



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

Report:	Improving Reactive Hazard Management
Recommendation Number:	2001-1-H-R3
Date Issued:	October 8, 2002
Recipient:	U.S. Environmental Protection Agency
New Status:	Open- Unacceptable Response
Date of Status Change:	March 11, 2014

Recommendation Text:

Revise the Accidental Release Prevention Requirements, 40 CFR 68, to explicitly cover catastrophic reactive hazards that have the potential to seriously impact the public, including those resulting from self-reactive chemicals and combinations of chemicals and process-specific conditions. Take into account the recommendations of this report to OSHA on reactive hazard coverage. Seek congressional authority if necessary to amend the regulation.

Board Status Change Decision:

A. Rationale for Recommendation

After a number of high-consequence incidents resulting from runaway chemical reactions, including the April 21, 1995 explosion and fire at the Napp Technologies specialty chemical plant in Lodi, New Jersey,¹ which killed five workers, and the April 8, 1998, explosion and fire at the Morton International dye manufacturing plant in Paterson, New Jersey, which injured nine, the CSB undertook a comprehensive study of reactive chemical hazard management in the United States.

Released in September 2002, the CSB's study, *Improving Reactive Hazard Management*, identified 167 serious incidents in the United States between January 1980 and June 2001 involving uncontrolled chemical reactivity. Forty-eight of these incidents resulted in 108 fatalities. The CSB also found that more than half of these incidents involved chemicals that were not covered by the U.S. Environmental Protection Agency's (EPA's) Accidental Release Prevention Requirements (40 CFR 68).² Concluding that this regulation had "significant gaps in coverage of reactive hazards", the Board recommended that EPA revise its regulation to ensure coverage of reactive chemical hazards that have the potential to impact the public.

¹ See EPA/OSHA Joint Chemical Accident Investigation Report. Publication No. EPA 550-R-97-002. Available at: <http://www.epa.gov/oem/docs/chem/napp.pdf>. Accessed February 19, 2014.

² If a facility is covered by the Accidental Release Prevention requirements (40 CFR 68), it is required to file a Risk Management Plan per Subpart G of that part. Therefore, the Accidental Release Prevention requirements are typically referred to collectively as the EPA "RMP" standard or regulation. The PSM and RMP standards cover processes meeting threshold quantities of listed chemicals that present a range of hazards (e.g., toxicity), and the PSM standard covers processes containing 10,000 pounds or more of flammables..

B. Response to the Recommendation

Following the release of the CSB's study, EPA undertook a number of efforts related to the management of reactive hazards, including:

- Participating in the CSB's June 2003 roundtable conference on how best to regulate reactive chemicals,
- Implementing CSB Recommendation No. 2001-1-H-R4 (also issued pursuant to the CSB's Reactive Hazards study) by revising the RMP*Submit accident-reporting system to facilitate the reporting of (and therefore the collection of data regarding) incidents caused by uncontrolled chemical reactions,³
- Collaborating with the Center for Chemical Process Safety (CCPS) in the production of its October 2003 publication, *Essential Practices for Managing Chemical Reactivity Hazards*,⁴ and
- Publishing two relevant safety alerts, as follows:
 - "Identifying Chemical Reactivity Hazards: Preliminary Screening Method" (May 2004),⁵ and
 - "Managing Chemical Reactivity Hazards" (February 2005).⁶

EPA also informed the CSB that it would continue to use its regulatory enforcement authority under the General Duty Clause (GDC) of the Clean Air Act (at Section 112(r)) to apply Risk Management Plan (RMP) requirements to those facilities producing, processing, handling, or storing "an extremely hazardous substance", regardless of whether the facility is covered by the RMP standard.⁷ EPA wrote, "based on our analysis of the statute and its legislative history, EPA believes that a substance that poses 'catastrophic reactive hazards' with 'the potential to seriously impact the public' is presumably an extremely hazardous substance."

To date, EPA has not initiated, nor has the agency indicated its intent to initiate, rulemaking efforts that would revise the Accidental Release Prevention Requirements, 40 CFR 68, consistent with the CSB's recommendation.

³ Recommendation No. 2001-01-H-R4 to the EPA read as follows: "Modify the accident reporting requirements in RMP* Info to define and record reactive incidents. Consider adding the term "reactive incident" to the four existing "release events" in EPA's current 5-year accident reporting requirements (Gas Release, Liquid Spill/Evaporation, Fire, and Explosion). Structure this information collection to allow EPA and its stakeholders to identify and focus resources on industry sectors that experienced the incidents; chemicals and processes involved; and impact on the public, the workforce, and the environment." The Board voted to close this recommendation on June 2, 2004 (Notation Item 303).

⁴ Johnson, Robert. W.; Rudy, Steven W.; Unwin, Stephen D. (2003). *Essential Practices for Managing Chemical Reactivity Hazards*. Center for Chemical Process Safety/AIChE. Available at: http://www.knovel.com/web/portal/browse/display?EXT_KNOVEL_DISPLAY_bookid=898&VerticalID=0. Accessed February 20, 2014.

⁵ See <http://www.epa.gov/osweroe1/docs/chem/flowchart.pdf>. Accessed February 20, 2014.

⁶ See <http://www.epa.gov/osweroe1/docs/chem/reactive-management-pub.pdf>. Accessed February 20, 2014.

⁷ EPA Guidance for Implementation of the GDC indicates that owners and operators of facilities that produce, process, or handle chemicals covered by EPA's RMP program, or chemicals otherwise considered "extremely hazardous," "must adhere, at a minimum, to recognized industry standards and practices (as well as government regulations)" in order to be in compliance with the GDC. See Guidance for the Implementation of the General Duty Clause Clean Air Act Section 112(r)(1). May 2000. Available online at: <http://www.epa.gov/oem/docs/chem/gdcregionalguidance.pdf>. Accessed February 20, 2014.

C. Board Analysis and Decision

Since issuing its reactive hazard investigation study in 2002, the CSB has continued to learn of industrial accidents involving reactive chemicals. The agency has investigated several of these incidents, including:

- An October 13, 2002 incident at the First Chemical Corporation facility in Pascagoula, Mississippi.
- An April 12, 2004, incident at MFG Chemical, a specialty chemical manufacturer in Dalton, Georgia.
- A July 31, 2007 incident at Synthron, LLC, in Morganton, North Carolina.
- A December 19, 2007, incident at T2 Laboratories in Jacksonville, Florida.
- An August 28, 2008 incident at the Bayer CropScience facility in Institute, West Virginia.
- An April 17, 2013, fire and explosion at the West Fertilizer facility in West, Texas.⁸

These incidents and several others identified by the CSB illustrate that reactive hazards continue to pose catastrophic risks to workers and the public at large.

Moreover, the CSB found in its study, and continues to believe today, that General Duty Clause (GDC) enforcement is insufficient to prevent or mitigate the impact of catastrophic reactive hazards. Though EPA may cite facilities under the GDC for hazards not addressed by an existing industry standard, no national consensus standards for management of reactive chemicals have been developed to date. Moreover, many substances are unlikely to be considered “extremely hazardous” since they do not present an inherent catastrophic reactive hazard until combined with other chemicals or under process-specific conditions. These factors limit the preventive value of GDC citations, and make it difficult to issue and uphold these citations.

In brief, the CSB continues to believe that the regulatory changes advocated by CSB Recommendation No. 2001-1-H-R3 are necessary. Since more than ten years have passed since issuance of this recommendation, and EPA has not initiated rulemaking consistent with the intent of this recommendation, the Board voted to change its status to: “Open- Unacceptable Response.”

⁸ The CSB’s investigation of this incident is ongoing.