

CODE OF PRACTICE ON THE USE OF SEALED RADIOACTIVE SOURCES FOR TEACHING PURPOSES IN SCHOOLS

The use of sealed radioactive sources for teaching purposes in schools is governed by the Code of Practice on the Use of Sealed Radioactive Sources for Teaching Purposes in Schools issued by the Radiation Board. The Code of Practice is reproduced below for reference.

1. General Rules

- 1.1 Students shall not be exposed to ionizing radiation unless there is a valid reason for doing so: demonstrations and experiments that result in exposure shall be relevant to the course of instruction. Any such exposure shall be kept to as low as reasonably achievable.
- 1.2 The use of sealed radioactive sources ("sources") in schools shall be solely for the performance of simple experiments to demonstrate fundamental principles, and the sources used and the methods of using such sources shall be such as to ensure that degree of hazard is very small.
- 1.3 No demonstrations or experiments involving the deliberate exposure of students, staff or any other persons to ionizing radiation shall be performed.
- 1.4 Experiments shall be carefully planned to minimize the exposure time, and preliminary rehearsals of the experiment procedure using simulated sources should be encouraged.

2. Control of sources

- 2.1 The Radiation Board is the statutory body which controls the use and/or possession of radioactive substance and irradiating apparatus in Hong Kong. Schools deciding to avail themselves of the opportunities to possess and use sources for teaching shall apply to the Secretary, Radiation Board, 3/F., Sai Wan Ho Health Centre, 28 Tai Hong Street, Sai Wan Ho, Hong Kong, for exemption from requiring radioactive substances licence if the total quantity of radioactive substances does not exceed the limit specified in Section 3 below.
- 2.2 It shall be the responsibility of a graduate member of the science staff, who shall be designated the source custodian, to supervise the use of sources within the school. Should the source custodian leave the school for any reason, a fresh application for exemption will have to be made in respect of the newly appointed source custodian.
- 2.3 The source custodian shall be responsible for the procurement, storage, issuance and return of sources to storage and the correct use of all sources.
- 2.4 The source custodian shall arrange for routine checks, at intervals not exceeding 12 months, of the condition of all sealed sources by wipe test and the efficiency of monitoring instruments. All the results shall be entered into a logbook which shall be made available for inspection by Radiation Board on request. (*Wipe test -The source is wiped with a swab or tissue, moistened with ethanol or water; the activity removed is measured. Acceptance limit : 200 Bq)
- 2.5 All sealed sources failing the routine checks shall be considered as defective and withdrawn from use until proven otherwise by a competent laboratory approved by the Radiation Board.
- 2.6 The teacher-in-charge of a class shall account for all sources before the period of instruction is concluded.
- 2.7 Sources shall be used by a student only when under the direct supervision of a teacher.
- 2.8 The immediate responsibility of radiation safety in any experiment involving ionising radiation shall rest with the teacher-in-charge.
- 2.9 No sources shall be taken out of the school premises approved by the Radiation Board.

3. Storage and Labelling

3.1. Maximum amount in store

The type, quantity and activity of sources kept in a school laboratory should be the minimum practicable and shall in all cases be no greater than the following exemption limit:

Sealed sources	Quantity
Cobalt-60, Strontium-90, Radium-226, Americium-241	<ul style="list-style-type: none">• Not more than two sources for each type• Each source not exceeding 200 kBq in activity
Insoluble radium-226 sources to be used with diffusion cloud chamber	<ul style="list-style-type: none">• Not more than 10 such sources• Each source not exceeding 750 Bq in activity

Remarks: Should a school wish to use other sources or radioactive substances not in the Physics Standard Equipment and Furniture Lists issued by the Education Bureau in year 2004, the school shall apply to the Radiation Board for a licence (Tel: 36203746)

3.2. All sources should be kept in a locked metal container.

3.3. Access to this container shall be limited to an authorised staff member of the school.

3.4. The metal container shall be permanently labelled in such a manner to indicate that it contains radioactive substances.

3.5. Individual source should be stored in separate, appropriately labelled container or compartment within the locked metal container.

3.6. Each source should be easily identifiable by the user.

3.7. Sources and their containers should be permanently labelled with the type of radionuclide together with the activity at a specified date.

4. Handling of sources

4.1 Sources shall be handled with care and unnecessary handling of sources shall be avoided. The following rules should apply :

- (i) Sources should be transported between the laboratory and their place of storage within the same school premises in their dedicated containers.
- (ii) Sources should only be handled by tongs or forceps. Teachers should note that specially designed tongs for the safe handling of sources are available from commercial suppliers.
- (iii) Alpha-emitting sources should be handled with extreme care because of the necessarily fragile nature of their construction.
- (iv) Sources should whenever possible be kept at a distance greater than 30 cm from the user, and should be pointed away from the human body.

5. Damage to, Loss of and Disposal of sources

5.1 Retention of defective, obsolete or unnecessary sources is undesirable and positive steps shall be taken for the safe disposal of such sources. They shall either be returned to the suppliers and the Radiation Board notified; or be disposed of in a manner approved by the Radiation Board.

5.2 In the event of damage to, or loss of any sources, the following shall be notified immediately :

Physicist on-duty (Tel : 7110 3382 call 1912) and

Occupational Health Officer, Labour Department (First Call Tel: 9689 0378)

(Second Call Tel: 9689 0450)

In all cases, the Secretary of Radiation Board shall be notified in writing within 48 hours.

6. The Degree of the Hazard

When due consideration is given to the limitation on the type of source, the activity of radioactive substances to be used in schools, and the time in any one year such sources will be used by any one teacher or student, the degree of hazard from exposure to ionizing radiation to both teachers and students is very small. However, it is essential that students appreciate the nature of the hazard and the degree of care considered necessary in the handling of radioactive substances.