

THE IONISING RADIATION PROTECTION ACT, 2005

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GOVERNMENT OF ZAMBIA

ACT

No. 16 of 2005

Date of Assent: 28th September, 2005

An Act to establish the Radiation Protection Authority and to define its functions and powers; to provide for the protection of the public, workers and the environment from hazards arising from the use of devices or materials capable of producing ionising radiation; to repeal and replace the Ionising Radiation Act, 1972; and to provide for matters connected with or incidental to the foregoing.

[7th October, 2005

Enactment

ENACTED by the Parliament of Zambia

PART 1

PRELIMINARY

Short title and commencement

1. This Act may be cited as the Ionising Radiation Protection Act, 2005, and shall come into operation on such date as the Minister may, by statutory instrument, appoint.

Interpretation

2. (1) In this Act, unless the context otherwise requires-

“Authority ” means the Radiation Protection Authority established by section *five*;

“authorisation ” means a permission granted in writing by the Board to a person who has submitted an application to carry out a practice or any other action authorised under this Act and includes a registration or licence;

“Board ” means the Radiation Protection Authority Board constituted under section *six*;

“Chairperson ” means the person appointed as Chairperson of the Board under section *six*;

“clearance ” means removal of radioactive materials or radiation devices within authorised practices from any further control by the Board;

“clearance levels ” means values established by the Board and expressed in terms of activity concentration or total activity, at or below which sources of radiation may be released from regulatory control;

“committee ” means a committee constituted by the Board under section *twelve*;

“disease ” includes injury and bodily or mental deficiency or abnormality;

- “dose limit ” means the value of the effective dose or the equivalent dose to individuals from controlled practices that shall not be exceeded;
- “emergency ” means a sudden situation associated with an incident arising from the exposure of the public or the environment to the harmful effects of ionising radiation;
- “environment ” means the total terrestrial, atmospheric and aquatic environs but does not include the area within the boundaries of prescribed installations handling radioactive material or radiation sources;
- “Environmental Council of Zambia ” means the Council establishment under section *three* of the Environmental Protection and Pollution Control Act;
- Cap. 204 “Executive director ” means the person appointed as Executive Director under section *nineteen*.
- “exposure ” means the act or condition of being subject to irradiation and includes external exposure from sources outside the body or internal exposure from sources inside the body;
- “facility ” means an assembly of devices, equipment, structures or natural features whether simple or complex which serves some specific purpose or performs some specific functions;
- “former Board ” means the Radiation Protection Board established by section *five* of the Ionising Radiation Act;
- Cap. 311 “harmful ionizing radiation ” means ionizing radiation of sufficient intensity as to entail significant risk of disability or disease as a result of exposure;
- “ionizing radiation ” for the purpose of radiation protection, means radiation capable of producing ion pairs in biological materials;
- “limit ” means the value of a quantity used in certain specified activities or circumstances that must not be exceeded;
- “member ” means a member of the Board;
- “practice ” means any human activity that introduces additional sources of exposure to additional people or modifies the

network of exposure pathways from existing sources, so as to increase the exposure or likelihood of exposure of people or the number of people exposed;

“qualified expert ” means an individual who, by virtue of certification by appropriate boards or societies, professional licenses or academic qualifications and experience, is duly recognised as having expertise in a relevant field of specialisation;

“Radiation Safety Officer ” means a Radiation Safety Officer appointed under section *thirty-five*;

“radioactive material ” means any material emitting ionizing radiation including neutrons as to entail significant risk of disability or disease as a result of exposure;

“radionuclide ” means a nuclide that is radioactive;

“Secretariat ” means the Secretariat of the Authority constituted under section *eighteen*;

“source ” means anything that may cause radiation exposure by emitting ionising radiation or releasing radioactive substances or materials;

“Vice-chairperson ” means the person elected as Vice-chairperson of the Board under section *six*; and

“worker ” includes a temporary employee.

3. (1) The provisions of this Act shall apply to ionising radiation relating to practices and sources.

(2) Unless otherwise provided in this Act or in regulations made under it, radioactive material shall not be considered to be harmful if it contains radioactivity which is below the exemption levels.

Application

4. (1) The Minister may, on the recommendation of the Board (which may set higher limits for exemption in the case of material known to contain only less dangerous radionuclides), by statutory order, exempt any material which contains radioactive matter of less than specified limits from the provisions of this Act.

Exemption

(2) Sources of radioactive materials which are within authorised practices may be exempted from some of the provisions of this Act or of regulations made under it if they comply with the clearance levels approved by the Board.

(3) Any exposure to radiation which is part of the natural environment and is due to cosmic rays at the ground level or to natural radioactivity in the body shall be exempt from control as provided in this Act.

PART II

THE RADIATION PROTECTION AUTHORITY

Establishment
of
Authority

5. There is hereby established the Radiation Protection Authority which shall be a body corporate with perpetual succession and a common seal, capable of suing and of being sued in its corporate name, and with power, subject to the provisions of this Act, to do all such acts and things as a body corporate may by law do or perform.

Constitution
of
Board

6. (1) There is hereby constituted the Radiation Protection Authority Board which shall, subject to the provisions of this Act, perform the functions of the Authority under this Act.

(2) The Board shall consist of the following part-time members appointed by the Minister:

- (a) a medical practitioner who has specialised in ionising radiation nominated by the Medical Council of Zambia;
- (b) a scientist nominated by the Vice-Chancellor of a public university;
- (c) a representative of the National Institute of Scientific and Industrial Research;
- (d) a representative of the Zambia Chambers of Commerce and Industry;
- (e) a representative of the ministry responsible for health;
- (f) a representative of the ministry responsible for mines;
- (g) a representative of the ministry responsible for defence;
- (h) a representative of the ministry responsible for tourism, environment and natural resources;
- (i) a representative of the ministry responsible for agriculture;
- (j) a representative of the ministry responsible for transport and communications;
- (k) a representative of the ministry responsible for labour;
- (l) a representative of the ministry responsible for home affairs;

- (m) a representative of the ministry responsible for science and technology;
- (n) a representative of the ministry responsible for finance and national planning;
- (o) a representative of the Attorney-General;
- (p) a representative of the Environmental Council of Zambia;
- (q) a representative of Occupational Health Research Bureau;
- (r) a representative of a trade union representing workers in the ionising radiation sector; and
- (s) one other person.

(3) The Chairperson shall be appointed by the Minister from among the members.

(4) The Vice-Chairperson shall be elected by the members of the Board from among their number.

(5) A person shall not be appointed as a member of the Board if the person —

- (a) is an undischarged bankrupt;
- (b) has been convicted of an offence involving fraud or dishonesty; or
- (c) has been convicted of an offence under any other written law and sentenced to a term of imprisonment of not less than six months, without the option of a fine.

Functions of
Authority
Cap. 204

7. (1) Notwithstanding Part IX of the Environmental Protection and Pollution Control Act, the functions of the Authority shall be to —

- (a) advise the Government on policies, measures and matters relating to ionising radiation;
- (b) implement the policies of the Government related to the protection of the public, workers and the environment from harmful effects of ionising radiation;
- (c) establish facilities for the collection and dissemination of scientific and technical information on ionising radiation;
- (d) collect and disseminate information on the work of the Authority through publications, seminars, workshops and the print or electronic media;
- (e) liaise with the Environmental Council of Zambia or any other regional or international organisation and institution on matters relating to the promotion of the safe use of ionising radiation in Zambia;

- (f) initiate policy formulation and implement the provisions of this Act and, when so required by the Minister or if the Board otherwise thinks it necessary, draw up and submit to the Minister proposals for amending it or regulations to be made under it;
- (g) ensure the protection and safety of the public in the event of an accidental release of harmful ionising radiation or other emergency;
- (h) respond to, and coordinate responses to radiological incidences and emergencies;
- (i) investigate any alleged breach of the provisions of this Act;
- (j) make recommendations to the Minister on all matters concerning —
 - (i) the assurance that all activities involving the use of devices or materials capable of producing dangerous amounts of ionising radiation are carried out in such a manner as to avoid dangers to the public or to workers concerned or limit risks to those acceptable as a matter of public policy; and
 - (ii) the allocation of priorities and coordination of activities in connection with maintenance of safety in the use of devices or materials producing ionising radiation and associated matters to make the best use of available resources, taking into account the needs of the country and alternative methods of achieving equivalent results;
- (k) issue licences and authorisations; and
- (l) carry out such other activities as are necessary or conducive to the better performance of its functions under this Act.

(2) Notwithstanding subsection (1), the Board may, by direction in writing and subject to such conditions as it considers fit, delegate to any member, Committee or the Executive Director any of the Authority's functions under this Act.

Decisions of
Board to
prevail

Cap. 204

8. Where any decision of the Board made under the provisions of this Act conflicts with any decision of the Environmental Council of Zambia taken by the Council in the exercise of the its functions under section *Seventy-two* of the Environmental Protection and Pollution Control Act, the decision of the Board shall prevail.

9. (1) Subject to the other provisions of this Act, a member of the Board shall hold office for a period of three years from the date of appointment and shall be eligible for re-appointment for one further term of three years.

Tenure of office and vacancy

(2) The office of the member shall become vacant —

- (a) upon the member's death;
- (b) if the member is absent without reasonable excuse from three consecutive meetings of the Board of which the member has had notice;
- (c) on ceasing to be a representative of the organisation which nominated the member;
- (d) if the member becomes mentally or physically incapable of performing the duties of a member of the Board;
- (e) if the member is declared bankrupt;
- (f) if the member is convicted of an offence involving fraud or dishonesty; or
- (g) if the member is convicted of an offence against any other written law and is sentenced to a term of imprisonment of not less than six months without the option of a fine.

(3) On the expiration of the period for which a member is appointed the member shall continue to hold office until a successor has been appointed but in no case shall the further period exceed three months.

10. Whenever the office of a member becomes vacant before the expiry of the term of office, the Minister may appoint another member in place of the member who vacates office but that member shall hold office only for the unexpired part of the term.

Filling of casual vacancy

11. (1) Subject to the other provisions of this Act, the Board may regulate its own procedure.

Proceedings of Board

(2) The Board shall meet for the transaction of business at least every three months at such places and times as the Chairperson may determine.

(3) The Chairperson may, upon giving notice of not less than fourteen days, call a meeting of the Board and shall call a special meeting to be held within fourteen days of receipt of a written request to the Chairperson by at least five members of the Board.

(4) If the urgency of any particular matter does not permit the giving of such notice as is required under subsection (3), a special meeting may be called by the Chairperson, upon giving a shorter notice.

(5) Nine members of the Board shall form a quorum at any meeting of the Board.

(6) There shall preside at any meeting of the Board—

(a) the Chairperson;

(b) in the absence of the Chairperson, the Vice-Chairperson;
or

(c) in the absence of the Chairperson and the Vice-Chairperson such member as the members present may elect for the purpose of that meeting.

(7) A decision of the Board on any question shall be by a majority of the members present and voting at the meeting and in the event of an equality of votes, the person presiding at the meeting shall have a casting vote in addition to the deliberative vote.

(8) The Board may invite any person, whose presence is in its opinion desirable, to attend and to participate in the deliberations of the meeting of the Board but such person shall have no vote.

(9) The validity of any proceedings, act or decision of the Board shall not be affected by any vacancy in the membership of the Board or by any defect in the appointment of any member or by reason that any person not entitled to do so took part in the proceedings.

Committees

12. (1) The Board may, for the purpose of performing its functions under this Act, constitute such committees as it considers necessary and may delegate to any committee such of its functions as it considers fit.

(2) The Board may appoint as members of a committee, persons who are, or are not, members of the Board, except that at least one member of a committee shall be a member of the Board.

(3) A person serving as a member of a committee shall hold office for such period as the Board may determine.

(4) Subject to any specific or general directions of the Board, a committee may regulate its own procedure.

Allowances of members

13. The members of the Board or any committee shall be paid such allowance as the Board may, with the approval of the Minister, determine.

Disclosure of interest

14. (1) If a member or person is present at a meeting of the Board or any committee of the Board at which any matter is subject of consideration and in which matter the member or person or the member or person's spouse is directly or indirectly interested in a

private capacity, the member or person shall as soon as is practicable after the commencement of the meeting, declare such interest and shall not, unless the Board or the committee otherwise directs, take part in any consideration or discussion of, or vote on, any question touching that matter.

(2) A declaration of interest made under subsection (1) shall be recorded in the minutes of the meeting at which it is made.

15. No action or other proceedings shall lie or be instituted against any member or member of a committee for or in respect of any act or thing done or omitted to be done in good faith in the exercise or purported exercise of that member or committee member's functions under this Act.

Immunity of members

16. (1) A person shall not without the consent in writing given by, or on behalf of, the Board, publish or disclose to any person other than in the course of duties, the contents of any document, communication, or information which relates to, and which has come to the person's knowledge in the course of the person's duties under this Act.

Prohibition of publication or disclosure

(2) Any person who knowingly contravenes the provisions of subsection (1) commits an offence and shall be liable, upon conviction, to a fine not exceeding three thousand penalty units or to imprisonment for a term not exceeding three months, or to both.

17. (1) The seal of the Authority shall be such device as may be determined by the Board and shall be kept by the Secretary.

Seal of Authority

(2) The affixing of the seal shall be authenticated by the Chairperson or the Vice-Chairperson and the Secretary or any other person authorised in that behalf by a resolution of the Board.

(3) Any contract or instrument which, if entered into or executed by a person not being a body corporate, would not be required to be under seal, may be entered into or executed without seal on behalf of the Authority by the Secretary or any other person generally or specifically authorised by the Board in that behalf.

(4) Any document purporting to be a document under the seal of the Authority shall be received in evidence and shall be deemed to be so executed or issued, as the case may be, without further proof, unless the contrary is proved.

PART III

SECRETARIAT

18. (1) There is hereby constituted the Secretariat of the Authority which shall have the function of implementing the decisions of the Board.

Constitution of Secretariat and definition of its functions

(2) Without prejudice to the generality of subsection (1) the Secretariat shall—

- (a) determine the extent of exposure to ionising radiation of the public and of workers and, subject to the provisions of this Act, determine the degree of risk or disability attached to such exposure;
- (b) be responsible for examining, as may be considered necessary by the Executive Director, all premises in respect of which a licence to use radiation is in force and all places of disposal for radioactive material and wastes;
- (c) advise the Board of the extent of radiation exposure to persons in Zambia; and
- (d) advise and recommend to licence holders steps desirable to reduce exposure to acceptable limits.

(3) The Secretariat shall maintain a personnel radiation dosimetry service —

- (a) to provide personal radiation measuring devices to be worn by an individual likely to be exposed to radiation;
- (b) to provide a reporting service by means of which it will maintain adequate records of personal radiation exposure measurements and shall render to the licensee and to the Board reports, at intervals to be determined by the Board, of the information contained in the records;
- (c) in collaboration with the Environmental Council of Zambia, provide information and warn and protect the public, in case of actual or potential public exposure to radioactive material or ionising radiation;
- (d) warn individuals who have been or are likely to be subject to over exposure;
- (e) monitor imported and local food stuff to detect any potential contamination with radioactive material;
- (f) prevent and monitor illegal importation of radioactive material and sources of ionising radiation into Zambia;
- (g) conduct assessments of radioactivity in underground mines and facilities and in by-products of mining activities;
- (h) monitor for radioactivity in building and construction materials;
- (i) undertake monitoring activities in any place or facility to ensure the adequate protection and safety of the public from sources and materials capable of emitting ionising radiation; and

(j) perform such other functions as may be assigned to it by the Board.

(4) The personal radiation dosimetry service referred to in subsection (3) may, subject to the approval of the Board, at the direction of the Executive Director, be provided without charge or for such fee as may be prescribed if the Board so determines on the request of a licensee, and its use may be included as a necessary condition of a particular licence.

19. (1) The Board shall, with the approval of the Minister, appoint an Executive Director who shall be the chief executive officer of the Authority and the Secretariat and who shall, subject to the control and direction of the Board, be responsible for the implementation of the decisions of the Board and the day to day administration of the Authority.

Executive Director

(2) The Board shall, with the approval of the Minister, determine the terms and conditions of service of the Executive Director.

(3) The Executive Director shall be appointed for a term of four years and shall be eligible for re-appointment.

(4) The Executive Director shall attend meetings of the Board and may attend meetings of any committee of the Board and may address the meetings, but shall have no vote.

20. (1) The Executive Director shall be the Secretary to the Board.

Secretary and other staff

(2) The Board may appoint such other staff of the Authority as it considers necessary for the performance of its functions under this Act.

(3) The Board shall, with the approval of the Minister, determine the terms and conditions of service of the staff of the Authority.

PART IV

LICENCES

21. (1) Any person who intends to import, process, mine, export, possess, transport, use, dispose of, or undertake any other activity relating to, radioactive material or any other source of harmful ionising radiation shall apply to the Board, in the prescribed form, for an appropriate licence.

Application for licence

(2) The Board shall, within sixty days of receipt of an application for a licence under subsection (1), issue a licence, subject to any condition specified under subsection (3), if the application is in accordance with the provisions of this Act.

(3) A licence issued under this section—

- (a) shall be in the prescribed form;
- (b) shall be accompanied by a prescribed fee;
- (c) shall be issued by the Board to a person as owner or as the appropriate responsible officer of an institution, partnership, cooperation or Government body;
- (d) may contain such conditions as the Board may consider necessary to impose for the safe conduct of the proposed operations, process or facility and for the safe disposal of all radioactive wastes and radioactive material resulting from the proposed operation, process or facility;
- (e) shall specify the process of operation or facility;
- (f) shall authorise the purchase or acquisition by other means, the importation, production, possession, transportation, storage, use and disposal as required, by specified quantities and kinds of radioactive material or other source of harmful ionising radiation required for the operation, process or facility specified;
- (g) may cover the separate acquisition or importation of diverse or repeated lots of radioactive material if they are all listed on the licence and are to be used solely in the licenced process, operation or facility.

(4) The conditions referred to in paragraph (d) of subsection (3) may be specific or take the form of general requirements to meet prescribed standards or codes of practice published pursuant to this Act, or standards or codes of practice published by internationally recognised bodies including the International Commission on Radiological Protection and the International Atomic Energy Agency or any combination of such conditions.

Refusal to
issue licence

22. (1) The Board may refuse to issue a licence under this Part if—

- (a) the applicant fails to comply with any prescribed condition precedent to the issue of such licence;
- (b) any licence formerly issued to the applicant under this Act has been revoked by the Board; or
- (c) the applicant has been convicted of an offence under this Act.

(2) Where the Board refuses to issue a licence under subsection (1), it shall, within sixty days from the receipt of the application, notify the applicant in writing of the refusal to issue the licence to the applicant and shall state the reasons for the refusal.

23. (1) Any person aggrieved by any refusal of the Board to issue a licence to that person may appeal to the Minister not later than thirty days after the notification of such refusal. Appeal against refusal to issue licence
- 5 (2) Where an appeal is made under subsection (1), the Minister may give such directions to the Board as the Minister considers necessary to enable the Minister to determine the appeal.
- 10 (3) The Minister in determining the appeal may direct the Board to issue the licence to the applicant or uphold the decision of the Board and notify the appellant accordingly.
- (4) Any person who is aggrieved by the decision of the Minister to uphold the Board's decision under subsection (3) may appeal to the High Court within thirty days of the receipt of the notification of the Minister's decision.
- 15 24. A licence issued under this Act may, by notice in writing to the applicant, be amended by the Board if the Board considers the amendment necessary for the protection and safety of the public, the workers or the environment. Amendment of licence
- 20 25. (1) A licence shall not be transferred to a third party, directly or indirectly, without the prior approval of the Board. Transfer of licence
- (2) Every application for approval to transfer a licence shall be made to the Board and the Board may, within thirty days of the receipt of the application, approve or disapprove the application in accordance with this Act.
- 25 26. (1) The licensee shall ensure that any operation, condition of storage, transport, disposal or other practice shall not result directly or indirectly in exposure to ionising radiation in such an amount as is likely to cause harmful effects to the public, the employees, other workers or the environment, or to any property. Responsibility of licensee
- 30 (2) Any owner or user of radioactive material or source of harmful ionising radiation for which the person holds no valid licence shall be answerable for any harmful effects arising from the possession, storage, transport, use or disposal of such radioactive material or source of harmful ionising radiation, and such answerability shall
- 35 continue with regard to any such material after it has been seized, impounded, stored or disposed off by the Executive Director or any radiation safety officer.
- (3) The radiation safety requirements prescribed by this Act—
- 40 (a) do not extend to patients undergoing medical treatment by exposure to radiation by or under the supervision of a medical practitioner if such treatment is in accordance with an approved code of practice established by the relevant medical professional bodies;

(b) do apply to the safety of medical and technical staff working with the radioactive material or source of harmful ionising radiation and to the protection of all other persons, other than the patient undergoing treatment.

(4) Every licensee shall appoint a competent person as radiation protection officer, who shall liaise with the Secretariat to ensure compliance with the Act.

(5) Whenever a physical or mental disability appears—

(a) in a person which medical opinion competent in the field of biological effects ascribed to ionising radiation exposure, it shall be presumed that the disability arose due to radiation exposure;

(b) that could have arisen either from radiation or from other causes in the course of duty, the following criteria shall be applied to discern the cause of such disability, namely:

(i) if a disability of a nature known to be caused either by ionising radiation or that can arise from other possible causes appears in a person for whom a personal radiation exposure record exists, indicating that exposure in excess of recommended dose limits have occurred in a person as a result of such radiation exposure;

(ii) if a disability of a nature known to be caused either by ionising radiation or that can arise from other possible causes appears in a person for whom a personal exposure record has been maintained to a standard approved by the Board, it shall be presumed that such disability occurred as a result of such radiation exposure.

Decommissioning of radioactive device

27. Where a licensee intends to decommission an ionising radiation device the licensee shall, at least six months before decommissioning the device, inform the Executive Director of the impending decommissioning, and seek the Board's approval concerning how the device will be stored in the interim period pending its final disposal.

Enforcement notices

28. (1) Where the Board is satisfied that a licensee is contravening or is likely to contravene any provision of this Act, or a directive issued by the Board in the performance of the Authority's functions under this Act or any other condition of the licence, the Board shall serve an enforcement notice on that licensee.

(2) An enforcement notice issued under subsection (1) shall—

- (a) state the contravention or the likely contravention of the Act, directive or any other condition of the licence and the matters constituting the contravention or making it likely that the contravention will arise;
- (b) specify the steps that have to be taken to remedy the contravention or avoid the contravention, as the case may be;
- (c) specify the effective date of the notice and the time limit within which the steps described under paragraph (b) must be taken.

(3) The Board, if it considers it necessary for the safety of the public or the workers —

- (a) may require the suspension of the work with the radioactive material or other source of harmful ionising radiation and its storage in a safe place or under conditions preventing exposure of the public or workers to potentially harmful radiation; and
- (b) shall require the licensee to take such measures as are needed to abate the adverse effects, if any, of the failure to comply with the conditions of the licence.

29. (1) Subject to the other provisions of this Act, the Board may suspend or cancel any licence if the licensee—

Suspension
or
cancellation
of licence

- (a) obtained the licence by fraud or deliberate or negligent submission of false information;
- (b) transfers or otherwise assigns a licence without the prior approval of the Board;
- (c) fails to comply with the conditions of the licence or contravenes any of the provisions of this Act or any regulations made under it; or
- (d) fails, without reasonable cause, to comply with the terms and conditions of an enforcement notice issued under section *twenty-eight*.

(2) The Board shall, before suspending or cancelling a licence under subsection (1), give notice in writing to the licensee of its intention to suspend or cancel the licence and specify the grounds for the impending suspension or cancellation and require the licensee to show cause, within a period of thirty days, why the licence should not be suspended or cancelled.

(3) The Board shall not suspend or cancel a licence under this section if the licensee takes remedial measures to the satisfaction of the Board, within the period specified in subsection (2).

(4) If the licensee who is notified under subsection (2), fails to show cause, or does not take remedial measures, to the satisfaction of the Board, within the period specified in that subsection, the Board may suspend or cancel the licence.

(5) Any person aggrieved by any decision of the Board to suspend or cancel a licence may appeal to the Minister not later than thirty days after the notification of such suspension or cancellation.

(6) Where an appeal is made under subsection (5), the Minister may give such directions to the Board as the Minister considers necessary to enable the Minister to determine the appeal.

(7) The Minister in determining the appeal may confirm, vary or set aside the decision of the Board and shall notify the appellant accordingly.

(8) Any person who is aggrieved by the decision of the Minister to confirm the Board's decision under subsection (7) may appeal to the High Court within thirty days of the receipt of the notification of the Minister's decision.

(9) Where a licence is suspended by the Board under this section the licensee shall take such steps as the Board may direct to ensure that no radiation hazards occur during the period of suspension.

(10) Any person who continues to permit the use of radioactive material or other source of harmful radiation while the licence is suspended commits an offence and shall be liable, on conviction, to a fine not exceeding fifty thousand penalty units or imprisonment for a term not exceeding three years, or to both.

PART V

FINANCIAL PROVISIONS

Funds of
Authority

30. (1) The funds of the Authority shall consist of such money as may—

- (a) be appropriated by Parliament for the purposes of Authority;
- (b) be paid to the Authority by way of loans, grants or donations; and
- (c) vest in or accrue to the Authority.

(2) The Authority may—

- (a) accept moneys by way of grants or donations from any source in Zambia; and

(b) subject to the approval of the Minister, raise by way of loans or otherwise, such moneys as it may require for the discharge of its functions.

(3) There shall be paid from the funds of the Authority—

(a) the salaries, allowances, loans, gratuities and pensions of staff of the Authority and other payments for the recruitment and retention of staff;

(b) such reasonable travelling and subsistence allowances for members or members of any committee of the Board when engaged on the business of the Authority at such rates as the Board may, with the approval of the Minister, determine; and

(c) any other expenses incurred by the Board in the performance of its functions.

31. The Board may invest in such manner as it considers necessary any of the funds of the Authority which the Board does not immediately require for the performance of the Authority's functions. Investment of funds

32. The financial year of the Authority shall be the period of twelve months ending on 31st December in each year. Financial year

33. (1) The Board shall cause to be kept proper books of accounts and other records relating to its accounts. Accounts

(2) The accounts of the Authority shall be audited annually by independent auditors appointed by the Board.

(3) The Auditor's fees shall be paid by the Authority.

34. (1) As soon as is practicable, but not later than ninety days after the end of the financial year, the Board shall submit to the Minister a report concerning its activities during such financial year. Annual report

(2) The report referred to in subsection (1) shall include information on the financial affairs of the Authority and there shall be appended to the report—

(a) an audited balance sheet;

(b) an audited statement of income and expenditure; and

(c) such other information as the Minister may require.

(4) The Minister shall, not later than seven days after the first sitting of the National Assembly next after receipt of the report referred to in subsection (1), lay it before the National Assembly.

PART VI

INSPECTIONS

Radiation
safety
officers

35. (1) In order to ensure compliance with the provisions of this Act, the Board shall appoint radiation safety officers to monitor, inspect and enforce the provisions of this Act and the regulations made under it.

(2) The Executive Director shall issue an identity card to each radiation safety officer which shall be *prima facie* evidence of the radiation safety officer's appointment as such.

(3) Any radiation safety officer carrying out any function under this Act shall on demand by any person affected by the radiation safety officer's exercise of powers, produce for inspection the certificate referred to in subsection (2).

(4) Each radiation safety officer shall be under the direction of the Executive Director and shall perform such duties as may be specified in the radiation safety officer's letter of appointment.

Powers of
radiation
safety
officers

36. (1) A radiation safety officer shall, for purposes of enforcing the provisions of this Act, have power -

- (a) at all reasonable times to enter, inspect and examine any premises or any part of such premises, vehicle, vessel, boat, aircraft or any carriage of any description in or upon which the officer has reasonable cause to believe that radioactive material or any source of harmful ionising radiation is stored, used transported or disposed of but no entry shall be made on a private dwelling house except under the authority of a court warrant;
- (b) to require the production of any licence authorising the use of radioactive material or sources of harmful radiation and any register, certificate, notice or document kept under the provisions of this Act and to inspect, examine or take a copy of such register, certificate, notice or document;
- (c) to take samples of radioactive material and make such examinations and inquiries as may be necessary to ascertain whether the provisions of this Act are being complied with;
- (d) to examine, either alone or in the presence of any other person as the officer thinks fit, any person with respect to matters under this Act or to require such person to be examined:

Provided that no person shall be compelled to answer any questions or give evidence tending to incriminate that person;

(2) An enforcement notice issued under subsection (1) shall—

- (a) state the contravention or the likely contravention of the Act, directive or any other condition of the licence and the matters constituting the contravention or making it likely that the contravention will arise;
- (b) specify the steps that have to be taken to remedy the contravention or avoid the contravention, as the case may be;
- (c) specify the effective date of the notice and the time limit within which the steps described under paragraph (b) must be taken.

(3) The Board, if it considers it necessary for the safety of the public or the workers —

- (a) may require the suspension of the work with the radioactive material or other source of harmful ionising radiation and its storage in a safe place or under conditions preventing exposure of the public or workers to potentially harmful radiation; and
- (b) shall require the licensee to take such measures as are needed to abate the adverse effects, if any, of the failure to comply with the conditions of the licence.

29. (1) Subject to the other provisions of this Act, the Board may suspend or cancel any licence if the licensee—

- (a) obtained the licence by fraud or deliberate or negligent submission of false information;
- (b) transfers or otherwise assigns a licence without the prior approval of the Board;
- (c) fails to comply with the conditions of the licence or contravenes any of the provisions of this Act or any regulations made under it; or
- (d) fails, without reasonable cause, to comply with the terms and conditions of an enforcement notice issued under section *twenty-eight*.

Suspension
or
cancellation
of licence

(2) The Board shall, before suspending or cancelling a licence under subsection (1), give notice in writing to the licensee of its intention to suspend or cancel the licence and specify the grounds for the impending suspension or cancellation and require the licensee to show cause, within a period of thirty days, why the licence should not be suspended or cancelled.

(3) The Board shall not suspend or cancel a licence under this section if the licensee takes remedial measures to the satisfaction of the Board, within the period specified in subsection (2).

(4) If the licensee who is notified under subsection (2), fails to show cause, or does not take remedial measures, to the satisfaction of the Board, within the period specified in that subsection, the Board may suspend or cancel the licence.

(5) Any person aggrieved by any decision of the Board to suspend or cancel a licence may appeal to the Minister not later than thirty days after the notification of such suspension or cancellation.

(6) Where an appeal is made under subsection (5), the Minister may give such directions to the Board as the Minister considers necessary to enable the Minister to determine the appeal.

(7) The Minister in determining the appeal may confirm, vary or set aside the decision of the Board and shall notify the appellant accordingly.

(8) Any person who is aggrieved by the decision of the Minister to confirm the Board's decision under subsection (7) may appeal to the High Court within thirty days of the receipt of the notification of the Minister's decision.

(9) Where a licence is suspended by the Board under this section the licensee shall take such steps as the Board may direct to ensure that no radiation hazards occur during the period of suspension.

(10) Any person who continues to permit the use of radioactive material or other source of harmful radiation while the licence is suspended commits an offence and shall be liable, on conviction, to a fine not exceeding fifty thousand penalty units or imprisonment for a term not exceeding three years, or to both.

PART V

FINANCIAL PROVISIONS

Funds of
Authority

30. (1) The funds of the Authority shall consist of such money as may—

- (a) be appropriated by Parliament for the purposes of Authority;
- (b) be paid to the Authority by way of loans, grants or donations; and
- (c) vest in or accrue to the Authority.

(2) The Authority may—

- (a) accept moneys by way of grants or donations from any source in Zambia; and

(b) subject to the approval of the Minister, raise by way of loans or otherwise, such moneys as it may require for the discharge of its functions.

(3) There shall be paid from the funds of the Authority—

(a) the salaries, allowances, loans, gratuities and pensions of staff of the Authority and other payments for the recruitment and retention of staff;

(b) such reasonable travelling and subsistence allowances for members or members of any committee of the Board when engaged on the business of the Authority at such rates as the Board may, with the approval of the Minister, determine; and

(c) any other expenses incurred by the Board in the performance of its functions.

31. The Board may invest in such manner as it considers necessary any of the funds of the Authority which the Board does not immediately require for the performance of the Authority's functions. Investment of funds

32. The financial year of the Authority shall be the period of twelve months ending on 31st December in each year. Financial year

33. (1) The Board shall cause to be kept proper books of accounts and other records relating to its accounts. Accounts

(2) The accounts of the Authority shall be audited annually by independent auditors appointed by the Board.

(3) The Auditor's fees shall be paid by the Authority.

34. (1) As soon as is practicable, but not later than ninety days after the end of the financial year, the Board shall submit to the Minister a report concerning its activities during such financial year. Annual report

(2) The report referred to in subsection (1) shall include information on the financial affairs of the Authority and there shall be appended to the report—

(a) an audited balance sheet;

(b) an audited statement of income and expenditure; and

(c) such other information as the Minister may require.

(4) The Minister shall, not later than seven days after the first sitting of the National Assembly next after receipt of the report referred to in subsection (1), lay it before the National Assembly.

PART VI

INSPECTIONS

Radiation
safety
officers

35. (1) In order to ensure compliance with the provisions of this Act, the Board shall appoint radiation safety officers to monitor, inspect and enforce the provisions of this Act and the regulations made under it.

(2) The Executive Director shall issue an identity card to each radiation safety officer which shall be *prima facie* evidence of the radiation safety officer's appointment as such.

(3) Any radiation safety officer carrying out any function under this Act shall on demand by any person affected by the radiation safety officer's exercise of powers, produce for inspection the certificate referred to in subsection (2).

(4) Each radiation safety officer shall be under the direction of the Executive Director and shall perform such duties as may be specified in the radiation safety officer's letter of appointment.

Powers of
radiation
safety
officers

36. (1) A radiation safety officer shall, for purposes of enforcing the provisions of this Act, have power -

(a) at all reasonable times to enter, inspect and examine any premises or any part of such premises, vehicle, vessel, boat, aircraft or any carriage of any description in or upon which the officer has reasonable cause to believe that radioactive material or any source of harmful ionising radiation is stored, used transported or disposed of but no entry shall be made on a private dwelling house except under the authority of a court warrant;

(b) to require the production of any licence authorising the use of radioactive material or sources of harmful radiation and any register, certificate, notice or document kept under the provisions of this Act and to inspect, examine or take a copy of such register, certificate, notice or document;

(c) to take samples of radioactive material and make such examinations and inquiries as may be necessary to ascertain whether the provisions of this Act are being complied with;

(d) to examine, either alone or in the presence of any other person as the officer thinks fit, any person with respect to matters under this Act or to require such person to be examined:

Provided that no person shall be compelled to answer any questions or give evidence tending to incriminate that person;

- (e) to require the medical examination of, or if the radiation safety officer is a medical practitioner to carry out such medical examinations of, any person whom the officer has reasonable cause to believe is contaminated with or has been exposed to radioactive material or is unlawfully in possession of any source of harmful ionising radiation;
- (f) to seize any radioactive material or ionising radiation source which the officer has reasonable ground to believe the person in whose possession it is has no authorisation; and
- (g) to exercise such other powers as are necessary for carrying the provisions of this Act into effect.

(2) The owner of any radioactive material or any source of harmful ionising radiation, the agent, employee or servant of such owner shall furnish the means required by the radiation safety officer as may be necessary for entry, inspection, examination, inquiry, the taking of samples or otherwise for the exercise of the officer's powers under this Act.

(3) Any person who obstructs a radiation safety officer in the exercise of that officer's duty under this Act commits an offence and shall be liable upon conviction to a fine not exceeding fifty thousand penalty units or to imprisonment for a term not exceeding three years or to both.

(4) A radiation safety officer shall treat as confidential the source of any complaint bringing to the officer's notice any contravention of the provisions of this Act and shall not give information to the owner or the representative of the owner that a visit of inspection was made in consequence of such complaint.

(5) A radiation safety officer who contravenes subsection (3) commits an offence and shall be liable on conviction to imprisonment for a term of not less than five years but not exceeding fifteen years.

37. Each radiation safety officer shall furnish the Board with such reports and other information relating to an inspection as the Board may direct.

Duty of radiation safety officer to report to Board

PART VI

GENERAL PROVISIONS

38. (1) A person who imports, processes, mines, exports, possesses, transports, uses or disposes of radioactive material or other source of harmful ionising radiation without a licence issued under this Act commits an offence and shall be liable, on conviction, to imprisonment for a term of not less than fifteen years but not exceeding twenty-five years.

Offences and penalties

(2) In addition to the penalties provided in subsection (1), the radioactive material or other source of harmful ionising radiation shall be liable on the order of the court, to seizure, impoundment, sealing, seizure of operation, destruction or disposal in such manner as the court may consider necessary to protect the public and the environment and may only be returned to the original owner on the order of the court and under such conditions set out in the licence issued under this Act.

(3) Any act or omission, which if done by an individual shall be an offence under this Act or any regulations made under it, shall, if done by a body corporate, be deemed an offence committed by every director, secretary or manager, unless the director, secretary or manager proves that the offence was committed without their consent or connivance and that the director, secretary or manager exercised all such diligence to prevent the commission of the offence as the director, secretary or manager ought to have exercised, having regard to the nature of the director, secretary or manager's functions and all the circumstances of the case.

Prohibition
of disclosure
of
information
by employee

39. Every person employed by the Authority shall treat as confidential any information of a type normally considered subject to professional, commercial, trade or industrial secrecy, the revelation of which is not necessary for the implementation of this Act, and any person who discloses such information to any other person in contravention of this section, whether such person has ceased to be employed by the Authority commits an offence and shall be liable on conviction to imprisonment for a term of not less than five years but not exceeding fifteen years.

References
to Radiation
Protection
Board and
Chief
Radiation
Officer

40. (1) On the appointed date, reference in any written law or any other legal document to the Radiation Protection Board shall be read and construed as references to the Radiation Protection Authority established by section *five* of this Act.

(2) On or after the appointed date, any reference in any written law or any other legal document to the Chief Radiation Officer shall be read and construed as references to the Executive Director appointed under section *sixteen* of this Act.

Dissolution
of Radiation
protection
Board
Cap. 311

41. The Radiation Protection Board constituted pursuant to section *five* of the Ionising Radiation Act shall, pending the appointment of the Board under this Act, continue in office for a period of three months from the appointed date.

Vesting of
assets of
Radiation
Protection
Board

42. (1) On or after the appointed date, there shall be transferred to, and vest in, or subsist against, the Authority by virtue of this Act and without further assurance—

- (a) the affairs of the Radiation Protection Board; and
- (b) subject to this Act, all property, rights and obligations which immediately before the appointed date were the property, rights and obligations of the Radiation Protection Board.

(2) Except as provided in this Act, every deed, bond and agreement (other than an agreement for personal service) to which the Government was a party immediately before the commencement of this Act in respect of the Radiation Protection Board, whether in writing or not, and whether or not of such a nature that rights, liabilities and obligations thereunder could be assigned, shall, unless its subject-matter or terms make it impossible that it should have effect as modified in the manner provided by this subsection, have effect as from the date of the assignment thereof, as if -

- (a) the Authority had been a party thereto;
- (b) for any reference to the Government there were substituted, as respects anything falling to be done on or after the appointed date, a reference to the Authority; and
- (c) for any reference to any employee of the Radiation Protection Board not being a party thereto and beneficially interested therein there were substituted, as respects anything falling to be done on or after commencement of this Act, or reference to such employee of the Authority as the Authority shall designate.

(3) Subject to the provisions of subsection (2), documents, other than those referred to therein, which refer specifically or generally to the Radiation Protection Board shall be construed in accordance with subsection (2) as far as applicable.

43. (1) Whenever in pursuance of this Act, any property, rights, liabilities and obligations of the Government through the Radiation Protection Board are deemed transferred to the Authority in respect of which transfer a written law provides for registration, the Authority shall make an application in writing to the appropriate authority for registration of the transfer.

Registration
of
property to
be
transferred
by
Government

(2) The registration authority referred to in sub-paragraph (1) shall make such entries in the appropriate register as shall give effect to such transfer and, where applicable, issue the transferee concerned with a certificate of title in respect of the property or make necessary amendments to the register, as the case may be, and shall make endorsement on the deeds relating to the title, right or obligation concerned; and no registration fees, stamp duty or other duties shall be payable in respect thereof.

Legal
proceedings

44. (1) Without prejudice to the other provisions of this Act, where any right, liability or obligations vest in the Authority by virtue of this Act, the Authority and all other persons shall, as from the commencement of this Act, have the same right, powers and remedies (and in particular the same rights as to the instituting or defending of legal proceedings or the making or resisting of applications to any authority) for ascertaining, perfecting that right, liability or obligation as they would have had if it had at all times been a right, liability or obligation of the Authority.

(2) Any legal proceedings or application of any authority pending immediately before the commencement of this Act by or against the Government in respect of the Radiation Protection Board may be continued by or against the Authority.

(3) After the commencement of this Act, proceedings in respect of any right, liability or obligation which was vested in, held, enjoyed, incurred or suffered by the Government in respect of the Radiation Protection Board may be instituted by or against the Authority.

Staff of
Radiation
Protection
Board

45. (1) On or after the appointed date, the Board shall on such terms and conditions as it may, with the approval of the Minister, determine appoint as officers of the Authority such number of public officers from the Radiation Protection Board as may be necessary for the performance of the functions of the Authority.

(2) Where an employee of the Radiation Protection Board is appointed to the service of the Authority—

(a) the terms and conditions of service with the Authority shall not be less favourable than those the officer enjoyed in the Public Service; and

(b) the employee shall be deemed to have retired under section *thirty-nine* of the Public Service Pensions Act.

Act No. 35
of 1996

(3) On or after the appointed date employees of the Radiation Protection Board who are not engaged by the Authority under subsection (2) shall be retained by the Government and shall—

(a) be redeployed in the service of the Government; or

(b) be retired under section *thirty-nine* of the Public Service Pensions Act.

Act No. 35
of 1996

Regulations

46. (1) The Minister may, on the recommendation of the Board, by statutory instrument, make regulations for the better carrying out of the provisions of this Act.

(2) In particular and without prejudice to the generality of subsection (1), the regulations made under this section may—

- (a) prescribe the application and licence forms to be used under this Act;
- (b) limit the use of radioactive material or equipment producing harmful ionising radiation for any specified purpose, including use for medical or dental purposes;
- (c) prescribe fees for services rendered by the Authority; and
- (d) prescribe anything required to be prescribed under this Act.

47. Section *seventy-four* of the Environmental Protection and Pollution Control Act is hereby repealed.

Repeal of section 74 of Environmental Protection and Pollution Control Act Cap. 204

48. (1) The Ionising Radiation Act, 1972 is hereby repealed.
(2) Notwithstanding subsection (1), any licence or authorisation given by the former Board shall unless earlier revoked or suspended continue to be valid as though issued under this Act.

Repeal of Ionising Radiation Act and savings Cap. 311

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1. The first part of the paper discusses the general properties of the system under study. It is shown that the system is characterized by a set of parameters that determine its behavior. The analysis is based on the assumption that the system is in a steady state, and the results are compared with experimental data. The second part of the paper deals with the specific details of the system, including the role of the various components and the effects of the different parameters. The third part of the paper discusses the implications of the results for the broader field of research, and the fourth part of the paper concludes with a summary of the findings and a list of references.