

CN3

COSHH essentials in construction: Silica



This information will help employers (including the self-employed) comply with the Control of Substances Hazardous to Health

Regulations 2002 (COSHH), as amended, to control exposure to respirable crystalline silica (RCS) and protect workers' health.

It is also useful for trade union safety representatives.

This sheet describes good practice using respiratory protective equipment (RPE) with dust extraction and/or water suppression.

It covers the points you need to follow to reduce exposure to an adequate level.

It is important to follow all the points, or use equally effective measures.

This sheet does not apply to underground working.

Main points

- High dust levels result from drilling stone, concrete, brickwork and other hard surfaces.
- Breathing in dust may cause silicosis.
- Keep exposure as low as possible using all the controls in this sheet. Make sure the controls work.

Drilling and coring with hand-held rotary power tools

Control approach R RPE

Hazard

- ✓ Construction work can produce airborne respirable crystalline silica (RCS).
- ✓ All RCS is hazardous, causing silicosis. This is a serious lung disease causing permanent disability and early death.
- ✓ Silicosis is made worse by smoking.
- ✓ 'Respirable' means that the dust can get to the deepest parts of the lung. Such fine dust is invisible under normal lighting.
- ✓ Keep inhalation of RCS as low as possible.
- ✓ When all controls are applied properly, less than 0.1 mg/m³ RCS is usually achievable (based on an 8-hour time-weighted average).

Crystalline silica concentrations in common materials

- ✓ See table in sheet CN0.

Access and premises

- ✓ Only allow access to authorised staff.
- ✓ Secure a good supply of water for dust suppression.
- ✓ Survey for utilities (electricity, gas, water) and stressed rebars before starting work.

Equipment

- ✓ Respiratory protective equipment (RPE) is normally needed to reduce exposures to an acceptable level.
- ✓ New developments should be designed to eliminate the task.
- ✓ Use equipment with an integral dust collector and/or water suppression. Confirm that the dust control is turned on and working.
- ✓ You need an air speed between 10 and 20 metres per second into a dust extractor.
- ✓ Use an air blower to get fresh air into restricted working places.
- ✓ Fit an indicator or alarm to show if filters have blocked or failed.

Procedures

- ✓ Check that there is adequate water for dust suppression and confirm that dust extraction/water suppression is working before starting work.
- ✓ Make sure that workers check their RPE works properly every time they put it on.

Maintenance, examination and testing

- ✓ Minerals and silica-containing dusts are very abrasive. Plan regular maintenance.
- ✓ Follow instructions in maintenance manuals - keep equipment in effective and efficient working order.
- ✓ If the water suppression is faulty, stop work until it is repaired.
- ✓ Daily, look for signs of damage. Make repairs.
- ✓ At least once a week, check that the dust extraction or water suppression works properly.
- ✓ You need to keep all controls in good working order. See sheet G406 for advice on engineering controls.
- ✓ You need to know the manufacturer's performance specifications to know if the equipment is working properly.
- ✓ Keep this information in your testing log-book.
- ✓ Get a competent ventilation engineer to examine any dust extraction thoroughly and test its performance at least once every 14 months. See the HSE publication HSG54 - see 'Further information'.
- ✓ Examine and test RPE thoroughly at least once every three months.
- ✓ Keep records of all examinations and tests for at least five years.
- ✓ Review records - failure patterns show where preventive maintenance is needed.
- ✓ Carry out air sampling to check that the controls are working well. See sheet G409.

Personal protective equipment (PPE)

- ✓ Ask your supplier, or the company health and safety advisor to help you select the right PPE.

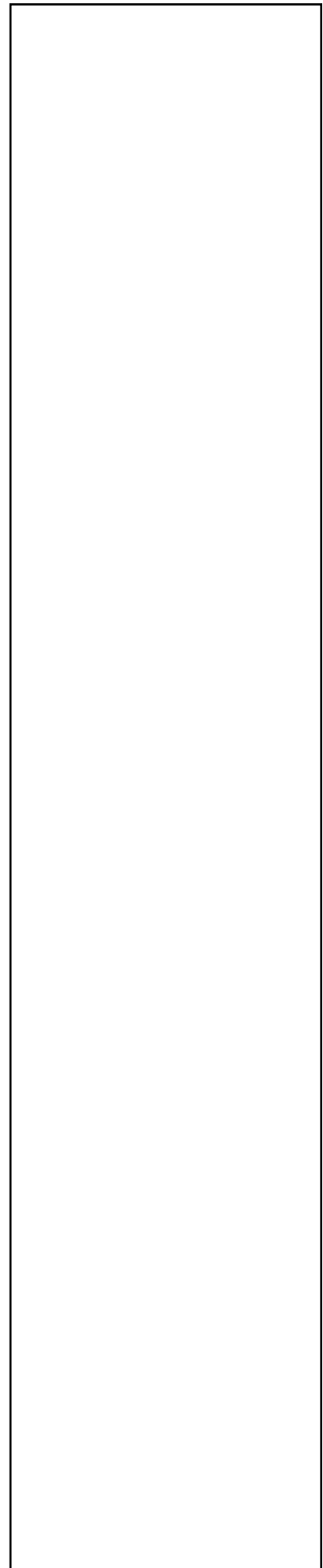
Respiratory protective equipment (RPE)

- ✓ RPE is needed and must be compatible with hearing protection.
- ✓ Powered or air-fed RPE is more comfortable to wear.
- ✓ Select RPE that suits the wearer, the job and the work environment.
- ✓ Decide the level of protection from air sampling data. Otherwise, use RPE with an assigned protection factor (APF) of at least 40. See sheet R4.
- ✓ Make sure all RPE is properly fit-tested - get advice from your supplier.
- ✓ Replace RPE filters as recommended by the supplier.
- ✓ Keep RPE clean.

Other protective equipment

- ✓ Workers also need coveralls, eye and face protection, hearing protection, a hard hat (worn correctly), and protective gloves and footwear.
- ✓ Provide coveralls that do not retain dust. Use synthetic fabrics - not cotton or knitted.
- ✓ Skin creams help in washing contamination from the skin. After-work creams help to replace skin oils.

Caution: Never allow use of compressed air for removing dust from clothing.



Health surveillance

- ✓ You need health surveillance unless exposure to RCS is well below the limit. See sheet G404.

Cleaning and housekeeping

- ✓ Clean up as soon as possible after the job is done - hose down and wet brush.

Training and supervision

- ✓ Tell workers that silica dust can cause serious lung diseases.
- ✓ Working in the right way and using the controls correctly is important for exposure control. Train and supervise workers. See sheet CN0.

Further information

- *Maintenance, examination and testing of local exhaust ventilation* HSG54 (Second edition) HSE Books 1998 ISBN 0 7176 1485 9
- *Respiratory protective equipment at work: A practical guide* HSG53 (Third edition) HSE Books 2005 ISBN 0 7176 2904 X
- *Silica* Construction Information Sheet CIS36(rev1) HSE Books 1999
- For environmental guidelines see sheet CN0

Useful links

- Construction trade associations may advise on health and safety consultants and training providers.
- HSE priced and free publications are available from HSE Books Tel: 01787 881165 Website: www.hsebooks.co.uk.
- HSE free leaflets can be downloaded from HSE's website: www.hse.gov.uk/pubns.
- For information about health and safety ring HSE's Infoline Tel: 0845 345 0055 Textphone: 0845 408 9577 e-mail: hse.infoline@natbrit.com.
- Contact the British Occupational Hygiene Society (BOHS) on 01332 298101 or at www.bohs.org for lists of qualified hygienists who can help you.
- Look in the Yellow Pages under 'Health and safety consultants' and 'Health authorities and services' for 'occupational health'.
- Also see www.nhsplus.nhs.uk.

Employee checklist

- Are you sure how to use all dust controls?
- Check your RPE works properly every time you use it.
- Is the dust extraction or water suppression working?
- Look for signs of leaks, wear and damage every day.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Make suggestions to improve the effectiveness of dust control.
- Co-operate with health surveillance.
- Use, maintain and store your protective equipment in accordance with instructions.
- Use skin creams provided as instructed.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory 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 as illustrating good practice.