

# Respiratory Protection for Stone Countertop Workers

## Background

Reports of silicosis, including fatalities, have increased among stone countertop workers. Crystalline silica content in countertop materials ranges from <45% in granite to >90% in engineered stone. Workers utilizing such materials may be exposed to small silica particles when cutting, grinding, chipping, drilling and polishing stone products; handling ground quartz; or cleaning up afterwards. Use of hand tools at the shop or job site can lead to some of the highest exposure levels. Breathing in airborne crystalline silica has been associated with silicosis (inflammation and scarring of lungs that permanently reduces ability to take in oxygen), lung cancer, chronic obstructive pulmonary disease (COPD), decreased immune system and kidney disease.

## OSHA

In 2016, the U.S. Occupational Safety and Health Administration (OSHA) published standards for occupational exposure to silica in both construction (29 CFR 1926.1153) and general industry (29 CFR 1910.1053). These standards, along with frequently asked questions, small business compliance guides, and training materials may be found at [www.osha.gov/silica-crystalline](https://www.osha.gov/silica-crystalline). Highlights of these standards include:

1. Lower exposure limit of 0.05 mg/m<sup>3</sup> respirable crystalline silica
2. Exposure monitoring
3. Engineering controls such as wet suppression, dust collection, and ventilation
4. Limiting access to, or duration in, hazardous areas
5. Respiratory protection
6. Housekeeping to keep dust levels down
7. Designated competent person (construction only)
8. Written exposure control plan
9. Medical surveillance to identify silicosis in exposed workers
10. Training including hazards of respirable silica
11. Record keeping

## Reducing Exposure

Silicosis is preventable, but not curable. Engineering controls such as using tools that include water feeds and high-efficiency particulate air vacuums (HEPA) can help to reduce dust. Other engineering controls may include isolating high dust activities such as angle grinding or cutting, installing local exhaust ventilation systems next to the dust generation point, and utilizing wet sweeping or HEPA vacuums to clean up instead of dry sweeping or compressed air. If these methods are not adequate or while they are being implemented, respirators may help further reduce exposure to and inhalation of silica dust. Depending on airborne respirable silica levels, respirator options range from disposable or reusable half mask particulate respirators to powered or supplied air respirators. When respirators are used, OSHA requires a written respiratory protection program including, but not limited to, respirator fit testing, training, and medical evaluations. For more information on respiratory protection and crystalline silica, please see [www.3M.com/oshasilica](https://www.3M.com/oshasilica).

## References

1. Rose C, Heinzerling A, Patel K, et al. Severe Silicosis in Engineered Stone Fabrication Workers — California, Colorado, Texas, and Washington, 2017–2019. MMWR Morb Mortal Wkly Rep 2019;68:813–818. DOI: <http://dx.doi.org/10.15585/mmwr.mm6838a1>
2. Hazard Alert: Worker Exposure to Silica during Countertop Manufacturing, Finishing and Installation. DHHS (NIOSH) Publication Number 2015-106. OSHA–HA-3668-2015. <https://www.osha.gov/Publications/OSHA3768.pdf>



### Personal Safety Division

3M Center, Building 235-2W-70  
St. Paul, MN 55144-1000

3M PSD products are  
occupational use only.

### 3M Canada

P.O. Box 5757  
London, Ontario  
N6A 4T1

### In United States of America

Technical Service 1-800-243-4630  
Customer Service 1-800-328-1667  
[3M.com/workersafety](http://3M.com/workersafety)

### In Canada

Technical Service 1-800-267-4414  
Customer Service 1-800-364-3577  
[3M.ca/Safety](http://3M.ca/Safety)

© 3M 2024. All rights reserved.

3M is a trademark of 3M Company and  
its affiliates.

Used under license in Canada. All  
other trademarks are property of their  
respective owners.  
Please recycle.