



اوتوريٽي ڪيٿسائن ڪسلامتن
ڪهيٽن. دان عالم سڪيٽر
Safety, Health and Environment
National Authority

GUIDELINES ON LICENSING REQUIREMENTS FOR ACTIVITY INVOLVING NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM)



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1. INTRODUCTION

The Safety, Health and Environment National Authority (SHENA) is a statutory body set up under the Safety Health and Environment National Authority Act, Chapter 227. The Authority acts and enforces all matters relating to workplace safety, health and the environment as well as radiation within Brunei Darussalam. SHENA is headed by a Chief Executive Officer (CEO) reporting directly to the Minister responsible for the administration of the SHENA Act, Chapter 227.

2. OUR VISION, MISSION, KEY PRINCIPLES AND VALUES

2.1 SHENA Vision Statement

We are committed to making a difference and ensuring Brunei Darussalam is a safe place to work and live.

2.2 SHENA Mission Statement

We will maintain a robust fit for purpose national safety, health and environmental regulatory framework and ensure that the risks to people, assets and the environment are controlled in compliance with Law and regulation, set by the government, implemented by those who create the risk and underpinned by continuous improvement.

2.3 Principles

Our operational philosophy is governed by four key principles:

- a) Structured
- b) Auditable
- c) Focused
- d) Engaged

In all our activities we will ensure a transparent and open dialogue with all our stakeholders. Our stakeholders include industry, government, and the general public and our key principles apply equally to all.

2.4 Values

All our employees are expected to adopt key values in their day-to-day engagements. Our employees will demonstrate the following values in all aspects of our activities:

- a) Integrity
- b) Respect
- c) Reasonability
- d) Professionalism

3. PURPOSE

This document is prepared as additional guidelines for applicants to apply for licence to conduct radiation activities that involve Naturally Occurring Radioactive Material (NORM) in Brunei Darussalam in accordance with Section 8 of the Radiation Protection Act (CAP 228).



4. SCOPE

These guidelines outline the regulatory requirements in the licence application prior to submission to the Safety, Health and Environment National Authority (SHENA) for licensees who import, export, sell, deal, transport, keep or has in possession of, is in control of and use Naturally Occurring Radioactive Material (NORM), as referred to in Section 6 of the Radiation Protection Act, Chapter 228.

This document also provides guidance to applicant on the regulatory requirement of the disposal and accumulation of radioactive waste in accordance with Sections 12 and 13 of the Radiation Protection Act, Chapter 228 respectively. Readers of this guideline are asked to familiarize themselves with these provisions.

These guidelines may be amended or varied by SHENA from time to time.

5. DEFINITIONS AND ABBREVIATIONS

In this guideline, the abbreviations commonly used are as follows:

- | | |
|-----------------|---|
| i. Bq/g | - Becquerel per gram |
| ii. GRW | - General Radiation Worker |
| iii. IAEA | - International Atomic Energy Agency |
| iv. NORM | - Naturally Occurring Radioactive Material |
| v. RPA, 228 | - Radiation Protection Act, Chapter 228 |
| vi. RPO | - Radiation Protection Officer |
| vii. SHENA | - Safety, Health and Environment National Authority |
| viii. TENORM | - Technologically Enhanced Naturally Occurring Radioactive Material |
| ix. μ Sv/hr | - Micro-sievert per hour |

The definitions in this guideline are as follows:

- (i) Activity Concentration is the activity per unit mass or volume of the material in which the radionuclides are essentially uniformly distributed.
- (ii) Control Limit is an established limit which may or may not derived based on regulatory limit.

6. REGULATORY CONTROL

NORM is the term used to describe radioactive material that occurs naturally and is present in the environment. Uranium-238 (U-238) and Thorium-232 (Th-232) along with the radionuclides in their decay series are all considered as NORM. The activity concentrations of NORM vary widely depending on its geological materials such as rocks, soils, ores, minerals, and their presence contributes to the existing natural background radiation level of the environment. Hence, radiation exposure due to NORM is categorized under existing exposure situation.



NORM that has been concentrated or exposed to the accessible environment as a result of human activities such as mining and drilling in oil and gas industry is known as TENORM. Section 6 of the RPA, 228 specifies that a radiation licence needs to be acquired from SHENA prior to dealing in any activities involving radioactive material. While Section 12 and 13 of the RPA, 228 specifies that written approval from SHENA is required prior to disposal and accumulation of any radioactive waste respectively. This regulatory control aims to ensure that radiological risk resulted from the activities is effectively managed and minimized for the protection of the worker, public and environment.

Regulatory and safety control limits in regard to the level of activity involving NORM which a practice needs to be licensed under RPA, 228 is described in **Appendix A**.

7. REQUIREMENTS FOR LICENCE APPLICATION

An applicant who is to undertake any activities involving NORM/TENORM or waste disposal management of NORM/TENORM must ensure that all requirements for the application of a licence are met at the time of application (refer to checklist in **Appendix B**).

An applicant who submits an application that does not meet the requirements set by SHENA will be automatically rejected and the applicant is required to resubmit a new application accompanied by additional supporting documents if the applicant wishes to do so (refer to **Appendix B**).

8. APPLICATION PROCESS

This guideline should be read in conjunction with the General Requirements for Radiation Licence Application Document. The flowchart for licence application appears in **Appendix C**.

9. SAFETY AND SECURITY REQUIREMENTS

The licensee shall ensure that safety equipment including but not limited to personal protective equipment (PPE), helmets, safety shoes, goggles, radiation masks, personal dosimeter, survey meters, radiation signage, etc are readily available.

The licensee shall also ensure the security of radioactive material that comprises the physical protection measures such as detection, delay and response elements and necessary arrangements to protect radioactive materials in use, handling, possession, storage and transport against theft, loss, sabotage, and malicious acts.



10. EFFECTIVE DATE

These guidelines take effect immediately upon the date of release and when they are published on the SHENA website at www.shena.gov.bn. For further questions regarding this guideline, the licensees and new applicants can contact the Authority at:

Safety Health and Environment National Authority (SHENA)
Level 6, Knowledge Hub Building,
Simpang 32-37, Kg Anggerek Desa,
Bandar Seri Begawan BB3713
Brunei Darussalam

Operating hours : Mon – Fri 8:00am – 11:30am; 2:00pm – 4:00pm
Office telephone no. : +673 2382000
Email address : radapplication@shena.gov.bn

11. REFERENCES

- i. Radiation Protection Act, Chapter 228.
- ii. IAEA-TEDOC-1484 Regulatory and Management Approaches for the Control of Environmental Residues Containing Naturally Occurring Radioactive Material (NORM), 2006
- iii. IAEA Radiation Protection and the Management of Radioactive Waste in the Oil and Gas Industry, Safety Reports Series No. 34, 2003
- iv. IAEA Safety Standards Series No. GSG-9: Regulatory Control of Radioactive Discharges to the Environment, 2018.



APPENDIX A

REGULATORY AND SAFETY CONTROL LIMITS

NO.	RADIONUCLIDE	ACTIVITY CONCENTRATION (Bq/g)
1	Each radionuclide in the uranium and thorium decay chains	1.0
2	Potassium-40 (K-40)	10.0

NO.	PARAMETER	LIMIT
1	External Exposure Dose Rate	0.5 μ Sv/hr
2	Contaminated Materials: Level of Exposure dose rate at 5cm from surface	0.5 μ Sv/hr
3	Waste categorization of NORM and TENORM Radionuclide (U-238 series and Th-232 series)	1.0 Bq/g (inclusive background)
4	Waste Disposal of NORM/TENORM	0.3 mSv/year
5	Transportation: At any point 2 metres from the outer lateral surfaces of the vehicle	0.1 mSv/hr



APPENDIX B

CHECKLIST FOR NEW RADIATION LICENCE APPLICATION

Please complete and attach the following documents during the submission of application:

1.0 ORGANIZATION AND MANAGEMENT	APPLICANT	SHENA
1.1 Completed Radiation License Application Form, signed and stamped	<input type="checkbox"/>	<input type="checkbox"/>
1.2 A copy of company registration form (Form 16/17 or Form X)	<input type="checkbox"/>	<input type="checkbox"/>
2.0 RADIATION PROTECTION OFFICER (RPO)		
2.1 Completed Radiation Worker Application Form	<input type="checkbox"/>	<input type="checkbox"/>
3.0 RADIATION PROGRAMME		
3.1 A copy of Company Radiation Protection Program inclusive of emergency plan	<input type="checkbox"/>	<input type="checkbox"/>
3.2 A copy of Company Radioactive Security <i>Plan</i> (applicable for radioactive materials category 1 and 2 only)	<input type="checkbox"/>	<input type="checkbox"/>
4.0 RADIATION SURVEILLANCE MONITORING EQUIPMENT		
4.1 A copy of quotation for purchase of personal dosimeter for each potential RPO and GRW or current personnel dose records	<input type="checkbox"/>	<input type="checkbox"/>
4.2 A copy of quotation for purchase of environmental dosimeter for each control area or current records	<input type="checkbox"/>	<input type="checkbox"/>
4.3 A copy of quotation/catalogue of survey meter (minimum 2 unit to purchase)	<input type="checkbox"/>	<input type="checkbox"/>
5.0 ADDITIONAL DOCUMENTS FOR ACTIVITIES INVOLVING NORM/TENORM		
5.1 Complete chemical analysis for raw materials and/or residue/waste (including analysis on radionuclide concentration activity for U-238 and Th-232 in unit of Bq/g)	<input type="checkbox"/>	<input type="checkbox"/>
5.2 Copy of Mass balance analysis for radioactive material	<input type="checkbox"/>	<input type="checkbox"/>
5.3 Expected total percentage of raw materials and/or residue/waste to be used and source of origin	<input type="checkbox"/>	<input type="checkbox"/>
5.4 Expected waste or residues to be generated during the activity (solid, liquids and gases)	<input type="checkbox"/>	<input type="checkbox"/>
5.5 Copy of Certification of Analysis (CoA) of raw materials and/or waste and/or residues issued by an Accredited Laboratory and a copy of Laboratory Accreditation Certificate Performing the analysis	<input type="checkbox"/>	<input type="checkbox"/>
5.6 Radiological Monitoring and Assessment	<input type="checkbox"/>	<input type="checkbox"/>



6.0 ADDITIONAL DOCUMENTS FOR WASTE MANAGEMENT INVOLVING NORM/TENORM FACILITY

6.1	Radiological Impact Assessment (RIA)	<input type="checkbox"/>	<input type="checkbox"/>
6.2	Radiological Monitoring and Assessment	<input type="checkbox"/>	<input type="checkbox"/>
6.3	Safety Case for the Radioactive Waste Disposal Management Facility	<input type="checkbox"/>	<input type="checkbox"/>
6.4	Radioactive Waste Management Programme	<input type="checkbox"/>	<input type="checkbox"/>
6.5	Decommissioning Programme	<input type="checkbox"/>	<input type="checkbox"/>
6.6	Emergency Response Plan (ERP)	<input type="checkbox"/>	<input type="checkbox"/>
6.7	Copy of Approval for Disposal Site from Relevant Authority/Authorities	<input type="checkbox"/>	<input type="checkbox"/>
6.8	Layout of Waste Disposal Facility	<input type="checkbox"/>	<input type="checkbox"/>



APPENDIX C

FLOWCHART FOR LICENCE APPLICATION

