

TAMING THE COST OF ACCIDENTS WHILE IMPROVING SAFETY

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THE TRUE COST OF ACCIDENTS CAN BE MANY TIMES HIGHER THAN WORKERS' COMPENSATION PAYOUTS.

A MAJOR NORTH AMERICAN PAPERMAKER, SKEWERED by ever-rising workers' compensation outlays, thought it had a case management problem. Inefficient handling of each case was driving up costs, management figured. The company did an internal financial audit to identify the inefficiencies.

The results were a big surprise. When the financial people—not the safety people—reported to management, they said, “The problem isn’t that each case costs too much, the problem is that there are too many cases.”

The report caught management by surprise. “You mean we could knock down the number of accidents and save more money that way than by reducing the payout per accident?”

When you think about it, the answer is obvious, but many companies don’t think about it—not without a good deal of prompting. Most organizations don’t understand that they can identify potential sources of accidents, analyze the underlying causes, and neutralize them before accidents find them. Contrary to what many believe, accidents aren’t an inevitable result of doing business that must be endured.

THE TRUE COST OF ACCIDENTS

The stakes are much greater than the cost of workers’ compensation. Study after study has shown that the property damage, process interruption, downtime, and other losses due to accidents cost from 5 to 50 times more than workers’ compensation.

The higher number applies to capital-intensive industries, e.g., heavy manufacturing and petrochemicals; the lower number applies to labor-intensive industries. For very high capital intensive industries such as offshore oil,

clients tell us that 50 is too low and that the actual ratio is more like 80 or 90 times the cost from injuries.

These costs are typically hidden. Organizations often say they don’t have financial evidence of such damage. But if they look closely at their maintenance budgets, they find that 30–50% is going to repair or replace things damaged accidentally.

REPORT ALL ACCIDENTS

One of the key objectives for management must be to ensure that all accidents, including minor property damage incidents and near misses, are reported. The more incidents are reported, the more problems can be investigated and resolved. The more problems are solved, the safer and more cost effective the operation will be.

The fact is that the only difference between a near miss and a catastrophe can be a matter of chance; therefore, every high-potential problem should be resolved.

This does not mean that everyone should be Chicken Little expecting the sky to fall. Resources should be expended on high-potential events—not on every sprained wrist, but on incidents that reasonably could lead to serious injury or loss. It’s a matter of judgment. The question to ask when a near miss or a minor accident occurs is this: What reasonably could have happened? Could a nicked arm have been instead an amputation or other disabling injury?

Many managements have taken steps to ensure that accidents are reported, but as often as not many organizations are their own worst enemy on this front.

Organizations traditionally offer incentives to improve safety; the safer the workplace, the greater the rewards. The problem is the measure used to define “safer.” If safer means only the number of accidents,

people tend to cover up incidents. The inevitable result is that no fewer accidents occur, but fewer are reported. Major incidents are hard to cover up and are still (reluctantly) reported. Other events—incidents that cause minor injury, property loss, or near misses—that might lead to fewer goodies from the incentive program start to seem unimportant.

The remedy for this self-defeating policy, which rewards the failure to report problems, is to reward activities and conditions that promote a safer workplace. For example, instead of rewarding a work unit for having no eye injuries for a given period, reward work groups that have complied with eye protection usage 90% of the time during random inspections over a given duration. Or ask them to identify the leading causes of accidents and reward suggestions for improvement.

INVESTIGATE ALL ACCIDENTS

Once events are reported, they must be professionally investigated. The key to any accident is to get beyond the immediate causes to the deep underlying root causes. Too often, investigations stop with the immediate causes. They address the issue of what happened, not why it happened. Cases in point:

- On a new state-of-the-art, computer-driven manufacturing line, a worker with long seniority opens a gate to the robot enclosure to disable the robots. Despite the open gate that is supposed to freeze the line, the equipment is activated from a remote location. The worker is crushed against the enclosure and sustains two cracked ribs.
- In a warehouse at a pulp and paper mill, a forklift transporting a 3 ton roll of product loses its spear attachment when a driver, newly transferred in, turns a corner. As the 6000-lb roll curls across the floor, two surprised people jump out of the way just before the slowly moving projectile smashes into the packaging line and brings operations to a dead halt. It takes the rest of that shift and the next one—more than 12 h—to repair the line and get it back into service.
- A recently hired worker in an automobile plant opens a Plexiglas panel to adjust a tool. In spite of magnetic interlocking devices designed to stop the line, the broach is activated and injures the worker's hand.

In cases like this, what often happens is confusion: Some people freeze, while others run around like

chickens with their heads cut off. No one takes control. Evidence is destroyed.

Eventually, when the mess is sorted out, safety managers investigate. They identify the immediate causes:

- The robot had been left in “teach” mode, which allowed activation from a remote location with the gate open.
- The spear had fatigue failure. An examination showed that 3 of 11 other spears also had similar signs of early crack formation.
- The interlocks on the broach line were commonly bypassed to “speed things up”—supposedly everybody knew about this.

In most of these cases, the immediate problems will be fixed, someone will be blamed, and the safety managers, overwhelmed by demands, will go off to fight other fires.

Accidents are handled like this every day. At best, this kind of approach deals with symptoms. In a few days, another piece of equipment will fail or a line that's supposed to be deactivated will start up, to the surprise of its victim. Someone else may be injured or killed. The plant will be shut down for a while, the damage will be repaired, and insurance costs will be ratcheted up another notch or two. The risks will remain.

To avoid this, an accident investigation must get beneath the surface to the underlying root causes. The goal is to get to the deep reasons “why” the incident occurred. Why were new employees driving a forklift or working on a dangerous line? What training had they received? When? What are the policies on these matters? Are they adequate? Were employees fatigued? Stressed? Is there a preventive maintenance program? A system of professional inspections? What must be changed in maintenance, training, and safety to keep this from happening again?

SUPERVISORS ARE A CRITICAL RESOURCE

Most organizations don't have the resources to fully investigate all accidents. Typically, accident investigation is the sole responsibility of the safety manager. But with limited resources, this individual seldom can investigate all incidents that should be investigated. An effective solution is to involve front-line supervisors in this process. This is the best way to ensure that an organization has the resources to investigate all the high-potential incidents that should be examined.

Of course, someone with higher-level jurisdiction should ultimately be in charge of the investigation to ensure that the results are acted on by the organization

as a whole. This might be the job of the safety manager. Ideally, the safety manager should directly conduct investigations only in situations where the loss or potential for loss is severe. Otherwise, the individual should be a resource for others.

ACCIDENT INVESTIGATION PROCESS

The basic elements of professional accident investigation can be easily learned by first-line supervisors and other leaders. Many organizations use a three-phase process that can help make accident investigation a regular part of the management system in organizations.

Phase 1: The initial response

Accident investigation begins with controlling the initial response. This is critical because when an accident happens, an effective initial response is crucial—not only to minimize injury and loss, but also to protect necessary evidence.

The most important issue is control. The supervisor needs to take control of the accident scene immediately in order to contain the disorder, ensure that injuries are immediately treated, preserve evidence for later study, notify appropriate managers, and make sure no one else is hurt.

Phase 2: Collecting evidence and information

When an accident investigation begins, investigators are faced with a puzzle. They have to figure out what the pieces are and how they go together. To do this, the investigators need to look at four categories of evidence: Position, People, Parts, and Paper—the Four P's.

Position evidence. Where were the people, equipment, and materials located when the accident occurred? Since much of this evidence will be moved or removed during the initial response, investigators preserve it through sketches, maps, or photographs.

People evidence. Witnesses, either eyewitnesses or others who designed facilities, ordered materials, or trained operators, must be interviewed by a trained investigator—a supervisor who knows how to elicit information without influencing witnesses and without allowing witnesses to influence each other. The supervisor also needs to know how to ask questions to get the whole story and record information without making people uncomfortable or defensive.

Parts evidence. This type of information includes a

careful examination of relevant tools, equipment, and materials.

Paper evidence. Position, people, and parts evidence give the investigator a sense of what happened. By contrast, documentary evidence leads to the underlying or basic causes. The investigator has to dig for documentary evidence in training records, maintenance logs and records, work schedules, job procedures and practices, and inspection records.

Phase 3: Analysis and correction

After evidence is collected, the next task is to analyze it to determine causes, identify corrective actions, and develop a report for management. The goal is to prevent recurrence.

Fundamental to this process is the identification of basic as well as immediate causes. To facilitate this, many organizations use a five-part Loss Causation Model.

The investigator identifies:

1. Losses: What and how much.
2. Incidents: The physical events, e.g., Lisa was struck by a load from a moving forklift.
3. Immediate causes: The substandard acts and conditions that preceded the incident, e.g., workers had disabled the interlock devices and failed to warn new employees.
4. Basic or root causes: The underlying reasons *why* the immediate causes exist, e.g., mental stress, inadequate motivation, inadequate leadership.
5. Lack of control: Analyze the overall loss control program to determine what conditions in the organization permit the root causes to flourish.

After this analysis is completed by management, the next task is to develop remedial actions.

By following the process described here, organizations can reduce losses to people, property, process, and the environment. The amount of savings can be considerable. **TJ**

Goldberg is senior consultant for Det Norske Veritas—DNV—(U.S.A.). The accident investigation process offered here is based on *Practical Accident Investigation Series*, an interactive video-based training program developed by DNV. Additional information is available from DNV Loss Control Management at +1 800 486-4524 or at 3805 Crestwood Parkway, Duluth, GA 30136.