

# QY1

## COSHH essentials in quarries: Silica



The Control of Substances Hazardous to Health Regulations 2002 (COSHH) require employers to ensure that exposure is prevented or, where this is not reasonably practicable,

adequately controlled. This guidance gives practical advice on how this can be achieved by applying the principles of good practice for the control of exposure to substances hazardous to health, as required by COSHH.

It is aimed at people whose responsibilities include the management of substances hazardous to health at work (eg occupational health specialists, anyone undertaking COSHH assessments, supervisors and is also useful for trade union and employee safety representatives). It will help you carry out COSHH assessments, review existing assessments, deliver training and supervise activities involving substances hazardous to health.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

See Essential information near the end of the sheet.

# Rock drilling

## Control approach 2 Engineering control

### What this sheet covers

This sheet describes good control practice when rock drilling.

It covers the points you need to follow to reduce exposure to an adequate level. Follow all the points, or use equally effective measures.

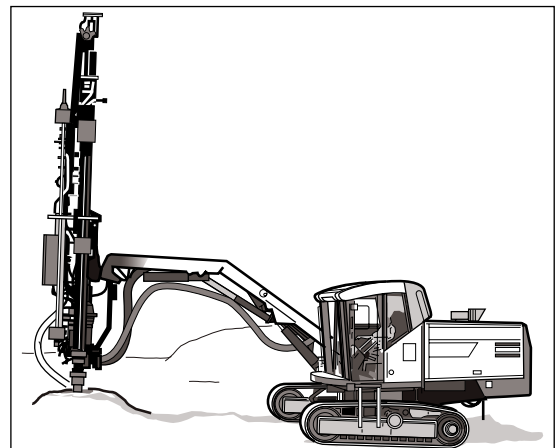
This sheet does not apply to underground working.

### Main points

- High dust levels are produced at the drill-bit when drilling.
- Breathing in dust may cause silicosis.
- Use all the controls in this sheet, make sure the controls work.
- Use air sampling. See sheet G409.
- Health surveillance is usually needed. See sheets G401 and G404.

### Hazards

- Respirable crystalline silica (RCS) is also known as alpha-quartz, cristobalite or 'free silica', and can be wrongly labelled as 'amorphous silica'.
- RCS is hazardous by inhalation as the 'respirable' dust, which is very fine and invisible under normal lighting, can get deep into the lungs. The workplace exposure limit (WEL) for RCS is 0.1 mg/m<sup>3</sup> (based on an 8-hour time-weighted average).
- Inhaling RCS can lead to:
  - Silicosis – a serious and irreversible lung disease that can cause permanent disablement and early death. There is an increased risk of lung cancer in workers who have silicosis.
  - Chronic obstructive pulmonary disease (COPD) – a group of lung diseases, including bronchitis, and emphysema. The risk of COPD is increased by smoking.
- RCS dust is also abrasive and drying when in contact with skin, and can lead to contact dermatitis.



### Access to work area

- ✓ Allow access to authorised and appropriately trained people only.

### Equipment and procedures

- ✓ Use segregation to control the airborne contaminants.
- ✓ Use equipment which is designed to resist the abrasive effects of silica-containing materials.
- ✓ Segregate by using a drill rig with a control cab.
- ✓ Consult the manufacturer or a qualified ventilation engineer to ensure that the design will cope with the anticipated dust levels. The design should cover the following points:
  - Use an enclosed ventilated cab fitted with filtered air intakes.
  - Use pre-filters and high efficiency particulate filters (class H to current British Standards) on the air intakes to stop dust getting into the cab. Consider purpose-designed or appropriate retro-fit filters.
  - Ensure the cab door and windows are closed at all times to keep dust out.
  - Consider air conditioning to provide thermal comfort and prevent the need for the driver to open windows in warm weather.
  - Use radios/CCTV/PA or a suitable communication system to prevent the need for the driver to open the cab.
  - Clean the cab regularly – at least once a week. Use vacuum equipment that meets at least the dust Class M (medium hazard) classification.
  - Ensure the ventilated cab is sealed tight by keeping door and window seals in good condition.
  - Fit an indicator or alarm to show if filters have blocked or failed.
  - Ensure seats are covered with a non dust-retaining material.

### Respiratory protective equipment (RPE)

- RPE is normally not needed.
- RPE may be needed for maintenance, cleaning or when entering dusty areas on exiting the cab.

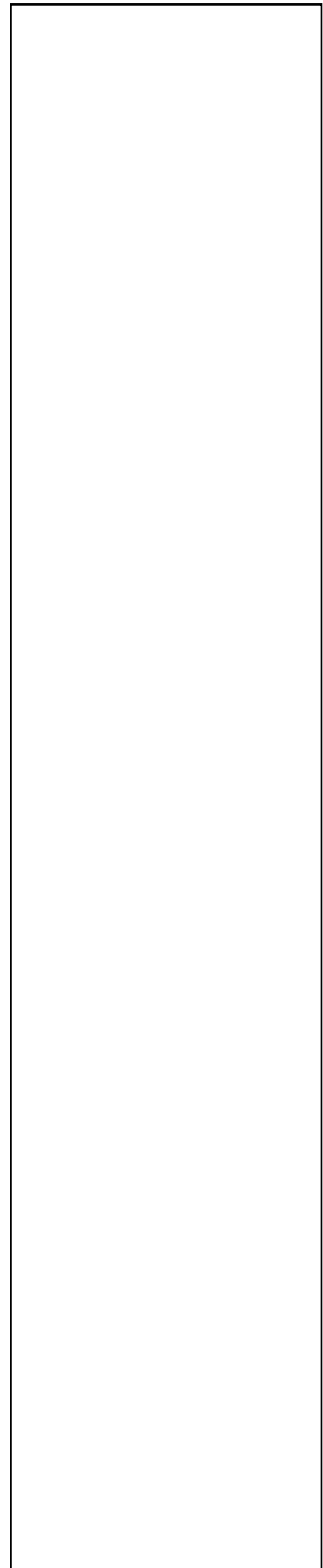
### Personal protective equipment (PPE)

- ✓ Ask your supplier to advise on suitable PPE.
- ✓ Provide separate storage for clean and contaminated PPE.
- ✓ Warn workers that dusty PPE can be a source of secondary exposure.
- Provide coveralls that do not retain dust – synthetic rather than cotton.
- Provide protective gloves suitable for working with RCS.
- Use a contract laundry or a suitable equivalent to wash work clothing. Don't allow workers to do this at home; warn them that the dust contains silica.

### Personal decontamination and skin care

- Provide warm water, mild skin cleansers, and soft paper or fabric towels for drying. Avoid abrasive cleansers.
- Provide pre-work skin creams, which will make it easier to wash dirt from the skin.
- Provide after-work creams to replenish skin oils.

**Caution:** 'Barrier creams' are not 'liquid gloves' and do not provide a full barrier.



### Maintenance, examination and testing

- ✓ Follow instructions in maintenance manuals – keep equipment in effective and efficient working order.
- ✓ Check for signs of damage daily. Make repairs.
- ✓ Review records – failure patterns show where preventive maintenance is needed.
- ✓ Minerals and silica-containing dusts are very abrasive; plan regular checks and maintenance of critical parts.
- ✓ Check pre-filters regularly – keep spares.
- ✓ Check that the filter seating is in good condition.
- ✓ Change inlet air filters as advised by the manufacturer.
- ✓ Get a competent engineer to examine the air filtration regularly.

### Cleaning and housekeeping

- ✓ Clean the cab at least once a week. Fine dust on internal surfaces suggests poor control.
- ✓ Clear up accumulated waste every day.
- ✓ Vacuum dry dust or use wet cleaning methods.
- ✓ Use vacuum equipment that meets at least dust Class M (medium hazard) classification to remove dust.

**Caution:** Never allow the use of brushes or compressed air for removing dust from skin and clothing. Avoid the use of brushes or compressed air for removing dust from surfaces or from inside machinery.

### Health surveillance

- Provide health surveillance for COPD where there is a reasonable likelihood that COPD may occur in your workplace. See G401.
- Provide health surveillance for dermatitis where there is a reasonable likelihood that dermatitis may occur in your workplace. See G403.
- Provide health surveillance for silicosis where there is a reasonable likelihood that silicosis may occur in your workplace. See G404.

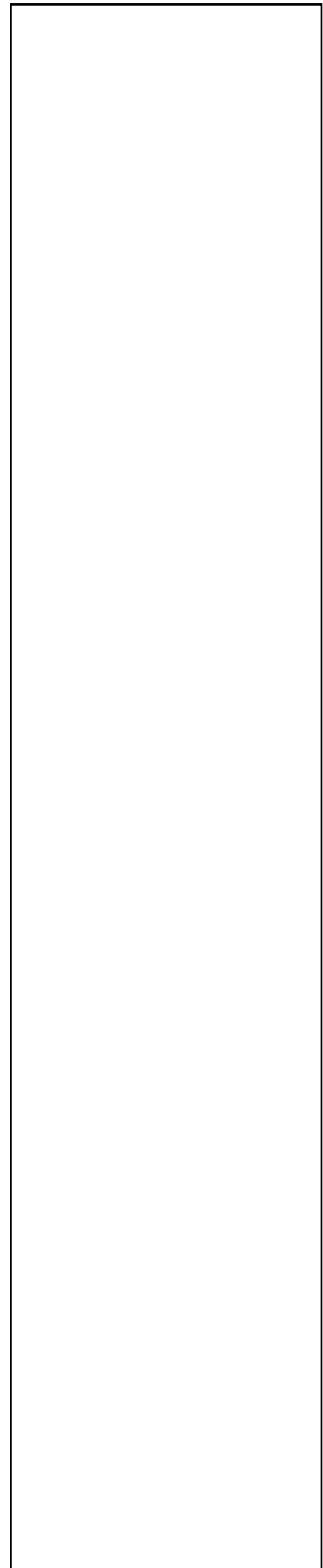
### Training and supervision

- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Tell workers about the hazards associated with their work and how to recognise early signs of lung damage from exposure to RCS.
- ✓ Provide workers with training on:
  - working safely with hazardous substances;
  - when and how to use controls;
  - how to check they are working;
  - what to do if something goes wrong.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Training records are helpful to demonstrate training has taken place.

### Essential information

You can find the full COSHH essentials series at [www.hse.gov.uk/coshh/essentials/](http://www.hse.gov.uk/coshh/essentials/)

Health surveillance, monitoring and sampling sheets are available at [www.hse.gov.uk/pubns/guidance/gseries.htm](http://www.hse.gov.uk/pubns/guidance/gseries.htm)



*Health surveillance for chronic obstructive pulmonary disease (COPD)*  
 COSHH Guidance Sheet G401 HSE 2016  
[www.hse.gov.uk/pubns/guidance/g401.pdf](http://www.hse.gov.uk/pubns/guidance/g401.pdf)

*Health surveillance for occupational dermatitis* COSHH Guidance Sheet  
 G403 HSE 2011 [www.hse.gov.uk/pubns/guidance/g403.pdf](http://www.hse.gov.uk/pubns/guidance/g403.pdf)

*Health surveillance for silicosis* COSHH Guidance Sheet G404 HSE Books  
 2016 [www.hse.gov.uk/pubns/guidance/g404.pdf](http://www.hse.gov.uk/pubns/guidance/g404.pdf)

*New and existing engineering control systems* COSHH Guidance Sheet  
 G406 HSE Books 2016 [www.hse.gov.uk/pubns/guidance/g406.pdf](http://www.hse.gov.uk/pubns/guidance/g406.pdf)

*Exposure measurement: Air sampling* COSHH Guidance Sheet G409  
 HSE Books 2016 [www.hse.gov.uk/pubns/guidance/g409.pdf](http://www.hse.gov.uk/pubns/guidance/g409.pdf)

General storage of solids and liquids COSHH Guidance Sheet G101  
 HSE 2015 [www.hse.gov.uk/pubns/guidance/g101.pdf](http://www.hse.gov.uk/pubns/guidance/g101.pdf)

General advice on chemicals causing harm via skin or eye contact COSHH  
 Guidance Sheet S100 HSE 2015  
[www.hse.gov.uk/pubns/guidance/s100.pdf](http://www.hse.gov.uk/pubns/guidance/s100.pdf)

Selecting personal protective equipment (PPE) COSHH Guidance Sheet  
 S102 HSE 2015 [www.hse.gov.uk/pubns/guidance/s102.pdf](http://www.hse.gov.uk/pubns/guidance/s102.pdf)

Advice for managers COSHH Guidance Sheet QY0 HSE 2006  
[www.hse.gov.uk/pubns/guidance/qy0.pdf](http://www.hse.gov.uk/pubns/guidance/qy0.pdf) contains a table showing RCS  
 concentrations in common materials

**Further Information**

Occupational Safety and Health Consultants Register [www.oshcr.org/](http://www.oshcr.org/)

Institute of Local Exhaust Ventilation Engineers  
[www.cibse.org/Institute-of-Local-Exhaust-Ventilation-Engineers-I](http://www.cibse.org/Institute-of-Local-Exhaust-Ventilation-Engineers-I)

Controlling airborne contaminants at work: A guide to local exhaust  
 ventilation (LEV) HSG258 HSE Books 2011  
[www.hse.gov.uk/pubns/books/hsg258.htm](http://www.hse.gov.uk/pubns/books/hsg258.htm)

HSE's LEV web page: [www.hse.gov.uk/lev/](http://www.hse.gov.uk/lev/)

Clearing the air: A simple guide to buying and using local exhaust ventilation  
 (LEV) Leaflet INDG408 HSE 2008 [www.hse.gov.uk/pubns/indg408.htm](http://www.hse.gov.uk/pubns/indg408.htm)

**Employee checklist**

- Keep the cab interior clean.
- Check for signs of leaks, wear and damage every day including to the door and window seals.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Use, maintain and store your PPE in accordance with instructions.
- Clean your work boots before entering the cab.
- Close cab doors and windows.
- Switch on and check the cab ventilation system before setting off.
- Use the communication system provided instead of opening the door or window.
- Wear RPE when leaving the cab and entering dusty areas.
- Shower and change clothing before leaving the site.
- Co-operate with health surveillance.
- If you develop any ill health symptoms that may be related to work, inform your supervisor.

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