

Process Safety: Get Ready for 10 Changes

By Terry L. Mathis

The practice of safety has changed and matured significantly in the chemical industry over the past several decades and will continue to evolve. Taking a glimpse into the future based on current trends is a good place to start a dialogue on what those changes might be. Preparing for the future is never an exact science but even an inexact attempt is better than no preparation at all. That said, let me outline some trends I see based on my extensive consulting and field experience in chemical safety that might impact you.

The Growing Importance of Safety Excellence

First, and possibly foremost, safety excellence is growing in its critical importance to the chemical industry. Safety mishaps have always been an expense and a negative influence on production - but in the future they also may provide the basis for more and more stringent legislative and regulatory actions. The past decade has seen safety regulatory agencies turn from a cooperative stance to an enforcement mentality, increasingly focusing on catching and punishing the worst offenders rather than encouraging the best performers.

Regardless of any changes the Trump administration makes, organizations will seek to stay off the radar screen of regulatory agencies. The best way to do this is to have excellent lagging indicators for safety. Even though we are discovering the limitations of lagging indicators in helping to improve performance, they remain the holy metric to regulators. The very nature of lagging indicators will tempt some chemical manufacturers to manipulate the numbers; regulators will look closely for such issues. Organizational leaders will begin to take a more active interest in such metrics as they hear of others in their ranks being punished for offenses they could once blame on subordinates. Safety performance and measurement will become an issue for the boardroom as well as the safety department. Savvy leaders will turn to their engineers and other subject-matter experts (SMEs) for advice on improving performance to shape lagging indicators.

The Trump Administration most likely won't reduce the emphasis on safety but will change the methods for achieving it. Expect regulatory agencies to reemphasize former programs such as the Voluntary Protection Program and others that encourage a partnership between regulators and organizations to further safety efforts and technologies. Such programs increase the positive reinforcement for excellence and reserve punishment for more willful and flagrant offenders. Any changes from the new administration won't be immediate and could meet with resistance from lawmakers that could lead to even more delays. So, organizations can hope for a relaxing of punitive measures in the future but should stay mindful of current realities.

Other Key Drivers

The enhanced emphasis on safety will also be driven by organizational leaders who will focus more seriously on what is being labeled "Major Operational Risks" or "MORs." These risks will include safety issues, but also major environmental and financial risks. MORs are the risks that could potentially cost the whole business. As such, they are at the top of the priority list for stockholders, directors of publicly held firms and owners of private enterprises. Very few organizations turn over the management of these risks to the safety department. Some assign top executives to manage each of them. Others are

forming teams or committees to oversee the risk management efforts. Chemical engineers will be key members of such committees and their technical knowledge will be necessary to successfully manage MORs.

Insurance companies are driving the focus on MORs as well. As they sense the high potential impact of such events on traditional coverage, umbrella coverage and public relations, they attempt to help their covered organizations protect themselves. As of this writing, there is no clear single path to such protection most major insurance carriers agree on, but there is a growing list of suggested steps beginning to show similarities. Many of these steps closely resemble or exactly match safety efforts. This expansion of safety efforts from simply preventing occupational injuries to preventing other high-impact events will have one of two effects: It will either expand the traditional definition of safety and greatly impact the scope of the safety department, or it will change the organizational design of overall risk management bringing it back closer to the boardroom and less toward being a delegated assignment.

Additionally, more of the major players in the chemical industry will insist on safety excellence from their contractors and suppliers. Most of the major players are either very good at safety or have convinced themselves they are. As such, they don't want to dilute their safety programs and cultures by mixing in contractors and suppliers with lower levels of safety performance. Good safety programs and metrics will not only be desirable, but necessary to get contracts with the big boys. Major petro-chemicals will use safety as an additional screening criteria to select those with whom to contract. This is already being done by some on a lower level, but it will increase and become more stringent. In the next few years, no other area of excellence will compensate for poor performance in safety when bidding on projects or supplying the majors.

Middle men who have placed themselves between the majors and the contractors will become the absolute gatekeepers for contractors. Their already strong position will grow even stronger as the major firms divest themselves of internal expertise and outsource the screening of contractors exclusively. Many of the majors will also begin to require their gatekeepers to not only select the contractors, but orient and train them as well. This has already begun and has the potential for either improvement or disaster. It remains to be seen exactly how the companies that are screening contractors will handle the additional responsibilities their clients want them to assume. But this could mean chemical contractors may have a new set of standards to address in the near future.

The Big 7 Universal Safety Trends

In addition to the growing importance of safety and the expansion of preventative efforts from traditional safety to MORs, there are seven other trends emerging.

1. The very definition of safety excellence will be reframed from zero accidents to sustainable and repeatable value. Lagging indicators will not disappear, but leaders will realize excellence is in the process that produces it and not just in the results. The goal of safety will be defined as adding value to the safety efforts. Both the use of new "big data" analysis and traditional trial-and-error will determine the algorithms between value-add activities and results. The leading indicators safety professionals are seeking will turn out to be these activities that add value to the safety efforts. The definition of safety excellence and the approach to achieve it will move significantly from reactive to proactive.

2. Organizations will move from a traditional programs approach to a much more strategic approach to safety. The increasing importance of safety will drive organizational leaders from a programmatic to a strategic approach. The detail work of safety will continue to be delegated, but the strategy will not. Leaders will find it necessary to develop safety strategies to synergize with business strategies rather than compete with them. The proverbial battle of 'production versus safety' will be fought in the boardroom by senior leaders rather than on the shop floor by workers and supervisors.

Such strategy will result in some basic changes to organizational structure. What was once the almost exclusive duty of the safety department will be divided among other organizational silos according to its nature. This means safety engineering will become the major responsibility of the engineering department. The safety department will serve as SMEs to advise engineering about regulatory details, but the real work of design, preventative maintenance and operational standard operating procedures development will fall back to the technical experts who best understand the processes.

3. Safety leadership will be held by organizational leaders and not delegated to safety subject-matter experts. The work will still be delegated but not the leadership. The development of safety strategy mentioned above will be the re-entry point of leaders into safety. Addressing MORs will also be viewed as a management responsibility that cannot be completely delegated. Leaders will break past the past silos that divided safety from production and the potential for truly "safe production" will begin to become a reality.
4. Safety professionals will progress from grunt (doing all the work) to guardian (managing the work) to guru (becoming the advisor and resource for the line managers and supervisors who will manage safety as a part of production). As leaders take back the strategic responsibilities of safety, the daily oversight of safety in the workplace will begin to be more a part of main-stream supervision. As this happens, safety professionals will evolve from managers and supervisors to subject-matter experts and advisors, to both leaders and supervisors. Likewise, some engineers will find themselves active members of interdisciplinary safety committees or teams which will replace the traditional safety-only departments. Safety will become an aspect of everyone's jobs and will find its way more and more into job descriptions and responsibilities. This will not only impact engineering but production, training, logistics, HR and other functions whose expertise is a necessary part of safety excellence.
5. A new kind of safety consultant will emerge who will help assist the organization to customize solutions rather than offering a universal program. As leaders become more strategic, they will necessarily become less programmatic. They will not shop for the newest consultant-developed program, but will look for strategic partners with corporate problem-solving skills. Improvement efforts will need to be fit for purpose and systematically woven into the fabric of the culture. Consultants who can fill this new role will work more with the C-suite and less with the site safety professionals. They will need to be business savvy and multi-disciplinary. They will also be called upon to modify and customize many existing programs rather than scrapping them and starting over from scratch.

6. Safety programs will begin to change their focus from viewing the worker as a problem to be controlled, to being the customer whose needs should be met. As the mindset changes from zero accidents to adding value, organizations will realize workers are the customers of safety to whom value should be added. There will still be the need to comply with regulatory guidelines which, in the past, has resulted in some ineffective and inefficient training activities. But even these required “refresher” trainings are being restructured to both meet regulatory requirements and provide value to workers. Organizations are realizing that if they are already taking workers off the job for training, they should make the most of this time. The ability to customize computer-based training (CBT) will facilitate this. The same old required training will truly add value to employees in the near future as it already does at leading-edge organizations.
7. Safety metrics will evolve from lagging indicators to leading indicators to a true measure of value added at each stage resembling a balanced scorecard used by financial managers. The search for leading indicators is a movement from one-dimensional to two-dimensional thinking. However, the world remains three-dimensional. As organizations discover what adds value and includes them in their list of leading indicators, they will also discover what drives the value-adding indicators and what intermediate improvements lead to lagging-indicator improvements. These intermediate steps will also be measured and the result will be a true, three-dimensional Balanced Scorecard for Safety.

Safety Culture in the Chemical Industry

There has been a lot of talk for years about the need for chemical engineering to become more engaged in the soft skills of culture building and move away from the strictly technical approach to safety. I could not disagree with this more if it was twice as wrong. The chemical industry has a culture of safety that is, in many respects, superior to those who have taken a more touchy-feely approach. The demands of the industry and the technical skills of key people in it dictate a very distinct cultural model to be successful at safety. All successful cultures adapt to the survival demands of their environmental realities. Just as arctic-circle natives developed a different culture than natives of tropical islands, chemical workers developed a different culture than manufacturing workers. Just as neither is universally superior to the other, neither is interchangeable with the other.

Because of the nature of the industry’s safety issues, chemical workers need to be more technically savvy. This does not mean they can neglect to address universal issues such as trips and falls. It means they have more critical safety issues that should be prioritized as such. A techier culture does not have to be less humanistic or caring; it must simply be more task and process oriented. Astute leaders are recognizing this fact and allowing their safety cultures to strive for personal best versus some universal model of perfection. This approach will continue and spread to organizations in other industries.

Process Safety Management (PSM)

Without getting into detailed technical aspects of PSM, there will be three important trends in the near future:

1. PSM will continue to make almost dizzying technical advances. Computerized controls and other technologies will make keeping up with PSM more like keeping up with IT. Organizations

will be in constant flux just understanding the changes, much less taking advantage of all of them.

2. Organizations outside the chemical industry will seek to emulate PSM and adapt its primary principles and methods. Such industries will offer to partner with chemical companies to learn how to do so and will look for other technologies or methodologies they can offer in return. Partnerships between dissimilar and non-competing organizations will form with the potential to create breakthroughs in safety excellence for both parties.
3. PSM will be viewed as the primary tool to address technical aspects of the above mentioned MORs. Catastrophic events have always been expensive and dangerous to organizational survival. It will be even more critical in the future. Leaders will give more attention and resources to ensure their organizations do not produce unplanned major events. Regulatory agencies will focus on organizations who make the news with their disasters, and that focus will be increasingly punitive. News agencies will add to the regulatory impact with negative PR. The best defense against such events will be prevention, and PSM will take the lead in that effort.

Conclusion

Organizations should look to the future and try to identify major trends that could impact the viability of their safety efforts. The lack of a crystal ball with exact details should not detract from that effort. There are a few major trends that merit attention and will likely have some degree of impact in the foreseeable future. Safety has already grown significantly in importance and will continue to do so. Being pretty good at safety may not be good enough for very long. Astute leaders will assess the potential impact of the issues discussed here and develop safety future-centered strategies that cross over organizational silos and address safety holistically. For the less astute, the future will always be a dark journey full of unpleasant and potentially fatal surprises. For the prepared, the future will be a series of opportunities to take the lead in business and drive safety excellence to new heights.



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