



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

Report:	Hoeganaes Corporation Fatal Flash Fires
Recommendation Number:	2011-4-I-TN-R4
Date Issued:	December 16, 2011 (released January 5, 2012)
Recipient:	International Code Council (ICC)
New Status:	Closed – Acceptable Action
Date of Status Change:	March 5, 2018

Recommendation Text:

Revise IFC Chapter 22 Combustible Dust-Producing Operations; Section 2204.1 Standards, to require mandatory compliance and enforcement with the detailed requirements of the NFPA standards cited in the chapter, including NFPA 484.

Board Status Change Decision:

A. Rationale for Recommendation

Between January and May of 2011, the U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated three iron dust-related incidents at the Gallatin, TN facility of the Hoeganaes Corporation, a worldwide producer of atomized iron and steel powders. The first iron dust flash fire incident killed two workers and the second injured an employee. The third incident, a hydrogen explosion and resulting iron dust flash fire, claimed three lives and injured two other workers.

As a part of its investigations, the CSB reviewed codes and standards applicable to operations at the Hoeganaes Gallatin facility, and found that both the State of Tennessee and the City of Gallatin had adopted the 2006 edition of International Fire Code (IFC), a product of the International Code Council (ICC), into law. Chapter 13 of the IFC (2006), entitled *Combustible Dust-Producing Operations*, briefly addresses precautions for ignition sources and housekeeping in areas where combustible dust is generated, stored, manufactured or handled. The IFC also references several NFPA standards, such as NFPA 484, *Combustible Metals, Metal Powders, and Metal Dusts*, and specifies that "the fire code official is authorized to enforce applicable provisions of the codes and standards listed ... to prevent and control dust explosions." This language does not make clear, however, whether compliance with and enforcement of the referenced NFPA standards is a mandatory or voluntary requirement of the IFC.

The CSB concluded that had the Hoeganaes facility adhered to the requirements of this chapter, including the more detailed design and engineering requirements contained in NFPA 484, the January and March incidents may have been prevented, and the effects of the May incident could have been reduced. Consequently, the Board voted to issue a recommendation to the ICC to revise the language in Chapter 22 of the most recently published IFC (e.g., 2012 edition).

B. Response to the Recommendation

The ICC recently released the 2018 edition of the IFC where the following changes were made in Chapter 22, entitled *Combustible Dust-Producing Operations*:

- Section 2204.1 has been renamed with the title “Specific Hazards Standards” and the text has been revised to read as follows: “The industry- or commodity-specific codes and standards listed in Table 2204.1 shall be complied with based on the identification and evaluation of the specific fire and deflagration hazards that exist at a facility.”
- Table 2204.1 has been renamed “Specific Hazard Standards” and contains a listing of the following NFPA standards: 61, 69, 70, 85, 120, 484, 654, 655, and 664. Note that this list of standards has not changed from earlier editions.
- Two new sections have been added to Section 2203 entitled “Precautions”. Section 2203.1, entitled “Owner Responsibility” has been added which states: “The owner or operator of a facility with operations that manufacture, process, blend, convey, repackage, generate or handle potentially combustible dust or combustible particulate solids shall be responsible for compliance with the provisions of this code and NFPA 652.” Section 2203.2 entitled “Dust Hazard Analysis” has also been added which states: “The requirements of NFPA 652 apply to all new and existing facilities and operations with combustible dust hazard. Existing facilities shall have a dust hazard analysis (DHA) completed in accordance with Section 7.1.2 of NFPA 652. The fire code official shall be authorized to order a dust hazard analysis to occur sooner if a combustible dust hazard has been identified in a facility that has not previously performed an analysis.”

C. Board Analysis and Decision

Based on the above changes to the 2018 edition of the IFC, the Board voted to designate Recommendation No. 2011-4-I-TN-R4 with the status: “**Closed – Acceptable Action.**”