Health & Safety Guidance

Health & Safety

Respirable Crystalline Silica (RCS)

Respirable Crystalline Silica (RCS) is one of the most abundant minerals in the earth's crust and is a major constituent of construction materials such as bricks, tiles and concrete. Many common workplace activities such as cutting, drilling, grinding and polishing, produce fine dust containing RCS. The term 'respirable' means that the dust particles are small enough to get deep into the lungs. There are different crystalline forms of silica, with the most common being quartz. Quartz is found in varying amounts in almost all types of rock, sands, clays, shales and gravel. For example, sandstone is almost pure quartz, whereas granite might contain 15-30% quartz.

There is very widespread occupational exposure to silica dust in a diverse range of industry sectors including mining and quarrying, construction, ceramics, heavy clay, foundries and stonemasonry. Aside from coal mining, the HSE has estimated RCS exposures in the UK to over 200,000 workers in foundries, ceramics, brick making, quarries, stonemasonry and construction. Recent warnings have been issued about risks of RCS exposure to workers involved in the production and fitting of stone kitchen work tops.

Health Hazards of RCS

For many years, it has been known that breathing in RCS can cause lung damage (silicosis). In fact, silicosis is the world's oldest known occupational disease. Silicosis is a slowly progressive, irreversible disease that usually takes some years to develop. Silicosis can cause breathing problems, the severity of which can range from mild through to severely disabling, depending on the amount of dust inhaled. In severe cases, silicosis leads to premature death. In people who have had exceptionally high exposures over just a few months or years, a rapidly progressive and often fatal condition known as "acute silicosis" can occur. It is now widely accepted that RCS can cause lung cancer. Other known effects of RCS exposure include Chronic Obstructive Pulmonary Disease (COPD), asthma and possible associations with scleroderma (an autoimmune disorder) and increased risk of kidney disease.

Workplace Exposure Limit (WEL) for RCS

In 2006 the Health and Safety Commission (HSC) set a new UK workplace exposure limit (WEL) for RCS of 0.1 mg/m^3. A WEL is the maximum concentration of an airborne substance, averaged over a reference period, to which employees may be exposed by inhalation. This means it is a figure that, at worst, should not be exceeded.

In practice, however, employers are expected to keep exposures well below 0.1 mg/m^3. More importantly, employers are also expected to apply good control practice. Because silica dust has been identified as a carcinogen, and because of the links to COPD, Unite policy is that levels should be as low as reasonably practicable. In the United States, the established RCS standard is half that in the UK (and Europe), having set a limit equivalent to 0.05 mg/m^3. Unite believes that the UK limit should be no more than 0.05 mg/m^3. Unite strongly opposed the setting of the 0.1 standard, since it was estimated that exposure at this level over 15 years represented a 2.5% risk of developing silicosis. This is completely unacceptable.

Adequate Control

Adequate control of exposure does not rely merely on numerical limits, but places greater emphasis on good control practice. The Control of Substances Hazardous to Health (COSHH) Regulations require employers to:

- apply the eight principles of good practice for the control of substances hazardous to health (regardless of whether a substance has an exposure limit);

- ensure that the Workplace Exposure Limit is not exceeded; and
- ensure that exposure to substances that can cause occupational asthma; cancer; or damage to genes that can be passed from one generation to another; is reduced as low as is reasonably practicable.

Principles of Good Practice

Employers already have a clear responsibility to manage and minimise the risks from work activities. They must develop suitable and sufficient control measures and ways of maintaining them. They should:

- identify hazards and potentially significant risks
- take action to prevent and control risks
- keep control measures under regular review

Principles of Good Control

To be effective in the long term, control measures must be practical, workable and sustainable. The principles of good control are now part of the COSHH Regulations – they appear in Schedule 2A, aligned with Reg. 7(7). Employers who do not follow these principles are not properly protecting their employees.

The principles of good control are to:

- design and operate processes and activities to minimise emission, release and spread of hazardous substances
- take into account all relevant routes of exposure
- control exposure by measures that are proportionate to the health risk
- choose the most effective and reliable control options which minimise the escape and spread of hazardous substances
- provide, in combination with other control measures, suitable personal protective equipment, where adequate control of exposure cannot be achieved by other means
- check and review regularly all elements of control measures for their continuing effectiveness
- inform and train all employees on the hazards and risks from the substances with which they work and the use of control measures developed to minimise the risks
- ensure that the introduction of control measures does not increase the overall risk to health and safety

HSE COSHH Silica Essentials Control Guidance Sheets

Silica Essentials is part of the COSHH Essentials programme which has been developed to help firms comply with the Control of Substances Hazardous to Health Regulations (COSHH). COSHH requires employers to:

- assess the risks to health from chemicals and decide what controls are needed;
- use those controls and make sure workers use them;
- make sure the controls are working properly;
- inform workers about the risks to their health;
- train workers.

The Health & Safety Executive's COSHH Silica Essentials sheets set out the different approaches employers can use to limit silica dust levels and control exposure. They also suggest how often tasks should be carried out such as testing, cleaning and maintaining protective equipment in different industry sectors and processes. In general, employers have to continue to follow principles of good practice (as listed above) to control silica. However, the COSHH Silica Essentials sheets offer employers practical guidance on keeping silica exposure within the WEL. Details of the currently available COSHH Silica Essentials Sheets are given below. They are available free of charge from the HSE web site at: http://www.hse.gov.uk/coshh/essentials/direct-advice/silica.htm

Brick and tilemaking
BK0 Advice for managers
BK1 Clay milling (pug-mill)
BK2 Sand handling and screening
BK3 Facing green bricks with sand
BK4 Moving green and fired bricks
BK5 Manual dehacking and batching
BK7 Ventilated vehicle cabs

Ceramics
CR0 Advice for managers
CR1 Glaze and colour preparation
CR2 Casting
CR3 Fettling
CR4 Kiln loading (placing) and unloading
CR5 Spraying glazes and colours

Construction
CN0 Advice for managers
CN1 Concrete scabbling
CN2 Chasing with hand-held power tools
CN3 Drilling and coring with hand-held rotary power tools
CN4 Crushing and screening demolition material
CN5 Clearing and removing rubble
CN6 Cutting paving and kerbstones with rotary cutters
CN7 Abrasive blasting
CN8 Tunnelling and shaft sinking

Foundries
FD0 Advice for managers
FD1 Fume – General ventilation
FD2 Molten metal fume - Melting
FD3 Molten metal fume – Pouring and casting
FD4 Sand plant
FD5 Coremaking and shell moulding (small scale)
FD6 Knock-out, shakeout, etc
FD7 Fettling small castings
FD8 Fettling large castings
FD9 Abrasive blasting small castings in a cabinet
FD10 Gouging
FD11 Pattern assembly(investment casting)
FD12 Spray coating a large casting(open workshop)
FD13 Cleaning dust collectors
FD14 Furnace relining

Manufacturing
MN0 Advice for managers
MN1 Making products that include silica flour
MN2 Making products that include mineral powder
MN3 Dry-mixing powders containing silica
MN4 Small packing operations: Dry products containing silica

Quarries
QY0 Advice for managers
QY1 Rock drilling
QY2 Excavating and haulage
QY3 Crushing
QY4 Drying and cooling
QY5 Dry screening
QY6 Dry grinding
QY7 Jumbo bag filling: 500-1500 kg
QY8 Silica flour: Small bag (15-50 kg) filling and transfer

Slate
SL0 Advice for managers
SL1 Primary sawing
SL2 Automated slate sawing
SL3 Sawing slate into special sizes and shapes
SL4 Manual slate splitting
SL5 Dressing slate (edge bevelling)

Stonemasons
ST0 Advice for managers
ST1 Primary and secondary sawing
ST2 Rotary tools: Boring and polishing
ST3 Hand-held rotary tools: Cutting and polishing
ST4 Hand and pneumatic chiselling

European-wide Social Dialogue Agreement (SDA) on silica

Unite is part of a European-wide Silica SDA to control silica dust in Aggregates, Cement, Ceramics, Foundry, Glass fibre, Special Glass, Container Glass & Flat Glass, Industrial Minerals, Mineral Wool, Mines, Mortar, Natural Stones and Pre-cast Concrete (the agreement does not cover the construction industry). The Silica SDA covers the entire production and use of crystalline silica and materials/products/raw materials containing crystalline silica.

The Silica Agreement aims to:
• protect the health of employees
• minimise exposure to RCS by applying the good practices and
• increase knowledge about potential health effects of RCS and about good practices

The principles of the Silica Agreement are:
- Compliance with national and EU law, including national Workplace Exposure Limits
- Application of the agreement and good practices
- Initial risk assessment to identify RCS exposures and application of general prevention principles
- Continued use of RCS, though the risk assessment process will need to consider the possibility of substitution
- Additional obligations
  - Training
  - Dust monitoring
  - Health surveillance
  - Cooperation to increase knowledge (R&D)
  - Reduction of failures (continuous improvement)
  - Monitoring application at site level through indicators
  - Biennial reporting through the signatory sectors to a bipartite Council
  - Summary report published by the Council

Further details of the agreement and Good Practice Guide can be found on the NEPSI (The European Network on Silica) website: https://www.nepsi.eu/home

Action by HSE Inspectors

HSE and Local Authority Inspectors enforce the COSHH Regulations. In terms of controlling exposure, they will expect employers to comply with COSHH Regulation 7 and the principles of good control practice detailed in Schedule 2A as well as ensuring the WEL for RCS of 0.1 mg/m3 is not exceeded. COSHH Silica Essentials sheets provide good control practice guidance, but they do not form part of the Regulations. Dutyholders could use "other equally effective measures" to comply which can include the SDA.

HSE welcomed the SDA good practice guidance as it contributes to the overall aim of the initiative; to improve good practice in industries where there is exposure to RCS. In practice, the differences between COSHH Silica Essentials Sheets and SDA Task Guidance Sheets are small.

What should Unite reps be doing about RCS?

As with many health and safety issues it is the role of the health and safety rep to ensure that employers are complying with their responsibilities.

- Ensure you are involved in the COSHH assessment, so that no silica containing substance is used without having first been fully assessed for its potential to generate silica dust.
- Use your rights to health and safety information to request and take copies of COSHH assessments and records of monitoring, including the results of local exhaust ventilation tests.
- Check that the WEL has not been exceeded.
- Press for exposure levels to be as far below the WEL as is reasonably practicable, in line with Unite policy.
- Check that measures to first prevent and then control exposure are introduced.
- Ensure that the employer provides information and training in the risks and alternative means of working with substances hazardous to health.
- Ask your employer whether there is a COSHH Silica Essentials control solution for the jobs you do. If there is, make sure it is applied.
- If you are covered by the SDA on silica, make sure that your employer is applying all of the requirements of the agreement, implementing the recommended control measures and training, and reporting exposures.
- If you are not formally covered by the agreement, there may still be many examples of good practice within it that are relevant to your work.
- Remember, all UK workplaces are covered by the COSHH Regulations, the WEL for silica, and Silica Essentials.

Unite Silica Register

Unite recently established a Silica Register for members who believe that they have been exposed to silica dust at work. This record of exposure means that if Unite members require legal assistance as a result of being diagnosed with a disease caused by silica dust exposure, it can be used as potential evidence to aid their claim.

Sources of Information

Unite Silica Register - https://www.unitelegalservices.org/services/silica-dust
To view the UK COSHH Essentials - Silica Essentials Sheets http://www.hse.gov.uk/pubns/guidance/index.htm
HSE Silica website http://www.hse.gov.uk/aboutus/occupational-disease/cancer/silica.htm
The European network on silica https://www.nepsi.eu/home
European Employers RCS website https://safesilica.eu/
USA OSHA silica website General Industries https://www.osha.gov/dsg/topics/silicacrystalline/gi_maritime.html
USA OSHA silica website Construction https://www.osha.gov/dsg/topics/silicacrystalline/construction.html