

# Hose and Couplings to Reduce Silica Dust

The new rule to protect workers from silica dust exposure aims to control dust rather than rely on face masks. Robert McIlvaine explores how this change and the new regulations is helping reduce silica dust exposure, which in return is helping create a large market for hoses and couplings.

By Robert McIlvaine, President, The McIlvaine Company



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AIRIS Vacuum System with Flexible Hose Exhaust Ducts

## New rules for silica dust exposure

A large market for hose and couplings is being generated by new rules to protect workers from silica dust exposure. Most of the provisions of the Respirable Crystalline Silica Standard for General Industry and Maritime, 29 CFR § 1910.1053, became enforceable on June 23, 2018. The standard established a new 8-hour time-weighted average (TWA) permissible exposure limit (PEL) of 50 µg/m<sup>3</sup>, an action level (AL) of 25 µg/m<sup>3</sup>, and additional ancillary requirements. Hydraulic fracturing operations in the oil and gas industry must implement dust controls to limit exposures to the new PEL by June 23, 2021. The new rule effectively cut in half the previous permissible exposure limit (PEL) on crystalline silica dust in general industry.

IAC has identified customers who need solutions. They include about 2.3 million men and women who are exposed to respirable

dust containing crystalline silica in their workplaces, 2 million construction workers who drill and cut silica containing materials such as concrete and stone 300,000 workers in operations such as brick manufacturing, foundries, and hydraulic fracturing and 50,000 miners in the US.

## Controlling silica dust at source

The new rule emphasizes dust control rather than reliance on face masks. This means controlling the dust at the source. IAC has pursued engineering controls with both rigid and flexible ducting. For stationary points such as belt transfer or storage a balanced duct work system with enclosed hoods insures dust capture. IAC employs flexible hosing where the source is mobile. Examples of mobile sources are silica sand transport and cutting or sawing of ceramic materials. Non silica sources such as welding and metal pouring ladles are other examples of mobile sources.

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*Mobile Fume Arm courtesy of IAC*

A big new source is hydraulic fracturing. Dust is created at the frac sand plants and must be controlled as sand is loaded for transport. The operation to mix the sand with water and chemicals and then inject it is done with mobile units. The reason is that fracking is a temporary operation. Large flexible hose and vacuum dust collectors are needed at each frac sand site.

On-Site Dust Control rents portable vacuum units used in many industrial areas including construction, sand blasting, painting, welding, and frac sites. 20,000 or 28,000 CFM units are delivered to the job site and rented on a monthly basis.

#### **Use of hoses to capture dust at source**

AIRIS has a number of rental units which can be moved from one fracking site to another. The dust vacuums are available in sizes up to 45,000 cfm powered by either diesel or electric units. The units filter the dust with MERV-12 cartridges. The collected dust is directed to Super Sacks for storage. Flexible hoses are used to capture the dust at its source.

The use of flexible hose to prevent silica dust release will be increasing significantly. One reason is that the cost of mobile hoods is far less than large area exhaust systems which utilize large fans and dust collectors and require much more energy than local mobile systems. The cost of replacement hose is small compared to the differential fan energy cost between a large central system and a small vacuum system.

#### **ABOUT THE AUTHOR**

Bob McIlvaine founded the McIlvaine Company in 1974 and oversees the work of 30 analysts and researchers. He has a BA degree from Princeton University.

