Health & Safety Guidance

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Local Exhaust Ventilation (LEV)

This guide is based on the HSE publication "HSE INDG 408 Clearing the air: A simple guide to buying and using local exhaust ventilation (LEV), Free to Download, http://www.hse.gov.uk/pubns/indg408.pdf

Is work making you Ill?

Every year, thousands of people in Great Britain die of lung disease or get asthma because of dust, mist, fumes or vapours they have breathed in at work. Some people call them airborne contaminants. Is anything being done to control airborne contaminants in your workplace?

What is LEV?

LEV stands for Local Exhaust Ventilation. It is meant to take those contaminants out of the workplace air so that they can't be breathed in. Properly designed LEV will:

- collect the air that contains the contaminants;
- make sure they are contained and taken away from people;
- clean the air (if necessary) and get rid of the contaminants safely.

Why should your employer be thinking about LEV?

The law (the Control of Substances Hazardous to Health (COSHH) Regulations) says employers must control the risks from airborne contaminants. Making the workplace safer for everyone protects more people and can improve efficiency and productivity, reduce sickness absence and improve morale. It is also a good idea not to damage people's health! Always choose LEV before wearing masks.

Making sure you get the right type of LEV?

LEV needs to be designed to work properly. LEV should be fit for purpose and capable of adequately controlling exposure. Getting your internal engineers or maintenance people to "knock something together" is unlikely to be good enough. Getting expert help is vital. A clear specification will help to get what is needed, and avoid any misunderstandings with the LEV supplier. The cheapest option will not always be the best option. A cut price system that does not work is probably worse than nothing.

A good LEV specification will:

- describe the process, the contaminant, its hazards and the sources to be controlled, how stringent the control needs to be.;
- require indicators to be fitted to show that the system is working properly;
- require the LEV to be easy to use, check, maintain and clean, taking account of other risks, eg accessibility, skin contamination and waste removal and filter changing without spreading contamination;
- specify that the supplier provides training in how to use, check and maintain the LEV system;
- require the supplier to provide a user manual that describes and explains the LEV system, how to use, check, maintain and test it, along with performance benchmarks and schedules for replacing parts;
- require the supplier to provide a logbook for the system to record the results of checks and maintenance.

Talking to union safety reps about how the LEV will be used is essential. It is vital to know exactly how work is done and what is needed in practice. LEV needs to be both effective and practical.

How to select an LEV supplier?

Employers are responsible for making sure the LEV supplier is competent to define, design and install a suitable LEV system to meet the performance intended by design. Selecting the right contractor is crucial. To do this employers should:

- invite more than one tender
- provide a drawing of the area and the processes to be controlled;
- provide a specification for the work to be done;
- tell potential contractors about any environmental or fire and explosion requirements;
- ask potential contractors to visit the site to see the processes.

Questions to potential suppliers:

Checking the ability of the LEV contractor can be done by asking the right questions, for example:

- What experience do you have in designing and providing LEV systems?
- What are your professional qualifications, experience and memberships?
- To which industries have you supplied LEV?
- Have you successfully applied LEV to similar processes or activities in my industry?
- Can you provide references, testimonials or examples showing successful installation of LEV systems?
- Are you tied to a particular range of LEV products?
- How will you show that the LEV provides adequate control?
- What training do you include for using, checking and maintaining the LEV system?
- Can they prove that the LEV will adequately control exposure.

How do I know the LEV works?

Turning on the LEV and it making a noise does not mean it is doing its job. Check the supplier's quotation covers all the requirements of the specification. On installation, the supplier should commission the LEV to make sure it is working according to the specification. It should be done when normal working is taking place. Employers must ensure that workers are trained to use the LEV correctly. The supplier should set out how the LEV works and how to check and maintain it. Some suppliers may offer training.

Recirculating LEV

Some LEV systems reintroduce air into the workplace, rather than to outside air. These are called recirculating systems, and rely on filters to clean the air before it is re-introduced to the work area. Unite reps should request information from their employer on the type of filter being used, its efficiency and its effectiveness. Reps should also request clear evidence that the filters are removing the contaminants from the workplace air, and that contaminants are not being reintroduced into the workplace.

Key documents to expect from the supplier

A user manual with a general specification of what the LEV system is designed to control and how it achieves that control; a **logbook**; and a **commissioning report**

What do I need to do once the LEV is installed?

The law says that employers need to make sure the LEV carries on working properly. Most LEV systems need a thorough examination by a competent person and test once each year (legally, you are allowed no more than 14 months between tests) to make sure it works well and continues to protect employees. Some LEV systems (such as those controlling more critical or high-hazard processes) need more frequent thorough examination and testing. If you have an LEV system that hasn't been commissioned, you will need to have its performance tested to ensure that it is adequately controlling exposure. However, this is a specific test and systems still need regular maintenance between tests.

Checking and maintenance

How often the LEV needs checking and how it is done will depend on how complicated the system is, how likely it is to fail, and the consequences if it does. Complicated LEV that will have serious consequences if it goes wrong needs more frequent checks and maintenance.

Checks and maintenance tend to cover four types of parts:

- moving parts that may wear, such as fan bearings or filter shakers;
- non-moving parts, such as hoods, ductwork and seals (which can suffer physical or chemical damage and wear);
- parts that deteriorate with use, such as filters or flexible ducting;
- items that need regular attention, such as filters that need replacing, or removing sludge from a wet scrubber.

If the LEV can become contaminated with toxic substances, it may need to use 'permits to work' and formal method statements when people work on the system. Allocate specific responsibilities for checks and maintenance. These may overlap, for example:

Operator	Make daily checks, report faults
Safety/workers' representative	Make weekly, monthly checks
Supervisor	Make weekly checks, arrange repairs, correct deviations from the correct way of working, record findings and actions
Section manager	Identify problems, receive regular reports from the supervisor, be responsible for maintenance and testing
Works engineer	Repair faults, carry out maintenance, arrange thorough examination

If there is any obvious damage to the LEV, or it clearly isn't working properly, employees should be encouraged to report this and it should be repaired straight away. Employees using LEV, and workers' representatives, should be asked for feedback and suggestions on how the LEV and working practices can be improved.

What records are needed?

In the logbook there should be a record of all LEV checks and maintenance to show that it has been done and that the LEV is working as well as it should be. This will also help to keep track of repairs and sort problems out before they get more serious. Thorough Examination and Test reports must be kept for at least five years. Employers and workers need to know how the system works. If it contains filters, for example, how often do these need to be cleaned or changed?

What is a thorough examination and test?

The thorough examination tests the LEV against the performance recorded in the commissioning report. It should include airflow and pressure measurements, checks on control effectiveness and, possibly, exposure measurement. If you don't have the design performance data you will not know whether your system is working correctly, so you may need to have your system commissioned. If your system has already been commissioned but you have changed the process or layout since then, you need to recommission it. A professional adviser such as an occupational hygiene specialist or LEV engineer can help you work out what you need to do.

The examination and test must be done by a 'competent person'. It isn't normally something that employers can do themselves. Employers and employees will need to co-operate with the examiner. Give them the:

- LEV commissioning report;
- LEV user manual;
- Logbook with details of checks and maintenance activities.

The examiner will attach a 'tested' label to all hoods. This will include the name of the examiner and the date of the next test. If a hood has clearly failed, then a report will be given to the employer indicating what urgent action is necessary. The examiner will provide an overall report of the examination and test, which should include a prioritised action plan listing anything that needs to be done**. If the examination and test show that the LEV is not adequately controlling people's exposure to airborne contaminants, the work should be stopped and the LEV repaired**.

If the work is to continue while repairs are arranged, employees will need further protection such as suitable personal protective equipment and respiratory protection. The system should carry the red 'fail' label until it has been repaired. If the thorough examination and test report action plan contains long lists of repairs and poor performance, this means that checking and maintenance is not good enough. Use the test report as an audit of procedures and an opportunity to review all exposure control measures.

- Employers must arrange checks, maintenance and a thorough examination and test , using competent people
- LEV systems should be thoroughly examined and tested against the original commissioning report

Competence

Employers must make sure that anyone who designs, selects, checks and maintains the LEV system and does the thorough examination and test is competent. They should have the knowledge, skills and experience to do the job properly. ILEVE has developed a Competency Matrix and a Competency Card for its members to help in this process. They can be found through the ILEVE website. (https://www.cibse.org/institute-of-local-exhaust-ventilation-engineers)

Training for operators/supervisors/managers should cover the basics of:

• the harmful nature of the substances you use;	• how exposure may occur;
• how the LEV system works;	• methods of working that get the best out of the LEV;
• how to check the LEV is working;	• the consequences of the LEV failing;
• what to do if something goes wrong;	

Keep training records for everyone. This includes refresher training. Changes to the work process mean that the LEV may also need to change and staff may need retraining.

Further information

- "Controlling airborne contaminants at work: A guide to local exhaust ventilation (LEV)" HSG258 (Second edition) HSE Books 2011 www.hse.gov.uk/pubns/books/hsg258.htm
- HSE INDG 408 "Clearing the air: A simple guide to buying and using local exhaust ventilation (LEV)" Free to Download, Free leaflet, http://www.hse.gov.uk/pubns/indg408.pdf
- BOHS (The Chartered Society for Worker Health Protection) "Breathe Freely in Manufacturing – An introduction the LEV" http://www.breathefreely.org.uk/an-introduction-to-lev.html
- Institute of Local Exhaust Ventilation Engineers (ILEVE) https://www.cibse.org/institute-of-local-exhaust-ventilation-engineers

LEV checklist for employers

Issue	Possible solution
Which sources are causing exposure?	Take advice from suppliers, trade associations, professional advisers, the HSE website and other reliable sources
What type of LEV system do I need?	Write a specification. If necessary, get professional advice. Be very clear about the type of LEV hood needed. Make sure that your adviser has the competence and experience you need
Has my LEV system been installed and commissioned properly?	Make sure your LEV system is installed and commissioned by a competent person. Get a full commissioning report and user manual. Ensure simple instrumentation is installed to check performance (eg a hood manometer)
Have I, and my staff, been properly trained?	Include training in your LEV specification document. Make sure employees and the person responsible for checking and maintaining the system are trained. Keep training records
How do I check and maintain my LEV system?	Look at the user manual, which should list the checks and their frequency. If you don't have one, get one written. Appoint people to do the checks, maintenance and repairs. Record any checking and maintenance details in the logbook
Have you changed the way you work or the production process but not the LEV?	Treat and plan changes to the LEV as part of any change to the production process. Don't assume it will cope. Get the LEV system recommissioned
How do I arrange a thorough examination and test of the LEV? What do I do with the report?	Include thorough examination and test in the yearly management cycle. Make sure that your examiner has the competence and experience you need. Follow the recommendations in the test report and carry out necessary repair work promptly
The examiner has put a red 'fail' label on an LEV hood	Check the test report for actions needed and arrange for repair. If necessary, provide further protection for your employees in the meantime, including Personal Protective Equipment and Respiratory Protective Equipment
When should I review exposure control measures?	Treat the LEV examination and test report as an audit on exposure controls. Think about what more you can do to stop employees breathing in airborne contaminants