HAZARD ANALYSIS

LESSONS LEARNED AND INITIAL FINDINGS FROM OSHA's EMPHASIS PROGRAM ON SILICA IN ENGINEERED STONE

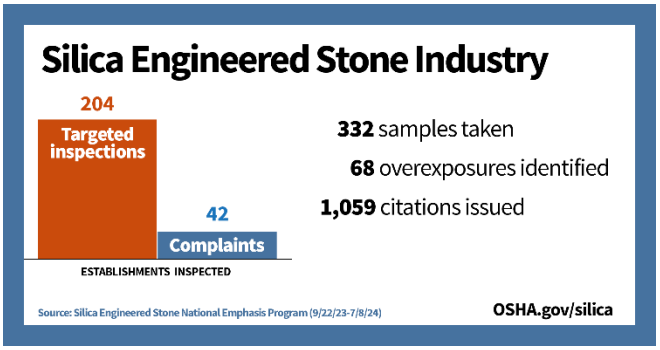
The connection between workplace exposure to fine airborne silica dust and the uncurable and progressive lung disease silicosis has been known for hundreds of years. Engineered stone has become very popular for use in modern countertops. However, it often contains large amounts of silica, and when it is cut it can generate high airborne levels of concentrated silica dust. In the past ten years, engineered stone has been linked to an expanding epidemic of accelerated silicosis cases. A case study recently published in *JAMA Internal Medicine* identified 52 young men who were diagnosed with silicosis, many with severe disease and some who died. The median age of these workers was 45, and 51 were Latino.[1]

Inspection Results

Respirable crystalline silica (RCS) exposure information was examined for OSHA inspections conducted during calendar year 2022 in workplaces that work with natural and engineered stone slabs. The data showed that:

- approximately one quarter of the breathing zone samples for RCS exceeded the OSHA Permissible Exposure Limit (PEL)
- the highest measured 8-hour time weighted average RCS exposure value recorded was approximately 20 times the PEL value
- nearly two thirds of the employers with RCS overexposures had not completed medical surveillance on exposed employees[2]

Based on these findings, OSHA has been conducting both additional outreach and enforcement within the engineered stone industry and other establishments with RCS exposures.



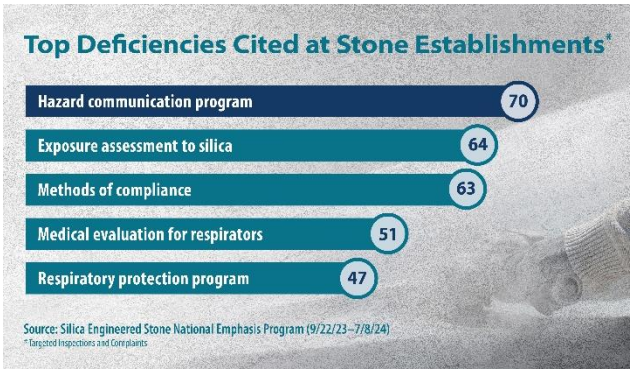
Confronting the Problem

On September 22, 2023, OSHA launched an initiative focused on enhancing enforcement and providing compliance assistance to protect workers in the engineered stone fabrication and installation industries. Between September 22, 2023, and July 8, 2024, OSHA conducted 160 programmed inspections in Cut Stone and Stone Product Manufacturing companies and 44 inspections in Brick, Stone, and Related Construction Material Merchant Wholesalers. During the same time period, OSHA conducted 42 unprogrammed inspections in these industries. Violations were issued in 149 of these inspections.

Violations cited include requires under 29 CFR 1910.1053 (silica), 29 CFR 1901.134 (respiratory protection), 29 CFR 1910.1200 (hazard communication), and 29 CFR 1910.95 (noise).

[1] Fazio JC, Gandhi SA, Flattery J, et al. Silicosis Among Immigrant Engineered Stone (Quartz) Countertop Fabrication Workers in California. JAMA Intern Med. 2023;183(9):991–998. doi:10.1001/jamainternmed.2023.3295

[2] Hodgson MJ, Smith PA. Workers at Risk of Silicosis—Ongoing Overexposure and Lack of Medical Surveillance. JAMA Intern Med. 2024;184(2):224–225. doi:10.1001/jamainternmed.2023.6632



Of the violations issued, the most common was for failure to develop and implement a written hazard communication program discussing workplace chemicals including silica. Also in the top 5 of violations were failure to develop, or missing elements of, a written respiratory protection program and lack of medical examinations for employees wearing respirators. Employers looking to create or update a comprehensive respiratory protection program can find assistance at osha.gov/respiratory-protection.

Among the most common violations of the general industry silica standard were methods of compliance, exposure assessments, and communication of silica hazards. Employers are required to assess RCS exposure for any employee who is, or reasonably believed to be, above the action level. Employers are required to use engineering and work practice controls to reduce and maintain employee exposures to RCS to or below the PEL. Respiratory protection can be used to supplement engineering and work practice controls when they are inadequate to control exposures to or below the PEL on their own. Employers must also have a written exposure control plan. RCS must be included in the program required under the hazard communication standard and training should focus on health hazards, specific tasks with exposures, measures to control exposures, and the purpose and description of the medical surveillance program.

Construction vs. General Industry Requirements

During an inspection of a marble and granite company, OSHA found that the employer was incorrectly using the construction table for silica which allowed the use wet cutting methods for exposure controls. The employer falsely believed that since his task was like one identified in the construction table, he could use that for compliance. However, the general industry standard prohibits using the construction table if the task is performed regularly in the same environment and conditions (in this case in a company shop.) The employer was required to conduct sampling and had not done so. Citations were issued for failure to conduct silica exposure monitoring, lack of respiratory protection fit-testing and annual training, and failure to provide hearing testing.

Using Wet Methods for Dust Control?

A recent programmed inspection of a brick manufacturer who employed temporary workers identified several RCS overexposures for saw operators with 8-hour time weighted averages up to 373 ug/m3 (over 7 times the OSHA Permissible Exposure Level of 50 ug/m^3.) Workplace controls included wet cutting methods; however, the facility was recycling cutting water, potentially concentrating silica and other contaminants. Workers were also overexposed to noise. Citations were issued to both the brick manufacturer and the temporary staffing agency for RCS and noise overexposures, lack of a hearing conservation program, lack of a respiratory protection program, lack of a silica exposure control plan, and lack of training. Total penalties for the two employers were $146,797. Although not using engineered stone in this case, the practice of recycling cutting water should be evaluated to determine if it is effective in controlling RCS exposures.

What other safety hazards might be present?

In several cases, OSHA has also cited employers for violations associated with blocked emergency exits, forklifts training, electrical hazards, and lack of machine guarding. Workshops contain a variety of hazards and it is important for both employees and employers to identify all workplace hazards and ensure proper controls are in place to protect everyone.

Our hazard alert provides simple and effective dust controls for most countertop operations — Worker Exposure to Silica during Countertop Manufacturing, Finishing and Installation. Additional information about working safely with silica is available at osha.gov/silica.

OSHA is committed to protecting workers from toxic chemicals and other serious hazards at work, ensuring that vulnerable workers in high-risk jobs have access to critical information and education about job hazards, and providing employers with compliance assistance to promote best practices that can save lives.

Worried about Silicosis?

If you are concerned about your health or someone else's health and potential exposures to respirable crystalline silica, please contact your local OSHA office. OSHA is investigating referrals related to silicosis including reports of early onset silicosis related to engineered stone. If you are a medical provider, health department, or coroner's office that encounters silicosis, please refer the case to your local OSHA office for further investigation. OSHA offices can be found at osha.gov/contactus/bystate.