

TOOLBOX TALK #9

EXPOSURE TO SILICA FROM CHIPPING, CRUSHING

Certain job tasks may expose construction workers to silica dust at levels more than 10 times the permissible exposure limit set by OSHA, according to the results of a recent study.

Researchers collected 51 personal breathing zone samples from workers at demolition, crushing and bridge repair sites in Massachusetts. Another 33 “area samples” were taken near demolition or crushing sites to determine possible exposure to bystanders. Comparison samples were taken at sites that had dust suppression controls and those that did not, when possible.



Workers performing concrete chipping at substructure bridge repair sites had the highest level of respirable crystalline silica exposure, a time-weighted average of 527 micrograms per cubic meter of air. That is more than 10 times the PEL of 50 micrograms per cubic meter of air that OSHA established in its most recent silica regulation (1926.1153).

Workers operating crushing machines had a respirable crystalline silica exposure of 93.3 micrograms per cubic meter of air. Operating engineers and laborers had the lowest exposure, a time weighted average of 17 micrograms per cubic meter of air.

Controlling or reducing silica exposure below OSHA’s PEL “remains challenging for chipping workers and crushing machine tenders. Even with the use of dust suppression controls, respiratory protection may be required for various tasks,” the researchers said. They recommend that employers provide additional respiratory safeguards for these workers.

Crystalline silica is a known carcinogen sand, stone and artificial stone. Exposure to silica dust can trigger silicosis, a chronic disease that involves scarring of the lungs. OSHA estimates that 2.3 million workers are exposed to the dust, including 2 million in construction.