



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

<b>Report:</b>	Hoeganaes Corporation Fatal Flash Fires
<b>Recommendation Number:</b>	2011-4-I-TN-R6 2011-4-I-TN-R7 2011-4-I-TN-R8 2011-4-I-TN-R9
<b>Date Issued:</b>	January 5, 2012
<b>Recipient:</b>	Hoeganaes Corporation
<b>New Status:</b>	R6: Closed – Unacceptable Action/No Response Received R7: Closed – Unacceptable Action/No Response Received R8: Closed – Unacceptable Action/No Response Received R9: Closed – Unacceptable Action/No Response Received
<b>Date of Status Change:</b>	October 26, 2021

**Recommendation Text:**

**2011-4-I-TN-R6:**

*Conduct periodic independent audits of the Hoeganaes Gallatin facility for compliance with the following NFPA standards, using knowledgeable experts, and implement all recommended corrective actions:*

- *NFPA 484, Standard for Combustible Metals, Metal Powders, and Metal Dusts*
- *NFPA 499, Recommended Practice for the Classification of Combustible Dusts and of Hazardous Locations for Electrical Installations in Chemical Process Areas*
- *NFPA 497, Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas*
- *NFPA 2, Hydrogen Technologies Code*
- *NFPA 2113, Standard on Selection, Care, Use, and Maintenance of Flame-Resistant Garments for Protection of Industrial Personnel Against Flash Fire*

**2011-4-I-TN-R7:**

*Develop training materials that address combustible dust and plant-specific metal dust hazards and train all employees and contractors. Require periodic (e.g. annual) refresher training for all employees and contractors.*

**2011-4-I-TN-R8:**

*Implement a preventative maintenance program and leak detection and leak mitigation procedures for all flammable gas piping and gas processing equipment.*

**2011-4-I-TN-R9:**

*Develop and implement a near-miss reporting and investigation policy that includes the following at a minimum:*

- *Ensure facility-wide worker participation in reporting all near-miss events and operational disruptions (such as significant iron powder accumulations, smoldering fires, or unsafe conditions or practices) that could result in worker injury;*
- *Ensure that the near-miss reporting program requires prompt investigations, as appropriate, and that results are promptly circulated throughout the Hoeganaes Corporation;*
- *Establish roles and responsibilities for the management, execution, and resolution of all recommendations from near-miss investigations;*
- *Ensure the near-miss program is operational at all times (e.g. nights, weekends, holiday shifts).*

## **Board Status Change Decision:**

### **A. Rationale for Recommendations**

Between January and May 2011, the U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated three iron dust-related incidents at the Gallatin, Tennessee facility of the Hoeganaes Corporation, a worldwide producer of atomized iron and steel powders. The first incident, an iron dust flash fire incident, resulted in two worker fatalities. The second incident, also an iron dust flash fire incident, injured one worker. The third incident was a hydrogen explosion that triggered multiple iron dust flash fires claiming three lives and injuring two other workers.

The CSB reviewed Hoeganaes corporate and facility safety policies, procedures, and practices and identified several deficiencies which contributed to these incidents. Notably:

- Hoeganaes facility management did not mitigate the iron powder combustibility hazard through the use of engineering controls and housekeeping procedures.
- Hoeganaes did not sufficiently train employees to understand the potentially severe consequences of combustible dust dispersion and to report minor flash fires and near misses that periodically occurred for prompt investigation.
- Hoeganaes did not institute safe procedures such as combustible gas monitoring and employee training to avoid flammable gas fires and explosions.

The CSB issued four recommendations to Hoeganaes Corporation to conduct independent audits of the Gallatin facility, develop and conduct training on combustible dust, implement a preventative maintenance program, and develop and implement a near-miss reporting program.

### **B. Response to the Recommendation**

The CSB was unable to obtain any of the information requested from Hoeganaes since June of 2015. Despite numerous attempts by the CSB over the six-year period of time, Hoeganaes has been unresponsive regarding the information requested.

### **C. Board Analysis and Decision**

As the CSB requested additional information from Hoeganaes in June of 2015, and they have been unresponsive since that time, the Board voted to designate CSB Recommendation Nos. 2011-

4-I-TN-R6, 2011-4-I-TN-R7, 2011-4-I-TN-R8, and 2011-4-I-TN-R9 with the status: **“Closed – Unacceptable Action/No Response Received.”**