



**THE RADIATION PROTECTION REGULATIONS 1951,
AMENDMENT NO. 1**

C. W. M. NORRIE, Governor-General
ORDER IN COUNCIL.

At the Government House at Wellington, this 14th day of July 1954

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

PURSUANT to the Radioactive Substances Act 1949, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following regulations.

REGULATIONS

1. (1) These regulations may be cited as the Radiation Protection Regulations 1951, Amendment No. 1, and shall be read together with and deemed part of the Radiation Protection Regulations 1951* (hereinafter referred to as the principal regulations).

(2) These regulations shall come into force on the fourteenth day after the date of their notification in the *Gazette*.

2. (1) Regulation 2 of the principal regulations is hereby amended as follows:

(a) By omitting from the definition of the term "licensee" in subclause (1) the words "that apparatus", and substituting the words "that kind of apparatus":

(b) By omitting from the definition of the term "irradiating apparatus" in subclause (2) the words "5 milliroentgens equivalent man per hour (5 mrem./hour)", and substituting the words "0.75 milliroentgens equivalent man per hour (0.75 mrem./hour)".

(2) Regulation 2 of the principal regulations is hereby further amended by revoking the definition of the term "radioactive substance" in subclause (2), and substituting the following definition:

"Radioactive substance" means any substance which—

"(a) Emits alpha particles and has a half life of less than one million years and undergoes more than 100 atomic disintegrations per gram per second; or

"(b) Has been artificially produced and emits beta or gamma rays and undergoes more than 37,000 atomic disintegrations per second."

(3) Regulation 2 of the principal regulations is hereby further amended by revoking subclause (3), and substituting the following subclauses:

* Statutory Regulations 1951, Serial number 1951/155, page 482.

“(3) Notwithstanding anything in subclause (2) of this regulation, a substance used as a component part of a luminous indicator shall not be considered a radioactive substance if it undergoes less than one million atomic disintegrations per second and is enclosed in such a way as to prevent accidental ingestion and inhalation.

“(4) For the purposes of the Act and of these regulations, the term ‘atomic disintegrations’ shall, in the case of elements giving rise to a radioactive series, apply to atomic disintegrations of the parent element only.”

3. Regulation 5 of the principal regulations is hereby amended by omitting the words “radiation work”, and substituting the words “work with irradiating apparatus or radioactive substances or both”

4. The principal regulations are hereby amended by revoking regulation 6, and substituting the following regulation:

“6. The Director-General, acting on the advice of the Radiological Advisory Council, may direct persons or groups of persons engaged in radiation work to undergo periodical blood examinations and medical examinations. The results of these examinations shall determine the continuance, limitation, or termination of the work of the individual concerned in accordance with regulation 9 hereof.”

5. The principal regulations are hereby amended by revoking regulation 9, and substituting the following regulation:

“9. Where there is evidence of overexposure to radiation, the person affected shall cease work involving the radiation hazard, and shall place himself under medical supervision for an adequate period.”

6. Regulation 11 of the principal regulations is hereby amended by omitting the words “the licensee” where they first occur, and substituting the words “the employer of those persons”.

7. Regulation 13 of the principal regulations is hereby amended by revoking subclauses (1) and (2), and substituting the following subclauses:

“(1) The Director-General, acting on the advice of the Radiological Advisory Council, may direct that the working time of persons or groups of persons engaged in radiation work shall not exceed an average of thirty-five hours per week, computed over a stated period.

“(2) The Director-General, acting on the advice of the Radiological Advisory Council, may direct that persons or groups of persons engaged in radiation work shall have in addition to statutory holidays an annual holiday of not less than four weeks, of which at least two weeks must be taken consecutively.”

8. Regulation 17 of the principal regulations is hereby amended by inserting, before the words “radioactive substance”, the word “unattended”.

9. Regulation 19 of the principal regulations is hereby amended by omitting the words “engaged in radiation work”, and substituting the words “working with irradiating apparatus or radioactive substances”.

10. Regulation 23 of the principal regulations is hereby amended by omitting from subclause (1) the words “No person shall administer any treatment with any given combination of tube voltage, tube current, filter, or focal skin distance, unless the dosage rate and the quality of the radiation emitted by any X-ray tube used for therapeutic purposes have been determined by an ionometric or other method approved by the Council”, and substituting the words “No person shall

administer any treatment with any given combination of tube, tube voltage, tube current, filter, and focal skin distance, unless the dosage rate and the quality of the radiation resulting from this combination have been determined by an ionometric or other method approved by the Council, or unless the quality of the radiation has been determined and the dose delivered is measured concurrently with each treatment by an ionometric or other device approved by the Council”.

11. (1) Regulation 25 of the principal regulations is hereby amended by revoking subclause (1), and substituting the following subclause:

“(1) If the licensee knows or has reasonable grounds to suspect that a sealed container of any radioactive substance, such as a radium needle, radium tube, or radium plaque, is damaged, the licensee shall immediately enclose the same in an airtight container which complies with the requirements of regulation 10 of the Transport of Radioactive Substances Regulations 1951*.”

(2) Regulation 25 of the principal regulations is hereby further amended by omitting from subclause (3) the word “Permanently”.

12. Regulation 26 of the principal regulations is hereby amended by adding the words “in accordance with regulation 23 (2) hereof”.

13. Regulation 29 of the principal regulations is hereby amended by omitting the words “and shall be redetermined at such intervals as the Director-General may prescribe”.

14. The principal regulations are hereby amended by revoking regulation 30, and substituting the following regulation:

“30. The dosage rate at the panel of every X-ray apparatus employed for fluoroscopic examinations shall be redetermined under maximum normal operating conditions by some person appointed by the Director-General for that purpose, and every such redetermination shall be made at such intervals as the Director-General may direct.”

15. Regulation 34 of the principal regulations is hereby amended by revoking subclause (1), and substituting the following subclause:

“(1) A licensee shall be entitled to employ other persons on work with irradiating apparatus or radioactive substances if those persons work under the supervision or instructions of the licensee.”

16. (1) The Schedule to the principal regulations is hereby amended by revoking the definitions of the terms “combustible anaesthetic agent” and “roentgen equivalent physical” or “rep”.

(2) The Schedule to the principal regulations is hereby further amended by revoking the definitions of the terms “half-value layer”, “intensity”, and “maximum permissible exposure” or “tolerance dose” or “indifference dose”, and substituting therefor respectively the following definitions:

“‘Half-value layer’ means the thickness of material which reduces to half the exposure rate of a particular beam of radiation.

“‘Intensity of radiation’ means the energy flowing through unit area perpendicular to the beam per unit time. It is expressed in ergs per cm^2 per second or watts per cm^2 .

“‘Maximum permissible exposure’ or ‘tolerance dose’ or ‘indifference dose’ means the amount of ionizing radiation which, in the light of present knowledge, is not expected to cause appreciable bodily injury to a person at any time during the lifetime of that person.

“NOTE.—However, it has been shown in animal experiments that the present maximum permissible exposure may not provide a reasonable safety factor against the production of some types of tumours

* Statutory Regulations 1951, Serial number 1951/156, page 493.

as after effects of chronic radiation exposure, and that genetic changes may be induced by very small doses of radiations. The possibility cannot be excluded that even strict observance of the maximum permissible exposure may not prevent the occurrence of genetic changes in humans in some future generation. Every effort should therefore be made to strive for the lowest possible exposure in every operation, and to keep the average weekly exposure of any single worker well below the maximum permissible exposure. With this reservation, the maximum permissible exposure during any one week for whole body exposure is at present accepted to be 0.3 rem. The maximum permissible exposure during any one week to the hands and forearms, feet, and ankles is at present accepted to be 1.5 rem. These figures for the 'maximum permissible weekly exposure' for whole body exposure and for the exposure of specified parts of the body represent the total additive exposure from the independent components of all radiations involved, and for the purposes of this definition it shall be assumed that the tissue dose in 'rads' is numerically equal to the tissue dose in roentgens. For the purposes of this definition the dose in rems shall be assumed to be numerically equal to the dose in roentgens for all X-rays with photon energies less than 3 MeV. For all other ionizing radiations allowance shall be made for the fact that the biological effectiveness of ionizing radiation is dependent upon the specific ionization in tissue, and the dose in rems shall be found by multiplying the dose in rads with that numerical value of the relative biological effectiveness (r.b.e.) which is being recommended by the International Commission on Radiological Protection for the particular type of radiation."

(3) The Schedule to the principal regulations is hereby further amended by inserting, in their appropriate alphabetical order, the following new definitions:

"'Absorbed dose' of any ionizing radiation means the amount of energy imparted to matter by ionizing particles per unit mass of irradiated material at the place of interest. It shall be expressed in 'rads'.

"'Integral absorbed dose' means the integration of the energy absorbed throughout a given region of interest. The unit is the gram-rad which equals 100 ergs.

"'Quantity of radiation' means the time integral of intensity. It is the total energy which has passed through unit area perpendicular to the beam and is expressed in ergs per cm² or watt-secs per cm².

"'Rad' means the unit of absorbed dose, and equals 100 ergs per gram."

T. J. SHERRARD,
Clerk of the Executive Council.

Issued under the authority of the Regulations Act 1936.

Date of notification in *Gazette*: 15 July 1954.

These regulations are administered in the Department of Health.