



Risk control

Storage of Hazardous Substances in Educational Establishments



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Overview

There is the potential for school evacuations and disruption to local communities due to the discovery of hazardous materials used in science lessons. For example, Army bomb disposal teams may be called upon to deal with situations where the inappropriate storage of 2,4-DNP (2,4-dinitrophenylhydrazine) can lead to the materials becoming potentially unstable with a significant risk of explosion.

As well as the direct risk to school pupils and staff, it is worth considering that the bomb disposal service teams may seek to recover their costs from the local authority.

2,4-DNP (2,4-dinitrophenylhydrazine) is a hazardous material with a number of industrial uses, but in schools and colleges 2,4 -DNP is used as an indicator to determine the chemical identity of aldehydes or ketones. It usually appears in a solid form but needs to be kept from drying out otherwise it becomes explosive.

A failure to maintain and monitor the necessary storage arrangements for 2,4 -DNP is often the cause of the problem.

Depending upon the material's characteristics and the situational context e.g. supply, transportation, storage, use or disposal, hazardous substances can fall under several pieces of regulation, including: The Control of Substances Hazardous to Health Regulations 2002¹, The Dangerous Substances Explosive Atmospheres Regulations 2002², and The Explosives Regulations 2014³.

If you are in any doubt as to the condition of stored hazardous substances including 2,4 -DNP you are advised to contact CLEAPSS⁴ (formerly known as the Consortium of Local Education Authorities for the Provision of Science Services) as one of the Department of Education's key recognised sources of guidance along with the Health and Safety Executive⁵.

Thankfully cases so far have not resulted in any serious injury, however, each case serves as a timely reminder that the risks of hazardous materials needs to be carefully and systematically managed.

Managing hazardous substances can seem complex, but by applying good risk management principles based around the central practice of risk assessment can still ensure that most practical experiments in science lessons can still go ahead.

Practical Steps

Organisations must ensure the involvement of competent people with access to current information (e.g. material safety data sheets) and good practice guidance (e.g. CLEAPSS Hazcards and Guides) to perform an assessment of the risks and ensure the necessary steps are taken to control them, which might include the following:

- Reviewing hazardous substance inventories and if there are materials that are no longer used or needed, then arrange to have them safely disposed of. If the substances cannot be avoided then the next step is to reduce the amounts held to minimum practicable levels.
- Handling and storage arrangements need to be tailored to the specific materials and consider issues such as security, keeping incompatible substances apart, temperature and ignition sources under control etc. These should be supported with good housekeeping practices. Mechanisms should be established to periodically rotate stock and ensure the required storage conditions are being maintained.
- Users should be trained in applying the safe systems of work and encouraged to report any shortcomings.
- Finally it is a prudent step for schools to prepare, communicate and test plans to deal with foreseeable emergencies involving hazardous substance including spillages and accidental releases.

RMP Risk Control are well-placed to assist client authorities with their health and safety risks. Support can be provided in the following ways:

- Reviewing current methods and procedures against good practice guidance and legislative requirements to provide a gap analysis and action plan to improve standards.
- Developing in-house competencies in the management of health and safety by delivering topic specific courses or more general accredited IOSH Managing Safely programmes.

References

1. <https://www.legislation.gov.uk/ukxi/2002/2677/regulation/7/made>
2. <https://www.legislation.gov.uk/ukxi/2002/2776/contents>
3. <https://www.legislation.gov.uk/ukxi/2014/1638/contents/made>
4. <https://science.cleapss.org.uk/>
5. <https://www.hse.gov.uk/fireandexplosion/index.htm>

Further information

For access to further RMP Resources you may find helpful in reducing your organisation's cost of risk, please access the RMP Resources or RMP Articles pages on our website. To join the debate follow us on our LinkedIn page.

Get in touch

For more information, please contact your broker, RMP risk control consultant or account director.

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