

My name is Mel Rosas, and after 25 years in the safety industry I now teach safety, as well as work as a consultant. I have found a device that is becoming as prevalent to construction, as the use of “wet-cutting” for brick, block and tile is today.

As a former OSHA (Department of Labor-US Federal Government) Compliance Officer in North Carolina I would like to share this information with all that can use it to reduce the respiratory exposure to total dust, silica and other similar contaminants in the construction workplace. Exposure to crystalline silica dust can be associated with a number of debilitating and fatal diseases, such as silicosis, lung cancer, and immunologic disorders.

I was asked to oversee air monitoring to evaluate the effectiveness of the Demo Air Net. A safety product, which captures “airborne particulates” in a unique fashion. I was amazed at the results. The Demo Air Net system significantly reduced the dust levels in the testing area. The Demo Air Net is unique in that it can be attached to any fan exhaust and capture particulates down to 5 microns in size. Converting the fan into a portable dust filter, working in high volume.

Until now there has not been an “area” engineering control for total dust and silica that was effective and affordable. There are some products that work on the vacuum principle to control dust at the point of generation, or wet methods, but not for the whole area where other workers are also exposed.

A fan equipped with the Demo Air Net can be positioned anywhere to reduce employee exposure. In a situation where employees cut concrete, the fan can be placed so that it pulls the concrete dust (including silica) away from the employee’s breathing zone. The resulting dust is captured in the Demo Air Net, reducing the amount of dust in the work area and the amount of dust that will settle out.

I am certain that using the Demo Air Net in asbestos abatement operations will also produce a significant reduction of the air contaminants at the point where the Asbestos is disturbed into the air. And reduce the exposure to property, equipment and workers.

Fine dust can be a real issue when employees are sanding dry wall. A fan equipped with the Demo Air Net can be positioned below the employee with the intake angled up toward the employee. This configuration will pull the dust down and away from the employee’s breathing zone into the Demo Air Net.

When portable ductwork is necessary, the Demo Air Net can be attached to the exhaust fan used with the portable ductwork to capture particulates instead of releasing them into the surrounding work area. This includes ventilators used to control dust levels in confined spaces such as storm drains and sewers during operations that require employees to cut or grind on concrete pipe.

We have known for years that workers in a typical concrete block and drywall operations can create environmental conditions that exceed the permissive exposure limits (PEL) for total dust and silica. The only protection to the worker has been personal protective equipment (PPE), the “Dust Mask” which many construction workers hate to use. There are also other trades (electricians, plumbers etc.) that are working in the same vicinity, many times without any PPE.

This evaluation revealed to me, that with proper application of the necessary Demo Air Net units, it is possible to maintain compliance with OSHA and MSHA respiratory hazard protection requirements and potentially below the Permissible Exposure Limits (PEL). The net captures large volumes of contaminated air keeping total dust and silica levels down, where only minimal PPE might be needed and protecting short-term workers that may enter the area.

The air sampling was done in a 31,000 cubic foot room under construction. The room was composed of concrete block. One wall was lined with windows. The room had two standard size entrances. The outside entrance was equipped with a door that remained closed during the sampling periods. The other door, which leads to the inside of the building, was blocked and the ventilation system was closed off.

We purposefully contaminated the room. A medium fan was placed at the center of the room aimed upward. Construction waste (drywall, block, cement, etc.) dust (from an actual construction site) was liberated on top of the fan and blown upwards into the air. Two additional fans were positioned 5 feet on both sides of the center fan to keep the dust circulating throughout the room. Four air sampling units were placed around the center fan approximately 3 feet off the ground. Two samples were placed on either side of the fan at 12 feet from the fan. Two additional samples were placed 6 feet from the fan. A standard 42-inch diameter floor fan was used in the exercise with a Demo Air Net was installed.

Samples for Total Dust and Quartz Silica were collected using Air Check 52 air pumps equipped with a 5-micron polyvinyl chloride (PVC) filter cassettes attached to tygon tubing connected to the air pump. After completion of the sampling, the samples were sent to the laboratory where they were analyzed using Gravimetry NIOSH 500 for Total Dust and NIOSH 7500 for Quartz Silica.

Sample Location	Total Dust Levels and Quartz Silica Levels before, <u>without</u> the Demo Air Net Analytical Method – Gravimetry NIOSH 0600, X-ray Diffraction NIOSH 7500		Total Dust Levels and Quartz Silica Levels after, <u>with</u> the Demo Air Net Analytical Method – Gravimetry NIOSH 0600, X-ray Diffraction NIOSH 7500	
	Total Dust Results	Quartz Silica Results	Total Dust Results	Quartz Silica Results
1A	53 mg/m ³	1.8 mg/m ³	0.74 mg/m ³	< 0.048 mg/m ³
2A	20 mg/m ³	0.48 mg/m ³	0.83 mg/m ³	< 0.049 mg/m ³
3A	35 mg/m ³	1.6 mg/m ³	0.81 mg/m ³	< 0.051 mg/m ³
4A	19 mg/m ³	0.39 mg/m ³	0.87 mg/m ³	< 0.050 mg/m ³

The test revealed that an area where the respiratory hazards were out of compliance, the Demo Air Net was able to bring the room conditions into compliance with OSHA PEL levels and the silica level nearly undetectable.

Also, sweeping towards the Demo Air Net can pick up some of the heavier dust particles that settled onto the floor.

There is no doubt in my opinion, that this invention is a method of engineering out the respiratory hazards in large open areas, and will help construction and remodeling companies to come into compliance with safety requirements.

As a former OSHA compliance officer, I see the use of Demo Air Net method of controlling Silica exposure, becoming as prevalent to construction, as the use of “wet-cutting” for brick, block and tile is today.

Remember that OSHA’s position is to engineer out the hazard first, before considering the use of personal protective equipment (PPE) to provide protection to the worker.

Additionally the workforce will enjoy a cleaner air environment to work in which is not normally possible under today’s work practices and saving time and money during final clean up.