SafetyInfo

Safety Management Systems
The Strategy of Efficiency when it comes to managing safety

All core business disciplines (i.e. production, marketing, sales, quality, safety) require some type of strategy to ensure that they perform in a manner that meets organizational expectations. This is generally accomplished through the use of some type of formal management system. The administration of any management system requires time, effort and a good deal of planning. All organizations, whether large and complex or small and simple, require some type of management system to oversee their safety efforts. The collective formal to manage safety activities are known as a safety management systems (SMS).

Safety Management System Overview

The concept of an SMS is not a new one and it tends to arise organically, over a long period of time. As companies evaluated safety-related activities and defined certain actions as having value and as something that needed to be measured and managed, metrics of success for these actions were developed and defined. Ever since safe work practices were first instituted, a need to identify trends, document results and ensure consistent actions for follow-up has been present. One common example involves the education of employees regarding safe work practices. The first-step taken by companies is to ensure that employees work in a consistent manner that meets expectations. This is done by training the new employees in the proscribed safe work practices. The tracking of employee, supervisor and manager safety training is one example of a metric that can be measured using an SMS. Having a training protocol is

important. Ensuring that all employees receive the required safety training and ensuring that the training is effective is crucial. Tracking training results and trending them against outcomes such as injury rates and workers' compensation expenditures is progressive and represents a high degree of achievement of the SMS.

Over the years, SMSs have become necessarily larger and more robust. The number and scope of items that are tracked and managed can eclipse the hundreds. Some of the more common elements in an SMS that are routinely measured and evaluated for performance include:

- Audit findings;
- Behavioral safety observations;
- Business continuity protocols;
- Countermeasure development and implementation;
- Employee drug and alcohol testing;
- Employee injury frequency and severity levels;
- Employee safety testing;
- employee training levels;
- ergonomic evaluations;
- investigations;
- job safety analysis;
- PPE evaluations;
- policy and procedure development;
- preventative maintenance;
- hazard identification and risk assessment;
- purchasing;
- operational controls
- contingency preparedness and response;
- critical incident recovery plan;
- safety committee activities;
- safety costing and fee allocation;
- safety cultural evaluations;
- safe work barrier removal.
- permit-to-work system;
- safety records;
- corrective actions;
- preventive actions;
- management reviews

The above list is not intended to be a comprehensive representation of items found in a modern SMS; rather, it is supposed to illustrate the diversity and complexity of measurements that could be considered of value. The management of all of these different activities and systems can be very challenging.

The idea for the modern SMS arose as managers and safety professionals attempted to evaluate the metrics of their safety process for effectiveness. Given the plethora of items that can be assessed to determine the effectiveness of workplace safety, it became important that only items with the most relevant bearing to actual safety performance be measured. This qualification of items that receive evaluation has led to numerous

articles and discussions regarding the importance of leading versus lagging indicators. The essential points to consider about these concepts is that lagging indicators are those items which are the outcome measures of a process. They are generally considered downstream metrics and have the most direct effect on the organization. In safety, the routinely measured lagging indicators are injury frequency, injury severity (lost work days), and incident costs. Leading indicators are process-related items that can be measured prior to the outcome event. Leading indicators are the antithesis to lagging indicators. These are upstream metrics and generally involve actions or activities on the part of the individual employee or the organization. Numbers of employees trained, behavioral safety observations completed, and levels of safety climate/culture expressed on an opinion survey are all examples of leading indicators.

Leading indicators are generally considered preferable metrics for inclusion in an SMS, as they represent items that an organization can control before an incident occurs. The key consideration for leading indicators is that they must be valid. Items measured by the SMS must have a direct correlation with outcome performance to be valid. For example, if employees do not have the knowledge to work safely, then the lack of information creates a high level of residual risk. If an organization trains and educates its employees to the level of fluency with respect to safe work practices, then the residual risk can be greatly reduced. The tracking of employee training levels and demonstrated skills, using an SMS, is an example of a valid leading indicator that is effectively managed.

Function, Integration & Optimization

Describing how an SMS functions, how it integrates with other management systems, and the way to optimize its use is the next critical topic to explore. In today's world, SMSs are sometimes disparate tools used to measure numerous different activities. They may include spreadsheets, proprietary databases, or internally developed and customized tracking systems. Other SMSs are well integrated, computer or cloud-based systems, which allow the organization to centralize efforts at tracking meaningful metrics. The remainder of this article will explore what a well-designed SMS should look at, how it should be devised and what positive outcomes a company or organization can achieve when using a rigorous and robust SMS. The next several paragraphs of this article will describe, in detail, some of the activities and metrics that an SMS can measure, track and trend.

An efficient SMS is designed to capture information and provide a platform for the management of all safety aspects within an organization, using data that are easy to understand. As discussed earlier, using only lagging indicators as the metrics of safety performance can be a common pitfall in many safety processes. Despite this, these items remain important to measure within the SMS due to the inherent relevance of knowing how many injuries have occurred and how severe they have been. A thoughtful and well-designed SMS will measure injuries and relate these measurements to other process-related activities. An SMS provides a means for looking at the metrics of

frequency, severity and financial implications of injuries. An efficient SMS will have a method for tracking injury trends and relating the trends to other demographic information such as most frequent time of day, day of week, or activity engaged in when the injury occurred.

In the past 10 years, SMSs have become technologically driven. Originally, most data was tracked in hard-copy format in journals and ledgers. With the advent of computerized data tracking many organizations resorted to spreadsheets and databases that were the norm for managing safety-related activity data. More recently, single source program or internet-based SMS have added a high degree of efficiency to the management efforts. A strong integrated SMS with a cloud or web-based software system allows instant data capture as well as linking the injury/incident to the necessary corrective actions. A comprehensive and integrated SMS facilitates and manages the incident investigation process, communicating through corrective actions and closing the loop from lagging to leading indicators.

Another important benefit that can be realized when using a robust SMS is its ability to provide a consistent foundation for managing exceptions and variances discovered through audit findings and safe-work barriers identified through behavioral observations. Within the SMS, it is important to identify potential improvement areas and track these with a corrective action program. Corrective actions are then tracked by the SMS to completion, ensuring that any identified unsafe work hazards have been removed before further injuries or incidents occur. This identification and removal of unsafe conditions through corrective action is the key component in any proactive approach to safety.

Within the SMS, job hazard analysis (JHA), risk assessments and PPE evaluations contribute immensely to improving workplace safety. Defining safe work practices within the context of a JHA greatly heightens the safety level in any workplace. The identification of risk and hazards when paired with a PPE program provides organizations the vehicle for a proactive approach to improved behaviors and employee engagement. As employees identify risks and hazards and see that the risks they find are remediated and documented, they will become more committed to the safety process. These increasing levels of employee ownership in safety will help to dramatically improve the organization' s safety culture.

Working with an SMS that allows an organization to report behavior based safety (BBS) observations will further assist in improving an organization's safety culture. Trending those observations allows for a risk-based, not loss-based, approach to safety management. Some SMS behavioral safety applications allow organizations to gauge and track employee participation and frequency within the BBS process. A strong SMS helps organizations identify at risk and unsafe behaviors before an injury occurs, while facilitating the presentation of appreciative feedback and positive reinforcement when safe behaviors are identified. Identifying areas where an organization is successfully working safely can steer a traditional safety culture that focuses heavily on identifying and punishing failures to focus on a more positive approach. This inevitably leads to a

safety culture based on accomplishment and achievement rather than avoidance and punishment.

Another critical component is the measurement and management of education and training of employees. Ensuring employee training and education not only involves regulatory requirements, but also has a meaningful, positive impact on behavior that has the potential for injury. Training is often effectively conducted when a true knowledge-gap is identified, when processes or procedures change or when the environment develops a new risk profile. Consistent documentation of completed employee education strengthens incident investigation, safety culture, incident reporting and safety communication.

Managing preventive maintenance is another element of a strong SMS. Although preventive maintenance may not typically be considered a safety-related action, the linkage between maintenance and safety is undeniable. The corrective actions within maintenance are important to prevent environmental and physical site incidents relating to equipment failure. Having the ability to track and trend repairs, and near-miss/incident reporting, against unplanned fixes and the associated costs allows a company to analyze the effectiveness and consistency within their maintenance program.

Reviewing these elements presents a clear vision for what an effective SMS entails. Having a dashboard available to organizations whether large or small allows them to easily provide content and store data. With various SMSs being utilized by many organizations, it is crucial to explore which format will be relevant and effective in the given environment where an organization resides.

Evaluations are critical when determining if the SMS in place is providing precise, accurate information and measurements. A general evaluation of the SMS provided by the Civil Aviation Authority presents an "SMS Evaluation Framework . . . " for Complex and Non-Complex Organizations. According to the Civil Aviation Authority general self-assessment tool, the evaluation is extensive and broken down into the following categories:

- management commitment and responsibility;
- safety accountabilities;
- appointment of key safety staff members;
- emergency response planning;
- safety documentation;
- hazard identification and risk assessment;
- safety performance monitoring;
- Permit-to-work system
- management of change;
- incident management;
- contingency management and response;
- continual improvement;
- safety auditing;
- safety training;
- communication;
- SMS implementation;
- Corrective and preventive actions;

- Management reviews.

According to this document, "The purpose of evaluating the SMS is to ensure that the system is put in place across the whole organization. . . . As the system becomes more developed, further evaluations can be made to ensure that the SMS is operating as intended and that it is effective" (Air Safety Support International, 2006). Assessment of the SMS provides relevant information that allows the determination if an optimal system in place or not. Examples of an optimal system include measurements about the usability and relevance of reports generated by the SMS, efficiency of investigations, impact of training alerts, report trending, data storage and security, ease of access and general user-friendliness. Many elements within a SMS must be studied to determine if there are additional items requiring measurement. Ultimately, the outcomes of these efforts should be providing the company with savings in time and money, improving communication, enhancing the availability of information and increasing the performance in safety by facilitating significant reductions in the frequency and severity of injuries.

The items that must be fully considered when examining a SMS are:

1) About what leading indicators does the SMS provide information and are these leading indicators valid?
2) What percent of employees use the SMS or derive benefits from its presence?
3) Has the SMS made the organization more efficient and productive?
4) What efforts have been done to create a positive Safety Culture in relation to the SMS?
5) What communication gaps, if any, exist between employees, supervisors, and upper level management?
    a) If communication gaps exist, how will the organization aim to improve them?
    b) If communication gaps do not exist, how can the organization capitalize on this strength to improve other lacking areas?
6) What values can the employees gain from increasing use of the SMS and improving communication?
7) How will increasing the use of the SMS affect the organization both in the immediate and the long-term?
8) How effective are the applications in the SMS?
    a) Are they easy to use?
    b) Do they facilitate interest and curiosity?
    c) Do they provide information of interest to organizational management?

9) How does the SMS illustrate specific measurements and generate reports in which your organization can trend different models?
10) What are ways that your SMS is used as the centralized source for your organization's various locations and/or departments?
11) Has the use of the SMS improved safety performance?
    a) Is the organization continually improving?
    b) Are there fewer injuries to employees?
    c) Are fewer dollars being spent to pay for injuries?
    d) Is the overall business cycle including productivity and profitability increasing?

According to Air Safety Support International, "When evaluating a SMS it is important to keep in mind that the purpose of the SMS is to make continuous improvement in the overall level of safety" (2006). The author has noted an increased use of SMSs in all industries and with many different organizations. Numerous entities are now focused on achieving safety excellence based on the use of the SMS. Both large and complex organizations as well as smaller more compact companies are noticing how an SMS is able manage employee trainings; track barriers and incident investigations; enter in, track, and close out corrective actions; maintain up-to-date SMS files; generate reports; and draw trending conclusions to improve an organization's culture and productivity.

Workplace safety is being looked at more closely in the present day than in the past. A successful SMS will allow employees to personally better understand how they make a difference in the safety efforts, and enhance their engagement. Ultimately, by using well-selected and customized SMS, organizations around the world are improving every aspect of their operations. The only question that must be answered is not should an SMS be implemented, but how can it be done in a timely manner with sufficient planning to ensure the achievement of operational excellence?