

The logo for Armstrong Environmental features the company name in a dark blue, sans-serif font. The word "armstrong" is on the top line and "environmental" is on the bottom line. The text is centered within a white, horizontally-oriented oval shape. This oval is set against a larger, three-dimensional red oval background that has a gradient and a shadow effect, giving it a sense of depth.

armstrong
environmental

Local Exhaust Ventilation

LEV Route to Control®

A Little bit about Armstrong Environmental Ltd

- Primary focus is **LEV** and **Workplace Air Sampling**
- 4 offices across the UK:
 - Gateshead
 - Durham
 - Barrow-in-Furness
 - Taunton
- **Five** of our team are **LEV Specialists** listed in the Professional Standards Authority (PSA) register



What am I
going to talk
about?

LEV Route to Control®

7 step process

Help Duty Holders

Reduce Workplace
Exposures



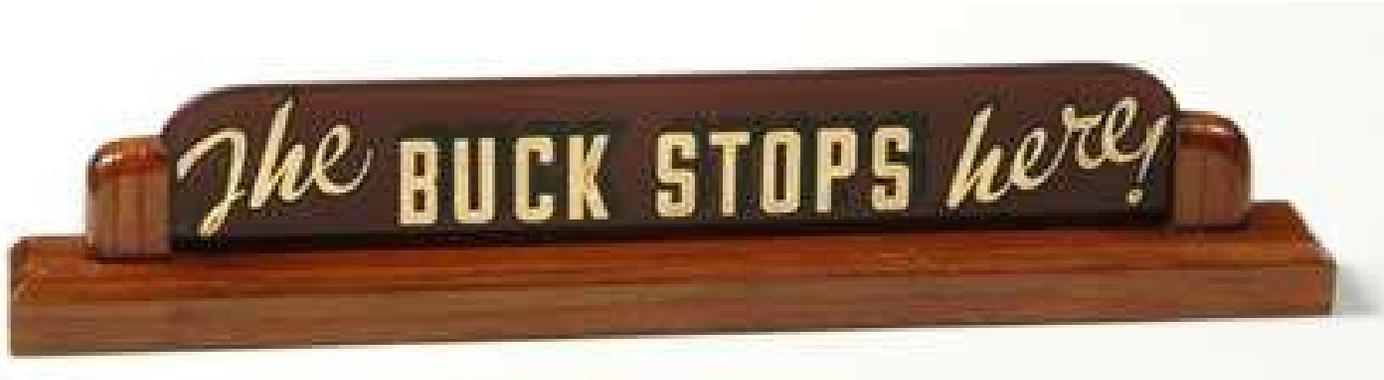
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Why?

The majority of LEV systems we test for the first time are found to be providing inadequate control

Let's Remind Ourselves - What is a Duty Holder?

Person with the primary responsibility for ensuring the effectiveness of LEV systems in controlling hazardous substances.



Sharks



Hot dogs



Duty Holders



Duty Holders

Deaths Per Year



Inadequate Label

armstrong environmental Local Exhaust Ventilation (LEV) Hood Label

SYSTEM ID	
HOOD ID	
INADEQUATE CONTROL	

www.ArmstrongEnvironmental.co.uk

Inadequate control:

Test date	FAIL
Examiner	

MEDICLINIC MEDICLINIC HERMANUS EMERGENCY CENTRE

PATIENTS WAITING TO BE SEEN

Patients waiting to be triaged	0	RED	Life threatening condition (Immediate)	0
Patients waiting to be seen (after triage)	0	ORANGE	Could become life threatening (Urgent)	0
Time last patient was seen	22:03:24	YELLOW	Not life threatening (Semi-urgent)	0
		GREEN	Normal vitals (Stable)	0

EXPERTISE YOU CAN TRUST.

A little bit about you – Agree/Disagree?

1. Your LEV has all been tested in the last 14 months.
2. Each of your LEV systems has a commissioning report, logbook and user manual.
3. All of your LEV systems are providing adequate control ie in the green.
4. Your LEV systems were all tested by a competent person.



The Good News

Don't worry.....our simple system will show you how to get the best out of your LEV systems.



What is LEV?

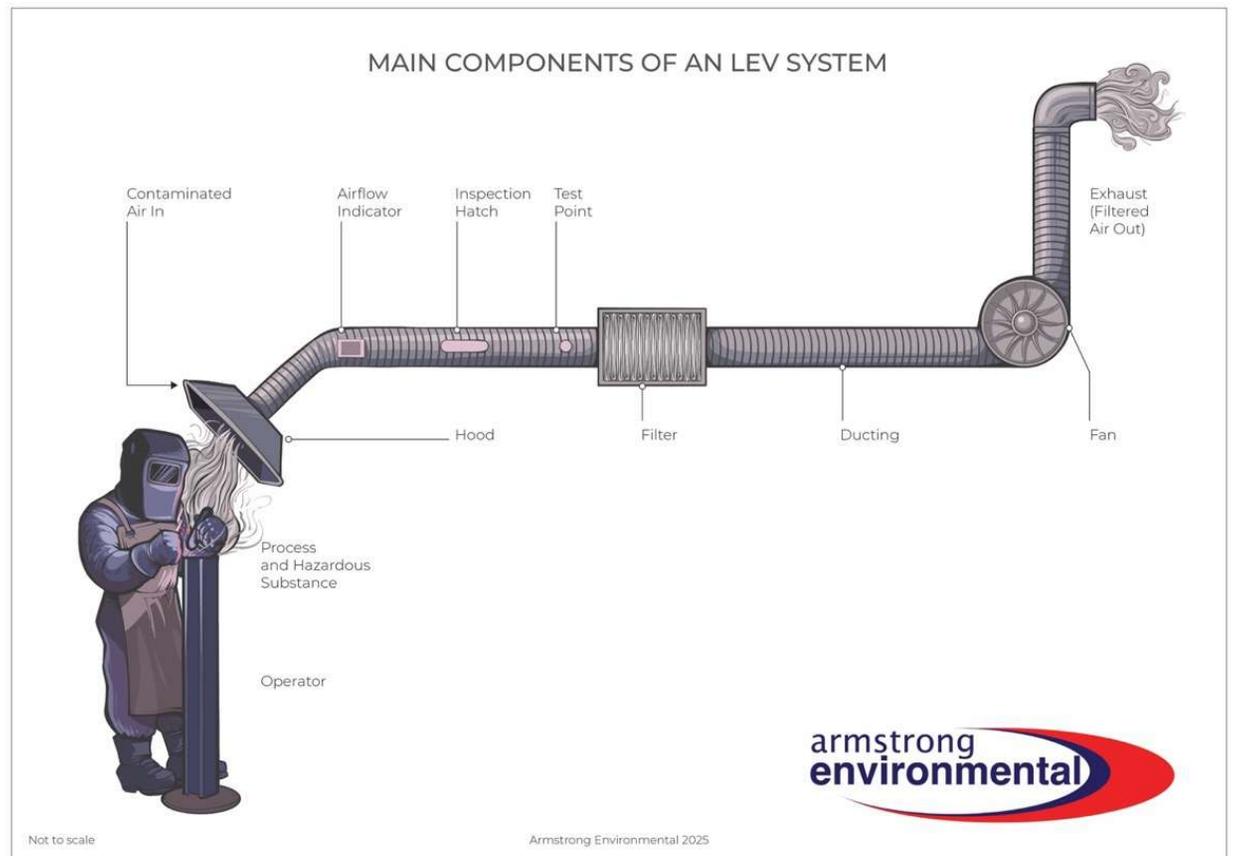
LEV should be an engineering system that has been designed, installed and commissioned to adequately control exposure to the substances hazardous to health.

LEV controls harmful substances at “source”!

LEV (on its own) rarely controls 100% of the hazardous substances.

Other control measures are often needed in conjunction with LEV, as part of a wider control strategy.

Main Components of an LEV System



LEV Route to Control®

Armstrong Environmental have developed an:-

LEV Route to Control®

.... as a basis for ensuring LEV projects are effective and appropriate for the application.

LEV Route to Control[®]

- **Step One - Risk Assessment**
- **Step Two** – Specification for Design
- **Step Three** - Design
- **Step Four** - Installation
- **Step Five - Commissioning Thorough Examination and Test (TExT)**
- **Step Six** – Service and Maintenance
- **Step Seven – Routine Thorough Examination and Test (TExT)**

Step One - Risk Assessment

Should consider:

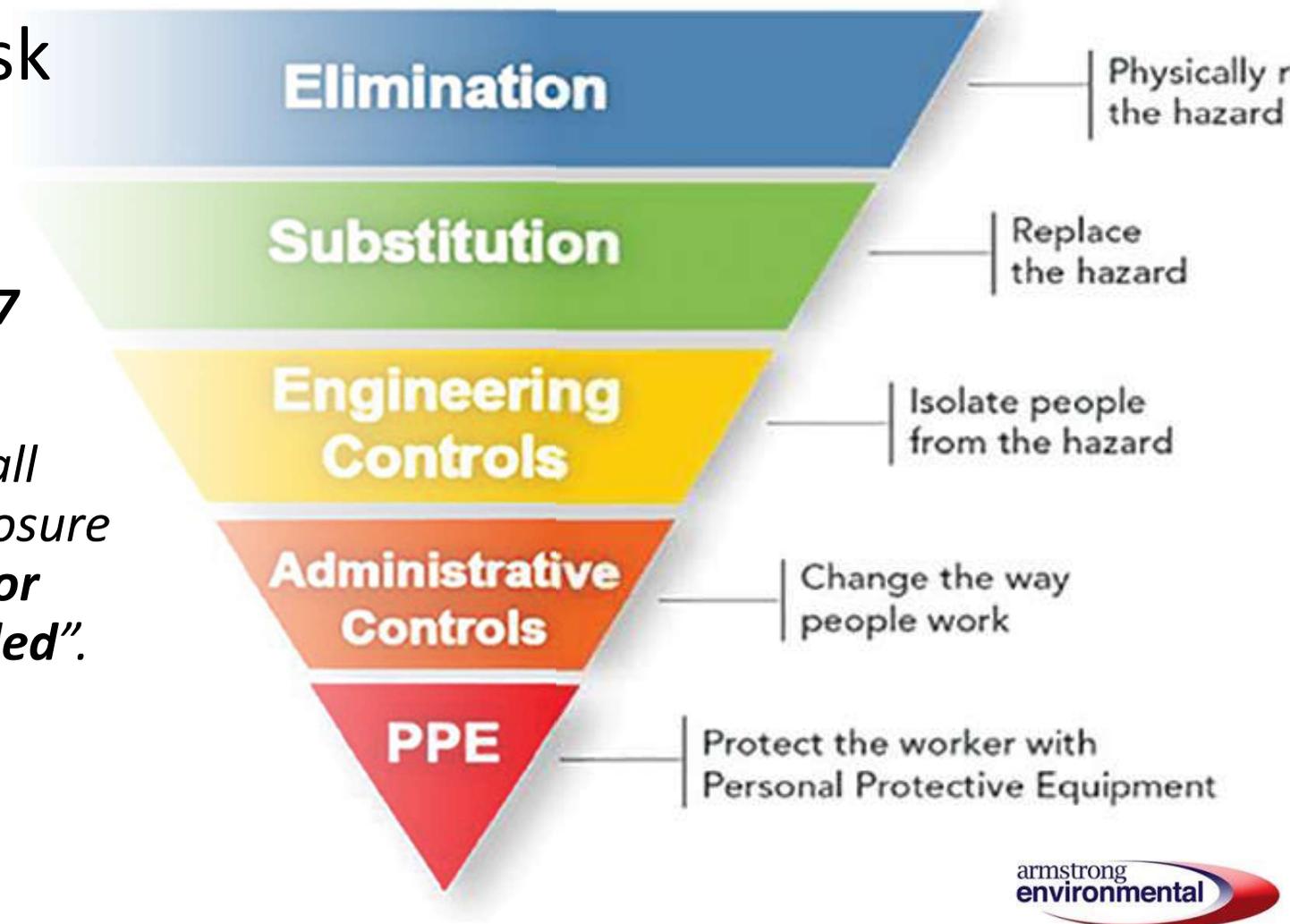
- **Work activity**
- **Hazard**
- **People** exposed
- **Types and extent of exposure**
- Potential **health effects** including the **likelihood** and **severity** of ill health.



Step One – Risk Assessment

COSHH Regulation 7

*“Every employer shall ensure that the exposure is either **prevented or adequately controlled**”.*



Step One – Risk Assessment

Adequately Controlled

HSE has established Workplace Exposure Limits (WELS) for a number of substances hazardous to health - listed in EH40 2005.

There are approximately 500 substances listed in EH40!

For Asthmagens, carcinogens and mutagens, exposures should be reduced to.....**As Low As Reasonably Practicable (ALARP)**

Step One – Risk Assessment

Demonstrating Control

Exposures varySufficient data is required to enable you to make good decisions with certainty.

HSE G409 Exposure Measurement gives guidance on when measurements are required and testing compliance with exposure limits.

It references **BS EN 689** In simple terms, if three measurements for a given Similarly Exposed Group (SEG) are all below 10% of the relevant exposure limit then it is considered that there is compliance with the limit.

Step One – Risk Assessment

The workplace ill health caused by these substances is entirely **preventable.**

Step Two - Specification

LEV Designers will need a “**Specification**”

This requires **collaboration** between several stakeholders, each bringing their expertise to ensure the system is effective.

Key collaborators typically include:

- **Health & Safety**
 - **Engineers**
 - **Operators**
- **Occupational Hygienists**

Step Two -Specification

Duty Holders - are required to provide a **Benchmark (HSG258)**

The **Benchmark** – is the target exposure levels once the control is in place (eg reduced to below 10% of the WEL).

Future Proof

Designer should be able to demonstrate and prove the benchmark is being achieved as part of the commissioning process (eg via air sampling).

Benchmarking is a frequently overlooked part of the specification process!!

Step Two -Specification

A good (LEV) specification for design should include the following:

- Description of the Process and Contaminants
- Main components (hood design, fan type, filter material etc)
- System Controls (Alarms/Airflow Indicators)
- Maintenance and Inspection Requirements (accessible access & test points)
- **Documentation:**
 - **User Manual**
 - **Logbook**
 - **Commissioning**

Step Three - Design

System Categorisation

Simple LEV Systems – Typically a system with one hood.

Eg portable capture hood used for welding fume or a fume cupboard

Complex LEV Systems – Characterised by multiple hoods or a non-standard design.

Examples include:

- Multibranch welding fume system.
- Large spray booth enclosures eg for aircraft, trains or maritime vessels.
- Pharmaceutical systems.
- LEV systems within a confined space

Step Three - Design

Appropriate **Hood selection** and **design** is critical to the performance of an LEV.

Keys to good design are:

- The system must Capture, Receive or enclose the contaminant cloud and remove the potential for operator exposure.
- The greater the degree of enclosure the more likely it will be successful.

Effectiveness is determined by how little of the contaminant cloud enters the users breathing zone

Not based on a velocity reading - meaningless without the exposure data (air sampling)!

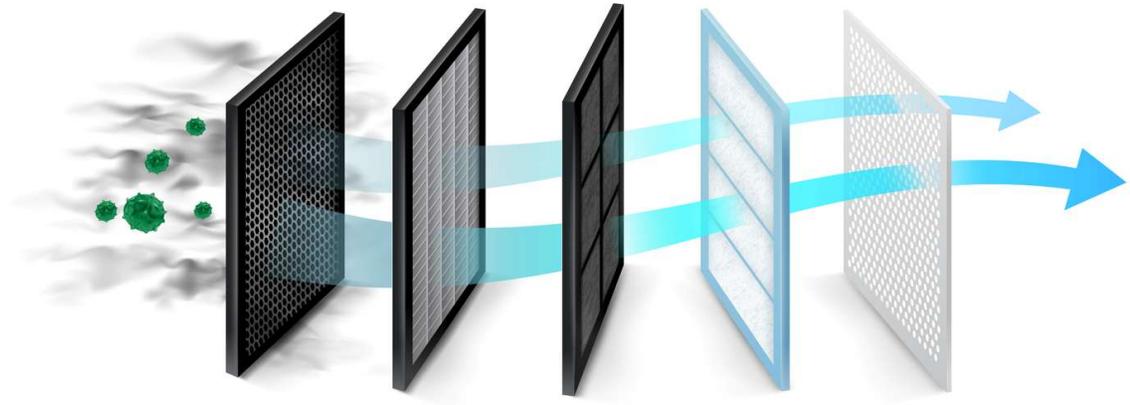
Step Three - Design

Filters

This filters and cleans the extracted air

System: Filtered / Unfiltered

Exhaust: Internal / External



Step Three - Design

Discharge to atmosphere (exhaust)

Whether or not it has been cleaned, extracted air must not re-enter the building or enter other buildings.

Dispersion modelling can be used (expensive).



Step Four - Installation

The installer may be the design or supply company, the service provider, or even the employer (if competent).

For **simple systems**, installation is generally limited to unpacking & assembling,

For more **complex systems**, installation could involve:

- Constructing the LEV system
- Checking all components are in good working order.
- Remedy of any simple faults

Step Five - Commissioning

Commissioning' is proving that an LEV system is capable of providing adequate control, against a benchmark (air sampling).

HSE bulletin *“You (DH) are responsible for ensuring your commissioner has demonstrated impartiality and competency”*

LEV systems with no documentation should be re-commissioned.

Step Six – Service and Maintenance

The system needs to be looked after.

User manual will state what is required.

This includes regular inspections and things like fan maintenance eg belt changes or filter changes.

Recorded in the **Log Book**

Step Seven – Thorough Examination & Test TExT

What is the purpose of a Routine LEV thorough examination and test TExT?

This is a detailed and systematic examination to ensure that the LEV can continue to perform as designed and will contribute to adequate control of exposure.

The examination and test must be done by a **competent person**.

What does an LEV TExT involve?

Our LEV **Thorough Examination and Testing** is undertaken using our four-part process called **LEV Control Review**



Stage 1

Desktop Study



Stage 2

Visual Inspection



Stage 3

Technical
Measurements



Stage 4

Report

Control Review



Stage 1

Desktop Study

A review of the following information:

- **Risk Assessment**
- What **benchmark** level of control are you trying to achieve? E.g. <10% of the WEL
- **Commissioning Report**
- **Logbooks**
- **User manuals**
- **Training Records**
- What other control measures are used eg RPE?

Control Review



Stage 2

Visual Inspection

Thorough visual inspection including:

External examination of all parts of the system for damage, wear and tear.

Internal examination (eg inside duct using inspection hatches/borescopes).

Control Review



Stage 3

**Technical
Measurements**

Qualitative and Quantative Testing

Visual observation of the processes and contaminant sources using smoke release or a dust lamp – needs to be **in use at the time of test!**

Measurements which may include:

- Face or duct velocities.

Air Sampling – critical in proving systems been designed and installed correctly.

- Could be surrogate sampling using a substitute material or
- Workplace exposure assessments (compared to WEL/OEL)

Control Review



Stage 4

Report

The findings are presented within a system specific report.

The examiner uses professional judgement to determine whether the system is adequately controlling exposure to the substance's hazardous to health.

The report should contain the details outlined in **HSG 258 2017** and the **COSHH ACOP L5 2013**.

Competent Testers

The CoSHH ACOP L5 states:

*“Employers must ensure that whoever carries out maintenance, examination and testing is **competent** to do so.*

*People carrying out examinations and tests on control measures such as LEV must have adequate **knowledge, training and expertise** in examination methods and techniques.”*

Tester's Competency



LEV Specialist Career Path



Take Homes

Risk Assessment the 'Key' ... It all starts there.

Benchmark & futureproof

3rd Party Commissioning

Ill health is entirely preventable!

Follow our LEV Route to Control®

**Follow the steps and hopefully
it won't be another fine mess you get into**



Questions

Happy to take any questions now if time permits or feel free to contact me:

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