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Managing System-Driven Incidents – A Business and Performance Approach

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Introduction

Safety or the lack of safety is an outcome of human performance. Human performance creates the outputs of organizations. Much of the output falls within an acceptable range, but some things do not. Those that do not can be considered the organization's operational "defect rate." The "defects" can be in the quality of the output, or the efficiency of the process, such as waste generation, as well as damage or injuries the workforce suffers. All of these results in some form of loss, which adversely impacts the organization. Safety viewed as a human performance issue and the factors that influence that performance and its resulting outcomes constitutes a different perspective on safety and its management.

Traditional Safety Practices

Traditional safety management involves creating a program that for the most part follows the OSHA Safety Standards. This program usually includes a policy statement, a code of safe practices, rules and regulations, accident investigation, training, communication, meetings, inspections, and some form of reward/discipline process. The bulk of the program is a restatement of the safety standards as promulgated by the state the organization resides in or the Federal standards. The more sophisticated organizations may add additional requirements to this program based on past experience, specific needs or external requirements. These may include drug testing, transitional duty work, driving requirements, behavior modification, charge back systems, cost allocations, etc.

The safety process is managed primarily by looking at past results and using that as a basis for future interventions. This method works to some extent, but since the future is never exactly the same as the past, this method can never eliminate all operational risk and therefore reaching zero injuries with this method is virtually impossible. The traditional interventions that are typically engaged in fall into three broad categories: engineering controls, training, and inspections. Virtually all safety standards and interventions as promulgated by state of federal agencies fall into these three categories.

Underlying all this is the general belief that safe work is controlled by the worker. And it is the worker who ought to make sure that they do not get hurt. This thinking assumes that the worker is in total control. Nothing could be further from the truth. Workers certainly should try to work safely and follow proper work practices. But they do not control much of anything except their own actions. It is management that controls just about everything on site or at the facility. Management plans the work, coordinated activities, assigns the tasks, selects the workers, decides

where the worker works, who they work with, how fast they work, how long they work, and the list goes on. So if we are going to find a solution to our loss problem there is ample opportunity in the management area!

Organizational Elements

Basically most people work because they have to. They work to make money so they may live their lives. To accomplish this most of them end up working for some organization. The goal of business organizations is profits for stockholders and benefits and salaries for management as well as employees. The organization accomplishes this by producing a product or service that meets the needs of others who are willing to buy it. Some organizations may not have profits as a goal but they still provide something others need or want.

To produce the output the organization has two key elements, systems and people. This operational system may include plant and equipment, processes, procedures, and practices.
And they have people to activate, energize, manage and control the systems so as to produce the outputs. It is while organization operate that it also produces some undesirable outcomes. On the product side there is the issue of quality. If it is below par it may require rework or replacement. On the production side the undesirable outcome may be waste or inefficiencies. And on the people side it could be lack of motivation, involvement, cooperation, support, sharing, and possibly injuries. All of these undesirable outcomes ultimately generate waste, increase costs and impact profitability.

The operation is a part of a larger entity which is the organization. The organization also has two key elements which are systems and people. The people in the operations are the producers (workers) and the people in the organization are the managers. The systems at the operational level produce the output. The systems at the organizational level are the policies, procedures, chain-of-command, resources, structure, metrics, etc. devised to effectively and efficiently run the operations so as to achieve the organizations goals and objectives.

In the process of producing the output, which is desired, there are side effects that are not value creating or desired. These defects are produced as part of the output of the operating system. So the question is what causes this model to generate the defects or undesirable outputs. At the operational level tools like lean thinking and six sigma can be used to make the operational systems efficient, that is the easy part. “Fixing” the people element is more complex and challenging.

Performance Management

We’ve already discussed how human performance is managed in the safety arena, and how it is usually less than optimal. In business typically performance is managed by setting goals and defining expectations for employees. These goals may be set for production, quality or safety results. Goals that are achieved result in some form of reward given to the employee by management. Failure on the other hand usually means the denial of promotions, recognitions or money. For workers who do not achieve the expected goals, the organization may provide counseling, training, or some other consequence.

Generally these interventions or consequences are mostly directed at the worker. In other words the goal is to “change” the worker, while ignoring the fact that in the operational model as described above there are two sources of failure risk: people and processes. Since producers work

within the system (interface with the system), it influences them and may cause them to take actions, make choices or arrive at decisions that may results in errors or discrepancies and so lead to underachievement or failure to meet expectations. To say nothing of the organizational systems!

Failure to meet expectations is generally attributed to human failings on the workers part. This may be attributed to inattentiveness, poor judgment, a lack of focus, incompetence, negligence, or worse, an intentional act. This outlook prevents the digging deeper into the inner workings of the organization for possible reasons causing such failure. Human error is simply a difference between an actual state and a desired state.

It is important to note that all human errors do not result in catastrophic negative outcomes; in many cases, the results are tolerable, inconsequential, or may even turn out to have positive results. To understand failure, we must also understand our reaction and response to failure. People do not operate in a vacuum, where they can decide and act all-powerfully. To err or not to err is not a choice. Instead people's work is subject to, and constrained by, multiple factors

If the worker is somehow “defective” then the hiring practices may have failed in the selection process. Or the orientation of the worker may be at fault. It may be that expectations were not clearly communicated. There may be a miss match between the worker’s capabilities and the task demand. These shortcomings point to deficiencies in the organizational and management systems. If the work met hiring criteria and somehow changed after being hired then the reason for the change must be identified and dealt with.

The Human Error Factor

The impact of human error on organizations is far-reaching in terms of productivity, customer service, quality, teamwork, decision-making, execution, injury, and loss. There is little in terms of statistics for most of these categories except for accidents. In many of the most serious accidents in the last 50 years, almost all initial findings attributed the failures primarily to human error. As in the1965, Little Rock, Arkansas construction accident, the 1978 West Virginia cooling tower collapse, the 1984 Union carbide - Bhopal, India disaster, 1988 Piper Alpha oil platform explosion, the 1989 Phillips refinery explosion in, Texas, the 1989 Exxon Valdez oil spill in Alaska, the 1991 Hamlet Chicken processing plant fire in North Carolia, the 2005 Texas City BP refinery explosion, and the BP Deep Water horizon explosion to name a few.

Referring back to the organizational model within which the operational model exists, we identified systems and people (management). Management devises all the systems, and—as humans—are fallible, creating systems with latent defects. Besides the system, management’s action, behaviors, communicated expectations and prognostications influence workers. The producers (workers) at the operational level have to function within the systems as well as respond to management expectations. These latent defects, combined with operator perception actions or errors, may lead to all kinds of failures.

The Systems-Human interface

Management’s intention is the devise efficient and effective systems, hire capable workers, and manage the process to meet the organization’s goals. So why do we end up with the less than desirable results we get? If you think about it, in every realm of our lives there are rules of engagement. These rules apply at work and in our social as well as family life. And if we further

think about it, these rules come in two varieties, written and unwritten forms. The written rules are how we are supposed to act and the unwritten ones reflect the way we actually do act. Think of this as it relates to safety. The written rules represent the safety programs, the policies, procedures, training, etc. which is there to help keep workers safe; while the unwritten ones are the way workers actually act and/or are expected to act, in spite of the written rules. So why and how do unwritten rules come about?

Safety management can be a much discussed and sometimes a misunderstood topic. Over the years many different theories and interventions have been tried and many of them have had less than stellar results. Some folks have tried behavior-based safety, others have gone the systems approach path, some would have you believe that safety should be management-driven while others propose an employee-driven approach. There also is the metrics issues in safety and how best to measure performance and success. All of these approaches have been around for 15, 20, and even more years – so why haven't we hit upon the "mother Lode" of safety intervention as yet?

In order to run an effective organization, management set out rules for how things are to be accomplished, for without rules there is chaos. These rules make up the policies, procedures and practices for accomplishing the organization's mission. Management also establishes a strategy to make the organizational vision become reality. To accomplish the strategy management set objectives, metrics and targets. Management also interacts with the employees on a daily basis through their statements, actions and behaviors. These actions and behaviors may not necessarily be aligned with the written rules. These signals (management's actions and behaviors) along with the written rules interact with each other as well as other factors, such as the employee's values, beliefs, expectations, agendas, etc. to create "the organizational climate". The employees "read" this and determine the best way to accomplish management's as well as their own goals and objectives. These become the unwritten rules.

The unwritten rules help employees understand and cope as well as successfully function within complex organizations. The unwritten rules tend to have side effects. Some of the side effects result in positive outcomes. They are unintended and unexplained, but at least they do not create barriers to achievement or change. Other unwritten rules tend to be undesirable from management's perspective and hamper accomplishment of improvement or change initiatives. In safety the undesirable side effects are the incidents, injuries, and losses we see at our facilities and jobsites. Understanding the unwritten rules is more than just a way of removing barriers to performance; it is a way to replicate success. The greater the divergence between the written and unwritten rules the larger to problem!

Let's look at some of the written and unwritten rules interactions and resulting unwanted outcomes. Let us assume that a construction firm wants to develop future project sponsors (managers). They may implements the following rules to create a more rounded future management group.

1. Everyone must rotate though all the departments (estimating, purchasing, cost control, scheduling and field operations, to better understand their workings and relationships to other departments. This will normally take about 24 months.

2. New talent will help improve the processes and practices of the department thereby improving the organization's performance.

3. Fast learners can be promoted out of the department earlier if the manager determines that the individual has a good understanding of the department's factions.

4. Typically departments are evaluated on their performance and contribution to the bottom line.

Rules intent:

1. Breath of experience
2. Teamwork
3. Innovation
4. Accountability

Obviously this is a win-win for both the employee as well as the organization. But how may the employee see these rules. As planned, it will take eight years to become a project manager. So to accelerate the process the individual must get the boss to promote them out of the department as soon as possible. The individual may also determine that innovative employees are kept in the department longer as the department head who wants to show improvement in the department's performance. Below is an example of possible unwritten rules the employee may devise to achieve their goal.

1. Not contributing - so as not to standout as an innovator and therefore retained longer
2. Since departments are measured on performance - watch the quarterly reports so as not to be flagged as a non-performer.
3. Avoid failure – Don't take any chances, limit participation in teams that may fail.
4. Keep the boss happy - whatever it takes to stay on the boss' good side to ensure promotion.

Resulting outcome:
1. Short term-ism
2. Poor team work
3. Lack of cooperation
4. No innovation

This certainly was not management's intent but it resulted from not looking at the proposed initiative holistically and understanding how these rules may be perceived and reacted to by individuals.

Performance Improvement

One approach to addressing some of the system-driven risks any be to look at some of the core drivers of organizational actions such as the values, mission, vision and strategies of the organization. The first step is to list the business issues, performance short-comings or barriers to improvement initiatives that cause the greatest concern. The next step is to identify the unwritten rules that influence the employee's behavior resulting in the undesired side effects.

There are three core underlying elements that create the unwritten rules. The first is what motivates the employees. Let call these the motivators. What do the employees want, value, perceive as a reward or punishment, what is important to them. Their behavior will be driven by what they want to accomplish, achieve, or get. The next core element is who in the organization

can give the employee what they want. This generally is the immediate supervisors, though it may be someone further up the chain-of-command. This represents the power structure of the organization, as perceived by those within it. The third and final element is the trigger. The trigger links the previous two elements. Triggers are the conditions that must be satisfied so that the employees get what they want.

The process starts with a behavioral concern or problem and by understanding the three core elements that create the unwritten rules which in turn motivate and drive the employee's behavior we are able to get at something concrete that we can do something about. This analysis traces the unwanted side effects to the corresponding written rule, thereby allowing for a structural correction of the discrepancy and elimination of the undesirable outcomes.

In safety there are tremendous opportunities to apply the unwritten rules concept to get at under optimized safety performance. In safety, strategy is deployed base on analysis of accident and losses and the implementation of "fixes" such as writing or rewriting programs, training or retraining, inspections and audits. None of these intervention analyze why the employee engages in the unsafe activity and trying to address the core drivers of that behavior.

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