases are serious and/or significant to the injury and illness prevention process

Other Issues

- Injury vs. illness
- New case vs. old case
- Rate calculations
- Data outputs, collection cycles, etc.
1. How Do You Determine Whether or Not a Case is **Work Related**? What Are the Options?

- **Work relationship** determinations could be:
  - Geographically based
  - Activity based
  - Case based
  - Fault or prevention based
  - Other???
<table>
<thead>
<tr>
<th>PRO</th>
<th>CON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geographically based</strong></td>
<td></td>
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</tbody>
</table>
| • Relatively easy to articulate and understand | • Can be overly inclusive without qualifiers  
• “The devil is in the details” |
| • Captures most cases |  |
| **Activity based** |  |
| • Easy to understand | • Could require the listing of literally hundreds of activities.  
• Could miss cases where the employer has responsibility and wants to drive performance using metrics (e.g., employee injured by general hazard in work environment while present, but not engaged in specific work activity) |
| **Case based** |  |
| • Could capture cases that are not work related;  
• Could miss a significant portion of cases that are work related.  
• Hard to address cases that are multi-factorial |  |
| **Fault or prevention based** |  |
| • Related to management system | • Subjective determination easily manipulated |
Recommended Approach: Develop Relatively Simple Criteria that Require Closer Connection to Work Than Some OSHA Cases

Determine **Work Relationship** with Three – Step Analysis:

1. A general rule that is easy to apply
2. Specific tests that explain the general rule
3. Examples that apply the tests to the most typical real world situations.
1. General Rule To Determine Work Relationship, Ask: “Did the Injury or Illness Result From:”

- Activities included within the scope of employment, or

- Activities related to a condition of employment

- Relatively easy to translate -- Related to current OSHA definition of work environment, but without “baggage” of current OSHA system

  ➢ More reliance on activities and less reliant on geography”
2. Tests That Apply The General Rule – Ask:

A. Was the injured/ill worker being paid for work by the employer at the time of the event or exposure that contributed to the case?

B. Was the injured/ill worker’s presence at the place of the injury/illness exposure related to a condition of employment?

C. Were conditions (physical, process, behavior, etc.) that contributed to the case under the control of the employer?

D. For Injuries and illnesses of complex or multiple origin (including musculoskeletal conditions and certain occupational diseases such as hearing loss)
   - Did the above work related criteria make a substantial contribution to the condition (contribute to the severity level of the condition)
   - Did the work event trigger the onset of the case
   - Note: One way to make this determination is to ask: Would the case in all likelihood have occurred at the same time with the same level of severity without the work event or exposure?

➢ If the answer to any of these questions (A-D) is “yes,” then consider the case work related
3. Specific Examples for Applying the Tests to Real World Situations

Injuries and illness exposures are considered work related if:

a. They occur while the employee is performing a work task (e.g., production employee engaged in manufacturing operations)

b. They occur while the employee is engaged in normal activities that occur at work in between specific work tasks (talking to supervisor, selecting tools, etc.)

c. The injured/ill worker is engaged in work required travel

d. The injured/ill worker is going between customers or other work stops (this excludes the initial commute from home to the first stop and the return commute from the last visit to home)

e. Employee trips over loose carpet in hall and falls

f. Employee slips on wet floor in cafeteria

g. Employee slips on ice in company parking lot

h. (Other examples provided as needed)
3. Examples cont.

Examples of injuries and illnesses that are not work related:

a. Cases that occur on company property or while the worker is engaged in a work activity, but *would have occurred at the same time and at the same level of severity even if the employee was not engaged in a work activity* (epileptic seizure; diabetic seizure, some heart attacks, etc.)

b. Injuries or illnesses that are related to commuting to or from a place of employment outside of work hours

c. Cases that result *solely* from normal body movements unrelated to work (sneezing, coughing, bending over to tie a shoe, etc.)

d. Cases that result *solely* from personal tasks performed outside of assigned work hours

e. Cases that occur in travel hotel unrelated to work

f. Cases where the employee is present at the site as a member of the general public, unrelated to their employment status
3. Examples, cont.

h. Cases that result from voluntary participation in wellness, medical, or fitness programs, or recreational activity

i. Symptoms that surface at work from a known non work related event or exposure

j. Eating or drinking or preparing food or drink for personal consumption

k. Personal tasks at the establishment outside of assigned work hours

l. Personal grooming, self medication for a non-work related condition; intentionally self inflicted injuries

m. Motor vehicle accident in company parking lot or access road during the commute

n. Common cold or flu

o. (Other examples provided as needed)
2. How Do You Determine Whether or Not A Case Is Serious and/or Significant to the Injury/Illness Prevention Process? Options...

- Look at the nature of injury and/or illness
- Consider the treatment required by the case
- Assess the impact of the injury and/or illness on the worker’s absence from work or ability to do their job
- Assess the impact of the injury and/or illness on the workers normal living activities
- Other???
<table>
<thead>
<tr>
<th>PRO</th>
<th>CON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Look at the type of injury and/or illness</strong></td>
<td></td>
</tr>
<tr>
<td>• Could provide consistency</td>
<td>• Requires a trade off between sufficient detail and too much complexity in the system.</td>
</tr>
<tr>
<td><strong>Consider the treatment required by the case</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Can be a good indicator of the seriousness of the case | • Hard to draw the “fine line.”  
• Treatment varies by country and frequently by doctor.  
• Treatment impacted by the accessibility and availability of medical care. |
| **Assess the impact of the injury and/or illness on the worker’s absence from work or ability to do their job** | |
| Lost time easy to measure | • Harder to assess restricted work activity.  
• Lost time significantly impacted by requirements in different countries, companies, etc.  
• Significant problems re consistency and comparability |
| **Assess the impact of the injury and/or illness on the workers normal living activities** | |
| Relatively straight forward assessment | • Trade off between sufficient detail and excessive complexity  
• Subjective determination easily manipulated |
Recommended Approach: Moving Forward re the Severity/Significance of the Case

- The basis for the assessing the significance should be the **nature of the injury/illness** -- case types are the one true constant.
- The primary basis should NOT be:
  - **The type of treatment provided** -- diagnoses are likely to be more consistent than treatment regimes; or
  - **The impact of the injury/illness on the employees ability to do their job.**
    - Lost time (like workers’ compensation) impacted by different country regulations and different company policies
    - Data on restricted work activity even worse
  - Treatment or disability may be a secondary indicator of severity

**Cases included should generally be limited to:**

1. Fatalities
2. Serious injuries and illnesses with potential *life threatening* or *life altering* impact
3. Select cases that may be significant to the organization and are likely to be captured consistently
Can We Use An Existing Severity Scale? Options Considered:

- Abbreviated Injury Scale
- Injury Impairment Scale – body system – degree of impairment
- Acute Physiology and Chronic Health Evaluation (APACHE)
- Simplified Acute Physiology Score (SAPS)
- Mortality Prediction Model (MPM)
- Multiple Organ Dysfunction score (MODS)

- OTHERS ???
Specific Criteria for Level One Cases

Level One is intended to be a subset of relatively serious cases that have significance for the I&I prevention process and are likely to be consistently diagnosed.

A. Injuries

- Fatalities
- Amputations (involving bone)
- Spinal cord injuries
- Herniated discs of the cervical, lumbar, and/or thoracic spinal regions
- Concussions and/or cerebral hemorrhages
- Loss of consciousness
- Injury to internal organs
- Fractured bones or teeth
- Cartilage, tendon, and ligament tears
- Dislocation of any joint

11. Lacerations and punctures requiring wound closure, such as sutures, surgical glue, etc.
12. MSDs requiring surgery or resulting in permanent impairment
13. All 3rd degree burns. 2nd degree burns greater than 3 inches in diameter (100 cm²)
14. A punctured eardrum or confirmed work related STS and a 25db shift from audiometric zero in same ear
15. Injuries of the eye requiring the services of a physician (unless treatment is preventive)
Specific Criteria for Level One Cases

Level One is intended to be a subset of relatively serious cases that have significance for the I&I prevention process and are likely to be consistently diagnosed.

B. Illnesses

1. Occupational dermatitis with blistering and/or cracking covering an area of skin greater than 3 inches in diameter (100cm²).
2. Occupationally acquired HIV, hepatitis B or C
3. Occupationally acquired cancer
4. Occupationally acquired lung diseases
5. Occupationally acquired infectious diseases
6. Occupationally acquired disease of the liver, spleen, kidney, heart, brain, nervous system, pancreas, thyroid, or other vital organ
What This Is NOT...

- A parallel system
  - The goal is to identify a subset of existing data that can be derived from existing records

- A complete listing of all cases that are considered serious and/or significant
  - The goal for Level One cases is to identify a subset of cases that are more reliable and useful for driving prevention and comparison purposes than current OSHA-based measures

- A solution to the problem of getting an accurate count of work related illnesses
  - Capturing data on occupational illness will always be problematic; especially long-term latent and chronic conditions with multiple causal factors.
  - An alternative way to understand the nature of the occupational illness problem is to measure prevalence (instead of occurrence) by industry and occupation
What Would it Take to Implement These New Criteria?

- Not much additional effort

- OSHA logs currently have an “employer use column” – the margin

- Recordkeepers or managers could screen existing OSHA cases (Our Level Two cases) and place a check in the margin for cases that are in scope for Level One benchmarking.

- This could be done solely from existing documentation
  - Work relationship determinations could be made from the log and/or from supplementary information kept for each log entry (OSHA 301 or equivalent)
  - Selections based on Level One criteria for severity and/or significance to the injury or illness prevention process could be made from Column F of the log which requires that entries “Describe the injury or illness, part of body affected, and object/substance that directly injured or made the person ill”
ASTM Opportunity

- Trailing metrics activity is simultaneously registered as an ASTM task force

- ASTM is a consensus standard setting body with global reach

- ASTM standard would add additional credibility to activity and broader application of the product

- ASTM process reaches a wider audience and is expected to generate increased input

- Little downside – Mercer/ORC could still go it alone if ASTM process bogs down
Now on to Leading Indicators -- Overall
Leading Indicator Strategy

1. Utilize the work of the leading indicator risk and management system teams for leading indicators that can drive continuous improvement -- largely by focusing on metrics related to site level activities and improvements – **Pilot Two**
   - These metrics will also be assessed for possible benchmarking opportunities

2. Identify high level leading indicators for global benchmarking that focus on enterprise level issues and are relatively easy to compile – **Pilot Three**

3. Connecting the dots:
   - Use the *subset* of indicators identified by the Mercer ORC membership as most critical as a possible bridge between the high level leading indicators and the site–based leading indicators
   - Audits, evaluations and metrics can also serve to bridge metrics at different levels of the organization
A Vertical Look At Leading Indicators

Enterprise Level Questions:
Are there policies, programs and processes in place across the enterprise that support safety and health excellence?
Do they contain elements needed to drive worker protection?
Are they effectively communicated?

Bridges:
Evaluations
Audits
Selected metrics

Site Level Questions:
Are the policies being carried out and the programs and processes being done?
Is there a process to verify effective implementation?
Are they being done well?
Are they having the desired impact/result?
Pilot Test Number Two: Leading Indicators To Drive Continuous Improvement in Key Safety and Health Management System Elements and Programs that Address Serious Risk

“If you don’t know where you are going, chances are you will end up somewhere else.”

Yogi Berra
Management System Team Objectives

- Develop a list of proactive leading indicators that can be used to assess and drive continuous improvement for safety and health management systems.
- Explore whether a subset of these measures could be used for global benchmarking purposes.

Team Approach

- Identify S&H management system categories to be measured, excluding a category devoted to risk since that was being addressed by Team One.
- Develop an initial list of candidate measures.
- Survey members to prioritize list of candidates.
- Have members vote on “critical few” to be used for benchmarking purposes.
Original Management System Categories Emphasized

- Leadership Engagement
  - Accountability
  - Demonstrated commitment
  - Training
  - Succession planning

- Employee involvement
  - Accountability
  - Participation
  - Continuous improvement

- Management system integration into business process
  - Planning process
  - Management of change
  - Risk Assessment

- Stakeholder value
### Team 2: Metrics to assess and drive key elements of a S&H management system

<table>
<thead>
<tr>
<th>Metric Description</th>
<th>Ease of Implementation</th>
<th>Potential to Effect Change</th>
<th>Value as a Predictor of S+F Events</th>
<th>Metric Already in Use</th>
<th>Ave. score on B through D</th>
<th>Ave. score on C + D</th>
</tr>
</thead>
<tbody>
<tr>
<td>% employees active in EHS program</td>
<td>1.8</td>
<td>1.9</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>% employees with written EHS objectives</td>
<td>1.6</td>
<td>2.1</td>
<td>1.7</td>
<td>1.6</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>% employees responding to EHS opinion surveys</td>
<td>2.2</td>
<td>1.7</td>
<td>1.5</td>
<td>1.7</td>
<td>1.8</td>
<td>1.6</td>
</tr>
<tr>
<td># of near miss reports per employee per year</td>
<td>1.9</td>
<td>1.9</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Annual management systems effectiveness review against goals conducted by management and employees</td>
<td>2</td>
<td>2.1</td>
<td>1.9</td>
<td>1.6</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>% new projects reviewed for EHS in planning phase (facilities, equipment, people, production processes)</td>
<td>1.6</td>
<td>2.1</td>
<td>2</td>
<td>1.6</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>% of locations meeting all management system criteria (or requirements)</td>
<td>2.1</td>
<td>2.1</td>
<td>2</td>
<td>1.7</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>All required EHS permits and registrations in place and up-to-date (Corp level is % sites meeting criteria)</td>
<td>2</td>
<td>1.8</td>
<td>1.6</td>
<td>1.8</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>% sites achieving score of 2, and separately, % sites achieving 3 on 0-3 scale</td>
<td>1.9</td>
<td>1.6</td>
<td>1.6</td>
<td>1.8</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>JSA or equivalent in place for all routine and known non-routine tasks or processes, and reviewed within the last year</td>
<td>1.9</td>
<td>2.1</td>
<td>2.2</td>
<td>1.9</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>% IH exposures &lt; OEL</td>
<td>2.1</td>
<td>2.1</td>
<td>2.2</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>% of safety-critical PMs addressed on time</td>
<td>2</td>
<td>2.1</td>
<td>2.2</td>
<td>1.8</td>
<td>2.0</td>
<td>2.2</td>
</tr>
<tr>
<td>% Senior Executive with EHS goals &amp; objectives established for both leading and lagging measures</td>
<td>1.8</td>
<td>2.4</td>
<td>1.9</td>
<td>1.8</td>
<td>2.0</td>
<td>2.2</td>
</tr>
<tr>
<td>% of job descriptions that incorporate EHS criteria</td>
<td>1.6</td>
<td>2.1</td>
<td>1.6</td>
<td>1.9</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>% of corrective actions from EHS inspections, audits, accident and near miss incidents closed on time</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>1.6</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>Average cycle time for completion of EHS Corrective Action from inspections, audits, accident and near miss incidents</td>
<td>1.6</td>
<td>1.7</td>
<td>1.6</td>
<td>1.9</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>% sites w/ planned external EHS audits scheduled, based on risk or management system certification</td>
<td>2.1</td>
<td>1.9</td>
<td>1.6</td>
<td>1.7</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>% sites receiving annual external EHS inspection on time according to plan</td>
<td>2.1</td>
<td>1.7</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>% EHS regulatory/company required training completed on-time</td>
<td>2.3</td>
<td>1.9</td>
<td>1.6</td>
<td>1.7</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>% of EHS critical positions w/ succession planning process in place</td>
<td>1.9</td>
<td>1.8</td>
<td>1.5</td>
<td>1.8</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>% sites with with formal root cause investigation procedures and access to trained investigators.</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
</tr>
</tbody>
</table>
Member Selected Proactive Leading Indicators for OHS Management Systems

- Chosen on the basis of ease of implementation, potential to effect change, value as a predictor of S&H events and whether the metric was already in use.
  - Greater weight give to potential to effect change and value as a predictor of S&H events

- Top selections:
  - Percent of new capital projects reviewed for EH&S in planning phase (facilities, equipment, people, production processes)
  - Percent of locations meeting all management system criteria or requirements
Member Selected Proactive Leading Indicators for OHS Management Systems (cont.)

- Percent of sites with Job Safety Analysis or equivalent in place for all routine and known non-routine tasks or processes, and reviewed within last year

- Percent of safety-critical Preventive Maintenance Actions addressed on time

- Percent of Senior Executive with EH&S goals and objectives established for both leading and lagging measures

- Percent of corrective actions from EHS inspections, audits, accident and near miss incidents closed on time

- Percent sites with both formal root cause accident investigation process and access to trained investigators
Risk Team Objectives

- Develop a list of proactive leading indicators that can be used to assess and drive continuous improvement for programs and activities that address risk.

- Explore whether a subset of these measures that can be used for global benchmarking purposes.

Team Approach

- Develop metrics categories
- Survey membership to develop initial list of candidate measures
- Resurvey members to prioritize list of candidates
- Have members vote on “critical few” to be used for benchmarking purposes.
Risk- Focused Metrics Categories

- Equipment or Process Indicators
- Work Method/Instruction Indicators
- Organization/Work Group Interface Indicators
- People/Personnel Factors Indicators

Key Elements

- Risk recognition
- Risk assessment
- Risk management
<table>
<thead>
<tr>
<th>Team 1: Recognition and Management of Risk</th>
<th>Ease of Implementation</th>
<th>Potential to Effect Change</th>
<th>Value as a Predictor of S+F Events</th>
<th>Metric Already in Use</th>
<th>Ave. B through D</th>
<th>Ave. C + D</th>
</tr>
</thead>
<tbody>
<tr>
<td># of fatality risks identified by month/year</td>
<td>1.9</td>
<td>2.3</td>
<td>2.4</td>
<td>1.7</td>
<td>2.2</td>
<td>2.4</td>
</tr>
<tr>
<td># % of hazards identified pre-design, fabricate and install</td>
<td>1.7</td>
<td>2.1</td>
<td>2.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td># machine safeguarding, energy isolation, ergonomic, confined space, work at heights, or PPE surveys completed</td>
<td>2.1</td>
<td>2.0</td>
<td>2.0</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td># of pre-project safety and health reviews completed prior to hand-off to operations</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>1.6</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td># % of equipment or process changes or modifications where with a potential safety impact identified during a MOC Review</td>
<td>1.7</td>
<td>2.0</td>
<td>2.0</td>
<td>1.9</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Ease of Implementation # % safety critical equipment issues detected before failure</td>
<td>1.7</td>
<td>2.2</td>
<td>2.3</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td># of fatality risks assessed as unacceptable, or marginal</td>
<td>1.9</td>
<td>2.3</td>
<td>2.5</td>
<td>1.8</td>
<td>2.2</td>
<td>2.4</td>
</tr>
<tr>
<td>% of on-time inspections, testing and maintenance for safety critical equipment</td>
<td>2.0</td>
<td>2.2</td>
<td>2.3</td>
<td>1.8</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td># % of required risk assessments completed</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>1.6</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>% mechanical integrity, preventive or predictive maintenance activities completed</td>
<td>2.1</td>
<td>2.0</td>
<td>2.0</td>
<td>1.6</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td># % of fatality risks closed by a specified target date</td>
<td>2.0</td>
<td>2.1</td>
<td>2.4</td>
<td>1.7</td>
<td>2.2</td>
<td>2.3</td>
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<tr>
<td># % corrective action items open greater than &gt; 30-60-90 days etc.</td>
<td>2.0</td>
<td>2.1</td>
<td>2.0</td>
<td>1.4</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td># of risk notifications linked to delayed maintenance, non-destructive testing, overdue corrective actions, etc.</td>
<td>1.7</td>
<td>2.0</td>
<td>2.0</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
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<tr>
<td># % of equipment or process changes or modifications where MOC Review completed</td>
<td>1.9</td>
<td>2.0</td>
<td>2.0</td>
<td>1.9</td>
<td>1.9</td>
<td>2.0</td>
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<tr>
<td># % hazards and risk gaps identified in incident investigations where a procedure existed by failed to address</td>
<td>2.0</td>
<td>2.1</td>
<td>2.2</td>
<td>1.9</td>
<td>2.1</td>
<td>2.2</td>
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<tr>
<td>Team 1: Recognition and Management of Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% personnel presently trained or qualified who demonstrate proficiency (testing, energy isolation audits, etc.)</td>
<td>2.4</td>
<td>2</td>
<td>2.1</td>
<td>1.7</td>
<td>2.2</td>
<td>2.1</td>
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<tr>
<td>#/##% hazard analysis or risk assessments completed vs. a specified target</td>
<td>2.2</td>
<td>2.1</td>
<td>2.2</td>
<td>1.7</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td>#/##% of high-risk tasks identified for control</td>
<td>2</td>
<td>2.2</td>
<td>2.3</td>
<td>1.8</td>
<td>2.2</td>
<td>2.3</td>
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<tr>
<td>#/##% jobs or task with current hazard analysis or risk assessment</td>
<td>2.2</td>
<td>1.9</td>
<td>2</td>
<td>1.7</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>% deviation from safe work methods and permit conditions</td>
<td>1.6</td>
<td>2.1</td>
<td>2.4</td>
<td>1.8</td>
<td>2.0</td>
<td>2.3</td>
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<tr>
<td>#/##% work procedures reviewed and up to date</td>
<td>2.2</td>
<td>1.9</td>
<td>1.9</td>
<td>1.7</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% properly completed work permits</td>
<td>2.3</td>
<td>1.8</td>
<td>2</td>
<td>1.8</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% pre-job briefs completed</td>
<td>2.3</td>
<td>2</td>
<td>1.9</td>
<td>1.7</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Rating of the quality of job observations</td>
<td>1.6</td>
<td>1.8</td>
<td>1.7</td>
<td>1.8</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Rating of the quality of inspections performed</td>
<td>1.8</td>
<td>1.8</td>
<td>1.7</td>
<td>1.9</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Rating of the quality of JSA/JSP</td>
<td>1.7</td>
<td>1.8</td>
<td>1.9</td>
<td>1.9</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Rating of the quality of pre-job safety briefings</td>
<td>1.6</td>
<td>1.8</td>
<td>1.9</td>
<td>1.9</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Percent of high-risk tasks conducted (with/without) on-site supervision</td>
<td>1.7</td>
<td>2.1</td>
<td>2.2</td>
<td>1.9</td>
<td>2.0</td>
<td>2.2</td>
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<tr>
<td>Percent of high-risk tasks conducted (with/without) pre-job risk assessment</td>
<td>1.8</td>
<td>2.4</td>
<td>2.5</td>
<td>1.8</td>
<td>2.2</td>
<td>2.5</td>
</tr>
<tr>
<td>Percent of high-risk tasks conducted (with/without) safety plan</td>
<td>1.9</td>
<td>2.1</td>
<td>2.4</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Percent of high-risk tasks conducted (with/without) pre-job briefing</td>
<td>1.8</td>
<td>2.2</td>
<td>2.3</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
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<tr>
<td>Percent of high-risk tasks conducted (with/without) STOP WORK criteria</td>
<td>1.9</td>
<td>2.1</td>
<td>2.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>% personnel presently trained or qualified vs. expectations</td>
<td>2.2</td>
<td>1.9</td>
<td>2</td>
<td>1.7</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>% contractors in high risk category based on safety pre-qualified criteria</td>
<td>2</td>
<td>2</td>
<td>2.3</td>
<td>1.8</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>% contractors/contracted services operating with a workforce that includes &gt; 20% out of its employee having less than 18 months experience in the trade/craft/industry</td>
<td>1.5</td>
<td>1.9</td>
<td>2</td>
<td>1.9</td>
<td>1.8</td>
<td>2.0</td>
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</table>
## Team 1: Recognition and Management of Risk

<table>
<thead>
<tr>
<th>Metric</th>
<th>Ease of Implementation</th>
<th>Potential to Effect Change</th>
<th>Value as a Predictor of S+F Events</th>
<th>Metric Already in Use</th>
<th>Ave. B through D</th>
<th>Ave. C + D</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of contractors with job safety pre-plan</td>
<td>2.3</td>
<td>2.1</td>
<td>2.2</td>
<td>1.9</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td>% contractors/contracted services operating without on-site supervision and a documented job safety plan</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
<td>1.9</td>
<td>2.1</td>
<td>2.1</td>
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<tr>
<td>% of supervisors new-to-job (&lt; 18 months experience)</td>
<td>2.2</td>
<td>1.8</td>
<td>1.8</td>
<td>1.9</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>% locations with contractor safety program audit rated good or better</td>
<td>2.0</td>
<td>2.0</td>
<td>1.9</td>
<td>1.8</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>% incident investigation where vague or poor work group communication or coordination was a factor</td>
<td>1.7</td>
<td>1.9</td>
<td>2.1</td>
<td>1.9</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Outcome of employee perception or culture survey results</td>
<td>2.1</td>
<td>1.8</td>
<td>1.8</td>
<td>1.6</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>% complete hazard recognition training</td>
<td>2.4</td>
<td>2.2</td>
<td>2.1</td>
<td>1.8</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>% of industrial hygiene for significant health risks &gt; TLV</td>
<td>2.2</td>
<td>2</td>
<td>1.7</td>
<td>1.6</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% of supervisors trained in hazard recognition and risk assessment</td>
<td>2.4</td>
<td>2.1</td>
<td>2.1</td>
<td>1.8</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>% of employees trained in hazard recognition and risk assessment</td>
<td>2.4</td>
<td>2.1</td>
<td>2.1</td>
<td>1.8</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>% of employees in hearing conservation or respiratory protection</td>
<td>2.6</td>
<td>1.6</td>
<td>1.5</td>
<td>1.7</td>
<td>1.9</td>
<td>1.6</td>
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<tr>
<td>% of employees observed to be deviating from a safe work instruction or rule</td>
<td>1.5</td>
<td>2.1</td>
<td>2.2</td>
<td>1.8</td>
<td>1.9</td>
<td>2.2</td>
</tr>
<tr>
<td>% of employees participating in health screening and wellness activities</td>
<td>2.3</td>
<td>1.7</td>
<td>1.3</td>
<td>1.5</td>
<td>1.8</td>
<td>1.5</td>
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<tr>
<td>Metric Description</td>
<td>Ease of Implementation</td>
<td>Potential to Effect Change</td>
<td>Value as a Predictor of S+F Events</td>
<td>Metric Already in Use</td>
<td>Ave. B through D</td>
<td>Ave. C+ D</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
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<td>----------------------------</td>
<td>------------------------------------</td>
<td>-----------------------</td>
<td>------------------</td>
<td>------------</td>
</tr>
<tr>
<td>% of completed new hire safety training</td>
<td>2.8</td>
<td>2</td>
<td>1.8</td>
<td>1.7</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>% contractors trained</td>
<td>2.4</td>
<td>2.1</td>
<td>1.9</td>
<td>1.7</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>% of contractor safety observations</td>
<td>1.8</td>
<td>1.9</td>
<td>2.1</td>
<td>1.8</td>
<td>1.9</td>
<td>2.0</td>
</tr>
<tr>
<td>% of pre-job briefs completed</td>
<td>2</td>
<td>2</td>
<td>2.1</td>
<td>1.8</td>
<td>2.0</td>
<td>2.1</td>
</tr>
<tr>
<td>% training completed on time</td>
<td>2.3</td>
<td>1.7</td>
<td>1.5</td>
<td>1.6</td>
<td>1.8</td>
<td>1.6</td>
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<tr>
<td>% of BBS observations completed</td>
<td>2.1</td>
<td>1.9</td>
<td>1.8</td>
<td>1.6</td>
<td>1.9</td>
<td>1.9</td>
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<tr>
<td>% job observations and safety coaching contacts</td>
<td>1.9</td>
<td>2</td>
<td>1.8</td>
<td>1.8</td>
<td>1.9</td>
<td>1.9</td>
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<tr>
<td># of wellness activities</td>
<td>2.2</td>
<td>1.6</td>
<td>1.6</td>
<td>1.4</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>% audit scores below expectation</td>
<td>2.4</td>
<td>2</td>
<td>2.2</td>
<td>1.9</td>
<td>2.1</td>
<td>2.0</td>
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<tr>
<td>% root cause analysis completed</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.3</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Implementation +/- near miss trends</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
<td>1.6</td>
<td>2.1</td>
<td>2.2</td>
</tr>
<tr>
<td>% plan initiatives complete</td>
<td>2.2</td>
<td>1.9</td>
<td>1.7</td>
<td>1.6</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>% legal non-compliance</td>
<td>2.3</td>
<td>1.9</td>
<td>1.8</td>
<td>1.6</td>
<td>2.0</td>
<td>1.9</td>
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<tr>
<td>% past due action items</td>
<td>2.4</td>
<td>2.2</td>
<td>1.7</td>
<td>1.6</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td>% of audit scores within expectation</td>
<td>2.5</td>
<td>2</td>
<td>1.8</td>
<td>1.6</td>
<td>2.1</td>
<td>1.9</td>
</tr>
</tbody>
</table>
Member Selected Proactive Leading Indicators for Addressing Risk

- Chosen on the basis of ease of implementation, potential to effect change, value as a predictor of S&H events and whether the metric was already in use.
  - Greater weight given to potential to effect change and value as a predictor of S&H events

- Top selections
  - Number of fatality risks identified by month/year
  - Number of fatality risks identified as unacceptable
  - Number of fatality risks closed by a specified target date
  - Number of on-time inspections, testing and maintenance for safety critical equipment
Member Selected Proactive Leading Indicators for Addressing Risk (cont.)

- Number and percent of safety critical design issues identified before failure
- Number and percent of high risk tasks identified for control
- Percent deviation from safe work methods and permit conditions
- Percent of high risk tasks (with/without) pre-job risk assessment
- Percent of high risk tasks (with/without) pre-job briefings
- Percent of high risk tasks (with/without safety plan)
Summary of Key Leading Indicators to Drive Continuous Improvement Around Risk and Management Systems

1. Number and percent of high risk tasks identified for control
2. Percent deviation from safe work methods and permit conditions
3. Percent of inspections and testing of safety critical equipment that are on time
4. Percent of safety–critical maintenance actions addressed on time
5. Percent of corrective actions from S&H inspections, audits, accident and near miss incidents closed on time
6. Percent of Senior Executive with S&H goals and objectives established for both leading and lagging measures

- These metrics will be tested by companies internally and will be evaluated for benchmarking purposes
Pilot Test Number Three: Identifying Leading Indicators For Global Benchmarking Purposes

Do the right thing. It will gratify some people and astonish the rest.
Three Major Challenges Were identified in Member Discussions on Benchmarking Leading Indicators:

1. **Definitional**
2. **Comparability** and issues around normalizing the data
3. The "roll up issue"

- Definitional issues can be addressed, and by doing so most of the concerns around comparability will also be addressed

➤ The “roll up issue” seems to represent the greatest challenge to benchmarking leading indicators.

   1. **Lack of precision:** The data get less and less precise when they are aggregated -- especially for a large organizations like many Mercer ORC member companies.

   2. **Workload:** Benchmarking leading indicators based on site data requires members' investment for some member companies.
Suggested Measurement Areas and Metrics Questions For Enterprise-Wide (Global) Benchmarking

1. Leadership commitment and support
   Question: Is an effective process in place for demonstrating leadership commitment to worker safety and health?

2. Accountability
   Question: Is there a process in place for holding leaders, managers, supervisors, and employees at all levels of the organization accountable for worker safety and health?

3. Risk
   Question: Are there effective risk identification, assessment, and control processes in place for identifying and abating hazards?

4. Employee involvement
   Question: Is there a process in place to insure that employees are effectively involved in worker safety and health?
1. **Leadership Commitment**: Is an effective process in place for demonstrating leadership commitment to worker safety and health?

1. Worker safety and health is articulated as a core value of the company in written policy statements.

2. A written safety and health management system is in place.

3. Safety and health goals and objectives are established in writing for each major operating or administrative function.

4. The budget process includes resource allocations sufficient to meet each safety and health goal and objective.

5. A written policy exists that employees have the right to refuse unsafe work and the authority to correct unsafe conditions.

6. A written policy exists that employees will be provided the resources they need to perform their jobs safely.
2. **Accountability:** Is there a process in place for holding leaders, managers, supervisors, and employees at all levels of the organization accountable for worker safety and health?

1. Safety and health criteria are included in performance standards for employees, supervisors and manager throughout the organization.

2. Written performance objectives at all levels include incident prevention activities, hazard elimination and safety and health performance improvement (not OSHA rates)

3. Performance against safety and health goals is included in annual performance reviews for individual employees

4. Safety and health specifications are incorporated into performance criteria for functions such as operations, purchasing, design, engineering, etc.

5. Cardinal rules (violation of which result in harsh penalty or termination) have been established for key high-risk activities
3. **Risk**: Are there effective risk identification, assessment and control processes in place for identifying and abating hazards?

1. A process is in place for routinely identifying hazards and conducting risk assessments.

2. The process insures that hazard identification and risk assessments are conducted as frequently as required to ensure the safety of employees.

3. A process is in place to insure prompt incident investigation.

4. The incident investigation process includes hazard analysis to root cause.

5. A process is in place to insure the availability of effective and adequately maintained control measures.

6. A process is in place to insure timely implementation of controls.

7. A system is in place to assure abatement follow-up on all incidents and hazards.

8. A process exists for reviewing and implementing system improvements to continually reduce risk
4. **Employee Involvement**: Is there a process in place to insure that employees are effectively involved in worker safety and health?

1. There is a process for involving employees in the development of safety and health programs and policies.

2. Employees are involved in conducting safety and health training and education.

3. Employees are involved in safety and health program audits and reviews.

4. A system is in place to address and follow up on employee concerns about workplace safety and health.

5. A system is in place to assess employee perceptions about workplace safety and health.

6. A system is in place to encourage employee reporting of hazards.
Summary

- Well known definition of insanity = doing the same thing repeatedly and expecting a different result

- Improving global data on occupational injuries and illnesses to the point where it would be useful for driving continuous improvement and global benchmarking requires a different approach than has traditionally been used.
  - We need to re-examine several key concepts
  - We need to think about clarity and ease of use

- These proposed approaches do not yet represent the perfect “answer.” Rather (hopefully) they represent progress, and create a framework that can be used to generate better data over time.

- The hard work is in completing the details and in testing some of the underlying concepts. The 2012 pilot tests should provide key insights.
Why Participate In the Pilots?

- We all know the current global (OSHA-based) injury and illness data have serious drawbacks
  - They aren’t very accurate
  - They require an inordinate amount of care and feeding
  - They don’t provide sufficient insights to drive improvement
  - They result in wasted time and effort and frequently divert resources from where they are needed the most

- How will things get better?
  - OSHA? International bodies? Other organizations? Doubtful!

- We don’t have all the answers…but we are collectively working towards a solution

- A critical mass of companies could initiate change – among ourselves and in the S&H profession
  
  ➢ We need professional engagement and support
If you have been frustrated by the current paradigm, please take a few minutes to think about the approach and candidate measures and provide us your feedback.

Additional thoughts and suggestions can be sent to: steve.newell@mercer.com; or dee.woodhull@mercer.com

Thank you.
Questions???

Comments/Suggestions for Improvement???

Need more information? Please contact Steve Newell at
steve.newell@mercer.com or 202-331-2620.