

Podcast: DSS088

Dust Explosion Loss History in Sweden 2011–2017 with Ken Nessvi, SafeDustExplosion

In this episode of the DustSafetyScience Podcast, Ken Nessvi, senior consultant with BSL Industries in Sweden and co-founder of SafeDustExplosion, shares information about dust explosion loss history in Sweden between 2011 and 2017.

Ken has worked in fire and explosion safety for over 30 years, with a specific focus on dust explosions. He was mentored by Professor Rolf Eckhoff, who has paved the way for the understanding of dust explosions in industry applications. Ken also presented a paper on metal dust explosions in Sweden at the 12th International Symposium on Hazards, Prevention and Mitigation of Industrial Explosions (ISHPMIE) in 2018.

More recently, Ken worked with a team to launch SafeDustExplosion.org, a Swedish website dedicated to combustible dust safety. In this discussion, he talks about his role in industries handling combustible dust in Sweden and answers the following questions:

What motivated your 2018 research?

What were some of the main findings?

Were there any common themes?

Were there any cases that stood out?

What inspired the creation of SafeDustExplosion.org?

What motivated your research?

At a course, Ken met Lennart Evaldsson, an inspector at the Swedish Work Environment Authority, which is the standard authority in Sweden for topics like dust explosions. Evaldsson, who had a lot of contacts with the authorities, provided him with information about incident reports like dust explosions. These incidents were later summarized in the report he presented at ISHPMIE.

In Sweden, the fire rescue services have to provide a report to the Swedish Civil Contingency Agency when they respond to incidents, but reporting was very poor when it came to dust explosions. However, having a central repository allowed what was there to be analyzed.

What were some of the main findings?

Ken's research found that of the 3,000 fires and explosions reported, about 250 events involved combustible dust. This is the equivalent of 10 to 13 incidents a year.

"When it came to what kind of dust, one out of three cases we found involved wood dust, which is not surprising, because in Sweden, we have a lot of wood," he said. "We have a big wood industry, of course. One in five incidents involved metal dust."

He added that he knew of other dust explosions that were not included in the statistics.

"I don't know why. It could be that it was lost in the total of all these events looked at, or it just wasn't reported. I think there is slight underreporting, meaning that not all the incidents are reported to the authorities."

Grain dust explosions are more common than metal-related incidents in North America, but in Sweden it's the opposite. Ken acknowledged that there have been grain dust explosions in Sweden, but the industry appears to be coping with the problem, as fewer are being reported these days.

Were there any common themes?

When examining the incidents, Ken found that many of them were located in extraction systems like filters and cyclones. He also determined that many of the biggest dust explosions could be attributed to errors in manual handling processes like cleaning, repairs, and maintenance.

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Were there any cases that stood out?

Ken recalled a titanium dust explosion ignited by laser welding. There was also a problem in the dust extraction system: when the dust that was not combusted or was only partly combusted came out in the system, there were explosions because titanium was so easily ignited.

“They had explosions there when cleaning. One operator was burned. They also had several fires in the dust collector. So after many, many incidents, they got permission from the environmental authorities to let the titanium dust go unfiltered out to the atmosphere. When their production expanded, they were not permitted to increase pollution, so they added an inerting powder (calcium carbonate) into the filter.”

What inspired the creation of SafeDustExplosion.org?

Ken explained that SafeDustExplosion.org was inspired by a long history of frustration over the lack of awareness of dust explosions.

“We have a lot of specialists and researchers doing great jobs and reports, but they don’t come out to the stakeholders who really need the knowledge. Not everything is designed for the stakeholders, of course, but the main findings and conclusions should come out.

“For example, we know that you can’t use the VDI guidelines or even the European norms for sizing of vents when it comes to certain metals, but in the industry, I’m not sure that they know that. The suppliers of equipment, they should also be aware of this. But on the other hand, we have, in Sweden, no special demands for competent persons. Anyone can be an ATEX consultant or specialist on this subject. No, we have no control over competence in this field.”

SafeDustExplosion.org presents information in both English and Swedish, so that the language barrier is not a major obstacle in understanding the hazards. It also consists of subgroups dedicated to various areas of study, like metal dust explosions, and experts who develop and present educational courses and training.

“There’s a lot of knowledge out there, but it’s not distributed,” Ken said. One of the goals of SafeDustExplosion.org is to change that.

Conclusion

Ken has talked to Dr. Chris Cloney about creating a global working group with a contact in every country. These contacts will be able to identify available information about combustible dust incidents, extract it, and add it to a worldwide knowledge base. This strategy would help with incident reporting and, hopefully, increase awareness of combustible dust as a problem that requires a solution.

Via oss på Safe Dust Explosion kan ni finna vidare information och rådgivning.

Tveka inte att ta kontakt med oss, via hemsidan eller via mail: info@safedustexplosion.org