STANDARD OPERATING PROCEDURE:

Fire extinguishers

Note: These instructions are for the use of adults and responsible students in an emergency.

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1. Introduction

Experiments conducted in school laboratories often require a source of heat from a naked flame or some form of ignition, which can cause a sudden fire. Occasionally electrical faults can cause sparking. Students are fascinated with matches and have the potential to behave irresponsibility. Any of these occurrences can introduce fire into a room and therefore fire extinguishers must be placed in each laboratory and also outside a chemical store, usually close to an exit door. A fire needs heat (ignition), fuel, and oxygen and can engulf a room exceedingly fast, although most deaths result from inhaling the toxic smoke containing dangerous fumes released by the fire melting various plastics and paint in the room.

2. Context

- Instructions for emergency fire response should be addressed in the Science Safety Policy and also reflected in your school's emergency planning policies.

3. Safety notes

- Purchase fire extinguisher/s from a reputable, recognised and certified fire safety company and follow their advice regarding which type of fire extinguisher to purchase.
- Ensure that you purchase a fire extinguisher that has an Australian Standards AS/NZS1841 series label.
- Obtain relevant SDS chemical safety sheets from the manufacturer's web site.
    - Follow the manufacturer's instructions for placement of the fire extinguisher and secure using the correct bracket.
    - Secure the fire extinguisher at a height that can be reached by both adults and students.
    - Secure relevant safety signs above or adjacent to the fire extinguisher as per AS 2444-2001. The signs should be white on a red background and visible from 20 metres in all directions.
    - Reduce combustibles in rooms.
    - Eliminate all combustibles in a chemical store.
    - Install ceiling smoke alarms to provide early warning of a fire.
    - Regularly familiarise yourself with the operating instructions.
    - Professional firefighting hands-on training is recommended for staff in high risk areas.
    - Purchase the correct fire extinguisher to suit the environment in which it will be used. Using the wrong extinguisher type on a fire may have disastrous

consequences. It may feed the fire, causing it to spread or result in the operator being injured. See chart below:

Fire Extinguisher Chart

YES / NO — TYPE OF EXTINGUISHER Colour scheme - AS 1841.1 (Pre 1997 / Post 1997)	A Wood, Paper & Plastic	B Flammable & Combustible Liquids	C Flammable Gases	E Energised Electrical Equipment	F Cooking Oils & Fats	COMMENTS: Refer Appendix B of AS 2444
Powder ABE	✓	✓	✓	✓	✗	Special Powders are available specifically for various types of metal fires. Seek expert advice.
Powder BE	✗	✓	✓	✓	✓	Special Powders are available specifically for various types of metal fires. Seek expert advice.
Carbon Dioxide (CO_2)	* LIMITED	* LIMITED	✗	✓	✗	Generally not suitable for outdoor fires. Suitable only for small fires.
Water	✓	✗	✗	✗	✗	Dangerous if used on flammable liquid, energized electrical equipment and cooking oil/fat fires.
Foam ***	✓	✓	✗	✗	* LIMITED	Dangerous if used on energized electrical equipment.
Wet Chemical	✓	✗	✗	✗	✓	Dangerous if used on energized electrical equipment.
Vaporising Liquid	✓	* LIMITED	* LIMITED	✓	✗	Check the characteristics of the specific extinguishant.
Fire Blanket	✗	✗	✗	✗	✓	Use blanket to wrap around a human torch. Ensure you replace the blanket with a new one after use.
Fire Hose Reel	✓	✗	✗	✗	✗	Ensure you maintain a path of egress between you and the nearest exit.

* Limited indicates that the extinguishant is not the agent of choice for the class of fire, but that it will have limited extinguishing capability.
*** Solvents which may mix with water, e.g. alcohol and acetone, are known as polar solvents and require special foam. These solvents break down conventional AFFF.

NOTE: Class D fires (involving combustible metal(s) use only special purpose extinguishers and seek expert advice.

Source: https://exelgard.com.au/fire_fighting_equipment/extinguishers

4. Regulations, licences and permits

- Fire extinguishers must conform to AS/NZS 1841.6:2008.
- No licence or permit is required.
- Fire extinguisher technicians need to be licensed in Queensland.

5. Equipment

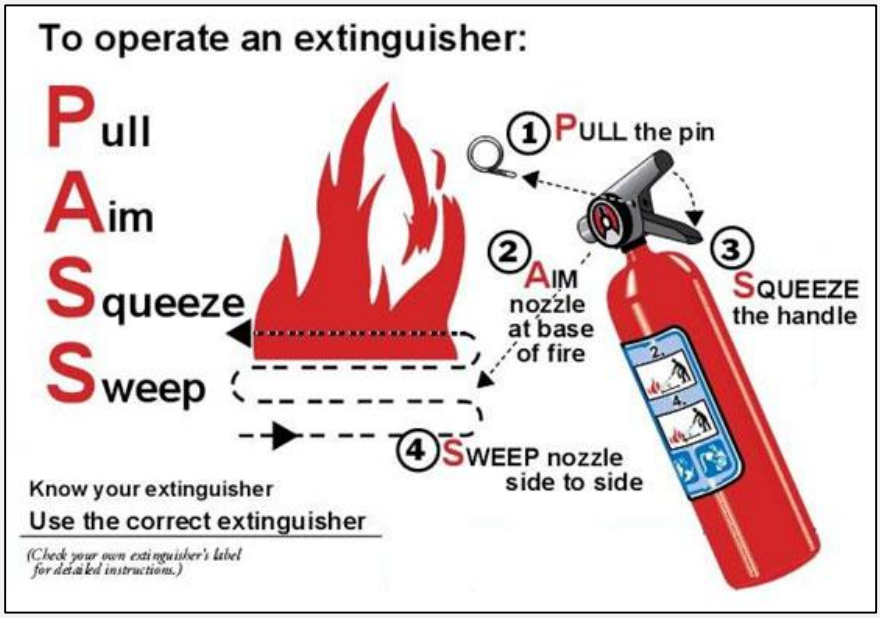
- Fire extinguisher

6. Operating procedure

1. Ignore the fire!
2. Stay calm.
3. Turn off all electrical and gas services to room.
4. Immediately evacuate all staff and students to a safe area.
5. Send responsible students to alert and evacuate rooms either side of the affected area.
6. Send a responsible person to the Administration Office to ask them to call 000.
7. Only return to fight the fire if you are confident that you can bring the fire under control.

(Operating procedure cont….)

8. Make sure the fire is not blocking your exit and ensure you can get out quickly if necessary.
9. If safe to do so, close doors and windows (fans and air conditioners should have ceased operating when electrical power was turned off).
10. Select the correct class of extinguisher for the type of fire.
11. Only stand as close as you can without getting burnt.
12. Point the extinguisher at the base of the fire, operate and use a sweeping motion to extinguish flames. See PASS diagram below:



13. If the fire is not doused by the time the extinguisher is empty, drop the extinguisher and leave the room quickly.
14. Ensure that the Fire Brigade has checked whether any ceiling insulation has been affected as this can smoulder for a considerable time and then reignite

7. Trouble shooting/emergencies

- **First aid:** If clothing is on fire, stop, drop to the floor and wrap around a blanket, coat or rug (not synthetic) and roll along the ground until flames are extinguished.
    - Treat all thermal burns by holding the burnt area under running water for up to twenty minutes until skin returns to normal temperature. Remove clothing from burnt area unless stuck; cover burn with a non-adherent burns dressing, plastic wrap or loosely applied aluminium foil. Seek urgent medical aid.
    - Smoke/Toxic fume inhalation: Remove casualty from area to fresh air. Sit up and loosen tight clothing. Administer oxygen if available and you are trained in its use and consider an asthma inhaler if casualty has difficulty in breathing or is wheezing. If breathing stops commence CPR. Seek urgent medical aid.
- **Maintenance:** A pressure test and service of fire extinguishers is required every six months and must be provided by an experienced person from a recognised and certified fire safety company. Test dates must be recorded, usually on a yellow metal tag

attached to the extinguisher. Extinguishers failing the test must be removed and a temporary one left as a replacement. A partially discharged extinguisher must be replaced with a full extinguisher immediately. Extinguishers need to be emptied, pressure tested and refilled every five years.

8. Waste disposal

- Contact a reputable, recognised and certified fire safety company to remove unwanted, depressurised or used extinguishers: **Note**: a partially used fire extinguished is regarded as an 'empty' extinguisher.

9. Related material

Websites for emergency services organisations in Australian states and territories:

- **Australian Capital Territory**
  ACT Government, Emergency Services Agency website http://esa.act.gov.au/ (Accessed May 2015)
- **New South Wales**
  NSW Government, Emergency New South Wales website https://www.emergency.nsw.gov.au/ (Accessed May 2015)
- **Northern Territory**
  Northern Territory Government, Police, Fire and Emergency Services website http://www.pfes.nt.gov.au/ (Accessed May 2015)
- **Queensland**
  Queensland Government, Queensland Fire and Emergency Services (QFES) website https://www.qfes.qld.gov.au/ (Accessed May 2015)
- **South Australia**
  Government of South Australia, South Australian Fire and Emergency Services Commission website http://www.safecom.sa.gov.au/site/home.jsp (Accessed May 2015)
- **Tasmania**
  Tasmanian Government, Department of Police and Emergency Management website http://www.dpem.tas.gov.au/ (Accessed May 2015)
- **Victoria**
  Victorian Government, Emergency services website, http://www.vic.gov.au/emergencies-safety/emergency-services.html (Accessed May 2015)
- **Western Australia**
  Government of Western Australia WA Department of Fire and Emergency Services website http://www.dfes.wa.gov.au/alerts/Pages/default.aspx (Accessed May 2015)

References:

'Fire Blankets and Extinguishers', Government of Western Australia. WA Department of Fire and Emergency Services website, http://www.dfes.wa.gov.au/safetyinformation/fire/fireinthehome/pages/fireblanketsandextinguishers.aspx (Accessed May 2015)

'Fire extinguishers' Exelgard website https://exelgard.com.au/fire_fighting_equipment/extinguishers (Accessed May 2015)

Standards Australia. 2001. AS 2444–2001 *Portable fire extinguishers and fire blankets – Selection and location*. Sydney, Australia.

Standards Australia. 2007. AS/NZS 1841 *Portable fire extinguisher series.* Sydney, Australia.

St John Ambulance Australia. 2011. *Australian First Aid 4th Edition*, St John Ambulance Australia. Barton, ACT

On example Risk Assessment

Wormald. 2008. *Pyro-Chem ABC Multipurpose Dry Chemical Powder Material Safety Data Sheet* Fire Systems Services website http://www.firesys.com.au/rs/7/sites/846/user_uploads/File/MSDS%20DCP%20Pyro-Chem%20ABC.pdf