University of South Australia

# Storing, using and disposing of unsealed radioactive substances in a Type C Laboratory: Extract of regulatory requirements

## Radiation Protection and Control (Ionising Radiation) Regulations 2015

## Maintain register of unsealed radioactive substances

### 127—Registered occupier of premises in which unsealed radioactive substance is kept or handled to maintain register of unsealed radioactive substances

The registered occupier of premises in which an unsealed radioactive substance is kept or handled must—

(a) maintain a register of unsealed radioactive substances; and

(b) within 24 hours after each unsealed radioactive substance kept or handled at the premises is first taken onto the premises, enter in the register an entry containing—

(i) the radionuclide contained in the substance; and

(ii) the activity or nominal activity; and

(iii) the date to which the activity refers; and

(iv) the name of the person in whose care the substance has been placed; and

(v) the date upon which the substance was first taken onto the premises.

## Storage of unsealed radioactive substances

### 129—Storage of sealed radioactive sources and unsealed radioactive substances

A person who owns a sealed radioactive source or is the registered occupier of any premises in which an unsealed radioactive substance is stored, being a source or substance that is not being handled or used, must—

(a) store the source or substance so that—

(i) the equivalent dose rate in any area accessible to members of the public and outside the place of storage is as low as is reasonably achievable and in no case exceeds 25 microsievert per hour; and

(ii) no person receives an effective dose exceeding the appropriate dose limit referred to in Part 2 Division 2; and

(iii) the place of storage is ventilated in such a way that the concentration of airborne radioactive substances within the place of storage will, for any period of time that the place of storage is occupied, be as low as is reasonably achievable; and

(b) take reasonable precautions to prevent unauthorised access to the source or substance or unauthorised removal of the source or substance from the place of storage; and

(c) if it is reasonably foreseeable that, during a period of time, chemical, radiation or other action may weaken or rupture a container in which the source or substance is stored so as to cause leakage from that container—provide suitable secondary containment adequate to contain the entire quantity of radioactive substance.

## Mark doors and entrances

### 130—Owner of sealed radioactive source etc to mark doors and entrances to areas where source or unsealed radioactive substance kept

(1) A person who owns a sealed radioactive source or is the registered occupier of any premises in which an unsealed radioactive substance is kept, handled or stored must mark every door and every entrance to the area in which the source or substance is kept, handled or stored with a sign that—

(a) complies with the requirements of AS 1319–1994 *Safety Signs for the Occupational Environment* applying to warning signs; and

(b) if it bears words—bears the words "RADIATION AREA" or "STORE FOR RADIOACTIVE SUBSTANCES" or other words to that effect; and

(c) bears the name and telephone number of a person to contact in the event of any emergency arising within or emanating from that area; and

(d) bears the radiation symbol; and

(e) has a total surface area of not less than 4 500 square millimetres; and

(f) is clearly legible from a distance of 2 metres.

## Mark (label) each vessel containing unsealed radioactive substance

### 131—Owner of sealed radioactive source etc to mark sources and vessels containing unsealed radioactive substance

(1) A person who owns a sealed radioactive source or is the registered occupier of any premises in which an unsealed radioactive substance is kept must mark each source and every vessel containing the substance with a sign that—

(a) bears the radiation symbol; and

(b) bears the word "RADIOACTIVE"; and

(c) contains the identity and activity of the radionuclide.

(2) A person need not mark a source or a vessel containing a radioactive substance if by reason of the size of the source or vessel it is not reasonably practicable to do so.

## Disposal of radioactive substances

### 132—Application of Division

This Division does not apply to—

(a) radioactive substances to which these regulations do not apply by virtue of regulation 8; or

(b) any radioactive ore; or

(c) . . .

### 133—Prohibition on disposal of radioactive substance without Minister's approval

A person must not dispose of a radioactive substance without the prior approval of the Minister.

### 134—Application for approval to dispose of unsealed radioactive substance

(1) An application for approval to dispose of an unsealed radioactive substance must be made by—

(a) in the case of a substance kept or handled in registered premises—the occupier of the registered premises;

(b) in any other case—the owner of the substance.

(2) An application may relate to the disposal of 1 or more unsealed radioactive substances on 1 occasion or a proposal to dispose of more than 1 or a variety of unsealed radioactive substances on more than 1 occasion extending over a period of up to 12 months from the date of the approval.

(3) An application must—

(a) be in writing; and

(b) specify the substance or substances to be disposed of; and

(c) contain details of the substance or substances to be disposed of including their chemical and physical form; and

(d) specify the maximum activities of the substances likely to be disposed of, and the arrangements to prevent the maximum activities from being exceeded; and

(e) contain details of the place or places where the substance or substances will be disposed of; and

(f) contain the approximate date or dates when the substance or substances will be disposed of; and

(g) contain details of the method of the proposed disposal including details of packaging, storage, segregation, labelling, monitoring and transport; and

(h) contain the name of any person or persons who it is proposed will handle the substance or substances during the course of their disposal.

## Type C Laboratory requirements

### 174—Laboratory in which unsealed radioactive substance is kept or handled

(1) A laboratory in which an unsealed radioactive substance is kept or handled must comply with the requirements set out in subregulations (2) to (7).

(2) A sign that displays—

(a) the type of the laboratory (as set out in Schedule 3); and

(b) the name and full contact details of the person in charge of the laboratory (being a person who holds a licence under section 28 of the Act),

must be displayed at each entrance to the laboratory.

(3) The sign referred to in subregulation (2) may be part of or separate to the sign required to be displayed under regulation 130.

(4) In respect of any laboratory where any unsealed radioactive substance the half life of which is 12 hours or longer, is likely to be kept or handled, the surfaces of the walls, floors, ceilings and fittings of the laboratory must either—

(a) be smooth and free from cracks and crevices; or

(b) consist of or be covered by a substance that—

(i) in the case of bench or floor coverings—prevents the spread of any radioactive liquid beyond the confines of such substance; and

(ii) is readily removable, disposable as radioactive waste and replaceable.

(5) Furniture must be moveable so as to facilitate the decontamination and cleaning of the surfaces of walls, ceilings, floors and fittings of the laboratory.

(6) Pipes and drains that are connected to the laboratory must be installed so that—

(a) they are readily accessible for maintenance; and

(b) they do not affect the surfaces of the walls, ceilings, floors and fittings of the laboratory in such a way that those surfaces cease to be smooth or contain cracks or crevices in which contamination with radioactive substances is likely to accumulate.

(7) Drains that are used to carry radioactive effluent must comply with the requirements of subregulation (6) and must be labelled at all points at which there is access to them for the purposes of maintenance with a label that—

(a) complies with the requirements applying of AS 1319–1994 *Safety Signs for the Occupational Environment* applying to warning signs; and

(b) contains the radiation symbol.

(8) Subregulation (6) does not apply to a laboratory in which an unsealed radioactive substance was kept or handled before 1 September 1985.

## 175—Requirement to provide fume cupboard or total enclosure in certain cases

(1) If an operation or process that is likely to produce airborne radioactivity in excess of the concentration that could result in a radiation worker receiving an annual limit on intake due to inhalation is carried out in a laboratory, a fume cupboard or total enclosure that complies with this regulation must be provided.

(2) The fume cupboard or total enclosure provided in accordance with this regulation must be designed, constructed, maintained and used so that the concentration of airborne radioactivity in the air breathed by a radiation worker is not likely to exceed the concentration that could result in a radiation worker receiving an annual limit on intake due to inhalation of airborne radioactivity.

(3) If the laboratory referred to in subregulation (1) had before 1 September 1985 not been used for the keeping or handling of unsealed radioactive substances, a fume cupboard provided in accordance with that subregulation must comply with subregulations (5) to (8).

(4) For the purposes of subregulation (3) and regulation 176, the requirements with which a fume cupboard must comply are set out in subregulations (5) to (8).

(5) The fume cupboard must be designed and constructed so that—

(a) there is a constant non-turbulent flow of air at a rate sufficient to prevent the movement of radioactive substances from its interior into the laboratory and in any case the flow of air must be at a rate not less than 0.5 metres per second; and

(b) the efficiency of the fume cupboard is not impaired by changing the position of the sash; and

(c) the accumulation of contamination with radioactive substances in any part of the fume cupboard or the fume extraction system is minimised; and

(d) its internal surfaces and the surfaces of any of its fittings comply with regulation 174(4)(a).

(6) The fume extraction system must be labelled at all accessible points with signs that comply with the requirements of regulation 174(7).

(7) The extraction system must be designed and constructed so that there is no escape of air from the fume cupboard into a part of the laboratory or to a part of the premises in which the laboratory is situated if such part of the laboratory or premises is normally occupied by any person.

(8) The extraction system must be sited in such a position so that the opening of any door or window or the presence of any furniture or other object in the laboratory does not significantly disturb the flow of air into the fume cupboard.

(9) Subregulation (5)(a) does not apply to a fume cupboard that is a laminar flow cupboard.

## 178—Duties of registered occupier of premises in which unsealed radioactive substance is kept or handled

The registered occupier of any premises in which an unsealed radioactive substance is kept or handled must—

(a) provide **monitoring equipment** suitable for detecting radioactive contamination by the types of radioactive substances kept or handled on the premises; and

(b) post in a prominent position near to all parts of the premises where a radioactive substance is kept or handled, a summary of—

(i) the **working rules** referred to in regulation 9; and

(ii) the **contingency plan** prepared in accordance with regulation 32; and

(c) display in a prominent position on the premises a **sign that contains a prohibition against eating, drinking and smoking** on the premises.

## 9—Specified employer to give radiation worker certain information

(1) A specified employer must, before a radiation worker employed by him or her first commences any duties as a radiation worker—

(a) inform the worker of the potential hazards from ionising radiation to which the worker is likely to be subject during the course of employment; and

(b) inform the worker of the name of the radiation safety officer appointed by the specified employer together with the name of any assistant radiation safety officer who has responsibilities pertaining to such worker's duties; and

(c) inform the worker of all safety arrangements that have been made to protect the worker from the effects of ionising radiation; and

(d) give directions in the form of **working rules** to the worker as to all steps that the worker must take in order to achieve the general objective; and

(e) inform the worker of the existence of the Act, these regulations and any radiation safety manual prepared under regulation 10; and

(f) make available to the worker for perusal a copy of the Act, these regulations and any radiation safety manual prepared under regulation 10.

(2) Wherever there is a change in any of the matters referred to in subregulation (1), a specified employer must immediately inform a radiation worker who is likely to be affected by any such change of the particulars of the change.

## 32—Specified employer to prepare contingency plans

(1) A specified employer must, in respect of every kind of operation carried out by him or her that involves the use, handling, storage or disposal of any radioactive substance, prepare in respect of that operation a contingency plan.

(2) A contingency plan must be prepared before the commencement of the kind of operation to which it relates.

(3) A contingency plan must—

(a) take into account every radiation accident and radiation emergency that is reasonably foreseeable; and

(b) contain specific instructions as to how each such accident and emergency is to be dealt with, paying particular regard as to how control may be restored and the exposure of persons may be kept to a minimum; and

(c) be incorporated into the radiation safety manual prepared in accordance with regulation 10.

(4) A specified employer must provide the equipment and facilities (including any monitoring instrument, detector or alarm) that is necessary for the effective operation of the contingency plan.

(5) If a specified employer discovers that any monitoring instrument, detector, or alarm that is required by subregulation (4) is not in correct working order, the specified employer must immediately replace it by a monitoring instrument, detector, or alarm that is in correct working order.

(6) The Minister may, by notice in writing given to a specified employer, require the specified employer to supply to the Minister a copy of any contingency plan that the employer has prepared under this regulation.

(7) A specified employer must not fail to comply with a notice given by the Minister on the specified employer under subregulation (6).