

RADIOLOGICAL ENVIRONMENTAL IMPACT ASSESSMENT (REIA) IN THE LEGAL AND REGULATORY FRAMEWORK FOR NUCLEAR FACILITY

Department of Atomic Energy Malaysia (ATOM MALAYSIA)
Ministry of Energy, Science, Technology, and Innovation (MOSTI)

Ensuring Safety, Security & Safeguarding Peaceful Nuclear Activities

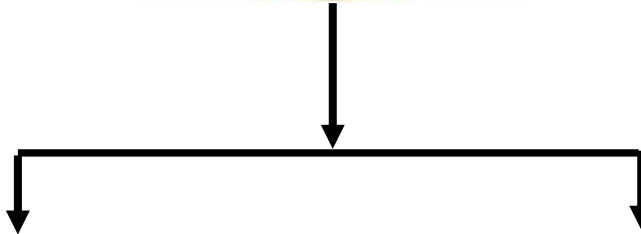
Presentation Outline

- ◆ Introduction
- ◆ Regulatory Body Infrastructure
- ◆ Malaysian Legal Framework
- ◆ REIA for nuclear-related activities in Malaysia
- ◆ Conclusions – A way forward

Introduction

- Environmental assessment is an important technique for **ensuring that the likely impacts** on the environment of proposed development/facility are fully understood and taken into account before such development is **allowed to go ahead**.
- **Environmental Impact Assessment (EIA)** is required for **activities prescribed** under the **Environmental Quality Act 1974 (Act 127)- Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987**.
- In addition, **Radiological Environmental Impact Assessment (REIA)** is also required for **activities associated with radioactive materials and radioactive waste** under **Atomic Energy Licensing Act 1984 (Act 304)**.

Regulatory Body Infrastructure



Director General
Department of Environment (JAS)



Act 127

EIA



DEPARTMENT OF ATOMIC
ENERGY MALAYSIA

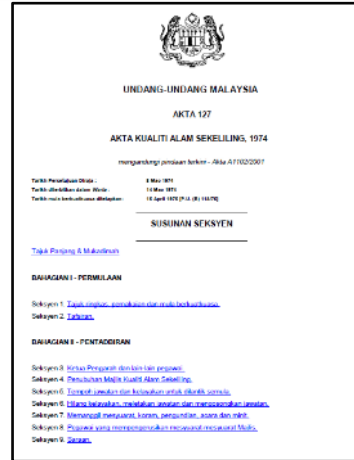
Director General
Department of Atomic Energy Malaysia
(Atom Malaysia)

Act 304

REIA

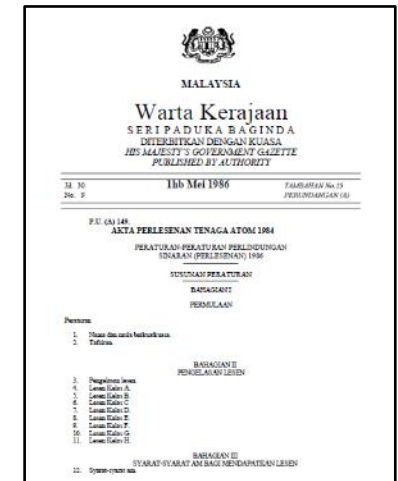
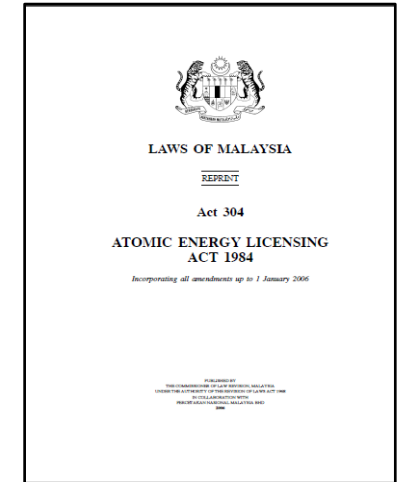
Malaysia Legal Framework

- Environmental Quality Act 1974 (Act 127) was established on 1974 (Act 127)
- Department of Environment (DOE) was established under Act 127
- An act relating to prevention, abatement, control of pollution and enhancement of the environment, and for purposes connected therewith or related thereto. .
- **EIA** is subjected under Section 34A (2) **Environment Quality Act 1974**, 2nd Schedule* - Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 – using radioactive materials and generating radioactive wastes.



Excerpt of the statutory instruments of Malaysia

- Atomic Energy Licensing Act was established on 1984 (Act 304)
- Atomic Energy Licensing Board (AELB) was established under Act 304
- The act to provide for the regulation and control of atomic energy, for the establishment of standards on liability for nuclear damage and for matters connected therewith or related thereto.
- **REIA** is subjected under **Atomic Energy Licensing Act 1984**, Radiation Protection (Licensing) Regulations 1986 - for nuclear installation, milling of materials containing or associated with radioactive materials/nuclear materials, waste treatment facility.



Note: *2nd Schedule = subject to public display & public comments

RESEARCH REACTOR TRIGA MARK II PUSPATI, MALAYSIA NUCLEAR AGENCY

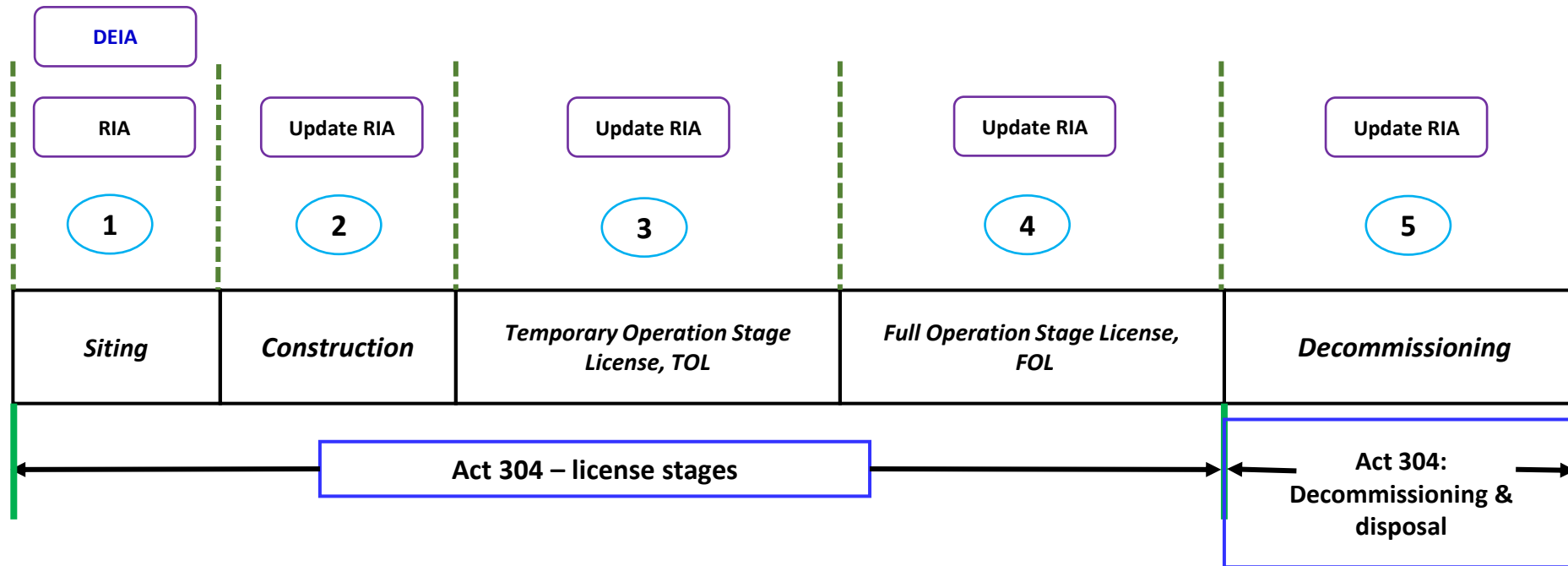
- Reactor Type: TRIGA Mark II
- Reactor power: 1MW thermal
- Start of installation: 9 Nov 1981
- First criticality: 28 June 1982



- Reactor Model: 1 MW TRIGA Mark II
- Critical/ Status: 28 June 1982/ Operational
- Fuel: U-ZrH (Standard TRIGA Fuel)
- Enrichment: 19.9%
- No. Fuel: Core #15 with 8.5%; 12% & 20% Fuel element weight percent
- Coolant & Moderator: Demineralized Light Water
- Reflector: Graphite
- Control Rod: Boron Carbide
- Neutron Source: Am-Be
- Core Cooling: Natural Convection
- Heat Rejection: Two-Loop Cooling System
- Maximum Fuel Temperature: 500°C
- Utilization: NAA, Material Studies, Neutron camera, training & education.

REIA for nuclear-related activities in Malaysia

Example of nuclear installation / milling of materials containing or associated with radioactive materials/nuclear materials, waste treatment facility license.



RADIOLOGICAL ENVIRONMENTAL IMPACT ASSESSMENT (REIA)

- to estimate and control the radiological effects on the workers, public and environment;
- for planned exposure situations as part of the authorization process and, when applicable, as part of a governmental decision making process for facilities and activities; and
- the situations covered include both exposures expected to occur in normal operation and potential exposures:
 - ✓ To establish baseline data prior to operation of the plant, which will later be used to benchmark the radiological impact of the plant;
 - ✓ To ensure that the operational of the plant is within the acceptable level as what has been assessed and predicted by the RIA; and
 - ✓ To ensure that the operation of the plant comply the regulations and the guidelines issued by AELB

CONTENT FOR THE PREPARATION OF REIA

activity milling of materials containing or associated with radioactive materials/nuclear materials

1. Executive Summary
2. General
3. Scope
4. Objective of RIA
5. Description of the plant and the process involved
6. Description of the site and its surrounding environment
7. Current state of radiological environment
8. Impact assessment
9. Mitigation measure
10. Monitoring program
11. Conclusion
12. Reference

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Example activities



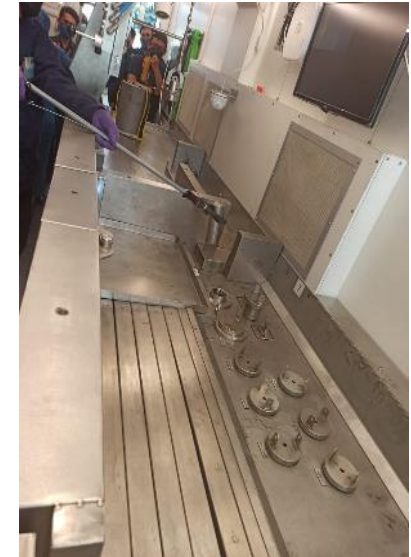
- Secured Landfill



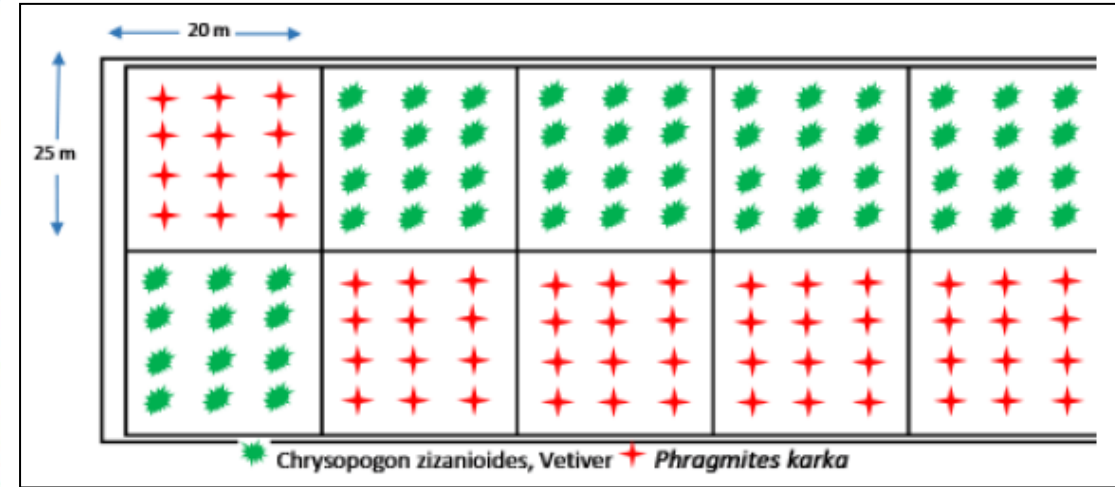
- Engineered cell (Thorium Hydroxide)



- Borehole disposal facility



Example activities



- Sludge Farm



- Residue Storage Facility (RSF) (iron phosphate)



- Permanent Disposal Facilities (PDF)

Conclusion : A way forward

- Strengthen best available techniques & best management in conducting EIA and REIA
- Integrated communication in decision making through other agency
- Environmental & radiological safety mainstreaming
- Enhancement of EIA / REIA procedures

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THANK YOU