

ASSIST INFORMATION SHEET:

Plant and equipment maintenance and servicing schedules for optimum performance, safety and to meet compliance

*“**Good housekeeping** is one of the **best aids to safety** with mechanical apparatus. This implies the need for tidiness, cleanliness, clear work areas, proper use and **timely maintenance of plant and equipment.**”¹*

Schools should develop their own maintenance and servicing schedule for all emergency equipment, plant and mechanical fixtures, electrical and electronic devices etc. based on site specific risk assessments.

“All maintenance shall be conducted by competent persons in accordance with the equipment manufacturer’s instructions and the procedures for the laboratory or organization”(6.1)².

Accreditation or compliance certificates must be obtained and displayed for certain equipment and fixtures. Written records of regular inspections and servicing should also be maintained.

Science ASSIST recommends the following guidelines for several main fixtures/equipment commonly found in school science areas, which require regular servicing and sometimes a form of compliance certification or tagging.

A few points to note:

- Manufacturers shall provide operation, inspection and maintenance instructions, which shall be readily accessible to the person providing the maintenance and inspection.
- Testing and/or maintenance shall be carried out by a **competent person**.
- A competent person is defined as *“A person who has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specified task.”*³
- It may be necessary for some maintenance and service schedules to be conducted by a licenced contractor such as a plumber or an independent National Association of Testing Authorities, Australia (NATA) accredited service provider.
- Records of inspection and testing together with findings should be kept. Keeping records helps demonstrate compliance activities with the risk management process.
- Non-compliant equipment should be reported to the school’s administration to arrange for servicing to comply with requirements or for decommissioning and replacement.
- Inspections should occur at a minimum on an annual basis
- Science ASSIST has a few previously published related resources. Links are given later in this document.

The items listed below are in alphabetical order not in order of importance.

Item and relevant AS/NZ Standard and/or Code of Practice	Frequency of testing	Person carrying out testing/inspection	Certification/Tag/Records	Comments
1. Chemical store ventilation system: extractor fan or natural ventilation				
<p>AS/NZS 2243.10:2014 <i>Safety in laboratories, Part 10: Storage of Chemicals</i></p> <p>AS1940:2017 <i>The storage and handling of flammable and combustible liquids</i></p> <p><i>Model Code of Practice – Managing risks of hazardous chemicals in the workplace</i></p>	<p>The model Code of Practice states: <i>Regular checks of these systems should be included in planned maintenance schedules to ensure that vents remain unobstructed.</i> (p.35)</p> <p><i>To ensure the effectiveness of ventilation systems, they should be designed in accordance with appropriate technical standards, and installed and maintained by qualified or experienced persons, such as engineers or occupational hygienists.</i> (p.36)</p> <p>Science ASSIST recommends regular inspections and at a minimum inspected annually.</p>	<p>A competent person could make a general inspection such as checking and cleaning of air vents</p> <p>A qualified person such as an electrician should conduct inspection and servicing of exhaust fans.</p> <p>A qualified person such as an engineer or occupational hygienist should conduct inspection and/or servicing of full mechanical ventilation systems that meet all the Australian Standard requirements.</p>	<p>Records of inspections and servicing should be kept.</p>	<p>School science chemical storerooms vary considerably in the types and quantities of chemicals they store and also the facilities in which chemicals are stored.</p> <p>The ventilation needs to be based upon a site-specific assessment.</p> <p>If inadequate ventilation is provided then appropriate control measures need to be implemented to bring it up to the required standard.</p> <p>Mechanical ventilation system of the chemical storage room should conform to AS/NZS 2243.10:2014 and AS1940:2017.</p> <p>See also:</p> <ul style="list-style-type: none"> • Chemical Storage • Chemical Store • GUIDELINES for the design and planning of secondary school science facilities in Australian schools

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2. Electrical equipment (Portable)				
<p>AS/NZS 3760:2010 <i>In-service safety inspection and testing of electrical equipment</i></p> <p><i>Model Code of Practice – Managing electrical risks in the workplace</i></p>	<p>The model Code of Practice states: <i>The nature and frequency of inspection and testing will vary depending on the nature of the workplace, its environment and the risks associated with the electrical equipment.</i> (p.21)</p> <p><i>AS/NZS 3760:2010 sets out indicative inspection and testing intervals for certain electrical equipment, including RCDs, used in a variety of different operating environments.</i> (p.21)</p> <p>Science ASSIST recommends regular visual inspection along with annual testing and tagging.</p>	<p>The model Code of Practice states: <i>For the purposes of the testing... a competent person includes a person who is licenced or registered to perform electrical work under a law relating to electrical safety or occupational licensing.</i>" (p.24)</p>	<p>A record of testing must specify the following:</p> <ul style="list-style-type: none"> • The name of the person who carried out the testing. • The date of the testing • The outcome of the testing. • The date on which the next testing must be carried out. <p>The record may be in the form of a tag attached to the electrical equipment tested.</p>	<p>Equipment that has failed the electrical safety test should be labelled as 'out of service' and removed from usage.</p> <p>It should be either:</p> <ul style="list-style-type: none"> • repaired and retested or • removed from the workplace permanently <p>(It is recommended to cut off the cord where unsafe equipment is to be removed, so that they cannot inadvertently be plugged in and used).</p> <p>It is good practice before using electrical items to visually check that cords and connections have not suffered any physical damage.</p>

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3. Emergency eyewash and shower equipment				
AS 4775:2007 <i>Emergency eyewash and shower equipment</i>	Weekly visual inspection and weekly activation for a period long enough to verify operation and ensure that flushing fluid is available. (6.8;7.6) <i>This weekly interval may be varied on the basis of a documented risk assessment. (6.8;7.6)</i>	A competent person such as member of science staff.	Weekly inspection records should be displayed near the eye wash/shower facility.	<i>NOTE: The intent is to ensure that there is a flushing fluid supply at the outlet of the device, to clear the supply line of any sediment build-up that could prevent fluid from being delivered to the outlet of the device and to minimize microbial contamination due to sitting water. (6.8;7.6)</i>
	Annual testing to ensure proper water flow rate and compliance with the requirements of AS 4775-2007.	A competent person such as a licenced plumber.	<i>A tag should be permanently attached to each eyewash/shower unit, to be marked at the successful completion of each inspection. (6.8;7.6)</i>	See also: <ul style="list-style-type: none"> Emergency eye wash basins, showers and gas taps
4. Emergency stop buttons and isolation valves for power and gas				
AS/NZS 2982:2010: <i>Laboratory design and construction</i> <i>Model Code of Practice – Managing risks of plant in the workplace</i>	The Model Code of Practice states that: Control measures must be maintained so they remain fit for purpose, suitable for the nature and duration of the work and are installed, set up and used correctly. (p.19) Science ASSIST recommends annual testing of emergency stop buttons.	By in-house competent maintenance staff or outside contractors (e.g. electrician or gas plumber)	Records of inspections and servicing should be kept.	Any stop buttons or valves found not working optimally, should be reported immediately and warnings to be posted for the safety of the potential users. Emergency stops should be clearly labelled to indicate service and readily accessible. See also: <ul style="list-style-type: none"> Testing emergency off buttons for power and gas

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5. Firefighting equipment				
AS 1851: 2012 <i>Routine service of fire protection systems and equipment</i>	6 monthly inspection The contractors should recharge used or non-compliant extinguishers immediately.	This is usually conducted school-wide by an outside licenced contractor. Some Australian state/territory jurisdictions may have legislative requirements for persons qualified to service portable fire extinguishers.	Each fire extinguisher and blanket is to be tagged to indicate compliance. This includes the date of testing. A summary record should be kept detailing the level of service and notes on any defects or issues.	Extinguishers need to be emptied, pressure tested and refilled every 5 years. Fire blankets are for single use only. Replace with a new blanket after use. See also: <ul style="list-style-type: none"> • SOP: Fire blankets • SOP: Use of fire extinguishers
6. Fume cupboards – built in, fully ducted				
AS/NZS 2243.8:2014 <i>Safety in laboratories, Part 8: Fume Cupboards</i>	Annual testing and maintenance is the minimum requirement.	A NATA accredited service provider.	<i>A self-adhesive label must be attached to the fume cupboard showing the inspection date, name of inspector and report number, overall test result (pass or fail), and the date on which the next inspection is due. (5.5.4)</i>	A fume cupboard that fails to pass the smoke test and/or the face velocity test should be taken out of use and signage used to indicate it is out of service. All faults require repair and the fume cupboard retested again before use. See also: <ul style="list-style-type: none"> • Fume cupboard servicing

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7. Fume cupboards – recirculating (these rely on inbuilt filters)				
AS NZS 2243.9:2009 <i>Safety in laboratories, Part 9: Recirculating fume cabinets</i>	<i>A maintenance schedule shall be developed to ensure that the performance checks are carried out regularly. (7.1) according to the Standard's requirements.</i>	<i>Testing shall be carried out by a competent person using equipment that has current calibrations that are traceable to standards of physical measurement in accordance with the National Measurement Act 1960 for Australia. (5.2.6) e.g. a NATA accredited service provider.</i>	<i>A copy of the siting requirements should be attached to the recirculating fume cabinet. (6.2)</i> <i>Records of performance checks shall be maintained in a logbook for each recirculating fume cabinet in use. These records shall indicate when pre-filters and main filters have been changed, and shall contain an accurate record of substances used in the cabinet, the volumes used, hours of operation and the occurrences of major spills or accidents, so that accurate predictions of future filter changes can be determined. (7.2)</i>	There are limitations associated with recirculating fume cupboards and users should be made aware of these limitations. Science ASSIST does not recommend the use of recirculating fume cabinets in school science laboratories. For more detailed information see: <ul style="list-style-type: none"> • AIS: Recirculating fume cabinets
8. Gas taps				
AS/NZS 2243.6:2010 <i>Safety in laboratories, Part 6: Plant and equipment</i> <i>Model Code of Practice – Managing risks of plant in the workplace</i>	Science ASSIST recommends regular inspections and at a minimum inspected annually.	By in-house competent maintenance staff or outside contractors (e.g. gas plumber)	Records of inspections and servicing should be kept.	Gas taps should be checked for leaks, blockages and smooth operation to maintain functionality and ensure safe operation. See also: <ul style="list-style-type: none"> • Emergency eye wash basins, showers and gas taps

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9. Safety glasses				
AS/NZS 1336:2014 <i>Eye and face protection-guidelines</i>	Regular inspections and cleaning. Systems should be in place for identifying and replacing damaged eye and face protectors.	To be carried out by a competent person	Records of inspections and cleaning should be kept.	Schools should establish systems for the provision and regular cleaning of safety glasses. Scratched / damaged safety glasses should be removed from use and be replaced. Use only non-abrasive cleaning agents and cloths. See also: <ul style="list-style-type: none"> Safety glasses and assessing risks
10. Stepladders				
AS/NZS 1892.5:2000 <i>Portable ladders</i>	Pre-use inspection before every use	To be carried out by the potential user.		Faulty ladders should be marked as faulty and removed from use.
<i>Model Code of Practice – Managing the risk of falls at work places</i>	Regular inspections in accordance with the manufacturer's recommendations and also after mishaps, drops or impact.	A competent person such as a maintenance person.	Records of inspections should be kept.	They should either be repaired by a competent person or destroyed so that they cannot be used. See also <ul style="list-style-type: none"> AIS: use of stepladders in school science areas

References and further reading:

- ¹ Standards Australia 2010, AS/NZS 2243.6:2010 *Safety in laboratories Part 6: Plant and equipment aspects*, 2.3 Requirement for safe conduct
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- ³ Standards Australia 2005, AS/NZS 2243.1:2005 *Safety in laboratories Part 1: Planning and operational aspects*, 1.4.2 Definition of Competent person

Standards Australia. 2000. AS/NZS 1892.5:2000 *Portable ladders*

Standards Australia. 2007. AS 4775:2007 *Emergency eyewash and shower equipment*

Standards Australia. 2010. AS/NZS 2243.6:2010 *Safety in laboratories: Plant and equipment*

Standards Australia. 2010. AS/NZS 3760:2010 *In-service safety inspection and testing of electrical equipment*

Standards Australia. 2010. AS/NZS 2982:2010 *Laboratory design and construction*

Standards Australia. 2012. AS1851.2012 *Maintenance of Fire Protection Equipment*

Standards Australia. 2014. AS/NZS 1336:2014 *Eye and face protection- guidelines*

Standards Australia. 2014. AS/NZS 2243.8:2014 *Safety in laboratories, Part 8: Fume Cupboards*

Standards Australia. 2014. AS/NZS 2243.10:2014 *Storage of Chemicals*

Standards Australia. 2017. AS1940:2017 *The storage and handling of flammable and combustible liquids*

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'Model Code of Practice: Managing risks of hazardous chemicals in the workplace', Safe Work Australia website, <https://www.safeworkaustralia.gov.au/doc/model-code-practice-managing-risks-hazardous-chemicals-workplace> (25 May 2018)

'Model Code of Practice: Managing risks of plant in the workplace', Safe Work Australia website, <https://www.safeworkaustralia.gov.au/doc/model-code-practice-managing-risks-plant-workplace> (25 May 2018)

'Model Code of Practice: Managing the risk of falls at workplaces', Safe Work Australia website, <https://www.safeworkaustralia.gov.au/doc/model-code-practice-managing-risk-falls-workplaces> (26 October 2018)

National Association of Testing Authorities, Australia (NATA) website <http://www.nata.com.au/nata/>
'Test and tag course', Workplace Health and Safety Electrical Safety Office Workers' Compensation Regulator | WorkCover Queensland website, <https://www.worksafe.qld.gov.au/licensing-and-registrations/electrical-training/test-and-tag-course> (Accessed November 2018)

WorkSafe WA. 2014. *Guide to testing and tagging portable electrical equipment and residual current devices at workplaces*, WA Department of Mines, Industry Regulation and Safety website, <https://www.commerce.wa.gov.au/sites/default/files/atoms/files/guide-testing-and-tagging-portable-electrical-equipment-and-residual-current-devices.pdf>

Science ASSIST resources

'Chemical Storage', Question to Science ASSIST, Science ASSIST website, <http://assist.asta.edu.au/question/2666/chemical-storage> (17 February 2015)

'Chemical Store (ventilation)', Question to Science ASSIST, Science ASSIST website, <https://assist.asta.edu.au/question/3145/chemical-store-ventilation> (2 September 2015)

'Emergency eye wash basins, showers and gas taps', Question to Science ASSIST, Science ASSIST website, <https://assist.asta.edu.au/question/3321/emergency-eye-wash-basins-showers-and-gas-taps> (4 November 2015)

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