White Paper for Timber and Wood Processing Industry by SonicAire President, W. Brad Carr

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New Congressional Bill Sets Sights on Combustible Dust Controls

> *"An emergency exists concerning worker exposure to combustible dust explosions and fires, and there is a significant risk of death or severe injury to workers employed at facilities where combustible dusts are present." [Bill HR 691 Section 2 (1)]*

This quote is from a new bill Congress introduced earlier this year called HR691: Worker Protection Against Combustible Dust Explosions and Fires Act of 2013. At this point in time the bill has been referred to the Subcommittee on Workforce Protections for review. The bill seeks to require the Secretary of Labor to issue an interim set of standards regulating the control of combustible dust and to finalize a permanent ruling within three years of the interim standard.

OSHA Gets Involved

The interest in combustible dust is not new. Previously, House Bill HR5522 was introduced in 2008 to regulate fugitive dust levels. The House passed its bill to enforce a new standard on combustible dust buildup for overhead structures and walls for all industries. Essentially, this bill gave the Occupational Safety & Health Administration (OSHA) the teeth to pay extra attention to fugitive combustible dust in all industries, including timber and wood processing facilities. This extra attention translated into a regulatory push for higher standards on combustible dust, and significant fines for a lack of compliance.

OSHA's regulations are based on the National Fire Prevention standards, which set requirements for all industries in the *NFPA 654: Standard for the Prevention of Fires and Dust Explosions in Wood Processing & Woodworking Facilities*. The standard for the wood industry is *NFPA 664: Standard for the Prevention of Fires & Explosions in Wood Processing & Woodworking Facilities.*

What Matters Most?

So what are some of the details that are most important? Let's take a closer look at some of the specifics of NFPA 664 that clearly focus on the issues that matter most:

- A specific requirement is made in Chapter 4.2.1. "A deflagration hazard shall be determined to exist where the layer of accumulated fugitive wood dust on upward-facing surfaces exceeds 3.2mm (1/8") over 5 percent of the area or 93m2 (1000ft2), whichever is smaller. For smaller areas, a **deflagration hazard shall exist where the accumulated fugitive deflagrable wood dust layer is equipment to 3.2mm (1/8") over 5 percent of the area**. " (*Author's emphasis*)

Keep in mind that 1/8" is the size of the diameter of the tip of an average pen.

The practical reality is that these requirements mean there is a zero-tolerance approach to dust buildup in a plant. Timber and wood processing plants must find ways to deal with this immediately or risk penalties for non-compliance.

Housekeeping Recommendations

Annex A.6.4.2.2 of NFPA 664 states that wood processors must follow these guidelines:

"(1) Dust layers 3.2mm (1/8 in.) thick can be sufficient to warrant immediate cleaning of the area. (Author's emphasis)

(2) The dust layer is capable of creating a hazardous condition if it exceeds 5 percent of the building floor area.

(3) **Dust accumulation on overhead beams and joists contributes significantly to the secondary dust cloud** and is approximately equivalent to 5 percent of the floor area. Other surfaces, such as the tops of ducts and large equipment, can also contribute significantly to the dust cloud potential… (*Author's emphasis*)

(6) Attention and consideration should also be given to other projections, such as light fixtures, that can provide surfaces for dust accumulation. These guidelines will serve to establish a cleaning frequency."

Clearly, the imperative is to comply with these strict standards through frequent and regular cleaning. But what are workable ways to accomplish that?

Managed vs. Engineered Approaches for Wood Processing Facilities

There are two different strategies to address OSHA's concerns: a managed solution or an engineered solution. In fact, the NFPA Standards refer to a managed solution, which has been the status quo to date. It's important to take a look at each approach and identify the strengths and weaknesses.

A managed approach means that personnel or third party businesses clean the overhead structures on a continuing basis. This has been the conventional approach to controlling combustible dust. One benefit of a managed approach is that there are low upfront costs: contracts are set up for ongoing payments that become part of annual operating expenses.

There are also other issues to consider with a managed approach, however. There is risk to personnel for the overhead cleaning. The levels of clean in the facility varies based on the proximity to the scheduled cleaning time: for example, if overhead cleaning is scheduled monthly on the 15th of the month, the combustible dust has had time to accumulated by the 14th of the month, making it possible for the plant to be out of compliance with OSHA regulations…and risk the safety of the employees. Even if a plant owner/manager were not inclined to procrastinate the cleaning, the cyclical nature of the buildup is inevitable with a managed approach. Also inevitable is lost production due to the necessary shutdown of the plant.

Two Engineered Solutions

There are two different types of engineering solutions. With an engineered solution, an enterprise-wide system is needed. This enterprise wide solution often combines technologies, depending on the size of the wood processing plant. The first technology is localized filtration. With this, the equipment captures the combustible dust by either vacuuming or suctioning. This approach is often needed, but the reality is that it can't be used alone because localized filtration can't capture every particle.

The second technology is barrier technology, which prevents combustible dust from accumulating on overhead structures. With barrier technology, a robotic clean fan automatically maintains OSHA compliance throughout the plant. With this approach, there is a one-time deep clean of fugitive dust, and once that dust is removed, no new dust is allowed to accumulate again. Often there is synergy between the filtration and the barrier technologies and they can be effectively used together in one facility to assure ongoing compliance.

With either engineered approach, there are higher, one-time costs for implementation. But these are one-time costs, as opposed to the ongoing costs of a managed solution. An engineered approach also allows for automated, controlled cleaning that doesn't interfere with production. Depending on the sophistication of the specific technology, it also delivers consistently higher levels of clean for ongoing compliance to government regulations and for employee safety.

Practical Next Steps for Timber and Wood Processing Facilities

There are two different ways to address OSHA's stepped-up enforcement: a managed solution or an engineered solution. In fact, the Standards refer to a managed solution, which has been the status quo.

With a managed solution, you have

- Low upfront costs
- Risk to personnel for cleaning
- Cyclical level of combustible dust accumulation
- Inevitable tendency to procrastinate
- Lost production when equipment must be shut down for manual cleaning

With an engineered solution, you need something that is enterprise-wide. Localized filtrations don't capture every particle. With SonicAire's BarrierAire Technology ™, the proprietary engineering designs used in all the SonicAire fans, you get an engineered solution that is enterprise-wide and delivers:

- One-time capital investment
- Higher levels of clean - all areas can be reached

- Consistent levels of clean for ongoing compliance
- Safety for employees
- No interference with production
- Automatic, controlled cleaning

Management should evaluate the overall cost for any solutions based on a range of variables including the criteria of:

- Initial cost
- Operating cost
- Ongoing labor cost
- Employee morale
- Disruption to normal production

Consider an independent consultant's opinion:

> "I like the fans as a concept because they can control dust in hard-to-access areas. The fans provide an option for controlling dust accumulations without the risks to worker safety that would result from the use of ladders or scissor lifts to reach those difficult places."
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SonicAire has developed a line of robotic SonicAire™ fan systems that allows you to clean a plant continuously, thereby preventing fugitive dust accumulation. A one-time investment in this solution provides ongoing protection – and peace of mind – knowing that you have met the stringent OSHA NEP regulations.

For more information, visit www.sonicaire.com, email to moreinfo@sonicaire.com or call the company at 336.712.2437