

Dust off those masks: The dangers of silica dust

Writing in the fourth century BC, the Ancient Greek physician Hippocrates noted how miners would become breathless from breathing in dust. Fast forward to the 1930s and the US Department of Labor undertook a study that highlighted the hazards of respirable crystalline silica after a spate of worker deaths. Yet despite this precedent, today the construction industry has the largest number of reported cases of occupational lung disease of any industrial sector. With preventative measures and effective PPE readily available (and inexpensive), awareness of the dangers of exposure to silica dust – and other substances such as asbestos - is paramount to reducing the number of casualties.



Figure 1 Dust cloud created by cutting concrete

A hidden killer, silica dust is fine, invisible particles of the mineral silica, found in soil, sand, concrete and stone. The particles are dispersed by cutting, grinding, drilling or generally disturbing these materials; the fine dust is called respirable crystalline silica (RCS). Once this is airborne, it can be inhaled deep in to the lungs reducing their ability to absorb oxygen from the air. Ordinarily the mucus that lines your lungs catches dust particles and through the action of cilia (microscopic hair-like structures) in your bronchial tubes, moves the mucus in to your throat where it is swallowed or coughed up. Prolonged exposure to harmful airborne irritants like silica dust damage the cilia and stop this happening, causing breathing to rapidly deteriorate. Over time this can manifest itself as serious illnesses such as silicosis, chronic obstructive pulmonary disease (COPD) or lung cancer. Silicosis has been described as being like breathing through a straw that reduces in diameter over time gradually suffocating the person.

The stone industry is particularly vulnerable. Working with sandstone poses the greatest concern, as this has up to 90% silica content. Granite and limestone have lower percentages at 30% and 2% silica content respectively, but nevertheless still pose a threat when frequently exposed. The proximity of operatives and masons to cutting and working procedures on site or at production facilities puts them directly in danger. Given that the British daily workplace exposure limit for silica dust is less than the size of a one pence piece, large-scale activities of this nature could rapidly deteriorate a person's health and lead to serious illness.

Szerelmey's commitment to this issue is two-fold. First and foremost we strive to minimise cutting and working stone on site wherever possible. With modern primary/secondary sawing and CNC machinery the accuracy and finish of the delivered stone is of a very high quality. Therefore our operatives only drill holes for fixings and cut or trim stone for specific reasons whilst on site. We also aim to wet-cut stone at all times and use vacuum systems on site to minimise RCS, not only for our operatives but all operatives in the immediate area. Secondly, we provide half mask respirators to all of our operatives. The provision of respirators in the stone industry goes a long way to stopping the inhalation of silica dust but it is not the end of the story. Users of these masks must have been face-fit tested prior to their use and must be clean-shaven for the mask to be fully functional.



Figure 2 Wet cutting granite



Figure 3 Half Mask Respirator

National campaigns such as 'Breathe Freely' by the BOHS and 'No Time to Lose' by IOSH are key exposure for occupational cancers in an industry all too familiar with their effects – 3500 people a year die in the industry from occupational cancers of the respiratory system. Szerelmey's 'Think first, Be Safe' commitment is a supporter of campaigns such as these to increase our knowledge and understanding of key occupational health and safety hazards. Through this we can provide educational and informative content to our managers and site teams and hopefully impact on the site safety culture.