



U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

Report:	DuPont Corporation Toxic Chemical Releases
Recommendation Number:	2010-06-I-WV-R11
Date Issued:	September 20, 2011
Recipient:	American Chemistry Council (ACC) Phosgene Panel
New Status:	Closed – Acceptable Action
Date of Status Change:	October 4, 2016

Recommendation Text:

Revise the *Phosgene Safe Practice Guidelines Manual* to:

- Advise against the use of hoses for phosgene transfer that are constructed of permeable cores and materials subject to chlorides corrosion.
- Include guidance for the immediate reporting and prompt investigation of all potential (near-miss) phosgene releases.

Board Status Change Decision:

A. Rationale for Recommendation

On January 22 and 23, 2010, three accidents occurred over a 33-hour period at the DuPont Corporation's Belle, West Virginia chemical manufacturing plant. The series of accidents began when an alarm sounded leading operators to discover that 2,000 pounds of methyl chloride, a toxic and extremely flammable gas, had been leaking unnoticed into the atmosphere for five days. The next morning, workers discovered a leak in a pipe carrying oleum, which produced a fuming cloud of sulfur trioxide. A release of highly toxic phosgene occurred later that day exposing a worker who died the following evening in a hospital.

In investigating these three incidents, the CSB investigation found common deficiencies in multiple DuPont Belle plant safety management systems, including maintenance and inspections, alarm recognition and management, accident investigation, emergency response and communications, and hazard recognition. In addition, the CSB found that the type of hose (e.g., a braided stainless steel hose lined with PTFE¹) that burst in front of a worker was susceptible to leakage and corrosion from phosgene.

As part of its investigation, the CSB also reviewed consensus standards and good practices for the safe handling of phosgene in compressed gas cylinders published by various industry groups, including the *Phosgene Safe Practices Guidelines Manual* by the American Chemistry Council (ACC) Phosgene Panel. The CSB found that while the *Guidelines Manual* notes the permeability of phosgene through PTFE and corrosion potential of phosgene on the steel, it does not warn against using such hoses for phosgene transfer. The CSB also noted that the guidelines did not include guidance for the reporting and prompt investigation of near-miss incidents.

¹ PTFE = Polytetrafluoroethylene, a synthetic fluoropolymer of tetrafluoroethylene

The Phosgene Panel of the American Chemistry Council was established in 1972 to support the phosgene industry and to serve the public through the continuous evaluation of and improvements to the production, distribution and use of phosgene. The Panel is composed of companies that manufacture, use or distribute phosgene. Phosgene Panel members account for more than 95 percent of U.S. production of phosgene, which is several million tons of material. As the Panel issues guidelines that are widely utilized in the phosgene industry, the CSB issued a recommendation to revise the *Guidelines Manual* to address the above noted concerns.

B. Response to the Recommendation

On August 9, 2016, the ACC Phosgene Panel advised the CSB that it had made changes to its *Phosgene Safe Practices Guidelines Manual* to address all the provisions listed in the CSB recommendation and that it had posted these changes on its website. These changes included:

- Text revisions in Sections 2, 6 and 7 of the *Guidelines Manual* pertaining to the design, use and maintenance of hoses for transferring phosgene, including references to other consensus standards by the Compressed Gas Association, the Chlorine Institute and the British Standards Association.
- A text revision in Section 2 of the *Guidelines Manual* pertaining to near-miss reporting, including adding a reference for the Center for Chemical Process Safety (CCPS) *Guidelines for Investigating Chemical Process Incidents, Chapter 5: Reporting and Investigating Near Misses* for additional information on incidents and near-misses, determination and investigation.

C. Board Analysis and Decision

As the changes made by the ACC Phosgene Panel to the *Phosgene Safe Practices Guidelines Manual* appear to meet the intent of all the provisions listed in Recommendation No. 2010-06-I-WV-R11, the Board voted to change the status of this recommendation to: **“Closed – Acceptable Acton.”**