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# S T A T U T O R Y  I N S T R U M E N T S

## 2026 No. 59

# THE ATOMIC ENERGY (NATURALLY OCCURRING RADIOACTIVE MATERIAL) REGULATIONS, 2026

## Arrangement of Regulations

*Regulation*

PART I—PRELIMINARY

1. Citation
2. Purpose of Regulations
3. Application of Regulations
4. Interpretation

PART II—REQUIREMENTS FOR PRACTICE INVOLVING NATURALLY OCCURRING RADIOACTIVE MATERIAL

5. Notification of practice
6. Application for authorisation
7. Review of application
8. Grant of authorisation
9. Duration of authorisation
10. Renewal of authorisation
11. Authorisation by exemption
12. Revocation of authorisation
13. Modification of authorisation and practice
14. Incidents and accidents

15. Registration for use of naturally occurring radioactive material residues
16. Notice of intended suspension or termination of practice
17. Responsibilities of authorised persons
18. Investigations and feedback of operating experience

PART III—MANAGEMENT REQUIREMENTS

19. Management system
20. Safety culture
21. Human factors
22. Radiation safety officer
23. Qualified expert

PART IV—VERIFICATION FOR SAFETY

24. Safety assessment
25. Monitoring, testing and verification of safety compliance
26. Record keeping

PART V—RADIATION PROTECTION REQUIREMENTS

27. Justification of practices
28. Optimisation of safety
29. Dose limits

PART VI — OCCUPATIONAL EXPOSURE PROTECTION

30. Responsibilities of authorised person with respect to occupational exposure
31. Responsibilities of workers
32. Controlled areas
33. Supervised areas
34. Work place rules, procedures and personal protective equipment
35. Monitoring of workplace
36. Occupational exposure assessment
37. Records of occupational exposure

38. Health surveillance of workers
39. Information, instruction and training
40. Special arrangements for female workers and non-adult workers

PART VII—PUBLIC EXPOSURE PROTECTION

41. Responsibilities of authorised person with respect to public exposure
42. Control of visitors
43. Monitoring of public exposure

PART VIII—NATURALLY OCCURRING RADIOACTIVITY MATERIAL WASTE MANAGEMENT

44. Responsibilities of authorised person with respect to naturally occurring radioactive material waste management
45. Naturally occurring radioactive material waste records and reports
46. Storage of naturally occurring radioactive material waste
47. Recycling and reuse of naturally occurring radioactive material and objects
48. Discharge of naturally occurring radioactive material effluents to environment

PART IX—DECOMMISSIONING

49. Decommissioning plan
50. Authorisation for decommissioning
51. Decommissioning report
52. Remediation of naturally occurring radioactive material facilities

PART X—EMERGENCY PREPAREDNESS AND RESPONSE

53. Emergency preparedness
54. Implementation of emergency plan

PART XI—GENERAL PROVISIONS FOR SPECIFIC PRACTICES AND FACILITIES

55. Physical protection and security
56. Nuclear safeguards
57. Transport of naturally occurring radioactive material
58. Facilities and activities involving exposure to radon

PART XII—MISCELLANEOUS

59. Inspection
60. Transitional provisions

**SCHEDULES**

*Schedule 1* — Currency Point
*Schedule 2* — Forms
Form 1- Notification of a Practice Involving Natural Occurring Radioactive Materials
Form 2- Permit for Operation of Naturally Occurring Radioactive Material Facility
Form 3- Application for Authorisation Related to Naturally Occurring Radioactive Material Site
Form 4- Application for Registration for Use of Naturally Occurring Radioactive Material Residue
Form 5- Application for Authorisation for Decommissioning/Remediation of Naturally Occurring Radioactive Material Facilities/ Sites
Form 6- Application for Authorisation to Transport/ Store Naturally Occurring Radioactive Material at Facilities
*Schedule 3* — Facilities and Activities Related Naturally Occurring Radioactive Material
*Schedule 4* — Fees and Charges
*Schedule 5* — Exemption Levels
*Schedule 6* — Clearance Levels
*Schedule 7* — Dose Limits
*Schedule 8* — Radiation Warning Symbol

S T A T U T O R Y  I N S T R U M E N T S

**2026 No. 59**

# The Atomic Energy (Naturally Occurring Radioactive Material) Regulations, 2026

*(Under sections 72(1) and 72(2) (n) of the Atomic Energy Act, Cap. 154)*

**IN EXERCISE** of the powers conferred upon the Atomic Energy Council by sections 72(1) and 72(2) (n) of the Atomic Energy Act, these Regulations are made this 2nd day of July, 2026.

## Part I—Preliminary

### 1. Citation

These Regulations may be cited as the Atomic Energy (Naturally Occurring Radioactive Material) Regulations, 2026.

### 2. Purpose of Regulations

The purpose of these Regulations is to provide for radiation protection requirements for the production, processing, handling, use, holding, transport, storage and disposal of naturally occurring radioactive material.

### 3. Application of Regulations

(1) These Regulations apply to—

(a) occupational and public exposures in relation to naturally occurring radioactive material;

(b) facilities and activities involving radioactive ores and other naturally occurring radioactive material where the activity concentration in that material of any radionuclide in the uranium, thorium and actinium decay series is greater than

1 Bq/g or the activity concentration of 40K is greater than 10 Bq/g, throughout the life cycle of the facility; and

(c) facilities where naturally occurring radioactive material is not intentionally held or processed, but where radon build up and exposure to radon and its progeny is likely to occur and may exceed 1000 Bq/m^3 for workplaces and 300 Bq/m^3 for dwellings.

(2) These Regulations do not apply to the following exposures—

(a) exposures from natural radioactivity in the human or animal body;

(b) exposures from cosmic radiation at the earth's surface; and

(c) any other sources that are essentially unamenable to control as may be determined by the Council.

**4. Interpretation**

In these Regulations, unless the context otherwise requires—

"Act" means the Atomic Energy Act, Cap. 154;

"activity" means a measure of the rate at which nuclear disintegration occur;

"authorisation" means permission granted in writing by the Council to a person who has submitted an application to carry out a practice involving naturally occurring radioactive material;

"becquerel (Bq)" means the unit of activity and one Bq is equivalent to one disintegration per second;

"clearance" means removal of regulatory control by the Council from radioactive material or radioactive objects within notified or authorised facilities and activities;

"committed effective dose" means total dose gradually delivered to an individual over a given period of time by the decay of a radionuclide following its intake into the body where the integration time is usually taken as 50 years for adults and 70 years for children;

"Council" means the Atomic Energy Council established by section 3 of the Act;

"currency point" has the value assigned to it in Schedule 1 to these Regulations;

"decommissioning" means the discontinuation through administrative and technical actions taken to allow removal of some or all of the regulatory controls from a naturally occurring radioactive material facility except for a repository, which is closed and not decommissioned and it includes decontamination, dismantling and removal of radioactive materials, waste, components and structures;

"decontamination" means the removal of media containing regulated naturally occurring radioactive material from equipment or facilities solely for the intended purpose of reducing levels of radiation to levels below regulated naturally occurring radioactive material levels in order to release equipment, materials or land for unrestricted use in accordance with these Regulations;

"effective dose" means the weighted sum of the equivalent doses to the various organs and tissues and the weighting factor for each organ or tissue which takes into account the fractional contribution of the risk of death or serious

genetic defect from irradiation of that organ or tissue to the total risk from uniform irradiation of the whole body;

"equivalent dose" means the quantity obtained by multiplying the absorbed dose by a factor representing the different effectiveness of the various types of radiation in causing harm to tissues measured in sieverts (Sv) and one Sv produces the same biological effect irrespective of the type of the radiation;

"exempt" means the determination by Council that a source or practice need not be subject to some or all aspects of regulatory control on the basis that the exposure and the potential exposure due to the source or practice are too small to warrant the application of those aspects or that this is the optimum option for protection irrespective of the actual level of the doses or risks;

"equipment" means tubulars including pipes, wellheads, separators, tanks, condensers, or any other related apparatus that have been in contact with produced solid or fluids associated with the activity or practice;

"facility" means any land or structures, including appurtenances, and improvements on land or water used in or related to an industry;

"licensee" means the person or organisation having overall responsibility for a facility or activity;

"naturally occurring radioactive material (NORM)" means any nuclide which is radioactive in its natural physical state, not man-made but does not include byproduct, source or special nuclear material;

"oil and gas industry" means any person engaged in exploring, producing, gathering, trading, servicing, supplying, refining, and transporting of crude hydrocarbons, or their by-products and waste, or facilities associated with such activities;

"operator" means any person or organisation who applies for authorisation, is authorised or is responsible for safety when undertaking activities or in relation to any nuclear facilities or sources of ionizing radiation;

"product" means something produced, made, manufactured, refined, or beneficiated;

"regulated naturally occurring radioactive material" means naturally occurring radioactive material contained in any oil-field soils, equipment, sludges or any other materials related to mining or mineral extraction or oil-field operations or processes exceeding the radiation levels specified by under Regulation 3 (1) (b);

"radiation safety officer" means a person technically competent in radiation protection matters relevant for a given type of practice who is designated by the person authorised under the Act to oversee the application of relevant requirements prescribed by these Regulations;

"radionuclide" means an unstable nuclide that emits ionising radiation including either alpha, beta or gamma radiation;

"sievert (Sv)" means the unit of effective dose;

"treatment" means any commercial method, technique, or process, including neutralisation, designed to change the physical, chemical form or composition of Regulated naturally occurring radioactive material;

"qualified expert" means an individual who by virtue of certification by the appropriate professional body, professional licence or academic qualification and experience, is duly recognised by Council as having expertise in a relevant field of specialisation.

## Part II – Requirements For Practice Involving Naturally Occurring Radioactive Material

**5. Notification of practice**

(1) A person shall not engage in any practice involving naturally occurring radioactive material unless the person has notified the Council and obtained authorisation.

(2) A person who intends to carry out any practice specified in Schedule 2 to these Regulations involving naturally occurring radioactive material shall notify the Council of the intended practice in Form 1 prescribed in Schedule 3 to these Regulations.

(3) The Council shall, within thirty days after receipt of a notice under subregulation (1) and upon payment of the fees prescribed in Schedule 4 to these Regulations, cause the notice to be published in the Gazette and in at least one newspaper of wide circulation.

(4) The notice published under subregulation (3) shall—

(a) contain a summary of the information given under subregulation (2); and

(b) inform members of the public that the notice may be inspected at the offices of the Council and at a public office within the jurisdiction of the local council affected by the proposed practice.

(5) The Council shall invite directly affected parties and relevant ministries, departments and agencies of Government to give

comments on the proposed practice as contained in the notice referred to in subregulation (3), within thirty days from the date of publication of the notice.

(6) The Council shall, upon receipt of comments from directly affected parties and public agencies on the proposed practice, review the comments and determine whether to issue a permit or not.

(7) Where a determination to issue a permit is made by the Council under subregulation (6), the Council may within thirty days after receipt of comments under subregulation (5), issue to the applicant a permit in Form 2 set out in Schedule 3 to these Regulations.

(8) A permit issued under subregulation (7) shall enable the applicant to carry out studies and other activities that may be necessary to enable the applicant to prepare an application for an authorisation.

(9) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years, or both.

**6. Application for authorisation**

(1) A person who is granted a permit under regulation 5(7) shall not engage in any practice involving naturally occurring radioactive material unless the person obtains authorisation from the Council in accordance with these Regulations.

(2) An application under subregulation (1) shall be made in Form 3 set out in Schedule 3 to these Regulations and shall be accompanied by—

(a) a certificate of environmental and social impact assessment from the National Environment Management Authority;

(b) a naturally occurring radioactive material waste management plan for the lifecycle of the facility, where applicable;

(c) a decommissioning plan; and

(d) proof of payment of the fees prescribed in Schedule 4 to these Regulations.

**7. Review of application**

(1) The Council shall, upon receipt of the application under regulation 6, review the application and may, where necessary request additional information from the applicant, specifying the time frame for response by the applicant.

(2) The Council shall process every application for an authorisation expeditiously and, in any case, not later than ninety days after receipt of the complete application.

(3) The Council may, in reviewing an application under regulation 6, carry out an inspection of the applicant's facility.

**8. Grant of authorisation**

(1) The Council shall, where it is satisfied with the application made under regulation 6, grant an authorisation to the applicant to engage in a practice involving naturally occurring radioactive material.

(2) The authorisation granted by the Council under subregulation (1) may be subject to such terms, conditions or limitations as the Council may deem necessary.

(3) The Council shall, where it refuses to grant an authorisation, give the applicant a statement of the reasons for the refusal within thirty days after the decision.

(4) A person aggrieved by the decision of the Council under subregulation (3) may appeal to the High Court within thirty days after receipt of the decision.

**9. Duration of authorisation**

An authorisation issued by the Council under these Regulations shall remain in force for the period specified in the authorisation.

**10. Renewal of authorisation**

(1) An authorised person may, within ninety days before the expiry of an authorisation, apply for renewal of the authorisation in Form 3 set out in Schedule 3 to these Regulations.

(2) An application under subregulation (1) shall be accompanied by the fees prescribed in Schedule 4 to these Regulations.

(3) The Council may renew an authorisation on such terms and conditions as it may determine.

**11. Authorisation by exemption**

(1) Subject to subregulation (2), the Council may exempt a practice and a source within a practice from some or all of the requirements to these Regulations.

(2) The Council shall only grant an exemption under subregulation (1) where the Council determines that the radiation risk arising from such a practice or a source within the practice are sufficiently low not to warrant regulatory control.

(3) The Council may exempt materials and objects from regulatory control, where the activity concentration does not exceed the levels specified in Schedule 6 to these Regulations.

(4) A person authorised by exemption under subregulation (3) shall remove all radiation markings from any material or object which has been exempted, taking into account, the physical or chemical form of the radioactive material and its use or the means of its disposal.

(5) An authorised person shall record and retain information on the material that has been exempted from regulatory control under this regulation and shall report to the Council annually.

(6) An authorised person shall report any diversion of materials or objects from the site above the clearance levels prescribed in Schedule 6 to these Regulations.

**12. Revocation of authorisation**

The Council may revoke an authorisation granted under regulation 8 with immediate effect where the Council is satisfied that an authorised person is not operating in accordance with the terms and conditions of the authorisation, the Act or these Regulations, and the noncompliance—

(a) inflicts significant damage on the public or private interests; or

(b) gives the Council significant reason to believe that an authorised person may not be able to fulfil his or her obligations under the authorisation, the Act or these Regulations.

**13. Modification of authorisation and practice**

(1) The Council may in accordance with section 44 of the Act modify the terms and conditions of an authorisation following notification by an authorised person in Form 1 set out in Schedule 3 to these Regulations.

(2) The Council may, where it determines that there is need to modify a practice for purposes of ensuring radiation safety, direct an authorised person to undertake the necessary modifications.

(3) Notwithstanding subregulation (2), an authorised person shall seek authorisation from the Council to modify any practice where the modifications may have safety implications.

(4) A person who contravenes subregulation (3) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding two years, or both.

**14. Incidents and accidents**

(1) An authorised person shall notify the Council, as soon as possible, but in any case, not later than forty eight hours of the occurrence of an incident or accident in connection with a practice authorised under these Regulations.

(2) The notice referred to in subregulation (1) shall contain information on—

(a) the accident or incident and its causes, circumstances and consequences;

(b) any loss of life and personal injury caused by the accident or incident;

(c) appropriate action taken to remedy the circumstance and prevent recurrence of similar situation; and

(d) the recommended corrective or preventive actions taken or to be taken.

(3) Where an authorised person fails to take corrective or preventive actions within reasonable time after an incident or accident, the Council may modify, suspend or withdraw any authorisation granted to that person.

(4) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**15. Registration for use of naturally occurring radioactive material residues**

(1) A person who intends to use naturally occurring radioactive material residues of low risk shall apply to the Council for registration of the practice in Form 4 set out in Schedule 3 to these Regulations.

(2) An application referred to in subregulation (1) shall be accompanied by the fees prescribed in Schedule 4 to these Regulations.

(3) A person who uses naturally occurring radioactive material residues for practices of low risk or any facility that generates naturally occurring radioactive material waste shall submit to the Council a safety assessment report of the facilities and equipment.

(4) A person who contravenes subregulation (1) or (3) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding two years, or both.

**16. Notice of intended suspension or termination of practice**

(1) A person who intends to suspend or terminate a practice involving naturally occurring radioactive materials shall notify the Council of the intention to suspend or terminate the practice, at least three months prior to the proposed suspension or termination.

(2) The Council shall on receipt of the notification under subregulation (1)—

(a) in the case of suspension, evaluate and cause the applicant to comply with the safety requirements as prescribed under the Act and these Regulations; and

(b) in the case of termination, require the applicant to decommission the practice in accordance with the procedure prescribed in Part IX, within reasonable time, not exceeding sixty days after receipt of notification of the intended termination from an authorised person.

(3) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding two years, or both.

**17. Responsibilities of authorised persons**

(1) An authorised person shall—

(a) carry out the activities in a practice involving naturally occurring radioactive materials in accordance with the authorisation, the Act and these Regulations;

(b) develop, implement and document a radiation protection programme commensurate with the potential radiological risks to workers, the public and the environmental impacts associated with their authorised practices sufficient to ensure compliance with the requirements of the Act and these Regulations;

(c) establish and implement technical and organisational measures that are needed for ensuring safety for an authorised practice and for compliance with these Regulations;

(d) apply to an authorised practices a multilevel defence in depth system of sequential and independent provisions for safety that is commensurate with the likelihood and magnitude of the potential exposures;

(e) ensure that structures, systems and components, including software that are related to safety for facilities and activities of the authorised practice are designed, constructed, commissioned, operated and maintained in order to prevent accidents; and

(f) document the names and responsibilities of the persons designated under subregulation (2).

(2) An authorised person may designate suitably qualified persons to carry out actions and tasks related to the responsibilities under the practice; but the authorised person shall retain the prime responsibility for safety.

(3) An authorised person shall make suitable arrangements to—

(a) prevent reasonably foreseeable accidents in the facility or the activity;

(b) mitigate the consequences of an accident;

(c) restore facilities to safe conditions after an accident;

(d) provide workers with the information, instruction, training and equipment necessary to prevent or minimise potential exposures commensurate with the radiological risk;

(e) ensure that there are adequate procedures for the control of a facility and for the management of any reasonably foreseeable accidents;

(f) report all incidents and accidents to the Council;

(g) ensure that safety of significant structures, systems and components, including software and other equipment can be inspected and tested within prescribed schedules, for any degradation that may lead to abnormal conditions or inadequate performance;

(h) ensure that maintenance, inspection and testing appropriate to the preservation of the provisions for safety can be carried out without undue occupational exposure;

(i) ensure that abnormal operating conditions that may significantly affect safety are detected by systems that respond quickly enough to allow for corrective actions to be taken in a timely manner; and

(j) ensure that all relevant safety documentation is available in English and any other relevant local language.

(4) Where there is a breach of any provision of these Regulations, an authorised person shall, as appropriate—

(a) investigate the breach and its causes, circumstances and consequences of the breach;

(b) take appropriate action to remedy the circumstances and to prevent a recurrence of similar situation;

(c) report to the Council, as soon as possible, the breach, its causes, circumstances and consequences of the breach, and the corrective or preventive actions taken or to be taken; and

(d) take other necessary actions as the Council may direct.

(5) A person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**18. Investigations and feedback of operating experience**

(1) An authorised person shall make available to Council and any other relevant stakeholder including the operator, information on normal operation performance of a facility, abnormal conditions and incidents that have implication on radiation safety of the facility.

(2) An authorised person shall conduct an investigation as specified by the Council where—

(a) a quantity or operating parameter relating to safety of a facility or activity exceeds an investigation level or is outside the stipulated range of operating conditions; or

(b) any equipment failure, accident, error, mishap or other unusual event or condition occurs at the facility that has

the potential for causing a quantity to exceed any relevant limit or operating restriction.

(3) An authorised person shall conduct an investigation as soon as possible after an incident and shall prepare a written record of the causes or suspected causes of the incident, including—

(a) a verification or determination of any doses received or committed;

(b) any harm to human health;

(c) any impact on the environment; and

(d) recommendations for preventing the recurrence of the event and the occurrence of similar incidents.

(4) An authorised person shall communicate to the Council, and as appropriate, to any other relevant parties, a written report of any formal investigation relating to the incident.

(5) A person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

## Part III—Management Requirements

### 19. Management system

(1) An authorised person shall establish a management system that is commensurate with the size and nature of the activity involving naturally occurring radioactive material.

(2) An authorised person shall, in establishing a management system ensure that—

(a) established policies and procedures identify safety as the priority and are subject to periodic review and updating;

(b) issues identified that affect safety are promptly corrected in a manner commensurate with their importance;

(c) the responsibilities of each individual for safety are clearly identified and documented;

(d) each individual given responsibility is suitably trained and qualified to understand their responsibilities and can perform duties competently, with appropriate judgement and in accordance with these Regulations;

(e) clear lines of authority for decision making on safety are clearly defined; and

(f) organisational arrangements and lines of communications that result in an appropriate flow of information on safety at various levels in the facility or activity are established.

(3) An authorised person shall ensure that the management system established under this regulation is designed and implemented to enhance safety by—

(a) applying the requirements for safety coherently with operational performance and guidelines for security;

(b) describing the planned and systematic actions necessary to provide adequate confidence that the requirements for safety are fulfilled;

(c) ensuring that safety is not compromised by other requirements an authorised person is obligated to comply with;

(d) providing for the regular assessment of performance for safety and the application of lessons learned from experience, including previous incidents and accidents; and

(e) promoting a safety culture.

(4) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred currency points or to imprisonment for a term not exceeding two years, or both.

**20. Safety culture**

(1) An authorised person shall promote and maintain a safety culture by—

(a) ensuring individual and collective commitment to safety at all levels of the practice;

(b) ensuring a clear understanding of the key aspects of the safety culture within the practice;

(c) providing the means by which the practice supports individuals and teams in carrying out their tasks safely and successfully;

(d) encouraging the participation of workers, their representatives and other relevant persons in the development and implementation of policies, rules and procedures on safety;

(e) ensuring accountability of the practice and of individuals with regard to safety;

(f) encouraging open communication with regard to safety within the practice and with relevant parties, as appropriate;

(g) encouraging a questioning and learning attitude and discouraging complacency with regard to safety; and

(h) providing means by which the practice continually seeks to develop and strengthen its safety culture.

(2) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding six months, or both.

**21. Human factors**

(1) An authorised person shall take into account human factors and promote good performances and practices to prevent human errors and practice failures, by ensuring that—

(a) sound ergonomic principles are followed in the arrangement of equipment and the development of operating procedures, in order to—

(i) facilitate the safe operation and use of equipment;

(ii) minimise the possibility of operator errors leading to accidents; and

(iii) reduce the possibility of indications of normal conditions and abnormal conditions being misinterpreted;

(b) appropriate equipment, safety systems and procedural requirements are provided and other necessary provisions are made to—

(i) reduce, as far as practicable, the possibility of human errors or inadvertent actions giving rise to accidents or other incidents leading to the exposure of any person or to a significant environmental impact;

(ii) provide means for detecting and preventing human errors, and for correcting or compensating for human errors; and

(iii) facilitate protective and corrective actions in the event of failure of safety systems or protective measures.

(2) An authorised person who contravenes subregulation (1) (b) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding two years, or both.

**22. Radiation Safety Officer**

(1) Subject to section 35 of the Act, an authorised person shall, in consultation with the Council, appoint and employ a radiation safety officer in relation to the practice or source authorised under these Regulations.

(2) The qualifications of the radiation safety officer appointed and employed under subregulation (1) shall include a level of academic knowledge and professional experience compatible with the levels of risk associated with the authorised practice or source within the practice.

(3) An authorised person may employ such number of radiation safety officers that is commensurate with the size of the facility, the complexity of the practice and the risk involved.

(4) A radiation safety officer appointed and employed under subregulation (1) shall—

(a) advise the authorised person in relation to all matters pertaining to the safety of workers, the public and the environment from radiation and the security of radiation sources;

(b) advise the authorised person regarding the observance and enforcement of relevant codes of practice and regulations for the protection of workers, the public and

the environment from radiation and safety of radiation sources;

(c) consult and liaise with the Council regarding the implementation of radiation protection measures at the employee's premises;

(d) oversee the application of the radiation protection and safety requirements; and

(e) have authority to stop unsafe practices, where necessary, to protect human life and the environment.

(5) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred fifty currency points or to imprisonment for a term not exceeding two years, or both.

**23. Qualified Expert**

(1) An authorised person shall, where necessary and in consultation with the Council, hire a qualified expert for purposes of providing advice on the compliance of the authorised person with these Regulations.

(2) An authorised person shall ensure that the qualified expert hired under subregulation (1) possess the level of academic knowledge and professional experience compatible with the assigned tasks and the levels of risks associated with an authorised practice or sources within a practice

## Part IV—Verification For Safety

**24. Safety assessment**

(1) An authorised person shall carry out a variety of safety assessments including—

(a) baseline safety assessment;

(b) pre-operational safety assessment;

(c) operational safety assessment;

(d) decommissioning safety assessment;

(e) disposal of waste safety assessment ; and

(f) exemption and clearance safety assessment.

(2) The safety assessments carried out by an authorised person under subregulation (1) shall—

(a) identify ways in which naturally occurring radioactive material exposures may be incurred, and accounting for the effects of external events;

(b) determine the expected magnitudes and likelihood of naturally occurring radioactive material exposures in normal operation and to the extent reasonable and practicable, making an assessment of potential exposures;

(c) assess the adequacy of the provisions for safety; and

(d) include a systematic critical review of—

(i) the operational limits and conditions for the operation of a facility;

(ii) the ways in which structures, systems and components, including software and procedures relating to safety is likely to fail, singly or in combination, or is likely to otherwise give rise to exposures, and the likely consequences of such events;

(iii) the ways in which external factors is likely to affect safety;

(iv) the ways in which operating procedures relating to safety might be erroneous, and the consequences of such errors;

(v) the implications for safety on any modifications;

(vi) the implications of security measures or their modifications on safety; and

(vii) any uncertainties or assumptions and their implications for safety.

(3) The safety assessment carried out by an authorised person under subregulation (2) shall be documented and where appropriate, independently reviewed under the management system.

(4) An authorised person shall submit to the Council for approval a report of the safety assessment carried out under subregulation (1).

(5) The Council may, upon evaluation of the safety assessment report, amend the authorisation.

(6) An authorised person shall review the safety assessment of the facility to ensure that the technical specifications or conditions of use continue to be met the prescribed requirements, in particular where—

(a) changes are envisaged to the facility, its operating procedures or maintenance procedures;

(b) changes occur on the site that could affect the safety of the facility or of activities on the site;

(c) information on operating experience, or information about accidents and other incidents that could result in exposures, indicates that the current assessment might be invalid;

(d) any significant changes in activities are envisaged; and

(e) any relevant changes in guidelines or standards are envisaged or have been made.

(7) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years, or both.

**25. Monitoring, testing and verification of safety compliance**

(1) An authorised person shall—

(a) through monitoring, verify compliance with the authorisation and the requirements of these Regulations;

(b) ensure suitable equipment is provided and verification procedures are implemented;

(c) ensure equipment is properly maintained, tested and calibrated at appropriate intervals with reference to standards traceable to national or international standards;

(d) maintain records of the results of monitoring and verification of compliance; and

(e) avail the results of monitoring and verification of compliance to the Council.

(2) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

**26. Record keeping**

(1) An authorised person shall establish, maintain and be able to retrieve records relating to—

(a) doses from occupational exposures;

(b) operational activities of the facilities, as defined in the authorisation;

(c) inventory of radioactive waste;

(d) incidents and accidents, including non-routine release of radioactive material to the environment;

(e) routine discharges to the environment;

(f) area monitoring results; and

(g) any other relevant information as may be required by the Council.

(2) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

## Part V—Radiation Protection Requirements

**27. Justification of practices**

(1) The Council shall not authorise a practice involving naturally occurring radioactive material unless the practice is likely to produce sufficient benefit to the exposed individuals or to society to offset the radiation harm that the practice might cause taking into account social, economic and other relevant factors as the Council may determine.

(2) Subject to subregulation (1), an authorised person shall provide sufficient information and evidence on the benefits and likely harm to human health to support the justification for the practice.

**28. Optimisation of safety**

(1) An authorised person shall ensure that safety is optimised.

(2) An authorised person shall, for occupational exposure and public exposure, ensure that all relevant factors are taken into account in a coherent way in the optimisation of safety to—

(a) determine measures for safety that are optimised for the prevailing circumstances, with account taken of the available options for safety as well as the nature, likelihood and magnitude of exposures; and

(b) establish criteria, on the basis of the results of the optimisation, for the restriction of the likelihood and magnitudes of exposures by means of measures for preventing accidents and for mitigating the consequences of the accidents that do occur.

**29. Dose limits**

An authorised person shall ensure that the exposures of individuals due to an authorised practices are restricted so that neither the effective dose nor the equivalent dose to tissues or organs exceeds any relevant dose limit prescribed in Schedule 7 to these Regulations.

PART VI—OCCUPATIONAL EXPOSURE PROTECTION

**30. Responsibilities of authorised person with respect to occupational exposure**

(1) An authorised person is responsible for the protection of workers against occupational exposure to ionising radiation resulting from naturally occurring radioactive material.

(2) An authorised person shall ensure that, for all workers engaged in activities in which the workers are or may be subject to occupational exposure—

(a) occupational exposure is controlled so that the relevant dose limits for occupational exposure set out in Schedule 7 to these Regulations are not exceeded;

(b) safety is optimised in accordance with regulation 28;

(c) decisions with regard to measures for safety are recorded and made available to the workers;

(d) policies, procedures and organisational arrangements for occupational safety are established to implement the relevant requirements to these Regulations, with priority given to design measures and technical measures for controlling occupational exposure;

(e) suitable and adequate facilities, protective equipment and services for safety are provided, the type and extent of which are commensurate with the expected likelihood and magnitude of the occupational exposure;

(f) necessary health surveillance and health services for workers are provided;

(g) appropriate monitoring equipment and personal protective equipment are provided and arrangements are made for its proper use, testing and maintenance; and

(h) suitable and adequate human resources and appropriate training on safety are provided, as well as periodic retraining as required to ensure the necessary level of competence.

(3) An authorised person shall involve workers in optimisation of safety.

(4) An authorised person shall—

(a) ensure that workers exposed to ionising radiation within a practice that are not required by or directly related to their work have the same level of protection against such exposure as members of the public;

(b) take such administrative actions as are necessary to ensure that workers are informed that ensuring safety is an integral part of a general occupational health and safety programme in which they have specific obligations and responsibilities for their own protection and the protection of others against radiation exposure and for the safety of sources;

(c) facilitate compliance by workers with the requirements to these Regulations; and

(d) record any report received from a worker that identifies any circumstances that could affect safety conditions or compliance with the requirements to these Regulations, and shall evaluate and take remedial actions, where necessary.

(5) A person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding two years, or both.

**31. Responsibilities of workers**

(1) A worker employed in a facility associated with naturally occurring radioactive material shall—

(a) follow all applicable rules and procedures for safety as specified by the authorised person;

(b) ensure the proper usage of the monitoring equipment and personal protective equipment provided;

(c) cooperate with the authorised person with regard to safety and programmes for workers' health surveillance and programmes for dose assessment;

(d) provide the authorised person with information on their past and present work that is relevant for ensuring effective and comprehensive safety for themselves and others;

(e) abstain from any wilful action that could put themselves or others in situations that would not be in accordance with the provisions to these Regulations; and

(f) accept such information, instruction and training on safety as will enable them to conduct their work in accordance with the provisions to these Regulations.

(2) A worker who identifies circumstances that could adversely affect safety shall report such circumstances to the radiation safety officer.

(3) A person who contravenes this provision commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**32. Controlled areas**

(1) An authorised person shall designate as a controlled area, any area in which specific measures for safety are or may be required for controlling exposures or preventing the spread of contamination in normal operations or for preventing or limiting the likelihood and magnitude of exposures in anticipated operational occurrences and accident conditions.

(2) An authorised person shall—

(a) determine the boundaries of any controlled area on the basis of the magnitude and likelihood of expected exposures and the type and extent of the procedures required for safety;

(b) delineate controlled areas by physical means or, where this is not reasonably practicable, by some other suitable means;

(c) display the radiation warning symbol, specified in Schedule 8 to these Regulations, and display instructions at access points to and at appropriate locations within controlled areas, in the English language and any other language understood by the local communities;

(d) establish measures for occupational safety, including, as appropriate, physical measures to control the spread of contamination and work place rules and procedures for controlled areas;

(e) restrict access to controlled areas by means of administrative procedures including the use of work permits and by establishing physical barriers which could include locks or interlocks, the degree of restriction being commensurate with the magnitude and likelihood of exposures;

(f) provide, as appropriate, at entrances to controlled areas—

(i) personal protective equipment;

(ii) equipment for individual monitoring and workplace monitoring; and

(iii) suitable storage for personal clothing;

(g) provide, as appropriate, at exits of controlled areas—

(i) equipment for monitoring for contamination of skin and clothing;

(ii) equipment for monitoring for contamination of any objects or material being removed from the area;

(iii) washing or showering facilities and other personal decontamination facilities; and

(iv) suitable storage for contaminated personal protective equipment;

(h) assess whether there is any need to modify the measures for safety or the boundaries of controlled areas and take corrective action, where necessary; and

(i) provide appropriate information, instruction and training such that persons working in controlled areas are adequately informed and qualified.

(3) A person who contravenes subregulation (1) or (2) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years, or both.

**33. Supervised areas**

(1) An authorised person shall—

(a) designate as a supervised area any area not already designated as a controlled area; and

(b) ensure that the occupational exposure conditions in the supervised area are kept under review.

(2) An authorised person shall, taking into account the nature, likelihood and magnitude of exposures or contamination in the supervised areas—

(a) delineate the supervised areas by appropriate means;

(b) display approved signs, as appropriate, at access points to supervised areas; and

(c) periodically review conditions to assess whether there is any need for further measures for safety or any need for changes to the boundaries of supervised areas.

(3) An authorised person who contravenes subregulation (1) or (2) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding two years, or both.

**34. Work place rules, procedures and personal protective equipment**

(1) An authorised person shall minimise the need to rely on administrative controls and personal protective equipment for safety by providing well engineered controls and satisfactory working conditions, in accordance with the following hierarchy of preventive measures—

(a) engineered controls;

(b) administrative controls; and

(c) personal protective equipment.

(2) An authorised person shall in consultation with workers through their safety representatives and in a language appropriate to them—

(a) provide written work place rules and procedures necessary for the safety of workers and the general public;

(b) include in the work place rules and procedures any relevant investigation level or authorised level and the procedures to be followed in the event that any such level is exceeded;

(c) make the work place rules and procedures and the measures for safety known to all workers to whom they apply and to the members of the public who may be affected by them;

(d) ensure that any work in which workers are or could be subject to occupational exposure is adequately supervised; and

(e) take all reasonable steps to ensure that the rules, procedures, protective measures and safety provisions are observed.

(2) An authorised person shall ensure—

(a) where necessary, that workers are provided with suitable and adequate personal protective equipment that meets relevant standards or specifications, including as appropriate-—

(i) protective clothing;

(ii) respiratory protective equipment, the characteristics of which are known to the users; and

(iii) protective aprons, protective gloves and safety glasses;

(b) where appropriate, that workers receive adequate instruction on the proper use of respiratory protective equipment, including testing for good fit;

(c) tasks requiring the use of certain personal protective equipment are assigned only to workers who on the basis of medical advice are capable of safely sustaining the extra effort necessary;

(d) all personal protective equipment, including equipment for use in an emergency, is maintained in proper condition

and, where appropriate, is tested within the specified time frame;

(e) where the use of personal protective equipment is considered for any given task, an account of—

(i) any additional exposure that could result due to any additional time taken; and

(ii) any non-radiological risks that may be associated with the use of personal protective equipment while performing the task.

(3) An authorised person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

**35. Monitoring of workplace**

(1) An authorised person shall, under the supervision of a radiation safety officer, establish, maintain and keep under review a programme commensurate with the graded approach for monitoring at the workplace.

(2) Subject to subregulation (1), the type and frequency of monitoring of workplaces shall be—

(a) sufficient to enable—

(i) evaluation of the radiological conditions in all workplaces;

(ii) assessment of the exposure of workers in controlled and supervised areas; and

(iii) the review of the classification of controlled and supervised areas;

(b) based on—

(i) the dose rate;

(ii) activity concentration in the air and water;

(iii) surface contamination and their expected fluctuations; and

(iv) the likelihood and magnitude of exposures in anticipated operational occurrences and accident conditions.

(3) An authorised person shall maintain records of the findings of the workplace monitoring programme and make the findings available to the workers.

(4) The programmes for monitoring the workplace shall specify—

(a) the quantities to be measured;

(b) where and when the measurements are to be made and at what frequency;

(c) the most appropriate measurement methods and procedures; and

(d) the investigation levels and the actions to be taken where the quantities exceed the limits prescribed under these Regulations.

(5) An authorised person who contravenes this provision commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

**36. Occupational exposure assessment**

(1) An authorised person shall, where appropriate—

(a) arrange for the assessment of the occupational internal and external exposure of workers; and

(b) ensure that adequate arrangements are made for the provision of services by a dosimetry service provider approved by Council.

(2) An authorised person shall, where appropriate, adequate and feasible, undertake individual monitoring for any worker who works in a controlled area and is likely to receive a significant dose from occupational exposure.

(3) An authorised person shall, where individual monitoring of occupational exposure for any worker is inappropriate, inadequate or not feasible, asses the occupational exposure on the basis of the results of the workplace monitoring, information on the locations and duration of exposure of the worker.

(4) An authorised person shall—

(a) assess the occupational exposure for any worker who regularly works in a supervised area or who enters a controlled area only occasionally on the basis of the results of workplace monitoring or of individual monitoring;
ensure that workers, including workers who use respiratory protective equipment, subject to exposure due to contamination are properly identified;

(b) arrange for appropriate monitoring to the extent necessary to demonstrate the effectiveness of the measures for safety and to assess intakes of radionuclides and the committed effective doses; and

(c) notify the Council using any appropriate means, immediately of any event in which a dose limit is exceeded.

(5) An authorised person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

**37. Records of occupational exposure**

(1) An authorised person shall submit to Council records of occupational exposure for each worker for whom assessment of occupational exposure is required under regulation 35.

(2) The records of occupational exposure referred to in subregulation (1) shall include—

(a) information on the general nature of the work in which the worker was subject to occupational exposure;

(b) information on dose assessments, exposures and intakes at or above the relevant recording levels and the data upon which the dose assessments were based;

(c) when a worker is or has been exposed while in the facility of more than one operator, information on the dates of employment with each operator and on the doses and intakes in each such facility; and

(d) records of any assessment of doses, exposures and intakes due to actions taken in an emergency or due to accidents or other incidents, which shall be distinguished from doses, exposures and intakes due to normal conditions of work and which shall include references to reports of any relevant investigations.

(3) An authorised person shall—

(a) provide workers with access to records of their individual occupational exposure;

(b) provide the supervisor of the programme for workers' health surveillance and the Council with access to workers' records of occupational exposure;

(c) provide copies of the exposure records of workers to new employers when workers change employment or work at multiple facilities;

(d) make arrangements for the retention of exposure records for former workers; and

(e) in complying with paragraphs (a) to (d), maintain the confidentiality of records.

(4) Where an authorised person ceases to conduct activities in which workers are subject to occupational exposure, the occupational exposure records for the workers shall be retained by the Council.

(5) An authorised person shall maintain records of occupational exposure for each worker during and after the working life of the worker, at least until the worker attains or would have attained the age of seventy five years, and for not less than thirty years after cessation of the work in which the worker was subject to occupational exposure.

(6) An authorised person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years, or both.

**38. Health surveillance of workers**

(1) An authorised person shall make arrangements for appropriate health surveillance of workers based on the general principles of occupational health that is designed to assess the initial

fitness and continuing fitness of workers for the worker's intended tasks.

(2) An authorised person shall have systems in place to inform workers of their radiation exposure history from other facilities or activities.

(3) An authorised person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding fifty currency points or to imprisonment for a term not exceeding two years, or both.

**39. Information, instruction and training**

(1) An authorised person shall—

(a) provide all workers with adequate information on health risks due to—

(i) occupational exposure in normal operations;

(ii) anticipated operational occurrences;

(iii) accident conditions;

(iv) adequate instruction and training;

(v) continuous training in safety; and

(vi) significance of the actions of workers on safety;

(b) provide workers who may be involved in or affected by the response to an emergency with appropriate information, adequate instruction, training and periodic retraining for safety; and

(c) maintain records of the training on safety provided to individual workers.

(2) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years, or both.

**40. Special arrangements for female workers and non-adult workers**

(1) An authorised person shall provide female workers who enter controlled or supervised areas or who may undertake emergency duties with appropriate information on—

(a) the risk to the embryo or foetus due to exposure of a pregnant woman;

(b) the importance for a female worker to notify her employer as soon as possible, where she suspects that she is pregnant or where she is breast-feeding; and

(c) the risk and health effects on a breast-fed infant due to ingestion of radioactive substances.

(2) The notification of an authorised person by a female worker under subregulation (1) (b) where she suspects that she is pregnant or where she is breast-feeding shall not be considered a reason to exclude a female worker from work.

(3) An authorised person who has been notified of the suspected pregnancy or a female worker who is breast-feeding, shall adapt working conditions in respect of occupational exposure in order to ensure that the embryo or foetus or the infant is afforded the same broad level of protection as is required for members of the public.

(4) An authorised person shall ensure that—

(a) no person under the age of sixteen years is or may be subject to occupational exposure; and

(b) persons under the age of eighteen years are allowed access to a controlled area only under supervision and only for the purpose of training for employment in which they are or may be subject to occupational exposure or for the purpose of studies in which sources are used.

(5) An authorised person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding one hundred and fifty currency points or to imprisonment for a term not exceeding four years or both.

## Part VII—Public Exposure Protection

### 41. Responsibilities of authorised person with respect to public exposure

(1) An authorised person shall, in applying the principle of optimisation of safety in the exploration, siting, design, construction, commissioning, operation, decommissioning, closure, long term surveillance and monitoring of a facility or activity, take into account—

(a) possible changes in any conditions that may affect exposure of members of the public, including changes in the characteristics and use of the naturally occurring radioactive materials, changes in environmental dispersion conditions, changes in exposure pathways or changes in values of parameters used for the determination of the representative person;

(b) good practice in conducting operations involving naturally occurring radioactive material or the conduct of similar practices; and

(c) possible buildup and accumulation in the environment of naturally occurring radioactive material substances from discharges during the lifecycle of the facility or activities.

(2) An authorised person shall establish, implement and maintain—

(a) policies, strategies, procedures and organisational arrangements for safety in relation to public exposure;

(b) measures for ensuring—

(i) optimisation of safety; and

(ii) limitation of exposure of members of the public, in order that the total exposure is not higher than the dose limits for members of the public as specified in Schedule 7 to these Regulations.;

(c) measures for ensuring the safety of naturally occurring radioactive material in the facility or activity;

(d) provision for suitable and adequate resources for the safety of members of the public, commensurate with the magnitude and likelihood of the exposures;

(e) programmes for appropriate training of personnel having functions relevant to the safety of the public, as well as periodic retraining as required, to ensure the necessary level of competence;

(f) provision for appropriate monitoring equipment, surveillance programmes and methods for assessing public exposure;

(g) emergency plans, procedures and response arrangements, in accordance with the nature and magnitude of the radiation risks associated with the naturally occurring radioactive material; and

(h) adequate record of surveillance and monitoring.

(3) An authorised person who contravenes this provision commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**42. Control of visitors**

An authorised person shall—

(a) ensure that visitors are accompanied in any controlled area by a person who knows the measures for safety for the controlled area;

(b) provide adequate information and instructions to visitors before they enter a controlled or supervised area in order to provide safety for visitors and other individuals who could be affected by their actions;

(c) ensure that adequate control is maintained over the entry of visitors to a controlled or supervised area, including the use of appropriate signs for such areas;

(d) ensure that visitors are provided with appropriate and adequate protective gear before they are allowed into controlled or supervised areas where applicable; and

(e) keep records of all visitors to a controlled area, including exposure data.

**43. Monitoring of public exposure**

(1) An authorised person shall as appropriate—

(a) establish and carry out a monitoring programme of a magnitude and complexity commensurate with the type of risks associated with the naturally occurring radioactive material under his or her responsibility;

(b) assess the exposure of members of the public from naturally occurring radioactive material and discharges of naturally occurring radioactive material substances into the environment;

(c) keep appropriate records of the results of the monitoring programmes; and

(d) report a summary of all the monitoring results to Council annually and promptly inform the Council of any abnormal results which lead or may lead to an increase of public exposure.

(2) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

## Part VIII—Naturally Occurring Radioactive Material Waste Management

**44. Responsibilities of authorised person with respect to naturally occurring radioactive material waste management**

(1) An authorised person shall be responsible for the safe management and disposal of naturally occurring radioactive material waste.

(2) An authorised person shall assign the responsibility of management of naturally occurring radioactive material waste to a designated person with clearly defined roles and responsibilities.

(3) An authorised person shall—

(a) establish and implement the naturally occurring radioactive material waste management plan throughout the lifecycle of the facility; and

(b) ensure the provision of financial security for the management of naturally occurring radioactive material waste throughout the lifecycle of the facility taking into account the interdependences among all steps in radioactive waste management, the available options and the national radioactive waste management policy and strategy.

(4) An authorised person shall keep the generation of naturally occurring radioactive material waste to the minimum practicable measure, in terms of volume, activity and characterise the waste in terms of its physical, mechanical, chemical, radiological and biological properties.

(5) An authorised person shall, in establishing a waste acceptance criterion, consider the criteria established for other steps within the waste management process which shall be submitted to Council for review, assessment and approval.

(6) An authorised person shall ensure that waste is collected and segregated at the point of origin in accordance with the waste acceptance criteria.

(7) A person who contravenes this regulation commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**45. Naturally occurring radioactive material waste records and reports**

(1) An authorised person shall maintain an inventory of naturally occurring radioactive material waste generated.

(2) The inventory kept in under subregulation (1) shall include—

(a) the volume of waste generated;

(b) the contaminated material and scrap;

(c) higher level waste in storage on site;

(d) effluents discharged to the environment;

(e) total activity of the waste that may be transferred to another facility; and

(f) any other details as Council may require.

(3) The inventory in subregulation (1) shall be—

(a) maintained up-to-date and retained in such a way to ensure that relevant information is accessible in the future, as necessary; and

(b) submitted to Council on an annual basis.

(4) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**46. Storage of naturally occurring radioactive material waste**

(1) An authorised person shall prior to generating naturally occurring radioactive material waste ensure the availability of an appropriate storage installation within the facility or in another authorised facility.

(2) An authorised person shall have arrangements in place to verify that the naturally occurring radioactive material waste collected or received in the storage installation meets the acceptance criteria derived in the safety assessment report and in accordance with the authorisation conditions.

(3) An authorised person shall ensure that the naturally occurring radioactive material waste is—

(a) stored in a manner that ensures proper segregation and protection of the workers, the public and the environment; and

(b) stored is a manner that enables subsequent inspection, monitoring, retrieval and preservation in a condition suitable for movement, handling, transport or disposal.

(4) An authorised person shall, during storage of naturally occurring radioactive material, maintain full traceability of the waste by means of record keeping, adequate labelling and marking.

(5) An authorised person shall ensure that the integrity of waste packages in storage is maintained until it is retrieved for further treatment, conditioning or disposal.

(6) An authorised person shall periodically review the adequacy of the storage capacity, with account taken of the predicted waste arising, both from normal operation and from possible incidents, of the expected lifetime of the storage installation and of the availability of disposal options.

(7) An authorised person who contravenes this provision commits an offence and is liable on conviction to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years or both.

**47. Recycling and reuse of naturally occurring radioactive material and objects**

(1) An authorised person shall consider possible reuse and recycling of naturally occurring radioactive materials and objects in its waste management plan as a form of waste reduction.

(2) Where an authorised person intends to transfer a naturally occurring radioactive material or object to another party for recycling or reuse, an authorisation shall be required from Council.

(3) An application for authorisation to transfer naturally occurring radioactive material shall be as specified in Form 6 in Schedule 3 to these Regulations.

(4) An application made under subregulation (3) shall be accompanied by fees as prescribed in Schedule 4 to these Regulations.

**48. Discharge of naturally occurring radioactive material effluents to environment**

(1) An authorised person shall ensure that naturally occurring radioactive material effluents are not discharged to the environment unless such discharges are within the release limits prescribed in Schedule 6 to these Regulations and in compliance with the National Environment Act.

(2) An authorised person shall—

(a) keep all naturally occurring radioactive material discharges as far below the authorised dose limits as is reasonably achievable;

(b) monitor and record the discharges of radionuclides with sufficient detail and accuracy to demonstrate compliance with an authorised discharge limits and to permit estimation of the exposure of the representative person;

(c) maintain an appropriate management system for the activities related to effluent or environmental monitoring; and

(d) report discharges to the Council at intervals as specified in the authorisation and when any discharges will exceed the dose limits set in the authorisation.

(3) An authorised person shall review the operating experience of discharges and adjust the discharge control measures to ensure optimisation of safety.

(4) An authorised person who contravenes this provision commits an offence and is liable on conviction to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years or both.

## Part IX—Decommissioning

### 49. Decommissioning plan

(1) An authorised person shall—

(a) prepare a decommissioning plan for the construction and operation of the facility; and

(b) maintain, review and update the decommissioning plan throughout the lifecycle of the facility.

(2) The decommissioning plan shall contain information on the proposed decommissioning of the facility, and in particular on—

(a) the end state upon release from regulatory control;

(b) the strategy for decommissioning and the management of the waste generated during decommissioning;

(c) the choice of decontamination and dismantling techniques;

(d) the assessment of safety and environmental protection; and

(e) the management system, including human and financial resources, knowledge management and record keeping.

**50. Authorisation for decommissioning**

(1) An authorised person shall—

(a) apply to the Council for authorisation to terminate a practice or shut down a facility permanently at least six months before the intended termination of activities using Form 5 specified in Schedule 3 to these Regulations;

(b) submit the final decommissioning plan to the Council for approval; and

(c) ensure that the practice or facility is maintained in a safe configuration and technical decommissioning activities shall not start until approval of the final decommissioning plan by Council.

(2) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

**51. Decommissioning report**

(1) Upon completion of decommissioning, an authorised person shall prepare a decommissioning report and demonstrate that the end state, as defined in the decommissioning plan, has been reached and the waste generated during decommissioning has been properly managed.

(2) Subject to subregulation (1) An authorised person shall submit the report prepared under subregulation (1) to the Council for review.

(3) The Council shall, following review of the decommissioning report, decide whether the authorisation shall be continued and the site may be released from regulatory control.

**52. Remediation of naturally occurring radioactive material facilities**

(1) An authorised person shall—

(a) establish and implement a remediation program and post-remediation control measures as prescribed by the Council; and

(b) establish an appropriate strategy for naturally occurring radioactive waste management as determined by the Council.

(2) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

## Part X—Emergency Preparedness And Response

**53. Emergency preparedness**

(1) An authorised person shall prepare an emergency plan, for the protection of people and the environment, which describes the objectives, policy and concept of operations for a systematic, coordinated and effective response to an emergency.

(2) An authorised person shall, as part of the emergency plan, include arrangements for the prompt identification of an emergency and for determining the appropriate level of emergency response.

(3) The emergency plan shall, in relation to the arrangements for emergency response at the scene by an authorised person, include—

(a) provision for individual monitoring, area monitoring and arrangements for medical treatment; and

(b) arrangements for assessing and mitigating any consequences of an emergency.

(4) An authorised person shall be responsible for the implementation of the emergency plan and shall be prepared to take necessary actions for effective response both onsite and offsite.

(5) An authorised person shall as appropriate, to prevent the occurrence of conditions that could lead to incidents and accidents—

(a) develop, maintain and implement procedures as necessary;

(b) make available equipment, instrumentation and diagnostic aids that may be needed; and

(c) train and periodically retrain personnel in the procedures to be followed and exercise the procedures.

(6) A person who contravenes this provision commits an offence and is liable, on conviction, to a fine not exceeding one hundred fifty currency points or to imprisonment for a term not exceeding four years, or both.

**54. Implementation of the emergency plan**

(1) An authorised person shall ensure that the protective or remedial actions aimed at reducing or averting accidental exposures are only undertaken when they are justified taking into account health, social and economic factors.

(2) An authorised person shall, as soon as possible, but in any case, within forty eight hours of the occurrence of an incident or accident notify the Council when an accidental situation requiring intervention has arisen or is expected to arise and shall keep the Council informed of—

(a) the current situation and its expected evolution;

(b) the measures taken to terminate the accident and to protect workers and members of the public; and

(c) the exposures that have been incurred and that are expected to be incurred.

(3) An authorised person shall ensure that the form, scale and duration of any justified intervention in an emergency plan is optimised in order to produce the maximum net benefit under the prevailing social and economic circumstances.

(4) An authorised person who contravenes this provision commits an offence and is liable, on conviction, to a fine not exceeding one hundred fifty currency points or to imprisonment for a term not exceeding four years or both.

## Part XI—General Provisions For Specific Practices And Facilities

### 55. Physical protection and security

(1) An authorised person shall establish and implement a program to ensure physical protection and security of the facility.

(2) The program referred to in subregulation (1) shall be implemented in a manner that shall not compromise the safety of the facility.

(3) An authorised person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding one hundred fifty currency points or to imprisonment for a term not exceeding four years, or both.

### 56. Nuclear safeguards

(1) Where an authorised person encounters nuclear material in the course of an authorised practice, An authorised person shall immediately notify the Council.

(2) The Council shall upon receipt of the notice under subregulation (1) issue guidance or cause an authorised person to comply with nuclear safeguards requirements.

**57. Transport of naturally occurring radioactive material**

(1) A person shall not transport naturally occurring radioactive material without authorisation from the Council.

(2) A person who intends to transport naturally occurring radioactive material shall apply to the Council for authorisation using Form 6 specified in Schedule 3 to these Regulations.

(3) An application under subregulation (2) shall be accompanied with fees prescribed in Schedule 4 to these Regulations.

(4) The Council shall, upon receipt of the application for authorisation to transport naturally occurring radioactive material under subregulation (2), review the application, and where it is satisfied with the application, grant authorisation to the applicant.

(5) An authorised person shall transport naturally occurring radioactive material, either domestically or internationally, in compliance with the conditions set by Council.

(6) An authorised person who contravenes subregulation (1) or (5) commits an offence and is liable, on conviction, to a fine not exceeding one hundred fifty currency points or to imprisonment for a term not exceeding four years, or both.

**58. Facilities and activities involving exposure to radon**

(1) An authorised person shall establish an action plan to be implemented in case the annual average activity concentration due to $^{222}Rn$ of 1000 Bq/m³ is exceeded.

(2) The action plan established by an authorised person under subregulation (1) shall provide for reducing the activity concentration of $^{222}Rn$ and consequent exposures to levels at which safety is optimised, giving priority to actions to reduce activity concentrations of $^{222}Rn$ in those situations for which the actions are likely to be most effective.

(3) Where after implementation of the action plan, the annual average activity concentration due to $^{222}Rn$ is still higher than 600 Bq/$m^3$, the doses to the workers shall be considered to be occupational exposure, in which case the provisions of Part VI to these Regulations shall apply.

## Part XII—Miscellaneous

### 59. Inspection

An authorised person shall permit access by authorised representatives of the Council to carry out inspections on the practices and facilities of the safety records and shall cooperate in the conduct of the inspections.

### 60. Transitional provisions

(1) An authorised person operating a facility at the commencement of these Regulations, shall take the appropriate measures to comply with these Regulations within a period of ninety days following the commencement of these Regulations.

(2) A person who contravenes subregulation (1) commits an offence and is liable, on conviction, to a fine not exceeding two hundred currency points or to imprisonment for a term not exceeding four years, or both.

## SCHEDULES

*Schedule 1*

*Regulation 4*

## CURRENCY POINT

One currency point is equivalent to twenty thousand shillings.

*Schedule 2*

*Regulation 5(2)*

## Practices and Activities Related to Naturally Occurring Radioactive Material

(1) The following practices and activities involving naturally occurring radioactive materials are required to comply with the notification of a practice under regulation 5 of the Atomic Energy (Naturally Occurring Radioactive Material) Regulations, 2026, within the scope to these Regulations—

(a) mining and processing of uranium ore;

(b) mining and processing of thorium ore;

(c) extraction of rare earth elements;

(d) production and use of thorium and its compounds;

(e) production of niobium and ferro-niobium;

(f) mining of ores other than uranium ore;

(g) production of oil and gas;

(h) manufacture of titanium dioxide pigments;

(i) the phosphate industry;

(j) the zircon and zirconia industries;

(k) production of tin, copper, aluminum, zinc, lead, iron and steel;

(l) combustion of coal;

(m) water treatment;

(n) geothermal energy production; and

(o) scrap metal dealers, smelters, refurbishment of naturally occurring radioactive material contaminated equipment.

(2) The following facilities are prone to exposure to radon—

(a) work premises above ground located in risk areas defined by Council;

(b) underground work premises and caves which are open to visitors, in areas defined by Council;

(c) closed mines that are used for purposes other than extraction of minerals;

(d) mineral, residue and waste storage facilities including sheds and silos;

(e) used processing equipment storage facilities including valves, pipes, vessels from oil and gas industry, filter cloth from presses in titanium pigment and rare earth processing stored in enclosed areas and confined spaces;

(f) other enclosed processing facilities where radon-emanation may occur;

(g) hulls of the ships transporting minerals in bulk;

(h) containers used to or store transport minerals; and

(i) mineral laboratories.

*Schedule 3*

## FORMS

*Regulation 5 (2) & 13 (1)*

## FORM 1

### Notification of a Practice Involving Naturally Occurring Radioactive Materials

Name and address of applicant (Attach certificate of Registration and copy of the mining licence where applicable):
……
……
……

Title.……

Telephone: ……

E-mail:…….....…….....

Location of facility: ……
……..……..……
……
……

Region:……

District:……

Sub Location/Town:…….....…….....

(1) List names and qualification of individual workers who get in direct contact with naturally occurring radioactive materials:

| SN | Name | Qualification | Title | Mobile number |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

(2) Give the details of the ores/ minerals that are extracted that the radiation workers are likely to be exposed to during their normal operations:

| SN | Name of radioactive material/Ore | | Volume of the Ore |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |

(3) Purpose(s) of the practice:

……
……
……
……
……

(4) Impact of the proposed practice. Describe the expected impact of the proposed application of the material on public and private interest and possible mitigation measures (Attach Environmental Impact Assessment report, where applicable):

……
……
……
……

(5) Declaration:

I, ……..(legal person) certify that all the information given herein is true and correct to the best of my knowledge.

Date: ……

Signature of Applicant: ……

| For Official Use Only | | | |
|---|---|---|---|
| Licensee number | | | |
| Received | By | Date | Signature |
| | | | |
| Evaluated | | | |
| Remarks | | | |

**FORM 2**

*Regulation 5 (7)*

**Permit for Operation of Naturally Occurring Radioactive Material Facility**

Permit No.....

I, being the person charged with the receipt of the notification of practices/facilities relating to the Naturally Occurring Radioactive Material, hereby certify that I have authorised .....
..... .....
.....
(herein after called the applicant) for a period of .....
..... from this day.....of ....., .....(DD/month/year)
for the site at .....
.....(location of the site).

The authorisation is issued subject to the following;

(1) This permit is not a licence to be in use or possess the Naturally occurring Radioactive Material

(2) The permit holder shall further apply to Council for authorisation related to naturally occurring radioactive material sites

(3) This permit is only valid for the period indicated on this permit

(4) This permit is only for the site indicated on this permit

(5) This permit shall be withdrawn if the owner violets the requirements to these Regulations.

.....
OFFICIAL SEAL AND DATE
For the Council

**FORM 3**

*Regulation 6 (2) &10 (1)*

**Application For Authorisation Related to Naturally Occurring Radioactive Material Sites**

## TYPE OF AUTHORISATION

Please tick as appropriate ☑

☐ New application
☐ Renewal of authorisation number: _____

## GENERAL INFORMATION

1. Name of applicant (facility): _____

| Physical address | Postal Address | Email Address |
|---|---|---|
| | | |

2. Tick the practice which is applicable

| **Activity** | **Check** |
|---|---|
| Mineral extraction and processing | ☐ |
| Mining and processing Uranium ores | ☐ |
| Mining of ores other than uranium ore | ☐ |
| Production of:<br>Bauxite/Aluminium, Copper, Lead, Tin/Tantalum, Zinc, and Iron and Steel | ☐ |
| Phosphate industry | ☐ |
| Extraction of rare earths elements and mineral sands | ☐ |
| Production and use of **Thorium** and its compounds | ☐ |
| Production of Niobium and Ferro-niobium | ☐ |
| Downstream processing of mineral sands | ☐ |
| Titanium Dioxide pigment production | ☐ |
| Zircon and Zirconia production | ☐ |

| | |
|---|---|
| Oil and gas production | ☐ |
| Metal recycling | ☐ |
| Coal extraction, forest products, combustion of coal and thermal-electric production | ☐ |
| Water treatment facilities | ☐ |
| Underground workings and tunnelling | ☐ |
| Building industry | ☐ |
| Geothermal Energy Generation | ☐ |
| Others (indicate) | ☐ |

## 3. Details of legal person (Head of Institution)

Name: .....

Designation: .....

Tel: .....

Email: .....

## 4. Names and information about qualified experts

| Expert 1: Radiation Safety Officer | Expert 2: |
|---|---|
| Name: | Name: |
| Qualification | Qualification: |
| Experience: | Experience: |
| Tel: | Tel: |
| Email: | Email: |

5. Management System

Describe the organisational structure, management control systems and assignment of responsibilities related to radiation safety *(Attach details)*.

6. Verification for safety

(1) Describe the facility design, dimensions, and location of restricted areas.

(2) Describe the ventilation system to decontaminate if an enclosed area.

(3) Describe any equipment including containment system, spray system, retention tanks, storage facilities proposed for use during the decontamination process.

(4) In a separate attachment, please provide written verification that the proposed permanent facility complies with any local zoning ordinances or restrictions that are applicable.

(5) Provide a drawing and description of the waste-holding area.

(6) Provide instructions for the posting and security.
*(Attach safety assessment report, layout or design of the facility, instructions for posting and security for areas where NORM contaminated materials will be used or stored including temporary jobsites, written verification that the proposed permanent facility complies with any local zoning ordinances or restrictions that are applicable if applicable).*

7. Radiation protection requirements

Describe the steps taken to ensure that the magnitude of individual doses, the number of people exposed, and the likelihood that exposure will happen, are as low as reasonably achievable, having regard to economic and social factors.

_____

_____

8. Occupational exposure protection

(1) Describe assignment of responsibilities of individuals and clear lines of authority related to radiation protection and safety.

_____

_____

_____

(2) Describe the procedures that limit the storage of radioactive materials to areas or rooms designated as locations for use and storage. Append information regarding the posting of radiation warning signs for these locations.

_____

_____

(3) Describe the procedures for restricting access to only authorised workers to areas where high risk of exposure exists or radioactive materials and radiation sources are kept.

_____

_____

(4) Outline the process for alerting the relevant person within your organisation to the loss, theft or unauthorised use of radioactive materials or radiation sources.

_____

_____

(5) Describe work place rules and procedures for the specific operations to be followed at work involving NORM.

_____

_____

*(Attach a copy of work place rules and procedures)*

(6) Describe the procedures for monitoring radiation levels in work area.

_____

_____

(7) Describe the procedures for ascertaining and recording radiation doses received by all workers.

_____

_____

_____

(8) Detail the type of dosimeters provided to workers e.g. TLD, OSLD, electronic Dosimeter

_____

_____

(9) State the Details of service provider in (h)

Name: _____

Address: _____

Tel: _____

Email: _____

(10) Describe radiation health surveillance services provided to radiation workers at the facility.

(11) Public exposure protection

Describe your programme for optimising public exposure as low as reasonably achievable.

_____

_____

(12) Waste Management

Describe the procedures for handling and disposing of waste containing radioactive materials.

_____

_____

(13) Emergency procedures

Describe the procedures that will be used in incidents, accidents and other events that involve radioactive materials and radiation sources.

_____

_____

*(Attach an emergency plan)*

(14) Describe the procedures for packaging and transporting radioactive materials and radiation sources.

_____

_____

(15) Describe the procedures for Decommissioning of the facility

*(Attach a decommissioning plan)*

**DECLARATION**

I _____ *(name of authorised person)* certify that all the information given herein is true and correct to the best of my knowledge.

*Date* _____ *Signature of applicant*_____

**FOR OFFICIAL USE ONLY**

License No:

| | By | Date | Signature |
|---|---|---|---|
| Received: | | | |
| Evaluated: | | | |
| General Remarks or Comments: | | | |

## FORM 4

*Regulation 15 (1)*

**Application for Registration for use of Naturally Occurring Radioactive Material Residue**

**GENERAL INFORMATION**

1. Name of applicant (facility): _____

| Physical address | Postal Address | Email Address |
|---|---|---|
| | | |

2. (a) Name and address of Radiation Safety Officer

_____

(b) Telephone Number: _____ E-mail address: _____

(c) Qualification: _____

(d) Experience: _____

3. The representative of the applicant:

Name: _____ Telephone number: _____

Title: _____ e-mail address: _____

4. Type of facility for which the NORM activity is involved (i.e. Practice: offshore oil and gas, and rare earth element mining and processing facilities etc.)

_____

5. Other classified workers that will be responsible for the facility

| Name | Title | Qualification | Experience | Reg. No | Tel No. | Email |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

6. Indicate the stage of the facility under which stage if the NORM facility (e.g., baseline, pre-operational, operational, decommissioning, etc.)

_____

_____

7. Safety assessments:

(a) identifying the ways in which naturally occurring radioactive material exposures could be incurred and accounting for the effects of external events;

_____

_____

(b) determining the expected magnitudes and likelihood of naturally occurring radioactive material exposures in normal operation and to the extent reasonable and practicable, making an assessment of potential exposures;

_____

_____

(c) assessing the adequacy of the provisions for safety; and

_____

_____

(d) systematic critical review of—

(i) the operational limits and conditions for the operation of a facility;

(ii) the ways in which structures, systems and components, including software, and procedures relating to safety might fail, singly or in combination, or might otherwise give rise to exposures, and the consequences of such events;

_____

_____

(iii) the ways in which external factors could affect safety;

_____

_____

(iv) the ways in which operating procedures relating to safety might be erroneous, and the consequences of such errors;

_____

_____

(v) the implications for safety on any modifications;

_____

_____

(vi) the implications of security measures or their modifications on safety; and

_____

_____

(vii) any uncertainties or assumptions and their implications for safety.

_____

_____

(Attach a safety assessment report and supporting documentation)

**DECLARATION**

I, _____ *(name)* Certify that all the information given herein is true and correct to the best of my knowledge.

*Date:* _____ *Signature of applicant:* _____

| | **FOR OFFICIAL USE ONLY** | | |
|---|---|---|---|
| Notification No: | | | |
| | By | Date | Signature |
| Received: | | | |
| Evaluated: | | | |
| General Remarks and/or Comments: | | | |

## FORM 5

*Regulation 50*

**Application for Authorisation for Decommissioning/Remediation of Naturally Occurring Radioactive Material Facilities/Sites**

**GENERAL INFORMATION**

1. Name of applicant (facility): _____

| Physical address | Postal Address | Email Address |
|---|---|---|
| | | |

2. (a) Name and address of Radiation Safety Officer

_____

(b) Telephone Number: _____ E-mail address: _____

(c) Qualification: _____

(c) Experience: _____

3. The representative of the applicant:

Name: _____Telephone number: _____

Title: _____ e-mail address: _____

4. Type of facility for which the NORM activity is involved (i.e. Practice: offshore oil and gas, and rare earth element mining and processing facilities etc.)

_____

5. The qualified expert(s) responsible for the decommissioning process

Name: _____Telephone number: _____

E-mail address: _____Qualification *(Attach evidence)* _____ Experience _____

6. Other classified workers that will be responsible for decommissioning the facility

| Name | Title | Qualification | Experience | Reg. No | Tel No. | Email |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

7. State the reason for decommissioning the facility

_____

8. Proposed start and end date of decommissioning

Starting _____Ending _____

9. Waste management

(a) Details of the facility responsible for management of the waste after decommissioning *(Attach authorisation license).*

_____

_____

_____

(b) Type of waste likely to be generated

_____

(c) Environmental biota (e.g. marine biota) that are likely to be affected by the decommissioning activities

_____

_____

_____

(d) Estimated amount of waste in tonnes with activity concentrations of 10 Bq/g or more per installation to be generated during decommissioning

_____

_____

(e) Purpose of the waste to be generated (e.g. for recycling/ re-use, etc)

_____

_____

*(Attach a copy of the detailed site characterisation plan)*

10. Decommissioning and remediation

(a) Describe the procedures for decommissioning of the facility

*(Attach a copy of decommissioning plan)*

_____

_____

_____

(b) Remediation plan *(Attach a copy of the plan)*

_____

_____

(c) Possible circular economy opportunities that may exist for the nature of the remediation waste stream

_____

_____

11. On submission for your application, please provide the following;

(a) Final radiation survey report

(b) Safety assessment and supporting documentation

(c) Procedures for dealing with and reporting abnormal events, incidents and emergencies

(d) A work breakdown structure and implementation plan

(e) Administrative control procedures for individual tasks

(f) Procedures for the collection and maintenance of records during and after completion of decommissioning

(g) Any other information that may be required by the Atomic Energy Council.

12. You must provide a final decommissioning report on completion of the decommissioning

**DECLARATION**

I, _____ *(name)* Certify that all the information given herein is true and correct to the best of my knowledge.

*Date:* _____ *Signature of applicant:* _____

| **FOR OFFICIAL USE ONLY** | | | |
|---|---|---|---|
| Notification No: | | | |
| | By | Date | Signature |
| Received: | | | |
| Evaluated: | | | |
| General Remarks and/ or Comments: | | | |

**FORM 6**

*Regulation 47 (3)*

**Application for Authorisation to Transport/Store Naturally Occurring Radioactive Material at Facilities**

## GENERAL INFORMATION

1. Name of applicant (facility): _____

| Physical address | Postal Address | Email Address |
|---|---|---|
| | | |

2. (a) Name and address of Radiation Safety Officer

_____

(b) Telephone Number: _____ E-mail address:_____

(c) Qualification: _____

(d) Experience: _____

3. The representative of the applicant:

Name: _____Telephone number: _____

Title:_____e-mail address: _____

4. Give the details of the transport vehicle number, company and personnel for the conveyance of NORM will be required

_____

_____

5. Valid or previous permit of Applicant *(if not applying for the first time)*.

_____

_____

6. Describe the purpose of the intended transport of NORM within or into Country (i.e., Sale, Loan, nominal operations in new area, import /Export consignment etc.

_____

_____

7. Describe the packaging measures and methods made to comply with safety and transport requirements as per Regulations

_____

_____

_____

_____

8. Give a detailed of the preparations made with regards to Safety for premises at end point or establishment (if transport is within the country) where the equipment or NORM will be stored, managed or used).

_____

_____

_____

_____

9. Describe your emergency plan and preparedness procedures

_____

_____

_____

10. Describe the packaging measures and methods made to comply with safety and transport requirements

_____

_____

_____

**DECLARATION**

I, _____ *(name)* Certify that all the information given herein is true and correct to the best of my knowledge.

*Date:* _____ *Signature of applicant:* _____

**FOR OFFICIAL USE ONLY**

Notification No:

| | By | Date | Signature |
|---|---|---|---|
| Received: | | | |
| Evaluated: | | | |

General Remarks and/
or Comments:

*Schedule 4*

*Regulations 5 (3), 6(2) (d), 10(2), 15 (2), 47 (4) & 57 (3)*

## Fees and Charges

**Table 1: Authorisation fees and charges**

| | | |
|---|---|---|
| 1. | Notification of practice | 25 Currency Points |
| 2. | Reading a TLD card (Personal dosimetry) | 0.5 Currency Points |
| 3. | Authorisation related to NORM facilities/sites | 25 Currency Points |
| 4. | Registration of practice | 25 Currency Points |
| 5. | Authorisation to transport NORM | 50 Currency Points |
| 6. | Authorisation to decommission/remediation of NORM facilities/sites | 250 Currency Points |
| 7. | Verification for compliance after enforcement on a NORM facility/site | 50 Currency Points |
| 8. | Inspection of airborne radioactivity (radon gas) in mines & underground tunnels | 50 Currency Points |
| 9. | Authorisation to store NORM | 50 Currency Points |
| 10. | Radionuclide testing (all sample matrices) *except for research* | 5 Currency Points per sample |
| | Research | 7.5 Currency Points |
| 11. | Inspection of other NORM sites other than mines and underground tunnels | 25 Currency Points |
| 12. | Training services | Variable |

**Table 2: Surcharge for Late Renewals**

| **Duration after expiry of a license** | **Percentage of Possess and Use Fees** |
|---|---|
| 1 – 30 days | 5% of the fees |
| 31 days -90 days | 10% of the fees |
| >90 days | 15% of the fees |

**Table 3: Renewal period of Licenses**

| **Category of radiation sources** | **Renewal period of License/permit** |
|---|---|
| Authorisation related to NORM facilities/sites | Every after 2 years |
| Reading a TLD card | Three months |
| Transport of NORM | Six months |

*Schedule 5*

*Regulation 11(3)*

## Exemption Levels

| Nuclide | Activity concentration (Bq/g) | Activity (Bq) | Nuclide | Activity concentration (Bq/g) | Activity (Bq) |
|---|---|---|---|---|---|
| H-3 | $1 \times 10^6$ | $1 \times 10^9$ | Fe-52 | $1 \times 10^1$ | $1 \times 10^6$ |
| Be-7 | $1 \times 10^3$ | $1 \times 10^7$ | Fe-55 | $1 \times 10^4$ | $1 \times 10^6$ |
| C-14 | $1 \times 10^4$ | $1 \times 10^7$ | Fe-59 | $1 \times 10^1$ | $1 \times 10^6$ |
| O-15 | $1 \times 10^2$ | $1 \times 10^9$ | Co-55 | $1 \times 10^1$ | $1 \times 10^6$ |
| F-18 | $1 \times 10^1$ | $1 \times 10^6$ | Co-56 | $1 \times 10^1$ | $1 \times 10^5$ |
| Na-22 | $1 \times 10^1$ | $1 \times 10^6$ | Co-57 | $1 \times 10^2$ | $1 \times 10^6$ |
| Na-24 | $1 \times 10^1$ | $1 \times 10^5$ | Co-58 | $1 \times 10^1$ | $1 \times 10^6$ |
| Si-31 | $1 \times 10^3$ | $1 \times 10^6$ | Co-58m | $1 \times 10^4$ | $1 \times 10^7$ |
| P-32 | $1 \times 10^3$ | $1 \times 10^5$ | Co-60 | $1 \times 10^1$ | $1 \times 10^5$ |
| P-33 | $1 \times 10^5$ | $1 \times 10^8$ | Co-60m | $1 \times 10^3$ | $1 \times 10^6$ |
| S-35 | $1 \times 10^5$ | $1 \times 10^8$ | Co-61 | $1 \times 10^2$ | $1 \times 10^6$ |
| Cl-36 | $1 \times 10^4$ | $1 \times 10^6$ | Co-62m | $1 \times 10^1$ | $1 \times 10^5$ |
| Cl-38 | $1 \times 10^1$ | $1 \times 10^5$ | Ni-59 | $1 \times 10^4$ | $1 \times 10^8$ |
| Ar-37 | $1 \times 10^6$ | $1 \times 10^8$ | Ni-63 | $1 \times 10^5$ | $1 \times 10^8$ |
| Ar-41 | $1 \times 10^2$ | $1 \times 10^9$ | Ni-65 | $1 \times 10^1$ | $1 \times 10^6$ |
| K-40 | $1 \times 10^2$ | $1 \times 10^6$ | Cu-64 | $1 \times 10^2$ | $1 \times 10^6$ |
| K-42 | $1 \times 10^2$ | $1 \times 10^6$ | Zn-65 | $1 \times 10^1$ | $1 \times 10^6$ |
| K-43 | $1 \times 10^1$ | $1 \times 10^6$ | Zn-69 | $1 \times 10^4$ | $1 \times 10^6$ |
| Ca-45 | $1 \times 10^4$ | $1 \times 10^7$ | Zn-69m | $1 \times 10^2$ | $1 \times 10^6$ |
| Ca-47 | $1 \times 10^1$ | $1 \times 10^6$ | Ga-72 | $1 \times 10^1$ | $1 \times 10^5$ |
| Sc-46 | $1 \times 10^1$ | $1 \times 10^6$ | Ge-71 | $1 \times 10^4$ | $1 \times 10^8$ |
| Sc-47 | $1 \times 10^2$ | $1 \times 10^6$ | As-73 | $1 \times 10^3$ | $1 \times 10^7$ |
| Sc-48 | $1 \times 10^1$ | $1 \times 10^5$ | As-74 | $1 \times 10^1$ | $1 \times 10^6$ |
| V-48 | $1 \times 10^1$ | $1 \times 10^5$ | As-76 | $1 \times 10^2$ | $1 \times 10^5$ |
| Cr-51 | $1 \times 10^3$ | $1 \times 10^7$ | As-77 | $1 \times 10^3$ | $1 \times 10^6$ |
| Mn-51 | $1 \times 10^1$ | $1 \times 10^5$ | Se-75 | $1 \times 10^2$ | $1 \times 10^6$ |
| Mn-52 | $1 \times 10^1$ | $1 \times 10^5$ | Br-82 | $1 \times 10^1$ | $1 \times 10^6$ |
| Mn-52m | $1 \times 10^1$ | $1 \times 10^5$ | Kr-74 | $1 \times 10^2$ | $1 \times 10^9$ |
| Mn-53 | $1 \times 10^4$ | $1 \times 10^9$ | Kr-76 | $1 \times 10^2$ | $1 \times 10^9$ |
| Mn-54 | $1 \times 10^1$ | $1 \times 10^6$ | Kr-77 | $1 \times 10^2$ | $1 \times 10^9$ |
| Mn-56 | $1 \times 10^1$ | $1 \times 10^5$ | Kr-79 | $1 \times 10^3$ | $1 \times 10^5$ |

| Nuclide | Activity concentration (Bq/g) | Activity (Bq) | Nuclide | Activity concentration (Bq/g) | Activity (Bq) |
|---|---|---|---|---|---|
| Kr-81 | $1 \times 10^4$ | $1 \times 10^7$ | Tc-97 | $1 \times 10^3$ | $1 \times 10^8$ |
| Kr-83m | $1 \times 10^5$ | $1 \times 10^{12}$ | Tc-97m | $1 \times 10^3$ | $1 \times 10^7$ |
| Kr-85 | $1 \times 10^5$ | $1 \times 10^4$ | Tc-99 | $1 \times 10^4$ | $1 \times 10^7$ |
| Kr-85m | $1 \times 10^3$ | $1 \times 10^{10}$ | Tc-99m | $1 \times 10^2$ | $1 \times 10^7$ |
| Kr-87 | $1 \times 10^2$ | $1 \times 10^9$ | Ru-97 | $1 \times 10^2$ | $1 \times 10^7$ |
| Kr-88 | $1 \times 10^2$ | $1 \times 10^9$ | Ru-103 | $1 \times 10^2$ | $1 \times 10^6$ |
| Rb-86 | $1 \times 10^2$ | $1 \times 10^5$ | Ru-105 | $1 \times 10^1$ | $1 \times 10^6$ |
| Sr-85 | $1 \times 10^2$ | $1 \times 10^6$ | Ru-106[a] | $1 \times 10^2$ | $1 \times 10^5$ |
| Sr-85m | $1 \times 10^2$ | $1 \times 10^7$ | Rh-103m | $1 \times 10^4$ | $1 \times 10^8$ |
| Sr-87m | $1 \times 10^2$ | $1 \times 10^6$ | Rh-105 | $1 \times 10^2$ | $1 \times 10^7$ |
| Sr-89 | $1 \times 10^3$ | $1 \times 10^6$ | Pd-103 | $1 \times 10^3$ | $1 \times 10^8$ |
| Sr-90[a] | $1 \times 10^2$ | $1 \times 10^4$ | Pd-109 | $1 \times 10^3$ | $1 \times 10^6$ |
| Sr-91 | $1 \times 10^1$ | $1 \times 10^5$ | Ag-105 | $1 \times 10^2$ | $1 \times 10^6$ |
| Sr-92 | $1 \times 10^1$ | $1 \times 10^6$ | Ag-110m | $1 \times 10^1$ | $1 \times 10^6$ |
| Y-90 | $1 \times 10^3$ | $1 \times 10^5$ | Ag-111 | $1 \times 10^3$ | $1 \times 10^6$ |
| Y-91 | $1 \times 10^3$ | $1 \times 10^6$ | Cd-109 | $1 \times 10^4$ | $1 \times 10^6$ |
| Y-91m | $1 \times 10^2$ | $1 \times 10^6$ | Cd-115 | $1 \times 10^2$ | $1 \times 10^6$ |
| Y-92 | $1 \times 10^2$ | $1 \times 10^5$ | Cd-115m | $1 \times 10^3$ | $1 \times 10^6$ |
| Y-93 | $1 \times 10^2$ | $1 \times 10^5$ | In-111 | $1 \times 10^2$ | $1 \times 10^6$ |
| Zr-93[a] | $1 \times 10^3$ | $1 \times 10^7$ | In-113m | $1 \times 10^2$ | $1 \times 10^6$ |
| Zr-95 | $1 \times 10^1$ | $1 \times 10^6$ | In-114m | $1 \times 10^2$ | $1 \times 10^6$ |
| Zr-97[a] | $1 \times 10^1$ | $1 \times 10^5$ | In-115m | $1 \times 10^2$ | $1 \times 10^6$ |
| Nb-93m | $1 \times 10^4$ | $1 \times 10^7$ | Sn-113 | $1 \times 10^3$ | $1 \times 10^7$ |
| Nb-94 | $1 \times 10^1$ | $1 \times 10^6$ | Sn-125 | $1 \times 10^2$ | $1 \times 10^5$ |
| Nb-95 | $1 \times 10^1$ | $1 \times 10^6$ | Sb-122 | $1 \times 10^2$ | $1 \times 10^4$ |
| Nb-97 | $1 \times 10^1$ | $1 \times 10^6$ | Sb-124 | $1 \times 10^1$ | $1 \times 10^6$ |
| Nb-98 | $1 \times 10^1$ | $1 \times 10^5$ | Sb-125 | $1 \times 10^2$ | $1 \times 10^6$ |
| Mo-90 | $1 \times 10^1$ | $1 \times 10^6$ | Te-123m | $1 \times 10^2$ | $1 \times 10^7$ |
| Mo-93 | $1 \times 10^3$ | $1 \times 10^8$ | Te-125m | $1 \times 10^3$ | $1 \times 10^7$ |
| Mo-99 | $1 \times 10^2$ | $1 \times 10^6$ | Te-127 | $1 \times 10^3$ | $1 \times 10^6$ |
| Mo-101 | $1 \times 10^1$ | $1 \times 10^6$ | Te-127m | $1 \times 10^3$ | $1 \times 10^7$ |
| Tc-96 | $1 \times 10^1$ | $1 \times 10^6$ | Te-129 | $1 \times 10^2$ | $1 \times 10^6$ |
| Tc-96m | $1 \times 10^3$ | $1 \times 10^7$ | Te-129m | $1 \times 10^3$ | $1 \times 10^6$ |

| Nuclide | Activity concentration (Bq/g) | Activity (Bq) | Nuclide | Activity concentration (Bq/g) | Activity (Bq) |
|---|---|---|---|---|---|
| Te-131 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Ce-143 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Te-131m | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Ce-144[a] | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Te-132 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Pr-142 | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Te-133 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Pr-143 | $1 \times 10^{4}$ | $1 \times 10^{6}$ |
| Te-133m | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Nd-147 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Te-134 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Nd-149 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| I-123 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Pm-147 | $1 \times 10^{4}$ | $1 \times 10^{7}$ |
| I-125 | $1 \times 10^{3}$ | $1 \times 10^{6}$ | Pm-149 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| I-126 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Sm-151 | $1 \times 10^{4}$ | $1 \times 10^{8}$ |
| I-129 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Sm-153 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| I-130 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Eu-152 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| I-131 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Eu-152m | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| I-132 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Eu-154 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| I-133 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Eu-155 | $1 \times 10^{2}$ | $1 \times 10^{7}$ |
| I-134 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Gd-153 | $1 \times 10^{2}$ | $1 \times 10^{7}$ |
| I-135 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Gd-159 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Xe-131m | $1 \times 10^{4}$ | $1 \times 10^{4}$ | Tb-160 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| Xe-133 | $1 \times 10^{3}$ | $1 \times 10^{4}$ | Dy-165 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Xe-135 | $1 \times 10^{3}$ | $1 \times 10^{10}$ | Dy-166 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Cs-129 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Ho-166 | $1 \times 10^{3}$ | $1 \times 10^{5}$ |
| Cs-131 | $1 \times 10^{3}$ | $1 \times 10^{6}$ | Er-169 | $1 \times 10^{4}$ | $1 \times 10^{7}$ |
| Cs-132 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Er-171 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Cs-134m | $1 \times 10^{3}$ | $1 \times 10^{5}$ | Tm-170 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Cs-134 | $1 \times 10^{1}$ | $1 \times 10^{4}$ | Tm-171 | $1 \times 10^{4}$ | $1 \times 10^{8}$ |
| Cs-135 | $1 \times 10^{4}$ | $1 \times 10^{7}$ | Yb-175 | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Cs-136 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | Lu-177 | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Cs-137[a] | $1 \times 10^{1}$ | $1 \times 10^{4}$ | Hf-181 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| Cs-138 | $1 \times 10^{1}$ | $1 \times 10^{4}$ | Ta-182 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Ba-131 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | W-181 | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Ba-140[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ | W-185 | $1 \times 10^{4}$ | $1 \times 10^{7}$ |
| La-140 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | W-187 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Ce-139 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Re-186 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Ce-141 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Re-188 | $1 \times 10^{2}$ | $1 \times 10^{5}$ |

| Nuclide | Activity concentration (Bq/g) | Activity (Bq) | Nuclide | Activity concentration (Bq/g) | Activity (Bq) |
|---|---|---|---|---|---|
| Os-185 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Rn-222[a] | $1 \times 10^{1}$ | $1 \times 10^{8}$ |
| Os-191 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Ra-223[a] | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Os-191m | $1 \times 10^{3}$ | $1 \times 10^{7}$ | Ra-224[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ |
| Os-193 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Ra-225 | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Ir-190 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Ra-226[a] | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Ir-192 | $1 \times 10^{1}$ | $1 \times 10^{4}$ | Ra-227 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Ir-194 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Ra-228[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ |
| Pt-191 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Ac-228 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| Pt-193m | $1 \times 10^{3}$ | $1 \times 10^{7}$ | Th-226[a] | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Pt-197 | $1 \times 10^{3}$ | $1 \times 10^{6}$ | Th-227 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Pt-197m | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Th-228[a] | $1 \times 10^{0}$ | $1 \times 10^{4}$ |
| Au-198 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Th-229[a] | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Au-199 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Th-230 | $1 \times 10^{0}$ | $1 \times 10^{4}$ |
| Hg-197 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Th-231 | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Hg-197m | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Th-nat | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Hg-203 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | (incl. Th-232) | | |
| Tl-200 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Th-234[a] | $1 \times 10^{3}$ | $1 \times 10^{5}$ |
| Tl-201 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Pa-230 | $1 \times 10^{1}$ | $1 \times 10^{6}$ |
| Tl-202 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | Pa-231 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Tl-204 | $1 \times 10^{4}$ | $1 \times 10^{4}$ | Pa-233 | $1 \times 10^{2}$ | $1 \times 10^{7}$ |
| Pb-203 | $1 \times 10^{2}$ | $1 \times 10^{6}$ | U-230[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ |
| Pb-210[a] | $1 \times 10^{1}$ | $1 \times 10^{4}$ | U-231 | $1 \times 10^{2}$ | $1 \times 10^{7}$ |
| Pb-212[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ | U-232[a] | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Bi-206 | $1 \times 10^{1}$ | $1 \times 10^{5}$ | U-233 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Bi-207 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | U-234 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Bi-210 | $1 \times 10^{3}$ | $1 \times 10^{6}$ | U-235[a] | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Bi-212[a] | $1 \times 10^{1}$ | $1 \times 10^{5}$ | U-236 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Po-203 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | U-237 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Po-205 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | U-238[a] | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Po-207 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | U-nat | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Po-210 | $1 \times 10^{1}$ | $1 \times 10^{4}$ | U-239 | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| At-211 | $1 \times 10^{3}$ | $1 \times 10^{7}$ | U-240 | $1 \times 10^{3}$ | $1 \times 10^{7}$ |
| Rn-220[a] | $1 \times 10^{4}$ | $1 \times 10^{7}$ | U-240[a] | $1 \times 10^{1}$ | $1 \times 10^{6}$ |

| Nuclide | Activity concentration (Bq/g) | Activity (Bq) | Nuclide | Activity concentration (Bq/g) | Activity (Bq) |
|---|---|---|---|---|---|
| Np-237[a] | $1 \times 10^{0}$ | $1 \times 10^{3}$ | Cm-244 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Np-239 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Cm-245 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Np-240 | $1 \times 10^{1}$ | $1 \times 10^{6}$ | Cm-246 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Pu-234 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Cm-247 | $1 \times 10^{0}$ | $1 \times 10^{4}$ |
| Pu-235 | $1 \times 10^{2}$ | $1 \times 10^{7}$ | Cm-248 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Pu-236 | $1 \times 10^{1}$ | $1 \times 10^{4}$ | Bk-249 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Pu-237 | $1 \times 10^{3}$ | $1 \times 10^{7}$ | Cf-246 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Pu-238 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Cf-248 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Pu-239 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Cf-249 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Pu-240 | $1 \times 10^{0}$ | $1 \times 10^{3}$ | Cf-250 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Pu-241 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Cf-251 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Pu-242 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Cf-252 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Pu-243 | $1 \times 10^{3}$ | $1 \times 10^{7}$ | Cf-253 | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Pu-244 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Cf-254 | $1 \times 10^{0}$ | $1 \times 10^{3}$ |
| Am-241 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Es-253 | $1 \times 10^{2}$ | $1 \times 10^{5}$ |
| Am-242 | $1 \times 10^{3}$ | $1 \times 10^{6}$ | Es-254 | $1 \times 10^{1}$ | $1 \times 10^{4}$ |
| Am-242m[a] | $1 \times 10^{0}$ | $1 \times 10^{4}$ | Es-254m | $1 \times 10^{2}$ | $1 \times 10^{6}$ |
| Am-243[a] | $1 \times 10^{0}$ | $1 \times 10^{3}$ | Fm-254 | $1 \times 10^{4}$ | $1 \times 10^{7}$ |
| Cm-242 | $1 \times 10^{2}$ | $1 \times 10^{5}$ | Fm-255 | $1 \times 10^{3}$ | $1 \times 10^{6}$ |
| Cm-243 | $1 \times 10^{0}$ | $1 \times 10^{4}$ | | | |

[a] Parent nuclides and their progeny included in secular equilibrium are listed in the following:

| | |
|---|---|
| Sr-90 | Y-90 |
| Zr-93 | Nb-93m |
| Zr-97 | Nb-97 |
| Ru-106 | Rh-106 |
| Cs-137 | Ba-137m |
| Ce-134 | La-134 |
| Ce-144 | Pr-144 |
| Ba-140 | La-140 |
| Bi-212 | Tl-208 (0.36), Po-212 (0.64) |
| Pb-210 | Bi-210, Po-210 |
| Pb-212 | Bi-212, Tl-208 (0.36), Po-212 (0.64) |
| Rn-220 | Po-216 |
| Rn-222 | Po-218, Pb-214, Bi-214, Po-214 |

| | |
|---|---|
| Ra-223 | Rn-219, Po-215, Pb-211, Bi-211, Tl-207 |
| Ra-224 | Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64) |
| Ra-226 | Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210 |
| Ra-228 | Ac-228 |
| Th-226 | Ra-222, Rn-218, Po-214 |
| Th-228 | Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64) |
| Th-229 | Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209 |
| Th-nat | Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64) |
| Th-234 | Pa-234m |
| U-230 | Th-226, Ra-222, Rn-218, Po-214 |
| U-232 | Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212 (0.64) |
| U-235 | Th-231 |
| U-238 | Th-234, Pa-234m |
| U-nat | Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210 |
| U-240 | Np-240m |
| Np-237 | Pa-233 |
| Am-242m | Am-242 |
| Am-243 | Np-239 |

*Schedule 6*

*Regulation 11 (3), (6)*

## CLEARANCE LEVELS

### Part 1: GENERIC CLEARANCE LEVELS

The generic clearance levels for natural radionuclides are—

(a) 10 Bq/g for 40K;

(b) 1 Bq/g for each radionuclide in the actinium decay chain (235U), the uranium decay chain (238U) or the thorium decay chain (232Th).

### Part 2: DERIVED RELEASE LIMITS FOR NORM

| NORM RADIONUCLIDE | Unconditional Derived Release Limits[a] (Bq) |
|---|---|
| Uranium Ore (in equilibrium with all progeny) | 1,000 |
| Uranium-238 (Partitioned) (in equilibrium with Thorium-234 and Protactinium-234) | 10,000 |
| Thorium-230 (no progeny) | 10,000 |
| Radium-226 (in equilibrium with its progeny) | 10,000 |
| Lead-210 (in equilibrium with Bismuth-210 and Polonium-210) | 10,000 |
| Thorium-232 (in equilibrium with all progeny) | 1,000 |
| Radium-228 (in equilibrium with actinium-228) | 100,000 |
| Thorium-228 (in equilibrium with its short-lived progeny) | 10,000 |
| Potassium-40 | 1,000,000 |

(a) Unconditional DRLs (Activity and activity concentration) relate to the long-lived parent radionuclide in equilibrium with its progeny.

*Schedule 7*

*Regulations 29, 30(2) (a), 41 (2) (b) (ii) &48 (1)*

## Dose Limits

The effective dose limits specified in this Appendix apply to the relevant doses from external exposure in the specified period and the relevant committed doses from intakes in the same period. The period for calculating the committed dose shall be 50 years for intake by adults and shall be up to the age of 70 years for intakes by children.

### 1. OCCUPATIONAL EXPOSURE

For occupational exposure of workers over the age of 18 years, the dose limits are:

(a) an effective dose of 20 mSv per year;

(b) an equivalent dose to the lens of the eye of 20 mSv per year;

(c) an equivalent dose to the extremities (hands and feet) or the skin of 500 mSv in a year.

For occupational exposure of apprentices of 16 to 18 years of age who are trained for employment involving exposure to radiation and for students of age 16 to 18 who use sources in the course of their studies, the dose limits are:

(a) an effective dose of 6 mSv in a year;

(b) an equivalent dose to the lens of the eye of 20 mSv in a year;

(c) an equivalent dose to the extremities (hands and feet) or the skin of 150 mSv in a year.

### 2. PUBLIC EXPOSURE

For public exposure, the dose limits are:

(a) an effective dose of 1 mSv in a year;

(b) an equivalent dose to the lens of the eye of 15 mSv in a year;

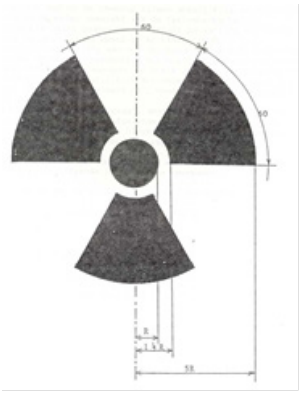
(c) an equivalent dose to the skin of 50 mSv in a year.

*Schedule 8*

*Regulation 32 (2) (c)*

**Radiation Warning Symbol**





**Cross References**

Atomic Energy Regulations, 2012, S.I 4 of 2012.

**PROF. OBWOYA KINYERA SAM**
*Chairperson, Atomic Energy Council*