

Playing by New Rules: How NFPA 652 Impacts Your Facility

VAA, LLC

According to the National Fire Protection Association (NFPA), 50 combustible dust accidents occurred in the United States alone between 2008 and 2012. To continue improving and reducing hazard risk in agricultural facilities, the NFPA reviews and updates their guidelines every three years. The latest, 2016 edition of NFPA 652 Standards for Combustible Dust introduces the use of a Dust Hazard Analysis (DHA). This edition's NFPA 652 update impacts existing and new facilities that combat dust-related hazards as a result of their processes. The NFPA now advises commissioning a DHA once every five years.

What is a DHA?

A DHA documents potential fire, flash fire and explosion (or dust deflagration) hazards. All potential hazards are placed in one of three general categories: Not a hazard, Maybe a hazard or Deflagration hazard. In existing facilities, a licensed professional will conduct a site visit to observe the process, categorize potential hazards and provide any recommended administrative or engineering safeguards to reduce the risk of deflagration. For new facilities or facility expansions, a licensed professional can assess and incorporate safety measures in designs based on the local jurisdiction and building codes.

When considering commissioning a DHA, reach out to the Authority Having Jurisdiction and a licensed professional. These entities will confirm which codes and guidelines are used in the jurisdiction and if a DHA is required for a project. To perform the DHA and offer practical solutions, engage a licensed professional that specializes in the industry, such as an architect, mechanical engineer or fire protection engineer. A qualified professional will be knowledgeable about the facility process and have a thorough understanding of local and state codes.

Existing Facilities: Operations & Housekeeping Procedures

Often it is not the design, but the lack of consistent maintenance in existing facilities that pose risk. When conducting a DHA, the difference between the Maybe a hazard and Deflagration hazard categories is frequently proper maintenance and scheduled inspections of the equipment and associated safety features. To effectively manage hazards in a facility, DHA inspections will look for the following safety practices:

1. Set schedules for cleaning and maintenance
2. Cleaning thoroughness
3. Lock out / tag out procedure for equipment cleaning
4. Vacuuming for dust removal
5. Pressure relief ventilation

New Facilities or Expansions: Considerations for Owners & Facility Managers

Part of the NFPA 652 - Annex B states the "purpose of a DHA is to identify hazards in the process and document how those hazards are being managed." For new construction, earlier is best for making hazard management design decisions. Recognizing and addressing dust hazards in the preliminary design phase of a project can lead to cost and time savings. Including features in the initial facility design

like appropriate ventilation and use of a vacuum system for dust removal will reduce the need for future retrofits. Keep maintenance and hazard management integrated in a project by considering the following questions in early phases:

1. What dust hazard codes, standards or guidelines must be met in the facility design?
2. How are potential hazards managed within the process?
3. What maintenance and/or housekeeping programs will be needed for safe facility operation?

Learning from a Dusty Past

The continued development and updates of the NFPA guidelines are, at least in part, developed as a result of past, unaddressed facility hazards. As a preventative measure and code improvement, NFPA 652 recommends DHA inspections are conducted once every five years. However, only some state and local jurisdictions have adopted NFPA 652 as a requirement.

It is important to note the relationship between NFPA guidelines and the International Building Code (IBC). IBC dictates the industry standard and references other guidelines to bring new versions into their requirements. NFPA 652 is not yet directly referenced in the current IBC requirements. While this means DHA's are not currently required by the IBC, there are a few compelling reasons to get ahead of the regulation.

1. Safety

Tracking and mitigating the accumulation of dust at your facility is critical to the safety of the operators. A DHA can help prove a facility is compliant or identify areas of concern and offer solutions. The painful results of ignoring potential dust hazards can include costly equipment failure, dust deflagration and, most importantly, loss of life.

2. Project Schedule

Depending on the local codes and jurisdictions, Code Officials may be working from the new guidelines. In that case, officials can deny a building permit if a DHA has not been completed. The delay will set new facility and expansion projects back in time and expense.

3. Expert Predictions

Based on the trend of previous updates, it is likely that the 2016 edition of NFPA 652 will be standardized and referenced in the IBC code by 2021. Keeping up with dust hazards and related guidelines will lead to safer facilities and fewer future project / maintenance hassles.

About VAA, LLC

VAA is a Twin Cities engineering firm serving agribusiness, architectural and industrial clients nationwide. Established in 1978, the firm has steadily grown to include civil, structural, marine, mechanical, process and electrical engineering; general arrangement; industrial architecture and rail design. VAA has registered professionals in the United States and Canada.