

DIGGING FOR ROOT CAUSES

COMPANIES SUCCESSFULLY REBOUND FROM ACCIDENTS BY SHIFTING FROM RESPONSE TO INVESTIGATION—RESEARCHING WHAT CAUSED THE ACCIDENT AND WHAT THEY CAN LEARN FROM IT. BY ANDY KNUDSEN

When an accident occurs, most companies know what to do first: get medical aid for injured workers, evacuate if necessary, call emergency responders such as the fire department, collect details from the accident scene, determine what was lost or damaged, and figure out how to get things back on track. These efforts consume time and create stress, but it's important to go even further. Determining how to prevent similar accidents is the necessary next step, and it's the only way to turn the enormous costs incurred because of the accident into value for your company.

THE COST OF ACCIDENTS

On average, more than 5,000 workplace deaths occur each year in the United States. In 2007, 25 workers in the scrap recycling industry died on the job, and 5,500 industry workers suffered injuries that resulted in lost time, transfer, or restricted duty. The scrap industry—like many other industries—presents safety challenges. Powerful, complex machines are constantly in use; workers move large, heavy materials around the yard as well as transport them to and from sites; and recyclers of paper, rubber, and similar materials face an additional susceptibility to fires.

Industrial accidents come at a high cost in financial and human terms. For the worker, debilitating injuries require extensive recovery and rehabilitation time that can affect personal finances and the ability to live the life he or she previously enjoyed. Accidents also affect co-workers, family, and friends.

Accidents also create expenses for businesses in addition to the toll on workers. If an accident damages the work environment, businesses could lose production time or experience layoffs as they repair buildings and equipment. Insurance might cover some of these costs, but hidden costs—lost productivity; finding, replacing, and training workers; and diverted management time that businesses could devote to development and improvement—sap profitability. Warehouses and outdoor storage facilities, in particular, are susceptible to the loss of significant inventory values. Customer service often suffers drastically after an accident. In the event of a fire or other



severely disruptive event, customers may find it easier to do business with a competitor and might not return. Many businesses

just never fully get back on their feet and some disappear from the business landscape altogether.

CAN ACCIDENTS BE PREVENTED?

Some people simply shrug and say, “Accidents happen.” That’s a lazy attitude for them to take regarding events that—with some extra thought and effort—could be avoided. After an accident, such people just fix up, clean up, and repeat the practices that caused the accident in the first place. If nothing changes, it’s likely that a similar event will occur again.

In contrast, establishing a mindset that “we do things the right way” creates and supports a culture of excellence. Eliminating hazards can improve productivity and provide other benefits. Ideally, preventive measures keep workplace accidents from happening. We need to be realistic, however—accidents happen, and when they do, successful companies use the opportunity to dust themselves off and implement changes that prevent a similar event from happening in the future. They learn from it, and they improve.

Successful companies’ most important tool for preventing future accidents is a comprehensive accident investigation. Further, they investigate whether it’s an accident or an incident—a near-miss situation that could have resulted in injury or property damage, but, luckily, didn’t. By treating incidents the same as accidents, companies have more opportunities for improvement and for heading off future problems. Think of a near-miss as a preview of an accident that will likely happen in the future if the company doesn’t make changes.

Accident investigation should go beyond what happened. Using a systematic approach—as outlined

below—companies can unearth the causes that led to the accident. Unfortunately, sometimes companies fail to give enough attention to this part of the investigation.

FINDING THE ROOT CAUSE

Companies focused on continuous improvement successfully rebound from adversity by quickly shifting from accident response to accident investigation, asking why did it happen? What failure caused this event? And what can we learn from it?

Assigning someone to carry out this phase—a step companies sometimes skip—helps mitigate the event’s impact. Be sure everyone knows who this person is ahead of time and how to reach him or her at any hour. This person should

- Secure the accident scene to preserve evidence so you can analyze what happened.
- Speak with staff about what happened and what they are doing to respond to the accident and get business back to normal.

We need to be realistic—accidents happen in scrapyards, and when they do, successful companies use the opportunity to dust themselves off and implement changes that prevent a similar event from happening in the future.

Prepare for and conduct effective accident/incident investigations by doing the following:

1. Respond and Report. Accident response always comes first. Keep a written record of your emergency response plan in a special binder or clipboard, and keep it updated and available. Review accident response plans with all new workers and cover the topic regularly in safety and production meetings.

Set up an emergency plan that designates certain workers in each section or floor of the facility who act as fire or emergency wardens and take charge during an emergency. Train these people to handle an immediate crisis, including evacuating if necessary, providing medical aid, controlling fire, shutting down essential equipment, and gathering data on the accident.

Also, designate an employee who pays immediate attention to and manages the next phase of the response effort (outlined below).

- Notify family members about an injured worker quickly and compassionately.
 - Prepare a response in the event that local or national media show up.
 - Follow regulatory requirements for notifying agencies such as OSHA and state or federal environmental agencies.
 - Notify property owners and/or leasing companies as needed regarding personal injury and damage to real property or equipment.
 - Report the accident and submit claims to insurance companies. Do this early to get them working on your behalf.
- 2. Investigate.** Begin your investigation immediately after the initial emergency response. Pull together a small team of competent, trusted managers or supervisors that you task with completing a thorough investigation. To the extent possible, isolate the area where the accident occurred, preserving any conditions that could provide

information about what happened and identify what went wrong. Quarantine damaged equipment and materials in case they require further analysis. Quickly secure all related documents, such as work-progress records, time cards, equipment and building service logs, instrument readings, and video recordings. Immediately interview the individuals who observed the event and document the findings. Include anyone who might know facts about the event or the conditions leading up to it. Time is critical because conversations with others may influence a witness's recall of events.

It is important to assure everyone of the positive intent of these actions: You're not working to assign blame, but to ensure you know what happened and how you can prevent such incidents in the future. Form questions that gather specific details about the accident that the team can substantiate. Include some open-ended questions that collect witnesses' insight about why or how they think the accident occurred and how the company could have avoided it. Keep detailed notes of the responses given. The team should be thorough and document all of its findings.

3. Determine Cause. With that data in hand, the team leading the investigation must shift from collecting facts about the event to determining its true or root cause. A root cause is the underlying system weakness that—when corrected—can prevent this failure from happening again. In many instances, correcting it will prevent a variety of other potential failures. It's important not to shortchange this part of the investigation because the initial inquiry usually only reveals surface causes. Surface causes often include things such as hazardous conditions, unsafe practices, or other problems in the work environment that contributed to the accident or incident. Those things might not be the true cause of the event, which is why root

cause analysis is essential.

Examining surface causes to find the root cause is often a difficult and complex process that requires more investigation and examination than just an initial assessment. For example, let's consider a hypothetical situation where it appears as if a bearing overheated in a production machine, causing it to bind up and overheat the drive motor. The company has overlooked lubricating this part of the machine for quite some time. This condition should have tripped the

extinguisher. These are all contributing factors and do need attention. But additional questions will likely point to some underlying weakness—the root cause that led to those surface causes, such as the lack of preventive maintenance, infrequent inspections, poor employee training, or insufficiencies in documenting and dealing with work-rule violations.

Organizations investigating complex and significant events such as major industrial catastrophes use a variety of tools to complete an effec-

To find the root cause, simply repeatedly ask, "Why could this have happened?" In many cases, the first few answers will reveal surface causes, and the third, fourth, and fifth answers will point to the root cause or causes.

electric circuit breaker, but there were some wiring problems, and for some reason the breaker didn't trip. The wires caught fire, and the fire spread to some nearby material because someone left the electrical junction box open. When the operator first discovered the fire, he could not get to the nearby fire extinguisher because someone had placed a bale of material in front of it. From there, things just got worse. Fire and water from fighting the fire damaged the building, equipment, and inventory. The accident also disrupted production; an employee became injured during the evacuation; and customers were severely inconvenienced in subsequent weeks.

In this example, many different issues are at play. The question of what went wrong has many correct answers. Initial analysis of the surface causes might point to a bad bearing, a bad circuit breaker, an electrical panel left open, or blocked access to the fire

ive root-cause analysis. There are even accident-investigation firms with proprietary analysis systems that evaluate all these factors, and educational institutions that teach this topic in depth. For many businesses, however, a basic investigative approach is a good starting point. The company in our scenario could use a simple technique called "The Five Whys." Simply repeatedly ask, "Why could this have happened?" Consider each successive answer a potential cause. In many cases, the first few answers will reveal surface causes, and the third, fourth, and fifth answers will point to the root cause or causes.

4. Implement Corrective Action. Once you determine the true cause of an accident, the job is still not complete. Conditions won't improve unless you take what you've learned and make changes. Some changes may simply require modifying procedures or work rules or substituting or eliminating

certain materials that present hazards. Other changes may involve purchasing new equipment or modifying existing equipment by adding safety features such as more efficient controls, improved guards, automated features, warning signs, and alarms. You also might need to modify the work environment or provide better protective equipment for workers. Incorporate all of the

and increase profits and business success. One way to become more comfortable with the added expense is to quantify how much the accident actually cost, including time lost dealing with the accident as well as replacement and training costs. It all adds up—especially if you don't correct the problem. These costs will most likely recur or increase if you don't fix the underlying cause.

Back injury is a typical example

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changes into your written procedures and include them in new-hire and ongoing training materials as well as documented self-inspection procedures.

Some modifications could include big-ticket items and disrupt the status quo, which might be hard for you to justify, especially in this economic environment. Business owners and managers must become comfortable with the idea that such changes will help reduce the expense of accidents

of an accident where the cost of a corrective change may seem like a lot. A \$25,000 investment for a lifting device to reduce potential strain and sprain from manual lifting could seem like an unnecessary business expense when considered by itself. But when you consider that the expenses of just one back injury from improper lifting can easily exceed \$25,000, the cost of the device seems much more reasonable. Workers' compensation insurance would prob-

ably cover the medical bills and time lost, but as claims mount from this exposure, insurance premiums for upcoming years will increase significantly. Moreover, the hidden, noninsured costs of those accidents—such as hiring and training replacement workers—will continue to mount as well. Companies should not ignore these costs.

The impact of an accident on a scrap recycling company can be enormous. Things don't always go as planned, and bad things do indeed happen. We must discipline ourselves to try to anticipate and prevent accidents from occurring whenever possible and learn from every failure. The worst failure would be allowing a preventable accident to recur. I believe you can anticipate every accident and thus eliminate it before it happens. Though no one wants an accident to happen, learning from it is the next best thing companies can do. ■

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