

STATUTORY INSTRUMENT

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THE PROTECTION FROM RADIATION Act, 2001

(Act No. 14 of 1991)

THE SAFETY IN MINING AND MILLING OF URANIUM AND OTHER ORES REGULATIONS, 2012 Short title.

IN EXERCISE of the powers conferred upon him by section 17 of the Protection from Radiation Act, 2001 and after consultation with the Board, the Minister responsible for Energy and Water Resources hereby makes these Regulations.

1. In these Regulations unless the context otherwise requires— Interpretation

“backfill” means the placing of material (including waste rock) into excavated portion of mine working;

“clean rock” means rock or overburden that does not require regulatory control and can be considered a resource for construction purposes or other net benefit;

“clearance” means the removal of radioactive material or radioactive objects within authorized practices from any further control by the Board;

“community” means those people living in the area which the activity may affect or which may generate concern regarding health, environment, economic, or cultural and social issues;

“decommissioning” means all steps leading to the release of a facility, other than a disposal facility, from regulatory control other than confirming the decommissioned status of a facility including the processes of decontamination, dismantling and site rehabilitation;

“discharges” means planned and controlled releases into the environment, as a legitimate practice, within limits authorized by the Board of liquid or gaseous material that originates from regulated facilities during normal operation;

“disposal” means the emplacement of waste in an appropriate facility without the intention of retrieval;

“environmental values” means those aspects of the ecosystem in which worth is placed by the community or society because of their biodiversity, aesthetic attributes, use for recreation or use as a resource;

“exemption” means the determination by the Board that a source or practice need not be subject to some or all aspect of regulatory control on the basis that the exposure (including potential exposure) due to the source or practice is too small to warrant the application of those aspects or, that this is the optimum option for protection irrespective of the actual level of doses or risks;

“hazardous substance” means a substance other than a radioactive substance that is used or produced in the course of carrying on a licensed activity and that may pose a risk to the environment or the health and safety of people;

“*in situ* recovery” means operations to extract uranium by means of chemical dissolution and liquid pumping systems without physically disturbing the ore body;

intrusive exploration” means mechanized sampling of the surface and subsurface geological structures for the purpose of bulk sampling, by drilling, trenching or coring or underground mining operations, and requires surface access to the potential uranium mineralized target area including pilot or development testing;

“ionizing radiation” for the purpose of radiation protection, means radiation capable of producing ion pairs in biological materials;

“licence” means a legal document issued by the Board granting authorization to perform specified activities related to a facility or activity;

2. (1) These regulations shall apply to intrusive exploration, siting, of construction, operation and decommissioning of mining and processing of uranium and processing of heavy mineral sands, mining and processing of rare earth elements, mining ores other than uranium and heavy mineral sands, production of oil and gas, manufacture of titanium dioxide pigment, the phosphate industry, the zircon and zirconia industry, production of tin, tantalum, copper, aluminum, iron and steel and geothermal energy generation. Scope.

(2) Nothing in these Regulations shall be construed as relieving any person from complying with any applicable law governing safety, health and protection of workers, the public and the environment.

Radiation protection plan.

3. For the purposes of these Regulations, a radiation protection plan shall include—

- (a) (i) identification of sources of ionizing radiation, associated exposure pathways and assessment of radiation risks;
- (ii) the design, engineering and administrative controls to optimize protection measure and ensure compliance with the established dose limits;
- (iii) the health and safety training program, that includes radiation protection, for workers;
- (iv) a medical health surveillance program, that responds to the potential health and safety risk posed by the activity; and
- (v) arrangements for monitoring, reviewing reporting and recording the radiation exposure of workers.
- (b) environmental management plan which include—
 - (i) the environmental protection policies and programs that will ensure environmentally sustainable development during design, construction, operation decommissioning and post-closure activities;
 - (ii) measures to prevent, limit and control releases of radioactive and hazardous substances (whether solid, liquid or gas) to the environment;

- (iii) identification of the potentially impacted ecosystems, resources and the environmental values to be protected and an assessment of the associated risks;
- (iv) the proposed location of authorized releases of radioactive substances and hazardous substance into the environment, including their physical chemical and radiological characteristics;
- (v) the effect on the environment that may result from the activity to be licensed and the measures that will be taken to prevent or mitigate the risks of those effects;
- (vi) the measure to prevent and mitigate the effects of accidental releases of radioactive material and hazardous substances on the environment;
- (vii) the environmental quality objectives to be achieved, with environmental outcomes and performance measures;
- (viii) the environmental monitoring program including baseline or pre-operational monitoring;
- (ix) the discharge quality objectives to be achieved;
- (x) the discharge monitoring program; and
- (xi) measures to continuously improve environmental performance.
- (c) a waste management program shall include—

- (i) measures to ensure that the generation of waste is kept to the minimum practicable;
 - (ii) categorization of all wastes and identification of associated management system;
 - (iii) characteristics of all waste streams including tailing, waste rock and industrial waste;
 - (iv) consideration of radiological and non-radiological hazards, feasible management options (including backfill into mine workings)
 - (v) definition of criteria and protocols to segregate waste into appropriate categories including those used to identify clean rock;
 - (vi) a description of the design and schedule for the construction, operation and decommissioning of the waste management system including handling transport, temporary storage and final disposal and a risk assessment of and justification for selected management options; and
 - (vii) a safety assessment of the waste management system including accidental situations and long term safety.
- (d) a strategic management plan which shall include–
- (i) a recognized quality management process;
 - (ii) a commitment to maintenance of an acceptable safety culture;

- (iii) incorporation of sustainable development principles into decision making processes;
 - (iv) description of risk assessment and risk management processes used by the organization;
 - (v) demonstration of adequate expertise, human resources and financial resources;
 - (vi) an organizational management structure that includes allocation of functions, responsibilities and authorities;
 - (vii) a program for self-assessment and audit against regulatory requirements;
 - (viii) a program for regular review of radiation environment and waste management plans and their implementation; and
 - (ix) a program for independent verification of radiation, environmental and waste management plans and their implementation.
- (e) a community engagement plan which shall include–
- (i) a public information program which requires effective communication to the community on the nature of the effects of the activity or practice, on the environmental and the health and safety of persons which shall cover routine and non-routine releases to the environment, environmental monitoring reports, unplanned events, emergencies and any other situations in which the community has an interest.

- (ii) commitment to openness and transparency including the timely release and maximum disclosure of relevant information; and
- (iii) commitment to consultation and engagement with all affected parties on the assessment and control of all significant health, safety, environment, social, cultural and economic impacts of operations.

Intrusive Exploration. 4. A company which wishes to conduct intrusive mining activity shall apply to the Board for a licence.

(2) The application shall include-

- (a) the applicant's name and address
- (b) a general description of the proposed activity and the schedule;
- (c) a description of the location of the proposed activity including access to the site;
- (d) a description of the proposed methods for undertaking the activity;
- (e) a list of the categories of material proposed to be explored for;
- (f) the plans for radiation protection and environmental and waste management that comply with regulation 3; and
- (g) a site remediation and restoration plan.

Construction of mines or mills. 5. (1) A company which wishes to construct a mine or mill shall apply to the Board for a licence.

(2) The application shall include-

- (a) the applicant's name and business address;
- (b) a general description of the location including, a surface plan which indicates the boundaries of the mine or milling facility and the area where the activity to be licensed is proposed to be under taken;
- (c) the proposed activities and their schedule;
- (d) the radiation protection plan and the environment management plan that comply with regulation 3.
- (e) a strategic management plan that complies with regulation 3.
- (f) a community engagement plan that complies with regulation 3.
- (g) a general description of the site's geology and mineralogy and the geotechnical characteristics that influenced the design of the mine or mill;
- (h) the design details for the mine or mill including the proposed installations or structures, excavations, underground working, open pit development or in situ recovery developments planned;
- (i) the results of a process hazard analysis or safety analysis;
- (j) the proposed decommissioning plan;
- (k) initial de-commissioning plan for the activities to be undertaken;
- (l) a financial guarantee of an amount that the Board may determine;

- (m) a description and justification for the proposed mining methods and programme;
- (n) the components, systems and equipment proposed to be installed at the mine including their design and operating condition, and
- (o) a description of the characterization and management controls to identify and handle the mine materials.

Underground
mines

(6) An application for the construction of an underground mine shall include the information in regulation 3 and the following:-

- (a) the proposed ventilation methods and equipment for controlling air quality; and
- (b) the proposed maintenance and in-service inspection programme for the ventilation control system.

In situ
recovery
mining.

7. (1) A company which wishes to undertake an *in situ* mining shall apply to the Board for a licence.

(2) The application shall include the information required in regulation 3 and the following :-

- (a) the characteristic geology of the mine;
- (b) demonstration that groundwater impacts can be managed or remedied;
- (c) the location and depth of the injection, recovery, monitoring and waste disposal wells;
- (d) the proposed reporting of the extent and movement of fluids and ground water including monitoring and modelling;
- (e) proposed reporting of impact of mining operations on ground water; and

- (f) location and depth of the installed injection, recovery, monitoring and waste disposal wells.

8. (1) An application to operate a mine or mill shall include- Operation of
mine or mill.

- (a) the applicant's name and business address;
- (b) a general description of the proposed activities and their schedule;
- (c) the results of a process-hazard analysis or safety analysis;
- (d) the proposed policies, methods and programs for operating and maintaining the mine or mill;
- (e) a radiation protection plan that meets the requirements of the Board;
- (f) an environmental management plan that meets the requirements of environmental management plan in regulation 3,
- (g) a waste management plan that meets the requirements of waste management plan in regulation 3;
- (h) a strategic management plan that meets the requirements of regulation 3;
- (i) a community engagement plan that meets the requirements of regulation 3,
- (j) updates of the proposed decommissioning plan, including commitments to ongoing progressive rehabilitation;
- (k) a financial guarantee of an amount to be determined by the Board;

- (l) the ventilation, air quality management and ground control plans;
 - (m) proposed reporting of the extent and movement of mine fluids and groundwater including monitoring and modeling;
 - (n) proposed reporting of impacts of mining operations on groundwater, and
 - (o) location and depth of the installed injection, recovery, monitoring and waste disposal wells.
- Decommissioning. (9) An application to decommission a mine or mill shall include-
- (a) the applicant's name and business address;
 - (b) a decommissioning plan that includes-
 - (i) the scope of the proposed decommissioning including land, buildings, structures, components, systems, equipment, waste materials, radioactive materials and hazardous substances that will be affected.
 - (ii) the scope of the currently authorized mine or mill that will not be subject to decommissioning;
 - (c) the term of the proposed authorization to include the periods of active decommissioning work and ongoing institutional control;
 - (d) the methods and programmes for carrying out the decommissioning;
 - (e) schedules including proposals to progressively apply for authorization to release parts of the authorized mine or mill from regulatory control;

- (f) a radiation protection plan, environmental management plan, a waste management plan and a strategic management plan that meets the requirement of regulation 3;
- (g) a community engagement plan that meets the requirement of regulation 3;
- (h) a financial guarantee of an amount determined by the Board;
- (i) a safety case including an environmental assessment to support the implementation of the final decommissioning plan;
- (j) the objectives and end-state status of the authorized mine or mill on completion of works;
- (k) radiological and environmental criteria;
- (l) performance measures and monitoring programs that will demonstrate that the end-state criteria have been achieved;
- (m) details of ongoing institutional controls including access restriction and longterm care and maintenance activities such as water treatment;
- (n) justification for any institutional controls;
- (o) monitoring programs to demonstrate that decommissioning objectives continue to be achieved after the decommissioning phase is completed;
- (p) the content of records to be provided to the Board at the conclusion of the term of the authorization and location form and accessibility of these records; and

Release from
regulatory
control.

- (q) contingency measures to be taken if decommissioning objectives do not continue to be achieved,

(10) The application to release a mine or mill from regulatory control shall include-

- (a) the applicant's name and business address;
- (b) the scope of the authorized site where release from regulatory control is being sought;
- (c) a general description of the site and its location, and any remaining buildings, structures and equipment;
- (d) results of decommissioning activities including-
 - (i) radiation surveys;
 - (ii) environmental monitoring
- (e) an assessment of the effectiveness of rehabilitation works;
- (f) structural assessment of engineered barriers;
- (g) evidence that ongoing institutional controls including access restrictions and long-term case and maintenance activities such as water treatment are in place and operating;
- (h) location, form and accessibility of records that have been retained;
- (i) the updated safety case based on results of decommissioning activities;
- (j) the proposed timing of release; and

- (k) a community engagement plan that meets the requirements of regulation 3.

11. (1) A licensee shall maintain primary responsibility for safety and for ensuring compliance with all requirements in these Regulations. Responsibilities of licensees.

(2) The licensee shall-

- (a) comply with the terms and conditions of the licence;
- (b) notify the Board of its intention to introduce modifications to any practise for which it has been licensed whenever the modification could have significant implications for safety; and shall not carry out the modification unless specifically authorized by the Board;
- (c) submit to the Board all routine reports that are required by the Board; and in form accepted to the Board;
- (d) notify the Board as soon as practicable, but not later than twenty four hours after discovery of an accident or incident which has the potential for or has resulted in radiation doses in excess of the regulatory limit or an unplanned environmental impact;
- (e) submit to the Board within thirty days after the initial notification referred to in paragraph (d) a written report stating the cause of the accident or incident and information on the doses, corrective measures and any other relevant information;
- (f) notify the Board of any breach of their authorization in a timely manner;

- (g) permit inspectors from the Board full access to the authorized facility and such plans, records, and information that are required to be maintained by the licensee;
- (h) ensure that the radiation level of all mineral ores being exported are within the limits determined by the Board;
- (i) ensure that all tailings from ores are monitored for radioactive contamination and those above the limits determined by the Board safely disposed of in the appropriate manner.

Cancellation
of licence.

12. (1) Any licensee who fails to comply with any of the provisions of these Regulations shall have the licence cancelled.

(2) Any person who commits an offence under these regulations shall be liable to the penalties as established in the enforcement policy issued by the Authority.

(3) The Authority shall impose an administrative fine, clause of facility or any combination of these.

(4) Any person or corporate fine, closure of facility or any combination of these.

(5) Any Licensee person may appeal to the Board if it is not satisfied with the decision made against it pursuant to these Regulations.

Inspection of
Mining sites.

(13) The Board shall monitor the activities of its licensee to ensure that these Regulations are complied with.

MADE this 29th day of October, 2012.

OLUNIYI ROBBIN-COKER,
Minister of Energy and Water Resource.