

August 2018
Management Circular No. 15

To Heads of all Educational Establishments

Ionising Radiations in Schools

Regulations and Departmental Management

1. Procedures for the use of ionising radiations in education establishments in Scotland are described in the Scottish Schools Education Research Centre (SSERC) document "[Working with radioactive materials in schools](#)", [downloadable from the SSERC website](#). SSERC guidance is based on the Ionising Radiation Regulation 2017 (IRR17), current environmental legislation and SED Circular No. 1166, a copy of which must be available within all appropriate safety files.

Working with the type of radioactive materials that are used within schools requires registration with the Health and Safety Executive (HSE). This registration has been carried out, at local authority level, by Technician Support Service on behalf of Education Services; this single registration will cover all establishments who wish to purchase and use sources.

2. Secondary schools within Glasgow City Council will be classified by SED Circular No.1166 as "Category C" establishments and the maximum activity of all sealed radioactive sources held must not exceed 1.1 megabecquerels and no single sealed source may exceed 370 kilobecquerels.

3. Glasgow City Council shall appoint a "Radiation Protection Adviser" (RPA) as required by the Ionising Radiation Regulation 2017 (IRR17). The role of RPA is currently provided to Glasgow City Council by the Scottish Schools Education Research Centre (SSERC) as part of the core membership with SSERC.

The RPA will be available to provide advice and to recommend good practice relating to all issues of radiological protection, purchase of and working with radioactive sources and staff training.

The RPA can be contacted by telephone 01383 626070 or email to rpa@sserc.scot

4. Glasgow City Council shall appoint a "Radiation Protection Manager" (RPM). The RPM shall be required to undertake annual audits of establishments holding radioactive sources and be available locally for consultation on matters concerning radiological safety.

The RPM can be contacted by telephone 0141 276 8550 or email to admin@tss.ea.glasgow.sch.uk

Suitable Radioactive Materials

5. Practical work should be restricted to the use of sources which have been Risk Assessed and approved for purchase and use by the "Radiation Protection Adviser" (RPA) some examples of which are listed below:

- Sealed sources (which comply with ISO 2919).

- Open sources for a half-life demonstration: Isotrak Cs-137/Ba-137m Isotope Generator (33 kBq version only)
- Thoriated Gas Mantles
- Frederiksen Sealed Cloud Chamber sources
- Thoriated TIG Welding rods
- Radioactive Mineral sets
- Protactinium Generator – please note although permitted for use within schools it is strongly recommended that schools do not purchase these items due to the potentially high disposal costs that will be incurred after their 8 year recommended working life.

Further information on sources currently permitted within schools is available in the SSERC document “Working with radioactive materials in schools”

6. Other radioactive material such as dismantled smoke alarms, loose radioactive rocks, old watch/aircraft instrument dials, uranium or thorium salts/solutions, cloud chamber or sealed sources other than those stated above must not be used.

If other radioactive materials are held or found within schools then contact should be made, in the first instance, to the “*Radiation Protection Manager*” (RPM) at Technician Support Service for advice.

7. The RPA must be contacted before any school purchases a radiological source, in order to arrange for Scottish Government approval. Under no circumstances should schools purchase sources without ensuring that this approval is in place.

The “*Radiation Protection Manager*” (RPM) at Technician Support Service must be notified if any school wishes to purchase a radiological source; this will allow Education Services to undertake and record an annual audit of all sources within Establishments.

Working Arrangements and School Management

8. Electron tubes such as those made by Teltron shall not be used with a power supply with an output greater than 5 kV as this could generate X-rays.

9. Children and young people in any class with children under the age of 16 must not be allowed to undertake experiments with ionising radiations. In these circumstances experiments shall be by demonstration by the class teacher only.

10. Each school holding radioactive sources shall appoint a “*Radiation Protection Supervisor*” (RPS), who shall manage the use of radioactive sources. The RPS would normally be the Principal Teacher of Physics but could also be another member of the science team who has recently attended the SSERC training course on “Working with radioactive materials”.

11. Any school working with sources shall display the poster “Working with radioactive sources – what you should know and do”, either beside the sources cabinet or in the science staff base. This has a list of rules for safe handling. The poster is downloadable from the [ionising Radiation section of the SSERC website](#).

You will be required to add the name of the nominated hospital for receiving casualties following an incident involving radiation. In the case of Glasgow City Council, this is the Queen Elizabeth University Hospital.

12. The “*Radiation Protection Supervisor*” (RPS) will prepare risk assessments for demonstration experiments appropriate to the sources held and the demonstrations carried out within their school. These risk assessments shall be based on generic risk assessments which are [downloadable from the SSERC web-site](#) and which include:

- Risk assessment: Use in schools of sealed radioactive sources made by Amersham.
- Risk assessment: Inverse square law demonstration with gamma radiation.
- Risk assessment: Half-value thickness demonstration with gamma radiation and lead absorbers.

- Risk assessment: Use of the Isotrak Cs-137/Ba-137m Isotope Generator in half-life experiment.
- Risk assessment: Geological specimens with radioactive minerals.
- Risk assessment: Protactinium Generator

N.B. If a generic risk assessment does not exist then the “*Radiation Protection Adviser*” (RPA) shall be consulted and involved in risk assessing any new practices.

13. A radioactive sources record book shall be maintained by the “*Radiation Protection Supervisor*” (RPS) and shall contain details of:

- Date of receipt of each source.
- Name and activity in becquerels of each source (being the original activity listed at the time of purchase).
- Existing stock shall be checked monthly (with the exception of July) and a record of the check recorded within the logbook.
- Details of annual leakage tests (date, source, results, action RPS’s signature)*.
- Date of disposal of each source listing the name of the agency to which the sources were transferred for disposal*.
- No source should be disposed of without first consulting the RPA.

In addition, on each occasion when any source is removed from storage for teaching purposes the following information shall be recorded within the radioactive sources logbook.

- Date.
- Name and strength of source(s) used.
- Signature (one on withdrawal and another to confirm return of the source to secure storage).

The logbook shall be readily available for inspection by any authorised person(s).

Logbooks for recording usage, stock lists and leak tests can all be downloaded from [the SSERC website](#).

* The general requirements for ageing and leak testing of sealed sources can be met by adoption and adherence to the principles contained in the SSERC document: “[Working with radioactive materials in schools](#)”, downloadable from the SSERC website.

Storage

14. Sources of ionising radiation shall be stored in a suitable container within a locked steel cabinet. A paper copy of the following SSERC guidance document concerning storage and security shall be held for reference within the department:

- “Working with radioactive materials in schools”

15. The store(s) and cupboard(s) designated for storage of radioactive sources shall require being clearly identified and marked with appropriate safety sign(s). Any proposed change to the storage arrangements must be pre-notified, discussed and agreed in advance with the “*Radiation Protection Manager*” (RPM) who will consult the “*Radiation Protection Adviser*” (RPA) as appropriate.

The “*Radiation Protection Supervisor*” (RPS) should note that the above would apply equally to any proposed permanent or temporary changes in storage arrangements.

The location of designated store(s) holding radioactive sources shall be made known to the Fire Service and the RPA by the RPM.

Contingency Plans and Audit

16. The “*Radiation Protection Supervisor*” (RPS) should ensure that a contingency plan is in place and regularly reviewed. Editable contingency plans are available from within the document called “Working with radioactive materials in schools”, downloadable from the SSERC website.

17. The “*Radiation Protection Manager*” (RPM) shall ensure that annual audits of establishments holding radioactive sources are undertaken. Records of audits, leak test results, purchases and disposals etc. will be held and maintained by the Technician Support Service on behalf of Education Services.

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