The Five Biggest Process Safety Challenges For 2003

An ioMosaic Corporation Whitepaper

Henry Ozog

Overview

As we start a new year, we can take pride in our accomplishments for 2002. Unfortunately, we cannot linger too long because there are new challenges awaiting us in 2003. We have tried to put ourselves in your shoes and look ahead to what will occupy most of your time going forward. These new challenges are driven by new regulations and industry standards as well as a desire to prevent accidents. We expect that some or all of the five biggest challenges we have listed will be important to you in 2003 and we would like to help you tackle them. We would also appreciate your comments on our list and any others you may have. Give us a call so we can work with you in meeting these challenges.

1. Safety And Vulnerability Analysis
2. Reactive Chemical Testing
3. Process Safety Management (PSM) Quality
4. Emergency Relief System Design And Documentation
5. Independent Auditing

Safety And Vulnerability Analysis

Since 9/11/01, there have been many governmental organizations and industry associations involved in determining what security measures should be implemented by companies that handle hazardous chemicals. Some companies have conducted security and vulnerability analyses and started implementing recommendations. However, we need to slow down, take a deep breath and think about what is practical and cost-effective to prevent sabotage. Of course we need to make hazardous process less attractive targets and we need to control access to hazardous processes by contactors and visitors, but there is a limit to what we can do to prevent a terrorist.

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Reactive Chemical Testing

OSHA has been trying for years to promulgate a revision to the PSM regulation to cover reactive chemicals. The real issue is how to define a reactive chemical. Both OSHA and the Chemical Safety Board, we believe, will agree on the definition for what is a reactive chemical and require that each reactive chemical undergo testing to determine the extent of the potential hazard.

Process Safety Management (PSM) Quality

Companies that have processes covered by the OSHA PSM regulation or the EPA RMP rule have implemented their PSM programs. Some have expanded the coverage of PSM to all of their US and international locations. However, these companies continue to have accidents. We believe that PSM programs can be implemented that meet regulatory requirements, but are not effective. These programs are not effective because they lack a high level of quality. In addition, there are new requirements and tools that should be incorporated into PSM programs, including Safety Instrumented Systems (ISA 84), thermal hazard screening, chemical interaction, improved frequency analysis (using LOPA techniques) and security.

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Consulting Services:

- *Auditing*
- *Calorimetry, Reactivity, and Large-Scale Testing*
- *Due Diligence Support*
- *Effluent Handling Design*
- *Facility Siting*
- *Fire and Explosion Dynamics*
- *Incident Investigation and Litigation Support*
- *Liquefied Natural Gas*
- *Pipeline Safety*
- *Pressure Relief Design*
- *Process Engineering Design and Support*
- *Process Hazards Analysis*
- *Risk Management Program Development*
- *Quantitative Risk Assessments*
- *Software*
- *Structural Dynamics*
- *Training*

Software Services:

Software Development:

- *Outsourcing Engineering*
- *Customized Software*
- *Mobile Devices*
- *Process Safety Training Simulation*

Software Products:

- *ioXpress Knowledge Manager*
- *SuperChems*
- *ioFirst*
- *HAZOPtimizer*

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Emergency Relief System Design and Documentation

The quality of emergency relief system (ERS) design is a major problem as a recent industry survey has shown that 30-40% of ERSs are not designed according to current industry standards. New software to allow more accurate design of systems with two-phase flow or reactive chemicals has been approved by DIERS. However, the shear volume of data that must be developed and maintained is a major reason why relief systems have not been designed properly initially or have not been updated to reflect changes in the processes they are supposed to protect. An ERS document management system is needed to maintain this data.

Independent Auditing

Many companies sought outside expertise in order to conduct their first regulatory PSM audits. Since then, most have decided to conduct their audits internally. Recently, these same companies have found that their PSM programs have deteriorated. Our experience is that the quality of their PSM audits has not identified weaknesses in the original programs and failed to identify the need for PSM program improvements based on development of new good industry practices. We believe this is the reason why after many years of allowing self-audits, the American Chemistry Council will require independent audits of Responsible Care elements starting in 2004.

If any of these challenges are important to you in 2003, contact us to see how we can help.

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About the Author

Mr. Ozog is a General Partner at ioMosaic Corporation. Prior to joining ioMosaic, Mr. Ozog was a consultant with Arthur D. Little, Inc. for twenty one years, where he managed the process safety consulting business. He also worked for seven years at the DuPont Company as a process and startup engineer.

Mr. Ozog is an expert in process safety and risk management, process hazard analysis (HAZOP, FMEA, FTA), and process safety auditing. He has helped numerous companies and governmental agencies identify process risks and implement cost effective mitigation measures. He teaches courses in each of these areas and is also an instructor for the American Institute of Chemical Engineers' Educational Services.

Mr. Ozog has a B.S. and M.S. in Chemical Engineering from the Massachusetts Institute of Technology. He is a member of the American Institute of Chemical Engineers and serves on various sub-committees for them.

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