NEJM Evidence

Published August 12, 2026

DOI: 10.1056/EVIDpha2600187

PUBLIC HEALTH ALERTS | IN PARTNERSHIP WITH CIDRAP

Silicosis among Workers Fabricating Engineered Stone ("Quartz") Countertops in California, 2019–2026

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Abstract

From January 2019 through June 2026, the California Department of Public Health identified 592 cases of silicosis among workers fabricating crystalline silica-containing engineered stone countertops. Of those, 65 underwent lung transplantation, and 31 died. Silicosis is preventable with reduction or elimination of silica dust exposure. Although surveillance findings have prompted regulatory and legislative changes in California, workers continue to be exposed to hazardous levels of respirable crystalline silica. Protecting workers from further exposure will require a multifaceted approach, including clinicians' identifying and reporting of cases to public health authorities, improved surveillance by local and state jurisdictions, and policy changes.

The Public Health Alerts section in *NEJM Evidence* is in partnership with the Center for Infectious Disease Research and Policy (CIDRAP) at the University of Minnesota.

Introduction

Silicosis is a progressive, incurable fibrotic lung disease caused by inhalation of respirable crystalline silica. Over the past two decades, a growing risk has been recognized among workers fabricating crystalline silica-containing engineered stone countertops (also known as artificial stone or "quartz"). Engineered stone slabs are manufactured by crushing natural quartz into fine powder then binding it with polyester resins and pigments; the material contains high levels of crystalline silica (typically >90%). Fabrication workers who cut, grind, and polish these slabs into countertops can be exposed to hazardous levels of respirable crystalline silica, along with volatile organic compounds and metals.

Global demand for engineered stone has grown substantially since its introduction in the 1980s, and it is now the most popular countertop material in the United States. The first case reports of engineered stone silicosis appeared in 2010; thousands of cases have since been identified worldwide, including in Australia, China, Israel, Spain, and elsewhere.[1]

In January 2019, the California Department of Public Health (CDPH) identified California's first known case of silicosis in a countertop fabrication worker, who received the diagnosis at 32 years of age and died of respiratory failure at 38 years of age. Information in this report was obtained after review and approval by the California Committee for the Protection of Human Subjects.

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Surveillance and Outcomes

Following the index case identification, CDPH conducted a workplace investigation and identified two additional cases of silicosis among former workers at the same company, including a second person who had died. Screening of the company's 43 current employees identified five additional cases of silicosis.[2] CDPH subsequently expanded its silicosis surveillance to include hospital discharge data, electronic case reporting, and direct reporting from clinicians and others.[3] Cases were confirmed using the National Institute for Occupational Safety and Health case definition for silicosis[4] and history of countertop fabrication.

As of June 2026, CDPH has identified 592 cases of engineered stone silicosis in California, including 65 workers who underwent lung transplantation and 31 who died (Table 1). These cases are notable for the patients' young age at diagnosis, short duration of exposure, severity and rapid progression of disease, and frequent co-occurrence of other silica-associated conditions, including autoimmune disease and tuberculosis.[5]

The CDPH's surveillance and documentation of these cases have prompted policy and regulatory actions, including passage of an emergency regulation by the California Occupational Safety and Health Standards Board (OSHSB) in 2023, made permanent in early 2025, that strengthened existing California Division of Occupational Safety and Health (Cal/OSHA) silica regulations. In 2025, California Senate Bill 20 codified these regulations and expanded CDPH's role in silicosis surveillance, outreach, and education, and CDPH designated silicosis as a mandatory reportable condition in California.

Table 1. Characteristics and Outcomes of Workers with Engineered Stone Silicosis in California, January 2019–June 2026 (n=592).*

Characteristic	Number (%)
Sex	
Male	591 (99.8)
Female	1 (0.2)
Race/ethnicity	
Latino	580 (98)
Other	11 (1.9)
Unknown	1 (0.1)
Referred for lung transplantation	138 (23)
Underwent lung transplantation	65 (11)
Died	31 (5)
	Median (IQR), yr
Years of occupational silica dust exposure (n=427)	22 (16–25)
Age at diagnosis (n=310)	46 (41–52)
Age at death (n=31)	52 (44–55)

*IQR denotes interquartile range.

Despite these developments, workers remain at risk. Although silicosis is preventable with reduction or elimination of silica dust exposure, the water-based tools and ventilation systems required to control silica dust are costly to install and maintain, and overexposures can occur even with recommended controls in place.[6] In addition, enforcement of existing regulations is challenging. In 2024, Cal/OSHA was able to inspect only 85 of California's over 1300 countertop fabrication shops, of which 95% were in violation of safety regulations.[7]

Conclusions

The extent of engineered stone silicosis among California countertop fabrication workers, unrecognized before initiation of public health surveillance, has prompted regulatory and legislative actions. Despite these interventions, hazardous worker exposures persist in California.

Although California's silicosis surveillance has expanded, the true burden of disease remains underestimated, because the system relies largely on passive reporting of diagnosed disease. Although case identification through active screening has increased through improved worker and clinicians' awareness, screening is inconsistent, and misdiagnosis remains common.[5] In Queensland, Australia, where all current and former countertop fabrication workers were offered screening, over 25% received a diagnosis of silicosis.[8] Among the thousands of current and former countertop fabrication workers in California and more than 100,000 nationwide, similar active screening would likely substantially increase case identification.

Establishing or strengthening silicosis surveillance systems and implementing active screening programs would provide policymakers with essential information for taking actions to prevent this disease. Clinicians also can play an important role by asking patients about their work, evaluating countertop fabrication workers for silicosis, and reporting cases of silicosis to public health authorities (Fig. 1).

Recognizing the ongoing threat to workers' health, the Western Occupational and Environmental Medical Association recently petitioned the California OSHSB to prohibit all fabrication and installation of engineered stone containing more than 1% crystalline silica; in May 2026, OSHSB granted the petition and directed Cal/OSHA to

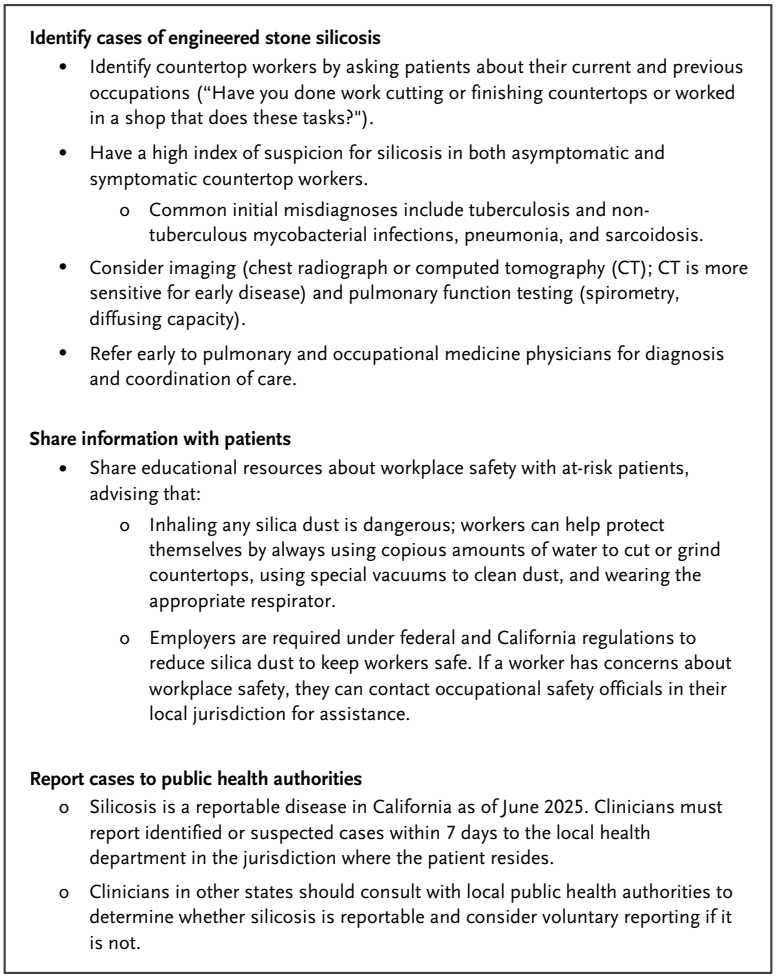

Figure 1. Recommendations for Clinicians for Active Surveillance for Engineered Stone Silicosis.

begin emergency rulemaking.[9] This approach follows the model of Australia, which banned manufacture, import, and fabrication of engineered stone in 2024.[10] Following the ban, manufacturers have responded by developing alternative products, including countertops made of amorphous silica, which carries a substantially lower risk of silicosis.

Clinicians, scientists, and public health professionals have a key role to play in establishing the evidence base and informing similar policy changes in the United States and globally to protect fabrication workers from acquiring a deadly, preventable disease.

Disclosures

Author disclosures are available at evidence.nejm.org.

The findings and conclusions in this article are those of the authors and do not necessarily represent the views or opinions of the California Department of Public Health or the California Health and Human Services Agency.

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