



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

<b>Report:</b>	DuPont Corporation Toxic Chemical Releases
<b>Recommendation Number:</b>	2010-6-I-WV-R6
<b>Date Issued:</b>	October 17, 2011
<b>Recipient:</b>	E. I. du Pont de Nemours and Company (DuPont)
<b>New Status:</b>	R6: Closed – Acceptable Action
<b>Date of Status Change:</b>	April 10, 2013

### Recommendation Text:

*Revise safeguards for phosgene handling at all DuPont facilities by:*

- *Requiring that all indoor phosgene production and storage areas, as defined in NFPA 55, have secondary enclosures, mechanical ventilation systems, emergency phosgene scrubbers, and automated audible alarms, which are, at a minimum, consistent with the standards of NFPA 55 for highly toxic gases.*
- *Prohibiting the use of hoses with permeable cores and materials susceptible to chlorides corrosion for phosgene transfer.*
- *Conducting annual phosgene hazard awareness training for all employees who handle phosgene, including the hazards associated with thermal expansion of entrapped liquid phosgene in piping and equipment.*

### Board Status Change Decision:

#### A. Rationale for Recommendation

On January 22 and 23, 2010, three incidents occurred over a 33-hour period at the DuPont Corporation's Belle, West Virginia, chemical plant. The last incident involved a release of highly toxic phosgene, exposing a worker who died the following evening in a hospital. The CSB investigation concluded that the release occurred from a failed phosgene transfer hose which did not meet DuPont's internal material quality requirements and was not changed in accordance with the plant's maintenance schedule.

While investigating these three incidents, the CSB reviewed E. I. du Pont de Nemours and Company (DuPont) corporate policies pertaining to phosgene handling and found both inconsistent application of internal guidelines regarding phosgene handling at the Belle facility and non-conformance with consensus standards for handling highly toxic materials. A recommendation was issued to the corporation to address these issues at all DuPont facilities that handle phosgene.

#### B. Response to the Recommendation

In response to bullet 1 of the recommendation, a technical assessment was conducted in 2011 at DuPont's one remaining indoor phosgene production operation in Mobile, AL. This technical assessment audited the facility's compliance against the requirements contained in the NFPA 55 standard for handling highly toxic gases. DuPont reported that all recommendations resulting from this assessment were successfully implemented.

In response to bullet 2 of the recommendation, the *DuPont Phosgene Safety Guardian Manual* was revised and reissued on March 1, 2012 to all sites that handle phosgene. The revised manual contains substantial changes and new content related to phosgene handling requirements based on information from external organizations as well as information and key learnings from internal sources, including the Belle, WV site incident of January 23, 2010. Also, a specific internal requirement in the revised *Manual* is a prohibition of the use of hoses with permeable cores in phosgene service.

In response to bullet 3 of the recommendation, phosgene awareness training was conducted for operations personnel at its U.S. sites that produce or handle phosgene. A component of this training included a section on the hazards of thermal expansion in piping and equipment.

C. Board Analysis and Decision

As all three elements of CSB Recommendation No. 2010-6-I-WV-R6 have been addressed by DuPont consistent with its intent, this status of this recommendation was changed to: "**Closed-Acceptable Action.**"