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HAZARDOUS SUBSTANCES ACT, 1973  
(ACT No. 15 OF 1973)

REGULATIONS RELATING TO GROUP IV  
HAZARDOUS SUBSTANCES

The Deputy Minister of National Health, acting on behalf and by direction of the Minister of National Health, has in terms of section 29 of the Hazardous Substances Act, 1973 (Act No. 15 of 1973), with specific reference to subsection (10) (b) of that section, made the regulations contained in the Schedule.

**CHAPTER 1**

**Definitions**

1. In these regulations "the Act" means the Hazardous Substances Act, 1973 (Act No. 15 of 1973), and an expression to which a meaning has been assigned in the Act shall have such meaning and, unless inconsistent with the context

"acting radiation protection officer" means a person appointed as such in terms of regulation 6;

"authority" means a written authority referred to in section 3A of the Act;

"calendar year" means a period from 1 January to 31 December;

"contamination" means the contamination by any Group IV hazardous substance of any surface or any part of any object, material, liquid or gas;

"controlled area" means any area

(a) where working conditions require the persons who are in such an area to follow procedures and practices aimed specifically at controlling radiation and radiation exposure; and

(b) where the danger exists that three tenths of the occupational dose limits referred to in Annexure 2 may be exceeded;

"direct-reading dosimeter" means a dosimeter from which the registered radiation dose may be read directly;

"dispose of" in relation to a Group IV hazardous substance, includes sell or dump;

"dose", in relation to ionising radiation, means any dose quantity or sum of dose quantities prescribed in Annexure 2;

"dosimetry service" means a dosimetry service referred to in regulation 23;

"employee" means a person in the employ of or in training with the holder of an authority who in the course of his employment or training with such holder carries out any of the activities referred to in section 3A (1) of the Act for which such authority was granted, or any action with regard to such activity, and includes an employee of a public conveyer;

"holder of an authority" means any person in whose name an authority has been issued and is in force, and "holder" has a corresponding meaning;

"internal rules" means the rules referred to in regulation 7;

"ionising radiation" means electromagnetic or particle radiation capable of producing ions, directly or indirectly, while passing through matter, and "radiation" has a corresponding meaning;

"medical physicist" means a person who is registered as such with the South African Medical and Dental Council and whose certificate of registration as a medical physicist, has been endorsed by that Council to the effect that he is competent to practise as a radiation medical physicist;

"overexposure" means any exposure of a person to ionising radiation to the extent that any dose limit prescribed in Annexure 2 relevant to that person is exceeded;

"particle radiation" means the emission of nuclear particles;

"patient" means a person who is or was exposed to ionising radiation for medical reasons;

"post" means a post which has been specifically created, or an existing post, on the establishment referred to in regulation 6 (1), and of which the duty sheet includes the duties of the radiation protection officer;

"public conveyer" means any person, except a holder of an authority, who conveys a Group IV hazardous substance for or on behalf of another person, irrespective of whether or not such conveyance occurs for payment;

"radiation Incident" means a single event or series of events which occur during the use of a Group IV hazardous substance, and which result in the harmful or potentially harmful exposure of any person to ionising radiation as a direct result of the use of such substance.

"radiation protection" means protection against ionising radiation;

"radiation protection officer" means a person appointed as such in terms of regulation 6, and includes an acting radiation protection officer;

"registered radiation worker" means any person who is potentially exposed through his occupation to more than three tenths of the occupational dose limit referred to in Annexure 2 and who is registered in terms of regulation 14 as a radiation worker, and "radiation worker" has a corresponding meaning;

"repair", in relation to a sealed source or device containing a Group IV hazardous substance, means the performance of any work on such source or device, as the case may be, for the purpose of restoring the original function thereof, but does not include the modification of the sealed source or device;

"sealed source" means a Group IV hazardous substance that is firmly bonded within solid inactive material or sealed in an inactive capsule of sufficient mechanical strength to exclude the possibility of contact with such substance and of the dispersion thereof into the environment under foreseeable conditions of use and wear; but this definition shall not apply where such bonding or encapsulation is solely for the purpose of storage, transport or disposal;

"shielding" means shielding against ionising radiation through the use of lead or other suitable material or through distance in such a manner that the exposure at any point on the external surface of such shielding or at the boundary of any boundary barrier surrounding any premises or device is such that it does not exceed the applicable maximum dose limits determined in Annexure 2;

"transport", in relation to a Group IV hazardous substance, means carriage of that substance on a road or through any other public place (whether in a vehicle or not), or by rail, on an inland waterway, by sea or by air, and in the case of transport by vehicle such substance shall be deemed as being transported from the time that it is loaded onto the vehicle for the purpose of transporting it until it is unloaded from that vehicle, but such 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 vehicle and is used in connection with the operation of that vehicle;

"unsealed source" means any Group IV hazardous substance that is not a sealed source; and

"wearing period" means the period from the issuing of a personal dosimeter to an employee to the replacement thereof.

## CHAPTER 2

### **AUTHORITY FOR THE PURPOSES OF THE PRODUCING OR OTHERWISE ACQUIRING OF, OR DISPOSING OF, OR THE IMPORTING, EXPORTING, BEING IN POSSESSION OF, USING OR CONVEYING OF GROUP IV HAZARDOUS**

#### **Application for authority**

2. (1) (a) Application or written authority for any of or all of the activities mentioned in section 3A (1) of the Act in respect of any Group IV hazardous substance shall be made by an applicant to the Director-General on a form that may be obtained from the Director-General for that purpose.
- (b) Such application form shall make provision for-
  - (i) particulars of the applicant;
  - (ii) the reason for the application;
  - (iii) a description of the Group IV hazardous substance rel

- (iv) the attachment to the form of-
    - (aa) a brief explanation of any activity regarding such substance that is envisaged; and
    - (bb) plans of the premise or premises to which such activities are relevant;
  - (v) the name, address, occupation, qualifications and experience regarding Group IV hazardous substances of the person who is being considered for appointment to the post of radiation protection officer;
  - (vi) the name, address, occupation, qualifications and experience regarding Group IV hazardous substances of the person who is being considered for appointment to the post of acting radiation protection officer;
  - (vii) in the case where the authority concerned pertains to a Group IV hazardous substance for medical purposes, the name, address and qualifications of the medical physicist referred to in regulation 29 (6) and of the medical physicist who will be acting in his place during his absence;
  - (viii) the name and address of the proposed dosimetry service referred to in regulation 23; and
  - (ix) additional particulars that the Director-General may deem necessary for the consideration of an application.
- (2) Before submitting an application for authority to the Director-General, an applicant shall affix to the application form uncanceled revenue stamps to the value of the amount stated in Annexure 1.
  - (3) The Director-General shall not consider an application for authority unless-
    - (a) the prescribed particulars appear in full and correctly on the application form concerned;
    - (b) the prescribed revenue stamps are affixed to the application form concerned; and
    - (c) any additional particulars that he is authorised to obtain in terms of the Act are in his possession, or any investigation he may cause to undertake concerning the application has been finalised.

#### **Period of validity of authorities**

3. (1) An authority issued in terms of these regulations shall remain valid-
  - (a) for the period stipulated in the authority; or
  - (b) until-
    - (i) in the case where the holder is a natural person, that holder dies; or
    - (ii) in the case of the insolvency or liquidation of any person concerned, the date of such insolvency or liquidation.

## CHAPTER 3

### **CONDITIONS RELATING TO ACTIVITIES WITH REGARD TO GROUP IV HAZARDOUS SUBSTANCES**

#### **Conditions applicable to authority**

4. In addition to any condition (if any) that the Director-General may in each case determine in terms of section 3A (2) the Act with regard to a specific authority, all activities with regard to that authority shall be subject to the conditions determined in this Chapter.

### General responsibilities of holder .

5. (1) (a) In addition to any specific responsibility assigned to a holder in terms of these regulations, and any other applicable condition (if any) that the Director-General may prescribe in an authority as a condition in a particular case, the holder of an authority shall be responsible for the entire extent of radiation protection with regard to a Group IV hazardous substance in respect of which he holds an authority.

(b) Without derogating from the generality of paragraph (a), such responsibility shall pertain to any facet that may reasonably be included under radiation protection and shall include-

- (i) efficient organisation for protection and continuous meticulous care with regard to optimum working methods, particularly with regard to routine matters:
- (ii) technical surveys to ensure the reliability and general technical excellence of equipment, premises and interlocks;
- (iii) that all persons who handle or work with a Group IV hazardous substance that is under the control of a holder be fully informed of the health and safety measures and user guidelines that are applicable to such substance; and
- (iv) that, in the case of fire, floods and similar emergencies on the premises of a holder, the relevant local authority, the South African Police and any other authority or person or organisation that performs clearing-up or protection work be warned of the dangers associated with the Group IV hazardous substance that is under the control of the holder and be advised accordingly.

### Radiation protection officer and acting radiation protection officer

6. (1) Every holder of an authority shall, before he engages in any activity that pertains to that authority, create or assign one post of radiation protection officer and one post of acting radiation protection officer on his permanent establishment and retain such posts for the duration of his authority.

(2) (a) A holder shall appoint, in consultation with the Director-General, incumbents to the posts referred to in subregulation (1) and shall forthwith notify the Director-General when such a post becomes vacant.

(b) A holder himself may, in the case where he is a natural person, hold any such post.

(3) A radiation protection officer, an acting radiation protection officer and a holder referred to in subregulation

(2) (b) shall be-

- (a) a medical physicist; or
- (b) any other person with knowledge and experience of-

- (i) the basic principles of radiation protection and control in general; and

- (ii) such specific aspects of radiation protection and control, as may be applicable to the installation and working conditions that are covered by the authority concerned.

(4) Except with the written approval of the Director-General, no activity in respect of which an authority was granted, or any action whatsoever pertaining to such activity may, subject to the provisions of subregulation (2) (b), take place in the absence of the appointment of incumbents to the posts referred to in subregulation (1).

(5) A holder of an authority who does not himself hold the post of radiation protection officer or acting radiation protection officer, as the case may be, in terms of subregulation (2) (b), shall in the service contract concerned, apart from any powers or duties associated with such post-

- (a) place the person whom he has appointed in terms of subregulation (2) (a) as radiation protection officer in control of all activities that pertain to that authority, and of all actions and operations which are carried out or performed in terms of such authority by any radiation worker or other employee in the employ of such holder; and

- (b) invest the person whom he appoints in terms of subregulation (2) (a) as acting radiation protection officer with all the said powers in the case where such person, in the absence of the radiation protection officer, acts on his behalf in his post, and shall submit or send by registered mail a copy of such service contract, which such holder has certified to be a true and correct copy of the original service contract, to the Director-General for record purposes within 14 days of such appointment.

### Internal rules

7. (1) (a) Every holder of an authority shall in writing, prior to engaging in any action with regard to an authority, compile internal rules pertaining to the specific circumstances in his undertaking, which rules shall be enforceable by the holder as occupational and operational conditions on all employees in his employ.

(b) Any addition to, or withdrawal or amendment of any such rule shall forthwith be incorporated by or on the authority of the holder in his internal rules, and such rules shall be edited by or on the authority of the holder regularly, but at least once every calendar year.

(2) (a) Every holder shall keep or cause to be kept on his premise or premises for the information of his employees and in a place accessible to such employees a copy of -

- (i) the Act;
- (ii) these regulations;
- (iii) his authority. and
- (iv) his internal rules, and any amendments thereof.

(b) Such holder shall further furnish to the radiation protection officer or the acting radiation protection officer concerned, as the case may be, and to every radiation worker in his employ any such copies if they so request.

### Controlled areas

8. (1) In respect of every controlled area pertaining to any activity for which his authority provides, a holder shall-

- (a) describe such area in his internal rules;
- (b) physically mark off or demarcate such area;
- (c) place such area under entrance control; and
- (d) furnish such area with a radiation warning notice referred to in subregulation (2)-
  - (i) in the case of a building or part thereof, other structure or enclosed area, on the outside of every door, gate or similar entrance, as the case may be, or
  - (ii) otherwise at any place or places on the boundary of the area from which it shall be visible from all directions at a distance of at least 30 metres from such boundary.

(2) A warning notice referred to in subregulation (1) shall indicate in both English and Afrikaans, in letters and figures not smaller than one centimetre, that it refers to a controlled area that is dangerous, and shall further contain at least the following particulars:

- (a) That radioactive material is present in such area;
- (b) the international symbol that indicates the presence of ionising radiation;
- (c) the name and telephone number of the radiation protection officer and the acting radiation protection officer concerned; and
- (d) where the Director-General or a local authority or other Government body has made known to the holder the name of a person who is to be informed in an emergency, the name and telephone number of that person.

(3) A holder referred to in subregulation (1) shall, by means of an entrance control system, ensure that entry to a controlled area is gained only by-

- (a) persons who are in the employ of such holder and who are authorised thereto by him;
- (b) persons who are not in the employ of such holder but who have been approved by the holder concerned for the carrying out of an activity;
- (c) a patient; or
- (d) persons authorised thereto by law.

### Stockrecords

9. (1) A holder of an authority shall open or cause to be opened in respect of each Group IV hazardous substance of which he is the owner, or which comes into his possession, or over which he has control or acquires control, a permanent stock record in which at least the following shall be recorded-

- (a) the name and activity of such substance;

- (b) the date of acquiring or gaining control over such substance, as the case may be;
- (c) the purpose for which such substance is or is to be used;
- (d) whether such substance is in the form of a sealed or unsealed source, and in the case of a sealed source, the serial number;
- (e) the date of and the specific action which was carried out with such substance; and
- (f) the date on which and means by which such (1) substance was disposed of.

(2) The record referred to in subregulation (1) shall be kept daily, and the radiation control officer shall inspect the record at least once a month and shall note his findings, together with his signature and date of inspection, in the record.

(3) Any person who makes any other entry in the stock record shall at the entry in question write his first initial and his surname in block letters and sign his signature or initials.

(4) (a) A holder shall within 14 days after the end of December of each year and on such times within a calendar year as he may deem necessary take stock or cause stock to be taken of all sealed sources in his possession or under his control.

(b) The holder shall at the end of January of each subsequent year submit, or send by registered mail, a copy of such December stocktaking to the Director-General, together with a statement by the radiation protection officer concerned that he has compared such stocktaking with the authority in question and has indicated discrepancies, if any.

(c) Any person who makes a statement contemplated in paragraph (b) knowing it to be false shall be guilty of an offence.

### Safekeeping of records and registers

10. (1) A holder of an authority shall in respect of any record, register or logbook that he is obliged to open and keep updated in accordance with these regulations-

- (a) keep such record, register or logbook in safe custody in a place where it is protected and safeguarded from fire, theft or destruction when it is not in use for the purposes of any entry, examination or inspection by him or his employees or by any person who is authorised by law or on legal grounds to inspect such record, register or logbook;
- (b) keep such record, register or logbook for a minimum period of five years after the date of the last entry therein, and thereafter continue to keep it in safe custody or dispose thereof with the approval of the Director-General or hand it over to the Director-General at his request for further safekeeping, as the case may be.

### Monitoring

11. (1) A holder of an authority shall -
- (a) when he uses a Group IV hazardous substance in the course of his activities, monitor or cause to be monitored the radiation levels and contamination, as the case may be, at regular intervals as required by the particular activities in order to ensure that the applicable maximum dose limits prescribed in Annexure 2 are not exceeded;
  - (b) cause the equipment for such monitoring to be calibrated by a person or body approved for this purpose by the Director-General-
    - (i) directly after the procurement thereof from a supplier;
    - (ii) before it is put into use after any reparation procedure; and
  - (iii) at regular intervals for as long as it is under his control, but at least once every 14 months; and
  - (c) keep a record of such monitoring and calibration.

(2) (a) Where a sealed source is damaged or where there are reasonable grounds to suspect that the source is leaking or may possibly leak, the holder concerned shall take immediate steps to prevent the spread of contamination and shall forthwith report the matter to the Director-General by telephone, telegram telefacsimile or other similar rapid means, and shall closely follow any instructions of the Director-General in relation to such reporting.

(b) Where such a source has been repaired, such source may not be put into use by the holder until he has reported the circumstances in writing to the Director-General, and until the Director-General has granted written approval for such recommissioning by the holder.

(3) A holder may not subdivide a sealed source without the written permission of the Director-General.

### Storage places

12. (1) A Group IV hazardous substance shall be stored in a storage place when it is not being used during the course of the activities of a holder of an authority or being transported.

(2) (a) A storage place referred to in subregulation (1) shall consist of a building or part thereof or other structure on a premises that has been zoned by a public authority for business purposes or on which a business may otherwise legally be operated.

(b) Such storage place shall be constructed so that ionising radiation measured directly against the outside thereof does not exceed the applicable dose limits determined in Annexure 2 and shall be safeguarded further against burglary and be equipped at every entrance door with a warning notice referred to in regulation 8 (2).

(3) No activity other, than the delivery and removal of a Group IV hazardous substance shall take place in a storage place referred to in subregulation (1), and all entrances shall remain locked, except during such delivery and removal.

### Disposal

13. Except where specific provisions regarding the disposal of a Group IV hazardous substance are included as a routine measure in the internal rules of the holder of an authority, any disposal of a Group IV hazardous substance shall take place strictly in accordance with such directives as the Director-General may with due regard to the circumstances determine and in each case after considering a specific application by a holder in this regard.

### Radiation workers

14. (1) Every holder of an authority shall open a register for radiation workers in his employ and shall enter the name of every such radiation worker in the register, stating such personal particulars of such person as the holder may deem fit, but with specific mention in respect of such radiation worker of at least-

- (a) the date of registration and deregistration;
- (b) the age at the time of registration;
- (c) in the case of a female radiation worker, the periods of pregnancy, as such person informed the holder;
- (d) the date of appointment in the employ of the holder and of dismissal and the reason for the dismissal;
- (e) the address at the time of dismissal.

(2) No person shall be registered as a radiation worker unless-

- (a) he is 18 years old or older;
- (b) a medical practitioner has certified in the health record of the person concerned that in the opinion of the medical practitioner such person is fit to perform radiation work; and
- (c) in the case of a female person, the holder concerned has informed such person pertinently of the hazard to the foetus of ionising radiation during pregnancy, and the holder is satisfied after personal enquiry that the person concerned is not pregnant.

(3) A holder shall remove the name of a radiation worker from the register of radiation workers in his employ as soon as-

- (a) in the case of a female radiation worker, it comes to his knowledge that such worker is pregnant;
- (b) a medical practitioner certifies in writing that in his opinion such worker is not fit for radiation work; or
- (c) the Director-General or the worker concerned so requests,

and shall not re-enter such name until, in the case of a pregnancy, such a pregnancy has terminated, and in any other case, until the worker concerned, or the medical practitioner or the Director-General, as the case may be, has been consulted.

### Medical examinations and health monitoring

15. (1) Every holder of an authority shall open a separate health record for-

- (a) every registered radiation worker in his employ and for every radiation worker he intends to register as such;
- (b) every employee who in the course of his employment with that holder as a radiation worker or otherwise, or any other person, except a patient, who in the course of any activity of that holder has received or is suspected to have received an overexposure of ionising radiation from a Group IV hazardous substance;
- (c) every employee of that holder in respect of whom a medical practitioner, or other person, has recommended to that holder special conditions based on scientific medical grounds regarding the employment of such employee with such holder;
- (d) every employee referred to in regulation 20 (2); and
- (e) every other employee who in the course of his employment with that holder should, in the opinion of the holder, be subject to health monitoring as a result of the employee's involvement with a Group IV hazardous substance.

(2) Such health record shall remain in the possession of the holder concerned and shall be kept by the holder for the prescribed period, except when it is being used for the prescribed medical examinations or such other medical examination of an employee as may be deemed necessary by the holder or as may be requested by an employee for purposes of examination.

(3) A holder shall check or cause such health record to be checked regularly, but at least once per month, and shall take any action consequent on any entry in that record in consultation with the employee concerned or with any other person affected by such action.

(4) Where a medical practitioner has made a note or has certified by any other means in a health record that an employee may not or should not be involved with ionising radiation at work or that such employee may or should be involved only in accordance with conditions specified by that medical practitioner in the health record or any other document, the holder concerned shall act in accordance with such note or other certification.

(5) A holder shall, at his own expense, arrange for the medical examination and health monitoring of the persons referred to in subregulation (1) in cases-

- (a) of medical examinations pertaining to the registration or deregistration of radiation workers;
- (b) where a radiation incident is suspected to have taken place or has taken place;

- (c) where a medical practitioner deems it necessary;
- (d) where the holder or the Director-General deems it necessary; or
- (e) where a radiation worker suspects that his health has been or will be detrimentally affected by occupational factors and such worker deems a medical examination necessary and requests such examination from the holder concerned

(6) At the request of any person, affected by an entry in a health record and with reasonable notice, a holder shall furnish to such person a copy of the remarks, notes and entries in a health record regarding such person.

### Accidents and incidents

16. (1) A holder of an authority shall in the event of a Group IV hazardous substance in respect of which he has an authority-

- (a) being lost, stolen or missing;
- (b) being released or being reasonably suspected to have been released into the atmosphere as a gas, aerosol or otherwise;
- (c) being dumped or otherwise released in such a way that, in his opinion, it could cause contamination.

forthwith notify the Director-General and in the case of theft the South African Police by telephone, telegram telefacsimile or other similar rapid means of the events in question, and such notification shall be followed up within seven days by a written report.

(2) A holder shall forthwith respond to all enquiries from the Director-General or the South African Police, as the case may be, in respect of the notification and written report referred to in subregulation (1) and shall provide every assistance with regard to an investigation into the incident in question.

## CHAPTER 4

### SAFETY STANDARDS AND OBLIGATIONS OF PERSONS WITH REGARD TO GROUP IV HAZARDOUS SUBSTANCES

17. A Group IV hazardous substance shall be transported only in accordance with specific directives that are determined by the Director-General in respect of every Group IV hazardous substance and that are obtained by the holder concerned or public conveyer concerned from the Director-General on request before such transportation commences.

#### Manufacture, distribution or Installation of equipment

18. (1) Any person who-

- (a) produces or manufactures;
- (b) imports into or exports from the Republic; or

- (c) obtains from a self-governing territory or distributes to such territory,

equipment that contains a Group IV hazardous substance or equipment intended for use in working with such substance shall ensure that such equipment is designed and manufactured to limit the extent to which persons working with such equipment are exposed to ionising radiation.

(2) Any person who supplies equipment referred to in subregulation (1) to any other person or erects or installs such equipment shall ensure that-

- (a) the safety features and warning devices inherent in the device operate correctly;
- (b) there is protection from exposure to ionising radiation for persons who come into contact with such equipment; and
- (c) information is provided regarding the proper use, testing and maintenance of the equipment.

(3) When the owner, possessor, user or supplier of equipment referred to in subregulation (1) becomes aware of any defect in such equipment that may affect the safe use thereof, he shall forthwith by telephone, telegram, telefacsimile or other similar rapid means notify the Director-General of such defect.

#### **Notifications by medical practitioners and other persons**

19. When a medical practitioner or any other person authorised thereto by law examines or for any reason medically treats a person and that medical practitioner or other person is of the opinion that such person was exposed to ionising radiation to such an extent that medical treatment is required or that the removal of that person from specific working conditions is necessitated, that medical practitioner or other person shall notify the Director-General of the situation in question.

#### **Employees**

20. (1) An employee shall, when required to do so by his employer, present himself during his working hours for such medical examinations and tests as may be required for the purposes of these regulations and, shall furnish to the medical practitioner concerned or other person who is to carry out the examination such information as the medical practitioner or other person may require of him.

(2) Where the Director-General has reasonable cause to believe that it is necessary for the protection of the health or safety of any employee, he may serve on that person's employer a written notice requiring that employer to make such arrangements with regard to any or all of the following:

- (a) The regulation, control, restriction or prohibition of entry by, or the presence of the employee in any or all of the controlled areas on that employer's premise or premises;

- (b) making the employee subject to any or all of the requirements of regulations 14 and 15.

(3) An employer referred to in subregulation (2) shall ensure that the employee concerned is informed of the relevant requirements of the Director-General.

(4) An employee failing or refusing to comply with any arrangement of an employer referred to in subregulation (2) shall be guilty of an offence.

(5) A notice referred to in subregulation (2) shall be applicable from a date specified in the notice for a period specified in the notice or until such period is in writing extended or the notice is withdrawn by the Director-General prior to the expiry of the specified period.

(6) Where an employee has reasonable cause to believe that an incident referred to in regulation 16 or 25 has occurred, he shall forthwith notify his employer of his suspicion.

#### **Restriction of exposure to ionising radiation**

21. (1) Every holder of an authority and every public conveyer shall, with regard to any activity he may undertake with a Group IV hazardous substance, with due regard to the dose limits prescribed in Annexure 2, take all necessary steps to restrict the extent to which employees and other persons may be exposed to ionising radiation.

(2) Without derogating from the generality of subregulation (1), every holder shall, as far as is reasonably practicable, achieve the restriction of exposure to ionising radiation required under that subregulation by means of warning notices, controls and the design of facilities for shielding, ventilation, the containment of Group IV hazardous substances and the minimising of contamination, and further by providing and using safety mechanisms and warning devices.

(3) In addition to taking the precautions required by subregulation (2), every holder shall provide such systems of work as will restrict the exposure of employees and other persons to ionising radiation and, in the case of employees or other persons who enter or remain in controlled areas, equip these persons with personal protective equipment.

(4) Every holder shall ensure that all personal protective equipment referred to in subregulation (3) and equipment containing a Group IV hazardous substance, and other equipment used in work with such substance, is properly maintained.

(5) An employee who is engaged in work with a Group IV hazardous substance-

- (a) may not, with due regard to the dose limits prescribed in Annexure 2, knowingly expose himself or any other person to ionising radiation to a greater extent than is necessary for the purposes of his work, and shall exercise reasonable care while carrying out such work:

- (b) shall make full and proper use of any personal protective equipment provided in terms of subregulation (3); and
- (c) shall forthwith notify his employer of any defect he may discover in any of the equipment specified in subregulation (4).

#### **Dose limits and dosimetry**

22. (1) Every holder of an authority shall estimate all potential doses of ionising radiation to which an employee or any other person who enters such holder's premise or premises where ionising radiation is present may be exposed.

(2) (a) Every holder shall issue a dosimeter, obtained from a dosimetry service, to every registered radiation worker in his employ and shall include in the internal rules instructions concerning the wearing of such meter on the radiation worker's person.

(b) Any person to whom a dosimeter has been issued in terms of paragraph (a) shall be obliged to wear such meter on his person at all times while working with or handling a Group IV hazardous substance.

(3) Every holder shall ensure that a dosimetry service replaces a dosimeter-

- (a) at regular intervals not exceeding 32 days; or
- (b) when an exposure larger than four millisievert has or is suspected to have occurred.

(4) In any case where a dosimeter has been lost or destroyed or where it is not possible to assess the dose received over any period by an employee, the holder shall investigate the circumstances of the case for the purpose of assessing the dose received by the employee during that period and shall apply to the Director-General for a special entry to be made in the dose record of that employee.

(5) Where a holder has reason to believe that the dose that may have been received by one of his employees differs from the dose record, he shall investigate the circumstances of the exposure of that employee to ionising radiation and, if that investigation confirms his suspicion, he shall apply to the Director-General for a special entry to be made in the dose record of that employee.

(6) A holder shall keep such dose record for at least five years from the end of the calendar year to which the dose record relates.

(7) (a) If an employee is likely to receive a dose in excess of 0,2 millisievert during one day, the holder concerned shall, in addition to the personal dosimeter prescribed by subregulation (2) (a), also issue to him a direct-reading dosimeter with full-scale deflections of at least two millisievert, and the holder shall take steps to ensure that the employee wears the direct-reading dosimeter while he is working with a Group IV hazardous substance.

(b) Any person to whom a direct-reading dosimeter has been issued in terms of paragraph (a) shall be obliged to wear such meter on his person at all times while working with or handling a Group IV hazardous substance.

(8) A holder shall ensure that direct-reading dosimeters are read at least once a day during use and that accurate records of the radiation doses are recorded in a logbook and that such dosimeters are calibrated at intervals not exceeding 26 months by a body or person approved by the Director-General.

#### **Dosimetry service**

23. (1) (a) for the purposes of these regulations, a holder of an authority shall, in consultation with the Director-General, designate a person or body to be a dosimetry service.

(b) The Director-General may, if he is satisfied on scientific grounds that such dosimetry service is in his opinion no longer capable of supplying a safe service, instruct a holder in writing to terminate such designation.

(2) A dosimetry service referred to in subregulation (1) shall-

- (a) at the request of the holder, supply personal dosimeters for use by the employees of such holder;
- (b) keep dose records in respect of each such employee and destroy those dose records only with the written permission of the Director-General;
- (c) send the holder concerned, within 45 days after the end of any wearing period, copies of all dose records he has kept concerning such wearing period;
- (d) when requested to do so by the holder, furnish to him such copies of the dose records relating to any of his employees as he may require;
- (e) forthwith send to the Director-General and the holder details of any employee who received, during a wearing period, a dose greater than four millisievert;
- (f) when requested to do so by the Director-General, furnish to him a copy of any dose record; and
- (g) make such entry in a dose record as may be required by the Director-General.

#### **Assessment of hazards and contingency plans**

24. (1) A holder of an authority shall not commence any work with a Group IV hazardous substance unless he has made an assessment to identify the nature and magnitude of any radiation hazard to any person which may possibly arise from that work should any accident occur.

(2) Where an assessment referred to in subregulation (1) shows that a radiation hazard exists, the holder shall take steps to prevent any such accident.

(3) Where the assessment made in terms of sub-regulation (1) shows that, as a result of any reasonably foreseeable accident or incident involving a Group IV hazardous substance-

- (a) an employee or any another person may possibly receive a dose of ionising radiation exceeding any applicable dose limit prescribed in Annexure 2; or
- (b) it will be necessary to consider any area, other than a controlled area, to be a controlled area as a safety precaution,

the holder shall devise a contingency plan that is designed to guarantee the restriction of exposure to ionising radiation and the health and safety of persons who may be affected by the accident or incident to which the plan pertains.

(4) For the purposes of formulating the contingency plan, a holder shall consult any suitable persons, bodies and authorities and where any emergency service forms part of the plan shall furnish to that service any information enabling it to perform its function in accordance with the plan.

(5) A holder shall ensure that-

- (a) a copy of the contingency plan formulated in accordance with subregulation (3) is included in his internal rules;
- (b) any employee under his control who may become involved in, or be affected by, the arrangements in the plan, receives sufficient instructions and is supplied with appropriate dosimeters and other safety equipment; and
- (c) the arrangements in the plan are rehearsed in consultation with the radiation protection officer.

#### **Investigation Into and notification of overexposure**

25. (1) Where an employer who works with or transports a Group IV hazardous substance suspects or is informed that any employee or other person has probably received a radiation dose greater than four millisievert as a result of that work or transport, he shall immediately conduct an investigation and shall forthwith by telephone, telegram, telefacsimile or other similar rapid means notify-

- (a) the Director-General; and

(b) such employee or other person, of the suspected overexposure and shall investigate, or arrange for an investigation into the circumstances of exposure to ionising radiation, make an assessment of the dose received and forthwith notify the persons referred to in paragraphs (a) and (b) above of the results of that investigation and assessment.

(2) An employer who conducts any investigation in terms of subregulation (1) shall compile a report on that investigation and shall keep that report and not destroy it except with the written consent of the Director-General.

#### **Duties of radiation protection officer**

26. A radiation protection officer shall, in addition to any other duties that the holder of the authority may assign to him by virtue of his appointment-

- (a) supervise work with a Group IV hazardous substance in respect of which the holder of the authority concerned has placed him in control;
- (b) ensure that the provisions of these regulations and any additional conditions that the Director-General may impose in the authority are complied with;
- (c) inform the holder immediately of any radiation incident or overexposure or any occurrence or suspected occurrence which may lead to a radiation incident, and
- (d) on resignation from his post take stock, on a form that is obtainable from the Director-General, of any seated source pertaining to the authority of the holder concerned and, after signing and dating such form, hand such form over to the holder; and
- (e) when taking up a post of radiation protection officer, verify the stock specified on such form and sign and date such form and hand it over to the holder concerned for transmission to the Director-General.

#### **Examination**

27. If requested thereto by the Director-General-

- (a) an applicant for an authority;
- (b) a holder of an authority;
- (c) a person referred to in regulation 2 (1) (b) (v) and (vi); or
- (d) an employee of a holder;

shall subject himself. to an examination or test by the Director-General or a person or a body designated by the Director-General in order to ascertain whether such applicant, holder, person or employee is familiar with the health and safety measures and service instructions applicable to the Group IV hazardous substance in respect of which an authority was granted.

#### **Radiation protection adviser**

28. The Director-General may, at his discretion, require that a holder of an authority appoint one or more radiation protection advisers for the purpose of providing that holder with advice and technical assistance regarding compliance with these regulations and any cleaning-up and decontamination procedures and such other health safety measures as the Director-General may deem necessary.

#### **Medical exposure**

29. (1) A holder of an authority who applies a Group IV hazardous substance for medical purposes shall ensure that-

- (a) appropriate special precautions are taken in the case of the irradiation of persons under the age of 18 years and of fertile and pregnant women, on whom only essential examinations may be carried out;

(b) a record is kept of every patient who is exposed to radiation emitted from such substance for diagnostic and therapeutic purposes, in which record the details of and the reason for such exposure shall be recorded; and

(c) a record is kept of the radio-therapeutic treatment given to patients, in which record is indicated the parts of the body irradiated, the Group IV hazardous substance used for the treatment, the tumour dose and all relevant data on which the calculation of such dose is based.

(2) A holder shall ensure that any equipment or apparatus under his control

(a) that contains a Group IV hazardous substance and that is used for medical exposure; or

(b) that is intended for use with such substance,

is of such design or construction and is installed and maintained and calibrated in such a way that the exposure to ionising radiation of any person who is undergoing a medical exposure may, as far as is reasonably practicable, be restricted to a minimum that is reconcilable with the intended clinical purpose or research objective.

(3) In the case of a holder knowing, having reasonable grounds to believe, suspecting or being informed that an incident may have occurred in which a person, while undergoing medical exposure with a Group IV hazardous substance covered by a holder's authority, has been exposed to ionising radiation to a greater or lesser extent than intended, the holder shall

(a) immediately investigate the suspected incident and, unless such investigation finds beyond reasonable doubt that no such incident occurred, shall forthwith notify the Director-General thereof by telephone, telegram, telefacsimile or other similar rapid means; and

(b) investigate in detail or arrange for such an investigation into the circumstances surrounding the exposure and shall make or cause to be made an assessment of the dose received.

(4) A holder who conducts any investigation in accordance with subregulation (3) shall compile a report on that investigation and shall furnish such report to the Director-General.

(5) Where an employee has reasonable grounds to believe that an incident referred to in subregulation (3) has occurred, the holder of the authority shall forthwith be informed of his suspicion.

(6) A holder who uses, for medical purposes, a Group IV hazardous substance with an activity of 370 megabecquerel or more shall make use of the services of a medical physicist.

**Duties of a medical physicist**

30. A medical physicist shall be responsible for the performance of the acts that pertain to his profession, as contained in Government Notice No. R. 310 of 26 February 1988, and that are applicable to the specific activity of the holder who is making use of the services of such a physicist in terms of regulation 29 (6).

**Conduct in the event of death, sequestration or insolvency**

31. (1) A radiation protection officer shall forthwith, as soon as it comes to his knowledge that a holder of an authority in whose employ he is has died, notify the Director-General by telephone, telegram, telefacsimile or other similar rapid means of such death.

(2) A holder shall forthwith, as soon as he is declared insolvent or his estate is sequestrated, notify the Director-General by telephone, telegram, telefacsimile or other similar rapid means, of the said insolvency or sequestration, as the case may be.

**Safety and warning notices**

32. A holder of an authority shall attach safety warning notices in both Afrikaans and English to indicate the presence of a Group W hazardous substance or ionising radiation, as the case may be, or ensure that such notices are attached

- (a) at the entrances to the premises to which the authority pertains:
- (b) on all immediate containers or apparatus, as the case may be, and in the case of transport on the packaging containers in which the holder himself transports or causes to be transported by any other person a Group IV hazardous substance.

**Entering a controlled area**

33. No person may, in contravention of the entrance control system referred to in regulation 8 (3), enter a controlled area.

**Offences**

34. Any person who contravenes or fails to comply with any provision of this Chapter with which he is obliged to comply shall be guilty of an offence.

**Commencement**

35. These regulations shall come into operation on 1 March 1993.

	ANNEXURE1	
Fees payable		Rand
Issueing of an authority		50
	ANNEXURE2	
	DOSE LIMITS	
	Applicable	Public dose limit
Application	occupational	applicable to
	dose limit	persons other
		than
		employees
Effective dose .....	20 mSv per annum,	1 mSv per annum
	averaged over five	
	years and not	
	more than 50 mSv	
	in any one year	

Application	Applicable occupational dose limit	Public dose limit applicable, to persons other than employees
Annual equivalent dose to the-		
eye	150 mSv .....	15 mSv
skin	500 mSv .....	50 mSv
hands and feet	500 mSv	

*Note:*

Additional restrictions apply to the above-mentioned occupational dose limit of pregnant women. When pregnancy has been diagnosed, the conceptus must be protected by applying a supplementary equivalent dose limit to the surface of the woman's abdomen (lower trunk) of 2 mSv for the remainder of the pregnancy.