



DIRECTOR'S CORNER



Recent events have focused a lot of attention on two quite important issues with regard to process safety. They are "Inherent Safety" and "Reactive Chemicals." Both are very important issues and progress must be made in each area if advances are to be made with regard to process safety performance. However, we must tread with caution and make sure that good science based approaches are utilized in developing whatever plans may be necessary on a nation-wide basis. Otherwise we run the risk of unintended consequences. I and others at the Center have argued the merits of both these subjects and the potential pitfalls associated with developing implementation programs.

With regard to inherent safety, the Center published a White Paper entitled, "Challenges in Implementing Inherent Safety Principles in New and Existing Chemical Processes." This paper defines inherent safety and contrasts it with more traditional approaches to safety. It illustrates through analogies with common household examples the challenges faced in evaluating and implementing inherently safer designs. The first challenge is simply to measure the degree of inherent safety in a way that allows comparisons of alternative designs, which may or may not increase safety or may simply redistribute the risk. The second is that because inherent safety is an intrinsic feature of a design, it is best implemented early in the design of a process plant, while the US has a huge base of installed process plants and little new construction. Thirdly, in developing inherently safer designs, there are significant technical challenges that require research and development efforts with limited short-term economic incentives. These challenges make regulation of inherent safety very difficult. We believe that a coordinated long-term effort involving government, industry, and academia is essential to develop and

implement inherently safer designs. A similar approach has shown success in related areas such as green chemistry, energy conservation, and sustainable development.

With regard to the reactive chemicals issue, the Center provided to the U.S. Chemical Safety and Hazard Investigation Board (CSB) written comments entitled, "Challenges of Regulating or Implementing a Reactive Chemicals Hazard Management Program." These comments were provided during the Public Meeting held by the CSB on September 17, 2002, in Houston, Texas. Reactive chemicals represent significant hazards and have contributed to a large number of incidents resulting in fatalities, injuries, and property losses. However, the CSB study and other information available in the open literature lead us to conclude that a majority of the reactive chemical incidents occurred because the owner/operator of the facility did not make use of the information easily available in the literature. In a smaller fraction of the incidents, the owner/operator did not have sufficient knowledge of the process chemistry involved. The Center document provides a discussion of the difficulties associated with regulating reactive chemicals. Recommendations are provided on a reasonable path forward with regard to addressing reactive chemical hazard management.

In both of the issues discussed above, I believe we have an opportunity to make major strides in developing and implementing useful programs that contribute to the improvement of safety performance. We must also be mindful of all good-science based approaches and try our best to avoid unintended consequences. Hard copies or electronic copies of the "White Paper on Inherent Safety" and the "Comments to the CSB on Reactive Chemicals" can be obtained by contacting the Center.

M. Sam Mannan

Fall 2002