Reducing the Use of Silica for Abrasive Blasting

Abrasive blasting is a common industrial procedure used to remove surface coatings, corrosion, or to roughen or smooth a surface by spraying an abrasive media at high pressure. Although commonly referred to as sand blasting, this is a misnomer as there are many other abrasive media that are used. In fact, in many countries (e.g., Europe) sand (silica) is banned for use as an abrasive media because of the high air levels of silica generated and the health hazard it creates.

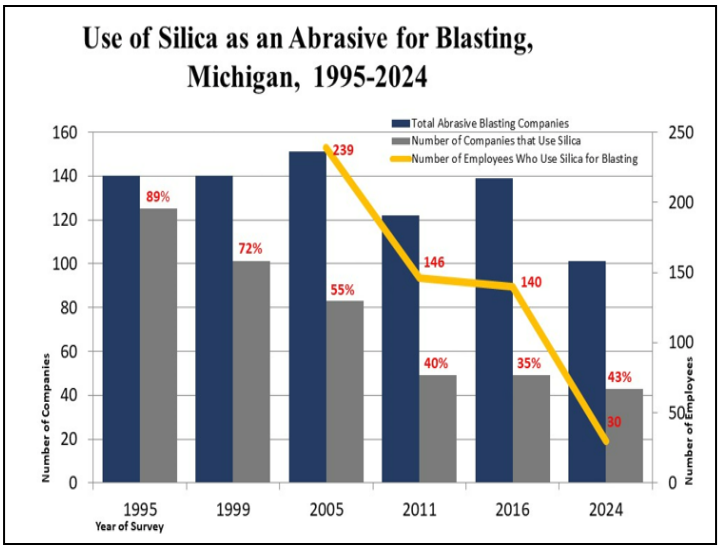
The Challenge

Reduce the use of sand (silica) in abrasive blasting even though it is plentiful, relatively inexpensive, and requires less upfront capital costs compared to other abrasive media. Use of sand is not safe despite workplace safety requirements and puts the blaster and other workers in the area at risk of silicosis, chronic obstructive pulmonary disease, lung cancer, connective tissue disease (e.g., rheumatoid arthritis), kidney impairment and active tuberculosis.

The Response

In the mid 1990's, Michigan began to encourage abrasive blasting companies to use non-sand abrasive media. This effort included a survey of the type of abrasive media used and the development of a training course and educational materials that discussed the economic and health benefits of using non-silica abrasives.

Michigan abrasive companies were surveyed in 1995, 1999, 2005, 2011, 2016 and 2024. Educational materials were provided to the companies after each survey. The fact sheet on the economic costs of different abrasive media is being updated in conjunction with NIOSH.



The Impact

The graph shows how the the number and percent of Michigan companies using sand for abrasive blasting has decreased over the last 30 years. Even more dramatic is the reduction in the number of workers in Michigan using silica as an abrasive media. More outreach to the abrasive companies that still use silica is needed to understand why some companies, particulary smaller companies, continue to use sand. Such outreach will help to develop better interventions to continue to reduce the use of silica as an abrasive media.

For more information, oem.msu.edu/index.php/resources#Abrasive_Blasting