



Power plant safety:
a wise business move

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Going to work in a controlled and safe environment is not an unreasonable expectation for any worker. In many occupations, a level of danger is expected because it is inherent to the job, but this is only more reason for companies to take employee safety seriously. The best organizations are those that understand that a safe workplace is not only the right thing to do for their employees, but also the right thing for their bottom line.

In recent decades, power plants and the power industry as a whole have made great strides in improving their employee safety records. This positive trend can be attributed partially to increased oversight and government regulation, but what is required to be in compliance with regulators and oversight committees is only the tip of the iceberg in terms of what is necessary to be an industry leader in safety.

The top performers in the power industry realize that implementing a safety program that becomes imbedded in the culture of the organization will not only benefit its workers, but also will help them become more competitive in the marketplace. These organizations realize that the monetary cost associated with implementing an effective safety program is far less than the indirect costs associated with a high frequency of injuries. The industry leaders in safety have identified the most common hazards, developed safety programs, successfully assessed these programs, and understand the correlation between employee safety and profitability.

Three hazards account for a large majority of the injuries: direct contact with electricity, fires and explosions of boiler equipment, and contact with hazardous chemicals.

Common hazards

In any occupation, a level of risk can always be expected while on the job. Some occupations are obviously more dangerous than others, and for many years, the power industry had a reputation of being one of the most hazardous workplace environments. The industry has worked hard to eliminate this reputation, and today it is a much safer work environment than in the past. According to OSHA, there has been a consistent downward trend in the number of annual fatalities and recordable injuries. OSHA reports that for electric power generation and distribution, natural gas distribution, and water sewage and other distribution companies, the number of annual fatalities has decreased from 73 in 2006 to 26 in 2009. The total rate of injury and illness cases has also declined during that same time period from 4.1 cases per 100 workers to 3.3.

Power companies typically have two sets of safety exposures: those that exist in the plant and those that exist in the field. Field workers are widely recognized as having the more hazardous occupation, but plant employees also sometimes work under dangerous conditions. Three hazards account for a large majority of the injuries: direct contact with electricity, fires and explosions of boiler equipment, and contact with hazardous chemicals.

Direct contact with electricity

Electrical shocks and burns account for thousands of injuries and many deaths every year in the power industry. Electrical injuries are generally attributed to electric shocks (electrocutions) as well as burns from arc flashes. The number of electric shock injuries has decreased significantly in recent years due to an industry-wide focus in safety awareness in this area. The same focus unfortunately has not been given to arc flash burns, and they continue to be a safety issue that results in nearly three quarters of all electrical work injuries.

The number of electric shocks has been minimized due to requirements that all individuals working in electrical cabinets must wear proper safety protection. This necessary regulation has reduced the number of injuries, but unfortunately, it does not go far enough. Other workers on the job site, who do not have direct contact with electrical cabinets and are not required to wear any protection, continue to be susceptible to burns from arc flashes, which can travel several feet.

In order to reduce the number of electrical related injuries, the power companies with the best safety records have implemented safety programs that go above and beyond what is required by OSHA. A few highlights of such programs include requiring all electrical workers to wear flame-resistant clothing, frequently conducting electrical hazard and awareness training, and requiring a safety review for every job profile to avoid complacency.

Boiler fires and explosions

Even with the advanced technology of today, boiler accidents in the power industry are still far too common and result in a large number of workplace injuries. The causes of these accidents can vary from equipment failure to operator error, but whatever the cause, the results of working with these machines can be catastrophic. Because of this, power companies need to focus on prevention and become proactive in reducing the number of accidents.

In order to reduce boiler-related incidents, it is essential to develop a boiler safety program that focuses on three key components: operator training, maintenance and testing of safety devices, and upgrading equipment when necessary. By simply focusing on these core areas, the risks associated with boiler fires and explosions can be reduced, and the cost of lost production time and repairing damaged property can be nearly eliminated.

Contact with hazardous chemicals

Exposure to hazardous chemicals is the cause of thousands of worker injuries every year in the power industry. Workers routinely come into contact with chemicals such as corrosives, oxidizers and solvents. To reduce chemical-related injuries, OSHA has developed and currently enforces hazardous chemical safety regulations.

OSHA's safety regulations provide the foundation, but they leave it up to the employer to identify what hazards exist, what type of safety equipment should be used, training on proper use of the safety equipment, as well as testing and maintenance. A commitment to reducing injuries due to chemical exposure requires a company to formally analyze its specific situation and develop a comprehensive safety program that focuses on these core areas.

Costs and benefits of safety programs

Organizational focus on employee safety can provide for higher morale and productivity in the workplace. This is due to the perception that the company truly cares about the health and well-being of its employees, thus creating a sense of pride for the organization. Increased productivity as it correlates to safety and morale is a difficult metric to measure, but forward-thinking organizations realize that it does exist and can therefore justify the costs of their safety programs as compared to the productivity benefits that they provide.

In contrast to measuring productivity as it relates to safety, the indirect costs of employee injuries are much more measurable. For example, a death or severe injury on the job site can shut down a project for extended periods of time while it is under investigation, and lost time equals lost money. Additionally, there is the cost of lost productivity of the affected employee, increased insurance premiums, cost of replacing the injured worker, cost of training the new worker and potential fines. These costs can be so severe that they may make it difficult to run a profitable organization.

Safety assessments

One of the key components to any safety program is the ability to monitor its effectiveness. It is essential that assessments be conducted as a way of measuring the safety program's compliance with both regulatory and company requirements. The purpose of the assessment is to measure both the performance of the safety program as well as identify opportunities for improvement.

Before a safety assessment is conducted, the company must first determine what tools should be used to provide the best overall picture of its performance. Risk management professionals in the power industry have developed various safety measurement tools. Some of the more common ones include workplace inspections, work observations, employee safety perception surveys, regulatory safety compliance audits and safety management audits. Companies with a clear understanding of the objective of its safety assessment can then determine what tools will provide the most accurate measurement.

- **Workplace inspections** are visual inspections of facilities, equipment and tools to identify hazards, physical deterioration and defects.
- **Work observations** are developed as a way to monitor, coach and train workers on safety while they are actually working on the job.
- **Employee safety perception surveys** are written evaluations of employees' opinions about the safety program and safety culture.
- **Regulatory compliance safety audits** are methods of assuring compliance with various safety regulations, standards and codes.

- **Safety management audits** are a comprehensive method of providing a company with an overall picture of the quality and effectiveness of its safety activities. Safety management audits include:
 - Review of documented safety policies and programs
 - Manager, safety specialist and supervisor interviews
 - Workplace inspections
 - Workplace observations

Putting it all together

Studies have showed that when employees perceive that safety is not a priority of the company, their behaviors and attitudes are adversely affected. This can be a recipe for disaster leading to increased workplace injuries, lower morale and decreased profitability. An investment in a safety program that focuses on hazard identification, training, prevention and assessment will not only help reduce losses and increase overall safety compliance records, but it could be the difference between being an industry leader or just another run-of-the-mill company.

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