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Engineered Stone Countertops and Silicosis but not in Michigan?

Engineered stone countertops began to be manufactured in 1987 in Israel. The percent of silica in engineered countertops, a combination of silica and resins, can be as great as 93%, in contrast, the percent of silica in a slab of granite is < 45%. Produced as slabs or blocks, the product is widely used in kitchens and bathrooms (Figures 1 and 2). Manufacturing of this material expanded rapidly after 1987 with products such as CaesarStone™, Silestone™, Zodiac™, and Cambria™. There are now more than 30 producers worldwide.

Figure 1. Slabs of engineered stone countertops

Figure 2. Bathroom with an engineered stone countertop

Workers who fabricate and install engineered stone countertops are exposed to silica released during sizing, cutting, grinding and polishing (Figures 3 and 4).

Figure 3. Cutter

Figure 4. Polisher

Fifteen years after the production of engineered stone countertops began, the first publication of silicosis in relation to engineered stone countertops was reported among 25 CaesarStone™ workers in Israel.[1] The first case in this reported series was diagnosed in 1997. These individuals had severe disease after only 10-14 years of work with 15 of the 25 workers placed on the lung transplant list. Engineered stone countertop production began in Spain in 1990. In 2014, 46 cases of silicosis were reported in Spain in workers cutting and installing engineered stone countertops with silica content of 70-90%.[2] These individuals were young (ages 29-37 years) and had only worked in the industry a short time, 9-17 years. In 2014, the first case was reported in the United States in Texas.[3] He was a 37-year-old Hispanic male with progressive massive fibrosis, who had fabricated, laminated and polished engineered stone countertops for 10 years. In 2019, a series of 18 advanced cases of silicosis including two deaths, were reported from the states of California, Colorado, Texas, and Washington. Nine were Hispanic and 11 of 18 were < 50 years old. Additional cases have been reported from Australia, Belgium, China and Italy (Figure 3).

Despite the worldwide recognition of severe silicosis in engineered stone countertop workers in multiple countries and in Colorado, Texas and states on the West Coast, no cases of silicosis among engineered stone countertop workers have been identified in Michigan.

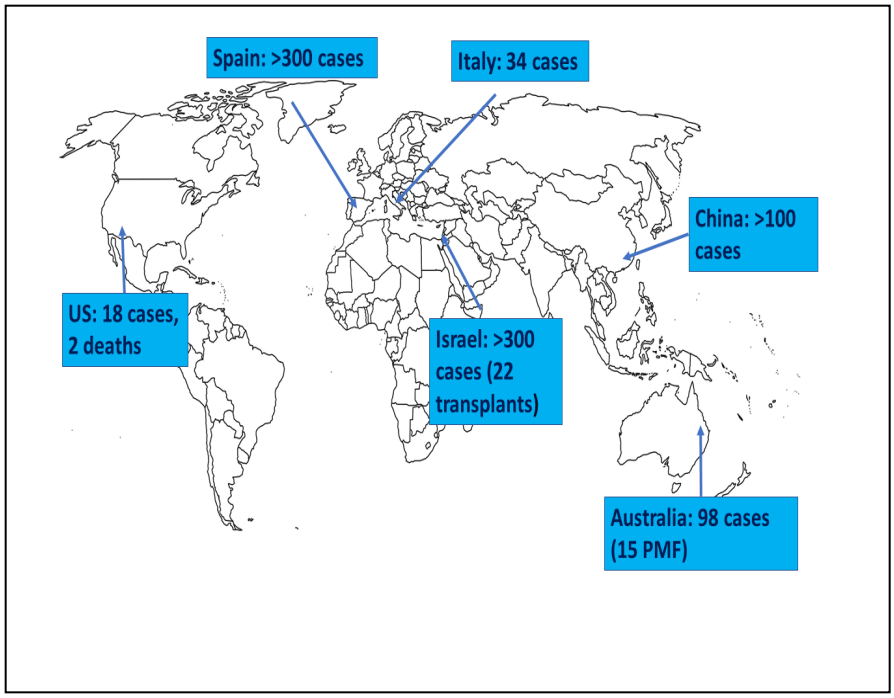

Figure 5. Map of Country and Number of Patients Reported with Silicosis from Working with Engineered Stone Countertops

Why have there been no cases identified in Michigan? Michigan has the most robust surveillance system for silicosis in the United States.[9] In Michigan, the average age of individuals with silicosis when first reported to our system is 72 (range 34-100 years), 5% under the age of 50, 8% were Hispanic and had been exposed to silica for an average of 27 years. These demographics are very different than what has been reported among engineered stone countertop workers with silicosis. Fewer workplace controls with greater exposures to silica in facilities in Texas and on the West Coast who employ undocumented immigrants has been suggested as a possible explanation for silicosis cases being reported in Texas and the West Coast.

Overexposure to silica has certainly been documented in Michigan engineered stone countertop companies. For example, A recent report from Michigan OSHA stated on the "initial visit on February 11, 2021, five employees were monitored, and it was determined that all were exposed to silica above the action level of 25 µg/m^3 as an 8-hour time-weighted average (TWA) with two polishing employees exposed above the permissible exposure limit of 50 µg/m^3 as an 8-hour TWA. Employees were not wearing respiratory protection, had no posted regulated area, no silica training, no silica medical surveillance, and no silica exposure control plan." However, it is possible that the extent and level of exposure to silica is less in Michigan than localities where silicosis has been recognized.

The lack of reported silicosis cases is certainly not because the engineered stone countertop industry is not active in Michigan. There are 58 companies in the state installing engineered stone countertops, under the North American Industrial Classification System (NAICS) code 327991, Cut Stone and Stone Product Manufacturing. There are over 3,600 Building Material and Supplies Dealers in the State (NAICS 4441) that could potentially sell and install engineered stone countertops as well.

The absence of cases of silicosis from engineered stone countertops has also been reported in the United Kingdom.[10]

The lack of recognized cases of silicosis in Michigan among stone countertop workers could be due to the slower introduction of these products in the Midwest, smaller workforce with shorter exposure because of workforce turnover and/or better workplace controls.

We would be very interested in hearing from any practitioners who are aware of patients with silicosis from working with engineered stone countertops. Please email or call Dr. Rosenman, rosenman@msu.edu or 517 353-1846.

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In this issue: V34n2: Engineered Stone Countertop and Silicosis but not in Michigan?

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