



Putting science to work
SAFETY MANAGEMENT

SAFETY MANAGEMENT CONSULTING

Today, energy companies have many good reasons to embrace safety as a strong core value. The global energy industry has become increasingly competitive in recent years.

Public sentiment toward such large and highly visible companies now reflects the growing desire for these corporate citizens to become increasingly more socially responsible.

However, when safety is quoted by company leadership to be a core value, what does it really mean? Is this core value “felt” by the organization at large? Is this a core value that is shared by all employees and contractors, and is it exercised with true passion? Or should such proclamations of safety as a core value be viewed with skepticism?

Each day around the world, many employees and contractors are injured while at work. In addition, operations are adversely affected when injuries to people also result in lost production from operations and damage to property, nearby communities and perhaps even to the environment. More broadly, families, friends and communities can also be affected. Harm to people and damage to property, communities and the environment can significantly raise the stakes for company management by negatively affecting company owners and even society at large.

At DuPont, we believe that the management systems, processes and culture that protect people can be extended successfully to the protection of property and operations. Perhaps the time has come to extend the increasingly popular challenge, “No one gets hurt today”, to a broader and ultimately more impacting challenge which is, “No one gets hurt, no property gets damaged and no operation gets unnecessarily interrupted today.”



Good Safety = Good Business

Over the years, DuPont has seen how improved safety, including preventing injuries, saving lives and enabling a more productive workforce and more productive plants, also enhances a company's bottom line. That's because when resources are more efficiently used, employee turnover is reduced and manufacturing plant/company operations run more efficiently with enhanced profitability. All of these factors demonstrate the key truth that Safety Excellence means Business Excellence.

No company can excel until it makes safety a way of life – and a way of doing business.



The annual cost of injuries and incidents is significant. Some costs are clearly visible. For example, the National Safety Council estimates that in the U.S. the average annual cost of injuries exceed US\$100 billion. This estimate includes costs associated with insurance administration, loss of wages, medical treatment, uninsured items, and incident investigations and reporting. In addition, indirect costs such as lost worker productivity, overtime, poor quality of goods and services, and damage to customer relations and public image can be 2-5 times the direct costs.

These costs can be multiplied again when one considers the cost to repair and replace damaged equipment and the opportunity cost of foregone production resulting from an unexpected disruption of operations. Often, many of these indirect costs are treated as hidden costs and as such represent a significant burden on the “bottom line” of many organizations.

As a global operating company with a global consulting services business focusing on Workplace Safety and Operational Excellence, DuPont is well positioned to observe macro-trends that are changing the business environment. Increasingly, DuPont is seeing that safety and operational excellence are top priorities for growth-oriented companies around the world. In working with clients, DuPont also sees many companies continue to struggle with profitability and sustainability while experiencing avoidable injuries to people and damage to equipment and assets.

As our world becomes more connected and competitive, and as societal expectations of employers and contractors continue to rise around the world, DuPont expects the trend toward safety and operational excellence to continue well into the foreseeable future. This trend will be fueled as more and more companies realize that in the long term, business excellence and safety excellence are closely related and not in conflict.

The Foundation for Excellence

In DuPont experience, the vast majority of injuries are caused when people exhibit unsafe behavior at the workplace.

For many managers, the occurrence of unsafe behavior among workers can be confounding. In some instances, there is a sense that the injured person "should have known better." However, these simple views ignore the true complexity of the workplace that is revealed when one gets hurt.

To find the root cause, one needs to consider the following:

- "How many times in the past has the worker been in a similar situation without being hurt?"
- "Did the worker fully understand all of the risks and probabilities being faced?"
- "Were employer expectations for the personal safety of the employee a top consideration and well known to the employee?"
- "What did the supervisor do [or not do] to help ensure the employee's safety?"



When incidents and injuries occur repeatedly, we know that common sense and the right People Protection Equipment are not sufficient to protect people, property and operations. While unsafe behaviors can be explicitly demonstrated by individual workers, another form of unsafe behavior is the absence of visible leadership – from supervisors and management.

To establish a strong foundation for safety excellence, including reducing the number of incidents and injuries, a safety management system is essential. DuPont has developed and uses a 22-element safety management system that addresses both the “hard”, technical aspects of safety management, as well as the “soft”, people aspects. The “hard” elements relate to the critical aspects of a company’s core technology as well as its facilities. These elements are absolutely essential to an effective safety management system for a hazardous industry. The “soft” aspects address the critical people-related issues associated with leadership for safety performance, organization for critical support and leverage and implementation in a way that drives worker involvement and continuous improvement. The 22-element system from DuPont is a powerful approach encompassing leadership, organization and operational components that guide organizations on a journey to zero injuries and incidents.

These elements include:

- Strong, visible management commitment (VMC)
- Clear, meaningful policies and principles (MPP)
- Integrated organization structure (IOS)
- Line management accountability and responsibility (LNA)
- Challenging goals, objectives and plans (CGP)
- Supportive SHE personnel (SHSP)
- High standards of procedures and performance (HSP)
- Continuous training and development (CTD)
- Effective two-way communication (ETC)
- Progressive motivation and awareness (PMA)
- Behavior and observations and audits (BOA)
- Thorough investigations and reports (TIR)
- Personnel changes
- Contractors safety management
- Quality assurance
- Pre-start-up reviews
- Mechanical integrity
- Changes in facilities
- Process information
- Changes in technology
- Risk assessment and process hazards analysis
- Emergency response and preparedness

Responsibility is clearly placed in the hands of line management, yet all employees are required to act in a safe way as a condition of employment. Training, auditing and correcting deficiencies immediately are intrinsic to the safety culture. There are no acceptable excuses for bad behavior.

Safety as a Core Value:

The Entry Point to Sustainable Excellence

Since the early 1800s, when E. I. du Pont introduced safety measures into novel construction techniques in his gunpowder mills such as the daily purging of matches from workers' pockets, DuPont has built an extraordinary reputation as one of the world's safest companies. Throughout two-century history of DuPont, it's core values have remained unchanged – safety, environmental stewardship, ethics and respect for people.

The Company today has a single corporate safety philosophy: All incidents are preventable... the Goal is Zero.

At DuPont, the company's safety culture is founded on a core set of guiding principles:

- All injuries are preventable.
- Management is responsible and accountable.
- All operating exposures can be controlled.
- Safety is a condition of employment.
- Employees must be trained to work safely .
- Management must audit.
- Deficiencies must be corrected.
- Off-the-job safety is an important part of the safety effort.
- Safety is good business.
- Safety must be integrated as a core business and personal value.

DuPont experience has also shown that safety and protection can be a strategic business value that links reduced workplace injuries to improved business performance. By leveraging it's over 200 – year history of safety and operating knowledge and experience, DuPont now helps other leading-edge companies and organizations make sustainable improvements in their insurance and operating costs, security, productivity, product quality, public image and employee morale.



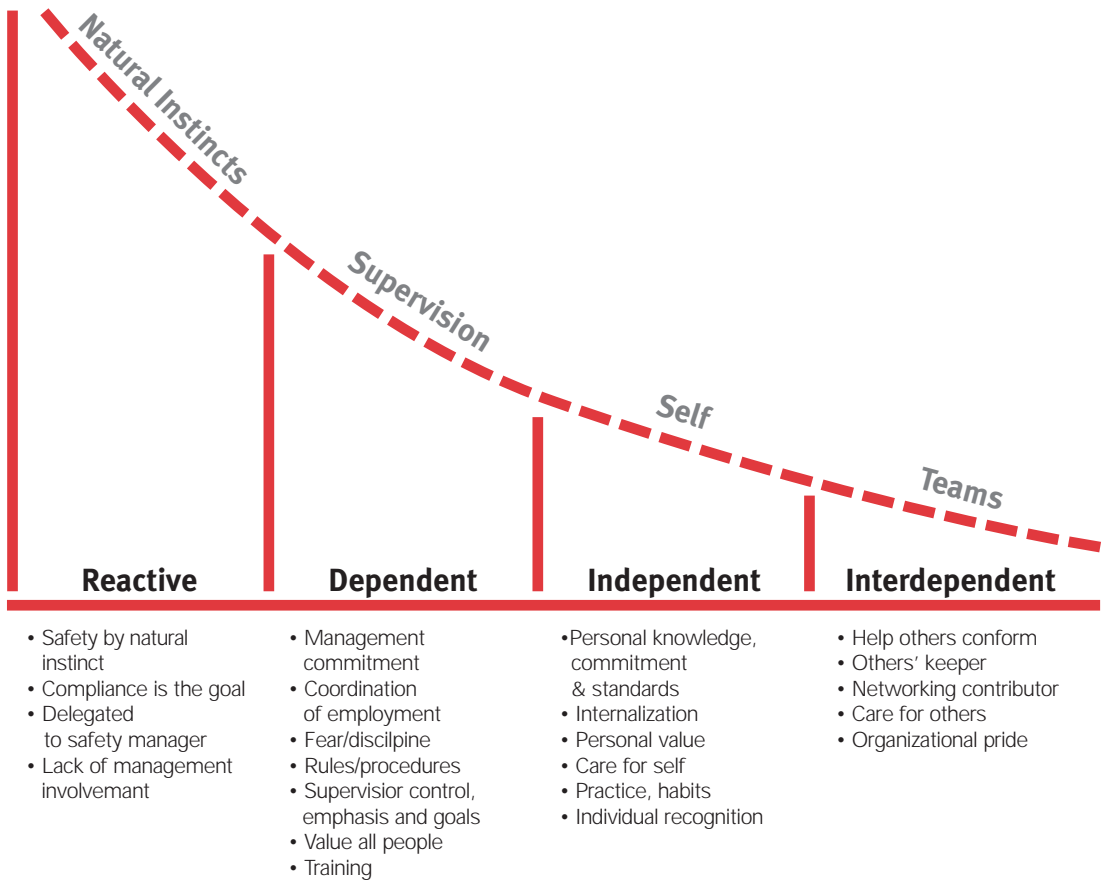
Safety as an Independent Culture

DuPont clients have seen significant drops in workplace safety incidents as they, with DuPont assistance, move from reactive approaches to safety to developing an interdependent safety culture. In an interdependent safety culture, all employees are responsible for safety and the safety of all employees is equally important.

The goal is to foster in each employee —whether it's an executive, manager, supervisor or worker— the attitude that doing one's job safely is an integral component of doing it well, and that safety is not a task which can be accomplished without helping and being helped by one's fellow employees.

Individual contributions to safety can range from efforts on the part of a factory worker to come to work alert and well-rested so as to avoid errors in judgment, to work schedule adjustments by a supervisor which ensure that workers do not become dangerously bored or tired on the job, to the redesign of the physical facilities and task structures by engineers (with direction from upper management) in order to help workers remain engaged in their work. Each of these components is necessary for attaining the overall goal of creating a safe and efficient workplace.

The following DuPont Curve graphically illustrates the changes that occur as a company moves from reactive to dependent to independent and finally interdependent within an organizational structure.



Felt Leadership and Safety

In any organization, there will be people on the left side of the curve and on the right. It is quite common to have individuals, specific assets and even business units at different stages of development within the same organization.

This is why leadership needs to drive the safety culture change – both collectively and individually.

While safety is a shared value by all employees in an organization, it needs to be actively embraced by leadership. This idea of “felt” leadership is integral to building a safety culture.

DuPont keys to good safety leadership include the following:

Visible Management Commitment

- Management's commitment to safety is seen and felt by all employees as genuine and deep.
- Safety is always considered in significant management decisions with the same priority as quality of service, cost and employee relations.

Clear Meaningful Policies and Principles

- The policy and principles inspire individuals by reflecting a unifying commonality, indicating the priority of safety and providing a clear basis for decisions.

Safety Goals and Objectives

- Safety goals, objectives and plans are a prominent part of the standard operating procedures.

High Standards of Performance

- High standards, applicable to all safety matters, are obvious to all employees.

Safety is Hard Work, but Rewarding

Embracing a safety culture is hard work. Unlike driving other business parameters, champions of safety may face the added challenge of having to help the workforce see safety performance as having the same level of importance as production, cost or schedule.

Reaching the goal of zero will occur only when all stakeholders are pulled together by a common purpose or vision. The common goal for both employees and contractors in the oil and gas industry is the wellness and safety of all workers.

Oil and gas company executives will ultimately achieve the level of safety excellence that they demonstrate they want. It is the responsibility of business leadership to embrace and drive the safety culture change, and to help their organizations move to a position of widespread operating discipline. Once a safety culture becomes established, it will be clear that safety leadership at the management level was a key factor in ultimately allowing more workers to come home safe to their families every day, and for company owners to have greater confidence that business performance is being driven for the positive.

Significant differences can be made by embracing safety leadership as a strategic business value. In the conduct of business in a global economy, safety is not optional. It is the core of a real business. And in the conduct of civilization, safety is also not optional. It is a necessary human value.

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