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RADIATION SAFETY ACT 1975-1981.

RADIATION SAFETY (GENERAL) REGULATIONS 1983.

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Western Australia.

RADIATION SAFETY ACT 1975-1981.

RADIATION SAFETY (GENERAL) REGULATIONS 1983.

ARRANGEMENT.

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SCHEDULE VIII (Regulations 15, 30, 31 and 33)—
MAXIMUM CONCENTRATIONS OF RADIOACTIVE ELEMENTS IN AIR AND WATER ABOVE NATURAL BACKGROUND

SCHEDULE IX (Regulation 36)—
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SCHEDULE X (Regulation 37)—
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SCHEDULE XV (Regulation 58)—
APPLICATION FEES

RADIATION SAFETY ACT 1975-1981.

RADIATION SAFETY (GENERAL) REGULATIONS 1983.

MADE by the Lieutenant Governor, and Deputy of the Governor in Executive Council.

PART I—PRELIMINARY.

Citation.

1. These regulations may be cited as the Radiation Safety (General) Regulations 1983.

Commencement.

2. These regulations shall come into operation on the expiry of the period of 6 months commencing on the day on which these regulations are published in the *Gazette*.

Interpretation.

3. (1) In these regulations, unless the contrary intention appears—

"absorbed dose" means quotient of $d\bar{E}$ by dm, where $d\bar{E}$ is the mean energy imparted by ionising radiation to matter of mass dm;

"approved" means approved in writing by the Council;

"becquerel" means SI unit of activity corresponding to one nuclear transition per second;

"chiropractor" means chiropractor as defined by section 4 of the Chiropractors Act 1964;

"condition" includes restriction and limitation;

"cooling curve" means graphical relationship between energy stored as heat and cooling time;

"class 1 laser" has the meaning given by regulation 52;

"dentist" means dentist as defined by section 4 of the Dental Act 1939;

"disposal permit" means disposal permit granted under section 34;

"dose equivalent" means product of D, Q and N at the point of interest in tissue, where D is the absorbed dose, Q is the quality factor and N is the product of all other modifying factors;

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"dose equivalent limit" means maximum dose equivalent specified in item 1 of Schedule I;

"exemption" means exemption referred to in section 6 and cognate expressions shall be construed accordingly;

"filtration" means modification of the characteristics of ionising radiation in passing through matter;

"form" means form specified in Schedule II;

"gray" means SI unit of absorbed dose in matter corresponding to the absorption of one joule per kilogram of matter;

"half value layer" means thickness of a specified material that attenuates a beam of radiation so that the absorbed dose rate in air or exposure rate at a given point is reduced by half;

"ionisation" means process by which one or more electrons are liberated from a parent atom or molecule or other bound state;

"ionising radiation" means radiation capable of causing ionisation by primary and secondary processes;

"item" means item of the Schedule in which the term appears;

"keep" includes cause to be kept;

"laser" means electronic product which can be made to produce or amplify electromagnetic radiation exceeding 250 nm, but not exceeding 13 000 nm, in wavelength primarily by the process of controlled stimulated emission;

"leakage radiation" means ionising radiation emerging after transmission through the protective shielding of the source of the ionising radiation;

"licence" means licence granted under the Act;

"licensee" means holder of a licence;

"lux" means SI unit of illuminance corresponding to one lumen per square metre;

"maximum permissible exposure level" means maximum permissible exposure level specified in item 2 of Schedule I;

"medical practitioner" means medical practitioner as defined by section 3 of the Medical Act 1894;

"microwave oven" means electronic product which—

(a) is designed primarily for the heating of foodstuffs and related products;

(b) generates electromagnetic radiation with a nominal frequency of 915 MHz or 2.45 GHz; and

(c) delivers the radiation referred to in paragraph (b) of this definition into an enclosure so designed that objects inserted in that enclosure are heated by that radiation;

"non-ionising radiation" means radiation other than ionising radiation;

"nuclide" means species of atom having specified numbers of neutrons and protons in its nucleus;

"paragraph" means paragraph of the regulation, subregulation, item or subitem in which the term appears;

"Part" means Part of these regulations;

"permit" means disposal permit or temporary permit;

"personal file" means personal file kept under regulation 11;

"physiotherapist" means physiotherapist as defined by section 2 of the Physiotherapists Act 1950;

"premises" means premises referred to in section 28 (1) (a);

"publication" means standard, rule, code or specification referred to in section 58 (2) (e);

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"quality factor", in relation to radiation, means factor which is a function of the linear collision stopping power in water of the radiation at the point of interest;

"radiation" means energy propagated through space or through a material medium in the form of waves or of kinetic energy of particles;

"radiation emission limit", in relation to a microwave oven, means maximum emission of microwave radiation specified in Schedule III;

"radiation safety committee" means radiation safety committee appointed under regulation 18;

"radiation safety officer" means radiation safety officer appointed under regulation 18;

"radiation warning symbol" means radiation warning symbol described and depicted in Schedule IV;

"radiation worker" means person who in the course of his employment may be exposed to radiation arising from his direct involvement with sources of radiation;

"radioactive material" means material which spontaneously emits ionising radiation;

"recognized test procedure" means procedure set out in the publication entitled "Procedure for Testing Microwave Ovens" approved by the NHMRC at its 85th Session in June 1978;

"registered" means registered under the Act and cognate expressions shall be construed accordingly;

"regulation" means one of these regulations;

"Schedule" means Schedule to these regulations;

"sealed source" means radioactive material sealed in a container, or having a bonded cover, strong enough to prevent contact with and dispersal of the radioactive material under the conditions of use and wear for which that container or cover was designed;

"section" means section of the Act;

"sievert" means SI unit of dose equivalent corresponding to the absorption of one joule in one kilogram of biological matter, taking into account the quality factor and other modifying factors;

"subitem" means subitem of the item in which the term appears;

"subparagraph" means subparagraph of the paragraph in which the term appears;

"subregulation" means subregulation of the regulation in which the term appears;

"temporary permit" means temporary permit granted under section 35;

"the Act" means the Radiation Safety Act 1975;

"the NHMRC" means the National Health and Medical Research Council as defined by section 2 of the Medical Research Endowment Act 1937 of the Commonwealth, as amended;

"veterinary surgeon" means registered veterinary surgeon as defined by section 2 of the Veterinary Surgeons Act 1960;

"x-rays" means electromagnetic radiation which is produced by—

(a) the transitions of electrons between the various electron shells of an atom; or

(b) the deceleration of electrons in the vicinity of nuclei.

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(2) In these regulations, a reference to the name of a SI unit preceded by the prefix—

(a) "tera" is a reference to the SI unit multiplied by 10^{12};

(b) "giga" is a reference to the SI unit multiplied by 10^{9};

(c) "mega" is a reference to the SI unit multiplied by 10^{6};

(d) "kilo" is a reference to the SI unit multiplied by 10^{3};

(e) "milli" is a reference to the SI unit multiplied by 10^{-3}; and

(f) "micro" is a reference to the SI unit multiplied by 10^{-6}.

(3) Copies of publications referred to in these regulations can be consulted free of charge at the library of the Public Health Department of the State or of the State X-ray Laboratory (Physics Division) or at the State Reference Library.

Application of regulations.

4. In the event of an inconsistency between these regulations and—

(a) the Radiation Safety (Transport of Radioactive Substances) Regulations 1982*; or

(b) any regulations relating to the mining or milling of radioactive ores made under the Mines Regulation Act 1946 or the Nuclear Activities Regulation Act 1978,

the regulations referred to in paragraph (a) or (b), as the case requires, shall prevail to the extent of the inconsistency.

Radioactive substances for purposes of Act.

5. (1) Subject to this regulation—

(a) a natural radioactive substance of an equivalent specific radioactivity not exceeding 0.03 megabecquerel per kilogram;

(b) a quantity of a radioactive substance specified in the second column of Schedule V which does not exceed the maximum quantity specified opposite to that radioactive substance in the third column of that Schedule;

(c) a quantity of a radioactive substance not specified in the second column of Schedule V, which does not exceed 0.004 megabecquerel;

(d) a personal timekeeping or other approved device containing radioactive self luminous elements, which device—

(i) is used or possessed by an individual; and

(ii) does not contain as part of those self luminous elements a radioactive substance specified in the first column of Schedule VI in respect of the category of device concerned in a quantity exceeding the maximum quantity specified opposite to that radioactive substance in the second column of that Schedule;

or

(e) a self luminous device the purpose of which is related to safety and which contains less than 18.5 gigabecquerel of Hydrogen-3 and complies with the requirements set out in the publication entitled "Recommendations for Exemptions from Licensing of Gaseous Tritium Light Devices" approved by the NHMRC at its 81st Session in October 1975,

is a substance consisting of or containing, as the case requires, less than the maximum prescribed concentration of any radioactive element, whether natural or artificial, for the purposes of the definition of "radioactive substance" in section 4.

(2) For the purposes of subregulation (1) (b), if a radioactive substance on any premises consists of or contains 2 or more radioactive chemical elements or radioactive isotopes of a chemical element and one or more of those elements or isotopes, as the case requires, is or are present in a quantity or quantities less than the maximum quantity or quantities specified in the third column of Schedule V opposite to the appropriate radioactive substance or radioactive

* Published in the *Government Gazette* on 24 December 1982 at pp. 4904-4905.

substances specified in the second column of that Schedule, and the sum of the fractions obtained by dividing the number of megabecquerels of each such element or isotope present by the appropriate maximum quantity so specified does not exceed unity, that radioactive substance is a substance consisting of or containing, as the case requires, more than the maximum prescribed concentration referred to in subregulation (1).

(3) For the purposes of subregulation (1) (d), if a watch, clock or other timepiece contains 2 or more radioactive substances specified in the first column of Schedule VI and the sum of the fractions obtained by dividing the number of megabecquerels of each of those radioactive substances present by the maximum quantity specified opposite thereto in the second column of that Schedule exceeds unity, the watch, clock or other timepiece contains more than the maximum prescribed concentration referred to in subregulation (1).

(4) Notwithstanding anything in subregulations (1), (2) and (3), but subject to subregulation (6)—

(a) a radioactive substance referred to in subregulation (1) which the Council is of the opinion is used or likely to be used in such a manner that an individual may receive a dose equivalent exceeding the appropriate dose equivalent limit; or

(b) a personal timekeeping or other device referred to in subregulation (1) (d) which—

(i) does not comply with the requirements set out in the publication entitled "Recommendations of the European Nuclear Energy Agency and the International Atomic Energy Agency: Radiation Protection Standards for Radioluminous Timepieces" published in Vienna in 1967; or

(ii) is a gaseous self luminous device which is not a self luminous device referred to in subregulation (1) (e),

consists of or contains, as the case requires, more than the maximum prescribed concentration referred to in subregulation (1).

(5) Notwithstanding anything in subregulations (1), (2) and (3), but subject to subregulation (6), if the Council is of the opinion that a radioactive ore which is a natural radioactive substance referred to in subregulation (1) (a) may—

(a) give rise to a radiation hazard; or

(b) result in an individual receiving a dose equivalent exceeding the dose equivalent limit,

when that radioactive substance is mined or milled, that radioactive substance consists of more than the maximum prescribed concentration referred to in subregulation (1) while it is being mined or milled.

(6) If the Council forms an opinion referred to in subregulation (4) (a) or (5), it shall forthwith notify each user of the radioactive substance concerned in writing that he is required to comply with these regulations in respect of that radioactive substance.

(7) In subregulation (6)—

"user", in relation to a radioactive substance, includes manufacturer, storer, transporter, seller, possessor, miner, miller or other dealer of or with, as the case requires, the radioactive substance.

Irradiating apparatus for purposes of Act.

6. (1) Subject to this regulation, any irradiating apparatus consisting of—

(a) electrical equipment, including equipment incorporating cathode ray tubes, transmitting valves, rectifying valves and image converters, which equipment—

(i) is not intended to produce ionising radiation; and

(ii) does not produce an absorbed dose rate in air exceeding 5 micrograys per hour at a distance of 50 mm from any point on the surface of that equipment;

or

(b) a television receiver or video display unit which does not produce an absorbed dose rate in air exceeding 5 micrograys per hour averaged over an area of 100 sq mm at a distance of 50 mm from any point on the external surface of that receiver or unit,

is an apparatus which is not capable of producing ionising radiation of any prescribed type within the meaning of the definition of "irradiation apparatus" in section 4.

(2) For the purposes of subregulation (1) (b), any measurement of absorbed dose rates in air shall be made with power source voltages up to 110 per cent of the nominal root mean square voltage specified by the manufacturer of the television receiver or video display unit concerned, with—

(a) a usable image displayed by that receiver or unit;

(b) all the controls of that receiver or unit so adjusted that the maximum production of ionising radiation takes place; and

(c) conditions identical to those which result from that circuit or component failure which gives rise to the maximum production of ionising radiation.

(3) Notwithstanding anything in this regulation, any irradiating apparatus referred to in subregulation (1)—

(a) which is being production tested, production serviced or repaired; or

(b) which is handled or used in such a manner that an individual may receive therefrom a dose equivalent exceeding the appropriate dose equivalent limit,

is an irradiating apparatus which is capable of producing ionising radiation of a prescribed type within the meaning of the definition of "irradiating apparatus" in section 4.

(4) For the purposes of the definition of "irradiating apparatus" in section 4, x-rays are a prescribed type of radiation.

Prescribed and exempted electronic products.

7. (1) Subject to subregulation (2), microwave ovens and lasers are prescribed for the purposes of section 6 (1) (c) as being subject to the provisions of the Act and these regulations.

(2) Subject to regulations 43 and 50, the electronic products specified in Schedule VII are not prescribed within the meaning of subregulation (1).

Period for registration.

8. For the purposes of section 28 (2) (a), the prescribed period is a period commencing on the coming into operation of the Act and expiring on the twenty-eighth day after the day on which this regulation comes into operation.

PART II—GENERAL PRECAUTIONS AND REQUIREMENTS RELATING TO RADIATION SAFETY.

Certain advertisements and advertising material restricted.

9. (1) A person—

(a) who is a licensee or the holder of an exemption or permit; or

(b) in whose name any premises or any irradiating apparatus or electronic products are registered,

shall not refer to that fact in any advertisement or advertising material.

(2) A person shall not, without the prior permission in writing of the Council, state or imply in any advertisement or advertising material that any operation or use of, or manufacture, storage, transport, sale, possession, installation, servicing, maintenance or repair of, or other dealing with, radioactive substances, irradiating apparatus or electronic products is approved.

Applications for licences and registrations, and prescribing of registers.

10. (1) Subject to subregulation (2), an applicant for a licence or for registration shall—

(a) apply therefor in the appropriate form;

(b) deliver his application to the office of the Council; and

(c) deliver with his application the appropriate fee payable in respect of that application.

(2) A person who is the owner of any premises and of any irradiating apparatus or electronic product or both therein may apply for combined registration of those premises and that irradiating apparatus or electronic product or both and the appropriate fee payable in respect of that application shall be the sum of the appropriate fees payable on separate applications for the registration of those premises and of that irradiating apparatus or electronic product or both.

(3) The registers to be kept under section 41 shall be in the form of a file relating to each person—

(a) to whom an exemption is granted;

(b) who is a licensee;

(c) to whom a permit is granted; or

(d) in whose name any premises irradiating apparatus or electronic product is registered,

and shall contain the information required to be furnished by him by or under the Act or these regulations.

Personal files.

11. (1) The employer of a radiation worker shall—

(a) keep a continuing personal file relating to the radiation worker;

(b) include in the personal file referred to in paragraph (a) the results of all personal monitoring of the radiation worker carried out in accordance with these regulations; and

(c) dispose of the personal file referred to in paragraph (a)—

(i) by forwarding it to; or

(ii) in a manner directed in writing by,

the Council and in no other manner.

(2) On the termination of the employment of a radiation worker, the employer of the radiation worker shall—

(a) supply the Council, on request, with a report in writing on—

(i) the dose equivalent of ionising radiation received by; or

(ii) the exposure to non-ionising radiation of,

the radiation worker as shown in his personal file or, if no personal monitoring or incomplete personal monitoring of the radiation worker has been carried out, on—

(iii) the estimated dose equivalent of ionising radiation received by; or

(iv) the estimated exposure to non-ionising radiation of,

the radiation worker; and

(b) if the dose equivalent or estimated dose equivalent of ionising radiation received by the radiation worker has been such as to require action to be taken under regulation 15 or the exposure or estimated exposure of the radiation worker to non-ionising radiation exceeds the appropriate maximum permissible exposure level, include in the report referred to in paragraph (a) particulars of the circumstances as a result of which that dose equivalent or estimated dose equivalent or that exposure or estimated exposure is such as to require action to be so taken or exceeds the appropriate maximum permissible exposure level, as the case requires.

(3) An employer who employs or formerly employed a radiation worker shall, at the request of the radiation worker, furnish the radiation worker with a report on the dose equivalent or estimated dose equivalent of ionising radiation received by, or the exposure or estimated exposure to non-ionising radiation of, the radiation worker as shown in the personal file relating to him.

(4) When a radiation worker whose employment has been terminated is again employed as a radiation worker, his new employer shall—

(a) if he is not the former employer of the radiation worker, obtain from that former employer, and that former employer shall, if he possesses the personal file relating to the radiation worker, give to the new employer of the radiation worker, a copy of the relevant contents of that personal file; and

(b) obtain from the Council, and the Council shall give to the new employer of the radiation worker—

(i) a copy of each report supplied to the Council under subregulation (2) in respect of the radiation worker; and

(ii) if the Council possesses the personal file relating to the radiation worker, a copy of the relevant contents of that personal file.

(5) In subregulation (4)—

"the relevant contents", in relation to a personal file, means those contents of the personal file consisting of the results referred to in subregulation (1) (b) or otherwise relevant to radiation safety.

Records relating to radioactive substances, irradiating apparatus and electronic products.

12. (1) Subject to subregulation (3), the person in whose name any premises are registered shall—

(a) keep records showing the receipt, transfer or disposal of radioactive substances, irradiating apparatus and electronic products in or from those premises; and

(b) retain records relating to—

(i) the receipt of a radioactive substance while the radioactive substance remains in his possession or under his control and thereafter for the period referred to in subparagraph (ii);

(ii) the transfer or disposal of a radioactive substance for a period equivalent to one half life of the radioactive substance reckoned from the date of the last recorded movement of the radioactive substance, but in any case for a period of not less than 6 months, or for such longer period as the Council may require by notice in writing sent to that person, from that date; and

(iii) any irradiating apparatus or electronic product while that irradiating apparatus or electronic product remains in his possession and thereafter for a period of not less than 5 years.

(2) If a person required by subregulation (1) to keep and retain any records referred to in that subregulation ceases to carry on business or to practise his profession or dies or is for any other reason unable to continue to keep and retain those records, he or the person responsible for managing his affairs or his estate, as the case requires, shall forthwith surrender those records to the Council.

(3) In subregulation (1) (b) (ii)—

"one half life of the radioactive substance" means for a single radioactive decay process occurring in the radioactive substance the time required for the radioactivity of the radioactive substance to decrease to half its initial value.

Records of surveys, tests and calibrations of equipment.

13. Whenever surveys, tests or calibrations of equipment are required by these regulations to be carried out, the person in whose name the premises, irradiating apparatus or electronic products concerned are registered shall keep records in writing, or in such other manner as the Council approves, of those surveys, tests or calibrations.

Reporting of losses and thefts.

14. A person who is—

(a) required to comply with section 28 in respect of; or

(b) in possession or control of,

any radioactive substance, irradiating apparatus or electronic product shall report any loss or theft of that radioactive substance, irradiating apparatus or electronic product to the Council immediately after he learns of that loss or theft.

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Action to be taken if excessive dose equivalents of ionising radiation received or excessive concentrations of radioactive substances released.

15. (1) If the licensee in respect of a radioactive substance or irradiating apparatus, the person in whose name any irradiating apparatus is registered or any premises are registered in respect of a radioactive substance or irradiating apparatus, or any person acting under the supervision and direction of such a licensee or person (in this regulation called a "responsible person") learns that—

(a) a radiation worker or other person has or may have received from the radioactive substance or irradiating apparatus a dose equivalent or estimated dose equivalent of ionising radiation exceeding 3/10 of, but not exceeding, the product obtained by multiplying the dose equivalent limit by the fraction of the year in respect of which that dose equivalent or estimated dose equivalent was recorded or, in the case of a dose equivalent or estimated dose equivalent received by a person wearing, operating or using an approved personal monitoring device under regulation 25, by the fraction of the year during which that device was so worn, operated or used, the responsible person shall—

(i) if he is not such a licensee or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires, immediately report that discovery to that licensee or person, and that licensee or person shall; or

(ii) if he is such a licensee or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires,

immediately investigate the circumstances of that receipt or possible receipt and shall, if the person who has or may have received that dose equivalent or estimated dose equivalent—

(iii) is or was at the relevant time a radiation worker, place a report on those circumstances on the personal file relating to that person; or

(iv) is not and was not at the relevant time a radiation worker, immediately forward a report on those circumstances to the Council;

or

(b) there has or may have been a release of a radioactive substance from any premises at a concentration which exceeds the appropriate maximum concentration set out in Schedule VIII, but does not exceed 10 times that maximum concentration, the responsible person shall, unless that release is a release permitted by regulation 31—

(i) if he is not the person in whose name those premises are registered, immediately report that discovery to that person and that person shall; or

(ii) if he is the person in whose name those premises are registered,

immediately investigate the circumstances of that release or possible release and take corrective action, and thereafter report to the Council on that investigation and corrective action within 14 days of taking that corrective action.

(2) If a responsible person learns that—

(a) a radiation worker or other person has or may have received from the radioactive substance or irradiating apparatus concerned a dose equivalent or estimated dose equivalent of ionising radiation exceeding the product obtained by multiplying the dose equivalent limit by the fraction of the year in respect of which that dose equivalent or estimated dose equivalent was recorded or, in the case of a dose equivalent or estimated dose equivalent received by a person wearing, operating or using an approved personal monitoring device under regulation 25, by the fraction of the year during which that device was so worn, operated or used, but not exceeding 5 times that product, the responsible person shall—

(i) if he is not the licensee in respect of the radioactive substance or irradiating apparatus concerned or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires, immediately report that discovery to that licensee or person, and that licensee or person shall; or

(ii) if he is the licensee in respect of the radioactive substance or irradiating apparatus concerned or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires;

or

(b) there has or may have been a release of a radioactive substance from any premises at a concentration which exceeds 10 times the appropriate maximum concentration set out in Schedule VIII, but does not exceed 1 000 times that maximum concentration, the responsible person shall, unless that release is a release permitted by regulation 31—

(i) if he is not the person in whose name those premises are registered, immediately report that discovery to that person and that person shall; or

(ii) if he is the person in whose name those premises are registered,

immediately investigate the circumstances of that receipt or possible receipt or of that release or possible release, as the case requires, and, within a period of 7 days after that discovery, report thereon in writing to the Council and take such corrective action as the Council directs.

(3) If a responsible person learns that—

(a) a radiation worker or other person has or may have received from the radioactive substance or irradiating apparatus concerned a dose equivalent or estimated dose equivalent of ionising radiation exceeding 5 times the product obtained by multiplying the dose equivalent limit by the fraction of the year in respect of which that dose equivalent or estimated dose equivalent was recorded or, in the case of a dose equivalent or estimated dose equivalent received by a person wearing, operating or using an approved personal monitoring device under regulation 25, by the fraction of the year during which that device was so worn, operated or used, the responsible person shall—

(i) if he is not the licensee in respect of the radioactive substance or irradiating apparatus concerned or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires, immediately report that discovery to that licensee or person, and that licensee or person shall; or

(ii) if he is the licensee in respect of the radioactive substance or irradiating apparatus concerned or the person in whose name the irradiating apparatus or premises is or are registered, as the case requires;

or

(b) there has or may have been a release of a radioactive substance from any premises at a concentration which exceeds 1 000 times the appropriate maximum concentration set out in Schedule VIII, the responsible person shall, unless that release is a release permitted by regulation 31—

(i) if he is not the person in whose name those premises are registered, immediately report that discovery to that person and that person shall; or

(ii) if he is the person in whose name those premises are registered,

immediately report all facts relevant to that receipt or possible receipt or to that release or possible release, as the case requires, to the Council, seek to ascertain the cause of that receipt or possible receipt or of that release or possible release and take such corrective action as the Council directs.

(4) A person required by subregulation (3) to report certain facts to the Council shall, as soon as possible after so reporting and in any event not more than 14 days thereafter, report to the Council all additional facts relevant to the receipt or possible receipt concerned or to the release or possible release concerned, as the case requires, which come to the notice of that person after he has so reported under that subsection.

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Monitoring instruments.

16. (1) A person in whose name any irradiating apparatus, electronic product or premises is or are registered shall provide such monitoring instruments as the Council directs in writing, within such period as the Council specifies in that direction, for detecting and measuring the type of radiation produced by that irradiating apparatus or electronic product or by any radioactive substance used, manufactured, stored, possessed or otherwise dealt with on those premises, as the case requires.

(2) Without limiting the generality of subregulation (1), a person who uses, manufactures, stores, possesses or otherwise deals with a radioactive substance—

(a) which is not enclosed in a sealed source shall, if so directed in writing by the Council, keep immediately available a monitoring instrument for detecting and measuring contamination by radioactive substances; or

(b) which is enclosed in a sealed source in a quantity which exceeds 4 megabecquerels or 1 000 times the appropriate maximum quantity set out in the third column of Schedule V, whichever is the greater, shall keep immediately available a monitoring instrument for detecting and measuring the ionising radiation produced by that radioactive substance.

Shielding, protective equipment and safety devices in relation to repair or installation of irradiating apparatus, electronic products or equipment containing radioactive substances.

17. (1) A person in whose name premises which are used for the repair or installation of irradiating apparatus, electronic products or equipment containing radioactive substances are registered shall, whenever he effects that repair or installation and whether that repair or installation takes place at those premises or not, provide such shielding, protective equipment and safety devices as are necessary for that repair or installation to be carried out safely.

(2) The Council may direct in writing a person in whose name any premises are registered to provide within the period specified in that direction such shielding, protective equipment and safety devices as are specified in that direction.

(3) A person to whom a direction has been given under subregulation (2) shall comply with that direction.

(4) A licensee and any person acting under his direction and supervision shall, when repairing or installing irradiating apparatus, electronic products or equipment containing radioactive substances, use shielding, protective equipment and safety devices provided in accordance with this regulation or with a direction made thereunder.

Appointment of radiation safety officers and radiation safety committees.

18. (1) The person in whose name any premises are registered—

(a) shall, subject to this regulation, in writing appoint a radiation safety officer to perform—

(i) on behalf of that person the duties imposed by subregulations (1) and (2) of regulation 19 on that person; and

(ii) the duties imposed on a radiation safety officer by regulation 19 (3);

and

(b) may, subject to this regulation, in writing appoint a radiation safety committee to supervise the performance by a radiation safety officer appointed by that person of the duties imposed by subregulations (1) and (2) of regulation 19 on that person and performed on behalf of that person by that radiation safety officer.

(2) It shall not be necessary for the person in whose name any premises are registered to appoint a radiation safety officer under subregulation (1) (a) if, with the consent in writing of the Council, he performs both—

(a) the duties imposed on him by subregulations (1) and (2) of regulation 19; and

(b) the duties imposed on a radiation safety officer by regulation 19 (3).

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(3) Before appointing a radiation safety officer or a radiation safety committee under subregulation (1), the person in whose name the premises concerned are registered shall obtain the approval in writing of the Council in respect of the person or persons to be appointed.

(4) The appointment of a radiation safety officer or of a radiation safety officer and a radiation safety committee, as the case requires, does not relieve the person making that appointment of liability for any failure to perform—

(a) any of the duties imposed on that person by subregulations (1) and (2) of regulation 19; or

(b) the duties imposed on a radiation safety officer by regulation 19 (3).

(5) A person shall not be appointed under subregulation (1) to be a radiation safety officer unless he—

(a) has passed an examination in radiation safety conducted by or on behalf of the Council in accordance with the Radiation Safety (Qualifications) Regulations 1980*; or

(b) possesses an approved qualification.

Responsibility for radiation safety precautions generally.

19. (1) The person in whose name any premises, irradiating apparatus or electronic product are or is registered shall ensure that these regulations are complied with in respect of those premises or that irradiating apparatus or electronic product, as the case requires.

(2) The person in whose name any premises are registered shall—

(a) inform himself of the hazards attendant on the presence of radiation on those premises and may for that purpose obtain the advice and services of a qualified expert;

(b) give appropriate instructions concerning the hazards referred to in paragraph (a) and the safe working practices necessitated by those hazards to all employees or persons whose duties involve the handling of radioactive substances or the operation of any irradiating apparatus or electronic product which produces radiation in an amount that may lead to such a hazard and to all other employees or other persons whose duties do not, or do not regularly, involve that handling or that operation but who may nevertheless be exposed to radiation;

(c) ensure that persons working with radioactive substances, irradiating apparatus or electronic products on those premises and all persons authorized by him to visit areas on those premises where radiation may be present are—

(i) properly and adequately instructed in the use of all necessary safeguards and procedures; and

(ii) supplied with such shielding, protective equipment and safety devices as may be necessary for their safety;

and

(d) notify in writing the Council of the existence of—

(i) any areas which are not normally occupied by human beings but in which visiting human beings may be exposed to hazardous radiation;

(ii) any condition or situation which, although not normally considered to be a radiation hazard, may become a radiation hazard under special or unusual circumstances; and

(iii) a radiation hazard on the premises which apparently does not originate from sources within the premises and of which he is or becomes aware.

(3) A radiation safety officer shall, in addition to performing on behalf of the person in whose name the premises concerned are registered the duties imposed on that person by this regulation—

(a) establish and maintain a programme of control of hazards associated with radiation of the type produced on those premises;

* Published in the *Government Gazette* on 6 June 1980 at pp. 1669-1671.

(b) train and instruct all persons working with, operating or using radioactive substances, irradiating apparatus or electronic products on those premises;

(c) formulate working rules for the safe operation or use of radioactive substances, irradiating apparatus or electronic products on those premises by persons referred to in paragraph (b);

(d) survey areas on those premises in which radioactive substances are to be manufactured, used or stored or irradiating apparatus or electronic products are to be installed before that manufacture, use, storage or installation is begun;

(e) regularly inspect and test shielding, protective equipment and safety devices;

(f) assess the requirements for the proposed installation, operation and use of irradiating apparatus or electronic products;

(g) investigate occurrences or accidents known or suspected to have occurred, initiating corrective action and reporting thereon to the person in whose name those premises are registered;

(h) make recommendations on the need or otherwise for the medical examination of radiation workers; and

(i) maintain the records required by the Act or these regulations to be kept by the person in whose name those premises are registered.

Manufacture, use, storage or operation of radioactive substances, irradiating apparatus and electronic products to be confined to certain premises.

20. (1) Subject to subregulation (2), the person in whose name any premises are registered shall ensure that—

(a) the manufacture, use or storage or any radioactive substance; and

(b) the use or operation, other than the repair, testing or installation, of any irradiating apparatus or electronic product,

in respect of which that registration was effected is carried out only on those premises.

(2) If the Council has by any condition imposed by it in relation to the registration of premises permitted—

(a) the manufacture, use or storage of any radioactive substance; or

(b) the use or operation, other than the repair, testing or installation, of any irradiating apparatus or electronic product,

in respect of which that registration was effected to be carried out on any other premises specified in that condition, the person in whose name the first-mentioned premises are registered shall ensure that that manufacture, use, storage or operation is carried out only on the first-mentioned premises or the other premises so specified or on both.

Medical examinations.

21. (1) The Council may require persons exposed or likely to be exposed in the course of their employment to a radiation hazard to undergo medical examinations—

(a) before that employment commences;

(b) periodically during that employment; and

(c) after that employment ends,

and at such other times as the Council considers necessary.

(2) A person required under subregulation (1) to undergo a medical examination shall comply with that requirement.

(3) The employer of a person who undergoes a medical examination in compliance with a requirement under subsection (1) shall—

(a) if that person is a radiation worker, cause the result of the medical examination to be recorded in the personal file relating to that person; and

(b) whether or not that person is a radiation worker, notify the Council of the result of the medical examination if the Council so requests.

Warning signs and labels.

22. (1) The person in whose name any premises in areas of which radioactive substances, irradiating apparatus or electronic products are manufactured, operated, used or stored are registered shall—

(a) unless exempted by the Council in writing, cause conspicuous signs, bearing the radiation warning symbol and approved wording, to be posted in those areas; and

(b) cause signs posted under this subregulation to be removed when those radioactive substances, irradiating apparatus or electronic products are no longer present in those areas.

(2) A licensee in respect of a radioactive substance or a person in whose name an irradiating apparatus or electronic product is registered shall cause labels—

(a) to be affixed in accordance with these regulations to every container in which the radioactive substance is kept or to the irradiating apparatus or electronic product, as the case requires; and

(b) affixed under this subregulation to be removed when the radioactive substance and its container or the irradiating apparatus or electronic product is no longer capable of emitting radiation.

(3) Subject to subregulations (1) and (2), a person shall not remove signs or labels posted or affixed under those subregulations except with the approval of the Council.

(4) The Council may direct the person in whose name any premises are registered to exhibit copies of these regulations at locations readily accessible to employees, and copies of working rules required to be formulated by regulation 19 (3) (c) adjacent to or on—

(a) containers or equipment in which a radioactive substance is kept or incorporated; or

(b) irradiating apparatus or electronic products, which are on the premises.

(5) A person to whom a direction has been given under subregulation (4) shall comply with that direction.

(6) This regulation does not apply to lasers.

Radiation surveys and calibrations.

23. (1) The person in whose name premises, irradiating apparatus or electronic products are registered shall make or cause to be made such radiation surveys as are necessary for compliance with the requirements of the Act and these regulations.

(2) The Council may direct the person in whose name premises, irradiating apparatus or electronic products are registered—

(a) to cause to be made a radiation survey, test or calibration of the premises or of a device or material used for the production of radiation or for protection therefrom, as the case requires, and to cause a report to be compiled on that radiation survey, test or calibration; and

(b) to furnish the Council with a copy of each report compiled in compliance with a direction given under this subregulation.

(3) A person who has received a direction given under subregulation (2) shall comply with that direction.

(4) Surveys, tests or calibrations referred to in subregulations (1) and (2) shall be made—

(a) by or under the direction and supervision of an approved person; and

(b) by means of approved instruments and methods.

(5) The Council may accept as evidence of the absence of a radiation hazard in a given area, in lieu of a report compiled on an actual radiation survey made in accordance with this regulation, a statement in writing made by a qualified expert on the basis of his inspection and analysis of the radiation producing sources concerned, of their location on the premises concerned and of the circumstances of their operation or use.

(6) In subregulation (5)—

"qualified expert" means expert whose qualifications are approved.

Dose equivalent limits and maximum permissible exposure levels not to be exceeded.

24. (1) Subject to subregulation (2), a person operating or using, or engaged in an activity operating or using, a particular radioactive substance, irradiating apparatus or electronic product shall not act in such a manner as knowingly—

(a) to receive or to cause another person to receive a dose of ionising radiation exceeding the appropriate dose equivalent limit; or

(b) to be exposed to or to cause another person to be exposed to a level of non-ionising radiation exceeding the appropriate maximum permissible exposure level.

(2) A person operating or using, or engaged in an activity operating or using, a radioactive substance or irradiating apparatus in the course of a single planned special exposure conducted with the prior approval of the Council shall not act in such a manner as knowingly to receive or to cause another person to receive a dose of ionising radiation exceeding the dose equivalent limit specified in item 1 (7) of Schedule I.

(3) This regulation does not apply to a person operating or using, or engaged in an activity operating or using, a radioactive substance, irradiating apparatus or electronic product who acts in a manner prohibited by this regulation in rescuing or safeguarding a person from serious injury or danger to life or in preventing the exposure of 2 or more persons to a radiation hazard.

(4) This regulation does not apply to the exposure to radiation of those parts of the human body—

(a) necessarily exposed thereto in the course of any diagnosis or treatment by or prescribed by a medical practitioner, dentist, chiropractor or physiotherapist; and

(b) conducted in accordance with the Act and these regulations (other than this regulation).

(5) Notwithstanding anything contained in subregulation (4), a licensee or any other person using a radioactive substance, irradiating apparatus or electronic product for diagnosis in respect of, or the treatment of, a human patient shall—

(a) not unnecessarily expose to radiation those parts of the human body which are not the subject of; and

(b) if the reproductive organs of that patient are or may be exposed to a direct x-ray beam, apply protective shielding to those organs unless that application might interfere with,

that diagnosis or treatment.

Personal monitoring devices.

25. (1) The person in whose name any premises are registered shall, if directed in writing by the Council to do so, issue from time to time in accordance with that direction to each radiation worker on those premises approved personal monitoring devices for detecting and measuring an integrated dose of accumulated radiation, so that each such radiation worker has such a device on issue to him at all times while he is at his place of employment.

(2) A person who issues a personal device to a radiation worker shall—

(a) subject to paragraph (b), give to the radiation worker instructions; or

(b) if directed in writing by the Council to do so, give to the radiation worker approved instructions,

on the wearing, operation or use of the personal device.

(3) When under subregulation (2) a personal device is issued to a radiation worker and the radiation worker is given any instructions or approved instructions, as the case requires, on the wearing, operation or use of the personal device, it shall be presumed for the purpose of any civil or criminal proceedings in which that wearing, operation or use is relevant that the radiation worker wore, operated or used the personal device in accordance with those instructions or approved instructions unless the contrary is proved.

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(4) A radiation worker to whom a personal device is issued shall wear, operate or use, as the case requires, the personal device—

(a) in accordance with any instructions or approved instructions given to him under subregulation (2); and

(b) whenever he is likely to be exposed to radiation from any radioactive substance, irradiating apparatus or electronic product in his possession or operated or used by him.

(5) A person who has issued to a radiation worker a personal device shall, whenever it is necessary for the personal device to be examined or for any film therein to be processed in order to ascertain the amount of radiation to which the radiation worker has been exposed while wearing, operating or using the personal device, cause—

(a) the personal device or any film therein to be examined or processed, as the case requires, in such manner, by such persons and at such times; and

(b) any film in the personal device to be changed, and the dose equivalents received by the radiation worker to be measured, at such intervals,

as the Council in writing addressed to that person directs.

(6) A person who issues a personal device to a radiation worker shall not subsequently issue the same personal device to any other person otherwise than in accordance with the instructions in writing of the Council.

(7) A radiation worker shall ensure that a personal device issued to him is not worn, operated or used by any other person during the period for which it is so issued.

(8) Whenever—

(a) a radiation worker who is required by subregulation (4) to wear, operate or use a personal device does not do so; or

(b) a personal device issued to a radiation worker is lost, damaged or destroyed,

and it is impossible to ascertain the amount of radiation to which the radiation worker was exposed during the period for which the personal device was issued to him or any part of that period, the Council may, taking into account the nature of the employment of the radiation worker, estimate the dose equivalent received by the radiation worker during that period or part thereof, and that dose equivalent shall be presumed, unless the contrary is proved, to be the actual dose equivalent received by the radiation worker during that period or part thereof.

(9) When the type of radiation emitted by a radioactive substance, irradiating apparatus or electronic product is of such a nature that there is no suitable personal device for measuring that type of radiation, the person in whose name the premises on which the radioactive substance, irradiating apparatus or electronic product is situated are registered shall—

(a) forthwith advise the Council accordingly; and

(b) make such arrangements as the Council directs in writing for the monitoring of that type of radiation.

(10) In this regulation—

"personal device" means approved personal monitoring device issued under subregulation (1).

Monitoring of radiation otherwise than by personal monitoring devices.

26. (1) The person in whose name any premises are registered shall, if directed in writing by the Council to do so, place on those premises from time to time in accordance with that direction approved equipment or devices for detecting and measuring radiation for the purpose of monitoring the presence of radiation on those premises.

(2) A person who has placed approved equipment or devices in accordance with a direction given under subregulation (1) shall, whenever it is necessary for the approved equipment or devices to be examined or for any film therein to be processed in order to ascertain the amount of radiation present on the premises concerned, cause the approved equipment or devices to be examined, or that film to be processed or changed, and the amount of radiation detected to be measured, in such manner, by such persons and at such times as the Council directs in writing.

PART III—RADIOACTIVE SUBSTANCES

Restrictions on activities of licensees and others in respect of radioactive substances.

27. (1) A licensee shall not administer or purport to authorize the administration of radioactive substances or the radiation emitted thereby for the treatment of, or diagnosis in respect of, human beings unless he is a medical practitioner who has satisfied the Council that he has appropriate specialist qualifications and experience or is working under the direction and supervision of such a medical practitioner.

(2) A licensee shall not use radioactive substances for industrial radiography unless in so doing he complies with the requirements of the publication entitled "The Code of Practice for the Control and Safe Handling of Sealed Radioactive Sources used in Industrial Radiography" approved by the NHMRC at its 66th Session in May 1968.

(3) A licensee shall not use radioactive substances for the treatment of animals unless he is—

(a) a medical practitioner who does so in association with a veterinary surgeon; or

(b) a veterinary surgeon.

(4) A licensee shall not use sealed sources in radiation gauges unless in so doing he complies with the requirements of the publication entitled "The Code of Practice for the Safe Use of Radiation Gauges" approved by the NHMRC at its 93rd Session in June 1982.

(5) A person shall not mine or mill any radioactive ore unless he does so—

(a) under the direction and supervision of a licensee who is normally in attendance at the site of that mining or milling;

(b) in the case of the mining or milling of radioactive ores other than mineral sands, in accordance with the requirements of the publication entitled "The Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores" issued by the Department of Science and the Environment of the Commonwealth in 1980; and

(c) in the case of the mining or milling of mineral sands, in accordance with the requirements of the publication entitled "The Code of Practice on Radiation Protection in the Mining and Processing of Mineral Sands (1982)" adopted by the Council in August 1982.

Conditions on registration of premises.

28. (1) The Council may, as a condition imposed in relation to the registration of any premises in which a radioactive substance is or is to be manufactured, used or stored—

(a) specify the maximum quantity of the radioactive substance which may be manufactured, used or stored in those premises or any part thereof;

(b) in the case of premises where industrial radiography employing sealed sources is carried out, require that the apparatus concerned and those sources conform to the requirements set out in the publication entitled "The Code of Practice for the Control and Safe Handling of Sealed Radioactive Sources used in Industrial Radiography" approved by the NHMRC at its 66th Session in May 1968 and that that apparatus, the sealed sources and any associated equipment are operated or used in conformity with those requirements;

(c) in the case of premises where self-luminous devices containing more than 1.8 gigabecquerel of Hydrogen-3 are installed, require that those devices conform to the requirements set out in the publication entitled "The Recommendations for Exemptions from Licensing of Gaseous Tritium Light Devices" approved by the NHMRC at its 81st Session in October 1975;

(d) in the case of premises where the mining or milling of—

(i) radioactive ores other than mineral sands is carried on, require that that mining or milling be carried out in accordance with the requirements of the publication entitled "The Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores" issued by the Department of Science and the Environment of the Commonwealth in 1980; or

(ii) mineral sands is carried out, require that that mining or milling be carried out in accordance with the requirements of the publication entitled "The Code of Practice on Radiation Protection in the Mining and Processing of Mineral Sands (1982)" adopted by the Council in August 1982;

(e) require that equipment for the safe manufacture, use or storage of the radioactive substance be provided;

(f) require that those premises be constructed in a specified manner using specified materials; and

(g) if radiation gauges incorporating sealed sources are installed in those premises, require—

(i) that those gauges and sealed sources conform to the requirements set out in the publication entitled "The Code of Practice for the Safe Use of Radiation Gauges" approved by the NHMRC at its 81st Session in October 1975 (in this paragraph called "the Code"); and

(ii) that those gauges are employed in accordance with the procedure laid down by the Code.

(2) A licensee or person acting under his direction and supervision shall use on the premises where he carries on business any equipment for the safe manufacture, use or storage of radioactive substances provided in compliance with a requirement made under subregulation (1) (e).

(3) The person in whose name premises are registered shall ensure that—

(a) quantities of radioactive substances exceeding those maximum quantities specified under subregulation (1) (a) are not brought onto the premises;

(b) the requirements set out in the publication referred to in subregulation (1) (g) are complied with in relation to the gauges and sealed sources concerned;

(c) in the case of premises where industrial radiography is carried out, the requirements of these regulations and of the publication entitled "The Code of Practice for the Control and Safe Handling of Sealed Radioactive Sources used in Industrial Radiography" approved by the NHMRC at its 66th Session in May 1968 are complied with in relation to industrial radiography using radioactive substances.

Labelling of radioactive substances.

29. (1) The person in whose name premises are registered in respect of the manufacture, use or storage of radioactive substances shall ensure that—

(a) all storage containers of radioactive substances, storage areas for radioactive substances, work areas or other areas where a radiation hazard arising from the manufacture, use or storage of radioactive substances may exist are posted with appropriate radiation hazard labels except when, in the opinion in writing of the Council notified to that person, those labels may be a source of disturbance to patients undergoing radiation treatment, in which case no such posting shall be effected;

(b) radiation hazard labels referred to in paragraph (a) incorporate the radiation warning symbol unless the Council by notice in writing notified to that person otherwise directs;

(c) except as otherwise directed in writing by the Council—

(i) containers for radioactive substances are clearly and permanently labelled "CAUTION—RADIOACTIVE"; and

(ii) equipment containing radioactive substances is labelled "CAUTION—RADIOACTIVE";

(d) every container of radioactive substances bears a clearly visible label identifying its contents; and

(e) every label referred to in this subregulation is durable, having regard to the period for which it is required to be attached, and has clearly legible lettering which, together with the radiation warning symbol, if any, referred to in paragraph (b), is surrounded by a black border.

(2) The person in whose name premises are registered may provide on or near any label referred to in subregulation (1) any information—

(a) which is additional to that required by that subregulation; and

(b) which is appropriate in aiding individuals to minimize exposure to radiation and, if that label relates to a container or equipment containing radioactive substances, to identify those radioactive substances.

Storage of radioactive substances.

30. The person in whose name any premises are registered in respect of the manufacture, use or storage of radioactive substances shall ensure that—

(a) radioactive substances which are not in use are kept or stored in such a manner that—

(i) the absorbed dose rate in air in any area accessible to persons other than radiation workers and outside the place of storage does not exceed 25 micrograys per hour; and

(ii) no person receives a dose equivalent exceeding the appropriate dose equivalent limit;

(b) every area used for the keeping or storage of radioactive substances is posted with a sign bearing the radiation warning symbol, the word "radioactive" or "radiation" and such other wording as is approved, and the name of the person in whose name those premises are registered;

(c) vaults or rooms used for keeping or storing radioactive substances which are capable of emitting radioactive gases are ventilated in such a manner that any accumulation of radioactive gases does not exceed the appropriate maximum concentration specified in Schedule VIII;

(d) radioactive substances which are not in use are—

(i) in the case of radioactive substances which are not radioactive ores, enclosed in containers of such construction, materials or thickness or are otherwise shielded in such a manner; or

(ii) in the case of radioactive ores, enclosed in containers of such construction, materials or thickness or are otherwise shielded in such a manner, or are kept at such a distance from areas to which unprotected persons have access, or are both so shielded and kept,

that no person is exposed to a dose equivalent in excess of the appropriate dose equivalent limit;

(e) except in the case of containers for radioactive substances which are radioactive ores, containers for radioactive substances specified in the second column of Schedule V in quantities in excess of 100 000 times the amounts specified opposite to those radioactive substances in the third column of that Schedule are designed to be resistant to fire and earthquake damage and to temperatures up to and including 800°C and are structurally sound, having regard to any corrosion, radiation effects and temperatures to which they may be subjected; and

(f) whenever it is possible that chemical, radiation or other action may weaken or rupture a container of radioactive substances sufficiently to cause leakage from that container, that container is provided with suitable secondary containment adequate to contain the entire quantity of radioactive substances in that container.

Release or disposal of radioactive substances.

31. (1) A person shall not knowingly cause or allow any radioactive substances to be released or disposed of in such a manner as to cause such contamination of the environment as to result in a person receiving a dose equivalent in excess of the appropriate dose equivalent limit.

(2) If, not withstanding that the release or disposal of any radioactive substances in a particular manner would not cause such contamination of the environment as to result in a person receiving a dose equivalent in excess of the appropriate dose equivalent limit, the Council is satisfied that such a release or disposal can reasonably be reduced in concentration or quantity or both, the Council may direct the person causing or allowing that release or disposal to effect such reduction of that release or disposal in such manner as is specified in that direction.

(3) A person to whom a direction is given under subregulation (2) shall comply with that direction.

(4) Subject to subregulations (5) and (6), a person shall not, except in accordance with approved waste disposal procedures embodied in a condition imposed in relation to a particular exemption, licence, temporary permit or registration, allow the release from any premises of radioactive substances in liquid or gaseous form in concentrations exceeding the appropriate maximum concentrations set out in Table II of Schedule VIII.

(5) Subject to subregulation (6), a person shall not knowingly discharge radioactive waste into a sewerage system unless—

(a) the radioactive substance in that waste is readily soluble or dispersable in water;

(b) the quantity of radioactive substance in that waste discharged into that system from the premises concerned in any one period of 24 hours does not exceed—

(i) the quantity which, if diluted by the average daily quantity of sewage discharged into that system from those premises, will result in an average concentration equal to the appropriate maximum concentration set out in column 2 of Table I of Schedule VIII; or

(ii) in the case of a radioactive substance specified in the second column of Schedule V, 10 times the maximum quantity of that radioactive substance specified opposite thereto in the third column of that Schedule;

(c) the quantity of radioactive substance in that waste discharged into that system from the premises concerned in any one month will not, if diluted by the average monthly quantity of water discharged into that system from those premises, result in an average concentration exceeding the appropriate maximum concentration set out in column 2 of Table I of Schedule VIII; and

(d) in the case of—

(i) one radioactive substance specified in the second column of Schedule V in that waste discharged into that system from the premises concerned in any period of 12 months, the gross quantity of that radioactive substance does not exceed 100 000 times the maximum quantity specified opposite to that radioactive substance in the third column of that Schedule; or

(ii) two or more radioactive substances specified in the second column of Schedule V in that waste discharged into that system from the premises concerned in any period of 12 months, the sum of the numbers obtained by dividing the number of megabecquerels of each of those radioactive substances by the maximum quantity specified opposite to each of those radioactive substances in the third column of that Schedule is less than 100 000.

(6) This regulation does not apply to the discharge from a private residence into a sewerage system of radioactive waste contained in excreta from individuals who are or have been undergoing medical diagnosis or treatment with radioactive substances.

(7) A licensee or the person in whose name premises are registered shall not dispose of, or permit the disposal of, radioactive substances by incineration otherwise than in accordance with the authority in writing of the Council.

(8) A person shall not dispose of any solid radioactive waste otherwise than in the manner provided by any relevant condition imposed in relation to an exemption, licence, temporary permit or registration held by him or, if no such condition is so imposed, in accordance with approved procedures.

Records, reports and notifications relating to radioactive substances.

32. (1) A licensee shall in such manner as is approved maintain records of the amounts, kinds, movements and dispositions of radioactive substances used, manufactured, stored, transported, sold, possessed or otherwise dealt with by him.

(2) The person in whose name any premises are registered shall maintain records in such manner as is approved of the amounts, kinds, movements and dispositions of radioactive substances—

(a) in respect of which an exemption has been granted; and

(b) used, manufactured, stored, transported, sold, possessed or otherwise dealt with on, to or from, as the case requires, those premises.

(3) Whenever a radioactive substance specified in the second column of Schedule V and in a quantity exceeding 100 times the maximum quantity specified opposite to that radioactive substance in the third column of that Schedule is unintentionally released, the licensee in respect thereof or, if that licensee does not have immediate control of that radioactive substance, the person having immediate control thereof shall report full particulars of that release to the Council within 7 days of learning of that release.

(4) The person in whose name any premises in, to or from, as the case requires, which a radioactive substance is or has been used, manufactured, stored, transported, sold, possessed or otherwise dealt with are registered shall, not less than 15 days before those premises are vacated, notify the Council in writing that those premises are to be vacated.

(5) On receipt of notification under subregulation (4), the Council may require in writing the person in whose name the premises concerned are registered to cause those premises to be decontaminated within such period as the Council specifies to a degree consistent with the use of those premises for purposes other than the use, manufacture, storage, transport, sale, possession or other dealing with radioactive substances and that person shall comply with that requirement.

(6) In the case of loss of or damage to a radioactive source, the licensee in respect of the radioactive substance concerned or, if that licensee does not have immediate control of that radioactive substance, the person having immediate control thereof shall, immediately on learning of that loss or damage, report that loss or damage to the Council.

Control of exposure to radiation.

33. (1) Subject to subregulations (2), (3) and (4), a licensee shall not use, manufacture, store, transport, sell, possess or otherwise deal with a radioactive substance in such a manner as to cause a radiation worker to be exposed to airborne radioactive material in a concentration which if averaged over a period of exposure of 40 hours per week for 52 weeks would exceed that set out in column 1 of Table 1 of Schedule VIII.

(2) For the purposes of subregulation (1)—

(a) "to be exposed" means to be present in an airborne concentration of the radioactive material concerned; and

(b) no allowance shall be made for—

(i) the use by the radiation worker concerned of protective clothing or equipment; or

(ii) the size of the particles of the radioactive material concerned,

except than in accordance with the authority in writing of the Council.

(3) The maximum concentrations specified in column 1 of Table I of Schedule VIII are based on exposure to airborne radioactive material in the concentrations specified in that column for 40 hours in any period of 7 consecutive days.

(4) When the number of hours of exposure to airborne radioactive material—

(a) is more than 40 in any period of 7 consecutive days, the maximum concentrations specified in column 1 of Table I of Schedule VIII shall be decreased by an amount which bears the same proportion to those maximum concentrations as the amount of the excess in the number of hours of that exposure bears to 40 hours; or

(b) is less than 40 in any period of 7 consecutive days, the maximum concentrations specified in column 1 of Table I of Schedule VIII shall be unchanged.

(5) If the nature of any work with a radioactive substance is such that the person performing that work or his clothing may become contaminated by a radioactive substance to such a degree as to present a hazard to that or any other person (in this subregulation called "the person at risk"), the radiation safety officer, if any, appointed in respect of the premises concerned shall—

(a) monitor both the person at risk and his clothing;

(b) cause to be removed from the person at risk before he is permitted to leave the work area concerned any contamination in excess of—

(i) in the case of alpha-emitting radioactive substances, 3.7×10^3 becquerels per square metre; or

(ii) in the case of beta-emitting radioactive substances, 3.7×10^4 becquerels per square metre;

and

(c) ensure that any clothing or other material contaminated by a radioactive substance is not taken from the work area concerned or released to public laundries or cleaners until it has been shown that the contamination does not exceed an approved limit.

(6) A person shall—

(a) not hinder or obstruct; or

(b) when called on to do so, assist,

a radiation safety officer in the performance of the duties imposed on him by subregulation (5).

(7) A licensee in respect of the use of radioactive substances not enclosed in sealed containers shall post in a prominent place in the vicinity of those radioactive substances a list of approved instructions to be followed in the event of accidental contamination of a person or object.

PART IV—IRRADIATING APPARATUS.

Exemption from licensing in relation to irradiating apparatus.

34. There are exempted from compliance with sections 25, 26 and 27—

(a) medical practitioners and persons acting under their direction and supervision who operate or use registered irradiating apparatus for the sole purpose of taking radiographs with x-ray film;

(b) dentists and persons acting under their direction and supervision who operate or use registered irradiating apparatus only for lateral oblique examinations of the mandible and radiography of teeth and jaws with intra-oral x-ray films on registered premises; and

(c) persons who operate or use irradiating apparatus in respect of which they are exempted from registration.

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Information to be furnished by suppliers of certain irradiating apparatus.

35. A supplier of irradiating apparatus for medical or veterinary fluoroscopy or radiography or chiropractic radiography shall, if that irradiating apparatus is new irradiating apparatus delivered to the operator or user thereof more than 12 months after the date on which this regulation comes into operation in respect of that operator or user, provide that operator or user with—

(a) adequate instructions concerning any radiological safety procedures and precautions which may be necessary because of features unique to that irradiating apparatus;

(b) a schedule showing the maintenance necessary to keep that irradiating apparatus in compliance with these regulations;

(c) statements of the maximum rated peak tube potential, leakage technique factors, the minimum permanent filtration in the beam and the peak tube potential at which the filtration is obtained;

(d) cooling curves for the x-ray tube anode and tube housing;

(e) x-ray tube rating charts; and

(f) performance data, including performance data for image intensifier tubes.

Conditions on registration of irradiating apparatus.

36. Subject to section 36, the Council may, in registering any irradiating apparatus, impose in relation to that registration—

(a) the condition that the irradiating apparatus be provided with shielding to a specified standard and that specified safety devices be provided; and

(b) any one or more of the conditions specified in Schedule IX.

Conditions on registration of premises.

37. (1) Subject to section 36, the Council may, in registering any premises in which any irradiating apparatus is or is to be operated or used, impose in relation to that registration the condition—

(a) that those premises or any specified part thereof be constructed in a specified manner and with specified materials, that specified safety devices be incorporated therein and that specified safety equipment be provided therein;

(b) that the irradiating apparatus be of a specified type, be operated or used for a specified purpose and be of a specified maximum or minimum x-ray tube kilovoltage or milliamperage; and

(c) that the irradiating apparatus be operated or used only by persons having approved qualifications.

(2) The person in whose name premises referred to in subregulation (1) are registered shall ensure that those premises comply with the requirements set out in Schedule X in respect of the type of irradiating apparatus which is or is to be operated or used in those premises.

(3) The person in whose name any premises are registered for the purpose of industrial radiography shall ensure that industrial radiography is carried out only in those premises, unless the Council has by any condition imposed in relation to that registration permitted industrial radiography to be carried out on any other premises specified in that condition.

Restrictions on operation or use of certain irradiating apparatus.

38. (1) Subject to this regulation, a person shall not operate or use—

(a) fluoroscopic x-ray apparatus for the examination of human beings unless he is, or is a medical practioner under the direction and personal supervision of, a medical practitioner who has satisfied the Council that he has appropriate qualifications and experience;

(b) therapeutic x-ray apparatus for the treatment of human beings unless he is, or is under the direction and personal supervision of, a medical practitioner who has satisfied the Council that he has appropriate specialist qualifications and experience;

(c) therapeutic x-ray apparatus for the treatment of animals unless he is, or is under the direction and personal supervision of, a veterinary surgeon; or

(d) chiropractic x-ray apparatus for radiography of human beings unless he is a chiropractor, or is a person—

(i) having qualifications rendering him eligible for membership of the Australian Institute of Radiography; and

(ii) working under the direction and personal supervision of a chiropractor.

(2) A person who is permitted by the Act and these regulations to operate or use irradiating apparatus shall do so in accordance with the requirements set out in Schedule XI.

PART V—ELECTRONIC PRODUCTS.

Division 1—Microwave Ovens.

Sale and transfer of ownership of microwave owens.

39. (1) A person shall not sell a microwave oven as a new microwave oven unless—

(a) the provisions of Part X of the Electricity Act Regulations 1947*, as amended, relating to the approval of electrical appliances have been complied with in relation to the model of microwave oven to which the microwave oven belongs; and

(b) the model of microwave oven to which the microwave oven belongs complies with the requirements of the publication entitled "Approval and test specification for particular requirements for microwave ovens", being AS 3301-1978, published by the Standards Association of Australia.

(2) A person shall not transfer the ownership of a used microwave oven unless a licensee in respect of the testing of microwave ovens has issued a certificate of approval in respect of the microwave oven within a period of 90 days preceding the date of the transfer concerned.

(3) A licensee in respect of the sale of microwave ovens shall not sell a microwave oven unless there are affixed to the microwave oven—

(a) a label which—

(i) is visible from the front of the microwave oven; and

(ii) exhibits the microwave symbol set out in Schedule XII;

and

(b) a label which incorporates the following message—

" This microwave oven shall only be repaired or tested by a person holding a valid licence to operate or use microwave ovens granted under the Radiation Safety Act 1975. Unauthorized removal of this label is an offence. ".

(4) A person shall not remove a label referred to in subregulation (3) without the consent in writing of the Council.

(5) A person who sells a new microwave oven shall supply with that microwave oven approved instructions on the operation, use and maintenance of that microwave oven in relation to radiation safety.

Certificate required on renewal of registration.

40. An applicant for the renewal of the registration of premises on which a microwave oven is operated or used shall transmit with his application a certificate—

(a) made by a licensee in respect of the testing of microwave ovens;

(b) relating to the testing of the microwave oven in accordance with the recognized test procedure by the licensee referred to in paragraph (a) on a date not more than 90 days before the date of that application; and

(c) stating that the microwave oven complies with the radiation emission limit.

* Reprinted in the *Government Gazette* on 21 August 1968 at pp. 2475-2544.

Transfer of registered premises.

41. Whenever the ownership of premises registered in respect of the operation or use of microwave ovens therein changes, the Council may require any microwave ovens in those premises—

(a) to be tested in accordance with the recognized test procedure; and

(b) to comply with the radiation emission limit,

before the Council effects the registration of those premises in the name of the new owner of those premises.

Use of certain microwave ovens prohibited.

42. A person shall not operate or use or permit to be operated or used a microwave oven which does not to his knowledge comply with the radiation emission limit unless he, being a licensee in respect of the repairing or testing of microwave ovens, is engaged in repairing or testing the microwave oven.

Repairs to microwave ovens.

43. (1) Whenever it is necessary to repair or adjust the safety interlocks, oven doors, seals or other parts of a microwave oven in order to enable the microwave oven to comply with the radiation emission limit, the microwave oven shall—

(a) if it is to be repaired on premises which are registered in respect of the repair of microwave ovens, be repaired by—

(i) a licensee in respect of the repair of microwave ovens; or

(ii) a person working under the direction and supervision of a licensee referred to in subparagraph (i);

or

(b) if it is to be repaired on premises which are not registered in respect of the repair of microwave ovens, be repaired by a licensee in respect of the repair of microwave ovens.

(2) When any safety interlock, oven door, seal or other part of a microwave oven the incorrect functioning of which might impair the ability of the microwave oven to comply with the radiation emission limit has been repaired or adjusted, the licensee—

(a) shall not return the microwave oven to the operator or user thereof; or

(b) shall render the microwave oven unusable,

until the microwave oven—

(c) has been tested in accordance with the recognized test procedure; and

(d) complies with the radiation emission limit.

(3) Notwithstanding anything in regulation 7 (2), this regulation applies to microwave ovens which are specified in Schedule VII.

Testing of microwave ovens.

44. A licensee in respect of the testing of microwave ovens shall not test a microwave oven and issue a certificate in respect thereof unless he tests it in accordance with the recognized test procedure.

Certain licences obtainable or renewable with registration of premises.

45. An applicant for the registration of premises in respect of the repair or testing of microwave ovens may submit to the Council with his application any applications by persons who are to work on those premises for the grant or renewal of licences in respect of the repair or testing of microwave ovens.

Care to be exercised by licensee in repair or testing of microwave ovens.

46. A licensee in respect of the repair or testing of microwave ovens shall not, when engaged in the repair or testing of a microwave oven, operate the microwave oven in such a manner as to endanger his own health or the health of any other person by exposure to microwave radiation in excess of the maximum permissible exposure level.

Registered premises to be provided with monitoring equipment and radiation protection shields and devices.

47. The person in whose name premises are registered in respect of the repair or testing of microwave ovens shall ensure—

(a) that those premises are adequately equipped with suitable instruments for the detection and measurement of microwave radiation and that those instruments meet the minimum performance standards set out in the recognized test procedure; and

(b) that approved radiation protection shields and devices are available for use so that, if those shields and devices are correctly used, no person on those premises will be exposed to microwave radiation in excess of the maximum permissible exposure level.

Limits of microwave oven licences.

48. A licence in respect of the repair or testing of microwave ovens does not of itself confer on the licensee concerned the right to perform any electrical work the performance of which is required to be authorized by or under any Act other than the Act.

Faulty microwave ovens to be reported.

49. The person in whose name any premises are registered in respect of the repair or testing of microwave ovens shall, if any microwave oven tested on those premises cannot be adjusted to comply with the radiation emission limit, forthwith inform both the owner of that microwave oven and the Council accordingly in writing.

Faulty microwave ovens to be reported to Council.

50. (1) A licensee in respect of the repair or testing of microwave ovens who is employed by a person in whose name premises are registered in respect of the repair or testing of microwave ovens shall in writing inform that person of—

(a) any microwave oven which, during the recognized test procedure, emits microwave radiation in an amount which exceeds 5 times the amount of microwave radiation permitted by the radiation emission limit to be emitted during the recognized test procedure; and

(b) the maximum microwave radiation level measured in respect of, the serial number of, and the name of the owner of, the microwave oven referred to in paragraph (a),

forthwith on discovering the excessive emission referred to in paragraph (a).

(2) The person in whose name the premises referred to in subregulation (1) are registered shall, on receiving the information referred to in that subregulation, forthwith give that information to the Council.

(3) A licensee in respect of the repair or testing of microwave ovens shall in writing inform the Council of—

(a) any microwave oven which, during the recognized test procedure, emits microwave radiation in an amount which exceeds 5 times the amount of microwave radiation permitted by the radiation emission limit to be emitted during the recognized test procedure; and

(b) the maximum microwave radiation level measured in respect of, the serial number of, and the name of the owner of, the microwave oven referred to in paragraph (a),

forthwith on discovering the excessive emission referred to in paragraph (a).

(4) Notwithstanding anything in regulation 7 (2), this regulation applies to microwave ovens which are specified in Schedule VII.

Licensees to issue test certificates to owners of microwave ovens.

51. A licensee in respect of the testing of microwave ovens who—

(a) tests a microwave oven shall issue; or

(b) repairs a microwave oven shall, on completing that repair, test the microwave oven and issue,

to the owner of the microwave oven a certificate stating whether or not the microwave oven complies with the radiation emission limit.

Division 2—Lasers.

Interpretation in Division 2.

52. (1) In this Division and in Schedules XIII and XIV, unless the contrary intention appears—

"class 1 laser" means Class 1 laser as defined by section 4 of the Guidelines;

"class 2 laser" means Class 2 laser as defined by section 4 of the Guidelines;

"class 3 laser" means Class 3 laser as defined by section 4 of the Guidelines;

"class 4 laser" means Class 4 laser as defined by section 4 of the Guidelines;

"controlled area" means controlled area within the meaning of subregulation (2);

"laser system" means assembly of electrical, mechanical and optical components which includes a laser;

"the Australian Standard" means the publication entitled "Laser Safety", being AS 2211-1978, issued by the Standards Association of Australia in December 1978;

"the Guidelines" means the publication entitled "Guidelines for Users of Lasers in Western Australia" adopted by the Council in 1978 and reprinted in January 1983;

"type 1 area warning sign" means Type 1 area warning sign referred to in Appendix F.2. to the Guidelines;

"type 2 area warning sign" means Type 2 area warning sign referred to in Appendix F.2. to the Guidelines.

(2) For the purposes of this Division and of Schedules XIII and XIV, a controlled area is an area—

(a) in which the activities of persons are controlled and supervised for the purpose of protection from radiation hazards;

(b) the extent of which is determined by the person in whose name the premises in which that area is situated are registered; and

(c) which is defined by approved screens or baffles having absorbing or diffusing reflecting surfaces.

Class 2 lasers.

53. (1) The person in whose name any premises in which a class 2 laser is operated or used are registered shall—

(a) require persons on those premises to follow such approved procedures; and

(b) give such directions,

as are necessary or desirable for preventing excessive direct intrabeam exposure to radiation of persons on those premises.

(2) A person—

(a) who is required to follow an approved procedure; or

(b) to whom a direction is given,

under subregulation (1) shall comply with that requirement or direction, as the case requires.

(3) The person in whose name any premises in which a class 2 laser is operated or used are registered shall—

(a) affix to the class 2 laser or to the protective housing of its laser system labels in accordance with the requirements of the Australian Standard; and

(b) display—

(i) while the class 2 laser is being operated or used, in conspicuous locations inside and outside the area in which that operation or use is taking place and on doors giving access to that area warning signs in accordance with Appendix F.2. to the Guidelines; and

(ii) in a prominent position near the class 2 laser a type 1 area warning sign.

Class 3 lasers.

54. The person in whose name any premises in which a class 3 laser is operated or used are registered shall, in addition to complying with the requirements of regulation 53 as if the class 3 laser were a class 2 laser, ensure that the requirements of Schedule XIII are complied with in relation to the class 3 laser.

Class 4 lasers.

55. The person in whose name any premises in which a class 4 laser is operated or used are registered shall, in addition to complying with the requirements of regulations 53 and 54 as if the class 4 laser were both a class 2 laser and a class 3 laser, ensure that the requirements of Schedule XIV are complied with in relation to the class 4 laser.

Requirements common to class 2, class 3 and class 4 lasers.

56. (1) The person in whose name any premises in which the totally enclosed laser system of a class 2 laser, class 3 laser or class 4 laser is operated or used are registered shall ensure that—

(a) the protective housing of that laser system limits the maximum accessible radiation to the level applicable to the class of laser concerned;

(b) control measures applicable to the class of laser concerned are applied when its laser system is in normal operation;

(c) persons who require access to that laser system for the purpose of servicing or maintaining it comply with the control measures and procedural requirements applicable to the class of laser concerned; and

(d) the class of laser concerned or its laser system is provided with safety interlocks complying with section 6.6.3 of the Guidelines for any part of the protective housing the removal or displacement of which allows human access to radiation in excess of the maximum permissible exposure level applicable to that class of laser.

(2) The person in whose name any premises in which a class 2 laser, class 3 laser or class 4 laser, which is itself enclosed, or the beam path of which is enclosed, by any covers, is operated or used are registered shall, when the laser concerned or its laser system is being operated or used with those covers removed for the purpose of servicing, maintenance, repair, testing or any other like procedure, ensure that—

(a) in the case of a class 3 laser or class 4 laser, the class 3 laser or class 4 laser is operated or used only within a temporary controlled area—

(i) defined by approved non-reflective screens or other means; and

(ii) provided with all safety measures required for persons working inside and outside it;

and

(b) the illuminance level at all working sites is not less than 350 lux.

PART VI—GENERAL.

Penalties.

57. A person who commits an offence against these regulations by virtue of section 52 is liable on conviction—

(a) to a fine not exceeding $1 000; or

(b) if that offence is a continuing one, to a fine not exceeding $50 for every day or part of a day during which that offence is continued.

Fees.

58. (1) An applicant for the registration or renewal of registration of any premises in which any radioactive substances—

(a) are manufactured, used or stored shall pay to the Council the appropriate annual fee set out in item 1 of Schedule XV in respect of the maximum quantity of all radioactive substances in those premises at any one time; or

(b) are sold shall pay to the Council the annual fee set out in item 2 of Schedule XV.

(2) An applicant for the registration or renewal of registration of—

(a) any premises, other than premises referred to in subregulation (1);

(b) any irradiating apparatus; or

(c) any electronic product,

shall pay to the Council the appropriate annual fee, related to the number of units of irradiating apparatus or electronic products in those premises, set out in item 3 of Schedule XV.

(3) An applicant for the grant or renewal of a licence shall pay to the Council the appropriate annual fee set out in item 4 of Schedule XV.

(4) Notwithstanding anything contained in this regulation, an applicant—

(a) referred to in subregulation (1), (2) or (3) shall, if his application is not an application for the renewal of a registration or licence, pay to the Council the application fee set out in item 5 of Schedule XV in addition to any other fee payable under this regulation;

(b) for more than one registration or renewal of registration shall not be required to pay by way of annual fees a total amount exceeding $150.

Forms.

59. (1) An applicant for a licence in respect of radioactive substances shall apply for that licence on form R.S. 1.

(2) An applicant for the renewal of a licence in respect of radioactive substances shall apply for that renewal on form R.S. 2.

(3) The Council shall, on granting a licence or a renewal of a licence in respect of radioactive substances, furnish the applicant for that licence or renewal with a licence on form R.S. 3.

(4) An applicant for a licence in respect of irradiating apparatus or electronic products shall apply for that licence on form R.S. 4.

(5) An applicant for the renewal of a licence in respect of irradiating apparatus or electronic products shall apply for that renewal on form R.S. 5.

(6) The Council shall, on granting a licence or a renewal of a licence in respect of irradiating apparatus or electronic products, furnish the applicant for that licence or renewal with a licence on form R.S. 6.

(7) An applicant for the registration of any premises in which any radioactive substance which is part of a gaseous self-luminous device is to be used or stored shall apply for that registration on form R.S. 7.

(8) An applicant for the renewal of a registration referred to in subregulation (7) shall apply for that renewal on form R.S. 8.

(9) A certificate referred to in section 28 (6) which evidences the registration or renewal of registration of any premises in which any radioactive substance which is part of a gaseous self-luminous device is or is to be used or stored shall be on form R.S. 9.

(10) An applicant for the registration of any premises in which any radioactive substance which is not part of a gaseous self-luminous device is to be manufactured, used or stored shall apply for that registration on form R.S. 10.

(11) An applicant for the renewal of a registration referred to in subregulation (10) shall apply for that renewal on form R.S. 11.

(12) A certificate referred to in section 28 (6) which evidences the registration or renewal of registration of any premises in which any radioactive substance which is not part of a gaseous self-luminous device is or is to be manufactured, used or stored shall be on form R.S. 12.

(13) An applicant for the registration of any premises and any irradiating apparatus or electronic products to be used or operated therein shall apply for that registration on form R.S. 13.

(14) An applicant for the renewal of a registration referred to in subregulation (13) shall apply for that renewal on form R.S. 14.

(15) A certificate referred to in section 28 (6) which evidences the registration or renewal of registration of any premises and any irradiating apparatus or electronic products to be used or operated therein shall be on form R.S. 15.

Repeal and transitional provisions.

60. (1) The Radioactive Substances Regulations 1958*, as amended, are repealed.

(2) Every licence in force under regulation 6 of the Radioactive Substances Regulations 1958 immediately before the coming into operation of these regulations shall—

(a) continue in force for the remainder of the period for which it would, if the regulations so repealed had not been so repealed, have continued in force; and

(b) be deemed to have been granted under the Act and these regulations.

* Published in the *Government Gazette* on 12 December 1958 at pp. 3250-3270.

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SCHEDULE I. (Regulation 3)

DOSE EQUIVALENT LIMITS AND MAXIMUM PERMISSIBLE EXPOSURE LEVELS

1. (1) A licensee or the person in whose name any premises are registered shall not—

(a) process, operate, use, receive or transfer sources of ionising radiation in such a manner as to cause a radiation worker; or

(b) permit a radiation worker acting under his supervision and direction to process, operate, use, receive or transfer sources of ionising radiation in such a manner as to cause him,

to receive from all sources of ionising radiation in the possession of the licensee or that person—

(c) in any period of 12 months a dose equivalent exceeding 50 millisieverts to the whole body;

(d) in any period of less than 12 months, but not less than 1 month, (in this paragraph called "the shorter period") a dose equivalent exceeding an amount which is the product of 50 millisieverts to the whole body and the ratio of the shorter period in weeks to 52 weeks; or

(e) in any period of less than 1 month a dose equivalent exceeding 1/12 of 50 millisieverts to the whole body; or

(f) in a period referred to in regulation 25 (7) or in such other period as the Council determines, a dose equivalent exceeding an amount which is the product of 50 millisieverts to the whole body and the ratio of that period in weeks to 52 weeks.

(2) For the purpose of determining the dose equivalents referred to in subitem (1), a dose equivalent from x-rays or gamma rays of up to 10 MeV shall be assumed to be equivalent to the absorbed dose in air measured by a properly calibrated instrument or device at or near the surface of the body in the region of the highest anticipated exposure rate and multiplied by any modifying factors.

(3) A licensee or the person in whose name any premises are registered shall not—

(a) without the authority in writing of the Council possess, operate, use, receive or transfer sources of ionising radiation in such a manner as to create in any area occupied by persons who are not radiation workers from all sources of ionising radiation in his possession radiation levels which, if a person were continuously present in that area, could result in the person receiving a dose equivalent in excess of—

(i) 20 microsieverts in any 1 hour; or

(ii) 0.25 millisievert in any 7 consecutive days;

or

(b) possess, operate, use, receive or transfer sources of ionising radiation in such a manner as to cause a person who is not a radiation worker to receive in any 1 calendar year a dose equivalent in excess of 5 millisieverts to the whole body.

(4) If it is known that a part or parts only of the body has or have been exposed to ionising radiation, the dose equivalent for the person exposed shall be determined by using the procedure set out in part 3.1, with the weighting factors set out in part 2.3, of the publication entitled "Recommended Radiation Protection Standards for Individuals Exposed to Ionising Radiation (1980)" approved by the NHMRC at its 89th session in June 1980.

(5) The dose equivalent limit in a single planned special exposure referred to in regulation 24 (2) is 0.10 sievert to the whole body.

2. (1) Persons occupationally exposed to microwave radiation shall not be exposed to—

(a) power densities exceeding 10 mW/cm^2 for exposures exceeding 0.1 hour but not exceeding an 8 hour working day; or

(b) an energy flux exceeding 1 mW hr/cm^2 for exposures not exceeding 0.1 hour.

(2) Persons not occupationally exposed to microwave radiation shall not be exposed to power densities exceeding 1 mW/cm^2.

(3) Subitem (2) does not apply to exposure resulting from the normal operation of microwave ovens which comply with the radiation emission limit.

(4) In the case of pulse modulation systems, the microwave radiation exposure may be averaged by multiplying the peak power density or energy flux by the duty cycle, where the duty cycle equals the product of the pulse duration and the pulse repetition rate in Hertz.

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SCHEDULE II.

FORMS

(Regulations 3, 10 and 59)

RADIATION SAFETY ACT 1975.

FORM RS 1

APPLICATION FOR LICENCE IN RESPECT OF RADIOACTIVE SUBSTANCES

First Application

Fee: $

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of Applicant.
2. Address:
3. Occupation:
4. Telephone No.:
5. Particulars of radioactive substances to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with by APPLICANT (maximum quantities to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with at any one time):

Sealed/unsealed	Isotope	Quantity and form

6. Purpose for which radioactive substances are to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with by APPLICANT:
7. Qualifications and experience of APPLICANT to use, manufacture, store, transport, sell, possess or otherwise deal with radioactive substances referred to in 5:
8. Location(s) at which it is intended to use, manufacture, store, transport, sell, possess or otherwise deal with radioactive substances referred to in 5:

.....
Signature of applicant

DATE .....

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FORM RS 2

RADIATION SAFETY ACT 1975.

APPLICATION FOR RENEWAL OF LICENCE IN RESPECT OF RADIOACTIVE SUBSTANCES.

Renewal Application Fee: $

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of Applicant:

2. Address:

3. Licence No.:	Expires:
4. Occupation:	5. Telephone No.:

6. Give details of any changes in the particulars of radioactive substances to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with by APPLICANT (maximum quantities to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with at any one time) which changes have not previously been notified to and approved by the Council:

Sealed/unsealed	Isotope	Quantity and form

7. Give details of any changes in the location(s) of use, manufacture, storage, transport, sale or possession of or other dealing with radioactive substances and in the purpose for which radioactive substances are used, manufactured, stored, transported, sold, possessed or otherwise dealt with, which changes have not previously been notified to and approved by the Council:

.....
Signature of applicant.

DATE .....

37

FORM RS 3

RADIATION SAFETY ACT 1975.

LICENCE IN RESPECT OF RADIOACTIVE SUBSTANCES.

A licence is hereby granted under the provisions of the Radiation Safety Act 1975 to the person named below to use, manufacture, store, transport, sell, possess or otherwise deal with radioactive substances of the type and for the purpose designated below. The licence is subject to all applicable regulations under that Act and to any conditions, restrictions or limitations specified below or in any attachments hereto.

1. Name of licensee:

2. Address:

3. Licence No.:	Licence expires:	Fee: $

4. Occupation:	5. Telephone No.:

6. Particulars of radioactive substances to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with by HOLDER (maximum quantities to be used, manufactured, stored, transported, sold, possessed or otherwise dealt with at any one time):

Sealed/unsealed	Isotype	Quantity and form

7. Conditions, restrictions or limitations:

8. Purpose of licence:

9. Location(s) of use, manufacture, storage, transport, sale, possession or other dealing with radioactive substances referred to in 6:

....

Date Chairman, Radiological Council.

(This licence is not valid until it is signed by the Chairman, Radiological Council.)

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RADIATION SAFETY ACT 1975. FORM RS 4

APPLICATION FOR LICENCE IN RESPECT OF IRRADIATING APPARATUS OR ELECTRONIC PRODUCTS.

First Application
Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Occupation: | 4. Telephone No.:

5. Type of irradiating apparatus or electronic product to be operated, used, manufactured, stored, transported, sold, possessed, installed, serviced, maintained, repaired, tested or otherwise dealt with by APPLICANT:

6. Purpose for which irradiating apparatus or electronic products to be operated, used, manufactured, stored, transported, sold, possessed, installed, serviced, maintained, repaired, tested or otherwise dealt with by APPLICANT:

7. Qualifications and experience of APPLICANT to operate, use, manufacture, store, transport, sell, possess, install, service, maintain, repair, test or otherwise deal with irradiating apparatus or electronic products of type referred to in 5:

8. Location(s) at which it is intended to operate, use, manufacture, store, transport, sell, possess, install, service, maintain, repair, test or otherwise deal with irradiating apparatus or electronic products referred to in 5:

.....
Signature of applicant

DATE .....

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RADIATION SAFETY ACT 1975. FORM RS 5

APPLICATION FOR RENEWAL OF LICENCE IN RESPECT OF IRRADIATING APPARATUS OR ELECTRONIC PRODUCTS.

Renewal Application Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Licence No.:	Expires:
4. Occupation:	5. Telephone No.:

6. Give details of any changes in type of irradiating apparatus or electronic products to be operated, used, manufactured, stored, transported, sold, possessed, installed, serviced, maintained, repaired, tested or otherwise dealt with, which changes have not previously been notified to and approved by the Council:

7. Give details of any changes in location(s) of operation, use, manufacture, storage, transport, sale, possession, installation, service, maintenance, repair, testing or other dealing with irradiating apparatus or electronic products and in the purpose for which irradiating apparatus or electronic products are to be operated, used, manufactured, stored, transported, sold, possessed, installed, serviced, maintained, repaired or otherwise dealt with, which changes have not previously been notified to and approved by the Council:

.....
Signature of applicant

DATE .....

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RADIATION SAFETY ACT 1975. FORM RS 6

LICENCE IN RESPECT OF IRRADIATING APPARATUS. OR ELECTRONIC PRODUCTS.

A licence is hereby granted under the Radiation Safety Act 1975 to the person named below to operate, use, manufacture, store, transport, sell, possess, install, service, maintain, repair, test or otherwise deal with irradiating apparatus and electronic products of the types and for the purpose designated below. The licence is subject to all applicable regulations under that Act and to any conditions, restrictions or limitations specified below or in any attachments hereto.

1. Name of licensee:		
2. Address:		
3. Licence No.:	Licence expires:	Fee: $
4. Occupation:	5. Telephone No.:	
6. Types of irradiating apparatus or electronic products:		
7. Conditions, restrictions or limitations:		
8. Purpose of licence:		
9. Location(s) of operation, use, manufacture, storage, transport, sale, possession, installation, service, maintenance, repair, testing or other dealing with irradiating apparatus or electronic products referred to in 6:		

....

Date. Chairman, Radiological Council.

(This licence is not valid until it is signed by the Chairman, Radiological Council.)

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RADIATION SAFETY ACT 1975. FORM RS 7

APPLICATION FOR REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (IN GASEOUS SELF LUMINOUS DEVICES) ARE TO BE USED OR STORED.

First Application Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Occupation: | 4. Telephone No.:

5. Particulars of GASEOUS SELF LUMINOUS DEVICES:

Number	Make and type	Purpose or wording	Location*

6. Particulars and location of premises subject of application:

7. Name and position of person responsible for gaseous self luminous devices at premises referred to in 6:

8. Name of architect, builder, electrician, contractor, etc. responsible for installation of gaseous self luminous devices:

I/We hereby apply for registration under section 28 of the Radiation Safety Act 1975 in respect of the premises referred to in 6 for the use or storage of radioactive substances (in gaseous self luminous devices) therein.

DATE ..... Signature of ..... applicant

* A plan or sketch must be provided which enables the gaseous self luminous devices in the building to be located. It should show the address or locality of the building, the location of the building with respect to other buildings in a complex, the orientation of the building with respect to access ways, and the location of those devices in the building (show whether ground, first, second or other floor).

NOTE: An application for registration must be made by the owner of the premises. As defined in the Radiation Safety Act 1975, "owner" includes hirer, lessee, borrower, bailee or mortgagee in possession and any attorney, agent, manager, foreman, supervisor or other person in charge or having control or management and any person acting or representing himself to be acting for an owner. The attention of applicants is drawn to the responsibilities of the person in whose name the premises are registered as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

On completion, this form and accompanying plans or sketches should be sent to:

Radiological Council,
Box C134, G.P.O.,
PERTH, W.A. 6001.

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FORM RS 8

RADIATION SAFETY ACT 1975.

APPLICATION FOR RENEWAL OF REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (IN GASEOUS SELF LUMINOUS DEVICES) ARE USED OR STORED.

Renewal Application Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Registered No.:	Registration expires:
4. Occupation:	5. Telephone No.:

6. Particulars of GASEOUS SELF LUMINOUS DEVICES:

Number	Make and type	Purpose or Wording	Location*

7. Give details of any changes in particulars of premises subject of application:

8. Name and position of person responsible for gaseous self luminous devices at premises referred to in 7:

I/We hereby apply for renewal of the registration held under the Radiation Safety Act 1975 in respect of the premises described above for the use or storage of radioactive substances (in gaseous self luminous devices) therein.

DATE ..... Signature of applicant .....

* If space is insufficient for any item, attach supplementary notes signed by the applicant.

NOTE: An application for renewal of registration must be made by the person in whose name the premises concerned are registered. The attention of applicants is drawn to the responsibilities of the person in whose name the premises are registered as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

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FORM RS 9

RADIATION SAFETY ACT 1975.

CERTIFICATE OF REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (IN GASEOUS SELF LUMINOUS DEVICES) ARE OR ARE TO BE USED OR STORED.

It is hereby certified that the premises referred to below have been registered under the Radiation Safety Act 1975 for the use or storage of the radioactive substances (in gaseous self luminous devices) listed below. The registration is subject to all applicable regulations under that Act and to any conditions, restrictions or limitations specified below or in any attachments hereto.

1. Name of owner of premises:

2. Address:

3. Registration No.:	Registration expires:	Fee: $

4. Occupation:	5. Telephone No.:

6. Particulars of GASEOUS SELF LUMINOUS DEVICES:

Number	Make and type	Purpose or wording	Location*

7. Particulars and location of premises subject of registration:

8. Name and position of person responsible for the gaseous self luminous devices at premises referred to in 7:

DATE .....

.....
Signature of person in whose name premises are registered.

DATE .....

.....
Secretary, Radiological Council.

(This registration is not valid until it is signed by the Secretary, Radiological Council.)

* If space is insufficient for any item, attach supplementary lists.

NOTE: As defined in the Radiation Safety Act 1975, "owner" includes hirer, lessee, borrower, bailee or mortgagee in possession and any attorney, agent, manager, foreman, supervisor or other person in charge or having control or management and any person acting or representing himself to be acting for an owner.

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RADIATION SAFETY ACT 1975. FORM RS 10

APPLICATION FOR REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (NOT IN GASEOUS SELF LUMINOUS DEVICES) ARE TO BE MANUFACTURED, USED OR STORED.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

First Application
Fee: $.

1. Name of applicant:

2. Address:

3. Telephone No.:

4. Occupation, nature of business, etc.:

5. Name and title of applicant for correspondence:

6. PARTICULARS OF RADIOACTIVE SUBSTANCES TO BE MANUFACTURED, USED OR STORED ON PREMISES:

Sealed/unsealed	Isotope	Quantity and form*	Location of manufacture, use or storage

* State maximum quantity to be on premises at any one time.

7. If regular use or storage is to be made of radioactive substances, state quantity in each shipment and frequency of arrival of shipments:

8. Locations where radioactive substances are to be manufactured, used or stored:

9. Purpose for which radioactive substances are to be manufactured, used or stored:

10. Protective equipment and handling techniques proposed:

11. Location and construction of storage facilities:

12. Nature and proposed method of disposal of radioactive waste:

13. Proposed manner of disposal of sealed sources no longer required:

14. Names, positions, qualifications and experience of persons who will manufacture or use the radioactive substances for radiation work (including persons holding licences under the Radiation Safety Act 1975):

15. Name, qualifications and experience of radiation safety officer:

16. Monitoring instruments:

17. Arrangements made for personnel monitoring:

DATE .....

.....
Signature of applicant.

NOTE: An application for registration must be made by the owner of the premises where the radioactive substances are to be manufactured, used or stored. As defined in the Radiation Safety Act 1975, "owner" includes hirer, lessee, borrower, bailee or mortgagee in possession and any attorney, agent, manager, foreman, supervisor or other person in charge or having control or management and any person acting or representing himself to be acting for an owner. The attention of applicants is drawn to the responsibilities of the person in whose name the premises are registered as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

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RADIATION SAFETY ACT 1975. FORM RS 11

APPLICATION FOR RENEWAL OF REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (NOT IN GASEOUS SELF LUMINOUS DEVICES) ARE MANUFACTURED, USED OR STORED.

Renewal Application Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Registration No.:	Registration expires:
4. Occupation:	5. Telephone No.:

6. Name and title of representative of applicant for correspondence:

7. PARTICULARS OF RADIOACTIVE SUBSTANCES* MANUFACTURED, USED OR STORED IN PREMISES:

Type of source (Sealed/unsealed)	Radioactive substance	Quantity and form	Purpose	Location on premises

8. Place of manufacture, use or storage (if this differs from address in 2):

9. Names and qualifications of persons* manufacturing or using radioactive substances for radiation work (including persons holding licences under the Radiation Safety Act 1975):

10. Name of radiation safety officer:

11. Have any changes been made in the premises, facilities or procedures for manufacture, use or storage of radioactive substances which have not been notified to and approved by the Council? If so, give details.

DATE .....

.....
Signature of applicant.

* If space is insufficient for any item, attach supplementary lists signed by the applicant.

NOTE: An application for renewal of registration must be made by the person in whose name the premises are registered. The attention of applicants is drawn to the responsibilities of that person as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

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FORM RS 12

RADIATION SAFETY ACT 1975.

CERTIFICATE OF REGISTRATION OF PREMISES IN WHICH RADIOACTIVE SUBSTANCES (NOT IN GASEOUS SELF LUMINOUS DEVICES) ARE OR ARE TO BE MANUFACTURED, USED OR STORED.

It is hereby certified that the premises referred to below have been registered under the Radiation Safety Act 1975 for the manufacture, use, storage or other dealing in radioactive substances. The registration is subject to all applicable regulations under that Act and to any conditions, restrictions or limitations specified below or in any attachments hereto.

1. Name of owner of premises:

2. Address:

3. Occupation:	4. Telephone No.:

5. Registration No.:	Registration expires:	Fee: $

6. PARTICULARS OF RADIOACTIVE SUBSTANCES TO BE MANUFACTURED, USED OR STORED IN PREMISES:

Sealed/unsealed	Isotope	Quantity and form*	Location of manufacture, use or storage

* State maximum quantity to be on premises at any one time.

7. Particulars and location of premises subject of registration:

8. Purpose for which radioactive substances are to be manufactured, used or stored:

9. Name of radiation safety officer:

10. Names of persons licensed or otherwise authorized to use radioactive substances in the premises:

11. Conditions, restrictions, or limitations:

....

Date Secretary, Radiological Council.

(This certificate is not valid until it has been signed by the Secretary, Radiological Council.)

NOTE: As defined in the Radiation Safety Act 1975, "owner" includes hirer, lessee, borrower, bailee or mortgagee in possession and any other attorney, agent, manager, foreman, supervisor or other person in charge or having control or management and any person acting or representing himself to be acting for an owner.

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FORM RS 13

RADIATION SAFETY ACT 1975.

APPLICATION FOR REGISTRATION OF PREMISES AND IRRADIATING APPARATUS/ELECTRONIC PRODUCTS TO BE OPERATED OR USED THEREIN.

First Application
Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134, G.P.O.,
PERTH, W.A. 6001.

1. Name of applicant:

2. Address:

3. Telephone No.:

4. Occupation, nature of business, etc.:

5. Name and title of representative of applicant for correspondence:

6. PARTICULARS OF IRRADIATING APPARATUS OR ELECTRONIC PRODUCTS *TO BE OPERATED OR USED IN THE PREMISES:

Number	Maker and type	Type of radiation**	Purpose	Location on premises

7. Location of premises to be registered:

8. Radiation protection provision i.e. structural, fixed and movable screens, safety devices, etc.:

9. Names, positions, qualifications and experience * of persons to operate or use the irradiating apparatus/electronic products for radiation work (other than licence holders under the Radiation Safety Act 1975):

10. Names of persons licensed to operate or use irradiating apparatus/electronic products:

11. Name, qualifications and experience of radiation safety officer:

12. Monitoring instruments available on premises:

13. Arrangements made for personnel monitoring:

DATE ....
Signature of applicant.

* If space is insufficient for any item, attach supplementary lists signed by the applicant.

** If irradiating apparatus, enter maximum kilovolts and milliamps: if electronic products, describe the radiation by its common name and give wavelength or frequency, if known.

NOTE: An application for registration must be made by the owner of the premises, irradiating apparatus or electronic products. As defined in the Radiation Safety Act 1975, "owner" includes hirer, lessee, borrower, bailee or mortgagee in possession and any attorney, agent, manager, foreman, supervisor or other person in charge or having control or management and any person acting or representing himself to be acting for an owner. The attention of applicants is drawn to the responsibilities of the person in whose name the premises, irradiating apparatus or electronic products are registered as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

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FORM RS 14

RADIATION SAFETY ACT 1975.

APPLICATION FOR RENEWAL OF REGISTRATION OF PREMISES AND IRRADIATING APPARATUS/ELECTRONIC PRODUCTS OPERATED OR USED THEREIN.

Renewal Application Fee: $.

TO: The RADIOLOGICAL COUNCIL,
Box C134,
G.P.O. PERTH W.A. 6001.

1. Name of applicant:

2. Address:

3. Registration No.:	Registration expires:
4. Occupation:	5. Telephone No.:

6. Name and title of representative of applicant for correspondence:

7. PARTICULARS OF IRRADIATING APPARATUS OR ELECTRONIC PRODUCTS OPERATED OR USED IN THE PREMISES:

Number	Maker and type	Type of radiation**	Purpose	Location on premises

8. Location of use or operation:

9. Names, positions, qualifications and experience* of persons operating or using the irradiating apparatus/electronic products for radiation work (other than licence holders under the Radiation Safety Act 1975):

10. Names of persons licensed to operate or use irradiating apparatus/electronic products:

11. Name of radiation safety officer:

12. Have any changes been made in the premises, irradiating apparatus or electronic products which have not been notified to and approved by the Council? If so, give details:

DATE .....

.....
Signature of applicant

*If space is insufficient for any item, attach supplementary lists signed by the applicant.

**If irradiating apparatus, enter maximum kilovolts and milliamps: if electronic products, describe the radiation by its common name and give wavelength or frequency, if known.

NOTE: An application for renewal of registration must be made by the person in whose name the premises, irradiating apparatus or electronic products are registered. The attention of applicants is drawn to the responsibilities of that person as set out in the Radiation Safety Act 1975 and the Radiation Safety (General) Regulations 1983.

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FORM RS 15

RADIATION SAFETY ACT 1975.

CERTIFICATE OF REGISTRATION OF PREMISES AND IRRADIATING APPARATUS/ ELECTRONIC PRODUCTS OPERATED OR USED THEREIN.

IT is hereby certified that the premises, irradiating apparatus or electronic products referred to hereunder have been registered under the Radiation Safety Act 1975. The registration is subject to all applicable regulations under that Act and to any conditions, restrictions or limitations specified below or in any attachments hereto.

1. Name of owner of premises, irradiating apparatus or electronic products*:

2. Address:

3. Occupation:	4. Telephone No.:

5. Registration No.:	Registration expires:	Fee: $

6. Particulars and location of premises subject of registration:

7. PARTICULARS OF IRRADIATING APPARATUS OR ELECTRONIC PRODUCTS OPERATED OR USED IN PREMISES:

Number	Maker and type	Type of radiation	Purpose	Location on premises

8. Name of radiation safety officer:

9. Names of persons licensed or otherwise authorized to operate or use the irradiating apparatus or electronic products in the premises:

10. Conditions, restrictions or limitations:

....
Date. Secretary, Radiological Council

(This certificate is not valid until it has been signed by the Secretary of the Radiological Council.)

*As defined in the Radiation Safety Act 1975, the owner of the premises, irradiating apparatus or electronic products, includes hirer, lessee, borrower, bailee or mortgagee in possession and any attorney, agent, manager, foreman, supervisor, or other person in charge or having control or management and any person acting or representing himself to be acting for an owner.

SCHEDULE III. (Regulations 3, 40, 41, 42, 43, 49, 50 and 51)

RADIATION EMISSION LIMIT.

A microwave oven shall not emit microwave radiation at a level greater than—

(a) 5 mW cm^{-2} when measured at any point 50 mm to 300 mm; or

(b) 1 mW cm^{-2} when measured at any point more than 300 mm,

from the external surface of the microwave oven while the microwave oven is being operated or used in the manner described by the recognized test procedure.

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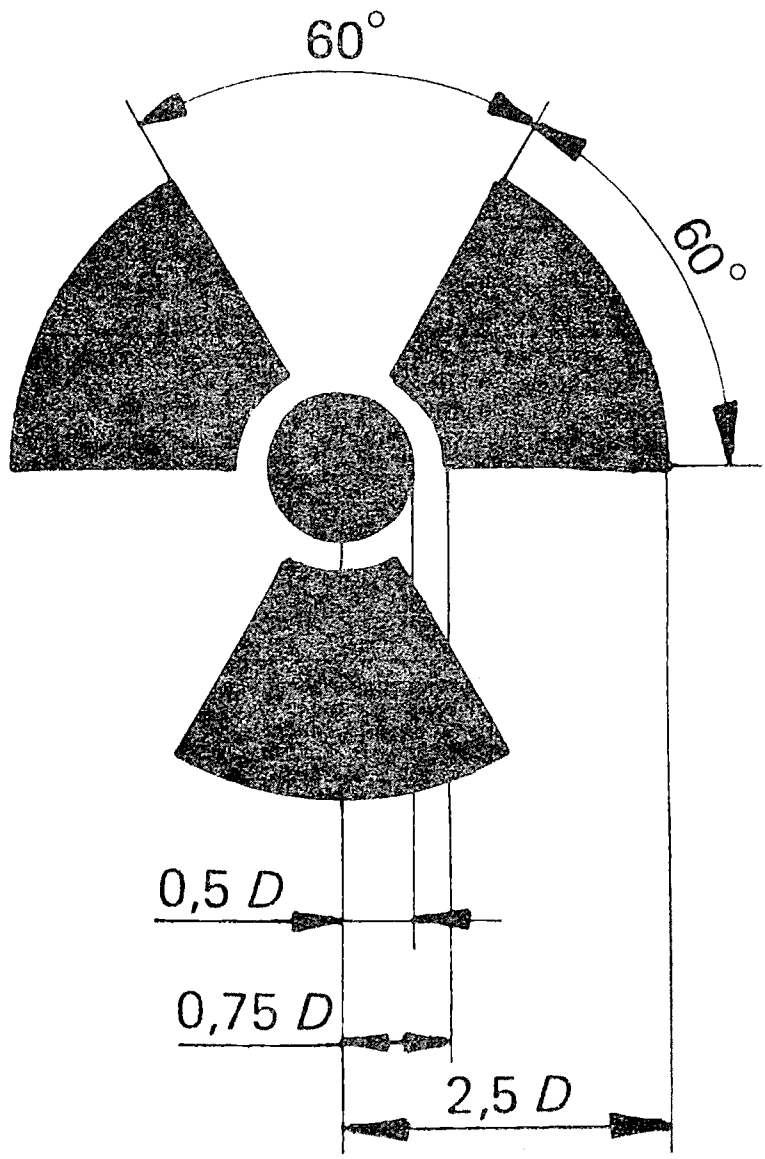
SCHEDULE IV. (Regulations 3, 20, 29 and 30)

RADIATION WARNING SYMBOL.

The radiation warning symbol consists of the conventional three-blade design shown below and uses the conventional radiation caution colours, that is to say, magenta, purple or black in the dark area and yellow in the background.



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SCHEDULE V. (Regulations 5, 16, 30, 31 and 32)

EXEMPT QUANTITIES OF RADIOACTIVE SUBSTANCES

Item	*Radioactive substance*	*Maximum quantity (megabecquerels)*
1	Americium 241	0.0004
2	Antimony 122	4.0
3	Antimony 124	0.4
4	Antimony 125	0.4
5	Arsenic 73	4.0
6	Arsenic 74	0.4
7	Arsenic 76	0.4
8	Arsenic 77	4.0
9	Barium 131	0.4
10	Barium 133	0.4
11	Barium 140	0.4
12	Bismuth 210	0.04
13	Bromine 82	0.4
14	Cadmium 109	0.4
15	Cadmium 115m	0.4
16	Cadmium 115	4.0
17	Caesium 131	40.0
18	Caesium 134m	4.0
19	Caesium 134	0.04
20	Caesium 135	0.4
21	Caesium 136	0.4
22	Caesium 137	0.4
23	Calcium 45	0.4
24	Calcium 47	0.4
25	Carbon 14	4.0
26	Cerium 141	4.0
27	Cerium 143	4.0
28	Cerium 144	0.04
29	Chlorine 36	0.4
30	Chlorine 38	0.4
31	Chromium 51	40.0
32	Cobalt 58m	0.4
33	Cobalt 58	0.4
34	Cobalt 60	0.04
35	Copper 64	4.0
36	Dysprosium 165	0.4
37	Dysprosium 166	4.0
38	Erbium 169	4.0
39	Erbium 171	4.0
40	Europium 152 (9.2h)	4.0
41	Europium 152 (13 yr.)	0.04
42	Europium 154	0.04
43	Europium 155	0.4
44	Fluorine 18	40.0
45	Gadolinium 153	0.4
46	Gadolinium 159	4.0
47	Gallium 72	0.4
48	Germanium 71	4.0
49	Gold 198	4.0
50	Gold 199	4.0
51	Hafnium 181	0.4
52	Holmium 166	4.0
53	Hydrogen 3	40.0
54	Indium 113m	4.0
55	Indium 114m	0.4
56	Indium 115m	4.0
57	Indium 115	0.4
58	Iodine 125	0.04
59	Iodine 126	0.04
60	Iodine 129	0.004

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE V—*continued* (Regulations 5, 16, 30, 31 and 32)

EXEMPT QUANTITIES OF RADIOACTIVE SUBSTANCES

Item	*Radioactive substance*	*Maximum quantity (megabecquerels)*
61	Iodine 131	0.04
62	Iodine 132	0.4
63	Iodine 133	0.04
64	Iodine 134	0.4
65	Iodine 135	0.4
66	Iridium 192	0.4
67	Iridium 194	4.0
68	Iron 55	4.0
69	Iron 59	0.4
70	Krypton 85	4.0
71	Krypton 87	0.4
72	Lanthanum 140	0.4
73	Lutetium 177	4.0
74	Manganese 52	0.4
75	Manganese 54	0.4
76	Manganese 56	0.4
77	Mercury 197m	4.0
78	Mercury 197	4.0
79	Mercury 203	0.4
80	Molybdenum 99	4.0
81	Neodymium 147	4.0
82	Neodymium 149	4.0
83	Nickel 59	4.0
84	Nickel 63	0.4
85	Nickel 65	4.0
86	Niobium 93m	0.4
87	Niobium 95	0.4
88	Niobium 97	0.4
89	Osmium 185	0.4
90	Osmium 191m	4.0
91	Osmium 191	4.0
92	Osmium 193	4.0
93	Palladium 103	4.0
94	Palladium 109	4.0
95	Phosphorus 32	0.4
96	Platinum 191	4.0
97	Platinum 193m	4.0
98	Platinum 193	4.0
99	Platinum 197m	4.0
100	Platinum 197	4.0
101	Plutonium 239	0.0004
102	Polonium 210	0.004
103	Potassium 42	0.4
104	Praseodymium 142	4.0
105	Praseodymium 143	4.0
106	Promethium 147	0.4
107	Promethium 149	0.4
108	Radium 226	0.0004
109	Rhenium 186	4.0
110	Rhenium 188	4.0
111	Rhodium 103m	4.0
112	Rhodium 105	4.0
113	Rubidium 86	0.4
114	Rubidium 87	0.4
115	Ruthenium 97	4.0
116	Ruthenium 103	0.4
117	Ruthenium 105	0.4
118	Ruthenium 106	0.04
119	Samarium 151	0.4
120	Samarium 153	4.0

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE V—*continued* (Regulations 5, 16, 30, 31 and 32)

EXEMPT QUANTITIES OF RADIOACTIVE SUBSTANCES

Item	*Radioactive substances*	*Maximum quantity (megabecquerels)*
121	Scandium 46	0.4
122	Scandium 47	4.0
123	Scandium 48	0.4
124	Selenium 75	0.4
125	Silicon 31	4.0
126	Silver 105	0.4
127	Silver 110m	0.04
128	Silver 111	4.0
129	Sodium 22	0.4
130	Sodium 24	0.4
131	Strontium 85	0.4
132	Strontium 89	0.04
133	Strontium 90	0.004
134	Strontium 91	0.4
135	Strontium 92	0.4
136	Sulphur 35	4.0
137	Tantalum 182	0.4
138	Technetium 96	0.4
139	Technetium 97m	4.0
140	Technetium 97	4.0
141	Technetium 99m	4.0
142	Technetium 99	0.4
143	Tellurium 125m	0.4
144	Tellurium 127m	0.4
145	Tellurium 127	4.0
146	Tellurium 129m	0.4
147	Tellurium 129	4.0
148	Tellurium 131m	0.4
149	Tellurium 132	0.4
150	Terbium 160	0.4
151	Thallium 200	4.0
152	Thallium 201	4.0
153	Thallium 202	4.0
154	Thallium 204	0.4
155	Thorium (natural)[1]	4.0
156	Thulium 170	0.4
157	Thulium 171	0.4
158	Tin 113	0.4
159	Tin 125	0.4
160	Tungsten 181	0.4
161	Tungsten 185	0.4
162	Tungsten 187	4.0
163	Uranium (natural)[2]	4.0
164	Uranium 233	0.0004
165	Uranium 235	0.0004
166	Vanadium 48	0.4
167	Xenon 131m	40.0
168	Xenon 133	4.0
169	Xenon 135	4.0
170	Ytterbium 175	4.0
171	Yttrium 90	0.4
172	Yttrium 91	0.4
173	Yttrium 92	4.0
174	Yttrium 93	4.0
175	Zinc 65	0.4
176	Zinc 69m	4.0
177	Zinc 69	40.0
178	Zirconium 93	0.4
179	Zirconium 95	0.4
180	Zirconium 97	0.4

[1] Based on alpha disintegration rate of Th-232, Th-230 and their daughter products.
[2] Based on alpha disintegration rate of U-238, U-234, and U-235.

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE V—*continued* (Regulations 5, 16, 30, 31 and 32)

EXEMPT QUANTITIES OF RADIOACTIVE SUBSTANCES

Item	*Radioactive substances*	*Maximum quantity (megabecquerels)*
	Any alpha emitting radionuclide not listed above or mixtures of alpha emitters of unknown composition	0.0004
	Any radionuclide other than alpha emitting radionuclides, not listed above or mixtures of beta emitters of unknown composition	0.004

NOTE: For purposes of regulations 5(b), 31(f) and 32(3), where there is involved a combination of isotopes in known amounts, the limit for the combination should be derived as follows: Determine, for each isotope in the combination, the ratio between the quantity present in the combination and the limit otherwise established for the specific isotope when not in combination. The sum of such ratios for all the isotopes in the combination may not exceed "1" (i.e. "unity"). *Example:* for purposes of regulation 5(b), if a particular combination contains 1 megabecquerel of Au-198 and 2 megabecquerels of C-14, it may also include not more than 0.01 megabecquerel of I-131. This limit was determined as follows:

$$\frac{\text{1 megabecquerel Au-198}}{\text{4 megabecquerels}} + \frac{\text{2 megabecquerels C-14}}{\text{4 megabecquerels}} + \frac{\text{0.01 megabecquerel I-131}}{\text{0.04 megabecquerel}}$$

$$= 0.25 + 0.5 + 0.25 = 1$$

SCHEDULE VI (Regulation 5)

EXEMPT QUANTITIES OF RADIOACTIVE SUBSTANCES IN CERTAIN TIMEKEEPING AND OTHER DEVICES

Table 1. Wrist watches

Radioactive substance	*Maximum quantity*
^{3}H	280 megabecquerels
^{147}Pm	5.5 megabecquerels
^{226}Ra	5.5 kilobecquerels

Table 2. Pocket watches

Radioactive substance	*Maximum quantity*
^{3}H	280 megabecquerels
^{147}Pm	5.5 megabecquerels

Table 3. Clocks

Radioactive substance	*Maximum quantity*
^{3}H	370 megabecquerels
^{147}Pm	7.4 megabecquerels
^{226}Ra	7.4 kilobecquerels

Table 4. Special timepieces

Radioactive substance	*Maximum quantity*
^{3}H	0.92 gigabecquerel
^{147}Pm	18 megabecquerels
^{226}Ra	0.055 megabecquerel

NOTE: Special timepieces are timepieces, usually worn by an individual, containing quantities of radioactive material to produce luminosity necessary for special purposes.

Table 5. Other devices

Radioactive substance	*Maximum quantity*
^{3}H	0.92 gigabecquerel
^{147}Pm	18 megabecquerels
^{226}Ra	5.5 kilobecquerels

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VII (Regulations 7, 43 and 50)

EXEMPTED ELECTRONIC PRODUCTS

Item	*Electronic product*
1.	Microwave ovens which are operated or used only— (a) in private residences for domestic purposes; or (b) for scientific purposes, at a power of less than 750 watts.
2.	Class 1 lasers.

SCHEDULE VIII (Regulations 15, 30, 31 and 33)

MAXIMUM CONCENTRATIONS OF RADIOACTIVE ELEMENTS IN AIR AND WATER ABOVE NATURAL BACKGROUND

Element (atomic number)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(becquerels per cubic metre)			
Actinium (89)	Ac-227	S	7.4×10^{-2}	$2.2 \times 10^{+6}$	3×10^{-3}	$7.4 \times 10^{+4}$
		I	1.1×10^{-0}	$3.3 \times 10^{+8}$	3.3×10^{-2}	$1.1 \times 10^{+7}$
	Ac-228	S	$3 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.1 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$7.4 \times 10^{+2}$	$1.1 \times 10^{+8}$	$2.2 \times 10^{+1}$	$3.3 \times 10^{+6}$
Americium (95)	Am-241	S	2.2×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	Am-242m	S	2.2×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	$1.1 \times 10^{+1}$	$1.1 \times 10^{+8}$	3.3×10^{-1}	$3.3 \times 10^{+6}$
	Am-242	S	$1.5 \times 10^{+3}$	$1.5 \times 10^{+8}$	$3.7 \times 10^{+1}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+3}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+1}$	$3.7 \times 10^{+6}$
	Am-243	S	2.2×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$1.7 \times 10^{+6}$
	Am-244	S	$1.5 \times 10^{+5}$	$3.7 \times 10^{+9}$	$3.7 \times 10^{+3}$	$1.8 \times 10^{+8}$
		I	$7.4 \times 10^{+6}$	$3.7 \times 10^{+9}$	$3 \times 10^{+4}$	$1.8 \times 10^{+8}$
Antimony (51)	Sb-122	S	$7.4 \times 10^{+3}$	$3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
	Sb-124	S	$7.4 \times 10^{+3}$	$2.6 \times 10^{+7}$	$1.8 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$7.4 \times 10^{+2}$	$2.6 \times 10^{+7}$	$2.6 \times 10^{+1}$	$7.4 \times 10^{+5}$
	Sb-125	S	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$1.1 \times 10^{+8}$	$3.3 \times 10^{+1}$	$3.7 \times 10^{+6}$
Argon (18)	Ar-37	Sub[2]	$2.2 \times 10^{+8}$	—	$3.7 \times 10^{+6}$	—
	Ar-41	Sub	$7.4 \times 10^{+4}$	—	$1.5 \times 10^{+3}$	—
Arsenic (33)	As-73	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.8 \times 10^{+7}$
		I	$1.5 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3.7 \times 10^{+2}$	$1.8 \times 10^{+7}$
	As-74	S	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.8 \times 10^{+4}$
		I	$3.7 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.5 \times 10^{+2}$	$1.8 \times 10^{+4}$
	As-76	S	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.5 \times 10^{+2}$	$1.8 \times 10^{+5}$
		I	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.1 \times 10^{+2}$	$1.8 \times 10^{+5}$
	As-77	S	$1.8 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$3 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3 \times 10^{+6}$
Astatine (85)	At-211	S	$2.6 \times 10^{+2}$	$1.8 \times 10^{+6}$	7.4×10^{-0}	$7.4 \times 10^{+4}$
		I	$1.1 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+1}$	$2.6 \times 10^{+6}$
Barium (56)	Ba-131	S	$3.7 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$1.8 \times 10^{+8}$	$3.7 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Ba-140	S	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$	$1.5 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$1.5 \times 10^{+3}$	$2.6 \times 10^{+7}$	$3.7 \times 10^{+1}$	$7.4 \times 10^{+4}$
Berkelium (97)	Bk-249	S	$3.3 \times 10^{+1}$	$7.4 \times 10^{+8}$	1.1×10^{-0}	$2.2 \times 10^{+7}$
		I	$3.7 \times 10^{+3}$	$7.4 \times 10^{+8}$	$1.5 \times 10^{+2}$	$2.2 \times 10^{+7}$
	Bk-250	S	$3.7 \times 10^{+3}$	$2.2 \times 10^{+8}$	$1.8 \times 10^{+2}$	$7.4 \times 10^{+6}$
		I	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotype*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Beryllium (4)	Be-7	S	$2.2 \times 10^{+5}$	$1.8 \times 10^{+9}$	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$1.8 \times 10^{+9}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+7}$
Bismuth (83)	Bi-206	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3.7 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.5 \times 10^{+6}$
	Bi-207	S	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$	$2.2 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$3.7 \times 10^{+2}$	$7.4 \times 10^{+7}$	$1.8 \times 10^{+1}$	$2.2 \times 10^{+6}$
	Bi-210	S	$2.2 \times 10^{+2}$	$3.7 \times 10^{+7}$	7.4×10^{-0}	$1.5 \times 10^{+6}$
		I	$2.2 \times 10^{+2}$	$3.7 \times 10^{+7}$	7.4×10^{-0}	$1.5 \times 10^{+6}$
	Bi-212	S	$3.7 \times 10^{+3}$	$3.7 \times 10^{+7}$	$1.1 \times 10^{+2}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.5 \times 10^{+7}$
Bromine (35)	Br-82	S	$3.7 \times 10^{+4}$	$3 \times 10^{+8}$	$1.5 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
Cadmium (48)	Cd-109	S	$1.8 \times 10^{+3}$	$1.8 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Cd-115m	S	$1.5 \times 10^{+3}$	$2.6 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.1 \times 10^{+6}$
	Cd-115	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
Calcium (20)	Ca-45	S	$1.1 \times 10^{+3}$	$1.1 \times 10^{+7}$	$3.7 \times 10^{+1}$	$3.3 \times 10^{+5}$
		I	$3.7 \times 10^{+3}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Ca-47	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.8 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
Californium (98)	Cf-249	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	1.8×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3.7 \times 10^{+7}$	1.1×10^{-1}	$7.4 \times 10^{+5}$
	Cf-250	S	1.8×10^{-1}	$1.5 \times 10^{+7}$	7.4×10^{-3}	$3.7 \times 10^{+5}$
		I	3.7×10^{-0}	$2.6 \times 10^{+7}$	1.1×10^{-1}	$1.1 \times 10^{+6}$
	Cf-251	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	2.2×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.1×10^{-1}	$1.1 \times 10^{+6}$
	Cf-252	S	2.2×10^{-1}	$7.4 \times 10^{+6}$	7.4×10^{-3}	$2.6 \times 10^{+5}$
		I	1.1×10^{-0}	$7.4 \times 10^{+6}$	3.7×10^{-2}	$2.6 \times 10^{+5}$
	Cf-253	S	$3 \times 10^{+1}$	$1.5 \times 10^{+8}$	1.1×10^{-0}	$3.7 \times 10^{+6}$
		I	$3 \times 10^{+1}$	$1.5 \times 10^{+8}$	1.1×10^{-0}	$3.7 \times 10^{+6}$
	Cf-254	S	1.8×10^{-1}	$1.5 \times 10^{+5}$	7.4×10^{-3}	$3.7 \times 10^{+3}$
		I	1.8×10^{-1}	$1.5 \times 10^{+5}$	7.4×10^{-3}	$3.7 \times 10^{+3}$
Carbon (6)	C-14	S	$1.5 \times 10^{+5}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$
	(CO_2)	Sub[2]	$1.8 \times 10^{+6}$	—	$3.7 \times 10^{+4}$	—
Cerium (58)	Ce-141	S	$1.5 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.8 \times 10^{+2}$	$3.3 \times 10^{+6}$
	Ce-143	S	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.3 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.5 \times 10^{+6}$
	Ce-144	S	$3.7 \times 10^{+2}$	$1.1 \times 10^{+7}$	$1.1 \times 10^{+1}$	$3.7 \times 10^{+5}$
		I	$2.2 \times 10^{+2}$	$1.1 \times 10^{+7}$	7.4×10^{-0}	$3.7 \times 10^{+5}$
Caesium (55)	Cs-131	S	$3.7 \times 10^{+5}$	$2.6 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
		I	$1.1 \times 10^{+5}$	$1.1 \times 10^{+9}$	$3.7 \times 10^{+3}$	$3.3 \times 10^{+7}$
	Cs-134m	S	$1.5 \times 10^{+6}$	$7.4 \times 10^{+9}$	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$
		I	$2.2 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$
	Cs-134	S	$1.5 \times 10^{+3}$	$1.1 \times 10^{+7}$	$3.7 \times 10^{+1}$	$3.3 \times 10^{+5}$
		I	$3.7 \times 10^{+2}$	$3.7 \times 10^{+7}$	$1.5 \times 10^{+1}$	$1.5 \times 10^{+6}$
	Cs-135	S	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+7}$
		I	$3.3 \times 10^{+3}$	$2.6 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Cs-136	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$	$2.2 \times 10^{+2}$	$2.2 \times 10^{+6}$
	Cs-137	S	$2.2 \times 10^{+3}$	$1.5 \times 10^{+7}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$
		I	$3.7 \times 10^{+2}$	$3.7 \times 10^{+7}$	$1.8 \times 10^{+1}$	$1.5 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Chlorine (17)	Cl-36	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3 \times 10^{+6}$
		I	$7.4 \times 10^{+2}$	$7.4 \times 10^{+7}$	$3 \times 10^{+1}$	$2.2 \times 10^{+6}$
	Cl-38	S	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.5 \times 10^{+7}$
Chromium (24)	Cr-51	S	$3.7 \times 10^{+5}$	$1.8 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$1.8 \times 10^{+9}$	$3 \times 10^{+3}$	$7.4 \times 10^{+7}$
Cobalt (27)	Co-57	S	$1.1 \times 10^{+5}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+3}$	$1.8 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+8}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+7}$
	Co-58m	S	$7.4 \times 10^{+5}$	$3 \times 10^{+9}$	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$
		I	$3.3 \times 10^{+5}$	$2.2 \times 10^{+9}$	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$
	Co-58	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+3}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+1}$	$3.3 \times 10^{+6}$
	Co-60	S	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.8 \times 10^{+6}$
		I	$3.3 \times 10^{+2}$	$3.7 \times 10^{+7}$	$1.1 \times 10^{+1}$	$1.1 \times 10^{+6}$
Copper (29)	Cu-64	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
Curium (96)	Cm-242	S	3.7×10^{-0}	$2.6 \times 10^{+7}$	1.5×10^{-1}	$7.4 \times 10^{+5}$
		I	7.4×10^{-0}	$2.6 \times 10^{+7}$	2.2×10^{-1}	$7.4 \times 10^{+5}$
	Cm-243	S	2.2×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.8 \times 10^{+5}$
		I	3.7×10^{-0}	$2.6 \times 10^{+7}$	1.1×10^{-1}	$7.4 \times 10^{+5}$
	Cm-244	S	3.3×10^{-1}	$7.4 \times 10^{+6}$	1.1×10^{-2}	$2.6 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.1×10^{-1}	$1.1 \times 10^{+6}$
	Cm-245	S	1.8×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	Cm-246	S	1.8×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	Cm-247	S	1.8×10^{-1}	$3.7 \times 10^{+6}$	7.4×10^{-3}	$1.5 \times 10^{+5}$
		I	3.7×10^{-0}	$2.2 \times 10^{+7}$	1.5×10^{-1}	$7.4 \times 10^{+5}$
	Cm-248	S	2.2×10^{-2}	$3.7 \times 10^{+5}$	7.4×10^{-4}	$1.5 \times 10^{+4}$
		I	3.7×10^{-1}	$1.5 \times 10^{+6}$	1.5×10^{-2}	$3.7 \times 10^{+4}$
	Cm-249	S	$3.7 \times 10^{+5}$	$2.2 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
		I	$3.7 \times 10^{+5}$	$2.2 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
Dysprosium (66)	Dy-165	S	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.5 \times 10^{+7}$
	Dy-166	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.5 \times 10^{+6}$
Einsteinium (99)	Es-253	S	$3 \times 10^{+1}$	$2.6 \times 10^{+7}$	1.1×10^{-0}	$7.4 \times 10^{+5}$
		I	$2.2 \times 10^{+1}$	$2.6 \times 10^{+7}$	7.4×10^{-1}	$7.4 \times 10^{+5}$
	Es-254m	S	$1.8 \times 10^{+2}$	$1.8 \times 10^{+7}$	7.4×10^{-0}	$7.4 \times 10^{+5}$
		I	$2.2 \times 10^{+2}$	$1.8 \times 10^{+7}$	7.4×10^{-0}	$7.4 \times 10^{+5}$
	Es-254	S	7.4×10^{-1}	$1.5 \times 10^{+7}$	2.2×10^{-2}	$3.7 \times 10^{+5}$
		I	3.7×10^{-0}	$1.5 \times 10^{+7}$	1.5×10^{-1}	$3.7 \times 10^{+5}$
	Es-255	S	$1.8 \times 10^{+1}$	$3 \times 10^{+7}$	7.4×10^{-1}	$1.1 \times 10^{+6}$
		I	$1.5 \times 10^{+1}$	$3 \times 10^{+7}$	3.7×10^{-1}	$1.1 \times 10^{+6}$
Erbium (68)	Er-169	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
	Er-169	I	$1.5 \times 10^{+4}$	$1.1 \times 10^{+8}$	$3.7 \times 10^{+2}$	$3.3 \times 10^{+6}$
	Er-171	S	$2.6 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Europium (63)	Eu-152	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
	(T_r=9.2 hrs.)	I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
	Eu-152	S	$3.7 \times 10^{+2}$	$7.4 \times 10^{+7}$	$1.5 \times 10^{+1}$	$3 \times 10^{+6}$
	(T =13 yrs.)	I	$7.4 \times 10^{+2}$	$7.4 \times 10^{+7}$	$2.2 \times 10^{+1}$	$3 \times 10^{+6}$
	Eu-154	S	$1.5 \times 10^{+2}$	$2.2 \times 10^{+7}$	3.7×10^{-0}	$7.4 \times 10^{+5}$
		I	$2.6 \times 10^{+2}$	$2.2 \times 10^{+7}$	7.4×10^{-0}	$7.4 \times 10^{+5}$
	Eu-155	S	$3.3 \times 10^{+3}$	$2.2 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$2.2 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Fermium (100)	Fm-254	S	$2.2 \times 10^{+3}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+1}$	$3.7 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+1}$	$3.7 \times 10^{+6}$
	Fm-255	S	$7.4 \times 10^{+2}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+1}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+2}$	$3.7 \times 10^{+7}$	$1.5 \times 10^{+1}$	$1.1 \times 10^{+6}$
	Fm-256	S	$1.1 \times 10^{+2}$	$1.1 \times 10^{+6}$	3.7×10^{-0}	$3.3 \times 10^{+4}$
		I	$7.4 \times 10^{+1}$	$1.1 \times 10^{+6}$	2.2×10^{-0}	$3.3 \times 10^{+4}$
Fluorine (9)	F-18	S	$1.8 \times 10^{+5}$	$7.4 \times 10^{+8}$	$7.4 \times 10^{+3}$	$3 \times 10^{+7}$
		I	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.8 \times 10^{+7}$
Gadolinium (64)	Gd-153	S	$7.4 \times 10^{+3}$	$2.2 \times 10^{+8}$	$3 \times 10^{+2}$	$7.4 \times 10^{+6}$
		I	$3.3 \times 10^{+3}$	$2.2 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Gd-159	S	$1.8 \times 10^{+4}$	$2.2 \times 10^{+7}$	$7.4 \times 10^{+2}$	$3 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$2.2 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3 \times 10^{+6}$
Gallium (31)	Ga-72	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
Germanium (32)	Ge-71	S	$3.7 \times 10^{+5}$	$1.8 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
		I	$2.2 \times 10^{+5}$	$1.8 \times 10^{+9}$	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$
Gold (79)	Au-196	S	$3.7 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$2.2 \times 10^{+4}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Au-198	S	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.8 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.8 \times 10^{+6}$
	Au-199	S	$3.7 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
Hafnium (72)	Hf-181	S	$1.5 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+1}$	$2.6 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.1 \times 10^{+2}$	$2.6 \times 10^{+6}$
Holmium (67)	Ho-166	S	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
Hydrogen (1)	H-3	S	$1.8 \times 10^{+5}$	$3.7 \times 10^{+9}$	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$
		I	$1.8 \times 10^{+5}$	$3.7 \times 10^{+9}$	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$
		Sub[2]	$7.4 \times 10^{+7}$	—	$1.5 \times 10^{+6}$	—
Indium (49)	In-113m	S	$3 \times 10^{+5}$	$1.5 \times 10^{+9}$	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$
		I	$2.6 \times 10^{+5}$	$1.5 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$
	In-114m	S	$3.7 \times 10^{+3}$	$1.8 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$7.4 \times 10^{+2}$	$1.8 \times 10^{+7}$	$2.6 \times 10^{+1}$	$7.4 \times 10^{+5}$
	In-115m	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.5 \times 10^{+7}$
	In-115	S	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$	$3.3 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$1.1 \times 10^{+8}$	$3.7 \times 10^{+1}$	$3.3 \times 10^{+6}$
Iodine (53)	I-125	S	$1.8 \times 10^{+2}$	$1.5 \times 10^{+6}$	3×10^{-0}	$7.4 \times 10^{+3}$
		I	$7.4 \times 10^{+3}$	$2.2 \times 10^{+8}$	$2.2 \times 10^{+2}$	$7.4 \times 10^{+6}$
	I-126	S	$3 \times 10^{+2}$	$1.8 \times 10^{+6}$	3.3×10^{-0}	$1.1 \times 10^{+4}$
		I	$1.1 \times 10^{+4}$	$1.1 \times 10^{+8}$	$3.7 \times 10^{+2}$	$3.3 \times 10^{+6}$
	I-129	S	$7.4 \times 10^{+2}$	$3.7 \times 10^{+5}$	7.4×10^{-1}	$2.2 \times 10^{+3}$
		I	$2.6 \times 10^{+3}$	$2.2 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
	I-131	S	$3.3 \times 10^{+2}$	$2.2 \times 10^{+6}$	3.7×10^{-0}	$1.1 \times 10^{+4}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
	I-132	S	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.1 \times 10^{+2}$	$3 \times 10^{+5}$
		I	$3.3 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
	I-133	S	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$	$1.5 \times 10^{+1}$	$3.7 \times 10^{+4}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.5 \times 10^{+6}$
	I-134	S	$1.8 \times 10^{+4}$	$1.5 \times 10^{+8}$	$2.2 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$1.1 \times 10^{+5}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
	I-135	S	$3.7 \times 10^{+3}$	$2.6 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.5 \times 10^{+5}$
		I	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.6 \times 10^{+6}$
Iridium (77)	Ir-190	S	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$1.8 \times 10^{+8}$	$3.7 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Ir-192	S	$3.7 \times 10^{+3}$	$3.7 \times 10^{+7}$	$1.5 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3.3 \times 10^{+1}$	$1.5 \times 10^{+6}$
	Ir-194	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
Iron (26)	Fe-55	S	$3.3 \times 10^{+4}$	$7.4 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$2.6 \times 10^{+9}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+7}$
	Fe-59	S	$3.7 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.8 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$1.8 \times 10^{+3}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$1.8 \times 10^{+6}$
Krypton (36)	Kr-95m	Sub[2]	$2.2 \times 10^{+5}$	—	$3.7 \times 10^{+3}$	—
	Kr-85	Sub	$3.7 \times 10^{+5}$	—	$1.1 \times 10^{+4}$	—
	Kr-87	Sub	$3.7 \times 10^{+4}$	—	$7.4 \times 10^{+2}$	—
	Kr-88	Sub	$3.7 \times 10^{+4}$	—	$7.4 \times 10^{+2}$	—
Lanthanum (57)	La-140	S	$7.4 \times 10^{+3}$	$2.6 \times 10^{+7}$	$1.8 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$3.7 \times 10^{+3}$	$2.6 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
Lead (82)	Pb-203	S	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.5 \times 10^{+7}$
	Pb-210	S	3.7×10^{-0}	$1.5 \times 10^{+5}$	1.5×10^{-1}	$3.7 \times 10^{+3}$
		I	7.4×10^{-0}	$1.8 \times 10^{+8}$	3×10^{-1}	$7.4 \times 10^{+6}$
	Pb-212	S	$7.4 \times 10^{+2}$	$2.2 \times 10^{+7}$	$2.2 \times 10^{+1}$	$7.4 \times 10^{+5}$
		I	$7.4 \times 10^{+2}$	$1.8 \times 10^{+7}$	$2.6 \times 10^{+1}$	$7.4 \times 10^{+5}$
Lutetium (71)	Lu-177	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Manganese (25)	Mn-52	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3.3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
	Mn-54	S	$1.5 \times 10^{+4}$	$1.5 \times 10^{+8}$	$3.7 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$1.5 \times 10^{+3}$	$1.1 \times 10^{+8}$	$3.7 \times 10^{+1}$	$3.7 \times 10^{+6}$
	Mn-56	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Mercury (80)	Hg-197m	S	$2.6 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
	Hg-197	S	$3.7 \times 10^{+4}$	$3.3 \times 10^{+8}$	$1.5 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.8 \times 10^{+7}$
	Hg-203	S	$2.6 \times 10^{+3}$	$1.8 \times 10^{+7}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$
		I	$3.7 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.5 \times 10^{+2}$	$3.7 \times 10^{+6}$
Molybdenum (42)	Mr-99	S	$2.6 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.5 \times 10^{+6}$
Neodymium (60)	Nd-144	S	3×10^{-0}	$7.4 \times 10^{+7}$	1.1×10^{-1}	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+1}$	$7.4 \times 10^{+7}$	3.7×10^{-1}	$3 \times 10^{+6}$
	Nd-147	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3 \times 10^{+2}$	$2.2 \times 10^{+6}$
	Nd-149	S	$7.4 \times 10^{+4}$	$3 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$3 \times 10^{+8}$	$1.8 \times 10^{+3}$	$1.1 \times 10^{+7}$
Neptunium (93)	Np-237	S	1.5×10^{-1}	$3.3 \times 10^{+6}$	3.7×10^{-3}	$1.1 \times 10^{+5}$
		I	3.7×10^{-0}	$3.3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	Np-239	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$2.6 \times 10^{+4}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Nickel (28)	Ni-59	S	$1.8 \times 10^{+4}$	$2.2 \times 10^{+8}$	$7.4 \times 10^{+2}$	$7.4 \times 10^{+6}$
		I	$3 \times 10^{+4}$	$2.2 \times 10^{+9}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+7}$
	Ni-63	S	$2.2 \times 10^{+3}$	$3 \times 10^{+7}$	$7.4 \times 10^{+1}$	$1.1 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+2}$	$2.6 \times 10^{+7}$
	Ni-65	S	$3.3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Niobium (41)	Nb-93m	S	$3.7 \times 10^{+3}$	$3.7 \times 10^{+8}$	$1.5 \times 10^{+2}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+8}$	$1.8 \times 10^{+2}$	$1.5 \times 10^{+7}$
	Nb-95	S	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.1 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Nb-97	S	$2.2 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$
		I	$1.8 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$
Osmium (76)	Os-185	S	$1.8 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.8 \times 10^{+3}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+1}$	$2.6 \times 10^{+6}$
	Os-191m	S	$7.4 \times 10^{+5}$	$2.6 \times 10^{+9}$	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$
		I	$3.3 \times 10^{+5}$	$2.6 \times 10^{+9}$	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$
	Os-191	S	$3.7 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$1.8 \times 10^{+8}$	$3.7 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Os-193	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.3 \times 10^{+2}$	$1.8 \times 10^{+6}$
Palladium (46)	Pd-103	S	$3.7 \times 10^{+4}$	$3.7 \times 10^{+8}$	$1.8 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$2.6 \times 10^{+4}$	$3 \times 10^{+8}$	$1.1 \times 10^{+3}$	$1.1 \times 10^{+7}$
	Pd-109	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.6 \times 10^{+6}$
Phosphorus (15)	P-32	S	$2.6 \times 10^{+3}$	$1.8 \times 10^{+7}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$
		I	$3 \times 10^{+3}$	$2.6 \times 10^{+7}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+5}$
Platinum (78)	Pt-191	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Pt-193m	S	$2.6 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$
		I	$1.8 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$
	Pt-193	S	$3.7 \times 10^{+4}$	$1.1 \times 10^{+9}$	$1.5 \times 10^{+3}$	$3.3 \times 10^{+7}$
		I	$1.1 \times 10^{+4}$	$1.8 \times 10^{+9}$	$3.7 \times 10^{+2}$	$7.4 \times 10^{+7}$
	Pt-197m	S	$2.2 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$
		I	$1.8 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$
	Pt-197	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Plutonium (94)	Pu-238	S	7.4×10^{-1}	$3.7 \times 10^{+6}$	2.6×10^{-3}	$1.8 \times 10^{+5}$
		I	1.1×10^{-0}	$3 \times 10^{+7}$	3.7×10^{-2}	$1.1 \times 10^{+6}$
	Pu-239	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	2.2×10^{-3}	$1.8 \times 10^{+5}$
		I	1.5×10^{-0}	$3 \times 10^{+7}$	3.7×10^{-2}	$1.1 \times 10^{+6}$
	Pu-240	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	2.2×10^{-3}	$1.8 \times 10^{+5}$
		I	1.5×10^{-0}	$3 \times 10^{+7}$	3.7×10^{-2}	$1.1 \times 10^{+6}$
	Pu-241	S	3.3×10^{-0}	$2.6 \times 10^{+8}$	1.1×10^{-1}	$7.4 \times 10^{+6}$
		I	$1.5 \times 10^{+3}$	$1.5 \times 10^{+9}$	$3.7 \times 10^{+1}$	$3.7 \times 10^{+7}$
	Pu-242	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	2.2×10^{-3}	$1.8 \times 10^{+5}$
		I	1.5×10^{-0}	$3.3 \times 10^{+7}$	3.7×10^{-2}	$1.1 \times 10^{+6}$
	Pu-243	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3 \times 10^{+3}$	$1.1 \times 10^{+7}$
	Pu-244	S	7.4×10^{-2}	$3.7 \times 10^{+6}$	2.2×10^{-3}	$1.5 \times 10^{+5}$
		I	1.1×10^{-0}	$1.1 \times 10^{+7}$	3.7×10^{-2}	$3.7 \times 10^{+5}$
Polonium (84)	Po-210	S	$1.8 \times 10^{+1}$	$7.4 \times 10^{+5}$	7.4×10^{-1}	$2.6 \times 10^{+4}$
		I	7.4×10^{-0}	$3 \times 10^{+7}$	2.6×10^{-1}	$1.1 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Potassium (19)	K-42	S	$7.4 \times 10^{+4}$	$3.3 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
Praseodymium (59)	Pr-142	S	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
	Pr-143	S	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.8 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.8 \times 10^{+6}$
Promethium (61)	Pm-147	S	$2.2 \times 10^{+3}$	$2.2 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$2.2 \times 10^{+8}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Pm-149	S	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.5 \times 10^{+6}$
Protactinium (91)	Pa-230	S	$7.4 \times 10^{+1}$	$2.6 \times 10^{+8}$	2.2×10^{-0}	$7.4 \times 10^{+6}$
		I	$3 \times 10^{+1}$	$2.6 \times 10^{+8}$	1.1×10^{-0}	$7.4 \times 10^{+6}$
	Pa-231	S	3.7×10^{-2}	$1.1 \times 10^{+6}$	1.5×10^{-3}	$3.3 \times 10^{+4}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$7.4 \times 10^{+5}$
	Pa-233	S	$2.2 \times 10^{+4}$	$1.5 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$	$2.2 \times 10^{+2}$	$3.7 \times 10^{+6}$
Radium (88)	Ra-223	S	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$	2.2×10^{-0}	$2.6 \times 10^{+4}$
		I	7.4×10^{-0}	$3.7 \times 10^{+6}$	3×10^{-1}	$1.5 \times 10^{+5}$
	Ra-224	S	$1.8 \times 10^{+2}$	$2.6 \times 10^{+6}$	7.4×10^{-0}	$7.4 \times 10^{+4}$
		I	$2.6 \times 10^{+1}$	$7.4 \times 10^{+6}$	7.4×10^{-1}	$1.8 \times 10^{+5}$
	Ra-226	S	1.1×10^{-0}	$1.5 \times 10^{+4}$	1.1×10^{-1}	$1.1 \times 10^{+3}$
		I	1.8×10^{-0}	$3.3 \times 10^{+7}$	7.4×10^{-2}	$1.1 \times 10^{+6}$
	Ra-228	S	2.6×10^{-0}	$3 \times 10^{+4}$	7.4×10^{-2}	$1.1 \times 10^{+3}$
		I	1.5×10^{-0}	$2.6 \times 10^{+7}$	3.7×10^{-2}	$1.1 \times 10^{+6}$
Radon (86)	Rn-220	S	$1.1 \times 10^{+4}$	—	$3.7 \times 10^{+2}$	—
	Rn-222	S[3]	$1.1 \times 10^{+3}$	—	$1.1 \times 10^{+2}$	—
Rhenium (75)	Re-183	S	$1.1 \times 10^{+5}$	$7.4 \times 10^{+8}$	$3.3 \times 10^{+3}$	$2.2 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3 \times 10^{+8}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+7}$
	Re-186	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.8 \times 10^{+6}$
	Re-187	S	$3.3 \times 10^{+5}$	$2.6 \times 10^{+9}$	$1.1 \times 10^{+4}$	$1.1 \times 10^{+8}$
		I	$1.8 \times 10^{+4}$	$1.5 \times 10^{+9}$	$7.4 \times 10^{+2}$	$7.4 \times 10^{+7}$
	Re-188	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
Rhodium (45)	Rh-103m	S	$3 \times 10^{+6}$	$1.5 \times 10^{+10}$	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$
		I	$2.2 \times 10^{+6}$	$1.1 \times 10^{+0}$	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$
	Rh-105	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Rubidium (37)	Rb-86	S	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$2.6 \times 10^{+7}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$
	Rb-87	S	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$2.6 \times 10^{+3}$	$1.8 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
Ruthenium (44)	Ru-97	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.1 \times 10^{+7}$
	Ru-103	S	$1.8 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$3 \times 10^{+6}$
		I	$3 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.1 \times 10^{+2}$	$3 \times 10^{+6}$
	Ru-105	S	$2.6 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Ru-106	S	$3 \times 10^{+3}$	$1.5 \times 10^{+7}$	$1.1 \times 10^{+2}$	$3.7 \times 10^{+5}$
		I	$2.2 \times 10^{+2}$	$1.1 \times 10^{+7}$	7.4×10^{-0}	$3.7 \times 10^{+5}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotype*!		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*beqcuerels per cubic metre*)			
Samarium (62)	Sm-147	S	2.6×10^{-0}	$7.4 \times 10^{+7}$	7.4×10^{-2}	$2.2 \times 10^{+6}$
		I	$1.1 \times 10^{+1}$	$7.4 \times 10^{+7}$	3.3×10^{-1}	$2.6 \times 10^{+6}$
	Sm-151	S	$2.2 \times 10^{+3}$	$3.7 \times 10^{+8}$	$7.4 \times 10^{+1}$	$1.5 \times 10^{+7}$
		I	$3.7 \times 10^{+3}$	$3.7 \times 10^{+8}$	$1.8 \times 10^{+2}$	$1.5 \times 10^{+7}$
	Sm-153	S	$1.8 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$3 \times 10^{+6}$
		I	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3 \times 10^{+6}$
Scandium (21)	Sc-46	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+2}$	$3.7 \times 10^{+7}$	$3 \times 10^{+1}$	$1.5 \times 10^{+6}$
	Sc-47	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
	Sc-48	S	$7.4 \times 10^{+3}$	$3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
Selenium (34)	Se-75	S	$3.7 \times 10^{+4}$	$3.3 \times 10^{+8}$	$1.5 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.7 \times 10^{+3}$	$3 \times 10^{+8}$	$1.5 \times 10^{+2}$	$1.1 \times 10^{+7}$
Silicon (14)	Si-31	S	$2.2 \times 10^{+5}$	$1.1 \times 10^{+9}$	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
Silver (47)	Ag-105	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$3 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.1 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Ag-110m	S	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+2}$	$3.3 \times 10^{+7}$	$1.1 \times 10^{+1}$	$1.1 \times 10^{+6}$
	Ag-111	S	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.5 \times 10^{+6}$
Sodium (11)	Na-22	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$3.3 \times 10^{+2}$	$3.3 \times 10^{+7}$	$1.1 \times 10^{+1}$	$1.1 \times 10^{+6}$
	Na-24	S	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
Strontium (38)	Sr-85m	S	$1.5 \times 10^{+6}$	$7.4 \times 10^{+9}$	$3.7 \times 10^{+4}$	$2.6 \times 10^{+8}$
		I	$1.1 \times 10^{+6}$	$7.4 \times 10^{+9}$	$3.7 \times 10^{+4}$	$2.6 \times 10^{+8}$
	Sr-85	S	$7.4 \times 10^{+3}$	$1.1 \times 10^{+8}$	$3 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$1.8 \times 10^{+8}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+6}$
	Sr-89	S	$1.1 \times 10^{+3}$	$1.1 \times 10^{+7}$	$1.1 \times 10^{+1}$	$1.1 \times 10^{+5}$
		I	$1.5 \times 10^{+3}$	$3 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.1 \times 10^{+5}$
	Sr-90	S	$3.7 \times 10^{+1}$	$3.7 \times 10^{+5}$	1.1×10^{-0}	$1.1 \times 10^{+4}$
		I	$1.8 \times 10^{+2}$	$3.7 \times 10^{+7}$	7.4×10^{-0}	$1.5 \times 10^{+6}$
	Sr-91	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$3.7 \times 10^{+7}$	$3.3 \times 10^{+2}$	$1.8 \times 10^{+6}$
	Sr-92	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
Sulphur (16)	S-35	S	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.3 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$3 \times 10^{+8}$	$3.3 \times 10^{+2}$	$1.1 \times 10^{+7}$
Tantalum (73)	Ta-182	S	$1.5 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.5 \times 10^{+6}$
		I	$7.4 \times 10^{+2}$	$3.7 \times 10^{+7}$	$2.6 \times 10^{+1}$	$1.5 \times 10^{+6}$
Technetium (43)	Tc-96m	S	$3 \times 10^{+6}$	$1.5 \times 10^{+10}$	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$
		I	$1.1 \times 10^{+6}$	$1.1 \times 10^{+10}$	$3.7 \times 10^{+4}$	$3.7 \times 10^{+8}$
	Tc-96	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.8 \times 10^{+6}$
	Tc-97m	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$1.8 \times 10^{+8}$	$1.8 \times 10^{+2}$	$7.4 \times 10^{+6}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*beqcuerels per cubic metre*)			
	Tc-97	S	$3.7 \times 10^{+5}$	$1.8 \times 10^{+9}$	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+2}$	$3 \times 10^{+7}$
	Tc-99m	S	$1.5 \times 10^{+6}$	$7.4 \times 10^{+9}$	$3.7 \times 10^{+4}$	$2.2 \times 10^{+8}$
		I	$3.7 \times 10^{+5}$	$3 \times 10^{+9}$	$1.8 \times 10^{+4}$	$1.1 \times 10^{+8}$
	Tc-99	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$2.2 \times 10^{+3}$	$1.8 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
Tellurium (52)	Te-125m	S	$1.5 \times 10^{+4}$	$1.8 \times 10^{+8}$	$3.7 \times 10^{+2}$	$7.4 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.5 \times 10^{+2}$	$3.7 \times 10^{+6}$
	Te-127m	S	$3.7 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.8 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$1.5 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.8 \times 10^{+6}$
	Te-127	S	$7.4 \times 10^{+4}$	$3 \times 10^{+8}$	$2.2 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.3 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
	Te-129m	S	$3 \times 10^{+3}$	$3.7 \times 10^{+7}$	$1.1 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$2.2 \times 10^{+7}$	$3.7 \times 10^{+1}$	$7.4 \times 10^{+5}$
	Te-129	S	$1.8 \times 10^{+5}$	$7.4 \times 10^{+8}$	$7.4 \times 10^{+3}$	$3 \times 10^{+7}$
		I	$1.5 \times 10^{+5}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$
	Te-131m	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.5 \times 10^{+6}$
	Te-132	S	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.6 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
Terbium (65)	Tb-160	S	$3.7 \times 10^{+3}$	$3.7 \times 10^{+7}$	$1.1 \times 10^{+2}$	$1.5 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.5 \times 10^{+6}$
Thallium (81)	Tl-200	S	$1.1 \times 10^{+5}$	$3.7 \times 10^{+8}$	$3.3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$3.7 \times 10^{+4}$	$2.6 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
	Tl-201	S	$7.4 \times 10^{+4}$	$3.3 \times 10^{+8}$	$2.6 \times 10^{+3}$	$1.1 \times 10^{+7}$
		I	$3.3 \times 10^{+4}$	$1.8 \times 10^{+8}$	$1.1 \times 10^{+3}$	$7.4 \times 10^{+6}$
	Tl-202	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3 \times 10^{+2}$	$2.6 \times 10^{+6}$
	Tl-204	S	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3.3 \times 10^{+1}$	$2.2 \times 10^{+6}$
Thorium (90)	Th-227	S	$1.1 \times 10^{+1}$	$1.8 \times 10^{+7}$	3.7×10^{-1}	$7.4 \times 10^{+5}$
		I	7.4×10^{-0}	$1.8 \times 10^{+7}$	2.2×10^{-1}	$7.4 \times 10^{+5}$
	Th-228	S	3.3×10^{-1}	$7.4 \times 10^{+6}$	1.1×10^{-2}	$2.6 \times 10^{+5}$
		I	2.2×10^{-1}	$1.5 \times 10^{+7}$	7.4×10^{-3}	$3.7 \times 10^{+5}$
	Th-230	S	7.4×10^{-2}	$1.8 \times 10^{+6}$	3×10^{-3}	$7.4 \times 10^{+4}$
		I	3.7×10^{-1}	$3.3 \times 10^{+7}$	1.1×10^{-2}	$1.1 \times 10^{+6}$
	Th-231	S	$3.7 \times 10^{+4}$	$2.6 \times 10^{+8}$	$1.8 \times 10^{+3}$	$7.4 \times 10^{+6}$
		I	$3.7 \times 10^{+4}$	$2.6 \times 10^{+8}$	$1.5 \times 10^{+3}$	$7.4 \times 10^{+6}$
	Th-232	S	1.1×10^{-0}	$1.8 \times 10^{+6}$	3.7×10^{-2}	$7.4 \times 10^{+4}$
		I	1.1×10^{-0}	$3.7 \times 10^{+7}$	3.7×10^{-2}	$1.5 \times 10^{+6}$
	Th	S	2.2×10^{-0}	$2.2 \times 10^{+6}$	7.4×10^{-2}	$7.4 \times 10^{+4}$
	natural	I	2.2×10^{-0}	$2.2 \times 10^{+7}$	7.4×10^{-2}	$7.4 \times 10^{+5}$
	Th-234	S	$2.2 \times 10^{+3}$	$1.8 \times 10^{+7}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+5}$
		I	$1.1 \times 10^{+3}$	$1.8 \times 10^{+7}$	$3.7 \times 10^{+1}$	$7.4 \times 10^{+5}$
Thulium (69)	Tm-170	S	$1.5 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.8 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.8 \times 10^{+6}$
	Tm-171	S	$3.7 \times 10^{+3}$	$3.7 \times 10^{+8}$	$1.5 \times 10^{+2}$	$1.8 \times 10^{+7}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+8}$	$3 \times 10^{+2}$	$1.8 \times 10^{+7}$
Tin (50)	Sn-113	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$3.3 \times 10^{+6}$
		I	$1.8 \times 10^{+3}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+1}$	$3 \times 10^{+6}$
	Sn-125	S	$3.7 \times 10^{+3}$	$1.8 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$3 \times 10^{+3}$	$1.8 \times 10^{+7}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+5}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element	*Isotope*[1]		Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
			(*becquerels per cubic metre*)			
Tungsten (74)	W-181	S	$7.4 \times 10^{+4}$	$3.7 \times 10^{+8}$	$3 \times 10^{+3}$	$1.5 \times 10^{+7}$
		I	$3.7 \times 10^{+3}$	$3.7 \times 10^{+8}$	$1.5 \times 10^{+2}$	$1.1 \times 10^{+7}$
	W-185	S	$3 \times 10^{+4}$	$1.5 \times 10^{+8}$	$1.1 \times 10^{+3}$	$3.7 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.5 \times 10^{+2}$	$3.7 \times 10^{+6}$
	W-187	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$7.4 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
Uranium (92)	U-230	S	$1.1 \times 10^{+1}$	$3.7 \times 10^{+6}$	3.7×10^{-1}	$1.8 \times 10^{+5}$
		I	3.7×10^{-0}	$3.7 \times 10^{+6}$	1.5×10^{-1}	$1.8 \times 10^{+5}$
	U-232	S	3.7×10^{-0}	$3 \times 10^{+7}$	1.1×10^{-1}	$1.1 \times 10^{+6}$
		I	1.1×10^{-0}	$3 \times 10^{+7}$	3.3×10^{-2}	$1.1 \times 10^{+6}$
	U-233	S	$1.8 \times 10^{+1}$	$3.3 \times 10^{+7}$	7.4×10^{-1}	$1.1 \times 10^{+6}$
		I	3.7×10^{-0}	$3.3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	U-234	S[4]	$2.2 \times 10^{+1}$	$3.3 \times 10^{+7}$	7.4×10^{-1}	$1.1 \times 10^{+6}$
		I	3.7×10^{-0}	$3.3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	U-235	S[4]	$1.8 \times 10^{+1}$	$3 \times 10^{+7}$	7.4×10^{-1}	$1.1 \times 10^{+6}$
		I	3.7×10^{-0}	$3 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	U-236	S	$2.2 \times 10^{+1}$	$3.7 \times 10^{+7}$	7.4×10^{-1}	$1.1 \times 10^{+6}$
		I	3.7×10^{-0}	$3.7 \times 10^{+7}$	1.5×10^{-1}	$1.1 \times 10^{+6}$
	U-238	S[4]	2.6×10^{-0}	$3.7 \times 10^{+7}$	1.1×10^{-1}	$1.5 \times 10^{+6}$
		I	3.7×10^{-0}	$3.7 \times 10^{+7}$	1.8×10^{-1}	$1.5 \times 10^{+6}$
	U-240	S	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$3 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$7.4 \times 10^{+3}$	$3.7 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
	U-natural	S[4]	3.7×10^{-0}	$3.7 \times 10^{+7}$	1.8×10^{-1}	$1.1 \times 10^{+6}$
		I	3.7×10^{-0}	$3.7 \times 10^{+7}$	1.8×10^{-1}	$1.1 \times 10^{+6}$
Vanadium (23)	V-48	S	$7.4 \times 10^{+3}$	$3.3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$2.2 \times 10^{+3}$	$3 \times 10^{+7}$	$7.4 \times 10^{+1}$	$1.1 \times 10^{+6}$
Xenon (54)	Xe-131m	Sub	$7.4 \times 10^{+5}$	—	$1.5 \times 10^{+4}$	—
	Xe-133m	Sub	$3.7 \times 10^{+5}$	—	$1.1 \times 10^{+4}$	—
	Xe-133	Sub	$3.7 \times 10^{+5}$	—	$1.1 \times 10^{+4}$	—
	Xe-135	Sub	$1.5 \times 10^{+5}$	—	$3.7 \times 10^{+3}$	—
Ytterbium (70)	Yb-175	S	$2.6 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$	$7.4 \times 10^{+2}$	$3.7 \times 10^{+6}$
Yttrium (39)	Y-90	S	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$3.7 \times 10^{+3}$	$2.2 \times 10^{+7}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+5}$
	Y-91m	S	$7.4 \times 10^{+5}$	$3.7 \times 10^{+9}$	$3 \times 10^{+4}$	$1.1 \times 10^{+8}$
		I	$7.4 \times 10^{+5}$	$3.7 \times 10^{+9}$	$2.2 \times 10^{+4}$	$1.1 \times 10^{+8}$
	Y-91	S	$1.5 \times 10^{+3}$	$3 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.1 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$3 \times 10^{+7}$	$3.7 \times 10^{+1}$	$1.1 \times 10^{+6}$
	Y-92	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
	Y-93	S	$7.4 \times 10^{+3}$	$3 \times 10^{+7}$	$2.2 \times 10^{+2}$	$1.1 \times 10^{+6}$
		I	$3.7 \times 10^{+3}$	$3 \times 10^{+7}$	$1.8 \times 10^{+2}$	$1.1 \times 10^{+6}$
Zinc (30)	Zn-65	S	$3.7 \times 10^{+3}$	$1.1 \times 10^{+8}$	$1.5 \times 10^{+2}$	$3.7 \times 10^{+6}$
		I	$2.2 \times 10^{+3}$	$1.8 \times 10^{+8}$	$7.4 \times 10^{+1}$	$7.4 \times 10^{+6}$
	Zn-69m	S	$1.5 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+2}$	$2.2 \times 10^{+6}$
	Zn-69	S	$2.6 \times 10^{+5}$	$1.8 \times 10^{+9}$	$7.4 \times 10^{+3}$	$7.4 \times 10^{+7}$
		I	$3.3 \times 10^{+5}$	$1.8 \times 10^{+9}$	$1.1 \times 10^{+4}$	$7.4 \times 10^{+7}$
Zirconium (40)	Zr-93	S	$3.7 \times 10^{+3}$	$7.4 \times 10^{+8}$	$1.5 \times 10^{+2}$	$3 \times 10^{+7}$
		I	$1.1 \times 10^{+4}$	$7.4 \times 10^{+8}$	$3.7 \times 10^{+2}$	$3 \times 10^{+7}$
	Zr-95	S	$3.7 \times 10^{+3}$	$7.4 \times 10^{+7}$	$1.5 \times 10^{+2}$	$2.6 \times 10^{+6}$
		I	$1.1 \times 10^{+3}$	$7.4 \times 10^{+7}$	$3.7 \times 10^{+1}$	$2.6 \times 10^{+6}$
	Zr-97	S	$3.7 \times 10^{+3}$	$1.8 \times 10^{+7}$	$1.5 \times 10^{+2}$	$7.4 \times 10^{+5}$
		I	$3.3 \times 10^{+3}$	$1.8 \times 10^{+7}$	$1.1 \times 10^{+2}$	$7.4 \times 10^{+5}$

(See notes at end of this Schedule and Appendix thereto)

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SCHEDULE VIII—*continued*

Element (*atomic number*)	*Isotope*[1]	Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
		(*beqcuerels per cubic metre*)			
Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half life less than 2 hours.	Sub[2]	$3.7 \times 10^{+4}$	—	$1.1 \times 10^{+3}$	—
Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half life greater than 2 hours.		$1.1 \times 10^{+2}$	$3.3 \times 10^{+6}$	3.7×10^{-0}	$1.1 \times 10^{+5}$
Any single radionuclide not listed above, which decays by alpha emission or spontaneous fission.		2.2×10^{-2}	1.5×10^{-4}	7.4×10^{-4}	$1.1 \times 10^{+3}$

[1] Soluble (S); Insoluble (I).

[2] "Sub" means that values given are for submersion in a semi-spherical infinite cloud of airborne material.

[3] These radon concentrations are appropriate for protection from radon-222 combined with its short-lived daughters. Alternatively, the value in Table I may be replaced by one-third (1/3) "working level". (A "working level" is defined as any combination of short-lived radon-222 daughters, polonium-218, lead-214, bismuth-214, and polonium-214, in one litre of air, without regard to the degree of equilibrium, that will result in the ultimate emission of 1.3×10^5 MeV of alpha particle energy.) The Table II value may be replaced by one-thirtieth (1/30) of a "working level." The limit on radon-222 concentrations in restricted areas may be based on an annual average.

[4] For soluble mixtures of U-238 and U-235 in air chemical toxicity may be the limiting factor. If the per cent by weight (enrichment) of U-235 is less than 5, the concentration value for a 40 hour work week, Table I, is 0.2 milligrams uranium per cubic metre of air average. For any enrichment the product of the average concentration and time of exposure during a 40-hour work week shall not exceed 8 x SA becquerels-hour/metre^3, where SA is the specific activity of the uranium inhaled. The concentration value for Table II is 0.007 milligrams uranium per cubic metre of air. The specific activity for natural uranium is 2.5×10^4 becquerels per gram uranium. The specific activity for other mixtures of U-238, U-235 and 234, if not known, shall be:

$SA = 1.33 \times 10^4$ becquerels/gram U	U depleted
$SA = (0.4 + 0.38\ E + 0.0034\ E^2)\ 10^{-6}$	$E \geq 0.72$

where E is the percentage by weight of U-235, expressed as per cent.

(See notes at end of this Schedule and Appendix thereto)

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APPENDIX TO SCHEDULE VIII

NOTE: In any case where there is a mixture in air or water of more than one radionuclide, the limiting values for purposes of this Appendix should be determined as follows:

1. If the identity and concentration of each radionuclide in the mixture are known, the limiting values should be derived as follows: Determine, for each radionuclide in the mixture, the ratio between the quantity present in the mixture and the limit otherwise established in this Appendix for the specific radionuclide when not in a mixture. The sum of such ratios for all the radionuclides in the mixture may not exceed "1" (i.e., "unity").

   Example: If radionuclides a, b, and c are present in concentrations C_a, C_b, and C_c, and if the applicable MPC's are MPC_a, MPC_b, and MPC_c, respectively, then the concentrations shall be limited so that the following relationship exists:

$$\frac{C_a}{MPC_a} + \frac{C_b}{MPC_b} + \frac{C_c}{MPC_c} \leq 1$$

2. If either the identity or the concentration of any radionuclide in the mixture is not known, the limiting values for purposes of this Appendix shall be:

   a. For purposes of Table I, Col. 1 ..... 2.2×10^{-2}
   b. For purposes of Table I, Col. 2 ..... $1.5 \times 10^{+4}$
   c. For purposes of Table II, Col. 1 ..... 7.4×10^{-4}
   d. For purposes of Table II, Col. 2 ..... $1.1 \times 10^{+3}$

3. If any of the conditions specified below are met, the corresponding values specified below may be used in lieu of those specified in paragraph 2 above.

   a. If the identity of each radionuclide in the mixture is known, but the concentration of one or more of the radionuclides in the mixture is not known, the concentration limit for the mixture is the limit specified in this Appendix for the radionuclide in the mixture having the lowest concentration limit; or

   b. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this Appendix are not present in the mixture, the concentration limit for the mixture is the lowest concentration limit specified in this Appendix for any radionuclide which is not known to be absent from the mixture; or

c. *Radionuclide*	Table I		Table II	
	Column 1 *Air*	Column 2 *Water*	Column 1 *Air*	Column 2 *Water*
	(*becquerels per cubic metre*)			
If it is known that Sr-90, I-125, I-126, I-129, I-131, (I-133, Table II only), Pb-210, Po-210, At-211, Ra-228, Th-230, Pa-231, Th-232, Th-nat, Cm-248, Cf-254, and Fm-256 are not present	—	$3.3 \times 10^{+6}$	—	$1.1 \times 10^{+5}$
If it is known that Sr-90, I-125, I-126, I-129, (I-131, I-133, Table II only), Pb-210, Po-210, Ra-223, Ra-226, Ra-228, Pa-231, Th-nat, Cm-248, Cf-154, and Fm-256 are not present	—	$2.2 \times 10^{+6}$	—	$7.4 \times 10^{+4}$
If it is known that Sr-90, I-129, (I-125, I-126, I-131, Table II only), Pb-210, Ra-226, Ra-228, Cm-248, and Cf-254 are not present	—	$7.4 \times 10^{+5}$	—	$2.2 \times 10^{+4}$
If it is known that (I-129, Table II only), Ra-226, and Ra-228 are not present	—	$1.1 \times 10^{+5}$	—	$3.7 \times 10^{+3}$

c. *Rodionuclide*	Table I Column 1 *Air*	Table I Column 2 *Water*	Table II Column 1 *Air*	Table II Column 2 *Water*
	(beqcuerels per cubic metre)			
If it is known that alpha-emitters and Sr-90, I-129, Pb-210, Ac-227, Ra-228, Pa-230, Pu-241, and Bk-249 are not present	$1.1 \times 10^{+2}$	—	3.7×10^{-0}	—
If it is known that alpha-emitters and Pb-210, Ac-227, Ra-228, and Pu-241 are not present	$1.1 \times 10^{+1}$	—	3.7×10^{-1}	—
If it is known that alpha-emitters and Ac-227 are not present	1.1×10^{-1}	—	3.7×10^{-2}	—
If it is known that Ac-227, Th-230, Pa-231, Pu-238, Pu-239, Pu-240, Pu-242, Pu-244, Cm-248, Cf-249 and Cf-251 are not present	1.1×10^{-1}	—	3.7×10^{-3}	—

4. If a mixture of radionuclides consists of uranium and its daughters in ore dust prior to chemical separation of the uranium from the ore, the values specified below may be used for uranium and its daughters through radium-226, instead of those from paragraph 1, 2 or 3 above.

   a. For purposes of Table I, Column 1, 3.7 becquerels per cubic metre gross alpha activity; or 1.8 becquerels per cubic metre natural uranium; or 75 micrograms per cubic metre of air natural uranium.

   b. For purposes of Table II, Column 1, 0.11 becquerels per cubic metre gross alpha activity; 7.4×10^{-2} becquerels per cubic metre natural uranium; or 3 micrograms per cubic metre of air natural uranium.

5. For purposes of this note, a radionuclide may be considered as not present in a mixture if (a) the ratio of the concentration of that radionuclide in the mixture C_a to the concentration limit for that radionuclide specified in Table II of this Appendix (MPC_a) does not exceed 1/10, (i.e., $C_a/MPC_a \leq 1/10$ and (b) the sum of such ratios for all radionuclides considered as not present in the mixture does not exceed 1/4, (i.e., $C_a/MPC_a + C_b/MPC_b + \ldots\ldots \leq 1/4$).

(Regulation 36)

SCHEDULE IX.

CONDITIONS IMPOSABLE ON REGISTRATION OF IRRADIATING APPARATUS.

1. In the case of irradiating apparatus which is operated or used for dental radiography and is capable of being so operated or used for lateral oblique examinations of mandibles and the taking of intra-oral x-ray films—

   (a) the x-ray tube shall be enclosed in a housing in such a manner that the absorbed dose rate in air from leakage radiation measured at a distance of 1 metre from the focus of that tube does not exceed 1 milligray in 1 hour at every rating specified by the manufacturer for that tube in the housing and, to determine compliance with this condition, measurements may be averaged over an area not larger than 10 000 sq mm at a distance of 1 metre from that tube;

   (b) the x-ray tube head shall remain stationary when placed in position for radiography;

   (c) cones or diaphragms which serve to limit the useful beam shall be so constructed that, in combination with the tube housing, they comply with the leakage radiation limits set out in paragraph (a);

   (d) a cone or diaphragm referred to in paragraph (c) shall be used for radiography to limit the diameter of the useful beam at the end of that cone or diaphragm to a diameter not exceeding 70 mm;

   (e) the cone or diaphragm referred to in paragraph (d) shall be so constructed that the minimum distance from the outer end to the x-ray tube focus is not less than 180 mm;

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(f) the useful x-ray beam shall incorporate filtration so that the half value layer of the beam for a given x-ray tube and cone or diaphragm is not less than the values shown in the following table—

TABLE.

Design operating range (kilovolts peak)	Measured potential (kilovolts peak)	Half-value layer (millimetres of aluminium)
50 to 70	50	1.2
	60	1.3
	70	1.5
Above 70	71	2.1
	80	2.3
	90	2.5
	100	2.7
	110	3.0
	120	3.2
	130	3.5
	140	3.8
	150	4.1

(g) x-ray equipment shall incorporate a clearly discernible audible and visible signal to indicate when the x-ray tube is energized;

(h) a device shall be provided to terminate the exposure after a preset time interval;

(i) the exposure control switch shall be so arranged that the operator can remain well outside the useful x-ray beam and at least 2 metres from the x-ray tube and from the patient but, when the operator cannot remain well outside the useful x-ray beam and at least 2 metres from the x-ray tube and from the patient, a protective barrier shall, if the Council so requires, be provided;

(j) the exposure control switch shall have a circuit closing contact which can be maintained only by continuous pressure and it shall not be possible to make repeat exposures without releasing that switch,

but this item does not apply to dental x-ray equipment which is operated or used for panoramic radiography, cephalometric procedures and other special examinations, which equipment shall comply with the relevant provisions of this Schedule dealing with fixed medical x-ray equipment.

2. In the case of irradiating apparatus which is operated or used for diagnostic medical radiography—

(a) the x-ray tube shall be enclosed in a housing in such a manner that the absorbed dose rate measured in air from leakage radiation measured at a distance of 1 metre from the focus of that tube does not exceed 1 milligray in 1 hour at each rating specified by the manufacturer for that tube in that housing and, to determine compliance with this requirement, measurements shall be averaged over an area not larger than 10 000 sq mm at a distance of 1 metre from that tube;

(b) diaphragms, cones or collimators used to limit the useful beam to the area of clinical interest shall be so constructed that, in combination with the tube housing, they comply with the leakage radiation limits set out in paragraph (a);

(c) except in relation to irradiating apparatus or procedures specified in writing by the Council—

(i) a continuously adjustable multiplane rectangular collimator shall be fitted to the x-ray tube and that collimator shall, except in the case of examinations utilizing a serial changer in association with a fluoroscopic apparatus, be a light beam unit;

(ii) the lack of alignment between any boundary of the light beam and the equivalent boundary of the x-ray beam in the plane of the image receptor shall not exceed 1 per cent of the distance between the target of the x-ray tube and the plane of the image receptor;

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(iii) the illuminance of the light beam shall be not less than 100 lux at a distance of 1 metre from the light source; and

(iv) when provision is made for the automatic adjustment of the collimator referred to in subparagraph (i) to the size of the film in use, it shall be possible, at the discretion of the operator, to adjust that collimator to produce an x-ray beam smaller than the size of the film in use;

(d) when more than one x-ray tube can be operated from a single control panel, there shall, except in the case of the undertable and associated overtable x-ray tubes on fluoroscopic equipment, be an indication at or near the tube housing and on the control panel showing which x-ray tube is selected;

(e) when x-ray tube potential and current—

(i) are capable of being varied, control settings or meters shall be provided in the control panel referred to in paragraph (d) to indicate that potential and current; or

(ii) are not capable of being varied, the values of that potential and current shall be indicated on the control panel referred to in paragraph (d);

(f) filtration shall be added, when necessary, to the useful x-ray beam so that the half value layer of the beam for a given x-ray tube and collimator shall not be less than the values shown in the following table—

TABLE

Design operating range (kilovolts peak)	Measured potential (kilovolts peak)	Half-value layer (millimetres of aluminium)
Below 50	30	0.3
	40	0.4
	49	0.5
50 to 70	50	1.2
	60	1.3
	70	1.5
Above 70	71	2.1
	80	2.3
	90	2.5
	100	2.7
	110	3.0
	120	3.2
	130	3.5
	140	3.8
	150	4.1

and either positive means shall be provided to ensure that at least the minimum filtration needed to achieve the beam quality specified in the above table is in the useful beam during each exposure or, failing that provision, the filtration shall be not less than is required to achieve the beam quality specified in the above table for the maximum x-ray tube potential at which the x-ray tube can operate with its associated control, and the Council may require permanent filtration in addition to the minimum filtration given above;

(g) the total filtration permanently in the useful beam as specified in paragraph (f) shall be indicated on the tube housing, or the separate components of that filtration shall be indicated on the tube housing and diaphragm;

(h) a device shall be provided to terminate the exposure after a preset time interval or exposure and, when an automatic exposure control is provided, that control shall limit the exposure time in such a manner that the product of x-ray tube current and exposure time per exposure does not exceed—

(i) 1 000 mAs; or

(ii) if the x-ray tube potential is less than 50 kVp, 2 000 mAs,

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and, when an exposure has been terminated at the limits described in this paragraph, a visible or audible signal shall indicate that termination has occurred and that manual resetting is required before further automatically timed exposures can be made;

(i) when an automatic exposure control is used to terminate the exposure, the selection of that control shall, when it takes place, be visibly indicated on the control panel;

(j) the exposure switch shall—

(i) be designed so that it is protected against accidental operation; and

(ii) except in special circumstances specified by the Council, be so arranged that it cannot be operated outside a shielded area,

but this requirement does not apply to exposure switches used in conjunction with fluoroscopic equipment or to portable or mobile x-ray apparatus unless the Council otherwise directs in writing;

(k) the x-ray tube head shall, except in tomography and other procedures in which it is a requirement that the x-ray tube head move in a predetermined manner, be supported in such a way that it remains stationary when placed in position for radiography;

(l) "Inverted T" collimation shall be provided for full spine radiography to enable the x-ray beam to be confined to the spinal column and the pelvic bones;

(m) the aluminium equivalent of each of the items listed in the following table which are used between the patient and image receptor shall not exceed the limits indicated in that table and compliance with this requirement shall be determined by x-ray measurements made at a potential of 100 kilovolts peak and with an x-ray beam which has a half-value layer of 2.7 millimetres of aluminium, but this requirement does not apply to such items as a fluorescent screen and its associated mechanical support panel or grids—

TABLE.

ITEM	Aluminium equivalent (millimetres)
Front panel(s) of cassette holder (total of all)	1.0
Front panel(s) of film changer (total of all)	1.0
Stationary tabletop	1.0
Moveable tabletop (including stationary subtop)	1.5
Cradle	2.0

(n) involving portable or mobile x-ray apparatus—

(i) paragraphs (a), (b), (c), (e), (f), (g), (h) and (k) apply to that apparatus, except that the continuously adjustable rectangular collimator referred to in paragraph (c) need not be multi-plane;

(ii) a cable not less than 2 metres in length shall be provided for the exposure control switch of that apparatus so that the operator thereof can remain outside the x-ray beam at least 2 metres from the x-ray tube and from the patient;

(iii) the equipment shall be so arranged that an x-ray tube focus to film distance of at least 750 mm may be utilized for medical radiography; and

(iv) that apparatus shall have a minimum x-ray exposure capability of 85 kVp at 20 milliamperes for 2 seconds;

(o) involving photo fluorography—

(i) high efficiency optical systems shall be used;

(ii) when there is a fixed relationship between the x-ray tube and the photo fluorographic camera, a fixed diaphragm is provided which limits the x-ray beam to dimensions no larger than those of the fluorescent screen and the equipment is designed for one image size only, it shall not be necessary for a continuously adjustable rectangular light beam diaphragm to be provided; and

(iii) when a light beam diaphragm is provided, it shall not be possible for the dimensions of the x-ray beam to exceed those of the fluorescent screen;

(p) involving equipment in which the x-ray tube is energised by a capacitor energy storage system (capacitor discharge x-ray equipment), radiation emitted from the x-ray tube when the exposure switch or timer is not activated shall not exceed 20 microsieverts per hour at 50 mm from any accessible surface of the x-ray tube or associated diaphragm or collimator with the collimator fully open and, to determine compliance with this requirement, measurements shall be averaged over an area not exceeding 10 000 square mm with no linear dimension greater than 200 mm and the response time of the measuring instrument shall not be less than 3, nor greater than 20, seconds.

3. In addition to the requirements specified in item 2, in the case of irradiating apparatus which is operated or used for medical fluoroscopy—

(a) that irradiating apparatus shall be so constructed that the entire cross section of the useful x-ray beam is always intercepted by a primary protective barrier irrespective of the source to image receptor distance, but this requirement may be waived in writing by the Council for approved special procedures;

(b) the exposure shall automatically terminate when the barrier is removed from the useful beam;

(c) an adjustable multiplane collimator (whether a light beam or other collimator) or a diaphragm shall be provided to define the useful beam, but this requirement may be waived in writing by the Council for approved special purpose equipment;

(d) the x-ray tube, collimating device and fluoroscopic screen or image intensifier shall be linked together in such a way that, under normal operating conditions, the x-ray beam will not fall outside—

(i) the image receptor; or

(ii) in the case of an image intensifier, outside the primary protective barrier referred to in paragraph (a);

(e) the fluoroscopic screen shall be provided with a protective lead glass sheet having a lead equivalence of not less than—

(i) 1.5 mm for irradiating apparatus having a maximum operating potential up to and including 70 kVp;

(ii) 2.0 mm for irradiating apparatus having a maximum operating potential above 70 kVp and up to and including 100 kVp; or

(iii) 2.0 mm for irradiating apparatus having a maximum operating potential above 100 kVp, together with 0.01 mm per KV above 100 kVp;

and image intensifiers and adjacent mounting components subject to exposure to the useful beam shall provide the same protection as is required for a conventional fluoroscopic screen assembly;

(f) the x-ray beam shall, if the equipment permits spot films to be taken in connection with a fluoroscopic examination, be intercepted by a barrier having a lead equivalence equal to that specified in paragraph (e) for the highest potential at which radiographic exposures can be made;

(g) the equipment shall be so arranged that the minimum distance between x-ray tube focus and the skin of the patient is not less than—

(i) 300 mm; or

(ii) in the case of special surgical applications that would be prohibited at the distance referred to in subparagraph (i) and with the authority in writing of the Council, 200 mm;

(h) an adjustable timing device with a maximum setting of 10 minutes shall be provided in order to give the fluoroscopist an audible signal at the termination of a preset time;

(i) the fluoroscopic exposure switch shall be—

(i) of the "dead man" type (i.e. a switch so constructed that the circuit closing is maintained only by continuous pressure on the switch); and

(ii) located at the position occupied by the fluoroscopist;

(j) a bucky slot cover or other approved arrangement containing shielding equivalent to not less than 0.5 mm of lead shall be provided to cover the bucky opening of the fluoroscopic equipment;

(k) an apron or drape providing shielding equivalent to not less than 0.5 mm of lead and of not less than such dimensions as are approved shall be attached to the edge of the fluoroscopic screen or image intensifier holder nearest to the fluoroscopist when that screen or holder is horizontal, and shall be continuous with the primary protective barrier referred to in paragraph (a);

(l) when a fluorescent screen is used, that screen shall have an efficiency of not less than 0.06 millilambert per 10 milligrays per minute;

(m) involving mobile fluoroscopic equipment—

(i) that equipment shall not be used with a convential fluoroscopic screen and an image intensifier shall always be provided;

(ii) it shall not be possible to operate that equipment for fluoroscopy unless the useful x-ray beam is wholly intercepted by the image intensifier;

(iii) in the absence of a table top, a cone or spacer frame shall be so arranged that the minimum distance between the x-ray tube focus and the skin of the patient is not less than—

A. 300 mm; or

B. in the case of special surgical applications that would be prohibited at the distance referred to in subparagraph A and with the authority in writing of the Council, 200 mm;

and

(iv) the supplier thereof shall, when the authority referred to in subparagraph (iii) B has been given in respect of equipment which is capable of being operated at x-ray tube focus to skin distances of less than 300 mm, advise the operator or user of that equipment of the precautions necessary for the safe operation or use of that equipment; and

(n) the absorbed dose rate in air measured at the minimum x-ray tube focus to skin distance shall not exceed 50 milligrays per minute.

4. In the case of x-ray therapy apparatus which is operated or used for medical therapy and in which the x-rays produced have a maximum energy not exceeding 500 000 electron volts—

(a) an x-ray tube used for conventional x-ray therapy shall be enclosed in such a housing that, at every specified rating of that tube in that housing, the absorbed dose rate in air from the leakage radiation measured—

(i) at a distance of 1 metre from the focus does not exceed 10 milligrays per hour, or 300 milligrays per hour at any position accessible to the patient at a distance of 50 mm from the surface of that housing or its accessory equipment; or

(ii) in the case of an x-ray tube which is operated at a potential of 60 kilovolts peak or below, does not exceed 1 milligray per hour at any position 50 mm from the surface of that housing or its accessory equipment,

and for the purpose of determining compliance with this requirement, measurements shall be averaged over an area not exceeding 10 000 square mm at a distance of 1 metre or 1 000 square mm at a distance of 50 mm, as the case requires, from the x-ray tube or source housing;

(b) control settings, meters or other means shall be provided at the control panel to indicate x-ray tube potential and current when these can be varied, and for recognition of the filtration being used;

(c) permanent diaphragms or cones shall be so constructed that, in combination with the x-ray tube housing, they comply with the exposure requirements for leakage radiation set out in paragraph (a);

(d) adjustable or removable beam limiting diaphragms or cones shall not transmit more than 5 per cent of the useful beam at the maximum operating kilovoltage and with the maximum treatment filter in position;

(e) the x-ray tube shall be so secured in its housing that it cannot move in relation to the useful beam aperture and there shall be a clear mark on the exterior of the x-ray tube housing to indicate the position of the focal spot;

(f) the x-ray tube housing shall remain stationary during stationary portal treatment;

(g) there shall be a clearly visible indicator on the control panel which indicates when x-rays are being produced;

(h) equipment in which the useful beam is controlled by a shutter shall have clearly visible indicators on the control panel which indicate whether the shutter is open or closed;

(i) the equipment shall be provided with an automatic timer which terminates an exposure by de-energising the x-ray tube after the preset time has elapsed and that timer shall preserve its accumulated response in the event of any failure or interruption in the operation of the equipment during treatment;

(j) equipment which can operate at tube potentials exceeding 150 000 volts peak shall be provided with a transmission monitoring ionisation chamber or equivalent device positioned in the useful beam to provide a continuous check on the constancy of the radiation output and, when that chamber is also employed as an integrating meter, the integrating meter shall—

(i) preserve its accumulated response in the event of any failure or interruption in the operation of the equipment during treatment; and

(ii) in the case of x-ray or electron beam therapy apparatus in which the x-rays or electrons produced have a maximum energy exceeding 500 000 electron volts, meet such requirements as the Council directs in writing.

5. In the case of irradiating apparatus which is operated or used for veterinary radiography—

(a) the requirements specified in item 2 in relation to the use in diagnostic medical radiography of fixed and mobile equipment, other than the requirements set out in paragraphs (c) and (n) (iv) of that item, shall apply to that irradiating apparatus;

(b) sheet lead at least 1 mm thick shall, when an x-ray table is used for radiography, be provided in the top of that table or, if a bucky is fitted, below the bucky tray, so as to intercept the x-ray beam fully, but this requirement may be waived by the Council in writing in respect of approved special procedures;

(c) the film or cassette shall, whenever radiography with an angulated or horizontal beam is necessary, be supported by mechanical means;

(d) such devices for restraining and immobilising animals for radiography as the Council directs in writing shall be provided.

6. In the case of x-ray equipment which is used for industrial radiography and in which x-rays are produced by the direct application of a high voltage to the x-ray tube, that tube shall be enclosed in a housing in such a manner that the exposure from leakage radiation measured at a distance of 1 metre from that tube does not exceed 10 milligrays per hour at every specified rating of that tube in the housing.

7. Cabinet x-ray apparatus shall comply with the specifications relating to cabinet x-ray equipment set out in the publication entitled "Revised statement on cabinet x-ray equipment for the examination of letters, packages, baggage, freight and other articles for security and related purposes" approved by the NHMRC at its 85th session in June 1978.

8. X-ray analysis equipment shall comply with—

(a) the requirements for equipment used for x-ray analysis set out in the publication entitled "Code of Practice for the Safe Use of X-ray Analysis Equipment" approved by the NHMRC at its 68th session in May 1969; or

(b) if that equipment is of such a kind that the requirements of the publication referred to in paragraph (a) cannot readily be complied with, such requirements as the Council specifies in writing in relation to that equipment for the purpose of achieving a level of safety equivalent to that attained by compliance with the requirements of that publication.

9. In the case of x-ray equipment used by chiropractors for radiography of human beings—

(a) the requirements specified in this Schedule for fixed medical diagnostic x-ray apparatus shall be met;

(b) equipment intended for the production of full spine radiographs with a single exposure at a working distance of 2 metres between source and film shall have a capability of not less than 300 milliamperes for 0.3 second at 100 kV;

(c) equipment intended for sectional radiography of the spine at a working distance of one metre between source and film shall have a capability of not less than 200 milliamperes for 0.3 second at a maximum of 100 kV using a 1 mm x-ray tube focal spot or equivalent approved rating.

SCHEDULE X. (Regulation 37)

REQUIREMENTS TO BE COMPLIED WITH IN RESPECT OF PREMISES IN WHICH IRRADIATING APPARATUS IS OPERATED OR USED.

1. In the case of any premises in which there is x-ray analysis equipment, the person in whose name those premises are registered shall—

(a) provide approved safety devices and safety equipment; and

(b) ensure that the devices and equipment referred to in paragraph (a) and the x-ray analysis equipment are installed and located in those premises,

in accordance with the requirements set out in the publication entitled "The Code of Practice for the Safe Use of X-ray Analysis Equipment" approved by the NHMRC at its 68th session in May 1969.

2. (1) Subject to subitem (2), in the case of any premises in which there is medical radiographic equipment, the person in whose name those premises are registered shall ensure that—

(a) the control apparatus for that equipment is located—

(i) in a room separate from the room in which that equipment is installed but adjacent thereto; or

(ii) behind a fixed screen, situated within the room in which that equipment is installed and composed of radiation shielding material to a height of not less than 2 metres and arranged so that the radiation emitted by that equipment is scattered twice before it enters the area behind that screen occupied by the operator of that control apparatus;

(b) the operator of the control apparatus referred to in paragraph (a) is able to see the patient—

(i) by means of closed circuit television or a mirror; or

(ii) through a lead glass window, the lead equivalence of which—

A. if that window is situated in a protective screen constructed to accommodate that screen, is not less than that of that screen; or

B. if that window is situated in a structural wall, is not less than that of the radiation protection design requirement for that wall,

and is in either case clearly and durably marked on that window, together with the peak kilovoltage of the x-ray beam with which that equivalent was measured;

(c) the operator referred to in paragraph (b) is able to communicate with the patient concerned from a shielded position;

(d) a protective apron and protective gloves with a shielding value of not less than 0.25 mm lead equivalent are provided for the use of the operator referred to in paragraph (b);

(e) protective devices with a shielding value of not less than 0.5 mm lead equivalent are provided for shielding the reproductive organs of patients; and

(f) any room in those premises used for fluoroscopy by the direct viewing of a fluoroscopic screen is free of any extraneous light which may interfere with observation of the fluoroscopic image.

(2) The person in whose name premises referred to in subitem (1) are registered need not comply with the requirements set out in paragraph (a), (b) and (c) of that subitem in respect of rooms in which mobile or portable x-ray apparatus is used unless the Council otherwise directs in writing.

(3) In the case of premises in which there is medical therapeutic irradiating apparatus—

(a) which can operate at voltages above 150 kilovolts peak, the person in whose name those premises are registered shall ensure that—

(i) the control panel for that irradiating apparatus is located outside the treatment room; and

(ii) safety interlocks are provided for that irradiating apparatus so that when any door to the treatment room is opened—

A. that irradiating apparatus automatically ceases to operate; or

B. the radiation level within the treatment room is reduced to an average of not more than 20 microsieverts per hour and to a maximum of 100 microsieverts per hour at a distance of 1 metre in any direction from the source of radiation,

whereupon that irradiating apparatus can only be restored to full operation at the control panel for that irradiating apparatus;

and

(b) the person in whose name those premises are registered shall ensure that—

(i) there are, in addition to any safety interlocks referred to in subparagraph (ii) of paragraph (a), warning lights to indicate the production of x-rays adjacent to all doors to the treatment room which are not visible to the operator of that irradiating apparatus when located at the control panel for that irradiating apparatus;

(ii) shielded windows, mirrors or closed circuit television systems are provided to permit continuous observation of the patient during treatment and are so located that the operator of that apparatus is able to see both the patient and the control panel for that irradiating apparatus from the same position; and

(iii) provision is made for oral communication with the patient.

4. In the case of premises in which there is chiropractic radiographic equipment, the person in whose name those premises are registered shall ensure that the requirements of item 2 are complied with in respect of that apparatus.

SCHEDULE XI. (Regulation 38)

REQUIREMENTS TO BE COMPLIED WITH IN RESPECT OF OPERATION OR USE OF IRRADIATING APPARATUS.

1. In the case of irradiating apparatus operated or used for dental radiography—

(a) a person other than the patient shall not hold the x-ray film during its exposure to x-rays;

(b) a person other than the patient shall not be in the x-ray beam emitted by that irradiating apparatus;

(c) a person shall not touch the cone, diaphragm or x-ray tube housing of that irradiating apparatus during exposure;

(d) a person other than a person whose presence is essential to the radiographic procedure concerned or for the care of the patient, as the case requires, shall not be in the radiographic room during an exposure;

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(e) a person shall not use for intra-oral dental radiography any x-ray film which has a sensitivity less than that of films defined as Speed Group D films by the publication known as American National Standard ANSI PHG.1. 1970 issued by the American National Standards Institute;

(f) facilities enabling the x-ray film taken by that irradiating apparatus to be processed in the manner specified by the manufacturer of that film shall be provided and those facilities shall include equipment designed for the size of the x-ray film in use; and

(g) all developing and other processing chemicals used shall be compatible with the x-ray film used and shall not have the effect of lowering the speed of that film as specified by the manufacturer thereof.

2. (1) In the case of irradiating apparatus operated or used for medical radiography or fluoroscopy—

(a) a person who holds a patient during the exposure to x-rays of the patient—

(i) shall wear a protective apron and protective gloves with a shielding value of not less than 0.25 mm lead equivalent; and

(ii) shall not expose any part of his body which is not protected by the apron and gloves referred to in subparagraph (i) to the useful x-ray beam;

(b) if a patient is being exposed to x-rays in a room where x-ray apparatus is installed, a person other than the patient shall not during that exposure remain in that room unless—

(i) that person remains behind a protective screen or is wearing a protective apron and—

A. his presence during the radiographic procedure concerned is necessary;

B. he is a medical practitioner responsible for the care of the patient;

or

C. he is receiving instruction from a person responsible for the conduct of the radiographic procedure concerned;

or

(ii) that room has been surveyed by an approved expert and that person remains in such parts of that room for such periods as the approved expert designates as safe;

and

(c) protective devices with a shielding value of not less than 0.5 mm lead equivalent shall, during radiographic procedures in which the reproductive organs of patients of reproductive age would otherwise be exposed to the useful x-ray beam, be used for shielding those organs, except when that shielding would interfere with the diagnostic procedure.

(2) In the case of irradiating apparatus operated or used for medical x-ray fluoroscopy—

(a) a fluoroscopist shall wear a protective apron and, if his hands are exposed to the direct x-ray beam, protective gloves with a shielding value of not less than 0.25 mm lead equivalent during an x-ray examination unless he is shielded by a protective screen; and

(b) persons other than the fluoroscopist referred to in paragraph (a) present in the fluoroscopic room during the radiographic procedure concerned shall wear protective aprons with a shielding value of not less than 0.25 mm lead equivalent, unless an approved expert considers it unnecessary for them to do so.

3. In the case of irradiating apparatus operated or used for medical therapeutic irradiation—

(a) the radiation emitted by that irradiating apparatus shall—

(i) be calibrated by an approved person before it is operated or used for treating human beings; and

(ii) be re-calibrated by an approved person at intervals not exceeding 12 months and a copy of the re-calibration data shall be forwarded to the Council;

and

(b) at voltages—

(i) above 150 kilovolts peak a person other than the patient shall not remain in; and

(ii) at or below 150 kilovolts peak a person other than the patient shall not remain in an unshielded area of,

the treatment room during the treatment of the patient.

4. In the case of irradiating apparatus operated or used for chiropractic radiography, a person shall not so operate or use that irradiating apparatus unless he is a licensee who is a chiropractor or is a qualified medical radiographer acting under the direction and supervision of such a licensee.

5. In the case of irradiating apparatus operated or used for x-ray analysis, that operation or use shall be in accordance with the requirements of the publication entitled "The Code of Practice for the Safe Use of X-ray Analysis Equipment" approved by the NHMRC at its 68th session in May 1969.

6. In the case of irradiating apparatus operated or used for industrial radiography—

(a) a licensee may carry out that radiography in either closed or open installations;

(b) a person shall not remain in or enter a closed or open installation during an x-ray exposure;

(c) the person in charge of that operation or use shall—

(i) before an open installation is employed for that radiography, ensure that adequate protection is provided; and

(ii) during an x-ray exposure ensure that an open installation is kept under continuous surveillance and that, if any person not authorized by him enters that installation, the x-ray exposure is terminated.

7. In the case of irradiating apparatus operated or used for veterinary radiography—

(a) whenever it is necessary to employ an angulated or horizontal beam, the film or cassette shall be supported by mechanical means;

(b) a person shall not be regularly employed to hold or support animal patients or film during x-ray exposures;

(c) subject to paragraph (d), mechanical restraining or supporting devices shall be employed if it is necessary for an animal patient to be held in position during x-ray exposures;

(d) a person who, for clinical reasons, holds an animal patient during an x-ray exposure shall—

(i) wear a protective apron with a shielding value of not less than 0.25 mm lead equivalent and protective gloves with a shielding value of not less than 0.25 mm lead equivalent; and

(ii) keep all parts of his body which are not protected by the apron and gloves referred to in subparagraph (i) out of the useful x-ray beam;

(e) a person under the age of 18 years shall not hold or support an animal patient during x-ray exposures; and

(f) a person shall not hold in his hand the x-ray film or the x-ray tube and attached cone or diaphragm of that irradiating apparatus during an x-ray exposure.

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(Regulation 39)

SCHEDULE XII.

MICROWAVE SYMBOL.

COLOURS.

Dark inner border: Orange or yellow.

Internal triangle and light outer border: White.

Symbol: Black.

(Regulation 54)

SCHEDULE XIII.

REQUIREMENTS TO BE COMPLIED WITH IN RESPECT OF PREMISES IN WHICH CLASS 3 LASERS ARE OPERATED OR USED.

1. Such beam stops, beam enlarging systems, shutters or other safety devices as the Council from time to time directs shall be incorporated in the class 3 laser or its system.

2. The beam of the class 3 laser shall be—

(a) contained within enclosures; or

(b) terminated at the end of the useful beam path by a beam trap or, in the case of a class 3 laser which is an infra-red laser, by a highly absorbent backstop.

3. In the case of a class 3 laser which is an ultraviolet laser, such special precautions as the Council from time to time directs for reducing radiation or preventing undesirable chemical reactions shall be taken.

4. Any optical system used for viewing in connection with the class 3 laser shall be provided with an interlock or filter to reduce ocular irradiation to a safe level.

5. The class 3 laser or its laser system shall be provided with a keyed master switch which, when the key is removed therefrom, makes it impossible to operate or use the class 3 laser or its laser system.

6. Labels shall be affixed to the class 3 laser or to the protective housing of its laser system in accordance with the requirements of the Australian Standard.

7. Approved instructions shall be issued to all persons operating or using the class 3 laser.

8. Persons, other than persons authorized by the person in whose name the premises concerned are registered to operate or use the class 3 laser or its laser system, shall not operate or use the class 3 laser or its laser system.

9. Whenever persons operating or using the class 3 laser or its laser system are exposed to potentially hazardous laser radiation, those persons shall be provided with protective eye-wear in accordance with Appendix H.2 to the Guidelines.

10. The class 3 laser or its laser system shall be operated or used only in a controlled area.

11. Bench and wall surfaces in the controlled area referred to in item 10 shall be painted with matt paints of approved colours so that those surfaces are not highly reflective to the radiation of the class 3 laser.

12. Areas which are exposed to reflections from an infra-red class 3 laser or its laser system shall be protected by screening the beam or target area concerned with infra-red absorbent material.

13. The illuminance level in the controlled area referred to in item 10 shall, unless the Council otherwise directs, be not less than 350 lux.

14. Persons other than those operating or using the class 3 laser or its laser system shall not enter the controlled area referred to in item 10 unless they have the permission of the person in whose name the premises concerned are registered to do so and take such protective measures as he directs.

15. There shall be displayed—

(a) in conspicuous locations inside and outside the controlled area referred to in item 10;

(b) at all entrances giving access to the controlled area; and

(c) in a prominent position near the class 3 laser,

type 2 area warning signs in accordance with Appendix F2 to the Guidelines.

16. Persons operating or using the class 3 laser or its laser system shall be subject to medical surveillance in accordance with Appendix C to the Guidelines.

SCHEDULE XIV.

(Regulation 55)

REQUIREMENTS TO BE COMPLIED WITH IN RESPECT OF PREMISES IN WHICH CLASS 4 LASERS ARE OPERATED OR USED.

1. The entire beam path of the class 4 laser shall be enclosed and that enclosure shall be equipped with interlocks in accordance with section 6.5.2 of the Guidelines in order to prevent the operation or use of the class 4 laser if that enclosure is not properly installed.

2. The class 4 laser or its laser system shall be provided with a keyed master switch which renders the class 4 laser or its laser system inoperable when the key concerned is removed.

3. The beam of the class 4 laser or its laser system shall be terminated in an absorbent fire resistant material, which shall be inspected periodically for signs of deterioration.

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4. If the class 4 laser or its laser system is operated or used without its entire beam path and interaction site enclosed, that operation or use shall take place in a controlled area which is permanently isolated from other areas within the premises concerned.

5. Safety latches or interlocks designed—

(a) to prevent uncontrolled entry into;

(b) to enable rapid exit from; and

(c) to enable rapid entry in an emergency into,

the controlled area referred to in item 4 shall be installed.

6. It shall be possible temporarily to override entrance safety switches to permit persons to operate or use the class 4 laser or its laser system whilst that operation or use is continuous.

7. In the case of a pulsed class 4 laser, power supplies thereto shall be as far therefrom as possible.

8. The class 4 laser or its laser system shall be—

(a) operated or used; and

(b) monitored by means of closed circuit television or through a viewing window of approved design,

from a position outside the controlled area referred to in item 4.

9. A control switch shall be situated in the controlled area referred to in item 4 for the purpose of switching off the class 4 laser in the event of an emergency.

10. Surfaces within the controlled area referred to in item 4 shall be rendered non-reflective by means of approved materials to reduce the possibility of hazardous diffuse reflections.

11. In the case of an infrared class 4 laser, surfaces within the controlled area referred to in item 4 which are exposed to reflections from that class 4 laser shall be protected by screening with approved fire-resistant material close to the reflecting source of that class 4 laser.

12. Compressed gases used in the vicinity of the class 4 laser shall be used in compliance with the requirements of—

(a) the publication entitled "Rules for the approval, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases" known as the "SAA gas cylinders code", AS 2030-1977; and

(b) the publication entitled "Safety devices for gas cylinders", AS B281-1969,

issued by the Standards Association of Australia.

13. Cryogenic coolants used in connection with the class 4 laser shall be used in compliance with the publication entitled "Code of practice for the safe handling of cryogenic fluids", AS 1894-1976, issued by the Standards Association of Australia.

14. Approved ear protection shall be provided for persons operating or using the class 4 laser during noisy applications thereof.

15. The requirements of Part IV shall be complied with in respect of any ionising radiation produced by the class 4 laser.

16. High pressure arc lamps and filament lamps in the class 4 laser or its laser system shall be enclosed in housings capable of withstanding the maximum explosive pressures resulting from the disintegration of those lamps.

17. The target of the class 4 laser and elements of its optical train which are liable to shatter during the operation or use of the class 4 laser shall be enclosed in housings or otherwise protected to prevent injury as a result of any such shattering to persons operating, using or observing the class 4 laser.

18. Approved shielding shall be provided in respect of ultraviolet, visible and infrared collateral radiation from a laser discharge tube, optical pump source or other part of the class 4 laser or its laser system.

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19. Electrical equipment forming part of the class 4 laser or its laser system shall comply with the requirements of—

(a) the publication entitled "The electrical installations of buildings, structures and premises" known as the "SAA wiring rules", AS 3 000-1981, issued by the Standards Association of Australia; and

(b) Appendix J.1.1.8 to the Guidelines.

20. The illuminance level in the controlled area referred to in item 4 shall be not less than 350 lux at all working sites during the operation or use of the class 4 laser.

21. An alarm system, consisting of—

(a) lights visible through protective eyewear; and

(b) audible warnings sounding—

(i) in the case of a pulsed class 4 laser, intermittently during charging and continuously after the completion of charging; or,

(ii) in the case of a continuous wave class 4 laser, continuously,

shall be used to give warning of the operation or use of the class 4 laser.

22. Type 2 area warning signs shall be displayed at the entrance to the controlled area referred to in item 4.

23. All persons having access to the controlled area referred to in item 4 shall be authorized to do so by or on behalf of the person in whose name the premises concerned are registered.

24. Persons operating or using the class 4 laser or its laser system shall be subject to medical surveillance in accordance with Appendix C to the Guidelines.

(Regulation 58)

SCHEDULE XV.

APPLICATION FEES.

1. *Annual fee for registration or renewal of registration of premises for the manufacture, use or storage of radioactive substances.*

(1) Radioactive substances, other than tritium in gaseous tritium light devices.

Maximum quantity	*Fee* $
40 gigabecquerels	25.00
400 gigabecquerels	50.00
4 terabecquerels	100.00
Exceeding 4 terabecquerels	150.00

(2) Tritium in gaseous tritium light devices.

Maximum quantity	*Fee* $
4 terabecquerels	10.00
40 terabecquerels	25.00
Exceeding 40 terabecquerels	50.00

2. *Annual fee for registration or renewal of registration of premises for the sale of radioactive substances.*

Fee
$25.00.

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3. *Annual fee for registration or renewal of registration of premises, other than premises referred to in items 1 and 2, irradiating apparatus and electronic products.*

In the case of—

(a) not more than 2 irradiating apparatus or electronic products, $25.00;

(b) more than 2 but not more than 5 irradiating apparatus or electronic products, $50.00;

(c) more than 5 but not more than 10 irradiating apparatus or electronic products, $100.00;

(d) more than 10 irradiating appartus or electronic products, $150.00;

4. *Annual licence fee.*

In the case of—

	$
(a) radioactive substances	10.00
(b) irradiating apparatus	10.00
(c) electronic products	10.00

By Order of the Lieutenant Governor and Deputy of the Governor.

R. D. DAVIES,
Clerk of the Council.

23964/2/83

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