Director's Corner

December 2014 will mark the 30th anniversary of the tragic Bhopal (India) methyl isocyanate gas release tragedy. It can be argued that over these thirty years we have seen tremendous strides in culture, practices and attitudes in the chemical handling community, as well as in the regulatory environment that governs the industry. If Bhopal was a wake-up call, the appeal for ongoing improvement in chemical safety has been answered in numerous ways by the industry and many other stakeholders. The demand for engineers and professionals who have process safety education has never been stronger and this trend continues to rise. However, what is also undeniably true is that catastrophic incidents keep happening and there remains no way of determining if we as an industry, country or world are getting safer. The answer to the simplest question: "Are we doing better or worse?" continues to be an elusive quest. We produce periodic 'report cards' on almost everything (*e.g.,* state of the economy, health, education) except chemical safety. I find this situation scandalous.

While I am concerned about the *status quo* and lack of a quantitative assessment of our progress in chemical safety, we cannot answer the question of superior or inferior performance in our chemical safety matters. Some would assert that since I do not have the data either way, I should say nothing. I find that to be a circular argument since the same people that make that assertion are also the same people who fight hard and strong against the need or reason to collect data or make data available. However, if I were to philosophize the reasons why progress is being impeded (if that is the case) with regard to process safety performance and reduction/elimination of incidents, I can think of many reasons. In this somber occasion of the 30th anniversary of the Bhopal incident, I have decided to dedicate my director's corner editorial to an account of these conjectures. First, I offer regrets to anyone who will take umbrage by these personal sentiments. Please pardon any offense, if such is taken, as I do not presume to have all the answers.

- We must develop and implement a national surveillance system for process safety incidents. There are presently no reliable means for evaluating the performance of industry in limiting the number and severity of accidental chemical releases. There is also limited data with which to prioritize efforts to reduce the risks associated with such releases. Without this information, the measurement and effectiveness of present programs will remain unchecked.

- Rulemaking processes should be streamlined so that regulations are based on good science and risk-benefit. Most importantly, appropriate resources should be provided for the implementation and enforcement of regulations. Unfunded mandates or inadequately funded mandates have the potential to do more harm than good, particularly in the area of safety regulations.

- Enforcement of existing regulations by governmental agencies should be improved. It is not helpful to promulgate new/revised regulations if existing regulations are not enforced in a meaningful manner. All governmental agencies with responsibility to regulate safety/risks and associated issues should be required to conduct a screening to determine their regulatory landscape. Once the regulatory landscape is established, a plan and schedule should be developed and implemented for ensuring compliance through regular inspections.

- Universities must play a role in continuing to integrate process safety into the academic and research programs in the engineering disciplines as well as in other disciplines (*e.g.,* sciences, geosciences, management, business). While many universities have taken very proactive steps in this regard, a vast majority of universities still do not address the realities of this crying need (see survey results in ***Centerline***, vol. 16, no. 2, Summer 2012).

- Strong, visible and effective leadership is a cornerstone of good safety performance. Safety thrives where leaders personally commit to safety; when all leaders genuinely and visibly accept safety as a core value (as opposed to a priority) of the organization; and when leaders plainly communicate its importance to all members of the organization. This is an imperative for leaders at all organizational levels, including senior corporate executives and operating site managers; these practices would also be relevant for leaders in industry, government and academia. Leaders should also be appropriately qualified and trained for leading and implementing the organization's safety mission and programs.

- A company's culture will influence both personnel safety and process safety. However, it must be remembered that personnel safety and process safety are two distinctly different issues and should be approached as such. Just because a company is doing well in personnel safety does not mean that they are also doing well in process safety. Thus, the culture of the company should be such that appropriate attention is paid to process safety, and appropriate resources and management systems are put in place to accomplish process safety goals. A safety culture that has truly accepted safety as a core value will begin to eliminate arbitrary distinctions between "safety" tasks and "operations" tasks. In addition, everyone from the top of the organization to the front line, and everyone working in all departments of the organization must be responsible and accountable for their roles with regard to process safety.

- Human factors and lack of adequate attention to human factors engineering in plant design and related operations continues to be a major factor and reason behind a vast number of incidents. We have to make progress in addressing these issues by incorporating human factors analyses early on during the design and engineering phases of the life cycle of a plant.

- Competency in process safety programs and activities related to process safety continues to be another major factor impeding the progress in process safety performance. Overcoming this problem can be of great value for both government agencies as well as industry.

I am not unhappy with the progress we have made with process safety programs but I am disappointed with some of the areas in which we have not made progress. I would like to see the dawn of a new process safety era wherein we talk publicly about our process safety performance, based on quantitative and transparent data collection; wherein we provide unfettered access to lessons learned from incidents, including our own incidents; wherein we challenge academics and researchers to consider the application of process systems engineering, complex systems analysis, multi-scale modeling and engineering for sustainable development, to solve process safety problems. I hope we have the political will and stakeholder support to address these weighty issues.

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