

S. I. of 2003

**NUCLEAR SAFETY AND RADIATION PROTECTION ACT
(1995 No. 19)**

Nigeria Basic Ionizing Radiation Regulations 2003

Commencement: 31st December 2003

In exercise of the powers conferred on it by section 47 of the Nuclear Safety and Radiation Protection Act 1995 and of all other powers enabling it in that behalf, the Nigerian Nuclear Regulatory Authority, with the approval of the President, hereby makes the following Regulations -

PART 1- GENERAL

1. In these Regulations, unless the context otherwise requires - Interpretation.
“accelerator” means an apparatus or installation in which particles are accelerated and which emits ionizing radiation with an energy higher than 1MeV;

“the Act” means the Nuclear Safety and Radiation Protection Act 1995; 1995 No. 19.

“appointed doctor” means a registered medical practitioner who is for the time being appointed in writing by the Authority for the purposes of these Regulations;

“the Authority” means the Nigerian Nuclear Regulatory Authority established under section 1 of the Act;

“authorised dosimetry service provider” means, a dosimetry service provider authorised in accordance with regulation 76 of these Regulations;

“authorisation” means a permission granted in a document by the Authority to a legal person who has submitted an application to possess, produce, process, manufacture, purchase, sell, import, export, handle, use, transform, transfer, trade, assign, transport, store or dispose of radioactive material, nuclear material, radioactive waste, prescribed substances or any apparatus emitting ionising radiation and the authorisation may take the form of a registration or a license;

“calendar year” means a period of 12 calendar months beginning from the 1st of January of the year;

“classified person” means a person designated as such pursuant to regulation 45 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;

“conditioning” means those operations that produce a waste package suitable for handling, transportation, storage or disposal and shall include the conversion of waste to a solid waste form, enclosure of the waste in containers and, if necessary, providing an overpack;

“consumer product” means device such as smoke detector, luminous dial or ion generating tube that contains a small amount of radioactive substances;

“contamination” means the contamination by any radioactive substance of any surface, any surface of the body or clothing or any part of absorbent objects or materials and includes the contamination of liquids or gases by any radioactive substance;

“controlled area” means an area which has been so designated in accordance with regulation 32 of these Regulations;

“critical group” means a group of persons which is reasonably homogeneous susceptible to exposure to a given radiation source and exposure pathway and includes the group of persons receiving the highest effective dose or equivalent dose, as applicable, by the given exposure pathway from the given source;

“disposal” means the emplacement of waste in an approved, specified facility including near surface or geological repository without the **intervention** of retrieval and includes the approved direct discharge of airborne or liquid effluents into the environment with subsequent dispersion;

“disused source” means a radioactive source no longer intended to be used;

“dose” means, in relation to ionizing radiation, any dose quantity or sum of dose quantities mentioned in the Fourth Schedule to these Regulations;

“dose assessment” means the dose assessment made and recorded by an authorised dosimetry service provider in accordance with regulation 47 of these Regulations;

“dose constraint” means a restriction on the prospective doses to individuals, which may result from a defined source;

“dose limit” means, in relation to persons of a specified class, the limit on effective dose or equivalent dose specified in the Fourth Schedule to these Regulations in relation to a person of that class;

“dose rate” means, in relation to a place, the rate at which a person or part of a person would receive a dose of ionizing radiation from external radiation if he were at that place being a dose rate at that place averaged over one minute;

“dose record” means, in relation to a person, the record of the doses received by that person as a result of his exposure to ionizing radiation, being the record made and maintained on behalf of the employer by the authorised dosimetry service provider in accordance with regulation 48 of these Regulations;

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

$$E = \sum_T W_T H_T$$

where w_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 $D_{T,R}$ the average absorbed dose in the organ or tissue T . the unit of effective dose is j. kg^{-1} , termed the Sievert (Sv).

“external radiation” means, in relation to a person, ionizing radiation coming from outside the body of that person;

“health record” means, in relation to an employee, the record of medical surveillance of that employee maintained by the employer in accordance with regulation 56 of these Regulations;

“internal radiation” means, in relation to a person, ionizing radiation coming from inside the body of that person;

“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 ions directly or indirectly;

“legal person” means any organization, corporation, partnerships, firm, association, trust, estate, public or private institution, group, political or administrative entity or other persons designated in accordance with national legislation, who or which has responsibility and authority for actions taken under these regulations;

“licence” means an authorisation granted by the Authority on the basis of a safety assessment and accompanied by specific requirements and conditions to be complied with by the licensee;

“licensee” has the meaning assigned to it by section 6 (a) of the Act;

“Local rules” means rules made in accordance with regulations 34 of these Regulations;

“limit” means the value of a quantity used in certain specified activities or circumstances that must not be exceeded;

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

“medical exposure” means exposure of a person to ionizing radiation for the purpose of his medical or dental examination or treatment which is conducted under the direction of a suitably qualified person and includes any such examination for legal purposes and any such examination or treatment conducted for the purposes of research;

“notification” means a document submitted to the regulatory authority by a legal person to notify an intention to carry out a practice or any other action described in the general obligations for practices of the

standards;

“orphan source” means a radioactive source which poses sufficient radiological hazard to warrant regulatory control but is not under regulatory control, either because it has never been under regulatory control, or because it has been abandoned, lost, misplaced, stolen or transferred without prior authorization;

“outside worker” means a classified person who carries out services in the controlled area of any employer, other than the controlled area of his own employer;

“over-exposure” means any exposure of a person to ionizing radiation to the extent that the dose received by that person causes a dose limit relevant to that person to be exceeded or, in relation to regulation 60 of these Regulations, causes a proportion of a dose limit relevant to any employee to be exceeded;

“practice” means work involving -

(a) the production, processing, handling, use, holding, storage, transport or disposal of radioactive substances; or

(b) the operation of any electrical equipment emitting ionizing radiation and containing components operating at a potential difference of more than 5kV,

which can increase the exposure of individuals to radiation from an artificial source, or from a radioactive substance containing naturally occurring radionuclides, which are processed for their radioactive, fissile or fertile properties;

“quality assurance” means all those planned and systematic actions necessary to provide adequate confidence that an item, process or service will satisfy given requirements for quality, for example, those specified in the licence;

“radiation accident” means an accident where immediate action would be required to prevent or reduce the exposure to ionizing radiation of employees or any other persons;

“radiation employer” means an employer who in the course of a trade, business or other undertaking carries out work with ionizing radiation and, for the purposes of regulations 4 to 12 of these Regulations includes an employer who intends to carry out such work;

“radiation equipment” means equipment which delivers ionizing radiation to the person undergoing a medical exposure and equipment which directly controls the extent of the exposure.

“radiation safety adviser” means, an individual who, or a body which, meets such criteria of competence as may from time to time be specified in writing by the Authority;

“radioactive discharges” means radioactive substances arising from a source within a practice which are discharged as gases, aerosols, liquids or solids to the environment, generally with the purpose of dilution and dispersion.

“radioactive substance” means any substance, which contains one or more radionuclides whose activity cannot be disregarded for the purposes of radiation protection;

“radioactive waste” means material, whatever its physical form, remaining from practices or interventions and for which no further use is foreseen, (i) that contains or is contaminated with radioactive substances and has an activity or activity concentration higher than the level for exemption or clearance from regulatory requirements, and (ii) exposure to which is not excluded from these regulations.

“regulatory control” means any form of control applied to facilities or activities by the Authority for reasons related to radiation protection or the safety or security of radioactive sources;

“safety” means measures intended to minimise the likelihood of accidents with radioactive sources and, should such an accident occur, to mitigate its consequences;

“safety assessment” means a review of the aspects of design and operation of a source which are relevant to the protection of persons or

the safety of the source, including the analysis of the provisions for

safety and protection established in the design and operation of the source and the analysis of risks associated with normal conditions and accident situations.

“safety culture” means the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance;

“sealed source” means a source containing any radioactive substance whose structure is such as to prevent, under normal conditions of use, any dispersion of radioactive substances into the environment, but it does not include any radioactive substance inside a nuclear reactor or any nuclear fuel element;

“security” means measures to prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources;

“security culture” means characteristics and attitudes in organizations and of individuals, which establish that security, issues receive the attention warranted by their significance;

“short-lived daughters of radon 222” means polonium 218, lead 214, bismuth 214 and polonium 214;

“supervised area” means an area, which has been so designated by the employer in accordance with regulation 33;

“transport” means, in relation to a radioactive substance, carriage of substance on a road within the meaning of, 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;

“woman of reproductive capacity” means a woman who is made subject to the additional dose limit for a woman of reproductive capacity specified in paragraphs 5 and 11 of the Fourth Schedule to these Regulations by an entry in her health record made by an appointed doctor or employed medical adviser;

“work with ionizing radiation” means work to which these Regulations apply by virtue of regulation 2 of these Regulations;

(2) In these Regulations, unless the context otherwise requires, any reference to -

(a) an employer includes a reference to self-employed person and any duty imposed by these Regulations on an employer in respect of his employee shall extend to a self-employed person in respect of himself;

(b) an employee includes a reference to -

(i) a self-employed person, and

(ii) a trainee who but for the operation of this sub-paragraph and paragraph (3) of this regulation would not be classified as an employee;

(c) exposure to ionizing radiation is a reference to exposure to ionizing radiation arising from work with ionizing radiation.

(3) For the purposes of these Regulations;

(a) the word “work” shall be extended to include any instruction or training which a person undergoes as a trainee and the meaning of “at work” shall be extended accordingly; and

(b) a trainee shall, while he is undergoing instruction or training in respect of work with ionizing radiation, be treated as the employee of the person whose undertaking, whether for profit or not, is providing that instruction or training and that person shall be treated as the employer of that trainee except that the duties to the trainee imposed upon the person providing instruction or training shall only extend to matters under the control of that person.

(4) In these Regulations, where reference is made to a quantity specified in the Eight Schedule to these Regulations, that quantity shall be treated as being exceeded if -

(a) where only one radionuclide is involved, the quantity of that radionuclide exceeds the quantity specified in the appropriate entry in the Eight Schedule to these Regulations; or

(b) where more than one radionuclide is involved, the quantity ratio calculated in accordance with Part II of the Eight Schedule to these Regulations exceeds one.

(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 an enactment; or

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

(6) In these Regulations -

(a) any reference to an effective dose means the sum of the effective dose to the whole body from external radiation and the committed effective dose from internal radiation; and

(b) any reference to equivalent dose to a human tissue or organ includes the committed equivalent dose to that tissue or organ from internal radiation.

2. -(1) Subject to the provisions of this regulation and regulation 7 of these Regulations, these Regulations shall apply to B

The scope of application of these Regulations.

(a) any work involving ionising radiation except any work specified in the First Schedule to these Regulations;

First Schedule.

(b) any practice;

(c) any work, other than a practice, carried out in an atmosphere containing radon 222 gas at a concentration in air, averaged over any 24 hour period, exceeding 400 Bqm^{-3} or levels exceeding those given in the Tenth Schedule to these Regulations except where the concentration of the short-lived daughters of radon 222 in air averaged over any 8 hour working period does not exceed $6.24 \times 10^{-7} \text{ Jm}^{-3}$; and

Tenth Schedule.

(d) any work, other than those referred to in sub-paragraphs (b) and (c) of this paragraph with any radioactive substance containing naturally occurring radionuclides or any radionuclides listed in the Ninth Schedule to these Regulations.

Ninth Schedule.

(2) The provisions of regulations 53, 60, 66, 69 to 74 of these Regulations shall not apply where, the only work being undertaken is that referred to in sub-paragraph (c) of paragraph (1) of this regulation.

(3) The provisions of regulations 12, 13, 24, 32 to 36, 53, 67 and 75 of these Regulations shall not apply in relation to persons undergoing medical exposure

(4) The provisions of regulation 24 of these Regulations shall not apply in relation to any comforter and career.

3.-(1) No person shall engage in activities, which involve practices or sources within practices as specified in regulation 2 of these Regulations unless the requirements of these Regulations, including the requirements for notification and authorisation, are met.

Duties under these Regulations.

(2) Any duty imposed on an employer under these Regulations in respect of the exposure to ionizing radiation of persons other than his employees shall be imposed only in so far as the exposure of those persons to ionizing radiation arises from work with ionizing radiation undertaken by that employer.

(3) Any duty imposed on the employer under these Regulations shall also be imposed upon the manager of a mine, within the meaning of Minerals and Mining Act 1999, in so far as such duty relates to the mine or part of the mine of which he is the manager and to matters within his control.

1999 No. 34.

(4) Any duty imposed on the employer under these Regulations shall also be imposed upon the operating organisation of a nuclear reactor.

PART II - GENERAL PRINCIPLES AND PROCEDURES

4.-(1) Subject to paragraph (2) of this regulation, a radiation employer shall not, except in accordance with a prior authorisation granted by the Authority for the purposes of this paragraph, carry out the following practices, that is -

Authorisation of specified practices.

(a) the use of electrical equipment intended to produce x-rays for the purpose of -

- (i) industrial radiography;
- (ii) the processing of products,
- (iii) research, or
- (iv) the exposure of persons for medical treatment, or

(b) the use of accelerators, except electron microscopes;

(c) the use of radioactive sources and nuclear materials.

(2) The authorisation mentioned under paragraph (1) of this regulation may be –

(a) granted subject to such terms and conditions as the Authority may, from time to time, determine;

(b) granted with or without time limit;

(c) revoked in writing at any time; and

(d) in form of a registration, permit or license.

5. Where any radiation employer to whom the authorisation was granted under regulation 4 of these Regulations subsequently makes a material change to the circumstances relating to the authorisation, the radiation employer shall forthwith notify the Authority of such changes.

Notifying material changes to the Authority.

6. Any radiation employer to whom regulation 4 of these Regulations applies and who is aggrieved by - Appeals.

(a) a decision of the Authority -

(i) refusing to grant an authorisation under paragraph (1) of regulation 4 of these Regulations, or

(ii) revoking an authorisation under paragraph (2) of regulation 4 of these Regulations; or

(b) the terms of any condition attached to the authorisation by the Authority under paragraph (2) of regulation 4 of these Regulations,

may appeal to the Governing Board of the Authority.

7. -(1) Any radiation employer who carries on work or is responsible for a practice or in possession of a radiation source specified in regulation 2 of these Regulations, shall submit a notice in writing of such work, practice or possession to the Authority within 90 days of the coming into force of these Regulations. Notification of certain works to the Authority.

(2) Subject to regulations 12 and 13 of these Regulations, any radiation employer intending to carry out work, initiate a practice or possess a radiation source specified in regulation 2 of these Regulations shall, before the commencement of such work, practice or possession –

(a) submit a prior written notification to the Authority of such an intention at least 28 days or such shorter period as the Authority may, from time to time, determine; and

(b) provide the Authority with the particulars specified in the Second Schedule. Second Schedule.

(3) Without prejudice to the provisions of paragraphs (1) and (2) of this regulation, no notification shall be required for any work specified in First Schedule to these Regulations. First Schedule.

(4) Where a radiation employer has given notification in accordance with paragraphs (1) and (2) of this regulation, the Authority may, by notice in writing served on the radiation employer, require the radiation employer to provide any or all of the particulars specified in the Third Schedule to these Regulations or such other additional particulars of the work, practice or possession as the Authority may, from time to time, determine and it shall be the duty of the radiation employer to comply.

Third Schedule.

(5) Any radiation employer who contravenes the provisions of this regulation commits an offence under these Regulations.

8. In giving notice to the radiation employer under paragraph (4) of regulation 7 of these Regulations, the Authority may require the radiation employer to specifically notify the Authority of any or all of the particulars specified in the Third Schedule to these Regulations before each activity or occasion in respect of which he carries out work, engages in practice or undertakes possession in relation to ionizing radiation.

Specific notification to the Authority on each activity, etc.

Third Schedule.

9.-(1) Where a radiation employer has notified work in accordance with paragraph (2) and subsequently makes a material change in that work which would affect the particulars so notified, he shall forthwith notify the Authority of that change.

Notice of material changes in work, etc.

(2) Nothing in paragraph (1) of this regulation shall be construed as requiring the cessation of the work to be notified except where the site or any part of the site in which the work was carried on has been or is to be vacated.

10. Where the only work being undertaken is work referred to in regulation 2(1) (b) or (c) of these Regulations, it shall be a sufficient compliance with paragraph (2) of regulation 7 of these Regulations if the radiation employer having control of the premises where the work is carried on makes the notification required by that paragraph forthwith after the work has commenced.

Notification of work in radon atmospheres or with substances containing naturally occurring radionuclides.

11. Where the work involves clinical treatment of a person with the use of a radioactive medicinal product, it shall be sufficient compliance with paragraph (2) of regulation 7 of these Regulations if the notification required under that paragraph is given as soon as practicable before the carrying out of that work.

Notification of the use of radioactive medicinal product on patients.

12. -(1) Any radiation employer shall, prior to commencement of any new activity involving work with ionizing radiation, undertake a suitable and sufficient assessment of the risk to any employee and other person for the purpose of identifying the measures requires to be taken to restrict the exposure of that employee or other person to ionizing radiation.

Prior risk
assessment, etc.

(2) No radiation employer shall carry out work with ionizing radiation unless he has made a sufficient assessment and submits a report of such assessment indicating that -

(a) all hazards with the potential to cause a radiation accident have been identified; and

(b) the nature and magnitude of the risks to employees and other persons arising from those hazards have been evaluated.

(3) Where the assessment made for the purposes of this regulation shows that a radiation risk to employees 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 that is likely to occur; and

(c) provide employees with the information, instruction and training including any necessary equipment to restrict the exposure of the employees to ionizing radiation.

13. -(1) The Authority shall not authorise any practice under these Regulations unless such practice is capable of producing sufficient benefit to the persons exposed to radiation or to the society in such a manner as to offset the radiation harm that it might cause, taking into account social, economic and other relevant factors.

Justification of
practices.

(2) For the purposes of paragraph (1) of this regulation, any applicant for authorisation shall provide to the satisfaction of the Authority, sufficient information and evidence on the benefits and the harm to support the justification of the practice.

(3) The following practices shall be deemed to be unjustified where they would result in an increase by deliberate addition of radioactive substances or by activation, in the activity of the associated commodities or products, that is -

(a) except for justified practices involving medical exposures, practices involving food, beverages, cosmetics or any other commodity or product intended for ingestion, inhalation or percutaneous intake by, or application to, a human being;

(b) practices involving the frivolous use of radiation or radioactive substances in commodities or products such as toys and personal jewelry or adornments; and

(c) any other practice determined by the Authority, from time to time, as unjustified.

14. -(1) Every radiation employer shall, in relation to any work with ionizing radiation that he undertakes, take all necessary steps to restrict so far as is reasonably practicable the extent to which his employees and other persons are exposed to ionizing radiation.

Restriction of exposure and protective equipment, etc.

(2) Without prejudice to the generality of paragraph (1) of this regulation, a radiation employer shall -

(a) in so far as is reasonably practicable achieve the restriction of exposure to ionizing radiation required under this regulation using appropriate means of engineering controls and design features including the provision and use of safety features and warning devices;

(b) provide such systems of work as will, so far as is reasonably practicable, restrict the exposure to ionizing radiation of employees and other person; and

(c) in addition to sub-paragraphs (a) and (b) above, where it is reasonably practicable to further restrict exposure to ionizing radiation by means of personal protective equipment, provide employees or other persons with adequate and suitable personal protective equipment (including respiratory protective equipment) unless the use of personal protective equipment of a particular kind is not appropriate having regard to the nature of the work or the circumstances of the particular case.

15. -(1) Except for medical exposure, the optimisation of the radiation safety measures associated with a given practice shall satisfy the condition that the resulting doses to the individuals of the critical group do not exceed dose constraints which are equal to the dose limits specified in the Fourth Schedule or any lower values as may be established by the Authority, from time to time.

Dose constraints.

Fourth Schedule.

(2) Where any source is capable of releasing radioactive substances to the environment, the dose constraints shall be established in such a way that the prospective annual doses to members of the public, people distant from the source and people of future generations, summed over all exposure paths, including contributions by other practices and sources, are unlikely to exceed the dose limits specified in the Fourth Schedule to these Regulations or any lower values as may be established by the Authority, from time to time.

Fourth Schedule.

16. Any employer who provides any system of work or personal protective equipment pursuant to these Regulations shall take all reasonable steps to ensure that such system of work or protective equipment is used properly as the case may be.

Proper use of systems of work and personal protective equipment.

17. -(1) Without prejudice to paragraph (1) of regulation 15 of these Regulations, a radiation employer shall ensure that -

Pregnant and breast-feeding employees.

(a) in relation to an employee who is pregnant, the conditions of exposure are such that, after her employer has been notified of the pregnancy, the equivalent dose to the foetus is unlikely to exceed 1 mSv during the remainder of the gestational period of the pregnancy; and

(b) in relation to an employee who is breastfeeding, the conditions of exposure are restricted so as to prevent significant bodily contamination of that employee.

(2) Nothing in regulation 18 of these Regulations shall be construed as requiring the radiation employer to take any action in relation to an employee until she has notified her employer in writing that she is pregnant or breastfeeding and the radiation employer has been made aware, or should reasonably have been expected to be aware, of that fact.

18. Every employer shall, for the purpose of determining whether the requirements of regulation 15 of these Regulations are being met, ensure that an investigation is carried out forthwith when the effective dose of ionizing radiation received by any of his employees for the first time in any calendar year exceeds 15 mSv or such other lower effective dose as the employer may specify, which dose shall be specified in writing in local rules made pursuant to regulation 34 of these Regulations or, where local rules are not required, by other suitable means.

Formal investigation levels.

19. -(1) A radiation employer or licensee shall bear prime responsibility for the safe management and security of radioactive sources.

General responsibilities.

(2) A radiation employer or licensee shall take all necessary measures to minimize the likelihood of a loss of control and in the event of any loss of control, it shall be reported to the Authority within 48 hours.

(3) Any radiation employer or licensee who is engaged in activities that involve or could involve occupational exposure shall be responsible for the protection of the workers against any occupational exposure, which is not excluded from these Regulations.

(4) A radiation employer or licensee shall ensure, for all workers engaged in activities that involve or could involve occupational exposure, that -

(a) occupational exposures are limited as specified in the Fourth Schedule to these Regulations;

Fourth Schedule.

(b) radiation safety is optimized in accordance with regulation 14 of these Regulations;

(c) policies, procedures and organisational arrangements for occupational protection and safety are established to implement the relevant requirements of these Regulations and the resulting decisions on measures to be adopted for this purpose are recorded and made available to the Authority, relevant parties, including workers through their representatives where appropriate;

(d) suitable and adequate facilities for radiation safety are provided, including personal protective devices and monitoring equipment and arrangements are made for their proper use;

(e) radiation safety and health surveillance services are provided through qualified experts;

(f) arrangements are made to facilitate consultation and co-operation with workers, through their representatives where appropriate, about measures which are needed to achieve adequate radiation safety by an effective implementation of these Regulations; and

(g) necessary conditions are provided and arrangements are made to promote a safety culture in the work force and achieve adequate training of workers on radiation safety matters.

(5) If any worker is to be engaged in work that involves or could involve a source, which is not under the control of his radiation employer, the licensee responsible for the source shall -

(a) obtain from the radiation employer, as a precondition for engagement of such worker, information on his previous occupational exposure history and other information as may be necessary to provide protection and safety in compliance with these Regulations;

(b) provide such worker with protective materials and safety measures which are not less than the quality and level provided for the employees of the licensee; and

(c) make dosimetric and other appropriate information available to the radiation employer for the purpose of demonstrating that the level of protection provided to such workers is compatible with the requirements of these Regulations.

(6) Every radiation employer or licensee shall ensure that workers under their control who are exposed to radiation, from sources other than natural sources that are not directly related to or required by their work, receive the same level of protection as if they were members of the public.

(7) Every radiation employer or licensee shall ensure that every worker is informed of his obligations and responsibilities towards his own protection and the protection of others against radiation and of the safety of sources and without prejudice to the generality of the foregoing, the radiation employer or licensee shall ensure that every worker -

(a) follows any applicable rules and procedures for protection and safety;

(b) properly uses the monitoring devices and the protective materials, equipment and clothing provided;

(c) abstains from any wilful action that could put himself or others in any situation that contravenes the provisions of these Regulations; and

(d) promptly reports to the radiation employer or licensee any circumstances that could adversely affect safety conditions or the provisions of these Regulations.

(8) Every radiation employer and licensee shall record any report received from a worker that identifies any circumstances that could affect safety conditions or compliance with the requirements of these Regulations and shall -

(a) notify the Authority of the report of such circumstances; and

(b) take appropriate remedial actions.

20. -(1) Attractive conditions of service for workers shall not obviate the responsibilities of any radiation employer or licensee, under these Regulations, with respect to the protection and safety of workers where there is the existence or the possibility of occupational exposure to radiation.

Conditions of service and occupational exposures, etc.

(2) For the purposes of paragraph (1) of this regulation, any special compensatory arrangement or preferential treatment with respect to salary or special insurance coverage, working hours, length of vacation, additional holidays or retirement benefit shall not operate as substitutes for the provision of proper protection and safety measures in accordance with these Regulations.

(3) Every radiation employer or licensee shall inform every female worker that it is mandatory for her to notify the radiation employer or licensee of any pregnancy.

(4) Where notification has been pursuant to paragraph (3) of this regulation, the radiation employer or licensee shall adapt the working conditions of such female worker, in respect of occupational exposure, so as to ensure that the embryo or foetus is afforded the same broad level of protection which is required for members of the public as specified in the Third Schedule to these Regulations and the notification of pregnancy shall not be considered a reason to exclude a female worker from work.

Third Schedule.

(5) Where it has been determined, either by the Authority or in the framework of the health surveillance programme required by these Regulations, that a worker, for health reasons, may no longer continue in employment involving occupational exposure, the radiation employer or licensee shall make every reasonable effort to provide such worker with suitable alternative workplace or employment in the circumstances.

(6) Notwithstanding anything to the contrary in these Regulations or any other enactment or law, any person under the age of 16 years shall not be subjected to occupational exposure and no person under the age of 18 years shall be allowed to work in a controlled area unless for purposes of training and under strict supervision.

21. -(1) Any personal protective material, device or equipment provided by any radiation employer or licensee pursuant to regulation 14 of these Regulations shall comply with any provisions of appropriate labour laws of the Federal Republic of Nigeria applicable to such personal protective material, device or equipment.

Personal protective equipment to comply with labour laws.

(2) Where, in the case of respiratory protective equipment, no other provisions of these Regulations applies, the respiratory protective equipment shall comply with the provisions of regulation 13 of these Regulations and conforms to a standard as may be authorised by the Authority, from time to time, and the radiation employer or licensee shall give the affected worker adequate instructions in the proper use of the respiratory protective equipment, including testing procedures for the fitness of the equipment.

(3) Account should be taken of any additional exposure or additional non-radiation risk that could result into additional time or inconvenience, that might be associated with performing a task while using protective equipment.

(4) Every radiation employer shall ensure that appropriate accommodation is provided for personal protective equipment when it is not being worn.

22. Any radiation employer or licensee who provides any engineering control, design feature, safety feature or warning device to meet the requirements of regulation 14(2) (a) of these Regulations shall ensure -

Maintenance and examination of engineering controls, etc. and personal protective equipment.

- (a) that any such control, feature or device is properly maintained; and
- (b) where appropriate, that thorough examinations and tests of such control, features or device are carried out at suitable intervals.

23. Every radiation employer shall ensure that any personal protective equipment, material or device provided pursuant to regulation 14 of these Regulations is, where appropriate, thoroughly examined at suitable intervals and is properly maintained and that, in the case of respiratory protective equipment, a suitable record of such examination is made and kept for at least two years from the date on which the examination was made and such record shall include a statement of the condition of the equipment at the time of the examination.

Maintenance, etc. of personal protective equipment.

24. Subject to the provisions of paragraphs 2 to 5 of the Fourth Schedule to these Regulations, every employer shall ensure that his employees and other persons who are within a class specified in that Schedule are not exposed to ionizing radiation to an extent that any dose limit specified in Part I of the Fourth Schedule to these Regulations for such class of persons is exceeded in any calendar year.

Dose limit for certain class of persons.

Fourth Schedule. Part I.

25. Where an employer is able to demonstrate in respect of any employee that the dose limit specified in paragraph 1 of Part I of the Fourth Schedule to these Regulations is impracticable having regard to the nature of the work undertaken by that employee, the employer may in respect of that employee apply the dose limits set out in paragraphs 9 to 11 of that Schedule and in such a case the provisions of Part II of the Fourth Schedule to these Regulations shall apply.

Dose limit for employees in special cases. Fourth Schedule. Parts I and II.

26.-(1) Where any assessment made in accordance with regulation 12 of these Regulations shows that a radiation accident is reasonably foreseeable having regards to the steps taken by the radiation employer under paragraph (3) of regulation 12 of these Regulations, the radiation employer shall prepare an emergency plan designed to secure, in so far as is reasonably practicable, the restriction of exposure to ionizing radiation and the health and safety of persons who may be affected by such accident using the guidelines for intervention levels and action levels in emergency exposure situations specified in the Eleventh Schedule to these Regulations.

Emergency plans.

Eleventh Schedule.

(2) The radiation employer shall ensure that -

(a) where local rules are required for the purposes of regulation 34 of these Regulations, a copy of the contingency plan made pursuant to paragraph (1) this regulation is identified in those rules and incorporated into them by way of summary or reference;

(b) any employee 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 device obtained in either case from the authorised dosimetry service provider with which the radiation employer has entered into an arrangement under regulation 47 of these Regulations; and

(c) where appropriate, rehearsals of the arrangement in the plan are carried out at suitable intervals.

**PART III B ARRANGEMENTS FOR THE MANAGEMENT
OF RADIATION PROTECTION**

27. -(1) Subject to paragraph (3) of this regulation, every radiation employer shall consult such suitable radiation safety advisers as are necessary for the purpose of advising the radiation employer with respect to compliance with these Regulations and shall, in any event, consult one or more suitable radiation safety advisers with regard to those matters are set out in the Fifth Schedule to these Regulations.

Radiation employer to consult radiation safety advisers.

Fifth Schedule.

(2) Where a radiation safety adviser is consulted pursuant to the requirements of paragraph (1) of this regulation, the radiation employer shall appoint that radiation safety adviser in writing and shall include in that appointment the scope of the advice that the radiation safety adviser is required to give.

(3) Nothing in paragraph (1) of this regulation shall be construed as requiring a radiation employer to consult a radiation safety adviser where the only work with ionizing radiation undertaken by that employer is work specified in the First Schedule to these Regulations.

First Schedule.

28. The radiation employer shall provide any radiation safety adviser appointed by him with adequate information and facilities for the performance of his functions.

Information and facilities for the radiation safety adviser.

29. Every employer shall ensure that B

(a) his employees who are engaged in work with ionizing radiation are given appropriate training in the field of radiation safety and receive such information and instruction as is suitable and sufficient for them to know

Information, instruction and training.

-

(i) the risks to health inherent in exposure to ionizing radiation,

(ii) the precautions which should be taken,

(iii) the importance of complying with the medical, technical and administrative requirements of these Regulations; and

(b) adequate information is given to other persons who are directly concerned with the work involving ionizing radiation carried on by the employer to ensure their health and safety so far as is reasonably practicable.

30. Every employer shall ensure that every female employee who is engaged in work with ionizing radiation is informed of the possible risks of exposure to ionizing radiation on the foetus or an infant and of the obligation of such employee to inform the employer in writing as soon as possible -

Information for female employees who may become pregnant or start breast-feeding.

(a) after becoming aware of her pregnancy; or

(b) if she is breast feeding.

31. Where work with ionizing radiation undertaken by one employer is likely to give rise to the exposure of the employee of another employer to ionizing radiation, both employers concerned shall co-operate by way of the exchange of information or otherwise to the extent necessary to ensure that each such employer is enabled to comply with the requirements of these Regulations in so far as his ability to comply depends upon such co-operation and such cooperation shall include, where appropriate -

Co-operation between employers to protect their employees from ionizing radiation.

(a) specific assessment of the dose received by such workers;

(b) a clear allocation and documentation of the respective responsibilities of the employers for occupational protection and safety.

PART IV - DESIGNATED AREAS

32. -(1) Every 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 33 of these Regulations or otherwise, as an area in which -

Designation of controlled areas.

(a) it is necessary for any person who enters or works in the area to follow special procedures designed to restrict significant exposure to ionizing 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 three-tenths of any relevant dose limit referred to in the Fourth Schedule to these Regulations in respect of an employee who is of the age of 18 years or above.

Fourth Schedule.

(2) No employer shall intentionally create in any area conditions which would require such area to be designated as a controlled area unless such area is, for the time being, under the control of such employer.

33. Every 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 1mSv a year or an equivalent dose greater than one-tenth of any relevant dose limit referred to in the Fourth Schedule to these Regulations in respect of an employee who is of the age of 18 years or above.

Fourth Schedule.

34. -(1) For the purposes of enabling work with ionizing radiation to be carried on 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 or any supervised area, make and set down in writing such local rules as are appropriate to the radiation risks and the nature of the operations undertaken in that area.

Local rules and radiation safety supervisors.

(2) Every radiation employer shall take all reasonable steps to ensure that any local rules made pursuant to paragraph (1) of this regulation and which are relevant to the work being carried out are observed.

(3) Every radiation employer shall ensure that the rules made pursuant to this regulation are relevant and the radiation shall bring such rules to the attention of the employees and other persons who may be affected by the rules.

35. Every radiation employer shall B

Appointing suitable radiation safety supervisors.

(a) appoint one or more suitable radiation safety 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 paragraph (1) of regulation 34 of these Regulations; and

(b) set down in the local rules the names of such individuals so appointed.

36. Every employer who designates any area as a controlled or supervised area shall ensure that any such designated area is adequately described in local rules and that -

Additional requirements for designated areas.

(a) in the case of any controlled area -

(i) the area is physically demarcated or, where this is not reasonably practicable, delineated by some other suitable means,

(ii) suitable and sufficient signs are displayed in suitable positions indicating that the area is a controlled area, the nature of the radiation sources in that area and the risks arising from such sources; and

(b) in the case of any supervised area, suitable and sufficient signs giving warning of the supervised area are displayed, where appropriate, in suitable positions indicating the nature of the radiation sources and the risk arising from such sources.

37. Any radiation employer who has designated an area as a controlled area shall not permit any employee or other person to enter or remain in a such an area unless that employee or other person -

Controlled entry into a controlled area.

(a) being a person other than an outside worker, is a classified person that -

(i) is subject to individual dose assessment pursuant to regulation 45 of these Regulations,

(ii) has been provided with and has been trained to use any personal protective equipment that may be necessary pursuant to regulation 14(2) (c) of these Regulations,

(iii) has received any specific training required pursuant to regulation 29 of these Regulations, and

(iv) has been certified fit for the work with ionizing radiation which he is to carry out pursuant to regulation 57 of these Regulations; or

(b) not being a classified person, enters or remains in the area in accordance with suitable written arrangement for the purpose of ensuring that -

(i) in the case of an employee of the age of 18 years or above, he does not receive in any calendar year a cumulative dose of ionizing radiation which would require that employee to be designated as a classified person; or

(ii) in the case of any other person, he does not receive in any calendar year a dose of ionizing radiation exceeding any relevant dose limit.

38. -(1) Any radiation employer who has designated any area as a controlled area shall not permit a person to enter or remain in such area in accordance with the written arrangements under paragraph 2 (b) of this regulation, unless he can demonstrate, by personal dose monitoring or other suitable measurements, that the doses are restricted in accordance with the provisions of these Regulations.

Dose monitoring for non-classified persons.

(2) Any employer who has designated any area as a controlled area shall, in relation to an outside worker, ensure that -

(a) the outside worker is subject to arrangement for estimating the dose of ionizing radiation he receives whilst in the controlled area;

(b) 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 worker is reported in writing to his employer and the Authority; and

(c) the radiation of the outside worker made available to that worker upon request.

39. The employer who carries out the monitoring or measurements pursuant to regulation 38 of these Regulations shall keep the results of the monitoring or measurements referred to in the paragraph (1) of that regulation for a period of two years from the date they were recorded and shall, at the request of the person to whom the monitoring or measurements relates and on reasonable notice being given, make the results available to such person.

Providing information to non-classified persons.

40. Where there is a significant risk of the spread of radioactive contamination from a controlled area, the radiation employer who has designated such area as a controlled area shall make adequate arrangements to restrict, so far as is reasonably practicable, the spread of such contamination.

Significant risk of spreading contamination.

41. Without prejudice to the generality of the provisions of regulation 40 of these Regulations, the specific arrangements or measures required to prevent the spread of contamination shall, where appropriate, include -

Specific measures to prevent the spread of contamination.

(a) the provision of suitable and sufficient washing and changing facilities for persons who enter or leave any controlled or supervised area;

(b) the proper maintenance of such washing and changing facilities;

(c) the prohibition of eating, drinking or smoking or similar activity likely to result in the ingestion of a radioactive substance by any employee in a controlled area; and

(d) the means for monitoring for contamination any person, article or goods leaving a controlled area.

42. Every employer who designates any area as a controlled or supervised area shall take such steps as are necessary, other than the use of assessed doses of individuals having regard to the nature and extent of the risk resulting from exposure to ionizing radiation, to ensure that levels of ionizing radiation are adequately monitored for each such area and that working conditions in those areas are kept under review.

Monitoring of designated areas.

43. -(1) Any employer upon whom a duty is imposed under regulation 42 of these Regulations shall provide suitable and sufficient equipment for carrying out the monitoring required under that regulation, which equipment shall -

Selection, maintenance and testing of equipment used for monitoring designated areas.

(a) be properly maintained so that it remains fit for the purpose for which it was intended; and

(b) be adequately tested and examined at appropriate intervals.

(2) Any equipment provided pursuant to paragraph (1) of this regulation shall not be or remain suitable unless -

(a) the performance of the equipment has been established by adequate test before its first use; and

(b) the test and examinations carried out pursuant to sub-paragraph (a) of this paragraph or paragraph (1) (b) of this regulation have been carried out by or under the supervision of a qualified person authorised by the Authority.

44. Any employer upon whom a duty is imposed under regulation 43 of these Regulations shall -

Monitoring and test records.

(a) make suitable records of the results of the monitoring carried out in accordance with regulation 42 of these Regulations and of the tests carried out in accordance with regulation 43 of these Regulations;

(b) ensure that the records of the test mentioned in paragraph (a) of this regulation are authorised by a qualified person; and

(c) keep the records referred to in sub-paragraph (a) of this regulation, or copies thereof, for at least 2 years from the respective dates on which they were made.

PART V - CLASSIFICATION AND MONITORING OF PERSONS

45. -(1) Subject to regulation 46 of these Regulations, every employer shall designate, as classified persons, his employees who are likely to receive an effective dose in excess of 6 mSv per year or an equivalent dose, which exceeds three-tenths of any relevant dose limit and shall forthwith inform those employees that they have been so designated.

Designation of classified persons.

(2) No employer shall designate an employee as a classified person unless -

- (a) such employee is of the age of 18 years or above; and
- (b) an appointed doctor or employment medical adviser has certified in the health record that such employee is fit for the work with ionizing radiation which he is to carry out.

46. No employer shall cease to treat an employee as a classified person unless at the end of a calendar year and except where -

When an employee ceases to be treated as a classified person.

- (a) an appointed doctor or employment medical adviser so requires; or
- (b) the employee is no longer employed by the same employer in a capacity, which is likely to result in significant exposure to ionizing radiation during the remainder of the relevant calendar year.

47. -(1) Every employer shall ensure that -

- (a) in respect of each of his employees who is designated as a classified person, an assessment is made of all doses of ionizing radiation received by such employee which are likely to be significant; and
- (b) such assessments are recorded and reported to the Authority.

Dose assessment and recording.

(2) For the purposes of paragraph (1) of this regulation, the employer shall make suitable arrangements with one or more authorised dosimetry service providers 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 classified person.

(3) For the purposes of paragraph (2) (b) of this regulation, the arrangements that the employer shall make with the authorised dosimetry service provider shall include requirements for that service to -

(a) keep and submit to the Authority, quarterly records made and maintained pursuant to the arrangements or a copy thereof until the person to whom the records relates has or would have attained the age of 75 years or for at least 50 years from when they were made, whichever is earlier;

(b) provide the employer at appropriate intervals with suitable summaries of the dose records maintained in accordance with subparagraph (a) of this paragraph;

(c) when required by the employer, provide the employer with such copies of the dose records relating to any of his employees as the employer may require, from time to time;

(d) when required by the employer, make a record of the information concerning the dose assessment relating to a classified person who ceases to be an employee of the employer, and to send such record to the Authority and a copy thereof to the employer forthwith, and a record so made is referred to in this regulation as a “termination record”;

(e) within 3 months after the end of each calendar year or such longer period as may be determined by the Authority, send summaries of all current dose records relating to the preceding year to the Authority;

(f) when required by the Authority, provide it with copies of any dose records;

(g) where a dose is estimated pursuant to regulation 51 of these Regulations, make an entry in a dose records and retain the summary of the information used to estimate that dose;

(h) where the employer employs an outside worker, provide a dose records in respect of that outside worker to the Authority.

48. An employer shall furnish the authorised dosimetry service provider with such information concerning his employees as is reasonably necessary for the authorised dosimetry service provider to comply with the arrangements made for the purposes of paragraph (2) of regulation 47 of these Regulations.

Information for the authorised dosimetry service.

49. An employer shall -

(a) ensure that each outside worker employed by him is provided with separate or individual radiation dose records; and

Keeping outside Worker's radiation dose records up to date.

(b) make suitable arrangements to ensure that the particulars entered in the radiation dose records are kept up-to-date, during the continuance of the employment of the outside worker, and submitted to the Authority by the employer at such intervals as may be determined, from time to time, by the Authority.

50. -(1) An employer shall -

Providing dose information to classified persons.

(a) at the request of and upon reasonable notice by a classified person employed by him or of a person formerly employed by him as a classified person, obtain where necessary from the authorised dosimetry service provider and make available to such person -

(i) a copy of the summary of the dose records provided for the purposes of paragraph (b) of regulation 49 of these Regulations relating to such person and made within a period of 2 years preceding the request, and

(ii) a copy of the dose records of that person; and

(b) when a classified person ceases to be employed by the employer, take all reasonable steps to provide to such person a copy of his termination record.

(2) The employer shall keep a copy of the summary of the dose records received from the authorised dosimetry service provider for at least 2 years from the end of the calendar year to which the summary relates.

51. -(1) Where a dosimeter or other device is used to make any individual measurement under paragraph (2) of regulation 50 of these Regulations and that dosimeter or device is lost, damaged or destroyed or it is not practicable to assess the dose received by a classified person over any period, the 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 -

Estimated doses
and special entries.

(a) in a case where there is adequate information to estimate the dose received by the classified person, the employer shall arrange for the authorised dosimetry service to enter a notional dose in the dose records of that person which shall be the proportion of the total annual dose limit for the relevant period; and

(b) in any other case, the employer shall take reasonable steps to inform the classified person of that entry and arrange for the authorised dosimetry service provider to identify the person of such entry and arrange for the authorised dosimetry service provider to identify the entry in the dose records as an estimated dose or a notional dose as the case may be.

(2) The employer shall, at the request of the classified person or a person formerly employed by that employer as a classified person to whom the investigation made under paragraph (1) of this regulation relates and upon reasonable notice, make available to such person a copy of the summary sent to the authorised dosimetry service provider under paragraph (1)(a) of this regulation.

52. -(1) Subject to paragraphs (3) and (6) of this regulation, where an employer has reasonable cause to believe that the dose received by a classified person is greater or much lesser than that shown in the relevant entry of the dose records, he shall conduct adequate investigation of the circumstances of the exposure of such person to ionizing radiation and, if that investigation confirms his belief, the employer shall, where there is adequate information to estimate the dose received by the employee -

Replacing doses
recorded in dose
records with special
entries.

(a) send to the authorised dosimetry service provider, the adequate summary of the information used to estimate such dose;

(b) arrange for the authorised dosimetry service provider to enter such estimated dose in the dose record of such person and for the authorised dosimetry service provider to identify the estimated dose in records as a special entry; and

(c) notify the classified person accordingly.

(2) The employer shall make a report of any investigation carried out under paragraph (1) of this regulation and shall preserve a copy of that report for a period of 2 years from the date it was made.

(3) The provisions of paragraph (1) of this regulation shall not apply -

(a) in respect of a classified person subject only to an annual dose limit, more than 12 months after the original entry was made in the records; and

(b) in any other case, more than 5 years after the original entry was made in the records.

(4) Where a classified person is aggrieved by a decision to replace a recorded dose by an estimated dose pursuant to paragraph (2) of this regulation, he may, by an application in writing to the Authority made within 3 months of the date on which he was notified of the decision, apply for that decision to be reviewed.

(5) Where the Authority concludes whether as a result of a review carried out pursuant to paragraph (4) of this regulation or otherwise that -

(a) there is reasonable cause to believe the investigation carried out pursuant to sub-paragraph (1) was inadequate; or

(b) a reasonable estimated dose has not been established,

the employer shall, if so directed by the Authority, re-instate the original entry in the dose record.

(6) The employer shall not, without the consent of the Authority, require the authorised dosimetry service provider to enter an estimated dose in the dose record in any case where B

(a) the cumulative recorded effective dose is 20mSv or more in one calendar year; or

(b) the cumulative recorded equivalent dose for the calendar year exceeds a relevant dose limit.

53. -(1) Where any accident or other occurrence takes place, which is likely to result in a person receiving an effective dose of ionizing radiation exceeding 6mSv or an equivalent dose greater than three-tenths of any relevant dose limit, the employer shall -

Dosimetry for
Accidents, etc.

(a) in the case of a classified person, arrange for a dose assessment to be made by the authorised dosimetry service provider forthwith;

(b) in the case of an employee to whom a dosimeter or other device has been issued in accordance with paragraph (2) of regulation 26 of these Regulations, arrange for that dosimeter or device to be examined and for the dose received to be assessed by the authorised dosimetry service provider as soon as possible;

(c) 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 radiation safety adviser.

(2) In such a case, the 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) keep a record of the assessment or a copy thereof until the person to whom the record relates has or would have attained the age of 75 years but in any event for at least 50 years from the date of the relevant accident.

54. -(1) This regulation shall apply in relation to -

Medical surveillance.

(a) classified persons and persons whom an employer intends to designate as classified persons;

(b) employees who have received an overexposure and are not classified persons;

(c) employees who are engaged in work with ionizing radiation subject to conditions imposed by an appointed doctor or employment medical adviser under regulation 57 of these Regulations.

(2) The employer shall ensure that each of his employees to whom this regulation relates is under adequate medical surveillance by an appointed doctor or employment medical adviser for the purpose of determining the fitness of each employee for the work with ionizing radiation which he is to carry out.

55. The employer shall ensure that any health record, containing the particulars referred to in the Seventh Schedule to these Regulations, in respect of each of his employees to whom this regulation relates is made and maintained and that record or a copy thereof is kept until the person to whom the record relates has or would have attained the age of 75 years or for at least 50 years from the date of the last entry made in it, which ever is earlier.

Health records.
Seventh Schedule.

56. -(1) Subject to regulation 55 of these Regulations, the employer shall ensure that there is a valid entry in the health records of each of his employees to whom this regulation relates, other than employees who have received an overexposure and who are not classified persons, made by an appointed doctor or employment medical adviser and an entry in the health records shall be valid -

Valid entries in health records for periodic reviews of health.

(a) for 12 months from the date it was made or treated as made by virtue of paragraph (2) of this regulation;

(b) for such shorter period as is specified in the entry by the appointed doctor or employment medical adviser; or

(c) until cancelled by an appointed doctor or employment medical adviser by a further entry in the records.

(2) For the purposes of this regulation, a further entry in the health records of the same employee shall, where made not less than 11 months nor more than 13 months after the start of the current period of validity, be treated as if made at the end of that period.

57. Where the appointed doctor or employment medical adviser has certified in the health records of an employee to whom this regulation relates that in his professional opinion that employee should not be engaged in work with ionizing radiation or that he should only be so engaged under conditions he has specified in the health records, the employer shall not permit that employee to be engaged in the work with ionizing radiation except in accordance with the conditions, if any, so specified.

Employees certified unfit or fit subject to conditions.

58. -(1) Where, for the purpose of carrying out his functions under these Regulations, an appointed doctor or employment medical adviser requires to inspect any workplace, the employer shall permit him to do so.

Information made available to the appointed doctor or employment medical adviser.

(2) The employer shall make available to the appointed doctor or employment medical adviser the summary of the dose record kept by the employer pursuant to regulation 50 of these Regulations and such other records kept for the purpose of these Regulations as the appointed doctor or employment medical adviser may reasonably require.

(3) Where an employee is aggrieved by a decision recorded in the health records by an appointed doctor or employment medical adviser he may, by an application in writing to the Authority made within 3 months of the date on which he became aware of the decision, apply for such decision to be reviewed and the result of that review shall be notified to the employee and entered in his health records.

59. -(1) Where a radiation employer suspects or has been informed that any person is likely to have received an overexposure as a result of work carried out by the employer, such employer shall make an immediate investigation to determine whether there are circumstances which show beyond reasonable doubt that no overexposure could have occurred and, unless this is shown, the radiation employer shall -

Investigation and notification of overexposure.

(a) as soon as practicable notify the suspected overexposure to -

(i) the Authority,

(ii) in the case of an employee of another employer, that other employer, and

(iii) in the case of his own employee, the appointed doctor or employment medical adviser;

(b) as soon as practicable, take reasonable steps to notify the suspected overexposure to the person affected; and

(c) make or arrange for such investigation of the circumstances of the exposure and an assessment of any relevant dose received as is necessary to determine, so far as is reasonably practicable, the measures, if any, required to be taken to prevent a recurrence of such overexposure and shall forthwith notify the results of that investigation and assessment to the persons and authorities mentioned in sub-paragraph (a) of this paragraph of this regulation and shall -

(i) in the case of his employee, forthwith notify that employee of the results of the investigation and assessment, or

(ii) in the case of a person who is not his employee, where the investigation has shown that person has received an overexposure, take all reasonable steps to notify him of his overexposure.

(2) A radiation employer who makes any investigation pursuant to paragraph (1) of this regulation shall make a report of that investigation and shall -

(a) in respect of an immediate investigation, keep that report or a copy thereof for at least 2 years from the date on which it was made; and

(b) in respect of an investigation made pursuant to paragraph (1)(c) of this regulation, keep report or a copy thereof until the person to whom the record relates has or would have attained the age of 75 years or for at least 50 years from the date on which it was made, whichever is earlier.

(3) Where the person who received the overexposure is an employee who has a dose records, his employer shall arrange for the assessment of the dose received to be entered into that dose records.

60. -(1) Without prejudice to regulation 59 of these Regulations or other requirements under these Regulations, where an employee has been subjected to an overexposure, paragraph (2) of this regulation shall apply in relation to the employment of that employee relating to work with ionizing radiation during the remainder of the dose limitation period commencing at the end of the personal dose assessment period in which he was subjected to the overexposure.

Dose limitation for overexposed employees.

(2) Every employer shall ensure that an employee to whom this regulation relates does not, during the remainder of the dose limitation period, receive a dose of ionizing radiation greater than that proportion of any dose limit which is equal to the proportion that the remaining part of the dose limitation period bears to the whole of such period.

(3) Every employer shall inform an employee who has been subjected to an overexposure of the dose limit, which is applicable to that employee for the remainder of the relevant dose limitation period.

(4) In this regulation, “dose limitation period” means, as appropriate, a calendar year or the period of five consecutive calendar years, as the case may be.

PART VI – PROVISIONS RELATING TO THE CONTROL OF RADIOACTIVE SUBSTANCES, ARTICLES OR EQUIPMENT

61. -(1) Where a radioactive substance is used as a source of ionizing radiation in work with ionizing radiation, the radiation employer shall ensure that, whenever reasonably practicable, the substance is in the form of a sealed source.

Sealed sources and articles containing or embodying radioactive substance.

(2) 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 -

(a) in the case of a sealed source, so far as it is practicable; or

(b) in the case of any other article, so far as it is reasonably practicable.

62. Where appropriate, the radiation employer shall ensure that suitable tests are carried out at suitable intervals to detect leakage of radioactive substance from any article to which paragraph (2) of regulation 61 of these Regulations applies and the employer shall make a suitable record of each such test and shall retain such records for at least 2 years after the article is disposed of or until a further record is made following a subsequent test to such article.

Suitable task tests.

63. For the purpose of controlling radioactive substances which are involved in work with ionizing radiation which he undertakes, every radiation employer shall take such steps as are appropriate to account for and keep records of the quantity and location of those substances and shall keep those records or a copy thereof for at least 2 years from the date on which they were made and, in addition, for at least 2 years from the date of disposal of that radioactive substance.

Accounting for radioactive substances.

64. 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.

65. -(1) 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.

Suitable receptacles for moving radioactive substance.

(2) Nothing in this regulation or regulation 64 of these Regulations shall apply in relation to a radioactive substance while it is in or on the live body or corpse of a human being.

66. -(1) Every radiation employer shall forthwith notify the Authority in any case where a quantity of a radioactive substance which was under his control and which exceeds the quantity specified for that substance in Column 4 of the Eight Schedule to these Regulations -

Notification of certain occurrences.

Eight Schedule. Column 4.

(a) has been released or is likely to have been released into the atmosphere as gas, aerosol or dust; or

(b) has been spilled or otherwise released in such a manner as to give rise to significant contamination.

(2) Paragraph (1) of this regulation shall not apply where such release -

(a) was in a manner authorised by the Authority to dispose of radioactive waste; or

(b) which was exempt from such authorisation.

(3) Where a radiation employer has reasonable cause to believe that a quantity of a radioactive substance which exceeds the quantity for that substance specified in Column 5 of the Eight Schedule to these Regulations and which was under his control is lost or has been stolen, the employer shall forthwith notify the Authority of that loss or theft, as the case may be.

Eight Schedule.
Column 5.

(4) Where a radiation employer suspects or has been informed that an occurrence notifiable under paragraph (1) or (3) of this regulation 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 paragraph.

(5) A radiation employer who makes any investigation in accordance with paragraph (4) of this regulation shall make a report of such investigation and shall, unless the investigation showed that no such occurrence took place, keep that report or a copy thereof for at least 50 years from the date on which it was made or, in any other case, for at least 2 years from the date on which it was made.

67. In the case of articles for use at work, where that work is with ionizing radiation, the supplier shall ensure that any such article is so designed and constructed as to restrict so far as is reasonably practicable the extent to which employees and other persons are or are likely to be exposed to ionizing radiation and all such suppliers must be licensed by the Authority.

Duties of suppliers, Vendors, etc. of articles for use in work with ionizing radiation.

68. Where a person erects or installs an article for use at work, being work with ionizing radiation, he shall -

Critical examination by installer or erector.

(a) where appropriate, undertake a critical examination of the way in which article was erected or installed for the purpose of ensuring , in particular, that -

- (i) the safety features and warning devices operate correctly, and
- (ii) there is sufficient protection for persons from exposure to ionizing radiation;

(b) consult with the radiation safety adviser appointed by himself or by the radiation employer with regard to the nature and extent of any critical examination and the results of that examination; and

(c) provide the radiation employer with adequate information about proper use, testing and maintenance of the article.

69. Every employer who has to any extent control of any equipment or apparatus which is used in connection with a medical exposure shall, having regard to the extent of his control over the equipment, ensure that such equipment is of such design or construction and is so installed and maintained as to be capable of restricting so far as is reasonably practicable the exposure to ionizing radiation of any person who is undergoing a medical exposure to the extent that this is compatible with the intended clinical purpose or research objective.

Equipment used for medical exposure.

70. Any employer who has, to any extent, control of any radiation equipment which is used for the purpose of diagnosis and which is installed after the date of the coming into force of these Regulations shall, having regard to the extent of his control over the equipment, ensure that such equipment is provided, where practicable, with suitable means for informing the user of that equipment of the quantity of radiation produced by that equipment during a radiological procedure.

Indication of quantity of radiation produced for new equipment.

71. -(1) Every employer in respect of whom a duty is imposed by regulation 69 of these Regulations shall, to the extent that it is reasonable for him to do so having regard to the extent of programme to be provided in respect of the equipment or apparatus for the purpose of ensuring that it remains capable of restricting so far as is reasonably practicable exposure to the extent that this is compatible with the intended clinical purpose or research objective.

Provision of a quality assurance programme for the equipment.

(2) Without prejudice to the generality of paragraph (1) of this regulation, the quality assurance programme required by that paragraph shall require the carrying out of-

(a) in respect of equipment or apparatus first used after the coming into force of this regulation, adequate testing of that equipment or apparatus before it is first used for clinical purposes;

(b) adequate testing of the performance of the equipment or apparatus at appropriate intervals and after any major maintenance procedure to that equipment or apparatus;

(c) where appropriate, such measurements at suitable intervals as are necessary to enable the assessment of representative doses from any radiation equipment to persons undergoing medical exposures.

72. Every employer who, to any extent, has control of any radiation equipment shall take all such steps as are reasonably practicable to prevent the failure of any such equipment where such failure could result in an exposure to ionizing radiation greater than that intended and to limit the consequences of any such failure.

Prevention of
equipment failures.

73. -(1) Where a radiation employer suspects or has been informed that an incident may have occurred in which a person while undergoing a medical exposure was, as a result of a defect or malfunction of a radiation equipment under the control of the employer, exposed to ionizing radiation to an extent much greater than that intended, the radiation employer shall make an immediate investigation of the suspected incident and, unless investigation shows beyond reasonable doubt that no such incident has occurred, shall forthwith notify the Authority thereof and make or arrange for a detailed investigation of the circumstances of the exposure and an assessment of the dose received.

Investigation
of incidents.

(2) A radiation employer who makes any investigation in accordance with paragraph (1) of this regulation shall make a report of that investigation and shall -

(a) in respect of an immediate report, keep that report or a copy thereof for a period of at least 2 years from the date on which it was made; and

(b) in respect of a detailed report, keep that report or a copy thereof for a period of at least 50 years from the date on which it was made.

(3) In this regulation “radiation equipment” means equipment which delivers ionizing radiation to the person undergoing a medical exposure and includes equipment which directly controls the extent of the exposure.

74. Any person who intentionally or recklessly misuse or without reasonable excuse interfere with any radioactive substance, ionising radiation source or any electrical equipment to which these Regulations apply, commits an offence under these Regulations.

Offence relating to sources of ionizing radiation.

PART VII - DUTIES OF EMPLOYEES AND MISCELLANEOUS

75. -(1) Any employee who is engaged in any work involving ionizing radiation shall not knowingly expose himself or any other person to ionizing radiation to an extent greater than is reasonably necessary for the purposes of his work, and shall exercise reasonable care while carrying out such work.

Duties of employees.

(2) Every employee who is engaged in work with ionizing radiation and for whom personal protective equipment is provided pursuant to regulation 14 (2) (c) of these Regulations 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.

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

(4) Any employee to whom regulation 47 of these Regulations applies shall comply with any reasonable requirement imposed on him by his employer for the purposes of making the measurements and assessments required under regulation 47 of these Regulation.

(5) An employee who is subject to medical surveillance under regulation 54 of these Regulations 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 purpose of paragraph (2) of regulation 54 of these Regulations and shall provide the appointed doctor or employment medical adviser with such information concerning his health as the appointed doctor or employment medical adviser may reasonably require.

(6) Where an employee has reasonable cause to believe that -

(a) he or some other person has received an overexposure;

(b) an occurrence mentioned in paragraph (1) of regulation 66 of these Regulations has occurred; or

(c) an incident mentioned in regulation 73 of these Regulations has occurred,

he shall forthwith notify his employer of such overexposure, occurrence or incident.

76. -(1) The Authority may, upon application to it, approve a suitable dosimetry service provider for purposes of these Regulations by issuing a certificate in writing to such dosimetry service provider upon such terms and conditions as may be specified in the certificate, from time to time, by the Authority.

Approval of
dosimetry service
provider.

(2) Any certificate issued pursuant to paragraph (1) of this regulation may be subject to such conditions as to revocation, at any time, by the Authority upon a breach by the dosimetry service provider of any of such conditions.

(3) The Authority may at such suitable periods as it considers appropriate carry out a re-assessment of any approval granted under this regulation.

77. Subject to the Act and any Regulations made pursuant thereto, the transportation of any radioactive or radiation source shall comply with the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Materials and any relevant Regulations made by the Authority or any other national agency and without prejudice to the generality of the foregoing, the requirements for transportation of radioactive or radiation source shall be as following, that is -

(a) the
package shall be
suitable for its
intended use and
the modes of
transport
involved
;

(b) the
operatin
g
organisa
tion
shall
have a

Requirements for the transportation of radioactive materials.

copy of the certification of Type A or Type B approvals supplied by the source container manufacturer and such approvals shall be still valid as at the date of transportation;

(c) the sealed source shall be locked in the shielded position and the key removed and all required shipping plugs or caps shall be installed and where possible, locked in place;

(d) the package shall not be damaged and all labels must be legible;

(e) radiation levels at the surface and at one meter shall be taken and if such levels exceed the regulatory limits, the package shall not be shipped;

(f) applicable shipping labels shall be applied to the outer surface of the package based on the radiation levels obtained;

(g) no radioactive source shall be transported if it does not have a valid leak test certificate and if not, a leak or wipe test shall be performed on the outer surface of the source container and the shipping package prior to shipment;

(h) the package shall be properly secured and braced in the transport vehicle;

(i) the vehicle carrying the package shall be placarded on both sides of the vehicle and on the rear of the vehicle with radioactive placards;

(j) appropriate transport papers shall accompany the shipment including a transport document, consignor's statement and information for the carrier on emergency response information.

78. The
disposal of spent
sources or

sources no longer in use shall comply with any radioactive wastes management Regulations as may be made by the Authority or any other national agency and notwithstanding anything to the contrary in any enactment or law -

(a) any person who generates radioactive wastes shall have the primary responsibility for the safe management of radioactive waste and shall take all necessary actions to ensure the safety of radioactive waste unless such responsibility has been transferred to another person or organisation with the approval of the Authority;

(b) the Authority shall be responsible for the enforcement of compliance with the provisions of the appropriate radioactive waste management Regulations made under the Act or any other law for the time being in force;

(c) any person who generates radioactive wastes shall be responsible for on-site segregation, collection, characterisation, and temporary storage of the radioactive waste arising from his activities and discharge of exempt waste and the Authority shall be notified of all radioactive wastes that are not expected to decay to clearance levels within one year from the time of their generation.

(d) no person or organisation shall dispose of any radioactive waste unless the disposal facility designed and constructed specifically for this purpose is available and licensed by the Authority or any other appropriate Government agency;

(e) the Authority shall be responsible for the management of radioactive wastes where the person who generates the wastes is incapable of appropriate management of the radioactive waste or the license is revoked, or the waste generator no longer exists. The Authority may request to recover the costs incurred from those responsible, where they are known

79. Any employer who intends to import a sealed source containing any radioactive material for any practice shall -

Return of sources to supplier.

(a) require the supplier, as a condition of any contract for the purchase or transfer, to receive the source back;

(b) submit to the Authority a copy of relevant parts of the purchase or transfer document and obtain its authorisation prior to entering the contract in force or accepting the source; and

Wastes disposal.

(c) return the source to the supplier within six months after its useful lifetime.

(2) The Authority shall be responsible for management of the spent source where the recipient is incapable of returning the source or the license is revoked, or the recipient no longer exists and the Authority may request to recover the costs incurred from those responsible, where they are known.

80. The decommissioning of any radiation source or facility with radioactive materials shall have due regard to safety and the licensees shall notify the Authority and ensure the following items are implemented as appropriate to the circumstances, that is -

Decommissioning.

- (a) authorised disposal of all radiation sources;
- (b) checks for any residual radioactive contamination and the authorised disposal of any contaminated material that is found or is created during decontamination;
- (c) authorised disposal of sealed source containers as empty if they do not contain a sealed source;
- (d) safe disposal of a radiation source or facility with radioactive materials preferably rendered inoperative if they are not to be re-used;
- (e) removal of all warning notices that are no longer applicable;
- (f) documentary evidence that the decommissioning work is completed;
- (g) on completion of decommissioning, no residual radiological hazard shall remain and there should be no indication that might create unnecessary concern in the future.

81. No person shall carry out any activity referred to in regulation 4 of these Regulations and at the end of the activity abandon, de-commission or rehabilitate installations thereof without a license issued by the Authority.

Decommissioning to be licensed by the Authority.

82. Any employer who employs any equipment that is likely to become a scrap material after its useful life and the equipment contains radioactive components, shall -

Radioactive consumer scrap materials.

(a) submit a notification subject to regulation 7 of these Regulations to the Authority; and

(b) complete the process of decommissioning subject to regulation 81 of these Regulations within 6 months of the equipment becoming a scrap,

obtain authorisation from the Authority for the disposal of the scrap equipment with or without its radioactive component or converting the equipment into other uses.

83. -(1) Subject to paragraph (2) of this regulation, the Authority may, by a certificate in writing, exempt -

Exemption certificates.

(a) any person or class of persons;

(b) any premises or class of premises; or

(c) any equipment, apparatus or substance or class of equipment, apparatus or substance,

from any requirement or prohibition imposed by these Regulations and any such exemption may be granted subject to such conditions and time limit subject and revocable by a certificate in writing at any time, as may be determined, from time to time by the Authority.

(2) The Authority shall not grant an exemption unless, having regard to the circumstances of the case and in particular to -

(a) the conditions, if any, which it proposes to attach to the exemption and

(b) any other requirements imposed by or under any enactment which applies to the case, it is satisfied that -

(i) the health and safety of persons who are likely to be affected by the exemption will not be prejudiced in consequence of it, and

(ii) compliance with the fundamental radiation protection provisions as provided under regulations 8, 24, 26, 32, 42, 45, 47, 55 and 69 of these Regulations will be achieved.

84. The Authority, with the approval of the Board, may prescribe -

Fees, etc.

(a) the fees payable in respect of any licence;

(b) the classification of licences;

(c) the inspection, at any such interval as may be deemed necessary, of any irradiating device or radioactive materials and the fees to be paid in respect of such inspections; and

(d) any other actions, including changes to fees charged, that may be deemed necessary in order to meet the needs of the time, to carry out the provisions of these Regulations.

PART VIII - OFFENCES AND PENALTIES

85. Any person who -

Offences and penalties.

(a) without reasonable excuse, fails to produce a licence which he is required by these Regulations to have; or

(b) willfully obstructs a Radiation Protection Officer or any other authorised officer in the exercise of his duties under these Regulations; or

(c) contravenes any other provisions of these Regulations,

commits an offence and shall be liable on conviction to a fine not less than ₦50,000 or more than ₦1,000,000 or to imprisonment for a term not less than 2 years or more than 10 years or to both such fine and imprisonment.

86. Where the offence under these Regulations is committed by a body corporate, the offender shall on conviction be liable to a fine of not less than ₦100,000 or more than ₦3,000,000 and every director, secretary or manager of the body corporate shall be proceeded against accordingly unless he proves that the offence was committed without his consent or connivance and that he exercised all such diligence to prevent the commission of the offence as he ought to have exercised having regards to the nature of his functions and the

Offence by body corporate.

circumstances of the case.

87. These Regulations may be cited as the Nigeria Basic Ionizing Radiation Regulations 2003. Citation.

SCHEDULES

FIRST SCHEDULE *regulations 2 (1) (a); 27 (3)*

Work not Required to be Notified

1. Work with ionizing radiation shall not be required to be notified in accordance with regulation 7 of these Regulations when the only such work being carried out is in one or more of the following categories -

(a) where the concentration of activity per unit mass of a radioactive substance does not exceed the concentration specified in column 2 of Part I of the Eight Schedule to these Regulations;

(b) where the quantity of radioactive substance involved does not exceed the quantity specified in column 3 Part I of the Eight Schedule to these Regulations;

(c) where apparatus contains radioactive substances in a quantity exceeding the values specified in sub-paragraph (a) and (b) of this paragraph provided that -

(i) the apparatus is of a type authorised by the Authority;

(ii) the apparatus is constructed in the form of a sealed source;

(iii) the apparatus does not under normal operating conditions cause a dose rate of more than $1\mu\text{Sv h}^{-1}$ at distance of 0.1m from any accessible surface; and

(iv) conditions for the disposal of the apparatus have been specified by the Authority;

(d) the operation of any electrical apparatus to which these Regulations apply other than apparatus referred to in sub-paragraph (e) below provided that -

- (i) the apparatus is of a type authorized by the Authority, and
- (ii) the apparatus does not under normal operating conditions cause a dose rate of more than $1\mu\text{Svh}^{-1}$ at a distance of 0.1m from any accessible surface;

(e) the operation of -

- (i) any cathode ray tube intended for the display of visual images or
- (ii) any other electrical apparatus operating at a potential difference not exceeding 30kV,

provided that the operation of the tube or apparatus does not under normal operating conditions cause a dose rate of more than $1\mu\text{Svh}^{-1}$ at a distance of 0.1m from any accessible surface;

(f) where the work involves material contaminated with radioactive substance resulting from authorized releases which the Authority has declared not to be subject to further control.

SECOND SCHEDULE *regulation 7 (2)*

Particulars to be Provided in a Notification

The following particulars shall be given in a notification under regulation 7 (2) of these Regulations -

- (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) into which of the following categories the source or sources of ionizing radiation fall -
 - (i) sealed source,

- (ii) unsealed radioactive substance,
- (i) electrical equipment,

- (ii) an atmosphere containing the short-lived daughters of radon 222;

- (e) whether or not any source is to be used at premises other than the address given at sub-paragraph (b) of this paragraph; and

- (f) dates of notification and commencement of the work activity.

THIRD SCHEDULE *regulation 8*

Additional Particulars that the Authority may Require

The Authority may, from time to time, require the following additional particulars as provided under regulation 8 of these Regulations, that is -

- (a) a description of the work with ionizing radiation;

- (b) particulars of the source or sources of ionizing radiation including the type of electrical equipment used or operated and the nature of any radioactive substance;

- (c) the quantities of any radioactive substance involved in the work;

- (d) the identity of any person engaged in the work;

- (e) the date of commencement and the duration of any period over which the work is carried on;

- (f) the location and description of any premises at which the work is carried out on each occasion that it is so carried out;

- (g) the date of termination of the works;

- (h) further information on any of the particulars listed in the Second Schedule to these Regulations.

FOURTH SCHEDULE *regulations 15, 24 and 25*

Dose Limits

PART 1 - CLASSES OF PERSONS TO WHO DOSE LIMITS APPLY

Employees of the age of 18 years or above

1. For purposes of regulation 24 of these Regulations, the limit on effective dose for any employee of 18 years or above shall be 20 mSv in any calendar year.

2. Without prejudice to paragraph 1 of this Schedule, -

(a) the limit on equivalent dose for the lens of the eye shall be 150 mSv in a calendar year;

(b) the limit on equivalent dose for the skin shall be 500 mSv in a calendar year as applied to the dose averaged over any area of 1cm² regardless of the area exposed.

(c) the limit on equivalent dose for the hands, forearms, feet and ankles shall be 500 mSv in a calendar year.

Trainees of the age less than 18 years

3. For purposes of regulation 24 of these Regulations, the limit on effective dose for any trainee under the age of 18 years shall be 6 mSv in any calendar year.

4. Without prejudice to paragraph 3 of this Schedule -

(a) the limit on equivalent dose for the lens of the eye shall be 50 mSv in a calendar year;

(b) the limit on equivalent dose for the skin shall be 150 mSv in a calendar year as applied to the dose averaged over any area of 1cm² regardless of the area exposed;

(c) the limit on equivalent dose for the hands, forearms, feet and ankles shall be 150 mSv in a calendar year.

Women of reproductive capacity

5. Without prejudice to paragraphs 1 and 3 of this Schedule, 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 ionizing radiation averaged throughout the abdomen, shall be 13 mSv in any consecutive period of three months during the gestation period.

Other persons

6. Subject to paragraph 7 of this Schedule and for the purposes of regulation 24 of these Regulations, the limit on effective dose for any person other than an employee or trainee, including any person below the age of 16 years, shall be 1 mSv in any calendar year.

7. Paragraph 6 of this Schedule shall not apply in relation to any person, not being a comforter or carer, who may be exposed to ionizing radiation resulting from the medical exposure of another and in such a case the limit on effective dose for any such person shall be 5 mSv in any period of 5 consecutive years.

8. Without prejudice to paragraphs 6 and 7 of this Schedule -

(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.

PART II – DOSE LIMIT FOR EMPLOYEES IN SPECIAL CASES

9. For purposes of regulation 25 of these Regulations, the limit on effective dose for employees of 18 years of age and above shall be 100 mSv in any period of five consecutive calendar years subject to a maximum effective dose of 50 mSv in any single calendar year in accordance with Appendix I to these Regulations.

Appendix I.

10. Without prejudice to paragraph 9 of this Schedule -

(a) the limit on equivalent dose for the lens of the eye shall be 150 mSv in a calendar year;

(b) the limit on equivalent dose for the skin shall be 500 mSv in a calendar year as applied to the dose averaged over any area of 1cm² regardless of the area exposed;

(c) the limit on equivalent dose for the hands, forearms, feet and ankle shall be 500 mSv in a calendar year.

11. Without prejudice to paragraph 9 of this Schedule, 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 ionizing radiation averaged throughout the abdomen, shall be 13 mSv in any consecutive period of three months.

12. Every employer shall ensure that any employee in respect of whom regulation 25 of these Regulations applies is not exposed to ionizing radiation exceeding any dose limit specified in paragraphs 9 to 11 of this Schedule.

13. No employer shall put into effect a system of dose limit in pursuance of regulation 25 of these Regulations unless -

(a) the radiation safety adviser and any employee who are affected have been considered;

(b) any employee affected and the authorised dosimetry service provider have been informed in writing of the decision and of the reasons for that decision; and

(c) notice has been given to the Authority at least 28 days or such shorter period as the Authority may determine before the decision is put into effect giving reasons for the decision.

14. Where there is reasonable cause to believe that any employee has been exposed to an effective dose greater than 20 mSv in any calendar year, the employer shall, as soon as practicable -

(a) undertake an investigation into the circumstance of the exposure for the purpose of determining whether the dose limit referred to in paragraph 9 is likely to be complied with; and

(b) notify the Authority of that suspected exposure.

15. An employer shall review the decision to put into effect a system of dose limit pursuant to regulation 25 of these Regulations at appropriate intervals or not less than once every five years.

16. Where as a result of a review undertaken pursuant to paragraph 15 of this Schedule, an employer proposes to revert to a system of annual dose limitation pursuant to regulation 24 of these Regulations, the provisions of paragraph 13 of this Schedule shall apply as if the reference in that paragraph to regulation 25 was a reference to regulation 24 of these Regulations.

17. Where an employer puts into effect a system of dose limitation in pursuance of regulation 24 of these Regulations, he shall record the reasons for that decision and shall ensure that the record is preserved for a period of 50 years from the date of its making and submit same to the Authority.

18. Where -

(a) the dose limits specified in paragraph 9 of this Schedule are being applied by a radiation employer in respect of an employee; and

(b) the Authority is not satisfied that it is impracticable for that employee to be subject to the dose limit specified in paragraph 1 of Part I of this Schedule,

the Authority may require the employer to apply the dose limit specified in paragraph 1 of Part I with effect from such time as the Authority may consider appropriate having regard to the interests of the employee concerned.

19. In any case where, as a result of a review undertaken pursuant to paragraph 15 of this Schedule, an employer proposes to revert to an annual dose limitation pursuant to regulation 24 of these Regulations, the Authority may require the employer to defer the implementation of that decision to such time as the Authority may consider appropriate having regard to the interests of the employee concerned.

20. Any person who is aggrieved by the decision of the Authority taken pursuant to paragraphs 18 or 19 of this Schedule may appeal to the Governing Board of the Authority.

FIFTH SCHEDULE *regulation 27 (1)*

Matters in respect of which a radiation safety adviser must be consulted by a radiation employer

1. The implementation of requirements as to controlled and supervised areas.
2. The prior examination of plans for installation and the acceptance into service of new or modified sources of ionizing radiation in relation to any engineering controls, design features, safety features and warning devices provided to restrict exposure to ionizing radiation.
3. The regular calibration of equipment provided for monitoring levels of ionizing radiation and the regular checking that such equipment is serviceable and correctly used.
4. The periodic examination and testing of engineering controls, design features, safety features and warning devices and regular checking of systems of work provided to restrict exposure to ionizing radiation.

SIXTH SCHEDULE *regulation 48*

Particulars to be entered in the Radiation Dose Record

1. Individual serial number of the dose record.
2. A statement that the dose record has been authorised by the Authority for the purposes of these Regulations.
3. Date of issue of the dose record by the authorised dosimetry service provider.

4. The name, telephone number and mark of endorsement of the employer.

5. The name, address, telephone and telex/fax number of the employer.

6. The Full name (surname, forenames), date of birth, gender and national insurance number of the outside worker to whom the dose record has been issued.

7. The Date of the last medical review of the outside worker and the relevant classification in the health record maintained under regulation 57 of these Regulations 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 dose record 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 B

(i) an 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 contamination, an estimate of the activity taken in or the committed dose.

Particulars to be contained in the health records

- (a) The employee's -
 - (i) full name,
 - (ii) sex,
 - (iii) date of birth,
 - (iv) permanent address, and
 - (v) National Identity number;
- (b) the date of the employee's commencement as a classified person in present employment;
- (c) the nature of the employee's employment;
- (d) in the case of a female employee, a statement as to whether she is likely to receive in any consecutive period of three months an equivalent dose of ionizing radiation for the abdomen exceeding 13 mSv;
- (e) the date of last medical examination or health review carried out in respect of the employee;
- (f) the type of the last medical examination or health review carried out in respect of the employee;
- (g) a statement by the appointed doctor or employment medical adviser made as a result of the last medical examination or health review carried out in respect of the employee classifying the employee as fit, fit subject to conditions (which should be specified) or unfit;

(h) in the case of a female employee in respect of whom a statement has been made under sub-paragraph (d) of this paragraph to the effect that she is likely to receive in any consecutive period of three months an equivalent dose of ionizing radiation for the abdomen exceeding 13 mSv, a statement by the appointed doctor or employment medical adviser certifying whether in his professional opinion the employee should be subject to the additional dose limit specified in paragraph 5 and 11 of the Fourth Schedule;

(i) in relation to each medical examination and health review, the name and signature of the appointed doctor or employment medical adviser;

(j) the name and address of the authorised dosimetry service provider with whom arrangements have been made of maintaining the dose record in accordance with regulation 47 of these Regulations.