

ASSIST INFORMATION SHEET:

School science area security

Security of the school science department is an important subject that is often overlooked in the management of the school as a whole. There are many items contained in a science department which are expensive to replace or, of more concern, can be used in the manufacture of illegal drugs or explosives. This information sheet is mainly concerned with the dangers rather than the costs.

School science areas contain hazardous areas, substances and specialised equipment that require special attention regarding security. Some aspects that require particular consideration include:

- Laboratories, preparation and storerooms
- Certain chemicals
- Chemical balances
- Radioactive sources
- Lasers
- Glassware such as round bottom flasks and distillation equipment

It is difficult to cover all possible situations in one document. The aim of this information sheet is to provide some starting points to be considered and then adapted to individual situations.

Policy

Each school should develop its own policy in regards to security. Points to be considered include:

- **Control of access**
 - Lock rooms (doors and windows) whenever an authorised person is not present.
 - Ensure good management of keys to authorised personnel for laboratories, storerooms and preparation areas, including the return of keys from people who leave the workplace.
 - Cover street side windows with blinds to reduce visibility of laboratory equipment and chemicals. It is best to have chemical storerooms with no windows.
 - Limit access to all chemical storage areas.
 - Monitor access by visitors such as tradespeople and service providers, by systems such as escorting them on site; signing in and out procedures; and/or the wearing of visitor badges.
 - Restrict after-hours access.
- **Stocktakes and inventories**
 - Conduct regular stocktakes and maintain inventories to fully account for all chemicals and equipment including their location.
 - Develop a reporting system for loss and theft.
 - Ensure that desirable items, e.g. balances and distillation equipment are kept in secure locations.

- **Lab procedures/training**

- Ensure all staff are aware of all security procedures.
- Only purchase and therefore only store minimum quantities of chemicals. (It is preferable to order chemicals more regularly, rather than hoarding big quantities.)
- Ensure deliveries of equipment/chemicals to schools are not left unattended, especially during busy periods.
- Only use minimum quantities of chemicals and equipment in science practical classes and establish and maintain a system of counting certain items in and out e.g. scalpels.
- Secure certain equipment to benches with cables/pad-locks e.g. computers.

Laboratories, preparation rooms and storerooms

Laboratories have particular hazards that are not present in ordinary classrooms. These include laboratory glassware, equipment, tools, fire extinguishers and specialist fittings, for example, gas taps. Laboratory benches and equipment may also have residues of chemical or biological materials that present unique hazards. Unsupervised access to students could result in personal injury to students or damage to property through either accidental breakage or deliberate vandalism.

Preparation rooms and storerooms may contain a range of equipment, resources and chemicals that can be expensive, difficult to replace, hazardous and/or desirable for illegal purposes such as in the manufacture of drugs or explosives. There may also be a wide variety of equipment in the process of being collated for practical activities.

Science ASSIST strongly recommends that all science rooms are locked unless a teacher or other authorised person is present.

Chemicals

All school science departments possess chemicals that have the potential for harm or injury if mis-used or mishandled. It is therefore imperative that measures are taken to ensure the security of the chemical storage areas, that they are well maintained and access to them is controlled and restricted to authorised members of staff. Students should not have access.

Each school or school governing body should therefore decide who has access to the keys to the chemical storage area(s). The lesser number of keys available means there is a lesser chance of unauthorised people gaining access. It is also important that anybody who does have access is well trained in handling the chemicals stored within. Consideration of security measures for the chemical storage area(s) at schools should include:

1. Keys to the chemical storeroom should be on a whole school master system for emergency access, and also on a **separate key to general classroom or science rooms**
2. Other chemical storage areas, such as storage cabinets located outside the main chemical storeroom e.g. in a preparation room, should be locked and access to keys restricted.
3. Limit access to authorised staff such as
 - Staff member responsible for issuing keys
 - Head of the Science Department
 - Senior chemistry teacher
 - Science technicians

Of particular concern are chemicals that have been identified as precursor chemicals to the manufacture of drugs or explosives, other chemicals of security concern, poisons and those classified as Dangerous Goods. For some of these chemicals, a permit or end user declaration (EUD) may be required before purchasing.

AS/NZS 2243.2:2006 *Safety in laboratories Part 2: Chemical aspects* states:

“3.2.3 Security

Chemicals such as controlled substances, drugs, poisons and radioactive substances shall be used and stored so that they do not present a risk to persons in the vicinity and are secure against theft or unauthorised tampering.

Note: In Australia, this would also include high consequence dangerous good”¹

Chemicals of a national security concern: Information on ninety-six chemicals considered a potential security concern desirable for the manufacture of explosives or chemical weapons can be found at <http://www.nationalsecurity.gov.au/ChemicalSecurity/Pages/default.aspx>

Of these ninety-six, eighty-four are identified as toxic and either industrial or Agvet chemicals, eleven as precursor chemicals and one, security sensitive ammonium nitrate, is regulated independently. The [National Code of Practice for Chemicals of Security Concern](#) covers any quantity of the eleven precursors to explosives. This includes chemicals such as hydrogen peroxide, nitric acid and potassium nitrate, which would be found in most school chemical storerooms.

SSAN: Ammonium nitrate is a chemical of high security concern and a chemical that may be found in some school science laboratories. Where it occurs in solid form in concentrations above 45%, it is also referred to as security sensitive ammonium nitrate (SSAN). It does not appear in the above list of eleven chemicals of high security concern because its availability and use are highly regulated by individual state and territory legislation. In 2004, the Council of Australian Governments' (COAG) Meeting agreed upon a national approach to the management of SSAN with regulation at a state level. See http://archive.coag.gov.au/coag_meeting_outcomes/2004-06-25/index.cfm Some states permit pure SSAN in quantities less than 3kg in educational institutions where there is a curriculum requirement. An end user declaration (EUD) may be required before purchasing. However, **Science ASSIST recommends the use of substitutes** for its curriculum uses. For example, using sodium nitrate, sodium acetate, or sodium thiosulfate for a 'heat of solution' activity.

Drug precursors: Information regarding chemicals (and other items) stored at schools considered desirable for the illegal drug manufacturing area can be found in the [Code of Practice for Supply Diversion into Illicit Drug Manufacture](#). The objectives of this code are to “*promote effective chemical security management practices throughout the chemical supply chain*”². It includes a “Self-assessment” for the security of the chemicals. Measures include controlling physical access, limiting access to relevant staff and maintaining regular checks of stock levels.

Poisons: Some chemicals that are used in schools are classified as poisons and listed in the *Poisons Standard* in Schedules based on their level of toxicity and their use. Poisons that are commonly used in schools are classified as a Schedule 5 (Caution), Schedule 6 (Poison) and Schedule 7 (Dangerous poison). Further details of the classification of medicines and poisons into Schedules can be found in [The Poisons Standard](#) also known as *The Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)*. The regulation of scheduled poisons is managed by the Health Department in each state and territory of Australia.

Dangerous goods: Even though these are not chemicals of national security concern as listed by the Government, they are still hazardous and dangerous in the hands of unskilled and unauthorised people and require adequate security measures. The guidance material regarding dangerous goods and hazardous chemicals concentrates on the safe handling of these chemicals. However, it also includes references to restricting access to authorised personnel, for example:

“In view of the *hazards* associated with the storage and *handling of dangerous goods*, access to *premises* and work areas must be restricted to those having a legitimate purpose.” (S30)³

“You must, so far as is reasonably practicable, prevent access to the premises by unauthorised persons.”(S21.12)⁴

Balances

Chemical balances are an obvious target for people involved in illegal activities. These are very portable devices and easily transported. It is highly recommended that they be stored in a locked cupboard within a restricted area such as the laboratory preparation area.

Radioactive sources

It is essential to safely and securely store radioactive sources. They should be stored in a locked lead lined metal container within a locked cupboard or drawer, with a unique key, in a room which should only be accessible by staff members. An inventory of all radioactive sources should be kept along with keeping a log, which should be filled in when a source is removed, by whom and when it is returned. The detail of requirements for the security of, and access to, the sources likely to be used in a school is covered in the [SOP: Handling sealed radioactive sources](#). Further information can also be found in the ARPANSA document [Safety Guide for the Use of Radiation in Schools \(2012\)](#)

Lasers

Lasers are another very portable item which requires special attention. The type of lasers that are permitted to be used in schools are of a low power rating, however, if they are used inappropriately they may still be of a health concern. Secure storage of these should be in an area where access is limited. The details of requirements for the security of and access to lasers likely to be used in a school are covered in parts 1 and 2 of [SOP: Use of lasers in schools](#). Further information can also be found in the ARPANSA document [Safety Guide for the Use of Radiation in Schools \(2012\)](#)

Glassware

Every school science area will have various items of glassware that may attract people involved in illegal activities. It is not generally practicable to keep all glassware securely stored away. Some items like round bottom flasks and distillation sets require more thought as they are sought after and mentioned in the [Code of Practice for Supply Diversion into Illicit Drug Manufacture](#)

References:

1. Standards Australia. 2006. *AS/NZS 2243 Safety in Laboratories, Part 2: 2006 Chemical Aspects*. Sydney, Australia. Reproduced with permission from SAI Global Ltd under Licence 1407-c117
2. 'Code of Practice for Supply Diversion into Illicit Drug Manufacture'. The Plastics and Chemical Industries Association website <http://www.pacia.org.au/Content/drugs.aspx> or www.pacia.org.au/DownFile.Aspx?fileid=291
3. National Occupational Health and Safety Commission. 2001. *National Code of Practice for Storage and Handling of Workplace Dangerous Goods*, Safe Work Australia website. http://www.safeworkaustralia.gov.au/sites/swa/about/publications/Documents/249/CodeOfPracticeStorageAndHandlingDangerousGoodsNOHSC2017-2001_PDF.pdf
4. WorkSafe Victoria. 2013. *The Code of Practice for Dangerous Goods – Storage and Handling* <http://www.worksafe.vic.gov.au/forms-and-publications/forms-and-publications/code-of-practice-for-the-storage-and-handling-of-dangerous-goods-2013>

ARPANSA. 2012. *Safety Guide for the Use of Radiation in Schools*, ARPANSA website <http://www.arpansa.gov.au/pubs/rps/RPS18.pdf>

'Chemical security' Australian Government Australian National Security website <http://www.nationalsecurity.gov.au/ChemicalSecurity/Pages/default.aspx> (Accessed July 2015)

'Code of Practice for Supply Diversion into Illicit Drug Manufacture'. The Plastics and Chemical Industries Association website <http://www.pacia.org.au/Content/drugs.aspx> or www.pacia.org.au/DownFile.Aspx?fileid=291 (Accessed July 2015)

'Code of Practice for the Storage and Handling of Dangerous Goods 2013' WorkSafe Victoria website <http://www.worksafe.vic.gov.au/forms-and-publications/forms-and-publications/code-of-practice-for-the-storage-and-handling-of-dangerous-goods-2013> (Accessed July 2015)

Committee on Promoting Safe and Secure Chemical Management in Developing Countries 2011. *Chemical Laboratory Safety and Security Executive Summary* National Research Council of the National Academies, Division on Earth and Life Sciences website <http://dels.nas.edu/resources/static-assets/bcst/miscellaneous/Execsummary-English-Pagebypage.pdf>

National Research Council (US) Committee on Prudent Practices in the Laboratory 2011. *Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards* National Academies Press: Washington (DC) <http://www.ncbi.nlm.nih.gov/books/NBK55881/>

Science ASSIST 2015. *SOP: Handling sealed radioactive sources*, Science ASSIST website <http://assist.asta.edu.au/resource/2490/sop-handling-sealed-radioactive-sources?search-id=5cdf316>

Science ASSIST 2015. *SOP: Use of lasers in schools*, Science ASSIST website <http://assist.asta.edu.au/resource/2723/sop-use-lasers-schools?search-id=cc7ec43>