How to Correctly and Safely Store Gases Within a Laboratory Setting

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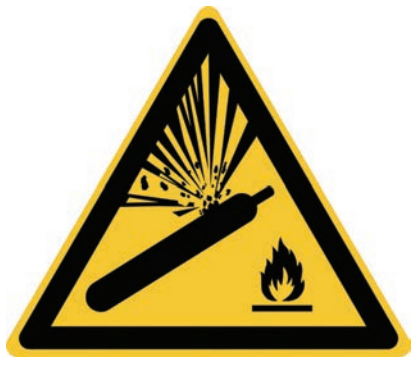

It is vital that any laboratory or research setting which stores and/or utilises gas cylinders follows a strict safety procedure to help ensure the safety of those using the gases or working within close proximity. A series of risk assessments, tests and checks must be regularly carried out to ensure the stability of the gas cylinders and, subsequently, the safety of the laboratory team.

Thankfully, guidelines are in place to simplify the process of safely storing gas cylinders, helping lab managers ensure they implement full and thorough safety procedures. From industry-standard risk assessments to advised practices, the process of storing gases within the laboratory should be measured and precise.

Comprehensive Risk Assessments

Every step of the process of implementing gas storage in the laboratory should be married with fully-compliant risk assessment processes. The first step in most cases is the implementation of a full COSHH (Control of Substances Hazardous to Health Regulations) risk assessment for both gas and the gas equipment.

The HSE (Health and Safety Executive) website includes detailed guidelines about how to carry out such an assessment – including gas-specific checks and checklists.

Following the COSHH assessment, a DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) assessment should be completed to help employers understand how they can control the risks attached to the installation of gas cylinders in the laboratory. Again, the HSE provides detailed guidelines about how best to implement such guidelines and practices.

Full Training and Cooperation

Gas cylinder safety does not end when the materials are installed in the laboratory, it is an ongoing responsibility for all members of the lab to ensure that safe practices are observed at all times. Full training must be provided for every member of the research team using a laboratory fitted with a gas cylinder. Instilling safety-conscious practices into the teams' psyche is vital in ensuring the long-term safety of the environment.

The main causes of accidents and injuries involving gas cylinders in the laboratory are avoidable, hence the requirement for thorough training. These causes include:

- Poor storage
- Poor handling
- Poor installation
- Inadequate supervision

Each of these causes can be avoided with full training for new and existing members of the laboratory team, with regular refresher sessions also held. Ensuring that all members of the team are fully aware of safe practice and correct usage can significantly reduce the risk of accidents and injuries occurring.

This is a long-term effort, and one which should not be compromised even if the laboratory has housed gas cylinders for many years. One small mistake could have a devastating impact on lab safety and the welfare of the personnel.

Intelligent Laboratory Practices

Just a few intelligent laboratory practices could help sure up the safety of a lab featuring a gas cylinder, never compromising the performance of the research team working within. The following practices should be observed in any laboratory which stores and uses gas cylinders.

Ensure the lowest possible number of gas cylinders are stored in the laboratory at any one time. An excess of cylinders could compromise the safety of the working area.

Similarly, if gas cylinders are to be moved through the laboratory or to another site, they should be done so in small numbers or batches. The greater the number of gas cylinders simultaneously moved, the larger the risk they present.

As mentioned in the previous point, all members of the laboratory research team should be appropriately trained in using and maintaining the gas cylinders. Even researchers who don't directly use the gas cylinders in their day-to-day work should be comprehensively trained in handling the materials – ensuring they understand how to act if they are called into action.

When a gas cylinder is no longer required, it should not remain sitting dormant in the laboratory. As soon as a gas cylinder has moved beyond its usability, it should be removed and placed in a suitable storage facility.

And finally, always make sure that your gas cylinders are purchased from a reliable and reputable supplier. Buying from a lesser-known retailer may promise a saving, but could compromise safety and severely impact performance.

Expert Input

With a myriad of safety concerns to contend with in many laboratories, it may be advisable to leave some of the duties to an expert third party. Leading lab fitters will adhere to safety standards and implement their own safe-installation and management techniques to double and triple guard against the potential for dangerous activity or accidents.

Employing the assistance of a lab fitter or specialist installation team can alleviate some of the concerns about correct gas storage in the laboratory. One such installation team, InterFocus, implements rigorous safety processes and testing at every step. Company Director, Marcus Cannon, explains the importance of seeking expert assistance:

"Currently, there is no law in the UK stipulating that gases must be kept in EN-rated safety cabinets, so a certain level of self-regulation needs to be implemented to guarantee absolute safety in the lab. Whilst discussions have taken place to make the use of EN-rated safety cabinets a legal requirement for laboratories storing gases, these are unlikely to come into effect in the UK in the near future.

"Furthermore, the increased costs of such safety cabinets could encourage smaller laboratories to seek a cheaper alternative – one which does not necessarily offer all the protection of an EN-rated model. If a laboratory is to take this route, it is vital that they follow all safety practices throughout and beyond the installation process."

Gas Cylinder Standards

As mentioned above, it is vital that gas cylinders are bought from a reputable and reliable retailer. Always pay due diligence when seeking gas cylinders for the lab – protecting yourself against the potential for bringing a dangerous piece of equipment into the laboratory.

And even when you have complete faith in the supplier, it is vital you complete a thorough check of the gas cylinder before storing it in the lab, checking for the following:

- Damaged mountain threads
- Stiff spindle valves
- Leaks
- Improper regulator seating

If you discover any of these issues with the ordered gas cylinders or any other identifiable problems, it is advisable that you return the unit to the supplier before the imprinted inspection date has expired. Even if the cylinder has been half emptied, it should still be returned in this window if an issue arises or has been covered.

This is just the start of the process of correctly maintaining and storing gases within the laboratory, it is an ongoing mission to guarantee the safety of the research team and surrounding equipment.