

Silica: A Forgotten Mineral?

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What's wrong with this picture (taken from [this Breathe Freely Toolbox Talk](#))?

Introduction

In July of 2023, as I walked from the Combined Court Centre in Sheffield in the company of other disease lawyers, we passed a construction site that bore the impression of compliance with the Construction Design & Management Regulations 2015: a modern, low rise, urban development surrounded by appropriate signage and fencing and, relatively, tidy.

We then saw two men at work: one was wielding a large petrol driven circular saw, a little like the image above, and the other was standing close by. As the saw bit into what looked like stone or concrete, a cloud of dust was created. Between them there did not appear to be any ear defenders, head protection, gloves, eye protection or respiratory protection.

However anecdotal this example, and I am sure you have seen others, why is it, in 2023, that such obviously hazardous activities occurred on what appeared to be a site bearing the imprimatur of safe construction practice?

Historically, silicosis was the less dramatic, but no less ruinous, relation to pneumoconiosis. The impact of carbon deposits provided for startling images of anthracotic lungs blackened by years of coal dust inhalation. Pneumoconiosis was the disease that afflicted generations of coal workers and granted its own legislation to compensate those affected (Pneumoconiosis etc. (Workers' Compensation) Act 1979).

That, of course, profoundly underestimates the impact of the inhalation of silica despite its ubiquity in mining operations. For example, it is estimated that a quarter of South Africa's career gold miners have contracted the condition (*A river of disease: Silicosis and the future of class actions in South Africa*, *South African Journal of Human Rights*, Volume 37, 2021 - *Issue 1: Class action litigation in South Africa*, Jason Brickhill) prompting a R5 billion settlement for 500,000 miners.

So, rhetorically, if the impact of exposure to silica is so well understood in the context of generations of international claims, why was the man I saw wielding the saw not wearing appropriate PPE? How had it come to pass that he worked in an environment where what he was doing appeared to be unchecked and/or condoned? Are there organisations and individuals out there who are oblivious to, or worse do not care about, the danger posed by the inhalation of such dangerous dust?

The Presence of Silica

According to the [HSE](#):

Silica is a natural substance found in varying amounts in most rocks, sand and clay. For example, sandstone contains more than 70% silica, whereas granite might contain 15-30%. Silica is also a major constituent of construction materials such as bricks, tiles, concrete and mortar.

In other words, silica is virtually ubiquitous in quarrying, mining and in building materials.

Distressingly, given the tableau described above, the HSE categorises RCS as ‘*the biggest risk to construction workers after asbestos*’. Unsurprising when exposure can cause lung cancer, silicosis and/or chronic obstructive pulmonary disease.

Legal Protections

Respirable crystalline silica (RCS) is a substance that is hazardous to health. The [HSE](#) points out that the Control of Substances Hazardous to Health Regulations 2002 oblige an employer to carry out the following:

- assess the risks to your health – this is called a ‘risk assessment’;
- keep a written record of the risk assessment if they employ more than five people;
- tell you anything significant about the risk assessment;
- consider where practicable substituting material with a lower RCS content
- prevent or control exposures to RCS by: (i) Implementing adequate control measures – more advice can be found in HSE’s COSHH essentials (see ‘Find out more’); (ii) for RCS, control measures must be effective in keeping exposure below the Workplace Exposure Limit (WEL) (0.1 mg/m^3 respirable dust, averaged over 8 hours);
- where necessary, provide you with personal protective equipment, including respiratory protective equipment (RPE),

when the risk cannot be controlled by engineering controls alone;

- maintain all equipment used as control measures in good working order;
- instruct and train you to use equipment properly, and tell you about health risks;
- monitor to ensure that controls are effective and that the WEL for RCS is not exceeded, (this may include measurement of the dust levels in your work area); and
- where appropriate arrange health surveillance.

No element of this list will be unfamiliar to anyone who practices in the field of employers' liability litigation as it chimes with the approach in the so-called 'six-pack' regulations first introduced in 1992.

The figures in relation to illness and death toll are inconsistent: according to the British Occupational Hygiene Society the annual death toll from exposure to silica dust ranges from 230 to 500 compared to the HSE's statistics which suggest 'There has been an average of 12 deaths per year from silicosis over the last 10 years'.

Clearly it is impossible to reconcile such a huge disparity.

The tool box talk created by Breathe Freely et al. demonstrates with the aid of a graphic that one's daily exposure should be limited to this:



In a recent American study (albeit of only 51 samples), namely *The Evaluation of Worker Exposure to Airborne Silica Dust During Five OSHA Table I Construction Tasks*, the authors concluded that 'silica exposures during construction tasks may exceed occupational exposure limits when the dust controls required by the United States Occupational Safety and Health Administration are used. Background silica concentrations at construction sites may contribute to overexposures. Though not required when the specified controls are in place, silica exposure monitoring and respiratory protection should be considered'.

By comparison with the UK workplace exposure limit of 0.1 mg/m^3 , the US limits are as follows: 'the new permissible exposure limit (PEL) for construction in 2016 of $50 \text{ } \mu\text{g m}^{-3}$ [0.05 mg/m^3] and an action limit (AL) of $25 \text{ } \mu\text{g m}^{-3}$ [0.025 mg/m^3], averaged over an eight-hour work shift'.

Although the unit volumes are different – the US PEL appears to be half of the UK WEL – and although background exposure is not conceptually new, the problem remains: background silica concentrations risk exposure beyond the permitted maximum. In other words, it's not just about the dust that the man using the saw is generating when one is surrounded on all sides by construction activity.

Cases

The axiomatic cases of *Bonnington Castings Ltd v Wardlaw* [1956] AC 613 and *Cartledge v E Jopling & Sons Ltd* [1963] AC 758 both involved inhalation of silica but are notable for other reasons (material contribution and material damage sufficient to start the limitation clock, respectively).

Clearly, the age of those cases indicate that the need to guard against exposure to silica at work is not new.

More modern cases dealing with exposure specifically to RCS are thin on the ground. Using the search terms '*respirable crystalline silica*' Lawtel reveals only the case of *Mills v J P Barnes & Sons Ltd* [2013] 6 WLUK 685, a decision of HHJ Cockcroft sitting in the County Court at Leeds.

That case centred around an argument that the Claimant's silicosis was symptomless, akin to pleural plaques and so non-compensable. After consideration of the evidence and the law, particularly the case of *Rothwell*, the judge concluded that the breathlessness described by the Claimant was sufficient to amount to a disability which sounded in damages.

My homespun example and the range of statistics above do not assist in coming to an informed view about the real incidence of silica exposure.

However, in the article '*Global incidence, prevalence and disease burden of silicosis: 30 years' overview and forecasted trends*' (*BMC Public Health* volume 23, Article number: 1366 (2023)), the authors concluded, amongst other things, that:

'Generally, silicosis BOD (burden of disease) is on a downward trend but cannot be ignored. Middle SDI (socio-demographic index) and high-middle SDI countries suffer much more than other SDI regions'.

Therefore, although the extent of the problem in the UK is unclear, the reality is that, in a world in which construction appears to continue unabated, there remains a need for vigilance and good health and safety management to protect against exposure to RCS.

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