BK5

COSHH essentials in brick and tile making: Silica

Dehacking

Control approach: Engineering control and Respiratory protective equipment (RPE)

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 and supervisors). It 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.

What this sheet covers

This sheet describes good practice for the control of exposure to Respirable Crystalline Silica (RCS) dust when dehacking bricks during brick manufacturing.

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

This is achieved by following good control practice (ie follow all points described in this sheet or use equally effective measures), and by reducing exposure to below the relevant workplace exposure limits (WELs).

Main points

- High dust levels may result during the movement of fired bricks.
- Automate the dehacking of bricks when reasonably practicable, and segregate the worker from the task.
- For manual dehacking, use LEV and RPE, or equally effective measures
- Dusty work clothing may also be a significant source of RCS exposure.
- Regularly check and review all elements of your control measures to ensure they remain effective in providing adequate control.
- Provide health surveillance when workers are regularly exposed to RCS dust and there is a reasonable likelihood that COPD and/or silicosis, and dermatitis may develop.

Hazards

✓ Crystalline silica dust, which is fine enough to reach deep inside the lung, is known as respirable crystalline silica (RCS). Exposure to RCS can cause silicosis, where irreversible lung damage can be present before any symptoms develop. Silicosis may continue to worsen even after exposure to RCS stops. RCS can also cause other serious diseases such as chronic obstructive pulmonary disease (COPD) and lung cancer. The workplace exposure limit for RCS is detailed in HSE publication EH40/2005 Workplace Exposure Limits (see Essential information).

✓ RCS dust is also abrasive and drying when in contact with skin and can lead to contact dermatitis. Wet working can also lead to dermatitis.

Access to work area

✓ Allow access to authorised and appropriately trained people only.

✓ Segregate this task to reduce spreading of airborne contamination to other workers.

✓ For automated dehacking, monitor the process to reduce the need for people to be in the area eg use CCTV.

Equipment and procedures

- ✓ De-dust bricks prior to dehacking, for example by:
  - using compressed air within an enclosed and extracted chamber;
  - removing excess dust by vacuum, and/or;
  - misting bricks eg prior to manual dehacking.
- ✓ Automate the process for dehacking bricks, where reasonably practicable.
- ✓ Provide a ventilated cabin if necessary to separate the worker and the task.
- ✓ When manually dehacking, use a push-pull extraction system (when reasonably practicable) so clean breathable air is blown down over the workers and extracted under a perforated floor.

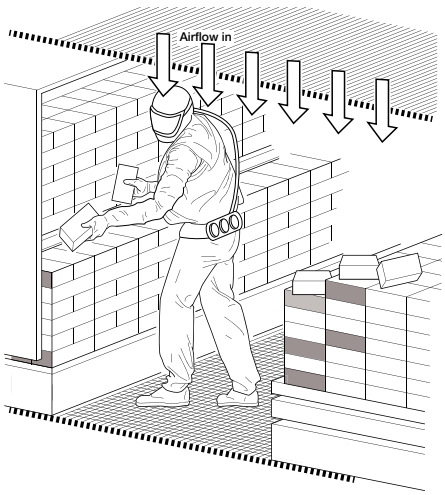

Figure 1 Manual dehacking with local air displacement

- ✓ Discharge extracted air to a safe place outside the building away from doors, windows and air inlets.
- ✓ Do not use a recirculating LEV system unless the air is thoroughly cleaned before its return to the workplace.
- ✓ If the use of LEV is not reasonably practicable, use local air displacement (down flow of clean air without extraction at floor level), good general ventilation and RPE. See Figure 1.
- ✓ For local air displacement the airflow must be sufficient to displace airborne contaminants effectively.
- ✓ Make sure that draughts do not interfere with the airflow.
- ✓ Provide an easy way of checking the LEV is working - fit an indicator, alarm or equivalent to show if filters have blocked or failed.
- ✓ Always confirm that the LEV is turned on and working at the start of work. Check the gauge.
- ✓ Use a vehicle fitted with a filtered air supply to the cab for transfer of pallets of bricks. See sheet BK7 in Essential information.

Respiratory protective equipment (RPE)

- ✓ RPE is normally not needed for automated dehacking.
- ✓ RPE is normally needed for manual dehacking.
- ✓ RPE is needed for cleaning and maintenance.
- ✓ Provide RPE with an assigned protection factor (APF) of at least 20 (see sheet R3 in Essential information).
- ✓ Face fit testing is required for RPE with a tight-fitting face seal (see INDG479 in Essential information).
- ✓ Workers wearing tight-fitting RPE must be clean shaven.
- ✓ Workers should be trained how to check RPE is working properly before every use, how to fit it properly and how to look after it.
- ✓ Provide powered respirators if the RPE needs to be worn continuously for more than one hour. See sheets R4 in Essential information.

- ✓ Ensure workers discard disposable RPE at the end of the shift, or sooner if their RPE becomes clogged.
- ✓ Change the filters on respirators in accordance with manufacturer's recommendations and if:
  - the shelf-life expiry date has passed;
  - they are damaged or visibly contaminated; or
  - they become harder to breathe through.
- ✓ Keep RPE clean and store it in a clean place.
- ✓ For reusable RPE, a thorough maintenance, examination and test should be carried out at least once a month. However, if the RPE is used only occasionally, an examination and test should be carried out before use and, in any event, the interval should not exceed three months.

Personal protective equipment (PPE)

- ✓ Ask your supplier to advise on suitable PPE.
- ✓ Consult workers to ensure PPE will be suitable for them.
- ✓ Make suitable arrangements for maintenance, storage and replacement of PPE.
- ✓ Provide separate storage for clean and contaminated PPE.
- ✓ Provide coveralls that do not retain dust – synthetic rather than cotton.
- ✓ Keep any PPE clean and replace at recommended intervals.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Warn them that the dust contains silica. Do not allow workers to launder work clothing at home.
- ✓ Provide protective gloves suitable for contact with crystalline silica.

Personal decontamination and skin care

- ✓ Prohibit eating, drinking and smoking in contaminated areas.
- ✓ 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.
- ✓ Barrier creams are not 'liquid gloves' and do not provide a full barrier.

Maintenance, examination and testing

- ✓ Equipment can wear out quickly especially as silica-containing dusts are abrasive. Plan regular maintenance.
- ✓ Clean down the equipment before starting maintenance – use wet or dustless methods.
- ✓ Keep all equipment used for the task in effective working order. Maintain it as advised by the supplier or installer.
- ✓ Check for signs of damage to control equipment before starting work.
- ✓ Have equipment thoroughly examined and tested against its performance standard, at suitable intervals.
- ✓ For LEV, a user manual or log book is helpful in setting out the frequency of checking, maintenance or parts replacement.

- ✓ For LEV with no user manual or log book, you may need the help of a competent person. They can determine the performance needed for adequate control.
- ✓ LEV systems require a statutory 'thorough examination and test' (TExT).
- ✓ Get a competent person to perform the TExT at least every 14 months.
- ✓ Carry out all actions arising from the TExT.
- ✓ Keep records of all examinations for at least 5 years.
- ✓ Several measures are available to check effectiveness of controls, ranging from simple qualitative (eg use of a dust lamp) to complex quantitative techniques (eg air sampling) usually for higher-risk scenarios. See sheet G409 in Essential information.

Cleaning and housekeeping

- ✓ Clean work equipment and the work area daily. Clean other equipment and the workroom regularly - at least once a week.
- ✓ Vacuum dry dust or use wet cleaning methods.
- ✓ Use vacuum equipment that meets at least the dust Class M (medium hazard) classification.
- ✓ Dispose of waste safely.
- ✓ Avoid the use of brushes or compressed air for removing dust from clothing, surfaces and machinery.

Health surveillance

- ✓ Provide health surveillance when workers are regularly exposed to RCS dust and there is a reasonable likelihood that COPD and/or silicosis may develop. See sheet G404 in Essential information.
- ✓ Provide health surveillance for dermatitis where there is a reasonable likelihood that dermatitis may occur in your workplace. See sheet G403 in Essential information.
- ✓ Workers undertaking the task described in this sheet will normally need health surveillance.
- ✓ You will need to take advice from a competent occupational health professional (a doctor or nurse) when setting up a health surveillance programme.

Training and supervision

- ✓ Tell workers about the hazards associated with their work and how to recognise early signs of lung damage and dermatitis 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.
- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Involve managers and supervisors in health and safety training.
- ✓ Training records are helpful to demonstrate what information, instruction and training has been provided.

Essential information

BK7 – Ventilated vehicle cabs. https://www.hse.gov.uk/pubns/guidance/bk7.pdf

G403 – Health surveillance for occupational dermatitis. www.hse.gov.uk/pubns/guidance/g403.pdf

G404 – Health surveillance for those exposed to respirable crystalline silica (RCS). https://www.hse.gov.uk/pubns/guidance/g404.pdf

G409 – Exposure measurement: Air sampling. www.hse.gov.uk/pubns/guidance/g409.pdf

R3 – UK Standard Assigned Protection Factor 20 (APF 20) www.hse.gov.uk/pubns/guidance/rpe3.pdf

R4 – UK Standard Assigned Protection Factor 40 (APF 40) www.hse.gov.uk/pubns/guidance/rpe4.pdf

Guidance on respiratory protective equipment (RPE) fit testing Leaflet INDG479(rev1) HSE 2019 www.hse.gov.uk/pubns/indg479.htm

EH40/2005 – Workplace exposure limits www.hse.gov.uk/pubns/books/eh40.htm

Further information

You can find the full COSHH essentials series at https://www.hse.gov.uk/pubns/guidance/bkseries.htm

BK0 - Advice for managers. https://www.hse.gov.uk/pubns/guidance/bk0.pdf

Control of exposure to silica dust - A guide for employees INDG463. https://www.hse.gov.uk/pubns/indg463.pdf

Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV) HSG258 HSE 2017 www.hse.gov.uk/pubns/books/hsg258.htm

New and existing engineering control systems COSHH essentials guidance sheet G406 HSE www.hse.gov.uk/pubns/guidance/g406.pdf

Respiratory protective equipment at work: A practical guide HSG53 (Fourth edition) HSE 2013 www.hse.gov.uk/pubns/books/hsg53.htm

Health surveillance for those exposed to respirable crystalline silica (RCS) - Guidance for occupational health professionals, Published 2015, http://www.hse.gov.uk/pubns/priced/healthsurveillance.pdf

The dust lamp: A simple tool for observing the presence of airborne particles MDHS82. https://www.hse.gov.uk/pubns/mdhs/pdfs/mdhs82-2.pdf

Control of substances hazardous to health: The Control of Substances Hazardous to Health Regulations 2002. Approved Code of Practice and guidance L5 (Sixth edition) HSE 2013 https://www.hse.gov.uk/pubns/books/l5.htm

Institute of Local Exhaust Ventilation Engineers Accredited members Institute of Local Exhaust Ventilation Engineers (ILEVE) | CIBSE

The Health and Safety Executive at http://www.hse.gov.uk/non-metallic-minerals/heavy-clay.htm

Information on health and safety in the brick manufacturing industry can be obtained from the British Ceramic Confederation at www.ceramfed.co.uk

British Occupational Hygiene Society (BOHS) Directory of Occupational Hygiene Services https://www.bohs.org/information-guidance/

For information about health and safety visit https://books.hse.gov.uk or www.hse.gov.uk

You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

To report inconsistencies or inaccuracies in this guidance email commissioning@williamslea.com

Employee checklist

- ☐ Do you understand the health hazards associated with your work?
- ☐ Are you sure about safe work procedures?
- ☐ Are you sure how to use all dust controls?
- ☐ If you find any problems, tell your supervisor. Don't just carry on working.
- ☐ Where LEV is used, check if the LEV is switched on and working properly? Check the gauge.
- ☐ Co-operate with health surveillance.
- ☐ Use, maintain and store your protective equipment in accordance with instructions. Do not take PPE home for laundering.
- ☐ Check that any RPE works properly every time you use it. Look for signs of leaks, wear and damage.
- ☐ Wash hands before eating, drinking, smoking, using the lavatory and after work.
- ☐ Follow any skin care programme provided. Never use solvents to clean your skin.