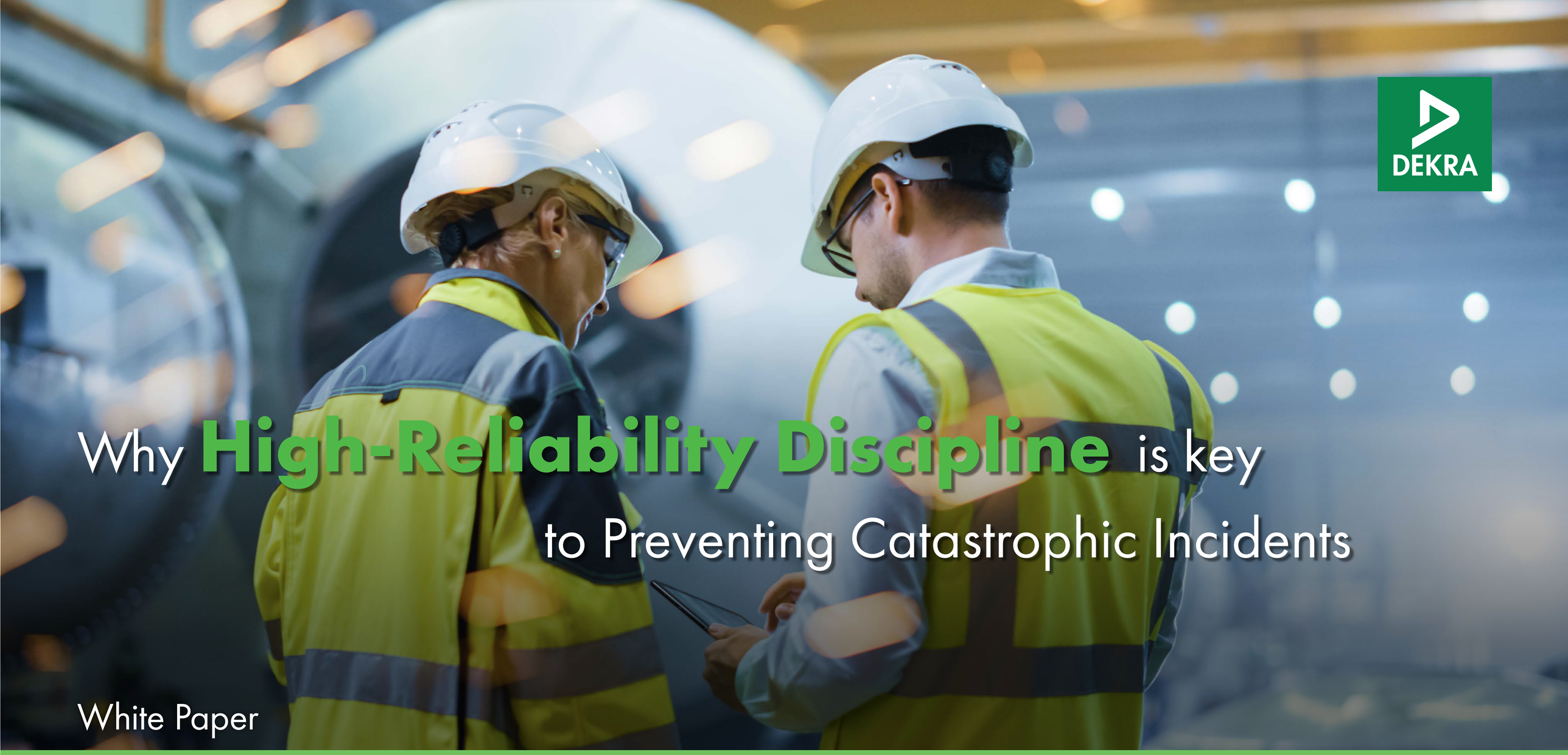


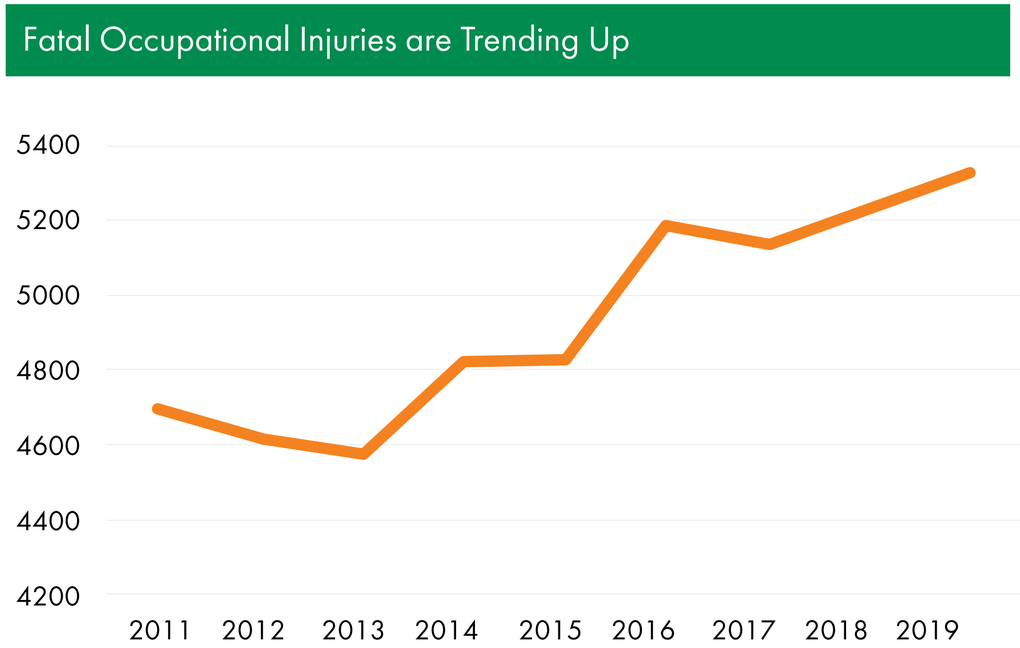
Why **High-Reliability Discipline** is key to Preventing Catastrophic Incidents

White Paper

Throughout the industrial age, complex manmade systems have evolved to provide the world with materials, fuel, food, and other resources. However, these systems are susceptible to catastrophic incidents that can threaten the health and safety of workers, customers, and communities.

Catastrophic incidents like fires, explosions, derailments, spills, releases, food contamination, etc. not only have a devastating impact on those impacted, but also put a stain on the company associated with the incident.

People Are Dying at Work More Than Ever



Source: Bureau of Labor Statistics

What is a Catastrophic Incident?

As defined by the National Response Framework, a catastrophic incident is "any natural or manmade incident, including terrorism, that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions."

Catastrophic incidents like fires, explosions, derailments, spills, releases, food contamination, etc. not only have a devastating impact on those impacted, but also put a stain on the company associated with the incident. Almost all business sectors are susceptible to having a catastrophic incident, especially if we modify the definition to include incidents that have catastrophic impact to an individual.

Catastrophic incidents are abundant in high-risk industries like Manufacturing, Utilities, and Oil and Gas.

Manufacturing. The risks of serious injuries and fatalities in heavy manufacturing comes from forklifts and moving equipment, the lack of proper guarding, heavy objects, the potential for falls, and more. According to the U.S. Bureau of Labor Statistics, injuries requiring medical treatment totaled 421,400 in 2019 for this sector; food manufacturing and fabricated metal products accounted for the majority of injuries that year.

Utilities. For utility workers, risks and fatalities tend to come from falls, fires, and contact with electrical power lines. The U.S. Bureau of Labor Statistics reports that recordable injury, illnesses, and fatalities cases totaled 12,000 in 2019 for this sector.

Oil and Gas. Oil and gas workers face risks such as vehicle accidents, explosions and fires, falls, confined spaces, and chemical exposures. Sadly, fatalities in this sector reached 127 in 2019. Recordable injury, illnesses, and fatalities cases totaled 6,200 in 2019.

What is Catastrophic Exposure?

Traditionally, companies in high-risk industries primarily focus on manmade incidents. These are incidents that result in life-altering outcomes to an individual or group, severe impacts to the environment, and deadly impacts to public health. The key to success is focusing on reducing and eliminating the number of catastrophic exposures.

But exposure is a state of vulnerability. A catastrophic exposure, therefore, is an exposure that has a reasonable probability of causing a catastrophic incident.

The important point is that a catastrophic exposure sets the stage for an incident, if all the other pieces necessary are in place. There are far more catastrophic exposures than there are incidents. A organization must constantly be on the hunt to identify and understand why these exposures exist and they must avoid developing a sense of complacency when they find that catastrophic vulnerabilities are identified without incident.

The key for organizations to avoid complacency is to embrace the five disciplines of High-Reliability Organizations (HROs). HROs anticipate catastrophic exposure by implementing high-quality decision making and controls.

The Impact of High Reliability Safety

When thoroughly investigated, catastrophic incidents are generally found to have happened after early warning vulnerabilities were not recognized, or recognized but not acted upon. These vulnerabilities represented catastrophic exposures.

If an organization is serious about reducing the potential for a catastrophic incident, they must embrace the following five disciplines:

Anticipation. Anticipation is about recognizing the early warning vulnerabilities that help you head off incidents. An organization strong in Anticipation will have mechanisms to capture information from a variety of sources that may be meaningful early indicators of change to exposure. Strong Anticipation is created by a culture that is always seeking indicators of problems.

Questioning. Questioning is about preserving the integrity of decision-making and action, specifically by protecting teams from the natural biases innate in all humans and groups.

Diligence. Diligence is about assuring consistent and reliable use of safety programs and processes. Even the best-designed hazard identification and control efforts are subject to failure or underperformance if the programs and practices are not followed as intended.

Resilience. Resilience is about developing the agility to recognize and quickly respond to exposures in real time. A resilient organization is able to react quickly in ways that prevent upset conditions from becoming catastrophic events, and then learning from the experience.

The 7 Factors Leading to Exposure

The fundamental framework for assessing an organization's potential for catastrophic incidents is the DEKRA Exposure Reduction Model (DERM).

DEKRA has identified seven factors that contribute to uncontrolled exposure in an organization; the DERM assessment is comprehensive in addressing each one.

Culture:
The value system that underlies the way the organization operates, including the importance of safety in everyday decisions.

Leadership:
The extent to which leaders at all levels leverage transformational safety leadership skills to collectively influence the culture.

Governance:
The structure used to communicate safety decisions and facilitate the orderly rollout of safety programs and initiatives.

Exposure Control Systems:
The safety systems that help employees identify and control exposures while ensuring these systems are fully utilized.

Performance Management Systems:
The extent to which safety is integrated into selection, development, motivation, and accountability of workers and other performance management activities.

Human Performance Reliability:
This element references methods the organization uses to overcome brain-centered hazards and combat human fallibility. It also includes how the organization treats errors.

Working Interface:
The point where work gets done, i.e., where employees, working conditions, and work processes and procedures intersect to produce value.

Learning. Great learning organizations are also characteristically self-aware. They make sure that even the newest employee knows the story of where the organization came from and where it is going. Continuously learning organizations are vigilant about preserving organizational memory and assuring that hard lessons are never forgotten or repeated.

The goal of High Reliability Safety is to understand why early warning vulnerabilities are overlooked and what can be done to improve the identification of and response to these signals. Before an organization embraces the five HRO disciplines, the organization needs to take steps to understand whether their climate, culture, leadership, and systems are aligned with developing a high reliability organization.

How DEKRA Helps

DEKRA offers a multi-faceted, science-based approach to catastrophic prevention and reduction. Using real data from real clients, DEKRA consultants have the tools at the working interface — the systems, the culture, the procedures, and the technologies — to help people want to make good decisions.

DEKRA helps leadership and their teams focus on specific interventions that ultimately reduce the risk of catastrophic events from taking place.

Conclusion

Leaders must understand that focusing attention to catastrophic exposure is an ongoing learning process that never stops. At the same time, they also must assure that organizational and technical systems, as well as enabling systems, support such continuous learning.

Everyone should be assured they will come home safe after a day at work. So leaders needn't wait for a life-altering or fatal incident before adopting the principles of high reliability. Customers, suppliers, and the public expect organizations to manage their safety performance beyond simply lowering the workforce injury rates.

Recognizing and understanding the seven factors of the DERM model will not only help an organization move toward high-reliability but will also help focus on exposures inherent in each of the seven factors. After all, top-tier companies evolve when key leaders rise to the challenge of adopting HRO principles and start to ask, "how can it happen here — let's do something about it."

Interested in exploring the catastrophic exposures in your organization?

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