SNAPSHOT OF ABRASIVE BLASTING IN MICHIGAN: 1995 - 2016

SUMMARY: In 1995, the Michigan State University Occupational and Environmental Medicine (MSU OEM) research team conducted the first survey of companies in the state that performed abrasive blasting. The program documented the extent of silica sand use in abrasive blasting activities, and offered resources including a training manual on identifying alternative media, safe work procedures, and information on the health effects of exposure to crystalline silica. The survey was updated in 1999, 2005, 2011 and most recently, in 2016. The training manual was updated in 2006; it will be updated again once the new Federal silica standard is adopted in Michigan by the Michigan Occupational Safety and Health Administration (MIOSHA).

2016 Survey Results: Of the 211 companies in Michigan that responded to the 2016 survey, 139 indicated that they performed abrasive blasting. Of the 139 that did abrasive blasting, 49 (35%) used silica as an abrasive. Other abrasive media reported included: coal slag 52 (37%), aluminum oxide 50 (36%), steel shot 48 (35%), glass beads 39 (28%), walnut shells 35 (25%), baking soda 28 (20%), garnet 25 (18%), corn cobs and crushed glass each with 23 (17% each) and plastic 8 (6%). Other less frequently reported media included iron oxide, sponge, Dupont Starblast®, and rice each with two companies reporting their use, and pumice, granite (which contains silica), quartz (which contains silica), dry ice and synthetic olivine each with one company reporting its use.

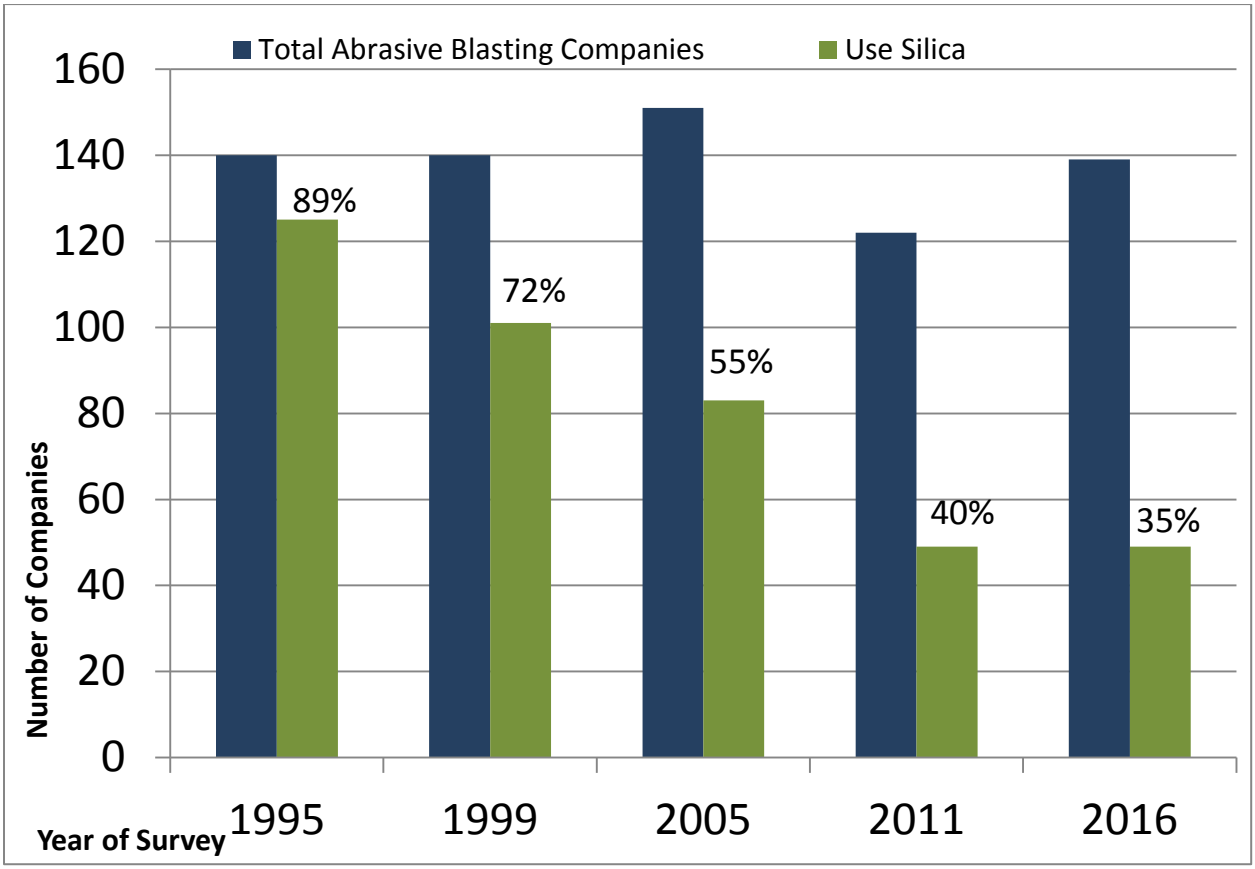
Among the 139 companies that do abrasive blasting: The 139 companies that perform abrasive blasting employed 2,986 workers. The range of employees was from 1 (the owner/operator) to 500, with an average of 22 employees per company. A total of 597 employees performed any type of abrasive blasting at the 139 companies, with an average of 4.4 employees per company (range 1-100). A total of 140 employees used silica sand for abrasive blasting, with an average of 3 employees per company (range 1-50).

Prior Survey Results: In 2011, our survey of the 192 abrasive blasting companies in the state found that 40% used silica as an abrasive (49 of 122 that did blasting). Results from abrasive blasting surveys prior to 2011 found the percentages of companies using silica was: 89% in 1995; 72% in 1999 and 55% in 2005. At the completion of each survey, literature was distributed to the facilities that performed abrasive blasting using silica, with information on the hazards associated with the use of silica as well as information on alternative media.

SILICA SUBSTITUTES: Abrasive blasting with silica sand places workers at risk of developing chronic, irreversible lung diseases-- silicosis and chronic obstructive lung disease (COPD). Silica has also been linked to the development of lung cancer, connective tissue disease such as rheumatoid arthritis, chronic renal failure and can put workers at increased risk of developing active tuberculosis if there was a past or there is a future exposure to the tuberculosis mycobacteria. When possible, alternative abrasive blasting media should be considered: dry ice, plastic bead, sponge, baking soda, ground walnut shells, ground corn cob and high pressure water offer less toxic alternatives.

MICHIGAN STATE UNIVERSITY
Department of Medicine Occupational and Environmental Medicine East Lansing, MI 48824

Figure 1 illustrates the trend of decreasing use of silica sand as an abrasive blasting agent in Michigan from 1995 to 2016.



DID YOU KNOW

- **The National Toxicology Program of the U.S. Department of Health and Human Services has included silica on the list of "Substances Known to be Human Carcinogens."**

- **Quartz sand, granite, beach sand, and baby sand all contain crystalline silica and are harmful when used as an abrasive.**

- **There is a new OSHA silica standard.** The new standard has a number of new provisions that require employers to perform air monitoring for silica, train employees, institute workplace controls and provide medical monitoring for employees.

RESOURCES

- ✓ **OSHA Fact Sheet:** Protecting Workers from the Hazards of Abrasive Blasting Materials: https://www.osha.gov/Publications/OSHA3697.pdf
- ✓ **Federal OSHAs new silica standard**: https://www.osha.gov/silica/index.html
- ✓ **Michigan OSHA resources:** www.michigan.gov/miosha
- ✓ **MSU OEM resources:** www.oem.msu.edu

Date last revised: 9-16-2016