

SL4

COSHH essentials for slate works: 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 engineering control - local air displacement 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 slate splitting.
- 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.

Manual slate splitting

Control approach 2 Engineering control

Hazard

- ✓ Cutting, splitting or dressing slate 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

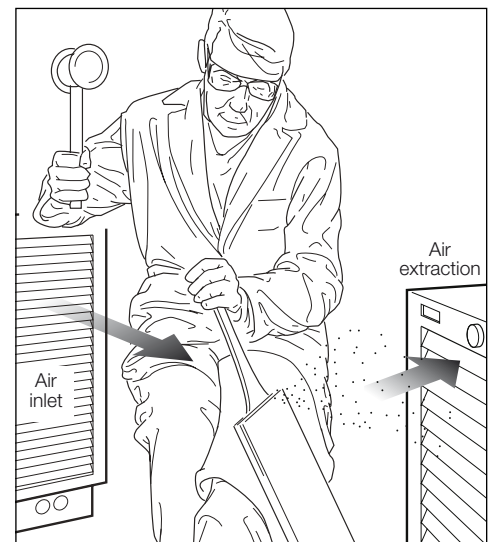
- ✓ Slate contains up to 40% crystalline silica.

Access and premises

- ✓ Only allow access to authorised staff.
- ✓ Floors should slope gently towards gulleys, to help dust removal by wet washing.

Equipment

- ✓ Splitting, separation, closing and stacking slates create local jets of fine dust.
- ✓ Reduce dust by keeping slates damp during handling and packing.
- ✓ Use local air displacement - see illustration. The inlet air must be clean.
- ✓ Arrange the workstation layout so that dust is directed towards the capture hood.
- ✓ You need an air speed at 1 metres per second from the air inlet, and between 5 and 10 metres per second into the capture hood.
- ✓ Make sure that draughts do not interfere with the air flow.
- ✓ Fit manometers or pressure gauges near the air supply and extraction points, to show that the system is working properly.
- ✓ Mark the acceptable range of readings.



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- ✓ Discharge cleaned, extracted air to a safe place outside, away from doors, windows and air inlets.
 - ✓ Fit an indicator or alarm to show if filters have blocked or failed.
 - ✓ Consult HSL on new system designs. See 'Useful links'

Procedures

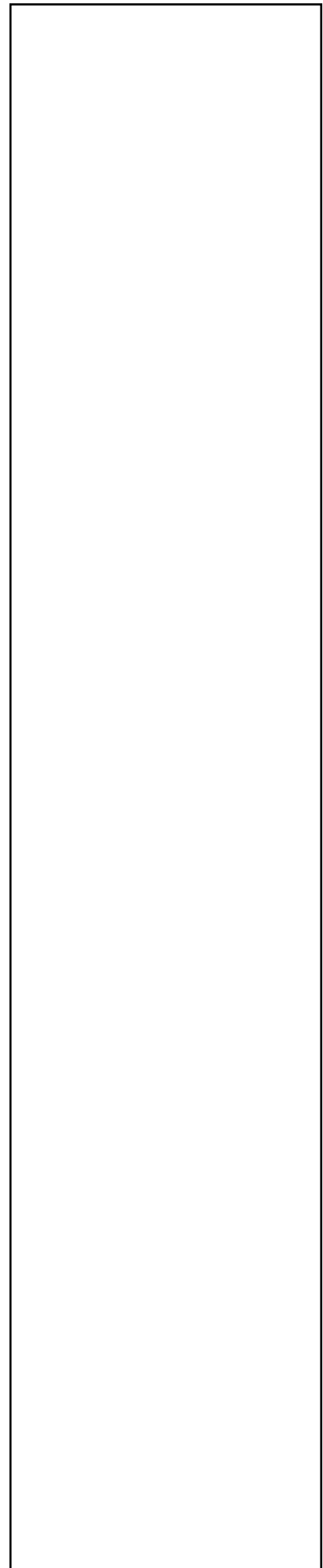
- ✓ Always confirm that the extraction system is turned on and working before starting work.
- ✓ Shake down air filters regularly (eg every hour), or use automated reverse-jet cleaning.
- ✓ Make sure you can get spares easily.

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.
- ✓ Check that filter seatings are in good condition.
- ✓ If the dust extraction or filtration plant is faulty, stop work until it is repaired.
- ✓ 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 keep all controls in good working order. See sheet G406 for advice on engineering controls.
- ✓ 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.
- ✓ 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 safety equipment supplier to help you get the right PPE.
- ✓ Provide storage for clean and contaminated PPE.



Respiratory protective equipment (RPE)

- ✓ RPE should not be needed if the controls work properly.
- ✓ RPE is often needed for maintenance and some cleaning jobs.
- ✓ Powered or air-fed RPE is more comfortable to wear.
- ✓ If slates are dry and local air displacement is not used, select RPE with an APF of at least 40. See sheets R4 and R5.

Other protective equipment

- ✓ Provide protective goggles. A visor may not stop flying debris.
- ✓ Provide clean, dust-resistant coveralls.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Warn them that the dust contains silica.
- ✓ 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

- ✓ Wash 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.

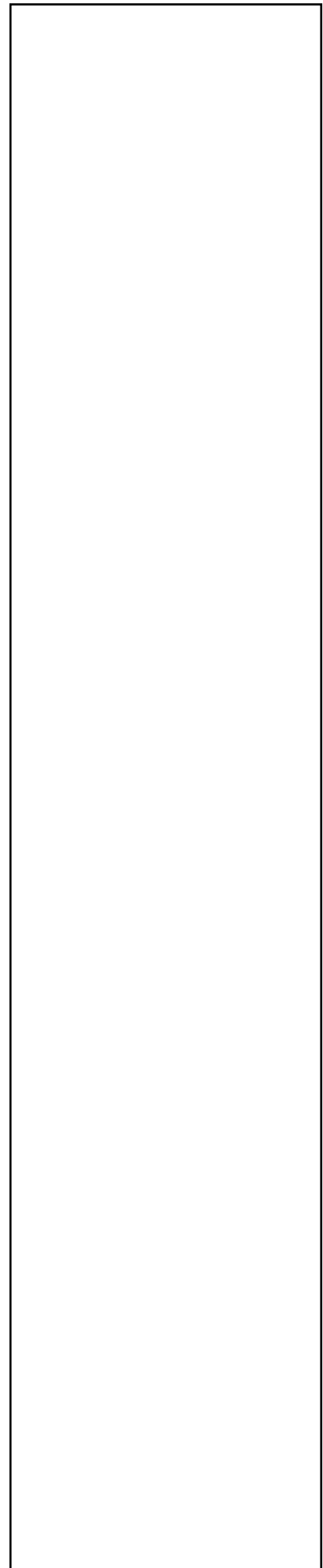
Caution: Don't clean up with a brush or compressed air.

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
- *Control of respirable crystalline silica in quarries* HSG73 HSE Books 1992 ISBN 0 11 885680 4
- For environmental guidelines see sheet SLO



Useful links

- The Stone Federation may advise on health and safety consultants and training providers. Website: www.stone-federationgb.org.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.
- For details of local air displacement controls contact the Health and Safety Laboratory (HSL) Tel: 0129 821 8000 e-mail hslinfo@hsl.gov.uk.
- 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?
- Is the air supply and 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.