

BK2

COSHH essentials in brick and tile making: 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 - 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 moving and handling sand.
- 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.

Sand handling and screening

Control approach 2 Engineering control

Hazard

- ✓ Brick and tile making 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

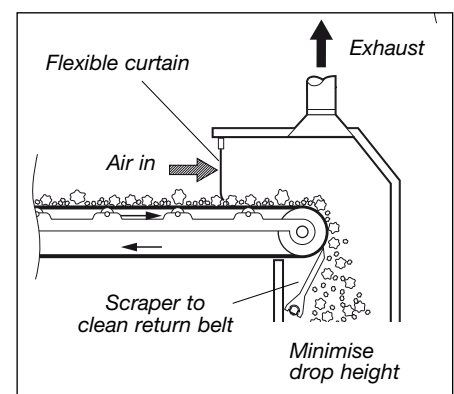
- ✓ See table in sheet BK0.

Access and premises

- ✓ Only allow access to authorised staff.
- ✓ Use CCTV to monitor the process and reduce the need for people to be there.
- ✓ Segregate this task as far as possible to reduce cross-contamination.

Equipment

- ✓ Can you use closed transfer systems, eg from an IBC or silo?
- ✓ Can you use water sprays to help suppress dust?
- ✓ Enclose conveyors and screens as much as possible, and extract dusty air at the feed and discharge points. Fit a scraper to clean the return belt.
- ✓ Position the feed chute so sand joins a moving conveyor belt at the same speed and direction as the belt.
- ✓ Always minimise the distance that sand needs to fall.
- ✓ Design enclosures in sections to allow easier maintenance and cleaning, with hinged doors for inspection.
- ✓ You need an air speed between 1 and 2.5 metres per second into the enclosure openings.
- ✓ Fit a manometer or pressure gauge near the extraction point, to show that the system is working properly.



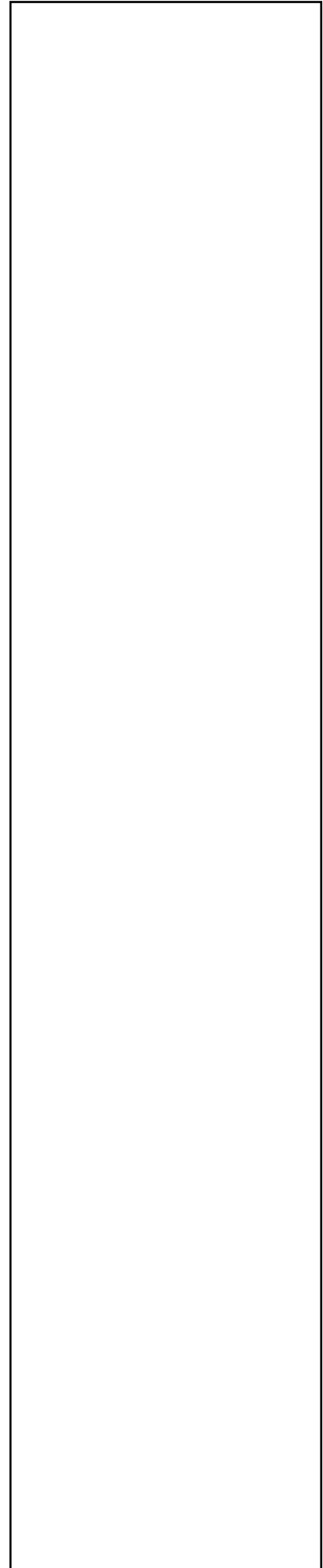
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- ✓ Mark the acceptable range of readings.
 - ✓ With multiple extraction points, a simplified pressure check method may suffice.
 - ✓ Discharge cleaned, extracted air to a safe place outside, away from doors, windows and air inlets.
 - ✓ Have a supply of clean air coming into the workroom to replace extracted air.
 - ✓ Fit an indicator or alarm to show if filters have blocked or failed.
 - ✓ Consult a qualified ventilation engineer to design new control systems or to update current controls. See sheet G406.

Procedures

- ✓ Always confirm that the dust extraction is turned on and working before starting work.
- ✓ 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 instructions in maintenance manuals - 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.
- ✓ Repair faulty extraction systems immediately. Meanwhile, wear respiratory protective equipment (RPE).
- ✓ Daily, look for signs of damage. Make repairs.
- ✓ 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 supplier to help you select 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.

Other protective equipment

- ✓ 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.
- ✓ Consult an occupational health professional - see 'Useful links'.

Cleaning and housekeeping

- ✓ Every day, clear up accumulated waste.
- ✓ Damp down and shovel large amounts carefully to avoid stirring up dust. Provide respiratory protective equipment (RPE).
- ✓ Use a Type H vacuum cleaner fitted with a HEPA filter to clear up dust eg. on overhead fittings.

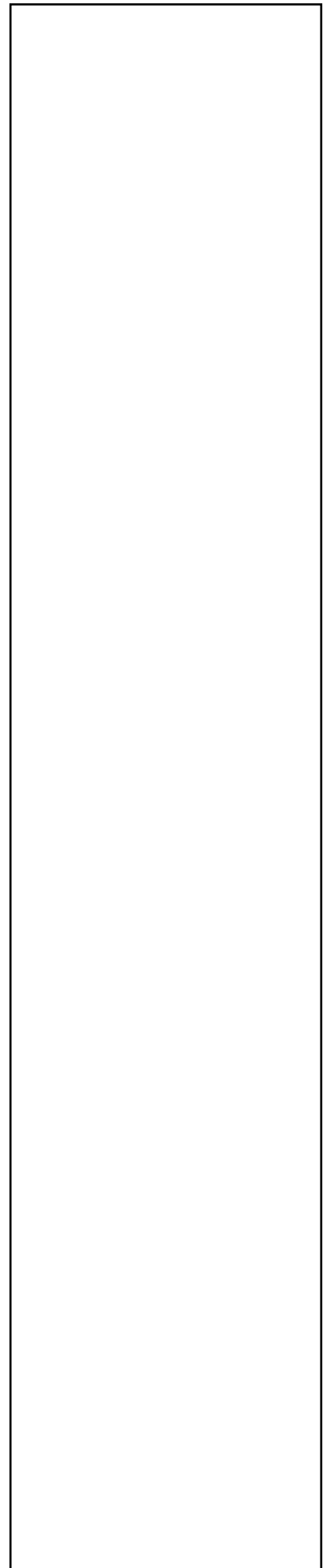
Caution: Don't use a brush or compressed air.

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 BK0.

Further information

- *Maintenance, examination and testing of local exhaust ventilation* HSG54 (Second edition) HSE Books 1998 ISBN 0 7176 1485 9
- *Control of respirable silica dust in heavy clay and refractory processes* HSG72 HSE Books 1992 ISBN 0 11 885679 0
- *Health surveillance: A ceramics industry booklet* Leaflet IACL100 HSE Books 1996 (single copy free)
- For environmental guidelines see sheet BK0



Useful links

- The British Ceramics Confederation (BCC) may advise on health and safety consultants and training providers. Website: www.ceramfed.co.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?
- Is the equipment switched off and locked off for maintenance and cleaning?
- Is the dust extraction working? Check the gauge.
- 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.