



SAFETY CULTURE IN CHEMICALS

**Embracing the
generational shift
to help enable
safe production**

INTRODUCTION

AS EXECUTIVES OFTEN POINT OUT, SAFETY IS OF PARAMOUNT IMPORTANCE IN THE CHEMICAL INDUSTRY—AND COMPANIES HAVE MADE SAFETY PERFORMANCE AN AREA OF INTENSE FOCUS.

But safety improvements do not always come easily. While new technologies and process improvements have led to greater efficiency and higher quality in plants, safety-improvement efforts have essentially made little, if any, headway.

One of the keys to improving safety is the creation of a more effective safety culture—one that does not emphasize production over safety. Today, companies have the opportunity to create such cultures by refocusing leadership, rethinking their approach to safety-related communications and leveraging advancing digital technology.

In addition, they will need to understand and meet the emerging challenges inherent in changing workforce demographics, as younger workers replace older workers. In the end, by building an effective safety culture, chemical companies can not only reduce injuries, they can also strengthen production, increase operational agility and move ahead on the journey to becoming a high-performance business.

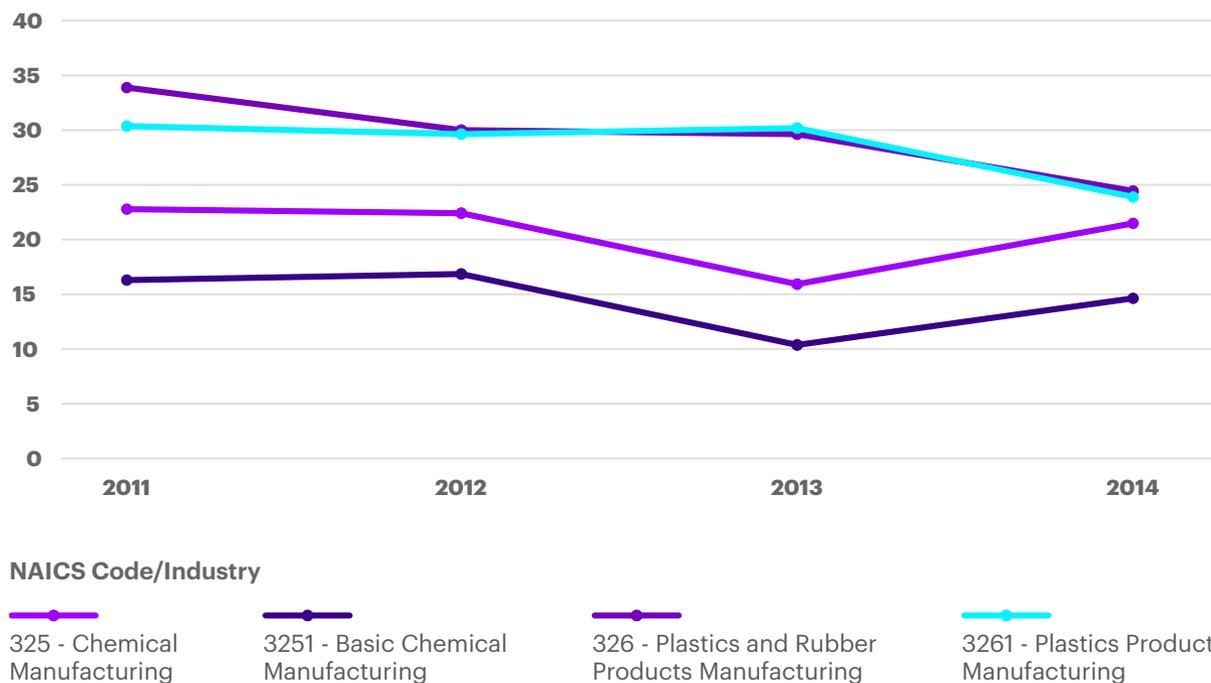
UNDERSTANDING THE CHALLENGES

Over the years, the chemical industry has brought increasingly sophisticated safety-related processes and technologies into its plants. In spite of those efforts, however, safety improvements have remained relatively stagnant.

According to the U.S. Bureau of Labor Statistics, from 2011 to 2014 the number of reported fatalities and recordable injuries in the chemical manufacturing and plastic product manufacturing industries have both remained relatively unchanged (See Figure 1 and Figure 2).

Figure 1. Non-fatal Recordable Injury Rates by the North American Industry Classification System (NAICS)

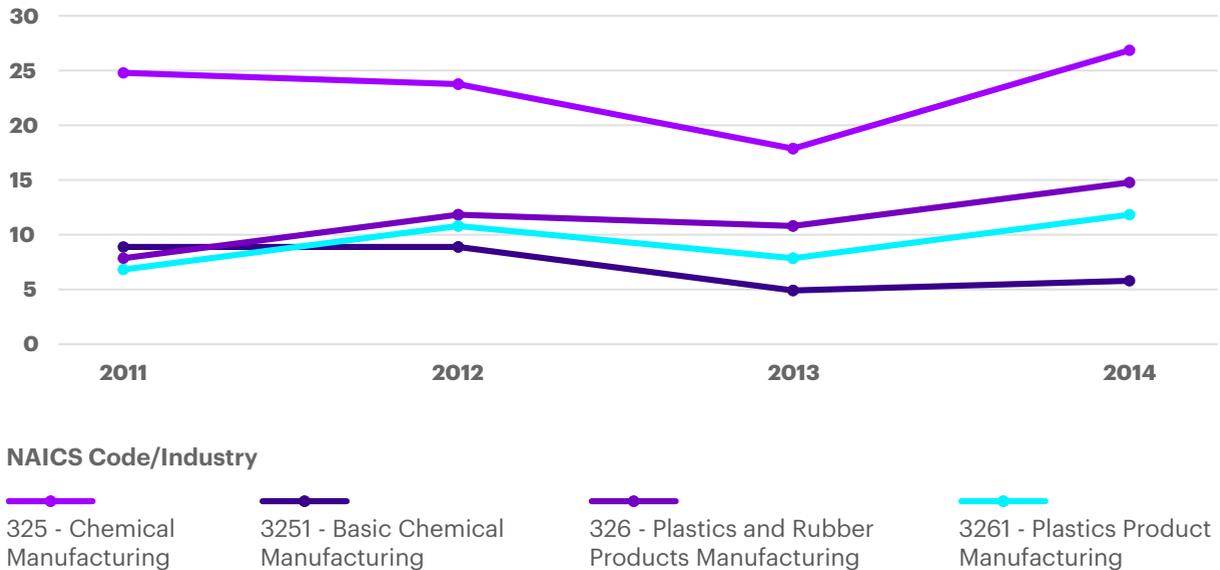
Incident rate per 10,000 full-time employees (FTE)



Source: U.S. Bureau of Labor Statistics

Figure 2. Number of Fatalities by the North American Industry Classification System (NAICS)

Total number of fatal injuries



Source: U.S. Bureau of Labor Statistics

One factor behind this inability to move the needle is the nature of safety culture—that is, the collective behavior and norms of employees involved in production. Because safety relies so heavily on following correct procedures, culture is a dominant driver of safety. However, the safety culture found in chemical plants today is not always effective.

In essence, safety culture and the overall business culture are more or less separate. Too often, chemical companies have inadvertently created two distinct

perspectives that can be summed up as “safety versus production.” The workforce sees this as a polarized, either-or choice, with the need to meet production targets conflicting with the need to complete work safely.¹ In that conflict, production typically takes precedence. The result is the creation of a cultural norm focusing on “doing whatever it takes to get the job done.” That in turn can lead to behaviors, such as rushing and taking short cuts, which contribute to the increased risk of an incident occurring on the job.

Much of this perspective flows from higher up in the organization, through the kind of messages that management sends to the workforce. Safety is usually a core value at chemical companies, but executives and managers often fail to “walk the talk” and reinforce that value. Instead, their actions tend to emphasize—and reward—production performance.

Thus, written communications from executives might highlight the importance of safety, but middle management, with an eye on maximizing production, does little to reinforce positive safety behaviors in the plant. Safety is said to be paramount, but workers can see that the real priority is getting product out the door.

THE CHANGING WORKFORCE

Creating an effective safety culture is only getting more complicated, thanks to the growing number of retiring baby boomers. Many chemical industry workers have reached or are close to reaching retirement age. In addition, there is pent up demand for retirement that may accelerate that trend. During the recession of a few years ago, financial realities drove a significant number of workers to remain on the job after the traditional retirement age of 65. But that has been changing, and from 2010 to 2014 the percentage of baby boomers reporting that they are retired increased from 10 percent to 17 percent.²

There are more retirements to come—and many are going to happen sooner rather than later. In recent American Chemistry Council (ACC)-Accenture research, 40 percent of surveyed chemical industry executives said that a significant portion of their workforce (20 percent to 40 percent) is eligible for retirement in the next three to five years.³

As these older workers leave, they are taking their experience-based knowledge of operations with them—potentially affecting both production and safety. Industry executives in the research noted the impact that this shift is already having. For example, 28 percent said that employee turnover over the last year had required their companies to put in more effort to maintain safety.⁴ In related issues, 37 percent said that it had led to more effort being needed to maintain quality, and 38 percent said it had increased costs due to unplanned operational issues.⁵ And, consider the devastating impact of a recent explosion at a global chemical company facility. Tragically, lives were lost and many people were injured. Several production and derivatives units were shutdown, resulting in a hit to the company’s annual earnings of over five percent.

To a great extent, the industry is still in the early stages of the baby boomer retirement wave, and such challenges are likely to grow. Overall, 86 percent of respondents in the ACC-Accenture survey said that profitability in the chemical industry will suffer if those talent losses are not addressed in the next five years.⁶ Meanwhile, those departing workers will often be replaced by millennials, who in 2015 became the largest age demographic in the overall labor pool.⁷ By 2025, it is expected that they will make up 75 percent of the global workforce.⁸ That means that the industry will see a large influx of newcomers who need to be brought up to speed on safety and operations quickly—at the same time that

potential older coaches and mentors are retiring in large numbers.

What's more, millennial workers bring a distinct set of attitudes to the table. As a group, they are well educated and technologically savvy. But they also differ from older workers in their expectations about work. They tend to want more feedback and acknowledgment, and they value flexibility and work-life balance. Instilling a safety culture in this increasingly important segment of the workforce will require new approaches to communicating about and supporting safety. Just doing “more of the same” is not likely to be effective.

MOVING TO SAFE PRODUCTION

To improve safety performance, companies need to address these issues—and they can start by resetting their approach to shaping safety culture. Companies need to integrate production with safety and instill an understanding that they are inseparable. Executives, managers and workers should be made to understand that improved safety leads to fewer incidents, which in turn drives reduced downtime and opens the door to the achievement of production goals.

To help make that shift, leaders and managers should find ways to be more consistent in their messaging of, and actions promoting, safety. Rather than simply pay lip service to safety in meetings and emails, they can engage employees on the topic more frequently; explain that safety supports better production; and make sure that safety concepts are embedded in training and operational procedures. Leaders then need to back up those words with actions that keep safety in the foreground— including recognizing people who contribute positive and innovative ideas, and discouraging employees from taking risks just to speed up operations—even as they push to meet production goals.

Meanwhile, when it comes to the generational shift, chemical companies have an opportunity to embrace new ways of engaging younger workers. In the recent ACC-Accenture research, 76 percent of industry executives agreed that their companies needed to change workplace

safety programs, which generally had been developed by baby boomers, in order to better serve millennials. Those new approaches will need to meet millennials' interest in frequent interaction, collaboration and flexible processes.

ENABLING CULTURE WITH DIGITAL TECHNOLOGY

Digital technology can play an important role in fostering an effective safety culture. Automation and the growing use of sensors and the Internet of Things in plants can help reduce risk, of course. To take advantage of the growing flow of operational data produced by such technologies, some companies have implemented mobile dashboards showing key safety and operational metrics. With these, frontline supervisors can make data-driven decisions to identify risks and respond quickly to problems, and have timely discussions with workers about safety issues and their impact on production. And the mere fact that the dashboards include safety and production information together underscores the new cultural norm that the two areas are interconnected.

Today's digital technology can also enhance safety communications—and especially, enable companies to engage younger employees. For example, millennials are accustomed to communicating through channels such as email, text messaging, social media and mobile technology. To reach them, companies will need to take advantage of such tools to provide more frequent, more real-time and more interactive communications. Classroom meetings and long memos will be increasingly ineffective. The same goes for onboarding and training. Here, companies can take advantage of interactive online and on-demand learning delivered in small “segments,” often at the point in time when it is most relevant to the worker.

ACCENTURE HAS COLLABORATED WITH LEADING COMPANIES IN THE RESOURCES INDUSTRIES TO DEVELOP AND IMPLEMENT TWO REVOLUTIONARY SOLUTIONS THAT SUPPORT THE INTEGRATION OF SAFETY AND PRODUCTION.

The first is our [Digital Turnaround Service](#). It leverages radio-frequency identification (RFID) technology and a pervasive wireless network to track the location of workers and equipment during scheduled maintenance events, improve the ability to mobilize personnel and equipment to needed areas, and monitor worker fatigue through data analytics.

The second is the Accenture Life Safety Solution. This solution integrates real-time atmospheric monitoring with worker location tracking to verify that employee working conditions are within identified safe-working parameters. It also includes man-down and panic-button functionality that summons emergency assistance when needed.

Digital technology is enabling a growing range of tools that can be used to reach workers. For example, “gamification”—the application of online game mechanisms such as interactivity, social interactions and competition—can be used to support safety communications and training in a way that engages and motivates workers.

It is important to note that the value of richer communication goes beyond helping millennials feel more comfortable. When there is a lack of real-time, multimedia communications, responses to issues can be

slow in coming—and employees may interpret the lack of acknowledgement or action as meaning that the safety issue is not that important, or their concern is not valid—reinforcing the more polarized view of production versus safety. Slower communication can also impede productivity and increase the probability that an incident will occur because workers are not getting instantaneous feedback about escalating issues. More immediate feedback, on the other hand, underscores the importance of safety issues in the eyes of the company.

PASSING THE TORCH

With the generational changes taking place in the workforce, the transfer of operational knowledge will be critical to safety. Younger workers will need to know the lessons learned through experience about what it takes to make quality products efficiently and safely. Not surprising, chemical industry executives in the ACC-Accenture research identified knowledge transfer as one of their top three workforce concerns.

Here again, technology can help, from knowledge bases to automation that embeds workers’ knowledge into processes. And new tools are continuing to emerge in this area: inexpensive virtual- and augmented-reality systems, for example, can be used to guide plant technicians through the steps involved in replacing a piece of equipment.

Technology is not a panacea for capturing knowledge, however. Older workers typically have insights into less-formal practices that are undocumented, but nevertheless important to safe operations. Chemical companies can tap into that knowledge pool by pairing up senior workers and millennials on projects, in mentorship programs, and so forth. They can also consider having soon-to-rotate workers spend their last few months with the company sharing their knowledge through forums, videos and podcasts.

THE SAFETY RIPPLE EFFECT

Increased safety is an important goal in and of itself, but instilling a sound safety culture will have a significant ripple effect in other areas. As mentioned above, fewer safety-related disruptions mean greater efficiency in production. Establishing real-time interactive communications with workers builds trust and morale in the workforce because people can see that the company is committed to safety issues. The use of advanced technology in communications can also enhance employee engagement, especially among millennials. And it can provide a network that enables the company to respond more quickly to operational problems in general—helping to make manufacturing more efficient and agile.

Ultimately, safety is a vital ingredient in the formula for high performance in the chemical industry—and effective safety programs depend on having the right culture. Chemical companies have an opportunity to build that kind of culture by bringing leadership, communications and technology together to support a “production and safety” mindset that can be sustained as the industry and the workforce evolve.

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