



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

<b>Report:</b>	Improving Reactive Hazard Management
<b>Recommendation Number:</b>	2001-01-H-XX-R2
<b>Date Issued:</b>	September 17, 2002
<b>Recipient:</b>	Occupational Safety and Health Administration
<b>New Status:</b>	Closed – Acceptable Action
<b>Date of Status Change:</b>	October 26, 2021

### Recommendation Text:

*Implement a program to define and record information on reactive incidents that OSHA investigates or requires to be investigated under OSHA regulations. Structure the collected information so that it can be used to measure progress in the prevention of reactive incidents that give rise to catastrophic releases.*

### 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, which resulted in five worker fatalities, and the April 8, 1998, explosion and fire at the Morton International dye manufacturing plant in Paterson, New Jersey, which injured nine, the U.S. Chemical Safety and Hazard Investigation Board (CSB) undertook a comprehensive hazard study of reactive chemical hazard management in the United States.

In total, the CSB identified 167 serious reactive incidents in the United States between 1980 and 2001; 48 of these incidents resulted in 108 fatalities. In addition, more than half of these incidents involved chemicals not covered by existing Occupational Safety and Health Administration (OSHA) or Environmental Protection Agency (EPA) standards. While the bulk of the incidents were in the chemical manufacturing industry, 30% occurred at industrial facilities that use or consume chemicals in bulk quantities.

As a part of its hazard study, the CSB examined applicable regulations issued by OSHA pertaining to reactive hazards. The CSB concluded that OSHA's Process Safety Management (PSM) standard, 29 CFR 1910.119, applies only to single component highly reactive chemicals<sup>1</sup> and that 50% of the reactive incidents reviewed in the CSB hazard study were not covered under the PSM standard. The CSB also determined that existing sources of incident data -- including those at OSHA -- were not adequate to identify the number, severity, and causes of reactive incidents or to analyze incident

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<sup>1</sup> Congress specified that highly hazardous chemicals include: "toxic, flammable, highly reactive, and explosive substances" in the Clean Air Act Amendments of 1990. Section 304 of that amended Act required OSHA to promulgate the PSM standard. OSHA chose to regulate only those chemicals classified as reactive category "3" or "4" that were listed in NFPA 49, *Hazardous Chemicals Data* (1975 edition), as "highly hazardous chemicals."

frequency trends. Moreover, there is no publicly available database for sharing lessons learned from reactive incidents. Additionally, incident data collected by OSHA and the EPA provide no functional capability to track reactive incidents to analyze incident trends and develop preventive actions at a national level.

Consequently, the Board issued two recommendations to OSHA to address these issues. The first recommendation, CSB Recommendation No. 2001-01-H-XX-R1, asked OSHA to amend the PSM standard to achieve more comprehensive control of reactive hazards that could have catastrophic consequences. The second recommendation, CSB Recommendation No. 2001-01-H-XX-R2 (R2), asked OSHA to implement a program to define and record information on reactive incidents that OSHA investigates or requires to be investigated under OSHA regulations. This status change summary only addresses the second recommendation, R2.

#### B. Response to the Recommendation

Although OSHA initially declined to implement this recommendation in November of 2003, further discussions between CSB and OSHA indicated that the agency continued to explore various alternatives short of rulemaking to meet the intent of this recommendation. Then in December of 2013, OSHA published a Request for Information indicating that it was considering possible regulatory changes to its PSM standard that might incorporate reactive hazards.

Since the 2014, as a result of OSHA's Request for Information (RFI), OSHA defined and has been collecting and reviewing information regarding process safety incidents including information not currently captured by OSHA to include all potential reactive hazard incidents. This data includes information from Federal partners, such as CSB and EPA as well as open-source information that requires additional follow-up verification and validation (typically done with contract support). The data also includes OSHA data from incidents and inspections. OSHA uses this data as they continue to evaluate updates to the PSM standard which includes the evaluation of how best to address reactive hazards. As with any database based upon frequency and severity information, it can also be used to measure the progress in the prevention of reactive incidents that give rise to catastrophic releases. The collected information is intended to provide specific numbers in support of rulemaking efforts in all aspects of the PSM standard to include reactive hazards.

#### C. Board Analysis and Decision

Based upon the information above, since 2014, OSHA has taken the necessary action to meet the requirements of this recommendation that has been outstanding for approximately 18 years. As a result, the Board voted to change the status of CSB Recommendation No. 2001-01-H-XX-R2 to: "Closed - Acceptable Action."