

Radioactive substances used for science activities

Some schools may have radioactive sources on site that are used, or have been used in the past to support the science curriculum. These products are safe if stored correctly and the container remains intact but must be managed according to the [Radiation Safety Act 1999 \(Qld\)](#) and [Radiation Safety Regulation 2010 \(Qld\)](#).

To support the safe and compliant use of radioactive substances, the department requires that the storage and safe use of radioactive sources in schools conforms to the best practice guidance in the [Safety Guide for Use of Radiation in Schools Part 1: Ionizing Radiation \(Radiation Safety Guide\)](#), published by ARPANSA. Advice contained within with regard to lasers and radiation admitters is to be adhered to as well as a matter of good practice.



Are there alternatives to using radioactive sources?

Schools wanting to demonstrate the concept of radioactivity, without storing a radioactive source at school can use a completely safe simulator which is available from science supply companies for approximately \$200. Free simulators are also available online.

What should schools do to ensure the safe use of radioactive sources?

1. Check if your school has radioactive sources on site.

Check entries in science equipment and chemical registers, contents of the school safe/s, storage areas in science laboratories and other store rooms for containers with any of the following labeling:

- 'radioactive', 'science department'
- The name or symbol of an isotope and its mass number e.g. 'Strontium 90', 'Sr90', 'Cobalt 60', 'Co60', 'Caesium 137', 'Cs137', 'Polonium 210', 'Po210', 'Radium 226', 'Ra226', 'Americium 241', 'Am241'.
- 'For use with a Geiger counter' e.g. 
- 'danger' or 
- The source itself may be wrapped in lead inside the box.



2. Determine if your school needs to keep the radioactive sources.

Verify how often and how recently any sources have been used:

- Ask science teachers, science operations officers, check experiment requests or equipment logs;
- Determine how often the product is accessed: there will be a limited number of people who can open the safe so you can check if, and when, the radioactive source has been retrieved;
- Check associated equipment: check the science asset register, or with the science department regarding any records of a Geiger counter or other radiation detectors. If there is no record of access to sources or detectors, it is unlikely that any sources or equipment are used.



Wherever practicable, schools should use sealed sources to reduce the likelihood of contamination. Sealed sources may be exempt from regulatory requirements provided they are used within normal operating conditions and comply with the good practice requirements of the Radiation Safety Guide

3. If it has been determined through consultation with the principal and science department representative that the product is to be kept:
 - a. **contact Radiation Health by completing the 'radioactive material questionnaire'** (see page 3 of this fact sheet). This questionnaire was developed by Radiation Health to gather background information and assist with providing your school with appropriate advice.
 - b. develop and follow rules for the safe use of all curriculum radiation sources;
 - c. appoint a suitable Radiation Supervisor. This person is responsible for the safe control, management and use of the sources, and maintaining a register of the sources in stock;
 - d. complete a risk assessment for each activity involving work with ionizing radiation; and
 - e. keep and maintain appropriate records as per the Radiation Safety Guide.

Who can use radioactive sources at School?

Only appropriately qualified or trained staff are to handle radiation sources.

- Teachers appointed to permanent positions on the science staff would be reasonably expected to have the qualifications required to handle radiation risks and have a sound understanding of associated hazards and safe handling requirements
- Pre service teachers, temporary staff, or those for whom science is a secondary subject, may not be suitably qualified. These staff are to be supervised by a qualified teacher until the radiation Safety Officer considers that they have gained adequate knowledge and experience.
- Laboratory support staff have a range of qualifications and experience. The Radiation Supervisor is to decide what functions (if any) they can be reasonably be given. Laboratory staff should be comfortable dealing with radiation.

As per the Radiation Safety Guide, the handling of radiation sources by students is restricted:

- Students in years 11 and 12 are able to use sealed radioactive sources in supervised practical work.
- Radioactive sources are to be used for demonstrations only for students in year 10 and below.

What if our school wants to dispose of the radioactive sources?

Radiation Health can also provide advice on disposal options for schools. Once again it is important to **complete the attached questionnaire** and return it to Radiation Health. Continue to store the sources securely until disposal.

Radioactive material questionnaire

Please complete the questionnaire and fax back to Radiation Health (fax: 3328 9622).

| | |
|-----------------|----------------|
| Name of school: | Location code: |
| Street address: | |
| Contact person: | Phone no: |

Is your school in possession of any radioactive material? Yes No

If 'yes' please provide details below. Include any geological samples that you know to be radioactive. See over for examples of what the radioactive material may look like.

An officer of Radiation Health will contact you to discuss options for keeping or disposing of your radioactive material.

| Radioactive material | Activity on label (if any) | Physical condition |
|----------------------|----------------------------|--------------------|
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| | | |
| | | |
| | | |
| | | |

Do you wish to dispose of any radioactive material in your possession? Yes No

Do you wish to keep your radioactive material and use it for teaching? Yes No

Signature (Principal/Officer in Charge)

Date

Office

Radiation Health Unit
15 Butterfield Street
HERSTON QLD 4006

Postal

Radiation Health Unit
PO Box 2368
FORTITUDE VALLEY
BC QLD 4006

Web

www.health.qld.gov.au/radiationhealth

Contact

Phone: 3328 9987
Fax: 3328 9622



The radioactive material may look like one of these:

Clear or coloured disc (Co60, Sr90, Am241, Cs137, etc)



Clear block with metal strip (Ra226)



White powder in plastic bottle



Geological samples (Uranium or Thorium ores)



It may be packaged like this:

Thin matchbox-type container



Small cardboard box



Lead foil



The radioactive material or package may have a label like this:

