

WD5

COSHH essentials for
woodworkers

Routers

Control approach: Engineering controls and Respiratory Protective Equipment

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.

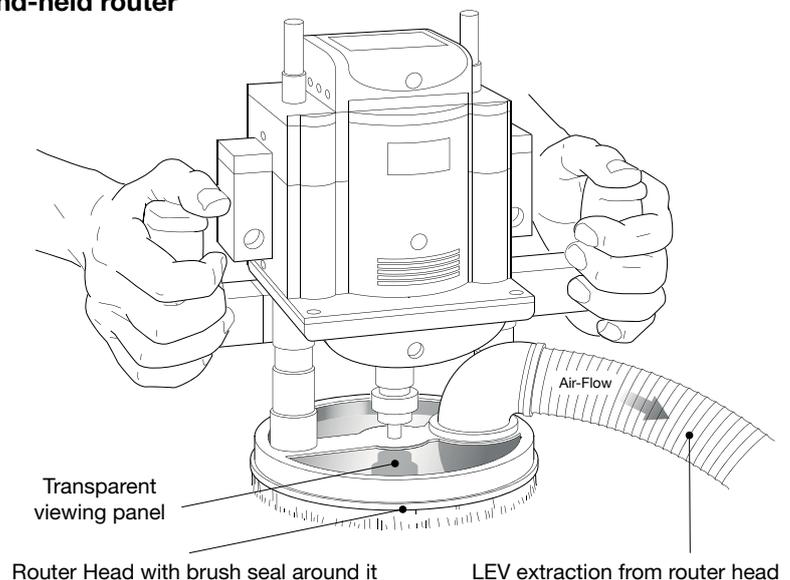
This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

See Essential information near the end of the sheet.

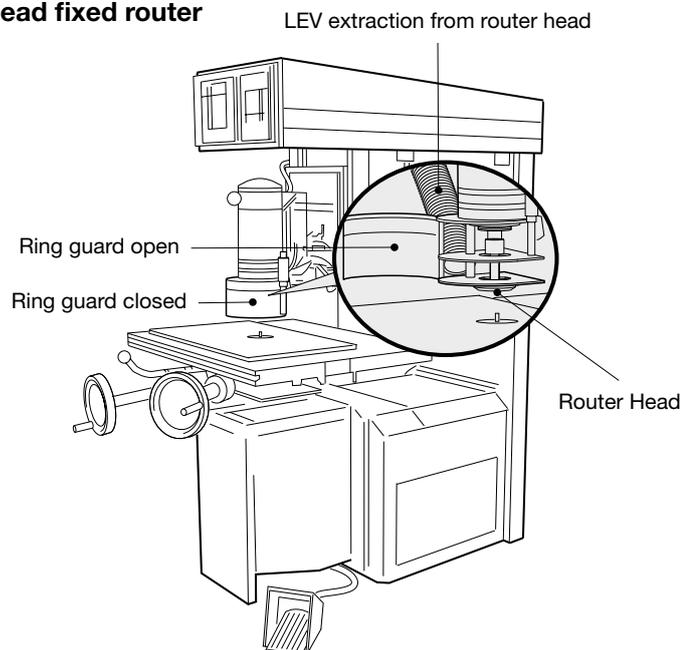
What this sheet covers

This sheet describes good control practice when using three types of routers; hand-held, overhead fixed and CNC flat-bed. This sheet does not cover woodworking machining centres which may have a router tool.

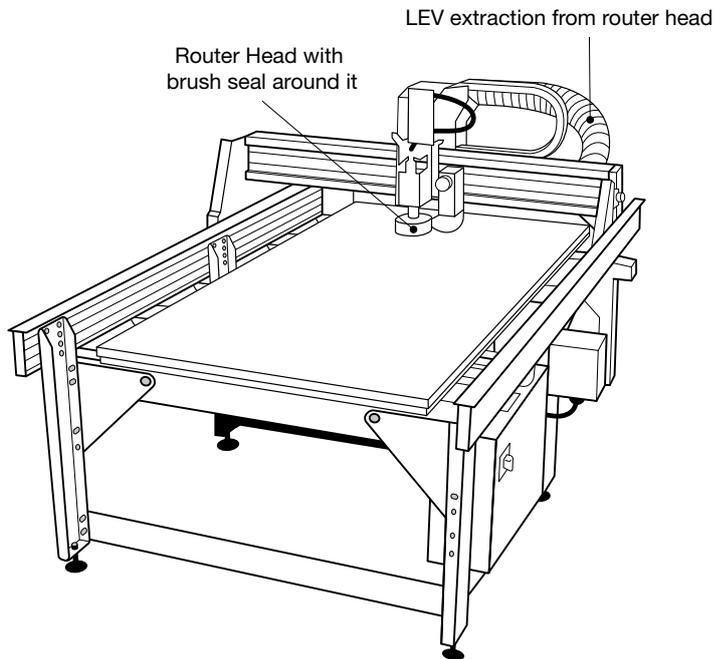
Hand-held router



Overhead fixed router



CNC flat-bed router



It covers the key points you need to follow to reduce exposure to wood dust 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), by reducing wood dust exposure to below the relevant workplace exposure limit (WEL) and to as low a level as reasonably practicable.

This sheet doesn't cover other health and safety risks. Further information on these can be found on the HSE woodworking web pages (see Essential information).

Hazards

- ✓ Routing produces high levels of dust.
- ✓ Wood dust includes dust from hardwood, softwood and composite boards such as medium density fibreboard (MDF) and plywood.
- ✓ Typically, cutting hardwoods and MDF produces significantly higher dust levels than for softwoods.
- ✓ Wood dust can cause dermatitis and asthma. Hardwood dusts can also cause nasal cancer.
- ✓ The WEL for both hardwood and softwood dust is detailed in HSE publication EH40/2005 Workplace Exposure Limits (see Essential information).
- ✓ For mixtures of hardwood and softwood dusts the WEL for hardwood dust applies to all dusts in the mixture.

CAUTION: The build-up of wood dust in the air and on surfaces could create a serious fire and explosion risk. For guidance on how to prevent this risk see WIS32 (in Essential information).

Access to work area

- ✓ Allow access to authorised and appropriately trained people only.

Equipment and procedures

- ✓ Routers produce large quantities of dust, which should be removed by effective dust extraction (also known as local exhaust ventilation or LEV).
- ✓ Check the router is undamaged and in good working order before work starts.
- ✓ Use the equipment in the right way – follow manufacturers' instructions.
- ✓ For CNC flat-bed routers
 - The router head should be enclosed, and the enclosure fitted with dust extraction.
 - The router should be operated remotely.
- ✓ For overhead fixed routers
 - The router head should be enclosed, and the enclosure fitted with dust extraction.
- ✓ For hand-held routers
 - The router should be fitted with on-tool extraction and a transparent viewing panel and brush seal around the router head.
 - Do not remove the viewing panel for better vision as this will render the dust extraction ineffective.
 - Select the correct dust extraction system with a dust Class M (medium hazard) or H (high hazard) classification.
 - Ensure the hose from the dust extraction system has a good connection to the tool. Use an adaptor if needed, not tape.
- ✓ Extraction must be sufficient to capture the dust effectively. The woodworking machinery manufacturer or ventilation engineer should be able to provide the volume flow rates necessary for the effective capture of dust.
- ✓ Provide adequate clean 'make up air' into the workplace to replace extracted air.
- ✓ Keep the dust extraction system simple and robust in design (see WIS23 in Essential information).
- ✓ Make sure connections between flexible ducts and moveable hoods are secure.
- ✓ Provide an easy way of checking the extraction is working eg airflow indicator or equivalent.
- ✓ Check the dust collection system regularly and empty as required.

Respiratory protective equipment (RPE)

- ✓ Use a powdered respirator when the worker is required to carry-out wood working continuously for more than 1 hour.
- ✓ RPE is not normally needed for the operation of flat-bed CNC routers fitted with dust extraction at the router head and operated remotely.
- ✓ RPE is normally needed when using an overhead fixed router even if the router head is enclosed and extracted.
- ✓ RPE is normally needed for the use of powered hand-held routers fitted with on-tool extraction.

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- ✓ RPE is also needed for maintenance and cleaning.
 - ✓ If required, provide RPE with a UK Standard Assigned Protection Factor (APF) of at least 20 (see R3 in Essential information).
 - ✓ Fit testing is required for RPE with a tight-fitting face seal. If a worker is unable to achieve a tight fit, for example if they are not clean shaven, a loose-fitting powered respirator will be necessary.
 - ✓ Workers wearing tight fitting RPE must be clean shaven and trained how to fit it properly and look after it.
 - ✓ Tell workers to discard disposable RPE at the end of the shift, or sooner if their RPE becomes difficult to breathe through.
 - ✓ Change the filters on reusable respirators in accordance with manufacturers' recommendations and if:
 - they are damaged or visibly contaminated;
 - they become harder to breathe through; or
 - the shelf-life expiry date has passed.
 - ✓ Thoroughly examine reusable RPE (and test where appropriate) on a regular basis, for example monthly, or before use if not used for long periods and keep a record of this.
 - ✓ Tell workers to check RPE is working properly before every use and record this.
 - ✓ Make suitable arrangements for maintenance, storage and replacement of RPE.

Personal protective equipment (PPE)

- ✓ Ask your supplier to advise on additional suitable PPE.
- ✓ Consult workers to ensure PPE will be suitable for them.
- ✓ Provide coveralls that do not retain dust – synthetic rather than cotton.
- ✓ Use a contract laundry or a suitable equivalent to wash work clothing. Don't allow workers to do this at home.
- ✓ Make suitable arrangements for maintenance, storage and replacement of PPE.

CAUTION: Avoid the use of gloves for manual machining operations due to the significant risk of entanglement / drawing in.

Personal decontamination

- ✓ 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.

CAUTION: Barrier creams are not 'liquid gloves' and do not provide a full barrier.

Maintenance, examination and testing

- ✓ Keep all equipment in effective working order. Maintain it as advised by the manufacturer or installer.
- ✓ Check for signs of damage to the routers and their dust extraction systems before starting work.
- ✓ For dust extraction systems a user manual or logbook is helpful in setting out the frequency of checking, maintenance or parts replacement.

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- ✓ For dust extraction systems with no user manual or logbook, you may need the help of a competent person. They can determine the performance needed for adequate control.
 - ✓ Dust extraction systems require a statutory 'thorough examination and test' (TexT).
 - ✓ On-tool extraction systems require a TexT to be carried out, and it should include:
 - a visual check to ensure the dust extraction system is not damaged / cracked;
 - a check that the velocity in the extraction hose is above 20 m/s;
 - a check that the flow indicator is functioning by simulating reduced air flow; and
 - a check that the filter/filter seal is not damaged by looking for dust in the outlet after the filter.
 - ✓ Get a competent person to perform the TExT at least once every 14 months.
 - ✓ Carry out all actions arising from the TExT.
 - ✓ Keep all records for at least 5 years.
 - ✓ Several measures are available to check effectiveness of controls. These range from simple qualitative (use of dust lamp) to complex quantitative techniques (eg air sampling) usually for higher risk scenarios (see G409 in Essential information).
 - ✓ HSE publication HSG258 provides more detailed information on dust extraction systems and legal and competency requirements (see Essential information).

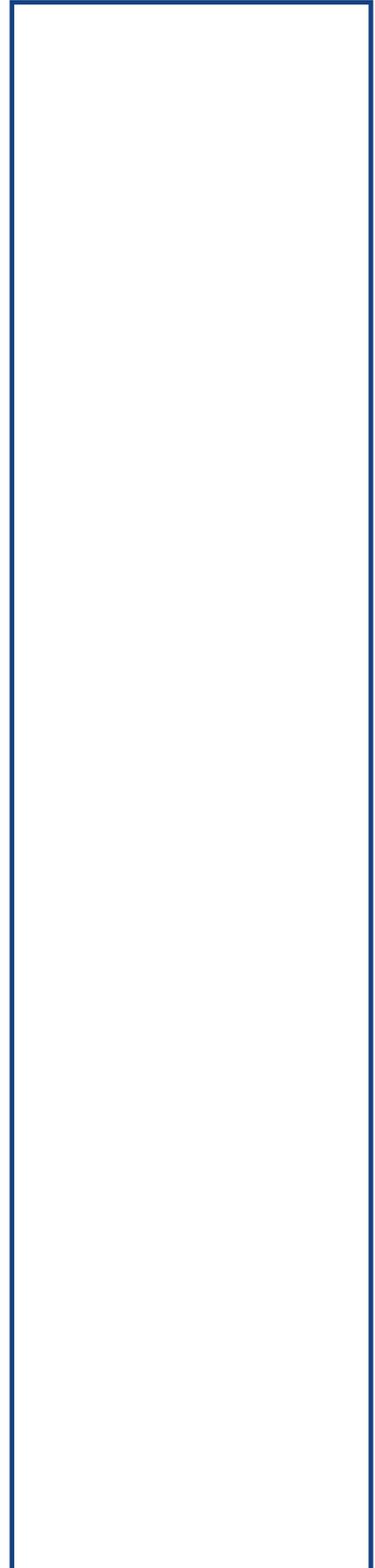
Cleaning and housekeeping

- ✓ Clean work equipment and the work area as necessary and at last daily. Clean other equipment and the workroom regularly – at least once a week.
- ✓ Use vacuums that meet the dust Class M (medium hazard) or H (high hazard) classification to remove dust. Alternatively use an appropriate suction hose attachment on your dust extraction system (see WD17 in Essential information).
- ✓ Dust class M and H vacuums should be appropriately labelled and have low-flow indicators. Lots of fine dust can quickly clog filters so choose vacuums with pre-filters, built-in 'back-flushing' filter cleaning mechanisms or similar devices. An industrial vacuum with HEPA filter is not adequate (see CIS69 in Essential information).

Caution: Avoid the use of brushes or compressed air for removing dust from skin, clothing, surfaces or the inside of machinery as these can generate large amounts of airborne dust.

Health surveillance

- ✓ Carry out health surveillance for all workers exposed to wood dust to detect the early signs of asthma and dermatitis (see guidance sheets G402 & G403 in Essential information). Detection of early signs of these diseases may indicate that you are not adequately controlling exposure.
- ✓ 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 asthma and dermatitis.
- ✓ Provide workers with training on:
 - working safely with hazardous substances;
 - when and how to use controls;
 - how the dust extraction system works;
 - how to use the dust extraction system to get the best out of it;
 - how to check that the dust extraction system is working;
 - how to use RPE;
 - how to check that the RPE is working;
 - what to do if something goes wrong; and
 - how to report any faults, concerns or early symptoms of ill-health.
- ✓ Provide supervision – ensure that safe work procedures are followed.
- ✓ Have a procedure to check that control measures are in place and being 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

HSE's woodworking webpage: <https://www.hse.gov.uk/woodworking>

HSE publication EH40/2005 Workplace Exposure Limits:
www.hse.gov.uk/pubns/priced/eh40.pdf

Safe collection of wood waste: Prevention of fire and explosion WIS32 (rev1). HSE 2011. <https://www.hse.gov.uk/pubns/wis32.pdf>

Wood dust. Controlling the risks. WIS23(rev2). HSE 2020.
<https://www.hse.gov.uk/pubns/wis23.pdf>

Controlling construction dust with on-tool extraction. CIS69. HSE 2013. Controlling construction dust with on-tool extraction (hse.gov.uk)

Suction hose attachment for cleaning (WD17). HSE 2020.
<https://www.hse.gov.uk/pubns/guidance/wd17.pdf>

UK Standard Assigned Protection Factor 20 (APF 20) COSHH Guidance Sheet R3 HSE 2006. <https://www.hse.gov.uk/pubns/guidance/rpe3.pdf>

Exposure measurement: Air sampling COSHH Guidance Sheet G409. HSE 2011. <https://www.hse.gov.uk/pubns/guidance/g409.pdf>

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

Health surveillance for occupational asthma COSHH Guidance Sheet G402. HSE 2011. <https://www.hse.gov.uk/pubns/guidance/g402.pdf>

Health surveillance for occupational dermatitis
COSHH Guidance Sheet G403. HSE 2011.
<https://www.hse.gov.uk/pubns/guidance/g403.pdf>

Further Information

You can find the full COSHH essentials series for woodworking at <https://www.hse.gov.uk/coshh/essentials/direct-advice/woodworking.htm>

HSE's LEV web page: <https://www.hse.gov.uk/lev/>

HSE's RPE web page: <https://www.hse.gov.uk/respiratory-protective-equipment/index.htm>

Supervising for safety in woodworking Are you as good as you think you are? Leaflet INDG 440 (rev1). HSE 2010. <https://www.hse.gov.uk/pubns/indg440.htm>

New and existing engineering control systems COSHH Guidance Sheet G406. HSE 2011. COSHH G406: New and existing engineering control systems ([hse.gov.uk](https://www.hse.gov.uk))

Clearing the air: A simple guide to buying and using local exhaust ventilation (LEV) Leaflet INDG 408 (rev1). HSE 2016. <https://www.hse.gov.uk/pubns/indg408.htm>

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

Health surveillance, monitoring and sampling sheets are available at <https://www.hse.gov.uk/pubns/guidance/gseries.htm>

Preventing contact dermatitis and urticaria at work Leaflet INDG233 (rev2). HSE 2015. <https://www.hse.gov.uk/pubns/indg233.htm>

British Occupational Hygiene Society 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 <http://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@wlt.com

Employee checklist

- Do you understand the health hazards associated with your work?
- Is the dust extraction switched on and working properly, with the baffle plate fully open?
- Check the airflow indicator has the correct reading.
- Check that any RPE works properly every time you use it.
- Check for signs of leaks, wear, and damage in RPE and the dust extraction system before every job.
- If you find any problems, tell your supervisor. Don't just carry on working.
- Use, maintain and store your PPE in accordance with instructions.
- Wash hands before eating, drinking, smoking, using the lavatory and after work.
- Follow any skin care programme provided - use skin creams as instructed.
- Co-operate with health surveillance.
- Be aware of early signs or symptoms of ill-health related to wood dust and report them as soon as possible.