Work Equipment:

LOCAL EXHAUST VENTILATION SYSTEMS

Sawdust

Summary

Code of Practice 46 Part 1 Management and Safe Use of Work Equipment describes the procedures for purchasing, using and maintaining all types of equipment used at work, including local exhaust ventilation (LEV).

This document, Part 4, gives more detail on the specific requirements that apply to LEV systems. This should be read in conjunction with Part 1 and, Code of Practice 49 parts 1 and 2, Fume cupboards.

1 Scope

1 SCOPE

Code of Practice 46 Part 1 Management and Safe Use of Work Equipment describes the procedures for purchasing, using and maintaining all types of equipment used at work, including local exhaust ventilation (LEV). This document, Part 4, gives more detail on the specific requirements that apply to LEV systems. This should be read in conjunction with Part 1 and, Code of Practice 49 parts 1 and 2, Fume cupboards and Code of Practice 14 Part 6, Microbiological Safety Cabinets.

2 INTRODUCTION

The primary purpose of an LEV system is to remove or dilute a hazardous substance from the immediate work place, and hence prevent people inhaling airborne contaminants that could cause short or long term damage to health. The hazardous substance may be gases, dust and particulates, aerosols, vapours, fume, mist or other airborne contaminants. The LEV system will not eliminate the hazard, it just moves it to another location, nor will the LEV protect against contact hazards.

There are basically two types of LEV, capture or extract:

- capture systems are normally small local systems designed to provide point extraction. They remove the substance from the point of generation, to a filter pack or a capture container. An example would be a welding operation with a telescopic trunk leading to a filter drum;
- an extract system is normally a larger system, often built into the building, and will normally be from a fume cupboard or booth. The system will normally reduce the risk by dilution of the substance before venting it to the atmosphere.

The principal legislation is the Control of Substances Hazardous to Health Regulations 2002 (as amended) (COSHH) and supported by the Provision and Use of Work Equipment Regulations 1998 (PUWER). See Code of Practice 28 for further information on COSHH, 49 parts 1 & 2 and HSE guidance, *Controlling airborne contaminants at work*, Ref 1. for detailed guidance on the design, management and use of LEV systems.

In laboratories where there are microbiological hazards, the use of safety cabinets is mandatory where there may be exposure

See Code of Practixhausw

specification of new systems that are supplied through Estates.
the provision of documentation e.g. engineering schematics, performance standards, O&M manuals, users manuals, for new systems supplied through Estates.

Schools/Functions are responsible for:

checking with Estates that the LEV systems that they use are included in the register of items maintained/inspected by Estates;
using LEV systems in accordance with the user manual/operating

it is a mechanical system and therefore prone to failure;
it only extracts from the point of source and is therefore dependent on proper set up and control;
it only moves the hazard from the work location to another area i.e. vented to atmosphere at high level (possibly on the roof of the building) or to a filter pack – making the filter pack then a hazardous waste product to be disposed of.

LEV should be installed, where practicable, where airborne workplace exposure limits (WELs) (see Ref. 2 EH40 Workplace Exposure Limits, EH40/2005 Table 1) are still exceeded by the process after other controls have been put in place.

System procurement

HSE publication HSG258 section 5 (Ref. 1) gives detailed guidance on the procurement process that must be followed when buying LEV systems. This includes the need for the employer i.e. the University, to identify:

other elements of the process that contributes to controlling exposure;
operator's working practices;
the nature of the contaminants, and how they may be generated;
exposure limits, and any appropriate benchmarks for performance of the LEV e.g. a fraction of a WEL.

The system specification must include the need for:

indicators to show that the system is working effectively;
the LEV to be easy to use, clean, check and maintain;
the supplier to provide training to University staff in operational and maintenance procedures;
the supplier to provide a user manual that describes and explains the LEV system, including how to use it, check, maintain and test it, along with performance benchmarks;
the supplier to provide a logbook for the system to record the results of scheduled checks and maintenance.

4.2 System design

The principles of good design for different types of LEV are given in sections 6 and 7 of HSG258 (Ref. 1). Competent persons must be engaged to undertake system design. An appropriate qualification is *P601 Initial Appraisal and Thorough Examination and Testing of Local Exhaust System,* British Occupational Hygiene Society (Ref. 3). Other routes are via UKAS and CIBSE (see Ref. 1).

Guidance:

Current practice is that where the 'annual' inspection and test is carried out by the University engineering inspector (currently RSA), the test results are sent to Estates for onward transmission to the School/Function. Estates also retain a copy.

The examiner must attach a test label to each hood when tested. This should state test date and next test date. Where the system fails, the examiner must instead attach a 'fail' label (generally red) to the hood.

5 RECOMMISSIONING REQUIREMENTS

Recommissioning must be undertaken should any of the following occur:

Existing equipment has been disconnected from the installed pipework to allow for any modifications in the working area or on the LEV system itself.

Major works have been carried out in the working area that have the potential for a disturbance of the air flow to the unit e.g. additional windows installed, high cupboards/benches installed, additional LEV units installed in the area.

New tasks are being considered where the performance of the installed LEV may not be suitable or sufficient.

6 OPERATIONAL USE

All users must be trained in safe operation of the LEV system. Without an understanding of the aim and design parameters, operators cannot use the equipment effectively, thereby risking their health as well as the health of those around them.

Users of extract systems must assess the system holistically. It is common for fume cupboards in a laboratory complex to share an extract system using balanced flow systems; in such cases all the fume cupboards will eventually flow through the same stack. The potential for vapours, fumes and dusts to intermingle in an extract system must be considered, and the potential for incompel well as the health of t

the frequency of checks, maintenance and4(nte)]n 758.50 G0 32 841.92 reW*nBTn 758.50 G0 32 841.9nt nsnJ

7 REFERENCES

1. *Controlling airborne contaminants at work. A guide to local exhaust ventilation (LEV).* HSG258, HSE, 2008.
2. *EH40 Workplace Exposure Limits,* EH40/2005, HSE, 2005.
3. *P602 Basic Design Principles of Local Exhaust Ventilation Systems.*