When Process Safety Management Breaks Down
A Case Study of the Lomac TNM Explosion

Christopher K. Kaijala
Process Technology Consulting
1667 W. Norton Ave.
Muskegon, MI 49441, USA
Phone: 231-343-4990, e-mail: processconsult@cs.com

ABSTRACT

Lomac had been operating nitration processes for some years in the Muskegon, Michigan area before the violent explosion rocked the Eagleston Township plant several years ago. However, consistent questions from the outside had dogged the small company due to several high profile incidents that landed the company in the local paper. Nevertheless, the company had made good progress in establishing a PSM program, which came under scrutiny in the ensuing court battle between Lomac and its client. The plant was closed soon after the incident.

An overview of the major events leading up to the explosion will be presented. How process changes inadvertently created a dangerous situation where TNM was able to detonate and devastate the plant site with an incredible explosion that nearly killed several people. An examination of how the safety culture at Lomac may relate to this catastrophic incident will be presented.

Several issues will be explored. These include: problems in technical management, client / contract manufacturer communication and technical support issues, technology transfer issues, process support requirements, how safety culture and approach to technical management can potentially weaken HazOp analysis and process change systems, the affect of unknown factors that result in catastrophic events, calculating the cost of safety and detailed process engineering analysis. Can the effectiveness of a PSM program be measured? Can effective process engineering make a difference in process safety programs and process troubleshooting?

Finally, a recommendation for minimum process and technical management requirements will be presented. A recommendation to improve engineering and safety cultures will also be presented.

Proper attention to detailed process engineering focused on documenting and fully understanding process chemistry, material and heat balances along with safety implications brings tremendous returns in improving product quality, improving process productivity, improving environmental controls, and preventing catastrophic incidents. All these improvements can yield definable cost savings. What is the return for a well run Process Safety Management system? For Lomac it cost the entire business.

Session: Safety culture or Case Histories