

ST4

COSHH essentials for stonemasons: 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) and dust extraction.

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.

Main points

- High dust levels result from stone chiselling.
- This includes tasks such as in-situ refurbishment, where the advice relates solely to using RPE.
- Breathing in dust may cause silicosis.
- Keep exposure as low as possible using all the controls in this sheet. Make sure the controls work.
- You need air sampling. See sheet G409.
- Health surveillance is usually needed. See sheet G404.

Hand and pneumatic chiselling

Control approach R

Respiratory protective equipment (RPE)

Hazard

- ✓ Stonemasonry 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

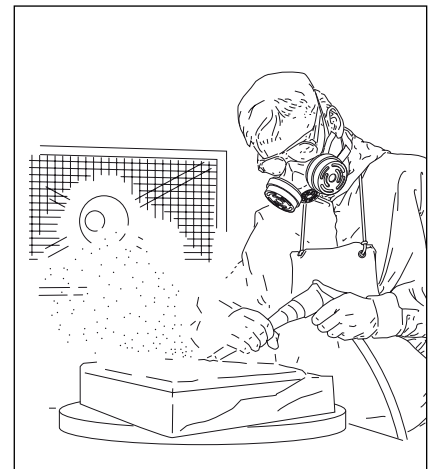
- ✓ See table in sheet ST0.

Access and premises

- ✓ Only allow access to authorised staff.
- ✓ Segregate this task as far as possible to reduce cross-contamination.
- ✓ Floors should slope gently towards gulleys, to help dust removal by wet washing.

Equipment

- ✓ RPE is normally needed to reduce exposures to an acceptable level.
- ✓ Provide extracted booths for all workshop jobs. Can you use water suppression for site jobs?
- ✓ Use a mobile capture hood, or a cross-draught booth fitted with a rotating banker.
- ✓ Arrange the workstation layout so that dust is directed towards the capture hood and the hood is correctly adjusted.
- ✓ You need an air speed between 10 and 20 metres per second into an extracted hood.
- ✓ You need an inward air speed between 1 and 1.5 metres per second at the face of a cross-draught booth.
- ✓ Fit a manometer or pressure gauge near the extraction point, to show that the system is working properly.
- ✓ Mark the acceptable range of readings.



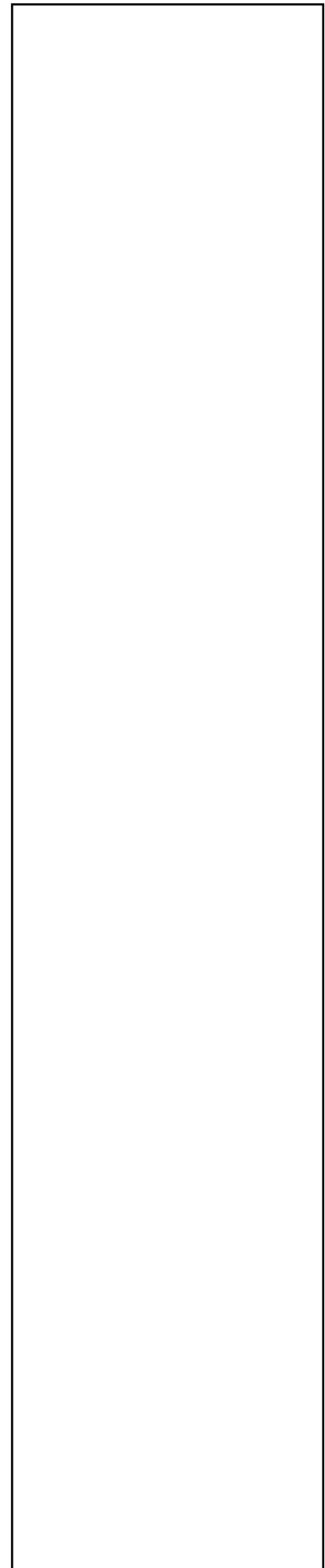
- ✓ Keep extraction ducts short and without bends - avoid long sections of flexible duct.
- ✓ Discharge cleaned, extracted air to a safe place outside, away from doors, windows and air inlets.
- ✓ Replace extracted air - supply clean air into the workroom.
- ✓ Fit an indicator or alarm to show if filters have blocked or failed.
- ✓ For short refurbishment jobs, can you set up a temporary workshop?
- ✓ Consult a qualified ventilation engineer to design new control systems or to update current controls - see sheet G406.

Procedures

- ✓ Always confirm that the extraction system is turned on and working before starting work.
- ✓ Make sure that workers check that their RPE works properly every time they put it on.
- ✓ Workers should stand to the side of a cross-draught booth, not in the air-flow.
- ✓ Adjust a capture hood as close as possible to the cutting point - within one hood diameter.
- ✓ Ensure that the dust jet is directed towards the extractor.
- ✓ Clean air pre-filters daily, or follow the manufacturer's advice.
- ✓ Shake down air filters regularly (eg every hour), or use automated reverse-jet cleaning.
- ✓ Make sure you can get spares easily.

Maintenance, examination and testing

- ✓ Minerals and silica-containing dusts are very abrasive. Plan regular maintenance.
- ✓ Follow the instructions in the manual - keep equipment in effective and efficient working order.
- ✓ Clean down the equipment before starting maintenance - use wet or dustless methods.
- ✓ Check that filter seatings are in good condition.
- ✓ If the dust extraction or filtration plant is faulty, stop work until it is repaired.
- ✓ Maintain all RPE in effective and efficient working order.
- ✓ Keep airline oil and water traps empty, and filters clean.
- ✓ Daily, look for signs of damage. Noisy or vibrating fans can indicate a problem.
- ✓ At least once a week, check that the dust extraction system and gauges work properly.
- ✓ You need to know the manufacturer's specifications to check the extraction's performance.
- ✓ If this information isn't available, hire a competent ventilation engineer to determine the performance needed for effective control.
- ✓ The engineer's report must show the target extraction rates.
- ✓ Keep this information in your testing log-book.
- ✓ Get a competent ventilation engineer to examine the extraction thoroughly and test its performance at least once every 14 months. See the HSE publication HSG54 - see 'Further information'.
- ✓ Keep records of all examinations and tests for at least five years.



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- ✓ Review records - failure patterns show where preventive maintenance is needed.
 - ✓ Check the air flow and air quality to air-fed RPE at least once every three months or before use. Ensure that compressors take in only clean air.
 - ✓ Make sure that users examine their RPE and test it works properly before each use.
 - ✓ Examine and test RPE thoroughly at least once every three months.
 - ✓ Keep records of these tests.
 - ✓ Carry out air sampling to check that the controls are working well. See sheet G409.

Personal protective equipment (PPE)

- ✓ Ask your safety equipment supplier to help you get the right PPE.
- ✓ Provide storage for clean and contaminated PPE.

Respiratory protective equipment (RPE)

- ✓ RPE is needed and must be compatible with hearing protection.
- ✓ RPE is often needed for maintenance and some cleaning jobs.
- ✓ Select RPE that suits the wearer, the job and the work environment. Powered or air-fed RPE is more comfortable to wear.
- ✓ Decide the level of protection from air sampling data. Otherwise, use RPE with a UK standard assigned protection factor (APF) of at least 40. See sheets R4 and R5.
- ✓ If there is a confined space risk, select airline RPE.
- ✓ Provide RPE that includes eye and face protection.
- ✓ Make sure all RPE is properly fit-tested - get advice from your supplier.
- ✓ Make sure that workers check their RPE works properly before use.
- ✓ Replace RPE filters as recommended by your supplier.
- ✓ Keep RPE clean and store it away from dust.

Other protective equipment

- ✓ Provide clean, dust-resistant (eg paper or nylon) coveralls.
- ✓ 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.

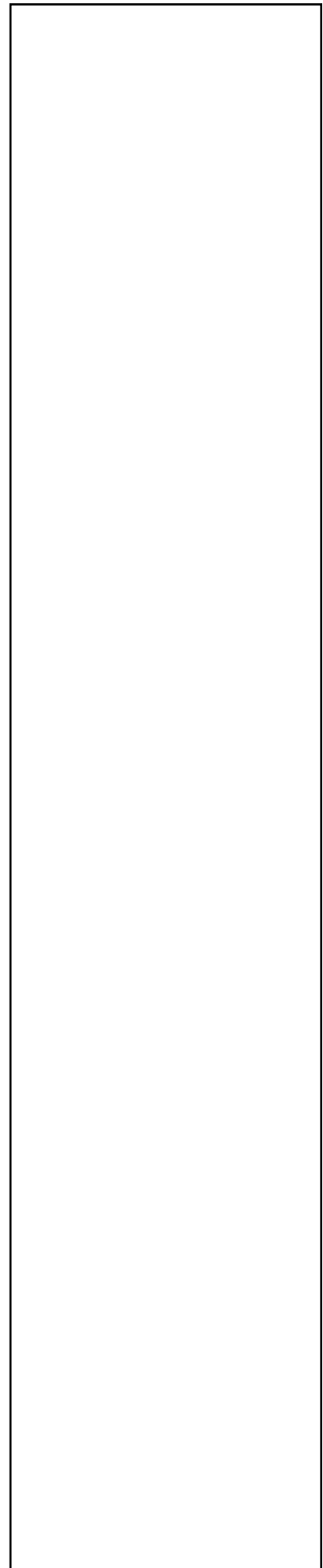
Health surveillance

- ✓ You need health surveillance unless exposure to RCS is well below the limit. See sheet G404.
- ✓ Consult an occupational health professional - see 'Useful links'.

Cleaning and housekeeping

- ✓ Clean down the workroom at the end of each day's work.
- ✓ Use a Type H vacuum cleaner fitted with a HEPA filter to clear up dust (eg on overhead fittings), or wet clean.

Caution: Don't clean up with a brush or compressed air.



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 ST0.

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
- *Controlling exposure to stonemasonry dust: Guidance for employers* HSG201 HSE Books 2001 ISBN 0 7176 1760 2
- For environmental guidelines see sheet ST0

Useful links

- The Stone Federation may advise on health and safety consultants and training providers. Website: www.stone-federationgb.org.uk.
- For details of local air displacement controls contact the Health and Safety Laboratory (HSL) e-mail hslinfo@hsl.gov.uk.
- 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 extraction working and in the correct position?
- 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.