MANAGING YOUR OHS PROGRAM: Use Matrix of Key Leading Indicators to Improve Safety Performance

Leading indicators continue to be a key area of interest for environmental, health and safety (EHS) professionals. A new research report describes the second phase of a research project conducted by the Campbell Institute in Chicago on the use of leading indicators to improve EHS performance. (To read about the first phase of the project, see 'Managing Your OHS Program: Using Leading Indicators to Measure Your EHS Performance.' The Institute constructed a matrix of key leading indicators, their definitions and associated metrics in an effort to catalog such indicators, which can be used as a guide for companies on improving their safety performance. Here's an overview of that report and this matrix.

The Research

The first phase of the project established a broad consensus among EHS leaders that focusing solely on lagging metrics, such as injury rates, isn't as effective in promoting continuous improvement as using leading indicators to anticipate and prevent injuries and incidents. The first phase also provided a set of successful leading indicator characteristics, including being actionable and timely. The specific aims of the project's second phase were to:

- Collect a list of key leading indicators and metrics to use as a basis for benchmarking;
- Create definitions for each key leading indicator; and
- Qualitatively describe how certain leading indicators are analyzed and put into practice through short case studies.

To that end, the researchers conducted a series of group discussions and phone interviews with companies that were members of the Institute. An initial meeting of industry experts was held to generate a list of leading indicators in three categories:

- **Systems-based indicators**, which relate more to the management of an EHS system and can be rolled up from a facility level to a region/business unit or corporate level;
- **Organizations-based indicators**, which are relevant to the functioning of an organization's infrastructure, such as its machinery and operations, and may be site-specific; and
- **Behaviour-based indicators**, which measure the behaviour or actions of individuals or groups in the workplace, such as people-to-people interactions related to supervision and management.

Three working groups then discussed these lists separately, with each group creating definitions and adding specific metrics for the key leading indicators on the list. The work from all three groups was combined to produce one matrix of key leading indicators, their definitions and associated metrics. And to provide more context for certain leading indicators, case studies from Institute members detail the development, implementation and analysis of a leading indicator within their organizations.

The Matrix

The resulting matrix presents leading indicator definitions and metrics that Institute members have collectively determined to be 'best performing' through their various safety management programs, which doesn't mean that all of these indicators and metrics are measured and tracked at every Institute organization. It's important to understand that every leading indicator program is unique and should be tailored for a specific organization.

The matrix (click **here** for the full matrix) includes the following 21 key leading indicators, their definitions and associated metrics for measuring each:

1. **Risk assessment:** Identification of the tasks, hazards and risks of a job prior to work, and the implementation of protective measures to ensure work is done safely;

2. **Hazard identification/recognition:** Evaluations and assessments (not necessarily audits) through management and employee observations to identify potential hazards;

3. **Risk profiling:** A review of the collected hazard identification data, prioritization of preventable and corrective actions, and identification of areas for continuous improvement;

4. **Preventative and corrective actions:** Any measure to correct behaviour that could result in failure or defect, as well as any proactive measure to prescribe safe behaviour and prevent non-conformance;

5. **Management of change process:** Formal process to ensure appropriate planning around HR activities, union negotiations, seasonal changes in employment and changing management;

6. **Learning system:** Any activity or program (such as training, communication, coaching and on-the-job training) to teach employees and

management about EHS issues and procedures (skills, knowledge and values) and learn from prior incidents;

7. **EHS management system component evaluation:** An audit of an organization's safety management system to assess conformance with system expectations and goals;

8. **Recognition, disciplinary and reinforcement program:** The recognition of safe behaviour or the correction of unsafe behaviour to reinforce the objectives of the EHS management system;

9. **Leading indicator component evaluation:** Correlation and trend analysis of key performance indicators to evaluate the outcomes of leading indicator implementation;

10. **Communication of safety:** Sharing of information to stakeholders, employees and management regarding safety metrics/indicators and EHS policy;

11. **Safety perception survey:** Polling employees on impressions and perceptions of management and/or organizational safety performance;

12. **Training:** Any event that attempts to enrich or increase knowledge, skills and ability to prevent incidents and/or control hazards;

13. **Compliance:** Adherence to standard operating procedure;

14. **Prevention through design:** Implementation of design elements to eliminate defects and ensure only one safe way of performing a task;

15. **Leadership engagement:** Leaders' behaviours and actions that demonstrate their extra effort and commitment to ensuring safety;

16. **Employee engagement and participation:** Employee behaviours and actions that demonstrate their extra effort and commitment to ensuring safety;

17. **At-risk behaviours and safe behaviours:** At-risk behaviours or safety violations that are observed by individuals, supervisors and management;

18. **Area observations/walk-arounds:** A workplace tour to observe the safety performance of people (such as activities, behaviours, work tasks);

19. **Off-the-job safety:** Efforts aimed at managing, tracking and reducing incidents and injuries that occur outside the workplace;

20. **Permit-to-work systems:** Formal written procedures to control types of work that are potentially hazardous; and

21. **Equipment and preventative maintenance:** Identification of critical pieces of equipment for more frequent maintenance when it's nearing the end of its 'life.'

Case Studies

The report also includes several case studies illustrating how companies used some of the above leading indicators. Here are a few examples focused on the following indicators:

Training hours. When Cummins was seeking to launch a leading indicator program, management eventually chose a few indicators as a starting point, one of which

was training hours. Based on 12 months of data, Cummins compared the number of training hours to the incidence rate for the same time period and found a very strong negative correlation, indicating that an increase in training hours was associated with a decline in the incidence rate. But the company didn't just identify training hours as a strong predictor of its incidence rate. It took the next step and set aggressive targets for training to ensure that this indicator remained a priority at each business unit and site. The strength of this correlation also prompted leaders to further investigate *why* training had such a large impact on the incidence rate. They found that the incidence rate was primarily being influenced by specific training in risk assessment and job safety analysis. For example, the Engine Business Unit (EBU) has a program called 'Find It, Fix It' that trains employees to identify and mitigate hazards. Not coincidentally, the EBU showed one of the highest correlations between number of training hours and incidence rate.

Site audits. In the early 1990s, certified safety professionals performed thorough, two- to three-day audits of USG facilities in Texas. Those facilities that were audited saw vast improvements in safety operations over those facilities that weren't audited. Leadership and plant managers expressed a desire to expand and standardize the audit process to involve operations personnel'not just safety professionals.

To do this, the safety department, plant managers and other leaders developed a broad-based, standard document to rate facility operations called the Safety Activity Rating (SAR). To conduct an SAR, a team of six consisting of a plant manager, employees, operators and supervisors visit a different USG site from the one at which they work and perform an audit using the SAR document. Afterwards, the team lead reviews the report with the plant manager who received the audit to develop corrective actions to address any weaknesses found. The scores from the audits are seen by the safety department, but otherwise aren't published or shared with the entire company. That is, these scores are used not to force-rank facilities and incite competition, but rather for self-evaluation and improvement within sites.

The SAR process not only lets a team view another facility's operations in an unbiased way, but also gives team members the opportunity to see what other sites do well and mentally benchmark these processes against what takes place in their home facilities. Use of the SAR process has resulted in a reduction in injury rate as well as a heightened awareness of safety among employees. And because the process is conducted by operations personnel and not safety professionals, it reinforces the idea that safety is *every worker's* concern.

BOTTOM LINE

Although it's impossible to create a 'full set' of leading indicators and metrics due to the changing nature of workplace practices and the ever-expanding knowledge of safety science, the matrix offered in the Institute's report represents a collaborative benchmarking effort to generate a catalog of key or critical leading indicators. The matrix can be used as a guide for companies on their way to safety excellence and to help already successful companies maintain their world-class status. In additional, EHS coordinators can use this information to not only convince senior management of leading indicators' importance and predictive power, but also demonstrate through examples how particular leading indicators produced positive outcomes in workplace safety in

actual companies.

***Insider* Source** 'Practical Guide to Leading Indicators: Metrics, Case Studies & Strategies,' The Campbell Institute, Chicago, Aug. 2014