

SUBSIDIARY LEGISLATION 365.15**NUCLEAR SAFETY AND RADIATION PROTECTION
REGULATIONS**

19th May, 2003

*LEGAL NOTICE 44 of 2003.***ARRANGEMENT OF REGULATIONS**

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PART I

GENERAL PROVISIONS

1. The title of these regulations is the Nuclear Safety and Radiation Protection Regulations. Citation.

2. (1) The scope of these regulations is to: Scope.

- (i) allow beneficial and justified uses of ionizing radiation;
- (ii) provide for adequate protection of people in current and future generations against the harmful effects of ionizing radiation and for the safety of radiation sources;
- (iii) provide for the physical protection of nuclear material;
- (iv) provide a mechanism whereby these objectives are achieved through the establishment of a Radiation Protection Board to act as the competent national authority, by co-ordinating the activities of the regulatory authorities in the field of nuclear safety and radiation protection.

3. (1) In these regulations, unless the content otherwise requires: Interpretation.

"absorbed dose" (D) means the energy absorbed per unit mass

$$D = d\varepsilon/dm$$

where $d\varepsilon$ is the mean energy imparted by ionizing radiation to the matter in a volume element, dm is the mass of the matter in this volume element.

In these regulations, absorbed dose denotes the dose averaged over a tissue or an organ. The unit for absorbed dose is the gray;

"accelerator" means an apparatus or installation, in which particles are accelerated, emitting ionizing radiation with an energy higher than 1 mega-electron volt (MeV);

"accident" means any unintended event, including operating errors, equipment failures or other mishaps, the consequences or potential consequences of which are not negligible from the point of view of protection or safety;

"accidental exposure" means an exposure of individuals as a result of an accident. It does not include emergency exposure;

"Act" means the National Interest (Enabling Powers) Act;

Cap. 365.

"activation" means the process through which a stable nuclide is transformed into a radionuclide by irradiating with particles or high-energy gamma rays the material in which it is contained;

"activity" (A) means the activity, A, of an amount of a radionuclide in a particular energy state at a given time and is the quotient of dN by dt , where dN is the expectation value of the number of spontaneous nuclear transitions from that energy state in the time interval dt :

$$A = dN/dt$$

The unit of activity is the becquerel;

"ambient dose equivalent" means the quantity $H^*(d)$ at a point in a radiation field, defined as the dose equivalent that would be produced by the corresponding aligned and expanded field in the ICRU sphere at a depth d on the radius opposing the direction of the aligned field. A depth $d = 10$ mm is recommended for strongly penetrating radiation;

Cap. 424.

"Appeals Board" shall have the same meaning as is assigned to it by article 2 of the Occupational Health and Safety Authority Act;

"apprentice" means a person receiving training or instruction within an undertaking with a view to exercising a specific skill;

"approved" means approved for the time being in writing for the purposes of these regulations by the Board, and published in such form as the Board or the considers appropriate;

"approved dosimetric service" means a body responsible for the calibration, reading or interpretation of individual monitoring devices, or for the measurement of radioactivity in the human body or in biological samples, or for assessment of doses, whose capacity to act in this respect is recognized by the Board;

"approved medical practitioner" means a medical practitioner responsible for the medical surveillance of category A workers, as defined in regulation 43(1), whose capacity to act in that respect is recognized by the Board;

"approved occupational health service" means a body or bodies to which may be assigned responsibility for the radiation protection of exposed workers and/or medical surveillance of category A workers and whose capacity to act in that respect is recognized by the Board;

"artificial sources" means radiation sources other than natural radiation sources;

"authorization" means a permission granted in a document by the Board application, or granted by national legislation, to carry out a practice or any other action within the scope of these regulations. Authorisation can take the form of a registration or a licence;

"avertable dose" means the dose to be saved by a protective action; that is, the difference between the dose to be expected with the protective action and that to be expected without it;

"Becquerel" (Bq): the special name of the unit of activity. One becquerel is equivalent to one decay per second;

"Board" means the Radiation Protection Board;

"calendar year" means a period of twelve calendar months beginning with the 1st January;

"clearance levels" means values, established by the Board, and expressed in terms of activity concentrations and/or total activity, at or below which radioactive substances or materials containing radioactive substances arising from any practice subject to the requirement of notification or authorization may be released from the requirements of these regulations;

"comforter and carer" means an individual who (other than as part of his occupation) knowingly and willingly incurs an exposure to ionizing radiation resulting from the support and comfort of another person who is undergoing or who has undergone any medical exposure;

"committed effective dose" means the quantity $E(t)$ defined as

$$E(t) = \sum_T w_T \cdot H_T(t) = \sum_J h(g)_{j,ing} J_{j,ing} + \sum_J h(g)_{j,inh} J_{j,inh}$$

where $H_T(t)$ is the committed equivalent dose to tissue T over the integration time t , and w_T is the appropriate tissue weighting factor. When t is not specified, it will be taken to be 50 years for adults and to age 70 years for intakes by children. The unit for committed effective dose is the sievert. Committed effective dose could also be assessed using the committed effective dose per unit-intake for ingested ($h(g)_{j,ing}$) or inhaled ($h(g)_{j,inh}$) radionuclide j [Sv/Bq] by an individual in group of age g; $J_{j,ing}$ and $J_{j,inh}$ respectively are the relevant intakes via ingestion and inhalation of the radionuclide j [Bq];

"committed equivalent dose" means the quantity $H_T(\tau)$ defined as:

$$H_T(\tau) = \int_{t_0}^{t_0+\tau} H_T(t) dt$$

where t_0 is the time of intake, $H_T(t)$ is the equivalent dose rate at time t in an organ or tissue, T and τ is the time elapsed after an intake of radioactive substances. When τ is not specified it will be taken to be 50 years for adults and to age 70 years for intakes by children. The unit for committed equivalent dose is the sievert;

"controlled area" means any area in which specific protection measures and safety provisions are or could be required for controlling normal exposures or preventing the spread of contamination during normal working conditions and for preventing or limiting the extent of potential exposures, and to which access is controlled;

"Convention" means the Convention on the Physical Protection of Nuclear Material;

"critical group" means a group of members of the public which is reasonably homogeneous with respect to its exposure for a given radiation source and given exposure pathway and is typical of individuals receiving the highest effective dose or equivalent dose (as applicable) by the given exposure pathway from the given source;

"deterministic effect" is a radiation effect for which generally exists a threshold of dose and above this threshold the severity of the effect increases with dose;

"disposal" means the emplacement of waste in a repository, or a given location, without the intention of retrieval. Disposal also

covers the approved direct discharge of wastes into the environment, with subsequent dispersion;

"dose" means, in relation to ionizing radiation, any dose quantity or sum of dose quantities mentioned in the Third Schedule;

"dose constraint" means a restriction on the prospective doses to individuals, which may result from a defined source for use at the planning stage in radiation protection whenever optimization is involved;

"dose limit" means, in relation to persons of a specified class, the limit on effective dose or equivalent dose that shall not be exceeded;

"effective dose" means the quantity E, defined as a summation of the tissue equivalent doses, each multiplied by the appropriate tissue weighting factor:

$$E = \sum_T w_T \cdot H_T$$

where H_T is the equivalent dose in tissue T and w_T is the tissue weighting factor for tissue T. From the definition of equivalent dose, it follows that:

$$E = \sum_T w_T \cdot \sum_R w_R \cdot D_{T,R}$$

where w_R is the radiation weighting factor for radiation R and $D_{T,R}$ is the average absorbed dose in the organ or tissue T. The unit of effective dose is the sievert (Sv). Taking into consideration various pathways of exposure, the effective dose may consist of external exposure and committed effective dose:

$$E = E_{\text{ext}} + E(\tau)$$

where E_{ext} is the external dose;

"emergency exposure" means an exposure of individuals implementing the necessary rapid action to bring help to endangered individuals, prevent exposure of a large number of people or save a valuable installation or goods, whereby one of the individual dose limits equal to that laid down for exposed workers could be exceeded. Emergency exposure shall apply only to volunteers;

"emergency plan" means the set of procedures to be implemented in the event of a radiological accident. Emergency plans may be either on-site, that is for the whole area under the control of the radiation employer where a source is present or intended to be present, or off-site, that is the area beyond that under the control of the radiation employer;

"equivalent dose" means the quantity $H_{T,R}$ defined as:

$$H_{T,R} = D_{T,R} \cdot w_R$$

where $D_{T,R}$ is the absorbed dose delivered by radiation type R averaged over a tissue or organ T and w_R is the radiation weighting

factor for radiation type R.

When the radiation field is composed of different radiation types with different values of W_R the equivalent dose is:

$$H_T = \sum_R w_R \cdot D_{T,R}$$

The unit of equivalent dose is J/kg, termed the sievert (Sv);

"exclusion" means the process whereby the Board deems that the magnitude or likelihood of an exposure is essentially unamenable to control and is thus excluded from regulatory control;

"exemption" (from regulatory control, including those of notification, registration and licensing) refers to practices or work activities and sources within justified practices, for which the Board is satisfied that the sources comply with the exemption criteria specified in regulation 18 or such sources satisfy other exemption levels determined by the Board;

"exposed workers" means persons, either self-employed or working for an employer, subject to an exposure incurred at work from practices and work activities covered by these regulations and liable to result in doses exceeding one or other of the dose levels equal to the dose limits for members of the public;

"exposure" means the act or condition of being exposed to ionizing radiation. Exposure can be either external exposure (irradiation by sources outside the body) or internal exposure (irradiation by sources inside the body). Exposure can be classified as either normal exposure or potential exposure; either occupational, medical or public exposure: and, in intervention situations, either emergency exposure or chronic exposure. The term exposure is also used in radiodosimetry to express the amount of ionization produced in air by ionizing radiation;

"external employer" means any person, other than the radiation employer, and including members of the staff of the external employer, performing services of any sort in a controlled area;

"Gray" (Gy) means the name of the unit of absorbed dose. One gray is equal to one joule per kilogram:

$$1 \text{ Gy} = 1 \text{ J kg}^{-1};$$

"health detriment" means an estimate of the risk at reduction in length and quality of life occurring in a population following exposure to ionizing radiation. This includes loss arising from somatic effects, cancer and severe genetic disorder;

"health record" means, in relation to a worker, the record of medical surveillance of that worker maintained by the employer in accordance with regulation 45;

"intake" means the process of taking radionuclides into the body by inhalation or ingestion or through the skin;

"international nuclear transport" means the carriage of a consignment of nuclear material by any means of transportation intended to go beyond the territory of the State where the shipment

originates beginning with the departure from a facility of the shipper in that State and ending with the arrival at a facility of the receiver within the State of ultimate destination;

"intervention" means a human activity that prevents or decreases the exposure of individuals to radiation from sources which are not part of a practice and work activity or which are out of control, by acting on sources, transmission pathways and individuals themselves;

"intervention level" means a value of avertable equivalent dose, avertable effective dose or a derived value, at which intervention measures should be considered. The avertable dose or derived value is solely that associated with the exposure pathway to which the intervention measure is to be applied;

"ionizing radiation" means the transfer of energy in the form of particles or electromagnetic waves of a wavelength of 100 nanometers or less or a frequency of 3×10^{15} Hertz or more capable of producing ion pairs in biological materials;

"local rules" means rules made in accordance with regulation 36;

"maintained", where the reference is to maintaining plant, apparatus, equipment or facilities, means maintained in an efficient state, in efficient working order and good repairs;

Cap. 234.

"Maltese ship" shall have the same meaning as is assigned to it by article 3 of the Merchant Shipping Act;

"medical exposure" means exposure incurred by -

- (a) patients as part of their own medical or dental diagnosis or treatment;
- (b) persons knowingly and voluntarily helping (other than those occupationally exposed), in the support and comfort of patients undergoing medical diagnosis and treatment; and
- (c) volunteers in a programme of biomedical research involving their exposure;

"member of the public" means in a general sense, any individual in the population except, for the purposes of these regulations, when subject to occupational or medical exposure, and for the purpose of verifying compliance with the annual dose limit for public exposure, shall mean the representative individual in the relevant critical group;

"Minister" means the Ministers responsible for occupational health and safety, for the environment, for health or for internal affairs, acting together or separately as appropriate;

"natural radiation sources" mean sources of ionizing radiation from natural terrestrial or cosmic origin;

"normal exposure" means an exposure that is expected to be received under normal operating conditions of an installation or a source, including possible minor mishaps that can be maintained under control;

"notification" means the requirement of submitting a document

to the Board to notify the intention to carry out a practice or work activity or any other action within the scope of these regulations;

"nuclear material" means plutonium except that with isotopic concentration exceeding 80% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing;

"occupational exposure" consists of all exposures of workers incurred in the course of their work, with the exception of exposures excluded from these regulations and exposures from practices and work activities or sources exempted by these regulations;

"outside worker" means a category A person (including trainees, apprentices or students over 18 years) who carries out services in the controlled area of any employer (other than the controlled area of his own employer), whether employed temporarily, permanently, or as a self-employed person;

"person" includes a body of persons and any body corporate established by or under any law;

"potential exposure" means exposure, that is not expected to be delivered with certainty, with a probability of occurrence that can be estimated in advance, that may result from an accident at a source or owing to an event or sequence of events of a probabilistic nature, including equipment failures and operating errors;

"practice" means any human activity action that can increase the exposure of individuals to radiation, or extend exposure or the likelihood of exposure to additional people from an artificial source, or from a natural radiation source where natural radionuclides are processed for their radioactive, fissile or fertile properties, except in the case of an emergency exposure;

"public exposure" means an exposure incurred by members of the public from radiation sources, excluding any occupational or medical exposure as well as the radiation from the local undisturbed background, but including exposure from authorised sources, practices and from intervention situations;

"qualified expert" means a person having the knowledge and training needed to carry out physical, technical or radiochemical tests enabling doses to be assessed, and to give advice in order to ensure effective protection of individuals and the correct operation of protective equipment, and whose capacity to act as a qualified expert is recognized by the Board. A qualified expert may be assigned the technical responsibility for the tasks of radiation protection of workers and members of the public;

"radiation employer" shall have the same meaning as is assigned to the word "employer" by article 2 of the Occupational Health and Safety Authority Act and includes: Cap. 424.

- (a) any natural or legal person who carries out the practices or work activities referred to in regulation 4 and, for the purposes of regulations 17 and 19,

includes a person who intends to carry out such work and who has the legal responsibility under national law for such practices or work activities; and

- (b) any duty imposed by these regulations on an employer in respect of his worker shall extend to a self-employed person in respect of himself;

"radiation passbook" means -

- (a) in the case of a worker employed by an employer in Malta a passbook approved by the Board for the purpose of these regulations;
- (b) in the case of an outside worker employed by an employer in an EU member State, a passbook authorised by the competent authority for that member State, as the case may be;

"radiation weighting factor" (w_R) is a dimensionless factor used to weight the dose absorbed in tissue according to the type of radiation;

"radiation worker" is any person who works, whether full or part time or temporarily, for an employer who has recognised rights and duties in relation to occupational radiation protection;

"radioactive contamination" means the presence of radioactive substances in or on any material, surface (including any surface of the body or clothing) or environment, including liquids or gases, or the human body where they are undesirable or could be harmful. In the specific case of the human body, this radioactive contamination includes both external skin contamination and internal contamination, irrespective of route of intake;

"radioactive substance" means any substance that contains one or more radionuclides the activity or concentration of which cannot be disregarded as far as radiation protection is concerned;

"radiological emergency" means a situation that requires urgent action in order to protect workers, members of the public or the population either partially or as a whole;

"radioactive waste" means a material of whatever physical form, remaining from practices and work activities or interventions, for which no further use is foreseen at present and which (i) contains or is contaminated with radioactive substances having activity or activity concentration higher than the relevant level of exemption from regulatory control, and (ii) exposure to which is not excluded from these regulations;

Cap. 234. "Registrar-General" shall have the same meaning as is assigned to it by article 2 of the Merchant Shipping Act;

"regulatory authority" means the Radiation Protection Board, jointly set up by the below mentioned members, which exercise their respective regulatory functions in the area of nuclear safety and radiation protection through the Board:

- (1) the Occupational Health and Safety Authority set up in terms of the Occupational Health and Safety Authority Act as regards the protection of workers from exposure

to radiation sources at work;

- (2) the Environment Protection Directorate or other competent authority as established by virtue of article 6 of the Environment Protection Act, as regards protection of the environment from radiation sources; Cap. 435.
- (3) the Superintendent of Public Health in terms of the Department of Health (Constitution) Ordinance, in matters relating to the protection of the general population from radiation sources; Cap. 94.
- (4) the Civil Protection Department established by the Civil Protection Act in relation to preparation for and response to civil emergencies; Cap. 411.
- (5) any other authority which, in the opinion of the Prime Minister, after consultation with the Board, may have a regulatory function in the field of ionizing radiation;
- (6) any other authority to which the Ministers responsible for occupational health and safety, civil protection, health or the environment may, from time to time, assign any of the responsibilities of the above-mentioned under these regulations:

Provided that the Prime Minister shall issue a notice of any such assignment of responsibilities in the Gazette;

"sealed source" means a source containing any radioactive substance that is permanently sealed in a capsule or closely bounded and in a solid form; and the capsule or material of which is strong enough to maintain leaktightness under the conditions of use and wear for which the source was designed as well as in cases of foreseeable mishaps;

"Sievert" means the name of the unit of equivalent or effective dose. One sievert is equivalent to one joule per kilogram:

$$1 \text{ Sv} = 1 \text{ J kg}^{-1};$$

"stochastic effects" of radiation are radiation effects which generally occur without a threshold level of dose and whose probability of occurring is proportional to the dose magnitude, whereas the severity of effects is independent of dose;

"source" means an apparatus, a radioactive substance or an installation capable of emitting ionizing radiation or radioactive substances;

"supervised area" means an area subject to appropriate supervision for the purpose of protection against ionizing radiation and which has been so designated by the employer in accordance with regulation 35;

"tissue weighting factor" (w_T) is a dimensionless factor used to weight the equivalent dose in a tissue T;

"trainee" means a person aged 16 years or over (including a student) who is undergoing instruction or training which involves operations which would, in the case of a worker, be work with ionising radiation;

"transport" means, in relation to a radioactive substance, carriage of that substance on a road or through another public place (whether on a conveyance or not), or by rail, inland waterway, sea or air and, in the case of transport on a conveyance, a substance shall be deemed as being transported from the time that it is loaded onto the conveyance for the purpose of transporting it until it is unloaded from that conveyance, but a substance shall not be considered as being transported if -

- (a) it is transported by means of a pipeline or similar means; or
- (b) it forms an integral part of a conveyance and is used in connection with the operation of that conveyance;

"uranium enriched in the isotope 235 or 233" means uranium containing the isotope 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature;

Cap. 424.

"work" shall have the same meaning as is assigned to it by article 2 of the Occupational Health and Safety Authority Act and shall include any instruction or training which a person undergoes as a trainee and the meaning of "at work" shall be considered accordingly;

"work activity" means a sequence of man-made actions, involving naturally occurring radionuclides, which are not aimed at processing and, or extracting these radionuclides for their radioactive, fissile or fertile properties;

Cap. 424.

"worker" shall have the same meaning as is assigned to it by article 2 of the Occupational Health and Safety Authority Act.

Application.

4. (1) These regulations shall apply to all practices and work activities which involve a risk from ionizing radiation emanating from an artificial source or from a natural radiation source in cases where natural radionuclides are or have been processed in view of their radioactive, fissile or fertile properties, namely:

- (a) the production, processing, handling, use, holding, storage, transport, supply, import to and export from Malta, transit through Maltese territory and disposal of radioactive substances;
- (b) the operation of any electrical equipment emitting ionizing radiation and containing components operating at a potential difference of more than 5 kV;
- (c) discontinuance or cessation of a practice or work activity involving radioactive substances and devices that produce radiation and are used for industrial, medical, agricultural, research and education purposes;
- (d) any other practice or work activity specified from time to time by the Board.

(2) In accordance with Part II, these regulations shall apply to nuclear material used for peaceful purposes while in international

nuclear transport, and as applicable to domestic use, storage and transport.

(3) In accordance with Part XII they shall also apply to work activities which are not covered by subregulation (1) but which involve the presence of natural radiation sources and may lead to a significant increase in the exposure of workers or members of the public which cannot be disregarded from the radiation protection point of view.

(4) In accordance with Part XIV it shall also apply to any intervention in cases of radiological emergencies or in cases of lasting exposure resulting from the after-effects of a radiological emergency or a past or old practice or work activity.

(5) These regulations shall not apply to exposures associated with excluded or exempted situations.

PART II

PHYSICAL PROTECTION OF NUCLEAR MATERIAL

5. For the purpose of article 3(4) of the Act, the text of the Convention, which these regulations shall implement, is being published in the Sixth Schedule.

Text of
Convention.

6. (1) No person shall, with regards to nuclear material -

- (a) export or authorize the export of such material from Malta;
- (b) import or authorize the import of such material into Malta;
- (c) transit Maltese territory by land or through its airports or seaports,

Physical protection
requirements for
the import into,
transit through or
export from
Maltese territory of
nuclear material.

unless prior authorisation has been granted by the Board, acting in close co-ordination with the Malta Maritime Authority and the Department of Civil Aviation, which may stipulate any conditions and levy any charges in this regard.

(2) The Board shall not grant authorisations for -

- (a) importation of nuclear material from, or transit through Maltese territory of such material en route to, States which are not party to the Convention, or
- (b) the export of such material from Malta,

unless the Board receives assurances that such material will be protected at the levels described in Annex I of the Sixth Schedule during the international nuclear transport and is supplied with all relevant information to enable it to inform in advance the States which the nuclear material is expected to transit by land or internal waterways or whose airports and seaports it is expected to enter.

7. (1) No Maltese ship or aircraft shall carry nuclear material unless such material is protected at the levels described in Annex I of the Sixth Schedule during international nuclear transport.

International
nuclear transport
by Maltese ships
and aircraft.

(2) It shall be the duty of the commander in the case of a Maltese aircraft, to ensure that there is prior authorisation for the

transport of nuclear material from the competent authorities of the exporting and importing states, after giving the necessary assurances and satisfying any conditions in this regard.

(3) It shall be the duty of the master, in the case of a Maltese ship, to ensure that there is prior authorisation for international nuclear transport from the Registrar-General, after giving the necessary assurances and satisfying any conditions in this regard:

Provided that the Registrar-General may stipulate any conditions and levy any charges in relation to such authorisations, and it shall be the duty of the master to ensure that these conditions are at all times adhered to.

Prohibition of activities in relation to nuclear material.

8. No person shall intentionally commit -

- (a) an act without lawful authority which constitutes the receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material and which causes or is likely to cause death or serious injury to any person or substantial damage to property;
- (b) a theft or robbery of nuclear material;
- (c) an embezzlement or fraudulent obtaining of nuclear material;
- (d) an act constituting a demand for nuclear material by threat or use of force or by any other form of intimidation;
- (e) a threat -
 - (i) to use nuclear material to cause death or serious injury to any person or substantial property damage, or
 - (ii) to commit an offence described in paragraph (b) in order to compel a natural or legal person, international organization or State to do or to refrain from doing any act;
- (f) an attempt to commit any offence described in paragraphs (a), (b) or (c); and
- (g) an act which constitutes participation in any offence described in paragraphs (a) to (f).

PART III

RADIATION PROTECTION BOARD

Functions and responsibilities.

9. (1) There shall be set up a Radiation Protection Board, hereinafter referred to as the Board, which shall act as the regulatory authority in the field of nuclear safety and radiation protection.

(2) The Board shall have such functions as may devolve on it under any other law or as may be assigned to it in writing by the Prime Minister or by the member agencies represented on the Board. In the case that other regulations are in force governing occupational, public, and medical exposures, or environmental protection and safety of sources, which in some way address the

use of ionizing radiation, the Board shall, if it considers it necessary, make recommendations to the Prime Minister for the reallocation of the regulatory responsibility to the Board itself or to some other authority as the Board deems fit.

(3) It shall be the function of the Board to:

- (a) take the necessary measures to improve the co-operation and co-ordination of the government bodies which have responsibility for issues related to occupational health and safety, environment, public health and civil protection amongst themselves and with other interested parties;
- (b) tender advice to the Prime Minister on allocation of responsibilities in the field of nuclear safety and radiation protection when these are unclear or unresolved;
- (c) co-ordinate the preparation of regulations governing notification, authorization of practices, work activities, radiation sources and establishing radiation protection and safety requirements;
- (d) define exposures that are excluded from regulatory requirements on the basis of their being unamenable to regulatory control;
- (e) receive notifications, and issue authorisations and grant exemptions concerning the possession and use of radiation sources, subject to any condition that may be required in the opinion of the Board and to revoke at any time any such authorisations if the Board feels that the required standards or levels of safety are not being complied with;
- (f) co-ordinate and conduct inspections and enforcement actions to assess radiation safety conditions and compliance with applicable regulatory and authorisation requirements and to protect the health and safety of workers and the public;
- (g) compile a national register of practices, work activities and sources;
- (h) authorise persons to carry out inspections and to take such action on its behalf on particular issues of regulatory interest and such persons shall be construed as being officers as per Part IV of the Occupational Health and Safety Authority Act; Cap. 424.
- (i) set up and run a National Interim Storage Facility for orphan and disused radioactive sources;
- (j) gather the required data to enable an assessment of total exposure from all practices and work activities in Malta and including the distribution of the individual occupational and public exposures for each type of practice, and to enable the setting up of a National Register for Occupational Exposure to Ionising Radiation;

- (k) initiate surveys on background radiation and radioactive contamination of all environmental media;
- (l) approve the capacity of persons to act as approved dosimetric services and qualified experts subject to the provisions of regulation 11;
- (m) establish guidance on protective measures required in controlled and supervised areas;
- (n) make recommendations, or provide technical advice on intervention and emergency responses, as appropriate;
- (o) advise other governmental authorities and other persons on matters within the competence of the Board;
- (p) promote or carry out research on radiation safety issues of regulatory concern;
- (q) maintain contact for information exchange and cooperation in any field related to nuclear safety and radiation protection with regulatory bodies of other countries and relevant international organizations;
- (r) establish appropriate mechanisms to inform the public about the regulatory process and the radiation safety aspects of regulated practices and work activities;
- (s) coordinate the establishment of technical standards, preparation of Codes of Practice and other guidance documents by the relevant authorities;
- (t) appropriately investigate any accident or incident involving radiation sources at a practice or work activity;
- (u) be the national body which gives effect to any decision of the UN Security Council or International Atomic Energy Agency, or other internationally recognised entity or competent authority in the field of nuclear safety and radiation protection whenever so directed by the Prime Minister;
- (v) to identify organisations, which may need to be involved in emergency situations and relevant intervention and define their responsibilities; and
- (w) take on any other additional activities in the field of radiation protection which the member agencies comprising the Board may, from time to time, pass on to the Board.

(4) Any decisions taken by the Board in respect of anything related to a notification, authorisation or exemption of practices, work activities, and sources, as well as in respect of any other of its functions, shall be considered to have been taken on behalf, and with the full powers, of the member agencies represented on the Board. Any document pertaining to any such decisions shall be signed by the Executive Chairperson.

(5) A person who feels aggrieved by any decisions taken by the

Board, shall have the right to ask the Board to reconsider such decisions, citing reasons for requesting a reconsideration.

10. (1) The Prime Minister shall appoint officers of the member agencies to serve as expert members on the Board. The Board shall be composed as follows: Composition of the Board.

- (a) one member representing the Occupational Health and Safety Authority;
- (b) one member representing the Environment Protection Directorate;
- (c) one member representing the Superintendent of Public Health;
- (d) one member representing the Civil Protection Department.

(2) The Occupational Health and Safety Authority shall also appoint a technically competent person to act as Executive Chairperson to the Board, who shall be responsible for the organization of the work of the Board.

(3) Each member shall hold office for a period of three years, and the members so appointed may be re-appointed on the expiry of their term:

Provided that they shall remain in office on completion of their term, until the Prime Minister formally informs them of the appointment of a substitute.

(4) A member of the Board may, by notice in writing addressed to the Prime Minister, resign his membership.

(5) The Prime Minister may remove a member of the Board from office if, in the opinion of the Prime Minister, such member is unfit to continue in office or has become incapable of properly performing his duties as a member.

(6) The Board shall meet as often as necessary to discharge its functions, either at the request of the Executive Chairperson or at the request of any other two members representing different member agencies.

(7) Three persons attending a meeting shall constitute a quorum. The Executive Chairperson shall, in the event of a tie in voting, have both an initial vote as well as a casting vote:

Provided that without prejudice to the preceding subregulation, the Board shall regulate its own procedures.

(8) It shall be the joint duty of the member agencies constituting the Board to ensure that the overall functions of the Board are carried out in close collaboration and as efficiently as possible, and the Occupational Health and Safety Authority shall take the lead in co-ordinating the administrative actions of the Board.

11. (1) The Board (or such other person as may from time to time be specified in writing by it) may, by a certificate in writing, approve (in accordance with such criteria as may from time to time Approval of services.

be specified by the Occupational Health and Safety Authority) -

- the approved medical practitioners;
- the approved occupational health services,

for such of the purposes of these regulations as are specified in the certificate.

(2) The Board may, by a certificate in writing, approve -

- the approved dosimetric services,
- the qualified experts,

for such of the purposes of these regulations as are specified in the certificate.

(3) A certificate made pursuant to subregulations (1) and (2) may be made subject to conditions and may be revoked in writing at any time.

(4) Any approval granted pursuant to subregulations (1) and (2) may be reassessed at such suitable periods as considered appropriate by the issuing body.

Funding for Board.

12. (1) The Occupational Health and Safety Authority shall ensure sufficient funding to enable the Board to fulfil its obligations. This shall be ensured irrespective of any funds obtained pursuant to subregulation (2).

(2) The Board may charge any person a fee for performing any of its functions under these regulations, and such a fee may include provision for costs incurred in the event of inability of the radiation employer to return disused sources to the manufacturer, and such fees shall be made payable to the Occupational Health and Safety Authority.

(3) When the Board requests payment, the fee due, which shall be recoverable only as a civil debt, shall become payable one month after a statement to that effect has been sent or given.

Advisory committees.

13. The Board shall be entitled to engage persons to serve as individual expert advisers or to set up advisory committees and appoint members to serve on such advisory committees as may be useful and appropriate for the Board to enable it to better discharge its responsibilities.

Address of Board.

14. The offices of the Board shall be at any address that the Board may occupy, provided that this has been notified in the Gazette. All correspondence should be addressed to the Executive Chairperson of the Board.

Cooperation with other Maltese authorities.

15. The Board shall establish a permanent mechanism for exchange of information and cooperation with any relevant Maltese authority as it considers necessary in the fulfilment of its duties, including but not limited to:

- (a) the Customs authorities, to ensure adequate control, including, as appropriate, prior notification of, or authorisation by, the Board, over sources entering and leaving the country and the proper identification and

authorization of the persons importing or receiving the sources;

- (b) the Ministry for Transport to ensure that adequate levels of safety are maintained during the storage and transport of radioactive material, whether on Maltese territory or on ships or aircraft under Maltese jurisdiction.

16. The Prime Minister may, after consultation with the other relevant authorities -

Powers of Prime Minister in relation to Board.

- (a) confer on the Board any new functions for purposes connected with the protection from radiation hazards,
- (b) terminate any function of the Board made under these regulations.

PART IV

NOTIFICATION AND AUTHORISATION

17. (1) Any person who intends to -

Notification.

- (i) adopt or introduce, conduct, discontinue or cease to operate a practice or work activity involving the use of ionising radiation, as well as
- (ii) design, manufacture, construct or assemble, acquire, import or export, distribute, sell, loan or hire, possess, locate, commission, use and operate, maintain or repair, transfer or decommission, disassemble, transport, store or dispose of radioactive material, as applicable, within a practice or work activity,

shall, at least thirty days before doing so:

- (a) submit to the Board a formal written notification of the intention to do so giving all information listed in the First Schedule and any other information which may from time to time be required by the Board, and
- (b) if appropriate, in accordance with the requirements established by the Board, also submit to the Board a request for formal written authorisation pursuant to regulation 19 from the Board to do so:

Provided that the Board may exclude the exposure from such a practice, work activity or source, or exempt the practice, work activity or the source from the requirements of these regulations, including the requirements of notification and authorization.

(2) The requirement to submit appropriate notification and request authorisation pursuant to subregulation (1) shall also apply to practices and work activities already in operation on the date of entry into force of these regulations, but in such cases these practices and work activities shall have six months to perform the notification or request authorisation pursuant to regulation 19, as appropriate.

(3) Where a radiation employer has notified a practice or work

activity in accordance with subregulation (2), the Board may, by notice in writing served on him, require that radiation employer to provide such additional particulars of that work as it may reasonably require, and in such a case the radiation employer shall provide those particulars by such time as is specified in the notice or by such other time as the Board may subsequently agree.

(4) The radiation employer shall submit to the Board, for its examination and approval, all relevant information about the practice or work activity which may be considered necessary by the Board and which shall include:

- (a) plans for installations involving an exposure risk, expressed in safety assessment, and of the proposed siting, design and operation of such installations within the territory concerned, from the point of view of radiation protection;
- (b) adequacy of the protection measures to be adopted, before acceptance into service approval of operation of new installations is given, against any radiation exposure or radioactive contamination liable to extend beyond the perimeter, taking into account, if relevant, demographic, meteorological, geological, hydrological and ecological conditions.

(5) Where a radiation employer has notified work in accordance with subregulation (2) and subsequently makes a material change in that work which would affect the particulars so notified, he shall forthwith notify the Board of that change and request new authorisation.

Exclusions and exemptions from requirement to perform notification.

18. (1) Exposures from natural radioactivity in the body, from cosmic radiation on Earth's surface, unmodified concentrations of natural radionuclides in raw materials and any other sources that are essentially unamenable to control, as may be determined by the Board, are excluded from the requirements of these regulations.

(2) The requirement to notify the Board of the intention to carry out a practice or work activity pursuant to regulation 17 shall not apply to the following:

- (a) radioactive substances contained in a material having mass of 1 tonne or less, where the concentration of activity per unit mass, of a given radionuclide, at any one time, do not exceed the exemption values set out in column 2 of Table A of the Second Schedule or, in exceptional circumstances different values authorized by the Board that nevertheless satisfy the basic general criteria set out in the Second Schedule; or
- (b) radioactive substances contained in a material having mass of 1 tonne or less, where the quantities involved do not exceed in total (for the same radionuclide), at any one time, the exemption values set out in column 3 of Table A of the Second Schedule or, in exceptional circumstances different values authorized by the Board that nevertheless satisfy the basic general criteria set

- out in the Second Schedule; or
- (c) apparatus containing radioactive substances exceeding the quantities or concentration values specified in paragraphs (a) or (b), provided that:
 - (i) it is of a type approved by the Board; and
 - (ii) it is constructed in the form of a sealed source; and
 - (iii) it does not cause, in normal operating conditions, a dose rate exceeding $1 \mu\text{Sv h}^{-1}$ at a distance of 0.1 m from an accessible surface of the apparatus, nor a dose to any member of the public exceeding $10 \mu\text{Sv h}^{-1}$ and
 - (iv) conditions for disposal have been specified by the Board; or
 - (d) the operation of any electrical apparatus to which these regulations apply, other than that referred to in paragraph (e), provided that:
 - (i) it is of a type approved by the Board; and
 - (ii) it does not cause, in normal operating conditions, a dose rate exceeding $1 \mu\text{Sv h}^{-1}$ at a distance of 0.1 m from any accessible surface of the apparatus, nor a dose to any member of the public exceeding $10 \mu\text{Sv h}^{-1}$; or
 - (e) the operation of any cathode ray tube intended for the display of visual images, or other electrical apparatus operating at a potential difference not exceeding 30 kV, provided that this operation does not cause, in normal operating conditions, a dose rate exceeding $1 \mu\text{Sv h}^{-1}$ at a distance of 0.1 m from any accessible surface of the apparatus, nor a dose to any member of the public exceeding $10 \mu\text{Sv h}^{-1}$; or
 - (f) radioactive or radioactively contaminated material, which is subject to a valid exemption or unconditional clearance issued by the Board.

19. (1) Unless exempted by regulation 18, it shall be the duty of the radiation employer, to submit a request for authorisation to the Board and to obtain written authorisation from the Board to operate a practice or work activity prior to commencement of any activity relating to or involving the emission of ionising radiation and/or generation of radioactive residues or waste, or discharge of radioactive substances into the environment in any of the following practices or work activities:

Authorisation.

- (a) operation and decommissioning of any facility of the nuclear fuel cycle and exploitation and closure of uranium mining;
- (b) the deliberate addition of radioactive substances in the production and manufacture of medicinal products and the import or export of such goods;
- (c) the deliberate addition of radioactive substances in the

- production and manufacture of goods and the import or export of such goods;
- (d) the deliberate administration of radioactive substances to persons and, in so far as radiation protection of human beings is concerned, animals for the purpose of medical or veterinary diagnosis, treatment or research;
- (e) the use of X-ray sets or radioactive sources for -
- industrial radiography or
 - processing of products or
 - research or
 - education or
 - the exposure of persons for medical diagnosis or treatment and
 - the use of accelerators except electron microscopes;
- (f) where an authorisation has been granted pursuant to subregulation (1) and the radiation employer, to whom the authorisation was granted, subsequently makes a material or operational change to the circumstances relating to that authorisation;
- (g) any other practice or work activity for which the Board may from time to time decide that authorisation is required:

Provided that the Board may specify that a practice or work activity shall not require authorisation where the practice or work activity has been exempted from notification by the Board.

(2) An authorisation granted under subregulation (1) may be granted subject to conditions and with or without limit of time and may be revoked in writing at any time.

(3) Where an authorisation has been granted pursuant to subregulation (1) and the radiation employer to whom the authorisation was granted subsequently makes a material change to the circumstances relating to that authorisation, that change shall forthwith be notified to the Board by the radiation employer.

(4) It shall be the duty of the radiation employer to obtain prior authorisation from the Board for the disposal, recycling or reuse of radioactive substances or materials containing radioactive substances arising from any practice or work activity subject to the requirement of notification or authorisation:

Provided that the Board may release the disposal, recycling or reuse of such substances or materials from the requirements of these regulations provided they comply with clearance levels to be set by the Board:

Provided further that these clearance levels shall take into account the basic exemption criteria to be established by the Board on its behalf and shall not be higher than the levels set out in the Second Schedule unless otherwise approved by the Board.

PART V

JUSTIFICATION, OPTIMIZATION AND DOSE LIMITATION
FOR PRACTICES OR WORK ACTIVITIES

20. (1) It shall be the duty of the radiation employer to ensure that all new classes or types of practice resulting in exposure to ionizing radiation are justified, prior to being first adopted or first approved, taking into account their economic, social or other benefits in relation to the health detriment they may cause.

Justification and
optimisation.

(2) The radiation employer shall review the justification of existing practices or work activities or types of practice whenever new and important evidence about their efficacy or consequences is acquired.

(3) In addition, the radiation employer shall ensure that:

- (a) in relation to exposures from any source within a practice or work activity, protection and safety shall be optimized in order that the magnitude of individual doses, the number of people exposed and the likelihood of incurring exposures all be kept as low as reasonably achievable, economic and social factors being taken into account, within the restriction that the doses to individuals delivered by the source be subject to dose constraints;
- (b) without prejudice to regulation 23, the sum of the doses from all relevant practices or work activities shall not exceed the dose limits laid down in these regulations for exposed worker, apprentices and students and members of the public:

Provided that paragraph (b) shall not apply to:

- (a) medical exposures of individuals as part of their own medical diagnosis or treatment,
- (b) to exposures of comforters and carers and
- (c) to exposures of volunteers participating in medical and associated research programmes.

(4) The radiation employer shall ensure that the process of optimization of protection and safety measures, which may range from intuitive qualitative analyses to quantitative analyses using decision aiding techniques, shall be sufficient to take all relevant factors into account in a coherent way so as to contribute to achieving the following objectives:

- (a) to determine optimized protection and safety measures for the prevailing circumstances, with account being taken of the available protection and safety options as well as the nature, magnitude and likelihood of exposures; and
- (b) to establish criteria, on the basis of the results of the optimization, for the restriction of the magnitudes of exposures and of their probabilities by means of measures for preventing accidents and mitigating their consequences.

(5) The principle set out in subregulation (3)(a) shall apply to

all exposures to ionizing radiation resulting from the practices or work activities referred to in regulation 4 (1).

Dose constraints.

21. (1) The radiation employer shall ensure that, except for medical exposure, the optimization of the protection and safety measures associated with any particular source within a single practice or work activity shall be subject to dose constraints. The magnitude of the generic dose constraint set by the Board is given in the Third Schedule.

(2) The Board may establish guidance, which may include dose constraints, on the appropriate procedures to be applied to individuals who are comforters and carers or who are participating in medical and biomedical research programmes.

Dose limitation.

22. (1) Every radiation employer shall ensure that the normal exposure of individuals shall be restricted so that neither the total effective dose nor the total equivalent dose to relevant organs or tissues, caused by the possible combination of exposures from ionising radiation from all relevant practices or work activities, exceeds the relevant dose limit specified in the Third Schedule for such class of person in any calendar year, except in special circumstances provided for in regulation 23.

(2) Dose limits shall not apply to doses incurred by undisturbed local background and to medical exposures from authorized practices.

(3) Where there is reasonable cause to believe that any worker has been exposed to an effective dose greater than 20 mSv in any calendar year, the employer shall, as soon as is practicable:

- (a) undertake an investigation into the circumstances of the exposure for the purpose of determining whether the dose limit referred to in the appropriate class in the Third Schedule is likely to be complied with; and
- (b) notify the Board of that suspected exposure.

Specially authorised exposures.

23. (1) In exceptional circumstances, excluding radiological emergencies and evaluated case by case, the Board, may, where some specific operation so requires, authorize individual occupational exposures of some identified workers exceeding the dose limits set out in the Third Schedule, provided that such exposures are -

- (i) limited in time,
- (ii) confined to certain working areas and;
- (iii) within maximum exposure levels defined for the particular case by the Board.

(2) Any authorisations granted pursuant to subregulation (1) shall take the following into account:

- (a) only category A workers as defined in regulation 28, and who volunteer to do so, may be subject to specially authorized exposures;
- (b) apprentices, students, pregnant women and

breastfeeding women who are likely to be bodily contaminated shall be excluded from such exposures;

- (c) the radiation employer shall carefully justify these exposures in advance and thoroughly discuss them with the voluntary workers, their representatives, the approved occupational health service or the qualified expert;
- (d) information about the risks involved and the precautions to be taken during the operation shall be provided to the relevant workers in advance;
- (e) all doses relating to such exposures shall be separately recorded in the individual dose record referred to in regulation 38 and the health record referred to in regulation 45.

(3) The exceeding of dose limits as a result of specially authorized exposures shall not necessarily constitute a reason by the employer for excluding from his usual occupation or relocating the worker, without the agreement of the worker.

(4) Protection of workers undertaking an intervention is specified in the Seventh Schedule.

24. (1) Each radiation employer shall take reasonable steps to ensure that the contribution to the exposure of the population as a whole from a practice or work activity is kept as low as reasonably achievable, economic and social factors being taken into account.

Exposure of the population as a whole.

(2) The Board, on behalf of the Superintendent of Public Health, shall take the necessary initiatives to ensure that the total of all such contributions shall be regularly assessed.

PART VI

ESTIMATION OF EFFECTIVE DOSE AND PRINCIPLES OF OPERATIONAL RADIATION PROTECTION

25. The Board shall, at any one time, be satisfied that the values and relationships to be used to estimate the relevant effective and equivalent doses as appropriate for external irradiation or for internal exposure from a radionuclide or mixture of radionuclides.

Effective dose estimation.

26. (1) Without prejudice to any other more detailed requirements in these regulation, it shall be the general duty of the radiation employer to develop, implement and document an appropriate system of operational radiation protection of exposed workers, including students, apprentices and other persons who might be affected by his practice or work activity, commensurate with the nature and extent of the risks associated with the practices or work activities and interventions under his responsibility and sufficient to ensure compliance with the requirements of these regulations, and, within this programme, to:

Operational radiation protection of exposed workers.

- (a) determine the measures and resources needed to achieve the protection and safety objectives and to ensure that the resources are provided and the measures properly implemented;

- (b) keep such measures and resources continually under review, and regularly to verify that the protection and safety objectives are being achieved;
- (c) identify any failures and shortcomings in the protection and safety measures and resources, and to take steps to correct them and prevent their recurrence;
- (d) establish arrangements, through representatives if appropriate, for facilitating consultation and cooperation between all relevant parties with respect to protection and safety; and
- (e) keep appropriate records regarding the discharge of their responsibilities.

(2) This system of operational radiation protection referred to in subregulation (1) shall be based in particular on the following:

- (a) prior evaluation to identify the nature and magnitude of the radiological risk to exposed workers and implementation of the occupational dose limitation and optimization of radiation protection in all working conditions;
- (b) classification of workplaces into different areas, where appropriate, by reference to an assessment of the expected annual doses and the probability and magnitude of potential exposures;
- (c) classification of workers into different categories;
- (d) implementation of control measures and monitoring relating to the different areas and working conditions, including, where necessary, individual monitoring;
- (e) medical surveillance.

(3) In the event of a breach of any applicable requirement of these regulations the radiation employer shall, as appropriate:

- (a) promptly inform the Board of any such breach, and whenever an emergency exposure situation has developed or is developing to also immediately inform the Civil Protection Department;
- (b) investigate the breach and its causes, circumstances and consequences;
- (c) take appropriate action to remedy the circumstances that led to the breach and to prevent a recurrence of similar breaches;
- (d) communicate to the Board, the causes of the breach and on the corrective or preventive actions taken or to be taken; as soon as possible and in any case by no later than ten working days; and
- (e) take any other actions that may be necessary as required by these regulations.

(4) The Board may, if it considers it necessary, require a radiation employer to set up a specialised radiation protection unit, distinct from production operation units, to perform radiation

protection tasks and provide specialist advice:

Provided that such a unit may be shared by several installations.

27. (1) Before a radiation employer commences a new practice or work activity involving work with ionising radiation in respect of which no risk assessment has been made by him, a suitable and sufficient assessment shall be made: Risk assessment.

- (i) a review of design and operational aspects related to a source, which is relevant to the protection of persons or the safety of the source;
- (ii) analysis of the provisions for safety and protection established by the design and operation of the source.

(2) The assessment referred to in subregulation (1) shall be:

- (a) in writing;
- (b) submitted to the Board as part of an application for notification or authorisation;
- (c) reviewed and amended as necessary and a copy of the latest assessment performed with any amendments made shall be kept at the practice.

(3) Without prejudice to subregulation (1), a radiation employer shall not carry out work with ionising radiation unless he has made an assessment sufficient to demonstrate that:

- (a) analysis of risks associated with normal conditions and accidental situations;
- (b) the nature and magnitude of the risks to workers and other persons arising from those hazards have been evaluated.

(4) Where the assessment made for the purposes of this regulation shows that a radiation risk to workers or other persons exists from an identifiable radiation accident, the radiation employer shall take all reasonably practicable steps to -

- (a) prevent any such accident;
- (b) limit the consequences of any such accident which does occur; and
- (c) provide workers with the appropriate information, instruction and training, and with the equipment necessary to restrict their exposure to ionising radiation.

(5) The radiation employer shall also keep a record of the ongoing system of instruction and training that shall comply with minimum requirements to be set by the Board.

PART VII

CLASSIFICATION OF EXPOSED WORKERS, APPRENTICES, AND STUDENTS

Categorization of
exposed workers.

28. (1) For the purposes of monitoring and surveillance, every radiation employer shall designate exposed workers in one of two categories:

- (a) category A: those exposed workers who are liable to receive an effective dose greater than 6 mSv per year or an equivalent dose greater than 3/10 of the dose limits for the lens of the eye, skin and extremities laid down in the Third Schedule;
- (b) category B: those exposed workers who are not classified as exposed category A workers.

(2) The radiation employer shall immediately inform those workers that they have been so designated further to subregulation (1).

(3) The radiation employer shall not designate a worker as a category A worker unless -

- (a) that worker is aged eighteen years or over; and
- (b) an approved medical practitioner or approved occupational health service has certified in the health record that that worker is fit for the work with ionising radiation which he is to carry out.

(4) The radiation employer may cease to treat a radiation worker as a category A worker only at the end of a calendar year except where -

- (a) an approved medical practitioner or approved occupational health service so requires; or
- (b) the radiation worker is no longer employed by the same radiation employer in a capacity that is likely to result in significant exposure to ionising radiation during the remainder of the relevant calendar year.

Information and
training.

29. Every radiation employer shall ensure that exposed workers, apprentices and students who, in the course of their work or studies are obliged to use sources, are given suitable and sufficient information, instruction and training on:

- (a) the health risks involved in their work including:
 - (i) the general radiation protection procedures and precautions to be taken and, in particular, those involved with operational and working conditions in respect of both the practice or work activity in general and each type of work station or job to which they may be assigned, and
 - (ii) the importance of complying with the technical, medical and administrative requirements;

- (b) in the case of women, the need for early declaration of pregnancy in view of the risks of exposure for the child to be born and the risk of contaminating the breastfeeding infant in case of bodily radioactive contamination and of the need to inform the employer as soon as possible as provided for in the Protection of Maternity at Work Places Regulations.

S.L. 424.11

30. (1) The radiation employer shall be responsible for assessing and implementing arrangements for the radiological protection of exposed workers.

Assessment and implementation of radiation protection measures.

(2) Subject to subregulation (4), every radiation employer shall consult such suitable qualified experts, as are necessary, for the purpose of advising the radiation employer as to the observance of these regulations and shall, in any event, consult one or more suitable qualified experts with regard to:

- (a) prior critical examination of plans for installations from the point of view of radiation protection;
- (b) the acceptance into service of new or modified sources from the point of view of radiation protection;
- (c) regular checking of the effectiveness of protective devices and techniques;
- (d) regular calibration of measuring instruments and regular checking that they are serviceable and correctly used;
- (e) periodical review (and update) of relevant procedures and documentation.

(3) Where a qualified expert is consulted pursuant to the requirements of subregulation (2) (other than in respect of the observance of that subregulation), the radiation employer shall appoint that qualified expert in writing and shall include in that appointment the scope of the advice which the qualified expert is required to give.

(4) Nothing in subregulation (2) shall require a radiation employer to consult a qualified expert where the only work with ionising radiation undertaken by that employer is work specified in regulation 18.

(5) The radiation employer shall provide any qualified experts appointed by him with adequate information and facilities for the performance of his functions.

PART VIII

MEASURES FOR RESTRICTION OF EXPOSURE

31. (1) The radiation employer shall be responsible for assessing and implementing arrangements for the radiological protection of the public, workers and the environment.

Restriction of exposure.

(2) Without prejudice to subregulation (1), every radiation employer shall, in relation to any work with ionising radiation that he undertakes, take all necessary steps to restrict so far as is reasonably practicable the extent to which his workers and the

public are exposed to ionising radiation.

(3) Without prejudice to the generality of subregulation (2), a radiation employer shall so far as is reasonably practicable achieve the restriction of exposure to ionising radiation required under that subregulation by means of engineering controls and appropriate siting, design, features organisation and management system, operational procedures and in addition by the provision and use of safety features protective equipment and warning devices.

(4) A radiation employer who provides personal protective equipment along with its relevant operating procedures, shall take all reasonable steps to ensure that the procedures are understood, adhered to and protective equipment is properly used or applied as the case may be.

(5) Where it is appropriate to do so at the planning stage of radiation protection, dose constraints shall be used in restricting exposure to ionising radiation pursuant to subregulation (1).

(6) Every radiation employer shall, for the purpose of determining whether the requirements of subregulation (1) are being met, ensure that an investigation is carried out forthwith when the effective dose under normal operation, received by any of his workers for the first time in any calendar year, exceeds 6mSv or such lower effective dose as the employer may specify in his radiation safety documentation.

Maintenance and examination upgrade of control, monitoring equipment, operational procedures and personal protective equipment.

32. (1) A radiation employer who provides any engineering control and monitoring equipment, design feature, operational procedures, personal protective equipment and safety feature or warning device to meet the requirements of regulation 31 shall ensure -

- (a) that any such control, feature equipment or device is periodically and properly maintained and upgraded; and
- (b) where appropriate, that thorough examinations and tests of such controls, features equipment or devices are carried out at suitable intervals; and
- (c) a suitable record of that examination, maintenance and upgrade is made and kept for at least two years from the date on which the examination was made and that the record includes a statement of the condition of the equipment at the time of the examination.

Personal protective equipment.
S.L. 427.50

33. Any personal protective equipment provided by an employer pursuant to regulation 32 shall comply with any provision in the Personal Protective Equipment Regulations, that is applicable to that item of personal protective equipment.

Designation of controlled areas.

34. (1) Every radiation employer shall designate as a controlled area any area under his control which has been identified by an assessment made by him (whether pursuant to regulation 27 or otherwise) as an area in which -

- (a) it is necessary for any person who enters or works in the area to follow special procedures designed to

restrict significant exposure to ionising radiation in that area or prevent or limit the probability and magnitude of radiation accidents or their effects; or

- (b) any person working in the area is likely to receive an effective dose greater than 6mSv a year or an equivalent dose greater than 3/10 of any relevant dose limit referred to in the Third Schedule in respect of a worker aged eighteen years or above.

(2) An employer shall not intentionally create in any area conditions that would require that area to be designated as a controlled area unless that area is for the time being under the control of that employer.

(3) The minimum requirements for a controlled area are as follows:

- (a) the controlled area shall be delineated and access to it shall be restricted to individuals who have received appropriate instructions and shall be controlled in accordance with written procedures provided by the undertaking. Wherever there is a significant risk of the spread of radioactive contamination, specific arrangements shall be made, including for access and exit of individuals and goods;
- (b) taking into account the nature and extent of radiological risks in the controlled area, radiological surveillance of the working environment shall be organized in accordance with the provisions of regulations 37 and 38;
- (c) signs indicating type of area, nature of the sources and their inherent risks shall be displayed;
- (d) a warning symbol, recommended by ISO and signs indicating type of area, nature of the sources and their inherent risks shall be displayed;
- (e) working instructions appropriate to the radiological risk associated with the sources and the operations involved shall be laid down;
- (f) entrances and exits of controlled areas shall be provided with appropriate means for change of clothing, contamination monitoring and personal decontamination.

(4) The implementation of these duties shall be carried out under the responsibility of the radiation employer following consultations with the approved occupational health service or the qualified experts, and the working conditions shall be kept under review.

(5) Nothing in these regulations shall be construed as preventing a person from entering or remaining in a controlled area or a supervised area where that person enters or remains in any such area -

- (a) in the due exercise of a power of entry conferred on

him by or under any enactment; or

(b) for the purpose of undergoing a medical exposure.

(6) (a) The radiation employer of a controlled area in which outside workers perform activities shall be responsible, either directly or through contractual agreements, for the operational aspects of their radiological protection which are directly related to the nature of the controlled area and of the activities and shall ensure that the protection offered to the outside workers is equivalent to that given to his workers.

(b) In particular, for each outside worker performing activities in a controlled area, the radiation employer must:

(i) check that the radiation worker concerned has been passed as medically fit for the activities to be assigned to him;

(ii) ensure that the radiation worker has received specific training in connection with the characteristics of both the controlled area and the activities;

(iii) ensure that he has been issued with the necessary personal protective equipment;

(iv) also ensure that he receives individual exposure monitoring appropriate to the nature of the activities, and any operational dosimetric monitoring that may be necessary;

(v) ensure compliance with the general principles and limitation of doses referred to in regulation 22;

(vi) ensure that as soon as is reasonably practicable after the services carried out by that outside worker in that controlled area are completed, an estimate of the dose received by that radiation worker is entered into his radiation passbook; and

(vii) when the radiation passbook of the outside worker is in the possession of that employer, the passbook is made available to that radiation worker upon request.

(7) The external employer shall either directly or through contractual agreements with the radiation employer, ensure the operational radiological protection of their radiation workers as referred to in Part VI and this shall include appropriate measures to ensure:

(a) limitation of doses

(b) provision of information and training

(c) individual exposure monitoring and records

(d) medical surveillance.

35. (1) A radiation employer shall designate as a supervised area any area under his control, not being an area designated as a controlled area -

Designation of supervised areas

- (a) where it is necessary to keep the conditions of the area under review to determine whether the area should be designated as a controlled area; or
- (b) in which any person is likely to receive an effective dose greater than 1 mSv a year or an equivalent dose greater than 1/10 of any relevant dose limit referred to in the Third Schedule in respect of a worker aged eighteen years or above.

(2) The requirements for a supervised area are as follows:

- (a) as a minimum, taking into account the nature and extent of radiological risks in the supervised area, radiological surveillance of the working environment shall be organized in accordance with the provisions of regulations 37 and 38;
- (b) the area shall be appropriately delineated and signs indicating type of area, nature of the sources and their inherent risks shall be displayed;
- (c) working instructions and operational procedures appropriate to the radiological risk associated with the sources and the operations involved shall be laid down and periodically reviewed to determine the possible need to revise the protection measures or safety provisions, including boundaries of the area.

(3) The implementation of these duties shall be carried out under the responsibility of the radiation employer following consultations with the qualified experts or the approved occupational health service.

36. (1) For the purposes of enabling work with ionising radiation to be carried out in accordance with the requirements of these regulations, every radiation employer shall, in respect of any controlled area or, where appropriate having regard to the nature of the work carried out there, any supervised area, make and set down in writing such local rules as are appropriate to the radiation risk and the nature of the operations undertaken in that area.

Local rules and radiation protection supervisors.

(2) The radiation employer shall take all reasonable steps to ensure that any local rules made pursuant to subregulation (1) are complied with.

(3) The radiation employer shall ensure that such of those rules made pursuant to subregulation (1) as are relevant are brought to the attention of those workers and other persons who may be affected by them.

(4) A radiation employer shall -

- (a) appoint one or more suitable radiation protection supervisors for the purpose of securing compliance with these regulations in respect of work carried out in any area made subject to local rules pursuant to

- subregulation (1); and
- (b) set down in the local rules the names of such individuals so appointed.

PART IX

WORKPLACE MONITORING

Monitoring of the workplace.

37. (1) The radiation employer shall establish, maintain and keep under review a programme for sufficient radiological surveillance of controlled and supervised areas the workplace, commensurate with the nature and the risk associated with the source, which shall comprise, as appropriate:

- (a) the measurement of external dose rates, indicating the nature and quality of the radiation in question;
- (b) the measurement of air activity concentration and surface density of contaminating radioactive substances, indicating their nature and their physical and chemical states.

(2) The results of these measurements shall be recorded and, if necessary, used for estimating individual doses, as provided for in regulation 38.

Individual monitoring.

38. (1) Every radiation employer shall ensure that individual monitoring to enable an assessment of all doses of ionising radiation received by exposed category A workers shall be systematically carried out and that records are kept of such assessments.

(2) For the purposes of subregulation (1), the radiation employer shall make suitable arrangements with one or more approved dosimetry service for -

- (a) the making of systematic assessments of such doses by the use of suitable individual measurement for appropriate periods or, where individual measurement is inappropriate, by means of other suitable measurements; and
- (b) the making and maintenance of dose records relating to each category A worker.

(3) The radiation employer shall provide the approved dosimetry service with such information concerning his workers as is necessary for the approved dosimetry service to comply with the arrangements made for the purposes of subregulation (2).

(4) A radiation employer shall -

- (a) ensure that each outside worker employed by him is provided with a current individual radiation passbook which shall not be transferable to any other worker and in which shall be entered the particulars set out in the Fourth Schedule; and
- (b) make suitable arrangements to ensure that that employer keeps the particulars entered in the radiation passbook up-to-date during the continuance of the

employment of the outside worker.

(5) The radiation employer shall -

- (a) at the request of a category A worker employed by him (or of a person formerly employed by him as a category A worker) and on reasonable notice being given, obtain (where necessary from the approved dosimetry service) and make available to that person a copy of the dose record of that person; and
- (b) when a category A worker ceases to be employed by the employer, take all reasonable steps to provide to that person a copy of his termination record.

(6) The radiation employer shall ensure that monitoring for category B workers shall be at least sufficient to demonstrate that such workers are correctly classified in category B:

Provided that the Board may require the radiation employer to provide individual monitoring and if necessary individual measurements, using an approved dosimetric service, for category B workers.

(7) The radiation employer shall keep separate records of any exposures, whether measured or estimated, pursuant to special authorisations and accidental or emergency situations.

39. (1) Where a dosimeter or other device is used to make any individual measurement under regulation 38(2) and that dosimeter or device is lost, damaged or destroyed or it is not practicable to assess the dose received by a Category A worker over any period, the radiation employer shall make an adequate investigation of the circumstances of the case with a view to estimating the dose received by that person during that period and either -

Estimated doses
and special entries.

- (a) in a case where there is adequate information to estimate the dose received by that person, shall send to the approved dosimetry service an adequate summary of the information used to estimate that dose and shall arrange for the approved dosimetry service to enter the estimated dose in the dose record of that person; or
- (b) in a case where there is inadequate information to estimate the dose received by the Category A worker, shall arrange for the approved dosimetry service to enter a notional dose in the dose record of that person which shall be the proportion of the total annual dose limit for the relevant period;

and in either case the radiation employer shall take reasonable steps to inform the Category A worker of that entry and arrange for the approved dosimetry service to identify the entry in the dose record as an estimated dose or a notional dose as the case may be.

40. (1) Where any occurrence takes place, including accidental or emergency exposure, which is likely to result in a person receiving an effective dose of ionising radiation exceeding 6mSv or an equivalent dose greater than three-tenths of any relevant dose limit, the radiation employer shall -

Dosimetry for
accidents and
emergency
exposures.

- (a) in the case of any worker to whom a dosimeter or other device has been issued in accordance with regulation 38(2), arrange for that dosimeter or device to be examined and for the dose received to be assessed by the approved dosimetry service as soon as possible;
 - (b) in any other case, arrange for the dose to be assessed by an appropriate means as soon as possible, having regard to the advice of the qualified expert.
- (2) In such a case, the radiation employer shall -
- (a) take all reasonably practicable steps to inform each person for whom a dose assessment has been made of the result of that assessment; and
 - (b) submit the results of individual monitoring to the Board without delay.

Recording and reporting of results.

41. (1) The radiation employer shall ensure that a dose record shall be retained during the working life involving exposure to ionizing radiation of exposed workers, and afterwards until the individual has or would have attained the age of seventy-five years, but in any case not less than thirty years from the termination of the work involving exposure and that this shall include:

- (a) a record of the exposures measured or estimated, as the case may be, of individual doses pursuant to regulations 23, 38, 39 and 40;
- (b) in the case of exposures referred to in regulations 39 and 40, the reports relating to the circumstances and the action taken;
- (c) the results of workplace monitoring used to assess individual doses where necessary.

(2) The exposure referred to in regulations 23, 39 and 40 shall be recorded separately in the dose record referred to in subregulation (1).

(3) The results of the individual monitoring required by regulations 38, 39 and 40 shall be:

- (a) made available to the Board;
- (b) made available to the worker concerned in accordance with subregulation (5);
- (c) submitted to the qualified expert to interpret the efficiency of the employer's radiation protection programme;
- (d) submitted to the approved medical practitioner or approved occupational health service in order to interpret their implications for human health, as provided for in regulation 43.

(4) Each radiation employer shall ensure that workers have access at their request to the results of their individual monitoring, including the results of measurements which may have been used in estimating them, or of the assessments of their doses made as a

result of workplace measurements.

(5) The Board shall facilitate the appropriate exchange of all relevant information on the doses previously received by a worker in order to perform the medical examination prior to employment or classification as a category A worker pursuant to regulation 44 and to control the further exposure of workers.

PART X

DUTIES OF PERSONS IN RELATION TO PRACTICES, WORK ACTIVITIES AND SOURCES

42. (1) It shall be the duty of every person, whether a private individual or corporate body, to render all assistance and cooperation to any officer duly authorised to act on behalf of the Board in the lawful execution of any duty carried out to fulfil the Board's functions and this shall include to permit access to premises and facilities in which radiation sources are located or expected to be located in order to obtain information about the status of radiation safety and verify compliance with regulatory requirements:

Duties of persons in relation to practices, work activities and sources.

Provided that such officers shall be provided with a document by the Executive Chairperson of the Board identifying them as being officers on official business of the Board and such a document shall be shown to the person whose assistance or cooperation is requested.

(2) It shall be the duty of every person, whether a private individual or corporate body, to abide with any condition in any authorisation issued by the Board, or with any other communication of the Board in respect to any safety measure required at a practice or work activity.

(3) A person who is engaged in work with ionising radiation shall -

- (a) not knowingly expose himself or any other person to ionising radiation to an extent greater than is reasonably necessary for the purposes of his work;
- (b) exercise reasonable care while carrying out such work;
- (c) co-operate fully with the employer in the implementation of any measures taken at the workplace aimed at minimising exposure to ionising radiation;
- (d) take due consideration of any relevant information supplied to him and to participate fully in any instruction and training programmes considered necessary by the employer;
- (e) follow all applicable rules and procedures for a person's protection and safety; and
- (f) immediately report any deficiency in measures referred to in paragraph (c) to the employer.

(4) Every person who is engaged in work with ionising radiation and for whom personal protective equipment is provided

pursuant to regulation 31(3) shall -

- (a) make full and proper use of any such personal protective equipment;
- (b) forthwith report to his employer any defect he discovers in any such personal protective equipment; and
- (c) take all reasonable steps to ensure that any such personal protective equipment is returned after use to the accommodation provided for it.

(5) It shall be the duty of every outside worker not to misuse the radiation passbook issued to him or falsify or attempt to falsify any of the information contained in it.

(6) Any person to whom regulation 38(1) or regulation 55(4) relates shall comply with any reasonable requirement imposed on him by his employer for the purposes of making the measurements and assessments required under regulation 38(1) and regulation 40(1).

(7) A person who is subject to medical surveillance under regulation 43 shall, when required by his employer and at the cost of the employer, present himself during his working hours for such medical examination and tests as may be required for the purposes of subregulation (1) of that regulation and shall provide the approved medical practitioner or approved occupational health service with such information concerning his health as the approved medical practitioner or approved occupational health service may reasonably require.

(8) A worker shall forthwith notify his employer if he has reasonable cause to believe that -

- (a) he or another person has received an overexposure;
- (b) an occurrence mentioned in regulation 64(1) or (2) has occurred.

PART XI

MEDICAL SURVEILLANCE OF EXPOSED WORKERS

Medical
surveillance.

43. (1) The radiation employer shall ensure the appropriate medical surveillance of any exposed workers, and notwithstanding this overall responsibility, shall make use of the services of approved medical practitioners or approved occupational health services to carry out medical surveillance of Category A workers to ascertain their state of health as regards their fitness to perform work with ionising radiation.

(2) Such surveillance shall apply to the following workers:

- (a) category A workers;
- (b) workers who have received an overexposure and are not category A workers;
- (c) workers who are engaged in work with ionising radiation subject to conditions imposed by an approved medical practitioner or approved

occupational health service under subregulation (6).

(3) Such surveillance shall include:

- (a) a thorough medical examination prior to employment or classification as a category A worker to determine the worker's fitness for a post as a category A worker;
- (b) periodic reviews of health.

(4) These examinations shall take into consideration the type of work and the individual worker's state of health and shall be performed at a frequency of:

- (a) at least once a year, to ensure continued fitness to perform their duties, and
- (b) more than once a year if the approved medical practitioners considers it necessary.

(5) The approved medical practitioners or approved occupational health service may indicate the need for medical surveillance to continue after cessation of work for as long as they consider it necessary to safeguard the health of the person concerned.

(6) The radiation employer shall ensure that special medical surveillance shall be provided in each case where one of the dose limits laid down in the Third Schedule has been exceeded and shall ensure that any subsequent conditions of exposure shall be subject to the agreement of the approved medical practitioner or approved occupational health service.

(7) The radiation employer shall further ensure that any measures considered necessary by the approved medical practitioner or approved occupational health service in relation to the health protection of the exposed individual such as further examinations, decontamination measures or urgent remedial treatment are carried out without undue delay.

44. (1) After each examination to ascertain fitness for work as a category A worker, the approved medical practitioner or approved occupational health services shall classify the worker as:

Medical
classification.

- (a) fit, or
- (b) fit, subject to certain conditions, or
- (c) unfit.

(2) Where the approved medical practitioner or approved occupational health service has certified in the health record of a Category A worker to whom this regulation relates that a worker should not be engaged in work with ionising radiation or that he should only be so engaged under conditions which have been specified in the health record, the employer shall not permit that the worker be engaged in the work with ionising radiation except in accordance with the conditions, if any, so specified.

(3) Where, for the purpose of carrying out his functions under these regulations, an approved medical practitioner or approved occupational health service requires to inspect any workplace, the

employer shall permit him to do so.

Health records.

45. The radiation employer shall ensure that a health record, containing the particulars referred to in the Fifth Schedule in respect of each worker referred to in regulation 43(2), shall be made and kept up to date for as long as he remains a worker of that category. Thereafter the record or a copy of it shall be retained until the individual has or would have attained the age of seventy-five years, but in any case not less than thirty years from the termination of the work involving exposure to ionizing radiation.

Appeals.

46. Any person who feels aggrieved by a decision taken pursuant to regulation 43(6) and 44 may lodge an appeal with the Occupational Health and Safety Appeals Board and the decision taken by the Appeals Board shall be final.

PART XII

SIGNIFICANT INCREASE IN EXPOSURE DUE TO NATURAL RADIATION SOURCES

Protection against exposure from terrestrial natural radiation sources.

47. (1) It shall be the duty of the radiation employer to identify, by means of surveys or by any other appropriate means, work activities, not covered by regulation 4(1), within which the presence of natural radiation sources leads to a significant increase in the exposure of workers or of members of the public which cannot be disregarded from the radiation protection point of view. Such work activities include, in particular:

- (a) work activities where workers and, where appropriate, members of the public are exposed to thoron or radon daughters or gamma radiation or any other exposure in workplaces such as spas, caves, mines, underground workplaces and aboveground workplaces in identified areas;
- (b) work activities involving operations with, and storage of, materials, not usually regarded as radioactive but which contain naturally occurring radionuclides, causing a significant increase in the exposure of workers and, where appropriate, members of the public;
- (c) work activities which lead to the production of residues not usually regarded as radioactive but which contain naturally occurring radionuclides, causing a significant increase in the exposure of members of the public and, where appropriate, workers;
- (d) aircraft operation.

(2) In situations where the radiation employer has identified work activities pursuant to subregulation (1), wherein exposure to natural radiation sources needed attention and had to be subject to control, the radiation employer shall be required to set up appropriate means for monitoring exposure and as necessary -

- (a) implement corrective measures to reduce exposure pursuant to all or part of Part XIV;
- (b) apply radiation protection measures pursuant to all or

part of Parts IV, V, VI, VII, VIII, IX and XI.

48. Every radiation employer operating aircraft shall take account of exposure to cosmic radiation of air crew who are liable to be subject to exposure to more than 1 mSv per year. The radiation employer shall take appropriate measures, in particular -

Protection of air crew.

- (a) to assess the exposure of the crew concerned;
- (b) to take into account the assessed exposure when organizing working schedules with a view to reducing the doses of highly exposed aircrew;
- (c) to inform the workers concerned of the health risks their work involves;
- (d) to apply Part 3(2) and (3) of the Third Schedule to female air crew.

PART XIII

IMPLEMENTATION OF RADIATION PROTECTION FOR THE POPULATION IN NORMAL CIRCUMSTANCES

49. It shall be the duty of the radiation employer to create the conditions necessary to ensure the best possible protection of other persons who may be affected by his practice or work activity, based on the principles set out in regulation 20 and to apply the fundamental principles governing operational protection of the population.

Basic principles.

50. (1) The radiation employer shall take all necessary measures to ensure, so far as reasonably practicable, the operational radiation protection of the population in normal circumstances from practices or work activities subject to prior authorization.

Conditions for authorization of practices or work activities involving a risk from ionizing radiation from the population.

(2) The radiation employer shall make all necessary arrangements and surveys for detecting and eliminating the factors which, in the course of any operation involving exposure to ionizing radiation, are liable to create a risk of exposure for the population which cannot be disregarded from the radiation protection point of view.

(3) Radiation employers shall be responsible for implementing measures for:

- (a) ensuring the safety of sources, in order that the likelihood of public exposures is controlled in accordance with the requirements of these regulations;
- (b) suitable and adequate facilities, equipment and services for the protection of the public, the nature and extent of which are commensurate with the magnitude and likelihood of the exposure;
- (c) appropriate training in radiation safety and periodic re-training of the personnel having functions relevant to the protection of the public.

51. (1) Radiation employers shall, as appropriate, establish and carry out a monitoring programme, of magnitude and

Estimates of population doses.

complexity commensurate with the type of and risks associated with the sources under their responsibility, which is sufficient to ensure that the requirements of these regulations are satisfied and to assess the exposure of the members of the public from sources of external irradiation and, or discharges of radioactive substances into the environment.

(2) The Board shall:

- (a) ensure that dose estimates from practices or work activities referred to in regulation 50 are made as realistic as possible for the population as a whole and for critical groups of the population in all places where such groups may occur;
- (b) decide on the frequency of assessments and take all necessary steps to identify the critical groups of the population, taking into account the effective pathways of transmission of the radioactive substances;
- (c) ensure, taking into account the radiological risks, that the estimates of the population doses include:
 - (i) assessment of the doses due to external radiation, indicating, where appropriate, the quality of the radiation in question,
 - (ii) assessment of the intake of radionuclides, indicating the nature of the radionuclides and, where necessary, their physical and chemical states, and determination of the activity and concentrations of these radionuclides,
 - (iii) assessment of the doses that the critical groups of the population are liable to receive and specification of the characteristics of these groups:
- (d) require records to be kept relating to measurements of external exposure, estimates of intakes of radionuclides and radioactive contamination as well as the results of the assessment of the doses received by critical groups and by the population.

Other duties of radiation employer.

52. (1) Every radiation employer shall conduct his practice or work activity in accordance with the principles of health protection of the population in the area of radiation protection.

(2) Without prejudice to the generality of subregulation (1), this shall, in particular, include the fulfilling of the following tasks:

- (a) achieving and maintaining an optimal level of protection of the environment and the population;
- (b) checking the effectiveness of technical devices for protecting the environment and the population;
- (c) acceptance into service application, from the point of view of surveillance monitoring of radiation protection, of equipment and procedures for measuring and assessing, as appropriate, exposures and radioactive contamination of the environment and the

population;

- (d) correct use, regular maintenance and calibration of measuring instruments and regular checking that they are serviceable and correctly used aimed at obtaining true results;
- (e) maintaining and updating the records related to paragraphs (a) to (d).

(3) The radiation employer shall make appropriate use of qualified experts and, if necessary, the specialized radiation protection unit referred to in regulation 26(4) to enable the appropriate discharge of these duties.

(4) The radiation employer shall -

Control of visitors.

- (a) ensure that visitors be accompanied in any controlled area by a person knowledgeable about the radiation safety measures for that area;
- (b) provide adequate information and instruction to visitors before they enter a controlled area so as to ensure appropriate protection of the visitors and of other individuals who may be affected by their actions; and
- (c) ensure that adequate control over entry of visitors to a supervised area be maintained and that appropriate signs be posted in such areas.

PART XIV

INTERVENTION

53. (1) These requirements shall apply to intervention in cases of radiological emergencies or in cases of lasting exposure resulting from the after-effects of a radiological emergency or a past or old practice or work activity.

Intervention in cases of radiological emergencies.

(2) The implementation and extent of any intervention shall be considered in compliance with the following principles:

- (a) intervention shall be undertaken only if the reduction in detriment due to radiation is sufficient to justify the harm and costs, including social costs, of the intervention;
- (b) the form, scale and duration of the intervention shall be optimized so that the benefit of the reduction in health detriment less the detriment associated with the intervention, will be maximized;
- (c) dose limits, as laid down in the Third Schedule, shall not apply to intervention; however, the intervention levels established in application of regulation 58(1) constitute indications as to the situations in which intervention is appropriate; furthermore, in cases of long term exposure covered by regulation 59, the dose limits set out in Part 2 of the Third Schedule should normally be appropriate for workers involved in interventions.

Potential
exposures.

54. The radiation employer shall, where appropriate, or if asked by the Board -

- (a) consider the possibility of radiological emergencies resulting from practices or work activities subject to the system of notification or authorization laid down in Part III;
- (b) make an assessment of the spatial and temporal distribution of the radioactive substances dispersed in the event of a possible radiological emergency;
- (c) make an assessment of the corresponding potential exposures.

Requirements for a
radiation
employer's
emergency plan.

55. (1) Where an assessment made in accordance with regulation 27 shows that a radiation accident is reasonably foreseeable (having regard to the steps taken by the radiation employer under subregulation (3) of that regulation), the radiation employer shall prepare an emergency plan designed to secure, so far as is reasonably practicable, the restriction of exposure to ionising radiation and the health and safety of persons who may be affected by such accident and to enable the assessment of corresponding potential exposures.

(2) The radiation employer shall ensure that -

- (a) where local rules are required for the purposes of regulation 36, a copy of the emergency plan made in pursuance of subregulation (1), and approved by the Board, is identified in those rules and incorporated into them by way of summary or reference;
- (b) rehearsals of the arrangements in the plan are carried out at suitable intervals.

(3) Emergency plans shall, as appropriate -

- (a) characterise extent of a potential emergency;
- (b) identify protective actions;
- (c) assign responsibilities for notifying the relevant authorities and for initiating and discharging protection and mitigation actions;
- (d) provide procedures and communication arrangements for contacting and obtaining assistance from the Civil Protection Department;
- (e) provide for training personnel involved in implementing emergency plans and for rehearsals at suitable intervals in conjunction with designated authorities;
- (f) provide for periodic review and update of the plan;
- (g) identify the public information arrangements in the event of an emergency; and
- (h) specify the criteria for terminating each protective action.

(4) Any worker under his control who may be involved with or

may be affected by arrangements in the plan has been given suitable and sufficient instructions and where appropriate issued with suitable dosimeters or other devices obtained in either case from the approved dosimetry service with which the radiation employer has entered into an arrangement under regulation 38.

56. (1) The Civil Protection Department shall be responsible for preparing for and managing radiological emergencies which may occur in connection with practices or work activities on or outside Maltese territory and which may affect Malta. The response and management responsibilities of the Civil Protection Department shall not be limited to off-site emergencies but shall extend to any on-site emergencies which in the opinion of the Civil Protection Department, cannot be managed by the radiation employer.

Intervention
preparation.

(2) Every radiation employer shall ensure that appropriate on-site intervention plans, taking account of the general principles of radiation protection for intervention referred to in regulation 53(2) and of the appropriate intervention levels established by the Board, are drawn up, in order to deal with various types of radiological emergency and that such plans are tested to an appropriate extent at regular intervals.

(3) The Civil Protection Department shall make suitable provision for the appropriate training of personnel who may be involved in technical, medical and health intervention.

(4) The Board shall be kept informed of:

- (a) the current situation and its expected evolution;
- (b) the measures taken to terminate the accident and to protect workers and members of the public; and
- (c) the exposures that have been incurred and that are expected to be incurred.

57. (1) The radiation employer shall immediately notify the Board and the Civil Protection Department, by the quickest practicable means, of any radiological emergency and shall take all appropriate action to reduce the consequences.

Implementation of
intervention.

(2) Without prejudice to the requirements in subregulation (1), the appropriate action shall include the carrying out of an initial provisional assessment of the circumstances and consequences of the emergency and rendering all the necessary assistance with intervention.

(3) The radiation employer shall ensure that provision is made, if the situation so requires, for intervention related to:

- (a) the source, to reduce or stop the direct radiation and emission of radionuclides;
- (b) the environment, to reduce the spread of radioactive contamination;
- (c) individuals, to reduce exposure and organize the treatment of victims.

(4) In the event of a radiological emergency on or outside Maltese territory, the Civil Protection Department shall be responsible for:

- (a) the organization of appropriate intervention, taking account of the real characteristics of the emergency;
- (b) the assessment and recording of the consequences of the radiological emergency and of the effectiveness of the intervention.

(5) The Civil Protection Department shall, in the event of a radiological emergency occurring at an installation in Malta or being likely to have radiological consequences on Maltese territory, establish relations to obtain cooperation with any other State which may be involved.

Emergency occupational exposure.

58. (1) The Board shall establish exposure levels, taking into account the technical obligations and health risks, for situations where workers or intervention personnel involved in different kinds of intervention are liable to be subjected to emergency exposure resulting in doses in excess of the occupational dose limits for exposed workers. These levels are given in the Seventh Schedule and shall serve as operational guides.

(2) It shall be the duty of the radiation employer to ensure adequate personal protective means, radiological monitoring and medical surveillance of any such workers or intervention personnel.

Intervention in cases of long-term exposure.

59. The Board shall ensure that when a situation leading to lasting exposure resulting from the after-effects of a radiological emergency or a past practice or work activity is identified, it shall, if necessary and to the extent of the exposure risk involved, ensure that:

- (a) the area concerned is demarcated;
- (b) arrangements for the monitoring of exposure are made;
- (c) any appropriate intervention is implemented, taking account of the real characteristics of the situation;
- (d) access to or use of land or buildings situated in the demarcated area is regulated.

PART XV

ARRANGEMENTS FOR THE CONTROL OF RADIOACTIVE SUBSTANCES, ARTICLES AND EQUIPMENT

Sealed sources and articles containing or embodying radioactive substances.

60. (1) Radiation employers shall ensure the safety of the sources under their responsibility, from the time of their acquisition throughout their entire operational life and up to their final disposal.

(2) Where a radioactive substance is used, the radiation employer shall ensure that, whenever reasonably practicable, the substance is in a form of a sealed source.

(3) The radiation employer shall ensure that the design, construction and maintenance of any article containing or embodying a radioactive substance, including its bonding,

immediate container or other mechanical protection, is such as to prevent the leakage of any radioactive substance.

(4) Where appropriate, the radiation employer shall ensure that suitable tests are carried out at suitable intervals to detect leakage of radioactive substances from any article under his control to which subregulation (3) applies and the employer shall make a suitable record of each such test and shall retain that record for at least two years after the article is disposed of or until a further record is made following a subsequent test to that article.

61. Radiation employers in co-operation with suppliers, shall -

Procurement and commissioning of sources.

- (a) ensure, on procurement of any new source or equipment containing radiation generator, that such sources or equipment conform to applicable international standards as may be approved by the Board; and
- (b) ensure that sources and equipment are tested to demonstrate compliance with the appropriate specifications.

62. (1) Every radiation employer shall take such steps as are appropriate, for the purpose of controlling radioactive substances which are involved in work with ionising radiation which he undertakes:

Accounting and security of radioactive substances.

- (a) to account for and keep up to date records of the quantity and location of radioactive substances by keeping written records of:
 - (i) whenever the location of the source is changed, and
 - (ii) annual verification of the employer's source inventory;
- (b) to keep those records or a copy thereof for at least two years from the date on which they were made and, in addition, for at least two years from the date of disposal of that radioactive substance.

(2) The records made pursuant to subregulation (1) shall be kept at the workplace and shall be readily available for inspection by the Board.

63. (1) Every radiation employer shall ensure, so far as is reasonably practicable, that any radioactive substance under his control which is not for the time being in use or being moved, transported or disposed of -

Keeping and moving of radioactive substances.

- (a) is kept in a suitable receptacle; and
- (b) is kept in a suitable store.

(2) Every employer who causes or permits a radioactive substance to be moved (otherwise than by transporting it) shall ensure that, so far as is reasonably practicable, the substance is kept in a suitable receptacle, suitably labelled, while it is being moved.

(3) Nothing in subregulations (1) or (2) shall apply in relation

to a radioactive substance while it is in or on the live body or corpse of a human being.

Notification of certain occurrences.

64. (1) Every radiation employer shall forthwith notify the Board in any case where a quantity of a radioactive substance which was under his control -

- (a) has been released or is likely to have been released into the atmosphere as a gas, aerosol or dust; or
- (b) has been spilled or otherwise released in such a manner as to give rise to significant radioactive contamination:

Provided that such a release had not been exempted from regulatory control or had not been in a manner specified in an authorisation to dispose of radioactive waste issued by the Board.

(2) Where a radiation employer has reasonable cause to believe that a quantity of a radioactive substance which was under his control is lost or has been stolen, the employer shall forthwith notify the Board of that loss or theft, as the case may be.

(3) Where a radiation employer suspects or has been informed that an occurrence notifiable under subregulation (1) or (2) may have occurred, he shall make an immediate investigation and, unless that investigation shows that no such occurrence has occurred, he shall forthwith make a notification in accordance with the relevant subregulation.

(4) A radiation employer who makes any investigation in accordance with subregulation (3) shall make a report of that investigation and shall, unless the investigation showed that no such occurrence occurred, keep that report or a copy thereof for at least fifty years from the date on which it was made or, in any other case, for at least two years from the date on which it was made.

(5) The Board may issue guidance documents specifying the quantities of radioactive substances below which the provisions for notification referred to in subregulation (1) and (2) shall not apply.

Misuse of or interference with sources of ionising radiation.

65. No person shall intentionally or recklessly misuse or without reasonable excuse interfere with any radioactive substance or any electrical equipment to which these regulations apply.

Appendices.

66. (1) The Board may from time to time publish Appendices to these regulations detailing specific requirements which have to be complied with by persons to which these requirements are addressed.

(2) These appendices shall deal with, but are not limited to, the following:

- (a) occupational exposure;
- (b) medical exposure;
- (c) public exposure;
- (d) safety of sources;
- (e) emergency exposure situations

- (f) chronic exposure situations.

PART XVI

ENFORCEMENT

67. (1) Any breach of any of these regulations or of the Schedules or Appendices to these regulations shall be deemed an offence. Enforcement.

(2) In any proceedings for an offence under these regulations consisting of a failure to comply with a duty or requirement to do something, it shall be for the accused to prove (as the case may be) that it was not practicable to do more than was in fact done to satisfy the requirement or duty, or that there was no better practicable means than was in fact used to satisfy the duty or requirement.

(3) The enforcing regulatory authority for any breach of these regulations shall be as follows:

- (a) the Occupational Health and Safety Authority shall enforce the relevant statutory provisions in Parts IV to XII, excluding regulation 19(4), and Part XV;
- (b) the Superintendent of Public Health shall enforce the relevant statutory provisions in Part XIII;
- (c) the Environment Protection Directorate shall enforce the relevant statutory provisions in regulation 19(4);
- (d) the Civil Protection Department shall enforce any breach of regulations relating to intervention in Part XIV as a breach of the Civil Protection Act: Cap. 411.

Provided that any person found guilty of an offence in terms of Part II shall be considered to have breached the provisions of the National Interest (Enabling Powers) Act and be liable to a fine not exceeding fifty thousand liri. Cap. 365.

FIRST SCHEDULE

Regulation 17

PARTICULARS TO BE PROVIDED IN A NOTIFICATION UNDER
REGULATION 17

The following particulars shall be given in a notification under regulation 17:

- (a) the name and address of the employer and a contact telephone or fax number or electronic mail address;
- (b) the address of the premises where or from where the work activity is to be carried out and a telephone or fax number or electronic mail address at such premises;
- (c) the nature of the business of the employer;
- (d) characteristics of the source, as a minimum - the source term, total activity, date and place of manufacturing and physical and chemical form of the radioactive substance;
- (e) into which of the following categories the source or sources of ionising radiation fall-
 - (i) sealed source;
 - (ii) unsealed radioactive substance;
 - (iii) electrical equipment;
- (f) whether or not any source is to be used at premises other than the address given at sub-paragraph (b) above;
- (g) dates of notification and commencement of the work activity; and
- (h) a written risk assessment pursuant to regulation 27.

SECOND SCHEDULE

Regulation 18

QUANTITIES AND CONCENTRATIONS OF RADIONUCLIDES
CRITERIA TO BE CONSIDERED FOR THE APPLICATION
OF REGULATION 18

1. A practice or work activity may be exempted from the requirement to report without further consideration, in compliance with regulation 18(1)(a) or (b) respectively, if either the quantity or the activity concentration, as appropriate, of the relevant radionuclides does not exceed the values in column 2 or 3 of Table A.

2. The basic criteria for the calculation of the values in Table A, for the application of exemptions for practices or work activities, are as follows:

- (a) the radiological risks to individuals caused by the exempted practice or work activity are sufficiently low as to be of no regulatory concern; and
- (b) the collective radiological impact of the exempted practice or work activity is sufficiently low as to be of no regulatory concern under the prevailing circumstances; and
- (c) the exempted practice or work activity is inherently without

radiological significance, with no appreciable likelihood of scenarios that could lead to a failure to meet the criteria in (a) and (b).

3. Exceptionally, as provided in regulation 18(1)(a) and (b), the Board may decide that a practice or work activity may be exempted where appropriate without further consideration, in accordance with the basic criteria, even if the relevant radionuclides deviate from the values in Table A, provided that the following criteria are met in all feasible circumstances:

- (a) the effective dose expected to be incurred by any member of the public due to the exempted practice or work activity is of the order of 10 μ Sv or less in a year; and
- (b) either the collective effective dose committed during one year of performance of the practice or work activity is no more than about 1 man . Sv or an assessment of the optimization of protection shows that exemption is the optimum option;
- (c) number of exempted practices or work activities at the same site and affecting the same critical group(s) shall be determined by the Board on case by case basis.

4. For radionuclides not listed in Table A, the Board shall assign appropriate values for the total activities and concentrations of activity per unit mass where the need arises. Values thus assigned shall be complementary to those in Table A.

5. The values laid down in Table A apply to the total inventory of radioactive substances held by a person or undertakings as part of a specific practice or work activity at any point in time and to a limited amount of radioactive material, not exceeding 1 tonne.(1000kg).

6. Nuclides carrying the suffix "+" or "sec" in Table A represent parent nuclides in equilibrium with their correspondent daughter nuclides as listed in Table B. In this case the values driven in Table A refer to the parent nuclide alone, but already take account of the daughter nuclide(s) present.

7. In all other cases of mixtures of more than one nuclide, the requirement for notification may be waived if the sum of the ratios for each nuclide of the total activity present divided by the value listed in Table A is less than or equal to 1. This summation rule also applies to activity concentrations where the various nuclides concerned are contained in the same matrix.

Table A

Table of Radionuclides

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Hydrogen		
Tritiated compounds	1 10 ⁶	1 10 ⁹
Beryllium		
Be-7	1 10 ³	1 10 ⁷
Carbon		
C-14	1 10 ⁴	1 10 ⁷
Fluorine		
F-18	1 10 ¹	1 10 ⁶

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Neon		
Ne-19	$1 \cdot 10^2$	$1 \cdot 10^9$
Sodium		
Na-22	$1 \cdot 10^1$	$1 \cdot 10^6$
Na-24	$1 \cdot 10^1$	$1 \cdot 10^5$
Silicon		
Si-31	$1 \cdot 10^3$	$1 \cdot 10^6$
Si-32	$1 \cdot 10^3$	$1 \cdot 10^6$
Phosphorus		
P-32	$1 \cdot 10^3$	$1 \cdot 10^5$
P-33	$1 \cdot 10^5$	$1 \cdot 10^8$
Sulphur		
S-35	$1 \cdot 10^5$	$1 \cdot 10^8$
Chlorine		
Cl-36	$1 \cdot 10^4$	$1 \cdot 10^6$
Cl-38	$1 \cdot 10^1$	$1 \cdot 10^5$
Argon		
Ar-37	$1 \cdot 10^6$	$1 \cdot 10^8$
Ar-41	$1 \cdot 10^2$	$1 \cdot 10^9$
Potassium		
K-40	$1 \cdot 10^2$	$1 \cdot 10^6$
K-42	$1 \cdot 10^2$	$1 \cdot 10^6$
K-43	$1 \cdot 10^1$	$1 \cdot 10^6$
K-44	$1 \cdot 10^1$	$1 \cdot 10^5$
Calcium		
Ca-45	$1 \cdot 10^4$	$1 \cdot 10^7$
Ca-47	$1 \cdot 10^1$	$1 \cdot 10^6$
Scandium		
Sc-46	$1 \cdot 10^1$	$1 \cdot 10^6$
Sc-47	$1 \cdot 10^2$	$1 \cdot 10^6$
Sc-48	$1 \cdot 10^1$	$1 \cdot 10^5$
Vanadium		
V-48	$1 \cdot 10^1$	$1 \cdot 10^5$
Chromium		
Cr-51	$1 \cdot 10^3$	$1 \cdot 10^7$
Manganese		
Mn-51	$1 \cdot 10^1$	$1 \cdot 10^5$
Mn-52	$1 \cdot 10^1$	$1 \cdot 10^5$
Mn-52m	$1 \cdot 10^1$	$1 \cdot 10^5$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Mn-53	$1 \cdot 10^4$	$1 \cdot 10^9$
Mn-54	$1 \cdot 10^1$	$1 \cdot 10^6$
Mn-56	$1 \cdot 10^1$	$1 \cdot 10^5$
Iron		
Fe-52	$1 \cdot 10^1$	$1 \cdot 10^6$
Fe-55	$1 \cdot 10^4$	$1 \cdot 10^6$
Fe-59	$1 \cdot 10^1$	$1 \cdot 10^6$
Cobalt		
Co-55	$1 \cdot 10^1$	$1 \cdot 10^6$
Co-56	$1 \cdot 10^1$	$1 \cdot 10^5$
Co-57	$1 \cdot 10^2$	$1 \cdot 10^6$
Co-58	$1 \cdot 10^1$	$1 \cdot 10^6$
Co-58m	$1 \cdot 10^4$	$1 \cdot 10^7$
Co-60	$1 \cdot 10^1$	$1 \cdot 10^5$
Co-60m	$1 \cdot 10^3$	$1 \cdot 10^6$
Co-61	$1 \cdot 10^2$	$1 \cdot 10^6$
Co-62m	$1 \cdot 10^1$	$1 \cdot 10^5$
Nickel		
Ni-59	$1 \cdot 10^4$	$1 \cdot 10^8$
Ni-63	$1 \cdot 10^5$	$1 \cdot 10^8$
Ni-65	$1 \cdot 10^1$	$1 \cdot 10^6$
Copper		
Cu-64	$1 \cdot 10^2$	$1 \cdot 10^6$
Zinc		
Zn-65	$1 \cdot 10^1$	$1 \cdot 10^6$
Zn-69	$1 \cdot 10^4$	$1 \cdot 10^6$
Zn-69m	$1 \cdot 10^2$	$1 \cdot 10^6$
Gallium		
Ga-72	$1 \cdot 10^1$	$1 \cdot 10^5$
Germanium		
Ge-71	$1 \cdot 10^4$	$1 \cdot 10^8$
Arsenic		
As-73	$1 \cdot 10^3$	$1 \cdot 10^7$
As-74	$1 \cdot 10^1$	$1 \cdot 10^6$
As-76	$1 \cdot 10^2$	$1 \cdot 10^5$
As-77	$1 \cdot 10^3$	$1 \cdot 10^6$
Selenium		
Se-75	$1 \cdot 10^2$	$1 \cdot 10^6$
Bromine		

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Br-82	$1 \cdot 10^1$	$1 \cdot 10^6$
Krypton		
Kr-74	$1 \cdot 10^2$	$1 \cdot 10^9$
Kr-76	$1 \cdot 10^2$	$1 \cdot 10^9$
Kr-77	$1 \cdot 10^2$	$1 \cdot 10^9$
Kr-79	$1 \cdot 10^3$	$1 \cdot 10^5$
Kr-81	$1 \cdot 10^4$	$1 \cdot 10^7$
Kr-83m	$1 \cdot 10^5$	$1 \cdot 10^{12}$
Kr-85	$1 \cdot 10^5$	$1 \cdot 10^4$
Kr-85m	$1 \cdot 10^3$	$1 \cdot 10^{10}$
Kr-87	$1 \cdot 10^2$	$1 \cdot 10^9$
Kr-88	$1 \cdot 10^2$	$1 \cdot 10^9$
Rubidium		
Rb-86	$1 \cdot 10^2$	$1 \cdot 10^5$
Strontium		
Sr-85	$1 \cdot 10^2$	$1 \cdot 10^6$
Sr-85m	$1 \cdot 10^2$	$1 \cdot 10^7$
Sr-87m	$1 \cdot 10^2$	$1 \cdot 10^6$
Sr-89	$1 \cdot 10^3$	$1 \cdot 10^6$
Sr-90+	$1 \cdot 10^2$	$1 \cdot 10^4$
Sr-91	$1 \cdot 10^1$	$1 \cdot 10^5$
Sr-92	$1 \cdot 10^1$	$1 \cdot 10^6$
Yttrium		
Y-90	$1 \cdot 10^3$	$1 \cdot 10^5$
Y-90m	$1 \cdot 10^1$	$1 \cdot 10^6$
Y-91	$1 \cdot 10^3$	$1 \cdot 10^6$
Y-91m	$1 \cdot 10^2$	$1 \cdot 10^6$
Y-92	$1 \cdot 10^2$	$1 \cdot 10^5$
Y-93	$1 \cdot 10^2$	$1 \cdot 10^5$
Zirconium		
Zr-93+	$1 \cdot 10^3$	$1 \cdot 10^7$
Zr-95	$1 \cdot 10^1$	$1 \cdot 10^6$
Zr-97+	$1 \cdot 10^1$	$1 \cdot 10^5$
Niobium		
Nb-93m	$1 \cdot 10^4$	$1 \cdot 10^7$
Nb-94	$1 \cdot 10^1$	$1 \cdot 10^6$
Nb-95	$1 \cdot 10^1$	$1 \cdot 10^6$
Nb-95m	$1 \cdot 10^2$	$1 \cdot 10^7$
Nb-97	$1 \cdot 10^1$	$1 \cdot 10^6$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Nb-98	$1 \cdot 10^1$	$1 \cdot 10^5$
Molybdenum		
Mo-90	$1 \cdot 10^1$	$1 \cdot 10^6$
Mo-93	$1 \cdot 10^3$	$1 \cdot 10^8$
Mo-99	$1 \cdot 10^2$	$1 \cdot 10^6$
Mo-101	$1 \cdot 10^1$	$1 \cdot 10^6$
Technetium		
Tc-96	$1 \cdot 10^1$	$1 \cdot 10^6$
Tc-96m	$1 \cdot 10^3$	$1 \cdot 10^7$
Tc-97	$1 \cdot 10^3$	$1 \cdot 10^8$
Tc-97m	$1 \cdot 10^3$	$1 \cdot 10^7$
Tc-99	$1 \cdot 10^4$	$1 \cdot 10^7$
Tc-99m	$1 \cdot 10^2$	$1 \cdot 10^7$
Ruthenium		
Ru-97	$1 \cdot 10^2$	$1 \cdot 10^7$
Ru-103	$1 \cdot 10^2$	$1 \cdot 10^6$
Ru-105	$1 \cdot 10^1$	$1 \cdot 10^6$
Ru-106+	$1 \cdot 10^2$	$1 \cdot 10^5$
Rhodium		
Rh-103m	$1 \cdot 10^4$	$1 \cdot 10^8$
Rh-105	$1 \cdot 10^2$	$1 \cdot 10^7$
Palladium		
Pd-103	$1 \cdot 10^3$	$1 \cdot 10^8$
Pd-109	$1 \cdot 10^3$	$1 \cdot 10^6$
Silver		
Ag-105	$1 \cdot 10^2$	$1 \cdot 10^6$
Ag-108m+	$1 \cdot 10^1$	$1 \cdot 10^6$
Ag-110m	$1 \cdot 10^1$	$1 \cdot 10^6$
Ag-111	$1 \cdot 10^3$	$1 \cdot 10^6$
Cadmium		
Cd-109	$1 \cdot 10^4$	$1 \cdot 10^6$
Cd-115	$1 \cdot 10^2$	$1 \cdot 10^6$
Cd-115m	$1 \cdot 10^3$	$1 \cdot 10^6$
Cd-117	$1 \cdot 10^1$	$1 \cdot 10^6$
Indium		
In-111	$1 \cdot 10^2$	$1 \cdot 10^6$
In-113m	$1 \cdot 10^2$	$1 \cdot 10^6$
In-114m	$1 \cdot 10^2$	$1 \cdot 10^6$
In-115m	$1 \cdot 10^2$	$1 \cdot 10^6$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Tin		
Sn-113	$1 \cdot 10^3$	$1 \cdot 10^7$
Sn-125	$1 \cdot 10^2$	$1 \cdot 10^5$
Antimony		
Sb-122	$1 \cdot 10^2$	$1 \cdot 10^4$
Sb-124	$1 \cdot 10^1$	$1 \cdot 10^6$
Sb-125	$1 \cdot 10^2$	$1 \cdot 10^6$
Tellurium		
Te-123	$1 \cdot 10^3$	$1 \cdot 10^6$
Te-125m	$1 \cdot 10^3$	$1 \cdot 10^7$
Te-127	$1 \cdot 10^3$	$1 \cdot 10^6$
Te-127m	$1 \cdot 10^3$	$1 \cdot 10^7$
Te-129	$1 \cdot 10^2$	$1 \cdot 10^6$
Te-129m	$1 \cdot 10^3$	$1 \cdot 10^6$
Te-131	$1 \cdot 10^2$	$1 \cdot 10^5$
Te-131m	$1 \cdot 10^1$	$1 \cdot 10^6$
Te-132	$1 \cdot 10^2$	$1 \cdot 10^7$
Te-133	$1 \cdot 10^1$	$1 \cdot 10^5$
Te-133m	$1 \cdot 10^1$	$1 \cdot 10^5$
Te-134	$1 \cdot 10^1$	$1 \cdot 10^6$
Iodine		
I-123	$1 \cdot 10^2$	$1 \cdot 10^7$
I-125	$1 \cdot 10^3$	$1 \cdot 10^6$
I-126	$1 \cdot 10^2$	$1 \cdot 10^6$
I-129	$1 \cdot 10^2$	$1 \cdot 10^5$
I-130	$1 \cdot 10^1$	$1 \cdot 10^6$
I-131	$1 \cdot 10^2$	$1 \cdot 10^6$
I-132	$1 \cdot 10^1$	$1 \cdot 10^5$
I-133	$1 \cdot 10^1$	$1 \cdot 10^6$
I-134	$1 \cdot 10^1$	$1 \cdot 10^5$
I-135	$1 \cdot 10^1$	$1 \cdot 10^6$
Xenon		
Xe-131m	$1 \cdot 10^4$	$1 \cdot 10^4$
Xe-133	$1 \cdot 10^3$	$1 \cdot 10^4$
Xe-135	$1 \cdot 10^3$	$1 \cdot 10^{10}$
Caesium		
Cs-129	$1 \cdot 10^2$	$1 \cdot 10^5$
Cs-131	$1 \cdot 10^3$	$1 \cdot 10^6$
Cs-132	$1 \cdot 10^1$	$1 \cdot 10^5$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Cs-134	$1 \cdot 10^1$	$1 \cdot 10^4$
Cs-134m	$1 \cdot 10^3$	$1 \cdot 10^5$
Cs-135	$1 \cdot 10^4$	$1 \cdot 10^7$
Cs-136	$1 \cdot 10^1$	$1 \cdot 10^5$
Cs-137+	$1 \cdot 10^1$	$1 \cdot 10^4$
Cs-138	$1 \cdot 10^1$	$1 \cdot 10^4$
Barium		
Ba-131	$1 \cdot 10^2$	$1 \cdot 10^6$
Ba-140+	$1 \cdot 10^1$	$1 \cdot 10^5$
Lanthanum		
La-140	$1 \cdot 10^1$	$1 \cdot 10^5$
Cerium		
Ce-139	$1 \cdot 10^2$	$1 \cdot 10^6$
Ce-141	$1 \cdot 10^2$	$1 \cdot 10^7$
Ce-143	$1 \cdot 10^2$	$1 \cdot 10^6$
Ce-144+	$1 \cdot 10^2$	$1 \cdot 10^5$
Praseodymium		
Pr-142	$1 \cdot 10^2$	$1 \cdot 10^5$
Pr-143	$1 \cdot 10^4$	$1 \cdot 10^6$
Neodymium		
Nd-147	$1 \cdot 10^2$	$1 \cdot 10^6$
Nd-149	$1 \cdot 10^2$	$1 \cdot 10^6$
Promethium		
Pm-147	$1 \cdot 10^4$	$1 \cdot 10^7$
Pm-149	$1 \cdot 10^3$	$1 \cdot 10^6$
Samarium		
Sm-151	$1 \cdot 10^4$	$1 \cdot 10^8$
Sm-153	$1 \cdot 10^2$	$1 \cdot 10^6$
Europium		
Eu-152	$1 \cdot 10^1$	$1 \cdot 10^6$
Eu-152m	$1 \cdot 10^2$	$1 \cdot 10^6$
Eu-154	$1 \cdot 10^1$	$1 \cdot 10^6$
Eu-155	$1 \cdot 10^2$	$1 \cdot 10^7$
Gadolinium		
Gd-153	$1 \cdot 10^2$	$1 \cdot 10^7$
Gd-159	$1 \cdot 10^3$	$1 \cdot 10^6$
Terbium		
Tb-160	$1 \cdot 10^1$	$1 \cdot 10^6$
Dysprosium		

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Dy-165	$1 \cdot 10^3$	$1 \cdot 10^6$
Dy-166	$1 \cdot 10^3$	$1 \cdot 10^6$
Holmium		
Ho-166	$1 \cdot 10^3$	$1 \cdot 10^5$
Erbium		
Er-169	$1 \cdot 10^4$	$1 \cdot 10^7$
Thulium		
Tm-170	$1 \cdot 10^3$	$1 \cdot 10^6$
Tm-171	$1 \cdot 10^4$	$1 \cdot 10^8$
Ytterbium		
Yb-175	$1 \cdot 10^3$	$1 \cdot 10^7$
Lutetium		
Lu-177	$1 \cdot 10^3$	$1 \cdot 10^7$
Hafnium		
Hf-181	$1 \cdot 10^1$	$1 \cdot 10^6$
Tantalum		
Ta-182	$1 \cdot 10^1$	$1 \cdot 10^4$
Tungsten		
W-181	$1 \cdot 10^3$	$1 \cdot 10^7$
W-185	$1 \cdot 10^4$	$1 \cdot 10^7$
W-187	$1 \cdot 10^2$	$1 \cdot 10^6$
Rhenium		
Re-186	$1 \cdot 10^3$	$1 \cdot 10^6$
Re-188	$1 \cdot 10^2$	$1 \cdot 10^5$
Osmium		
Os-185	$1 \cdot 10^1$	$1 \cdot 10^6$
Os-191	$1 \cdot 10^2$	$1 \cdot 10^7$
Os-191m	$1 \cdot 10^3$	$1 \cdot 10^7$
Os-193	$1 \cdot 10^2$	$1 \cdot 10^6$
Iridium		
Ir-190	$1 \cdot 10^1$	$1 \cdot 10^6$
Ir-192	$1 \cdot 10^1$	$1 \cdot 10^4$
Ir-194	$1 \cdot 10^2$	$1 \cdot 10^5$
Platinum		
Pt-191	$1 \cdot 10^2$	$1 \cdot 10^6$
Pt-193m	$1 \cdot 10^3$	$1 \cdot 10^7$
Pt-197	$1 \cdot 10^3$	$1 \cdot 10^6$
Pt-197m	$1 \cdot 10^2$	$1 \cdot 10^6$
Gold		

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Au-198	$1 \cdot 10^2$	$1 \cdot 10^6$
Au-199	$1 \cdot 10^2$	$1 \cdot 10^6$
Mercury		
Hg-197	$1 \cdot 10^2$	$1 \cdot 10^7$
Hg-197m	$1 \cdot 10^2$	$1 \cdot 10^6$
Hg-203	$1 \cdot 10^2$	$1 \cdot 10^5$
Thallium		
Tl-200	$1 \cdot 10^1$	$1 \cdot 10^6$
Tl-201	$1 \cdot 10^2$	$1 \cdot 10^6$
Tl-202	$1 \cdot 10^2$	$1 \cdot 10^6$
Tl-204	$1 \cdot 10^4$	$1 \cdot 10^4$
Lead		
Pb-203	$1 \cdot 10^2$	$1 \cdot 10^6$
Pb-210+	$1 \cdot 10^1$	$1 \cdot 10^4$
Pb-212+	$1 \cdot 10^1$	$1 \cdot 10^5$
Bismuth		
Bi-206	$1 \cdot 10^1$	$1 \cdot 10^5$
Bi-207	$1 \cdot 10^1$	$1 \cdot 10^6$
Bi-210	$1 \cdot 10^3$	$1 \cdot 10^6$
Bi-212+	$1 \cdot 10^1$	$1 \cdot 10^5$
Polonium		
Po-203	$1 \cdot 10^1$	$1 \cdot 10^6$
Po-205	$1 \cdot 10^1$	$1 \cdot 10^6$
Po-207	$1 \cdot 10^1$	$1 \cdot 10^6$
Po-210	$1 \cdot 10^1$	$1 \cdot 10^4$
Astatine		
At-211	$1 \cdot 10^3$	$1 \cdot 10^7$
Radon		
Rn-220+	$1 \cdot 10^4$	$1 \cdot 10^7$
Rn-222+	$1 \cdot 10^1$	$1 \cdot 10^8$
Radium		
Ra-223+	$1 \cdot 10^2$	$1 \cdot 10^5$
Ra-224+	$1 \cdot 10^1$	$1 \cdot 10^5$
Ra-225	$1 \cdot 10^2$	$1 \cdot 10^5$
Ra-226+	$1 \cdot 10^1$	$1 \cdot 10^4$
Ra-227	$1 \cdot 10^2$	$1 \cdot 10^6$
Ra-228+	$1 \cdot 10^1$	$1 \cdot 10^5$
Actinium		
Ac-228	$1 \cdot 10^1$	$1 \cdot 10^6$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Thorium		
Th-226+	$1 \cdot 10^3$	$1 \cdot 10^7$
Th-227	$1 \cdot 10^1$	$1 \cdot 10^4$
Th-228+	$1 \cdot 10^0$	$1 \cdot 10^4$
Th-229+	$1 \cdot 10^0$	$1 \cdot 10^3$
Th-230	$1 \cdot 10^0$	$1 \cdot 10^4$
Th-231	$1 \cdot 10^3$	$1 \cdot 10^7$
Th-232	$1 \cdot 10^1$	$1 \cdot 10^4$
Th-232sec	$1 \cdot 10^0$	$1 \cdot 10^3$
Th-234+	$1 \cdot 10^3$	$1 \cdot 10^5$
Protactinium		
Pa-230	$1 \cdot 10^1$	$1 \cdot 10^6$
Pa-231	$1 \cdot 10^0$	$1 \cdot 10^3$
Pa-233	$1 \cdot 10^2$	$1 \cdot 10^7$
Uranium		
U-230+	$1 \cdot 10^1$	$1 \cdot 10^5$
U-231	$1 \cdot 10^2$	$1 \cdot 10^7$
U-232+	$1 \cdot 10^0$	$1 \cdot 10^3$
U-233	$1 \cdot 10^1$	$1 \cdot 10^4$
U-234	$1 \cdot 10^1$	$1 \cdot 10^4$
U-235	$1 \cdot 10^1$	$1 \cdot 10^4$
U-236	$1 \cdot 10^1$	$1 \cdot 10^4$
U-237	$1 \cdot 10^2$	$1 \cdot 10^6$
U-238+	$1 \cdot 10^1$	$1 \cdot 10^4$
U-238sec	$1 \cdot 10^0$	$1 \cdot 10^3$
U-239	$1 \cdot 10^2$	$1 \cdot 10^6$
U-240	$1 \cdot 10^3$	$1 \cdot 10^7$
U-240+	$1 \cdot 10^1$	$1 \cdot 10^6$
Neptunium		
Np-237+	$1 \cdot 10^0$	$1 \cdot 10^3$
Np-239	$1 \cdot 10^2$	$1 \cdot 10^7$
Np-240	$1 \cdot 10^1$	$1 \cdot 10^6$
Plutonium		
Pu-234	$1 \cdot 10^2$	$1 \cdot 10^7$
Pu-235	$1 \cdot 10^2$	$1 \cdot 10^7$
Pu-236	$1 \cdot 10^1$	$1 \cdot 10^4$
Pu-237	$1 \cdot 10^3$	$1 \cdot 10^7$
Pu-238	$1 \cdot 10^0$	$1 \cdot 10^4$
Pu-239	$1 \cdot 10^0$	$1 \cdot 10^4$

1	2	3
<i>Radionuclide name, symbol, isotope</i>	<i>Concentration for notification. Regulation 18 (Bq/g)</i>	<i>Quantity for notification. Regulation 18 (Bq/g)</i>
Pu-240	$1 \cdot 10^0$	$1 \cdot 10^3$
Pu-241	$1 \cdot 10^2$	$1 \cdot 10^5$
Pu-242	$1 \cdot 10^0$	$1 \cdot 10^4$
Pu-243	$1 \cdot 10^3$	$1 \cdot 10^7$
Pu-244	$1 \cdot 10^0$	$1 \cdot 10^4$
Americium		
Am-241	$1 \cdot 10^0$	$1 \cdot 10^4$
Am-242	$1 \cdot 10^3$	$1 \cdot 10^6$
Am-242m+	$1 \cdot 10^0$	$1 \cdot 10^4$
Am-243+	$1 \cdot 10^0$	$1 \cdot 10^3$
Curium		
Cm-242	$1 \cdot 10^2$	$1 \cdot 10^5$
Cm-243	$1 \cdot 10^0$	$1 \cdot 10^4$
Cm-244	$1 \cdot 10^1$	$1 \cdot 10^4$
Cm-245	$1 \cdot 10^0$	$1 \cdot 10^3$
Cm-246	$1 \cdot 10^0$	$1 \cdot 10^3$
Cm-247	$1 \cdot 10^0$	$1 \cdot 10^4$
Cm-248	$1 \cdot 10^0$	$1 \cdot 10^3$
Berkelium		
Bk-249	$1 \cdot 10^3$	$1 \cdot 10^6$
Californium		
Cf-246	$1 \cdot 10^3$	$1 \cdot 10^6$
Cf-248	$1 \cdot 10^1$	$1 \cdot 10^4$
Cf-249	$1 \cdot 10^0$	$1 \cdot 10^3$
Cf-250	$1 \cdot 10^1$	$1 \cdot 10^4$
Cf-251	$1 \cdot 10^0$	$1 \cdot 10^3$
Cf-252	$1 \cdot 10^1$	$1 \cdot 10^4$
Cf-253	$1 \cdot 10^2$	$1 \cdot 10^5$
Cf-254	$1 \cdot 10^0$	$1 \cdot 10^3$
Einsteinium		
Es-253	$1 \cdot 10^2$	$1 \cdot 10^5$
Es-254	$1 \cdot 10^1$	$1 \cdot 10^4$
Es-254m	$1 \cdot 10^2$	$1 \cdot 10^6$
Fermium		
Fm-254	$1 \cdot 10^4$	$1 \cdot 10^7$
Fm-255	$1 \cdot 10^3$	$1 \cdot 10^6$
Other radionuclides not listed above (see note 1)	$1 \cdot 10^{-1}$	$1 \cdot 10^3$

Note 1. In the case of radionuclides not specified elsewhere in this Part, the

quantities specified in this entry are to be used unless the Board has approved some other quantity for that radionuclide.

Note 2. Nuclides carrying the suffix "+" or "sec" in the above table represent parent nuclides in equilibrium with their correspondent daughter nuclides as listed in the following Table. In this case the concentrations and quantities given in the above Table refer to the parent nuclide alone, but already take account of the daughter nuclide(s) present.

Table B

List of nuclides in secular equilibrium as referred to in point 6 of this Schedule

Parent nuclide	Daughter nuclides
Sr-80+	Rb-82
Sr 90+	Y-90
Zr-93+	Nb-93m
Zr-97+	Nb-97
Ru-106+	Rh-106
Cs-137+	Ba-137m
Ba-140+	La-140
Ce-134+	La-134
Ce-144+	Pr-144
Pb-210+	Bi-210, Po-210
Bi-210m+	Tl-206
Pb-212+	Bi-212, Tl-208, Po-212
Bi-212+	Tl-208, Po-212
Rn-220+	Po-216
Rn-222+	Po-218, Pb-214, Bi-214, Po-214
Ra-223+	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224+	Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Ra-226+	Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
Ra-228+	Ac-228
Th-226+	Ra-222, Rn-218, Po-214
Th-228+	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Th-229+	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
Th-232sec	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
Th-234+	Pa-234m
U-230+	Th-226, Ra-222, Rn-218, Po-214
U-232+	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212
U-235+	Th-231
U-238+	Th-234, Pa-234m
U-238sec	Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
U-240+	Np-240

Parent nuclide	Daughter nuclides
Np-237+	Pa-233
Am-242m+	Am-242
Am-243+	Np-239

THIRD SCHEDULE

Regulation 22

DOSE LIMITS FOR DIFFERENT CLASSES OF PERSONS

Dose limit applies to the sum of the relevant doses from external exposures in one year and the committed doses from intakes in the same period.

PART 1

Dose limits for apprentices and students

(1) The limit for effective dose for apprentices or students aged between 16 and 18 years who, in the course of their studies, are obliged to use sources shall be 6 mSv per year.

Without prejudice to this dose limit:

- (a) the limit on equivalent dose for the lens of the eye shall be 50 mSv in a year;
- (b) the limit on equivalent dose for the skin shall be 150 mSv in a year. This limit shall apply to the dose averaged over any area of 1 cm², regardless of the area exposed;
- (c) the limit on equivalent dose for the hands, forearms, feet and ankles shall be 150 mSv in a year.

(2) The exposure conditions and operational protection of apprentices and students aged between 16 and 18 years referred to in paragraph (1) shall be equivalent to that of exposed workers of category B.

(3) The dose limits for apprentices and students aged 18 years or over who, in the course of their studies, are obliged to use sources shall be as the dose limits for exposed workers laid down in Part 2.

(4) The dose limits for apprentices and students who are not subject to the provisions of paragraph (1) and (3) shall be the same as the dose limits for members of the public specified in Part 4.

PART 2

Dose limits for exposed workers

(1) For the purposes of regulation 22(1), the limit on effective dose for any worker of 18 years of age or above shall be 20 mSv in any calendar year.

(2) Where an employer is able to demonstrate in respect of any worker that this dose limit is impracticable having regard to the nature of the work undertaken by that worker, the limit on effective dose for such exposed workers shall be 100 mSv in a consecutive five-year period, subject to a maximum effective dose of 50 mSv in any calendar year.

- (3) Without prejudice to paragraphs (1) and (2):
- (a) the limit on equivalent dose for the lens of the eye shall be 150 mSv in a year;
 - (b) the limit on equivalent dose for the skin shall be 500 mSv in a year. This limit shall apply to the dose averaged over any area of 1 cm², regardless of the area exposed;
 - (c) the limit on equivalent dose for the hands, forearms, feet and ankles shall be 500 mSv in a year.

PART 3

Women of reproductive capacity

(1) Without prejudice to the above paragraphs, the limit on equivalent dose for the abdomen of a woman of reproductive capacity who is at work, being the equivalent dose from external radiation resulting from exposure to ionising radiation averaged throughout the abdomen, shall be 13 mSv in any consecutive period of three months.

(2) As soon as a pregnant woman informs the undertaking, in accordance with the Protection of Maternity at Workplaces Regulations, of her condition, the protection of the child to be born shall be comparable with that provided for members of the public. The conditions for the pregnant woman in the context of her employment shall therefore be such that the equivalent dose to the child to be born will be as low as reasonably achievable and that it will be unlikely that this dose will exceed 1 mSv during at least the remainder of the pregnancy.

(3) As soon as a breastfeeding woman informs the undertaking in accordance with the Protection of Maternity at Workplaces Regulations of her condition she shall be employed so that 1/20 of the annual limit intake (ALI) shall not be exceeded.

PART 4

Other persons

(1) Subject to paragraph (2) hereof, for the purposes of regulation 22(1) the limit on effective dose for any person other than a worker or trainee, including any person below the age of 16, attributable to practices or work activities, shall be 1 mSv in any calendar year.

(2) Paragraph (1) shall not apply in relation to any person (not being a comforter or carer) who may be exposed to ionising radiation resulting from the medical exposure of another person and in such a case the limit on effective dose for any such person shall be 5 mSv in any period of five consecutive calendar years.

- (3) Without prejudice to paragraphs (1) and (2) -
- (a) the limit on equivalent dose for the lens of the eye shall be 15 mSv in any calendar year;
 - (b) the limit on equivalent dose for the skin shall be 50 mSv in any calendar year averaged over any 1 cm² area regardless of the area exposed;
 - (c) the limit on equivalent dose for the hands, forearms, feet and ankles shall be 50 mSv in a calendar year:

Provided that the dose limits from all relevant practices or work activities shall not apply to any of the following exposures:

- (a) exposure of individuals as part of their own medical diagnosis or

treatment;

- (b) exposure of individuals knowingly and willingly helping (other than as part of their occupation) in the support and comfort of patients undergoing medical diagnosis or treatment. The dose of any such comforter or visitor of patients shall be constrained so that it is unlikely that his dose will exceed 5 mSv during the period of patient's examination or treatment. The dose to children visiting patients, who have ingested radioactive materials, should similarly be constrained to less than 1 mSv;

- (c) exposure of volunteers participating in medical and biomedical research programmes.

- (4) Generic dose constraints:

In relation to regulation 21, the generic dose constraint of effective dose, applicable to a single practice or work activity and to the mean dose among individuals of the critical group of the public, shall be 0.25 mSv/y.

FOURTH SCHEDULE

Regulation 38(4)

PARTICULARS TO BE ENTERED IN THE RADIATION PASSBOOK

1. Individual serial number of the passbook.
2. A statement that the passbook has been approved by the Board for the purpose of these Regulations.
3. Date of issue of the passbook by the approved dosimetry service.
4. The name, telephone number and mark of endorsement of the issuing approved dosimetry service.
5. The name, address, telephone and telex/fax number of the employer.
6. Full name (surname, forenames), date of birth, gender and identity card number and/or national insurance number of the outside worker to whom the passbook has been issued.
7. Date of the last medical review of the outside worker and the relevant classification in the health record maintained under regulation 44 as fit, fit subject to conditions (which shall be specified) or unfit.
8. The relevant dose limits applicable to the outside worker to whom the passbook has been issued.
9. The cumulative dose assessment in mSv for the year to date for the outside worker, external (whole body, organ or tissue) and/or internal as appropriate and the date of the end of the last assessment period.
10. In respect of services performed by the outside worker -
 - (a) the name and address of the employer responsible for the controlled area;
 - (b) the period covered by the performance of the services;
 - (c) estimated dose information, which shall be, as appropriate -

- (i) all estimate of any whole body effective dose in mSv received by the outside worker;
 - (ii) in the event of non-uniform exposure, an estimate of the equivalent dose in mSv to organs and tissues as appropriate; and
 - (iii) in the event of internal radioactive contamination, an estimate of the activity taken in or the committed dose.
-

FIFTH SCHEDULE

Regulation 45

PARTICULARS TO BE CONTAINED IN A HEALTH RECORD

The following particulars shall be contained in a health record made for the purposes of regulation 45 -

- (a) the worker's -
 - (i) full name;
 - (ii) sex;
 - (iii) date of birth;
 - (iv) permanent address; and
 - (v) Identity Card number and/or National Insurance number;
- (b) the date of the worker's commencement as a classified person in present employment;
- (c) the nature of the worker's employment;
- (d) in the case of a female worker, a statement as to whether she is likely to receive in any consecutive period of three months an equivalent dose of ionising radiation for the abdomen exceeding 13 mSv;
- (e) the date of last medical examination or health review carried out in respect of the worker;
- (f) the type of the last medical examination or health review carried out in respect of the worker;
- (g) a statement by the approved medical practitioner or approved occupational health service made as a result of the last medical examination or health review carried out in respect of the worker classifying the worker as fit, fit subject to conditions (which should be specified) or unfit;
- (h) in the case of a female worker in respect of whom a statement has been made under paragraph (d) to the effect that she is likely to receive in any consecutive period of three months an equivalent dose of ionising radiation for the abdomen exceeding 13 mSv, a statement by the approved medical practitioner or approved occupational health service certifying whether in his professional opinion the worker should be subject to the additional dose limit specified in paragraph (1) of Part 3 of the Third Schedule;
- (i) in relation to each medical examination and health review, the name and signature of the approved medical practitioner or approved occupational health service;

- (j) the name and address of the approved dosimetry service with whom arrangements have been made for maintaining the dose record in accordance with regulation 38.

SIXTH SCHEDULE

Regulation 5

CONVENTION ON PHYSICAL PROTECTION OF NUCLEAR MATERIAL

Preamble

THE STATES PARTIES TO THIS CONVENTION,

Recognising the right of all States to develop and apply nuclear energy for peaceful purposes and their legitimate interests in the potential benefits to be derived from the peaceful application of nuclear energy,

Convinced of the need for facilitating international co-operation in the peaceful application of nuclear energy,

Desiring to avert the potential dangers posed by the unlawful taking and use of nuclear material,

Convinced that offences relating to nuclear material are a matter of grave concern and that there is an urgent need to adopt appropriate and effective measures to ensure the prevention, detection and punishment of such offences,

Aware of the need for international co-operation to establish, in conformity with the national law of each State Party and with this Convention, effective measures for the physical protection of nuclear material,

Convinced that this Convention should facilitate the safe transfer of nuclear material,

Stressing also the importance of the physical protection of nuclear material in domestic use, storage and transport,

Recognising the importance of effective physical protection of nuclear material used for military purposes, and understanding that such material is and will continue to be accorded stringent physical protection,

Have agreed as follows:

Article 1

For the purposes of this Convention:

a. "nuclear material" means plutonium except that with isotopic concentration exceeding 80% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing;

b. "uranium enriched in the isotope 235 or 233" means uranium containing the isotope 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature;

c. "international nuclear transport" means the carriage of a consignment of

nuclear material by any means of transportation intended to go beyond the territory of the State where the shipment originates beginning with the departure from a facility of the shipper in that State and ending with the arrival at a facility of the receiver within the State of ultimate destination.

Article 2

1. This Convention shall apply to nuclear material used for peaceful purposes while in international nuclear transport.

2. With the exception of articles 3 and 4 and paragraph 3 of article 5, this Convention shall also apply to nuclear material used for peaceful purposes while in domestic use, storage and transport.

3. Apart from the commitments expressly undertaken by States Parties in the articles covered by paragraph 2 with respect to nuclear material used for peaceful purposes while in domestic use, storage and transport, nothing in this Convention shall be interpreted as affecting the sovereign rights of a State regarding the domestic use, storage and transport of such nuclear material.

Article 3

Each State Party shall take appropriate steps within the framework of its national law and consistent with international law to ensure as far as practicable that, during international nuclear transports nuclear material within its territory, or on board a ship or aircraft under its jurisdiction insofar as such ship or aircraft is engaged in the transport to or from that State, is protected at the levels described in Annex 1.

Article 4

1. Each State Party shall not export or authorise the export of nuclear material unless the State Party has received assurances that such material will be protected during the international nuclear transport at the levels described in Annex I.

2. Each State Party shall not import or authorize the import of nuclear material from a State not party to this Convention unless the State Party has received assurances that such material will during the international nuclear transport be protected at the levels described in Annex I.

3. A State Party shall not allow the transit of its territory by land or internal waterways or through its airports or seaports of nuclear material between States that are not parties to this Convention unless the State Party has received assurances as far as practicable that this nuclear material will be protected during international nuclear transport at the levels described in Annex I.

4. Each State Party shall apply within the framework of its national law the levels of physical protection described in Annex I to nuclear material being transported from a part of that State to another part of the same State through international waters or airspace.

5. The State Party responsible for receiving assurances that the nuclear material will be protected at the levels described in Annex I according to paragraphs 1 to 3 shall identify and inform in advance States which the nuclear material is expected to transit by land or internal waterways, or whose airports or seaports it is expected to enter.

6. The responsibility for obtaining assurances referred to in paragraph 1 may be transferred, by mutual agreement, to the State Party involved in the transport as the importing State.

7. Nothing in this article shall be interpreted as in any way affecting the territorial sovereignty and jurisdiction of a State, including that over its airspace and

territorial sea.

Article 5

1. States Parties shall identify and make known to each other directly or through the International Atomic Energy Agency their central authority and point of contact having responsibility for physical protection of nuclear material and for co-ordinating recovery and response operations in the event of any unauthorized removal, use or alteration of nuclear material or in the event of credible threat thereof.

2. In the case of theft, robbery or any other unlawful taking of nuclear material or of credible threat thereof, States Parties shall, in accordance with their national law, provide co-operation and assistance to the maximum feasible extent in the recovery and protection of such material to any State that so requests. In particular:

- a. State Party shall take appropriate steps to inform as soon as possible other States, which appear to it to be concerned, of any theft, robbery or other unlawful taking of nuclear material or credible threat thereof and to inform, where appropriate, international organizations;
- b. as appropriate, the States Parties concerned shall exchange information with each other or international organizations with a view to protecting threatened nuclear material, verifying the integrity of the shipping container, or recovering unlawfully taken nuclear material and shall:
 - i. co-ordinate their efforts through diplomatic and other agreed channels;
 - ii. render assistance; if requested;
 - iii. ensure the return of nuclear material stolen or missing as a consequence of the above-mentioned events.

The means of implementation of this co-operation shall be determined by the States Parties concerned.

3. States Parties shall co-operate and consult as appropriate, with each other directly or through international organizations, with a view to obtaining guidance on the design, maintenance and improvement of systems of physical protection of nuclear material in international transport.

Article 6

1. States Parties shall take appropriate measures consistent with their national law to protect the confidentiality of any information which they receive in confidence by virtue of the provisions of this Convention from another State Party or through participation in an activity carried out for the implementation of this Convention. If States Parties provide information to international organizations in confidence, steps shall be taken to ensure that the confidentiality of such information is protected.

2. States Parties shall not be required by this Convention to provide any information which they are not permitted to communicate pursuant to national law or which would jeopardize the security of the State concerned or the physical protection of nuclear material.

Article 7

1. The intentional commission of:

- a. an act without lawful authority which constitutes the receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material and which causes or is likely to cause death or serious injury to

- any person or substantial damage to property;
- b. a theft of robbery of nuclear material;
- c. an embezzlement or fraudulent obtaining of nuclear material;
- d. an act constituting a demand for nuclear material by threat or use of force or by any other form of intimidation;
- e. a threat:
 - (i) to use nuclear material to cause death or serious injury to any person or substantial property damage, or
 - (ii) to commit an offence described in sub-paragraph (b) in order to compel a natural or legal person, international organization or State to do or to refrain from doing any act;
- f. an attempt to commit any offence described in paragraphs (a), (b) or (c); and
- g. an act which constitutes participation in any offence described in paragraphs (a) to (f)

shall be made a punishable offence by each State Party under its national law.

2. Each State Party shall make the offences described in this article punishable by appropriate penalties which take into account their grave nature.

Article 8

1. Each State Party shall take such measures as may be necessary to establish its jurisdiction over the offences set forth in article 7 in the following cases:

- a. when the offence is committed in the territory of that State or on board a ship or aircraft registered in that State;
- b. when the alleged offender is a national of that State.

2. Each State Party shall likewise take such measures as may be necessary to establish its jurisdiction over these offences in cases where the alleged offender is presented in its territory and it does not extradite him pursuant to article 11 to any of the States mentioned in paragraph 1.

3. This Convention does not exclude any criminal jurisdiction exercised in accordance with national law.

4. In addition to the States Parties mentioned in paragraphs 1 and 2, each State Party may, consistent with international law, establish its jurisdiction over the offences set forth in article 7 when it is involved in international nuclear transport as the exporting or importing State.

Article 9

Upon being satisfied that the circumstances so warrant, the State Party in whose territory the alleged offender is present shall take appropriate measures, including detention, under its national law to ensure his presence for the purpose of prosecution or extradition. Measures taken according to this article shall be notified without delay to the States required to establish jurisdiction pursuant to article 8 and, where appropriate, all other States concerned.

Article 10

The State Party in whose territory the alleged offender is present shall, if it does not extradite him, submit, without exception whatsoever and without undue delay, the case to its competent authorities for the purpose of prosecution, through proceedings in accordance with the laws of that State.

Article 11

1. The offences in article 7 shall be deemed to be included as extraditable offences in any extradition treaty existing between States Parties. States Parties undertake to include those offences as extraditable offences in every future extradition treaty to be concluded between them.

2. If a State Party which makes extradition conditional on the existence of a treaty receives a request for extradition from another State Party with which it has no extradition treaty, it may at its option consider this Convention as the legal basis for extradition in respect of those offences. Extradition shall be subject to the other conditions provided by the law of the requested State.

3. States Parties which do not make extradition conditional on the existence of a treaty shall recognize those offences as extraditable offences between themselves subject to the conditions provided by the law of the requested State.

4. Each of the offences shall be treated, for the purpose of extradition between States Parties, as if it had been committed not only in the place in which it occurred but also in the territories of the States Parties required to establish their jurisdiction in accordance with paragraph 1 of article 8.

Article 12

Any person regarding whom proceedings are being carried out in connection with any of the offences set forth in article 7 shall be guaranteed fair treatment at all stages of the proceedings.

Article 13

1. States Parties shall afford one another the greatest measure of assistance in connection with criminal proceedings brought in respect of the offences set forth in article 7, including the supply of evidence at their disposal necessary for the proceedings. The law of the State requested shall apply in all cases.

2. The provisions of paragraph 1 shall not affect obligations under any other treaty, bilateral or multilateral, which governs or will govern, in whole or in part, mutual assistance in criminal matters.

Article 14

1. Each State Party shall inform the depositary of its laws and regulations which give effect to this Convention. The depositary shall communicate such information periodically to all States Parties.

2. The State Party where an alleged offender is prosecuted shall, wherever practicable, first communicate the final outcome of the proceedings to the States directly concerned. The State Party shall also communicate the final outcome to the depositary who shall inform all States.

3. Where an offence involves nuclear material used for peaceful purposes in domestic use, storage or transport, and both the alleged offender and the nuclear material remain in the territory of the State Party in which the offence was committed, nothing in this Convention shall be interpreted as requiring that State Party to provide information concerning criminal proceedings arising out of such an offence.

Article 15

The Annexes constitute an integral part of this Convention.

Article 16

1. A conference of States Parties shall be convened by the depositary of five years after the entry into force of this Convention to review the implementation of the Convention and its adequacy as concerns the preamble, the whole of the operative part and the annexes in the light of the then prevailing situation.

2. At intervals of not less than five years thereafter, the majority of States Parties may obtain, by submitting a proposal to this effect to the depositary, the convening of further conferences with the same objective.

Article 17

1. In the event of a dispute between two or more States Parties concerning the interpretation or application of this Convention, such States Parties shall consult with a view to the settlement of the dispute by negotiation, or by any other peaceful means of settling disputes acceptable to all parties to the dispute.

2. Any dispute of this character which cannot be settled in the manner prescribed in paragraph 1 shall, at the request of any party to such dispute, be submitted to arbitration or referred to the International Court of Justice for decision. Where a dispute is submitted to arbitration, if, within six months from the date of the request, the parties to the dispute are unable to agree on the organization of the arbitration, a party may request the President of the International Court of Justice or the Secretary-General of the United Nations to appoint one or more arbitrators. In case of conflicting requests by the parties to the dispute, the request to the Secretary-General of the United Nations shall have priority.

3. Each State Party may at the time of signature, ratification, acceptance, or approval of this Convention or accession thereto declare that it does not consider itself bound by either or both of the dispute settlement procedures provided for in paragraph 2. The other States Parties shall not be bound by a dispute settlement procedure provided for in paragraph 2, with respect to a State Party which has made a reservation to that procedure.

4. Any State Party which has made a reservation in accordance with paragraph 3 may at any time withdraw that reservation by notification to the depositary.

Article 18

1. This Convention shall be open for signature by all States at the Headquarters of the International Atomic Energy Agency in Vienna and at the Headquarters of the United Nations in New York from 3 March 1980 until its entry into force.

2. This Convention is subject to ratification, acceptance or approval by the signatory States.

3. After its entry into force, this Convention will be open for accession by all States.

4. a. This Convention shall be open for signature or accession by international organizations and regional organizations of an integration or other nature, provided that any such organization is constituted by sovereign States and has competence in respect of the negotiation, conclusion and application of international agreements in matters covered by this Convention.
- b. In matters within their competence, such organizations shall, on their own behalf, exercise the rights and fulfil the responsibilities which this Convention attributes to States Parties.
- c. When becoming party to this Convention such an organization shall communicate to the depositary a declaration indicating which States are

members thereof and which articles of this Convention do not apply to it.

- d. Such an organization shall not hold any vote additional to those of its Member States.

5. Instruments of ratification, acceptance, approval or accession shall be deposited with depositary.

Article 19

1. This Convention shall enter into force on the thirtieth day following the date of deposit of the twenty-first instrument of ratification, acceptance or approval with the depositary.

2. For each State ratifying, accepting, approving or acceding to the Convention after the date of deposit of the twenty-first instrument of ratification, acceptance or approval, the Convention shall enter into force on the thirtieth day after the deposit by such State of its instrument of ratification, acceptance, approval or accession.

Article 20

1. Without prejudice to article 16 a State Party may propose amendments to this Convention. The proposed amendment shall be submitted to the depositary who shall circulate it immediately to all States Parties. If a majority of States Parties request the depositary to convene a conference to consider the proposed amendments, the depositary shall invite all States Parties to attend such a conference to be held not sooner than thirty days after the invitations are issued. Any amendment adopted at the conference by a two-thirds majority of all States Parties shall be promptly circulated by the depositary to all States Parties.

2. The amendment shall enter into force for each State Party that deposits its instrument of ratification, acceptance or approval of the amendment on the thirtieth day after the date on which two-thirds of the States Parties have deposited their instruments of ratification, acceptance or approval with the depositary. Thereafter, the amendment shall enter into force for any other State Party on the day on which that State Party deposits its instrument of ratification, acceptance or approval of the amendment.

Article 21

1. Any State Party may denounce this Convention by written notification to the depositary.

2. Denunciation shall take effect one hundred and eighty days following the date on which notification is received by the depositary.

Article 22

The depositary shall promptly notify all States of:

- a. each signature of this Convention;
- b. each deposit of an instrument of ratification, acceptance, approval or accession;
- c. any reservation or withdrawal in accordance with article 17;
- d. any communication made by an organization in accordance with paragraph 4(c) of article 18;
- e. the entry into force of this Convention;
- f. the entry into force of any amendment to this Convention; and
- g. any denunciation made under article 21.

Article 23

The original of this Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Director General of the International Atomic Energy Agency who shall send certified copies thereof to all States.

Sixth Schedule: Annex I

Levels of Physical Protection to be Applied in International Transport of Nuclear Materials as Categorized In Annex II

1. Levels of physical protection for nuclear material during storage incidental to international nuclear transport include:

- a. For Category III materials, storage within an area to which access is controlled;
- b. For Category II materials, storage within an area under constant surveillance by guards or electronic devices, surrounded by a physical barrier with a limited number of points of entry under appropriate control or any area with an equivalent level of physical protection;
- c. For Category I material, storage within a protected area as defined for Category II above, to which, in addition, access is restricted to persons whose trustworthiness has been determined, and which is under surveillance by guards who are in close communication with appropriate response forces. Specific measures taken in this context should have as their object the detection and prevention of any assault, unauthorized access or unauthorized removal of material.

2. Levels of physical protection for nuclear material during international transport include:

- a. For Category II and III materials, transportation shall take place under special precautions including prior arrangements among sender, receiver, and carrier, and prior agreement between natural or legal persons subject to the jurisdiction and regulation of exporting and importing States, specifying time, place and procedures for transferring transport responsibility;
- b. For Category I materials, transportation shall take place under special precautions identified above for transportation of Category II and III materials, and in addition, under constant surveillance by escorts and under conditions which assure close communication with appropriate response forces;
- c. For natural uranium other than in the form of ore or ore-residue; transportation protection for quantities exceeding 500 kilograms uranium shall include advance notification of shipment specifying mode of transport, expected time of arrival and confirmation of receipt of shipment.

Sixth Schedule: Annex II

Table: Categorization of Nuclear Material

Material	Form	Category		
		I	II	III ^{c/}
1. Plutonium ^{a/}	Unirradiated ^{b/}	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g

2. Uranium-235	Unirradiated ^{b/} uranium enriched to 20% ²³⁵ U or more uranium enriched to 10% ²³⁵ U but less than 20% uranium enriched above natural, but less than 10% ²³⁵ U	5 kg or more	Less than 5 kg but more than 1 kg 10 kg or more	1 kg or less but more than 15 g Less than 10 kg but more than 1 kg 10 kg or more
3. Uranium-233	Unirradiated ^{b/}	2 kg or more	Less than 2 kg but more than 500 g	500 g or less but more than 15 g
4. Irradiated fuel			Depleted or natural uranium, thorium or low-enriched fuel (less than 10% fissile content) ^{d e}	

^a All plutonium except that with isotopic concentration exceeding 80% in plutonium-238.

^b Material not irradiated in a reactor or material irradiated in a reactor but with a radiation level equal to or less than 100 rads/hour at one metre unshielded.

^c Quantities not falling in Category III and natural uranium should be protected in accordance with prudent management practice or work activity.

^d Although this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.

^e Other fuel which by virtue of its original fissile material content is classified as Category I and II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 100 rads/hour at one metre unshielded.

SEVENTH SCHEDULE

Protection of workers undertaking intervention

(1) No worker undertaking an intervention shall be exposed in excess of the maximum single year dose limit for occupational exposure specified in the Third Schedule except:

- (a) for the purpose of saving life or preventing serious injury; or
- (b) if undertaking actions to prevent the development of catastrophic conditions.

When undertaking intervention under these circumstances, all reasonable efforts shall be made to keep doses to workers below twice the maximum single dose year limit, except for life saving actions, in which every effort shall be made to keep doses below ten times the maximum single dose year limit, in order to avoid deterministic effects on health. In addition, workers undertaking actions in which their doses may approach or exceed ten times the maximum single dose year limit shall do so only when the benefits to others clearly outweigh their own risk.

(2) Workers who undertake actions in which the dose may exceed the maximum single dose year limit shall be volunteers and shall be clearly and comprehensively informed in advance of the associated health risk, and shall, to the extent feasible, be trained in the actions that may be required.

(3) Once the emergency phase of an intervention has ended, workers

undertakings recovery operations shall be subject to the full system of requirements for occupational exposure specified in these regulations.

(4) All reasonable steps shall be taken to provide appropriate protection during the emergency intervention and to assess and separately record the doses received by workers involved in such intervention. The doses received during intervention and the associated health risk shall be communicated to the workers involved.

(5) Workers taking part in intervention shall not normally be precluded from incurring further occupational exposure because of doses received in an emergency situation. However, qualified medical advice shall be obtained before any such further exposure, if a worker receives a dose exceeding ten times the maximum single dose year limit, or at the worker's request.
