SAFETY MEMO

April 26, 2021 – Dust Hazard Analysis

Did you know?

Combustible Dust Hazard

Airborne dusts in sufficient concentrations and in certain environments can ignite with explosive results. In Canada alone, the last four years have yielded multiple combustible dust incidents: 11 explosions and 54 fires.

Combustible dust safety requirements are heavily dependent on the location of the facility and the local legislative environment. As a starting point, check the local fire and/or building codes to see which standards apply and to what degree.

In North America, the NFPA 652 Standard on the Fundamentals of Combustible Dust is the central document for prevention of combustible dust explosions & fire. European standards such as the ATEX Directive 2014/34/EU can be referenced for requirements local to Europe.

The following is a summary of selected information from NFPA 652 relating to the topic of combustible dust.

Dust Hazard Analysis (DHA)

NFPA 652 defines a process called Dust Hazard Analysis, or DHA. This systemic review and assessment of facility processes is a tool to assist plant managers and operators to identify, and address hazards, including hazards that may not otherwise be obvious[1]. The deadline for completing a DHA in new and existing process facilities was September 7, 2020. This pertains to facilities which fall under the jurisdiction of the NFPA 652 standard.

Dust Hazard Analysis is sometimes confused with electrical Hazardous Area Classification. However, these are distinct processes, and both are critical to manage combustible dust risks.

DHA Procedure

The procedure to conduct a DHA is outlined in NFPA 652, Chapter 7 – Dust Hazards Analysis (DHA). A summary of the required actions is as follows:

- Collection of site documentation from client on existing equipment and procedures.
- Site visit to verify site documentation and confirm effectiveness of existing equipment.
- Evaluation of existing preventative maintenance plans and housekeeping plans.

Figure 1: Dust Collectors at a Grain Terminal Facility

- Explosivity testing of dust samples to evaluate the most likely sources of dust explosions.
- Evaluation of hazardous area classification as described by NFPA 70 which defines the type of dusts present and the likelihood they will be present in flammable concentration.
- Preparation of a report detailing observations, comments, and conclusions which prioritizes identified hazards.

Recommendations

- Ensure that all projects involving combustible dust or the potential for combustible dust have identified and addressed fire and explosion hazards.
- Review local legislation for facilities with combustible dust to determine the appropriate DHA requirements.
- Ensure that facilities that fall under NFPA 652 are aware of DHA requirements.
- Ensure that our customers are aware that Laporte can conduct or assist with conducting a DHA.

[1] Canadian Forest Industries. (June 25, 2020). The who, what, when, and why of Dust Hazard Analysis.