What is Silica?

- Mineral found in the earth’s crust.
- Quartz is the most common – found in sand, stone, rock, concrete, brick, block, and mortar,
- Is hazardous when small particles (respirable silica) are inhaled. The particles can penetrate deep into the lungs and cause disabling and sometimes fatal lung diseases, i.e., Silicosis, lung cancer and kidney disease.

Exposure can occur during:

- Abrasive blasting/crushing
- Drilling rock & concrete
- Masonry and concrete work
- Mining/tunneling
- Cement and asphalt pavement manufacturing
- Jack-hammering
- Brick and concrete block cutting
- Fiber-Cement siding work
- Fracking operations

History

Hazards or respirable silica had been noted as early as the 1930’s. There were standards set in 1971 after OSHA was created. These standards have become outdated and don’t adequately protect workers. The process to update the rule began in 2013. Employers in the construction had to comply by 9/23/2017. Employers in the general industry have until 6/23/2018 to comply. It doesn’t mean the rule is not in effect.

Health Effects

Silicosis – a disabling, non-reversible and sometimes fatal lung disease. When silica dust enters the lungs, it causes the formation of scar tissue, which makes it difficult for the lungs to take in oxygen. Silicosis typically occurs after 15–20 years of occupational exposure to respirable crystalline silica. Shortness of breath, fatigue, chest pain.

Other non-malignant respiratory diseases, such as chronic bronchitis.

Lung cancer

Kidney disease, including nephritis and end-stage renal disease. Kidney failure has been observed among workers with high silica exposure, such as in abrasive blasters who also were suffering from silicosis.
Regulation

About 2.3 million workers are exposed, breaks down to about 2 million construction and 300,000 general industry.

The new regs main focus is further limiting exposure. The changes are estimated to save 600 lives and prevent 900 new cases each year.

The new reg reduces permissible exposure limit to 50 micrograms per cubic meter of air averaged over an 8 hour shift.

And Implements an Action level at 25 micrograms per cubic meter of air averaged over an 8 hour shift.

Employers are required to control dust using engineering controls, i.e., water, ventilation.

Employers are required to supply PPE when the PEL is going to exceed 50 micrograms per cubic meter.

Employers are also required to provide medical exams and to monitor highly exposed workers.

Table 1

Table 1 is a flexible compliance option that effectively protects workers from silica exposures. It identifies 18 common construction tasks that generate high exposures to respirable crystalline silica and for each task, specifies engineering controls, work practices, and respiratory protection that effectively protect workers. Employers who fully and properly implement the engineering controls, work practices, and respiratory protection specified for a task on Table 1 are not required to measure respirable crystalline silica exposures to verify that levels are at or below the PEL for workers engaged in the Table 1 task.

OSHA developed Table 1 in response to stakeholders in the construction industry, who indicated the need for guidance and a standard that is different than a standard for general industry. Among the concerns of construction industry stakeholders were the impracticality of exposure monitoring based on short duration of task and constantly changing conditions, such as weather, job sites and materials.