A New Spin On Dust Control
How cyclones can simplify your jobsite dust control plan and improve livability
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The Dangers of Remodeling Dust

Home remodeling is dusty business. In some cases, home remodeling activities have been shown to increase the amount of dust in the air by 10 times. To make things worse, many dusts generated during home remodeling can cause adverse health effects. Some are even linked to cancer.

Construction dust is now more regulated than ever. In a recent change to OSHA's regulation on silica dust, the permissible exposure limit (PEL) for silica dust was reduced 5 fold – from 250 μg/m to 50 μg/m, averaged over an 8 hour workday. This regulation change was sparked in part by the increasing pool of evidence linking crystalline silica dust to adverse health effects. These health effects include silicosis, lung cancer, Chronic Obstructive Pulmonary Disease (COPD), and kidney disease.

Crystalline silica can become airborne during a variety of home remodeling tasks including general demolition and drywall work. These activities can cause tiny crystalline silica particles – often 100 times smaller than beach sand – to become airborne and potentially inhaled. Without proper dust control practices in place, silica dust levels may reach dangerous levels during certain home remodeling tasks.

Other types of dust or fibers that may be uncovered during a home remodel may include dust from wood and tile, fiberglass, and other building materials. Even dust from organic matter such as mold, dust mites, insect parts, microorganisms, and rodent feces can be uncovered. These dusts can be very unpleasant and potentially harmful to work around.

Renovation dust is not only bad for you and your clients’ health, it is a major nuisance. Without proper control efforts, dust can settle throughout the residence, leaving homeowners the job of cleaning it up weeks after the remodel has been completed.

Most homeowners choose to live in the home during a remodel and expect the contractor to make proper dust control efforts. In many cases, contractors fail to provide an adequate level of dust control and clients are left unsatisfied. Some contractors consider dust control to be a losing battle, but this does not have to be the case. With proper planning, it’s possible for your clients to experience a truly livable remodel.

Key Takeaways

• 10 times more dust can be present during a remodel.
• Some construction dusts can cause adverse health effects such as silicosis, kidney disease, and cancer.
• Most homeowners choose to live in their home during a remodel and expect the contractor to make efforts to control the dust.
Effective Ways to Control the Dust

80% of contractors surveyed have a plan to improve their dust control program

After understanding the dirty side of dust, this statistic is no surprise. Clients are also aware of the health effects and general inconvenience caused by renovation dust. Because of this, it’s more important than ever to meet the need for an improved dust control program.

Helpful Tips for Reducing Jobsite Dust

1. **Use a collective approach** – There is no miracle solution, but a combination of the below methods can significantly reduce jobsite dust.

2. **Dust Barriers** – Isolate the work area with poly sheeting, seal HVAC vents, and designate an entry point. This will help prevent dust from leaving the workspace and drifting into other areas of the residence. Though this step is important for protecting your clients and their belongings, it will not decrease the amount of dust in the workspace. Active measures should be taken to protect your workers.

3. **Vacuum Equipped tools** – Many power tools can be purchased with a vacuum collection port including drills, saws, and sanders. Always use vacuum equipped tools when possible. This method is not possible for some tasks including demolition which is one reason why an air scrubber may be necessary.

4. **Air scrubbers** – Some dust will inevitably become airborne. This dust will be breathed in, settle in the workspace, or enter unwanted areas of the residence. By constantly exchanging the air in the workspace, any airborne dust can be removed before it is breathed in or settles on your client’s belongings.

5. **Negative pressure in the workspace** – Air scrubbers can often be vented outside to create a negative pressure in the workspace. This causes a continual draw of fresh air into the workspace and prevents dust from entering other areas of the residence.
A Technical Understanding of Remodeling Dust

Construction dust generally consists of larger particles when compared to normal indoor air quality. A study conducted by The Center for Construction Research and Training found that over 99% of airborne particles were larger than 3 microns during drywall sanding efforts. Although 3 microns is smaller than the human eye can see, it’s relatively large considering air quality standards and can be filtered by multiple technologies. This leads to a reasonable conclusion that coarse particle filtration can be substantially valuable to address construction particles.

OSHA §1926.1153 - Respirable Crystalline Silica
Effective: June 23, 2018

“Dust collector must have a filter with 99% or greater efficiency”

The value of coarse particle filtration has also been adopted by OSHA’s new regulation on silica dust. The new regulation mandates a 99% efficiency rating for air scrubbers used in silica dust control efforts. This efficiency rating was downgraded from the original regulation which mandated a more efficient HEPA filter be used in years prior.

The original regulation, released in 1971, mandated that a fibrous media be used for air filtration. One major drawback of this technology is the constant clogging of the filter media. This results in decreased air flow, until ultimately the filter has to be replaced at a cost of $30 to $150 each depending on the type and manufacturer.

The recent update to regulation has opened the door for new technologies to enter the dust control market. One of which being cyclonic technology.
Cyclones have been studied for decades and are well understood. As air is drawn into the cyclone body, a vortex is formed. Forces within the vortex remove particles over a certain size from the airstream. The size of particles that are removed is the cyclone’s cut-point. The cyclones cut-point combined with the size distribution of the dust being separated yields the cyclone’s overall efficiency. A study on cyclone design from Texas A&M University shows that a cut-point of 3 microns can be expected from a properly designed cyclone. This translates to an efficiency rating of 99% or more considering the large nature of construction particles.

Cyclones have many advantages over traditional filter media. One of the main advantages is that there’s no filter that clogs over time. Airflow will remain constant throughout the life of a cyclone and no routine maintenance is required. Cyclones are also relatively simple and can be constructed with minimal material, meaning a lighter, more maneuverable product for the user. Lastly, the inlet of a cyclone allows for a unique dust capture experience with better control – allowing the user to place the inlet where they need it most.

It’s clear that cyclones can offer a more simple solution to controlling jobsite dust and make it easy to do the right thing for your workers and clients.
References

