Breathe Easy : The Evolution and Importance of Workplace Air Quality

For over a century, efforts to improve air quality in the workplace have played a vital role in occupational health and safety. These initiatives began long before the modern understanding of respiratory diseases, driven by the reality that people perform better, are healthier, and are more productive in clean and well-ventilated environments. From the dark, soot-laden factories of the 19th and 20th centuries to today's sophisticated industrial operations, ensuring breathable air has been a persistent and evolving challenge.

A particularly pressing concern in recent years has been work-related respiratory conditions, with the UK Health Safety Executive (HSE) concentrating on the following priority areas, Construction, Refurbishment and demolition projects, Dust-generating activities – such as woodworking and baking, where flour and wood dust may cause occupational asthma and welding Fumes which have been classified as carcinogenic. Employers in these sectors should expect closer scrutiny of air quality controls, such as Local Exhaust Ventilation (LEV) systems and PPE provision.

Regulatory Foundations: CoSHH and the Rise of LEV

To address these and other health threats, the UK introduced the Control of Substances Hazardous to Health (CoSHH) regulations. First enacted in 2002, CoSHH consolidates decades of scientific research, workplace studies, and practical insights to form a structured, enforceable framework aimed at minimising harmful exposures in the workplace. While the regulations have evolved, their essence remains clear: protect people by identifying hazardous substances and implementing measures to control them.

One of the most significant advancements in this field has been the emergence of Local Exhaust Ventilation (LEV) systems. Initially focused primarily on dust control, LEV has broadened in scope to include the removal of fumes, vapours, and gases—many of which pose serious short and long-term health risks. LEV systems are now a cornerstone of modern industrial hygiene, helping ensure that harmful contaminants are efficiently captured at their source before they reach workers' breathing zones.

Achieving effective air quality control is not solely the responsibility of engineers or managers. Well-structured training programs are vital in creating a workplace culture that values and maintains good air quality practices. The HSE actively encourages both employers and employees to understand their roles in managing respiratory risks. Workers should be trained to recognise symptoms of poor air quality, such as unpleasant odours, visible dust, or malfunctioning LEV systems.

Airflow indicators are a common feature of LEV systems, offering a quick check to confirm proper function. While useful, these indicators should not be considered infallible. Regular inspection and maintenance are critical, and all users should be vigilant in reporting any defects, from abnormal dust accumulation to unusual sounds or smells. A well-maintained LEV system, coupled with alert and informed personnel, significantly enhances the overall effectiveness of workplace air safety measures.

Effective LEV systems begin long before installation. Collaboration between employers, system designers, and equipment suppliers is key. A deep understanding of the specific processes,

materials involved, and the physical layout of the workspace allows for customised solutions that not only perform well but also integrate seamlessly into daily operations without hindering productivity.

System design must consider operator movements, process variability, and future scalability. If a LEV system is cumbersome or interferes with workflow, it risks being bypassed or misused, reducing its effectiveness. Usability is just as important as performance in ensuring compliance and ongoing success.

Organisations such as SHAPA (Solids Handling and Processing Association) are instrumental in advancing best practices across the industry. As an active member of the Safety and Health Engineering Partnership (SHEP), SHAPA plays a key role in promoting safety standards and sharing technical knowledge. Through this and other collaborations, SHAPA supports comprehensive training, system design guidance, and up-to-date technical documentation.

A particularly valuable resource offered by SHAPA is the Matrix of LEV Knowledge, a detailed guide outlining the skills and understanding required for various roles involved in LEV implementation. This matrix helps companies identify competent partners and ensures that all parties involved in LEV projects—from design through to ongoing testing—are properly equipped and qualified. The matrix, along with many other resources, is freely available on the SHAPA technical webpage: https://www.shapa.co.uk/technical.php.

No LEV system should be considered "fit and forget." Annual testing by a competent and accredited company is essential. These professionals can perform rigorous assessments to verify airflow, capture velocity, filter integrity, and overall system performance. After testing, appropriate labelling and documentation should be provided to ensure that the system is up to date and compliant with current regulations.

In addition to professional servicing, in-house checks should become part of the daily routine. Operators should be trained to recognise signs of wear, damage, or inefficiency and to report these immediately. Preventative maintenance not only prolongs the life of the system but also ensures continuous protection for employees.

SHAPA offers a comprehensive suite of services through its member companies. These include LEV system design, supply, installation, and certification—ensuring peace of mind throughout the entire lifecycle of an installation. Whether you're seeking a new LEV solution, training resources, or technical guidance, SHAPA's Equipment Finder and technical documentation hub provide a reliable starting point.

Conclusion

Clean air in the workplace is not a luxury—it's a necessity. Through regulatory frameworks like CoSHH, technical standards such as EH40, and active collaboration between industry organisations like SHAPA and SHEP, significant strides have been made toward safer working environments. However, this is an ongoing journey. As industries evolve and new materials and technologies emerge, so too must our commitment to protecting those who work within them. By investing in effective LEV systems, ongoing training, and a culture of accountability, businesses can ensure a healthier, more productive future for all. For more information visit the SHAPA website at www.shapa.co.uk