


Neil Kinder,
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discusses methods of
controlling dust hazards
in materials handling
operations.

DUST HAZARDS DEMAND MANAGEMENT

A close-up photograph of a person wearing a dark suit jacket, a light-colored dress shirt, and a diagonally striped tie. The person's right hand is positioned just above a small, polished metal bell that sits on a dark wooden surface. The lighting is dramatic, with a strong blue and purple hue, creating a professional and serious atmosphere. The background is blurred, focusing attention on the hand and the bell.

There are many serious consequences and health risks associated with inhaling silica dust emissions, especially at quarrying and bulk materials handling operations that have ineffective measures and failures in controlling said emissions.

In addition to this, there are maintenance clean-up costs and long-term detrimental economic and environmental impacts to the surrounding residential communities. For materials handling operators tackling constant dust issues or risk disruption to their productivity, this can be time-consuming and mindful. The worst-case scenario would see planned developments and expansions suspended, along with the future viability of operations.

Headlines have been made recently in the US regarding silica dust emissions, resulting in testing, data, discussions and, consequently, standards being issued. The new regulation lays out stricter guidelines, which intend to minimise the risk of health conditions linked to the exposure of concentrated levels of airborne silica dust over a long period, such as silicosis, chronic respiratory issues, lung cancer and kidney disease, to name a few. Additionally, it details the best risk mitigation practices and compliance.

To date, Kinder Australia has counselled materials handling operators on the dangers of uncontained dust emissions, which can cause serious occupational health and safety issues. These issues not only affect staff, but machinery and nearby communities as well.



Figure 1. K-AllShelter conveyor covers.



Figure 2. K-Flexal elastic belt support.



Figure 3. K-MotorShield motor covers.

Kinder Australia is a leading independent supplier and manufacturer of solutions to improve and maintain the running efficiency of conveyor and bulk materials handling equipment that are used to convey a variety of products, including ore, quarried products, grain, sugar, salt and coal.

Health and safety

When inhaled, fine airborne dust particles can cause serious damage to one's personal health. Additional safety risks include the increased risks of slips, trips and falls in areas that have poor access and visibility caused by dust. Furthermore, dust can also extend to areas beyond the site boundaries. It can contaminate ecosystems, particularly in wetlands and rivers, which cause regulatory interest and rifts between nearby towns and materials handling plants.

It is also worth highlighting that from 1 October 2017 - 31 January 2018, 11.5% of all improvement notices in Victoria (Australia) issued by WorkSafe were related specifically to dust exposure.

When under examination, if materials handling operators fail to comply with regulations they can face fines, potential prosecution and, worst-case scenario, site closure.

For more than three decades, Kinder Australia has been providing innovative dust control solutions for all bulk materials handling operations. The company's K-Snap-Loc® dust seal system and K-Containment seal are high performance, low friction engineered polyurethane solutions for practical and cost-effective improvements for dust control. They are also both suitable for all conveyor belt speed applications.

Through the installation of the company's belt support and containment skirting seals, effective suppression of dust particles at the conveyor transfer points can also be achieved.

Dust control is not just about protecting individuals and the environment, but also the machines within and around the facilities. Kinder Australia believes that K-Motorshield motor covers and K-AllShelter® conveyor covers play a vital role in challenging and minimising dust emissions. Motor covers prevent environmental debris and particles from destroying drive motor bearings, windings and brushes, whereas conveyor covers provide easy access to the conveyor system at all times for any ongoing maintenance, which consequently reduces labour and shutdown requirements.

Case study

Kinder Australia's hard rock quarry producer continuously meets demands. At maximum capacity, the quarry conveys approximately 60 mm of hornfels crushed aggregates, 350 tph and 16 hr/d on a five and a half day production schedule.

Site inspections conducted by the quarry producer identified that the section under the jaw crusher and impact zones were notorious for material spillage.

Production and maintenance downtime of the affected area was required, which negatively impacted on the site's productivity due to the spiralling cleaning up costs and associated labour resources.

Also of primary concern to Kinder Australia was the presence of serious dust emissions; maintenance teams reported the potential for these emissions to cause occupational health and safety personal health risks, such as slips, trips and falls. Effective dust control measures were investigated and required urgent implementation to minimise the contamination of nearby environments, as well as the destruction to expensive conveyor structures and components.

Kinder Australia's K-Flexal® elastic belt support system was selected and installed at the transfer point where the full impact of the conveyed material was isolated to, as well as the location for greatest damage to existing conveyor belts and idlers.

The K-Flexal elastic belt support system installation comprised of four polyurethane elastic straps strategically positioned below the main load zone. The highly flexible and elongation design feature of the straps assist with the absorption of the conveyed material force and abrasiveness, whilst taking into consideration the dropping height and belt speed.

With well over four years of installation history, Kinder Australia's K-Flexal elastic belt support system

continues to deliver very positive outcomes for the quarry producer. Easy to install and belt-friendly, the K-Flexal straps act as shock absorbers, with the advantages of extending the wear life of the conveyor belt and effectively overcoming the challenges of material spillage and dust emissions experienced onsite. Other onsite improvements include reliability, productivity, availability and a significant reduction in clean-up costs and time, due to the successful spillage and emissions containment.

The nature of today's quarrying and bulk materials handling operations produce dust, and lots of it. As such, best practice dust control measures need to be implemented to ensure the levels are industry standard compliant, as a means of preventing harm to workers. Dust control systems currently available vary greatly in terms of complexity and ease of implementation, and is highly dependent on the sites size, location and the surrounding environment.

Conclusion

Kinder Australia's knowledge and experience has demonstrated that the return on investment on implementing an effective dust control solution can be realised quickly. The company believes that the real gains to an operator can also be put in terms of continuous efficiency in productivity, as well as reducing the risk to personal safety and the environment. **DB**