ARE YOU REALLY REDUCING YOUR HIGHEST RISK EXPOSURE?
A Closer Look at Sustainable Serious Injuries & Fatality Prevention
The most widely-used and accepted safety report card is the measure of Total Recordable and Lost Time Injuries or TRI and LTI, respectively. According to these lagging indicators, most organizations, at least in North America, have made significant strides in safety performance in the past few decades with a growing focus on employee safety, hazard awareness and prevention. The International Association of Oil & Gas Producers database offers proof of the downward trend in TRI and LTI (Reference Report 459) over the last decade and the downward trend continues to present day (Figures 1 & 2).

But, before we proclaim victory, serious injuries and fatalities are trending in the opposite direction (Reference Report 459); an alarming trend is emerging (Figure 3). For the identical 10-year period, the number of fatalities has risen while the TRI has steadily declined.

How is this possible? What can be done to reverse this alarming trend?
BACKGROUND

One set of answers to this critically important riddle lies within our DuPont operations experience. To understand it better, it is important to turn the clock back to 1989, the year that the DuPont Electrical Safety Network (ESN) was born. Why is this a critical date? Because at that time, we first recognized this same alarming trend and took action to reverse it. The hazard of concern was electrical energy. In the 1980’s, DuPont’s safety performance continued to improve. However, during that same ten-year period, we had five employee/contractor fatalities as a result of contact with electrical energy. That was unacceptable.

Over time, the ESN would become the flag ship for many DuPont serious injuries and fatalities networks to follow, each focused on specific hazards. It has been over 22 years since DuPont has had an electrical fatality despite many changes to the global corporate profile. How did the DuPont ESN achieve such a dramatic change so quickly and sustain that improvement despite continued business transformations? Let’s find out.

Here is how Lanny Floyd, who has helped lead the DuPont ESN for the past 25 years, answered that question:

“In 1989, we made a commitment to reduce the risk of injuries to employees and contractors from electrical hazards. We engaged management and employees differently than we had ever done before. Goals for sustainable improvement were established, financial support provided and dedicated people empowered to change the electrical safety culture and reduce the likelihood of electrical incidents, injuries and fatalities.”

The overwhelming success of the DuPont ESN and other DuPont serious injuries and fatalities networks that followed provides us with a blueprint for success. But, like anything worthy of achievement, sustainable risk reduction does not occur without dedication and determination. To be successful, the effort needs to be effectively structured, designed and empowered. Leadership must recognize and value the importance of prevention, and dedicate proper resources and investment accordingly. Yet, we all know that simply providing resources and funds to address strategic goals, no matter how important, leads to mixed results.

What are the secrets to the DuPont ESN’s success? What is the process behind this success?
**STEP 1 HAZARDS IDENTIFICATION:**

Identify and inventory high-hazard activities, as they have higher potential to cause a serious injury or fatality.

Proper hazard identification is the first step in putting into action the foundational premise that not all risks and hazards are created equal. The DuPont serious injuries and fatalities prevention process utilizes a combination of three hazard identification methods tailored to the workplace and prevalent safety culture with its system sophistication. Often all three are used in the following sequence:

- Safety Data Review,
- Classification of Industry-Specific High-hazard Activities, and
- Hazard Field Audits.

When properly executed and thoroughly evaluated, these three hazard identification methods inevitably yield a clear list of high-hazard activities specific to a particular industry, operation and safety culture.

**STEP 2 RISK EVALUATION & REDUCTION:**

Determine the risk ranking and reduction for the identified hazards by properly implementing targeted methodologies.

The DuPont serious injuries and fatalities prevention process consists of two complementary risk evaluation methods and one primary risk reduction method. Let’s take a closer look at each one, recognizing that there are many tools and best practices associated with each, especially in the broad area of effective hazard controls.

**Risk Ranking**

This is the first of the two complementary risk evaluation methods, which consists of the prioritization of operational risks of each high-hazard activity using the severity of actual injury and potential injury as the main criteria. In most cases, a three tiered risk ranking is sufficient. These tiers are broken out as follows: Level 1 - High Risk, Level 2 - Medium Risk, and Level 3 - Low Risk. The Level 1 ranked risks have the highest potential to result in serious injuries and fatalities. These are our highest priority. For example, direct contact with high electrical voltage is a Level 1 Risk.

**Risk Validation**

The second risk evaluation method involves validating all hazards and their assigned ranking. That validation takes the form of an in-depth review of the existing top tier hazards and their relevant hazard controls, including all applicable rules, standards and procedures.

**Hazard Controls**

This primary risk reduction method is rooted in the proven fact that the most effective way to manage a risk is to eliminate it, and the second most effective way is to control it. Both of these approaches rely on proper hazard controls, which are a key component of any successful prevention program. The product of this risk reduction method is the hierarchy of hazard controls. This list of controls, ranked from most effective to least effective includes: 1) hazard elimination, 2) substitution, 3) engineering, 4) warnings, 5) administrative and training controls, and 6) Personal Protective Equipment (PPE).

Two critical administrative and training hazard controls worth mentioning due to their importance are hazard prevention standards, procedures & certifications and stop work authority.

**Hazard Standards, Procedures & Certifications**

This key administrative and training hazard control focuses on strengthening and optimizing prevention standards, rules and procedures for all employees and contractors working with or exposed to a particular high-hazard activity. Even with the best engineered hazard controls there remains a level of risk in most cases that needs to be minimized using effective standards, rules and procedures that must be properly enforced and followed to assure that all hazards can be safely mitigated. Products of this administrative and training hazard control often include properly designed, managed and executed standards and procedures, hazard-focused safety observations, hazard-focused injury management, and hazard focused tiered audits.

**Stop Work Authority**

Another key administrative and training hazard control is grounded in clear empowerment of employees by their line management. The stop-work-authority process associated with a particular high-hazard activity enables such empowerment. However, for this process to be effective, it must build on worker knowledge and awareness while tailored to each particular scenario.
STEP 3  EMPLOYEE AWARENESS & INVOLVEMENT:

Properly train employees and contractors on the essential hazard controls and serious injury and fatality related metrics, and effectively communicate and obtain feedback from the employees and contractors on an on-going basis.

Now that we have identified, evaluated and prioritized the applicable hazards and incorporated multi-layered risk reduction methods, including optimal tailored hazard controls, what is left to be done?

The answer to sustainable improvement is employee awareness and involvement. Two essential components of this include applicable training and effective communications, inclusive of feedback through frequent discussion and receptive listening. We at DuPont have seen that two-way communication throughout an organization is imperative, leading to heightened awareness increased ownership, and, crucially, sustainable results. Furthermore, effective training needs to be applicable and well managed. The DuPont serious injuries and fatalities prevention process is no exception. Some of the key items to communicate and discuss include:

- Actual and Potential Serious Injury and Fatality Incident Metrics
- Identification of New High-hazard Activities
- New Risk Reductions (Hazard Controls)
- New High-hazard Activity Standards & Procedures

Often when a particular hazard control is developed or modified, targeted high-hazard activity training is required to operationalize its implementation. This prevention training should include the critical components from the associated high-hazard activity identification, risk ranking, and hazard controls steps listed above for a particular hazard in question. It must clearly and emphatically emphasize the key barriers of protection between that specific hazard and the worker. The worker needs to recognize the risks associated with their job tasks, and understand the purpose and proper execution of required hazard controls. He or she needs be well aware of the presence of and potential consequence of these risks. Once again, our primary focus of this awareness training is on hazards that can lead to serious injuries and fatalities because when it comes to such, what you don’t know can kill you.

STEP 4  SUSTAINABLE IMPROVEMENT:

Assure that the prevention process includes a sustainable improvement component, which is closely linked to the previous three steps.

It is essential that the serious injury and fatality prevention process contain at least three triggers for re-evaluation and subsequent improvement, which include:

Systemic, Periodic Reviews of the Serious Injuries and Fatalities Prevention Process
This is a periodic evaluation of the process at all levels, and for all high-hazard activities. This step should be repeated annually, or more frequently, as deemed necessary.

Continuous Improvement
As part of daily operations, high-hazard activities need to be performed carefully, and associated preventative measures and hazard controls need to be continuously improved. The triggers for this continuous improvement are often audit, observation and incident investigation processes, as well as near misses and new hazard identification of any kind.

Management of Change
This is an as-needed review of select hazards and risks impacted by a change in facilities, equipment, technology, policies & procedures and/or personnel. It should be part of broader Management of Change (MOC) processes, which are embedded in the organization’s Process Safety Management systems.
SUMMARY

We at DuPont have come a long way in serious injury and fatality prevention, but we are always working toward improving our approach and our success within the evolving field of risk reduction. The key to our success is the approach that we shared above, which is grounded in our paramount Commitment to Zero initiative. If properly designed, implemented and sustained, the DuPont prevention process can significantly reduce operational risks, and most importantly, serious injuries and fatalities.

References:
- International Association of Oil & Gas Producers (Reference Report 459)
- ASSE Risk Assessment Institute
- Canadian Centre for Occupational Health and Safety, Risk Assessment

ABOUT DUPONT

DuPont Sustainable Solutions (DSS) is one of 12 DuPont businesses. Bringing customers the benefits of an integrated global consulting services and process technology enterprise, DSS applies DuPont’s real-world experience, history of innovation, problem-solving success, and strong brands to help organisations transform their workplaces and work cultures to become safer, more operationally efficient and more environmentally sustainable. For additional information about DuPont Sustainable Solutions and its commitment to protecting people and the environment, please visit: www.sustainablesolutions.dupont.co.uk

DuPont (NYSE: DD) has been bringing world-class science and engineering to the global marketplace in the form of innovative products, materials, and services since 1802. The company believes that by collaborating with customers, governments, NGOs, and thought leaders we can help find solutions to such global challenges as providing enough healthy food for people everywhere, decreasing dependence on fossil fuels, and protecting life and the environment. For more information about DuPont, please visit: www.dupont.com