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Chemical use in junior laboratories

Posted by Anonymous on Wed, 2015-11-11 14:22

Chemical use in junior laboratories: Our science faculty is moving to a new, purpose-built facility next year. Senior labs have access to a safety shower and eyewash station. Junior labs, on a lower floor, have only an eyewash station.

I have been asked to find out if there are any OH&S restrictions on the strength of acids and bases and the use of flammable chemicals in the junior labs, given there is no safety shower available.

Our school is an independent coed school.

Voting:



No votes yet

Year Level:

7

8

9

10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

Showing 1-1 of 1 Responses

Chemical use in Junior laboratories

Submitted by sat on 01 December 2015

In Brief:

Regulatory body advice and Australian Standards are not prescriptive due to the numerous different settings and this needs to be considered in the context of the school setting. Provision of an eyewash station and the requirement for a safety shower are determined on the basis of a risk assessment. A risk assessment should take into account the hazards, concentrations and quantities of the materials which are used and stored, as well as any preparation carried out in the laboratories. In the absence of a safety shower, the school may decide to reduce the level of hazard by removing some chemicals from the area and modifying preparation procedures.

Science ASSIST recommends the following in a school science laboratory where any chemical is being handled, even if it is in relatively small, diluted volumes.

- Flushing and rinsing with water be the first aid applied for any chemical exposure.
- In addition to an eyewash facility, access be available to some type of drench facility, such as a separate drench hose, a combination eye wash/drench hose or emergency shower.

Note: These should be regularly maintained to function optimally for the purpose of irrigating eyes, skin or clothing in the event of any chemical exposure.

- The emergency units are clear of obstructions and within 10 seconds' reach.

Additional Information

Risk Assessment of activities: All operations and experiments involving hazardous materials should have documentation showing an assessment of the risks involved and the implementation of controls to minimise exposure or chance of an emergency and the provision of relevant first aid equipment. For links to the health and safety legislation that covers your school see the ASSIST information sheet [AIS: Links — Workplace Health and Safety \(WHS\)](#)

An eyewash and shower facility: This is required in laboratories where hazardous substances are being used⁽¹⁾. Exposure to strong and concentrated forms of corrosive and flammable chemicals can result in more severe injuries to eyes, skin, and damage to clothing than with weaker solutions. Consideration must also be given to the volumes of chemicals handled. The handling of relatively large volumes of strong corrosive/flammable chemicals requires access to more stringent first aid measures in the event of an accident, compared to dealing with relatively smaller volumes of weaker solutions.

Site-specific risk assessment: Emergency eye wash and safety showers are a part of the emergency response or first aid plan to flush away chemicals from the eyes, face or body,

preventing injury in the unfortunate event of an accident. **The provision of emergency showers, eye wash facilities or any other safety equipment in a school should be based upon a site-specific risk assessment.** It is the responsibility of the employer/school to make this emergency equipment available, if it is deemed necessary.

Consult the Safety Data Sheets (SDSs): Practical work is an important aspect in the science curriculum and school science laboratories have the potential for a range of hazards, in particular those from chemicals. When addressing the risks of handling chemicals, SDSs are a good source of information and should always be consulted. Section 4 of a SDS: First-aid measures describe the necessary steps/actions to be taken in case of an accident **and** what first aid facilities should be in place.

School science laboratories: Three common chemicals (an acid, base and a flammable liquid) that are used in the junior curriculum are 0.1M hydrochloric acid, 0.1M sodium hydroxide (both of which are considered non-hazardous), and Universal Indicator solution, which is both hazardous and flammable. According to their safety data sheets^(2,3,4), the first-aid measures for dealing with all of these solutions getting in the eye or spilt on skin include the following.

- **Eye:** Flush with water for at least 15 minutes.
- **Skin:** Remove contaminated clothing and flush with water.
- **First Aid Facilities:** Maintain an eyewash fountain and safety shower in work area^(3,4), Or, maintain eyewash fountain and drench facilities in the work area.⁽²⁾

Personal Protective Equipment (PPE): It should also be emphasised that, when handling any chemicals, all science staff and students are required to use approved and appropriate PPE such as safety glasses, face shields, gloves, lab coats or aprons when there is a reasonable probability of a hazard or injury to the eyes, face, skin or clothing from chemical exposure. It is the school's responsibility to ensure access to this protective equipment. Provision of other first-aid measures such as emergency eyewash stations and safety showers do not eliminate the need for use of PPE.

For further information Science ASSIST has previously answered questions relating to emergency eyewash stations and safety showers, see:

[Safety Shower Requirements for Regulations/Requirements](#)

[LAB SAFETY for Locations](#)

[Emergency eye wash basins, showers and gas taps for Maintenance](#)

References:

(1) Standards Australia. 2010. AS/NZS 2982.2010 *Laboratory design and construction*. Sydney, Australia.

(2) ChemSupply. 2013. *Safety Data Sheet: Hydrochloric acid, 0.1M*, ChemSupply website, <https://www.chemsupply.com.au/documents/HL0143CH9E.pdf> (6 May 2013)

(3) ChemSupply. 2011. *Safety Data Sheet: Sodium hydroxide 0.1M, 0.2N*, ChemSupply website, <https://www.chemsupply.com.au/documents/SL1313CH7N.pdf> (28 March 2011)

(4) ChemSupply. 2013. *Safety Data Sheet: Universal indicator solution pH3 – pH11*, ChemSupply website, <https://www.chemsupply.com.au/documents/UL0001CH7T.pdf> (28 October 2013)

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