

**NORTHERN TERRITORY OF AUSTRALIA**

**MINES SAFETY CONTROL (RADIOACTIVE WASTE MANAGEMENT)  
REGULATIONS**

As in force at 11 December 2001

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# NORTHERN TERRITORY OF AUSTRALIA

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## MINES SAFETY CONTROL (RADIOACTIVE WASTES MANAGEMENT) REGULATIONS

### Regulations under the *Mines Safety Control Act*

#### 1 Citation

These Regulations may be cited as the *Mines Safety Control (Radioactive Wastes Management) Regulations*.

#### 2 Commencement

These Regulations shall come into operation at the expiration of 14 days from the date on which the making of the Regulations is notified in the *Gazette*.

#### 3 Interpretation

- (1) In these Regulations, unless the contrary intention appears:

***appropriate authority*** means the Director of Mines.

***Code*** means the Code of Practice on the Management of Radioactive Wastes from the Mining and Milling of Radioactive Ores (1982), referred to as the Radioactive Waste Management (Mining and Milling) Code (1982), made under section 9(1) of the *Environment Protection (Nuclear Codes) Act 1978* of the Commonwealth and set out in the Schedule to these Regulations, as amended from time to time.

- (2) Words and expressions that are used in these Regulations have the meanings that they have in the Act.
- (3) Subject to subregulation (2), words and expressions used in these Regulations have the meanings that they have in the Code.
- (4) Where an action, matter or thing in respect of which the approval of an appropriate authority is required under the Code is the subject of an authorization under the *Uranium Mining (Environment Control) Act*, that action, matter or thing shall, for the purposes of these Regulations and the Code, to the extent that it is so authorized

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under that Act, be deemed to have been approved under the Code by an appropriate authority and the expression "appropriate authority" used in these Regulations and the Code shall be construed accordingly.

#### **4 Application**

These Regulations apply to each mine in the Territory.

#### **5 Duties of owner and manager**

(1) The owner, operator and manager of a mine shall ensure that the provisions of the Code are applied to and in relation to the mine and that all approvals required by the Code to be obtained in relation to:

- (a) operations to which the Code applies; and
- (b) waste management programmes,

in and in relation to the mine are obtained and that those operations and programmes are carried out in accordance with those approvals.

(2) Without limiting the generality of subregulation (1), where the operations of a mine include the mining or milling of radioactive ores, and the provisions of the Code apply to that mining or milling, the owner, operator and manager of the mine shall ensure that:

- (a) a proposed waste management programme, together with the assessment of potential radiological impacts of the radioactive wastes arising from all stages of the mining and/or milling operation, is prepared and submitted to the appropriate authority for approval;
- (b) a plan delineating the restricted release zone is submitted to the appropriate authority for approval;
- (c) a monitoring programme is established to the satisfaction of the appropriate authority before the commencement of construction or development work at the mine and is maintained throughout the duration of the operation and for such further time as is required by the appropriate authority;
- (d) sufficient staff, with qualifications and experience acceptable to the appropriate authority, are employed to establish, operate and maintain the monitoring programme;
- (e) adequate monitoring equipment and facilities are made available to allow effective operation of the monitoring programme at all times;

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- (f) such measurements, examinations and assessments are carried out, recorded and made available as are required by the appropriate authority;
  - (g) Inspectors are afforded access and opportunity to examine equipment, working procedures and records required by the appropriate authority to be kept under the Code by the owner, operator or manager of the mine;
  - (h) effluent discharge limits required by the appropriate authority are implemented and observed;
  - (j) the appropriate authority is notified immediately should discharge limits required by him be exceeded and that action required by the appropriate authority to be taken to return the operation to a state of compliance is taken as soon as practicable;
  - (k) approval is obtained from the appropriate authority before an intentional release of radioactive waste from a restricted release zone; and
  - (m) any unplanned events which lead or could lead to releases of radioactive wastes are reported promptly to the appropriate authority, and corrective action is taken.

## **6 Offences**

A person who contravenes, or fails to comply with, these Regulations is guilty of a regulatory offence.

Penalty: \$500.

## Schedule

regulation 3(1)

### RADIOACTIVE WASTE MANAGEMENT (MINING AND MILLING) CODE (1982)

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## PART I: PRELIMINARY

### *Code of Practice on the Management of Radioactive Wastes from the Mining and Milling of Radioactive Ores (1982)*

#### 1. Short title

The Code of Practice on the Management of Radioactive Wastes from the Mining and Milling of Radioactive Ores (1982) may be referred to as the Radioactive Waste Management (Mining and Milling) Code (1982).

#### 2. Object

- (1) The object of this Code is to provide, both in the short term and in the long term, for the protection of people and the environment from possible harmful effects associated with the radioactive wastes arising from all stages of the mining and milling of radioactive ores.
- (2) The Code is primarily directed towards mining and milling operations which have as an objective the recovery of uranium or thorium. It may also be applied to other mining and milling operations producing wastes containing radioactive materials which may constitute a hazard to people and the environment.

#### 3. Interpretation

- (1) In the Code, unless the contrary intention appears, a reference to a Clause is a reference to the relevant Clause of this Code.
- (2) Nothing in the Code shall be interpreted as limiting the requirements of the *Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1980)* or the *Code of Practice for the Safe Transport of Radioactive Substances (1982)*.
- (3) In the Code, unless the contrary intention appears:

**Appropriate authority** means an authority having responsibility for enforcing the provisions of any legislation implementing any part or the whole of this Code.

**Approved** means approved by the appropriate authority.

**Aquifer** means a geological entity which stores and can transmit significant volumes of water.

**Best practicable technology** means that technology, from time to time relevant to a specific project, which enables radioactive wastes to be managed so as to minimise radiological risks and detriment to people and the environment, having regard to:

- (a) the achievable levels of effluent control and the extent to which pollution and degradation of the environment is minimised or prevented in comparable mining and milling operations elsewhere;
- (b) the cost of the application or adoption of that technology relative to the degree of radiological and environmental protection expected to be achieved by its application or adoption;
- (c) evidence of detriment or lack of detriment to the environment after the commencement of mining or milling operations;
- (d) the location of the mine or mill;
- (e) the age of the equipment and facilities in use for mining and milling purposes and their relative effectiveness in achieving radiological and environmental protection; and
- (f) the potential hazards from the wastes over the long term.

**Critical pathways** means those pathways by which radioactive materials arising from mining or milling operations would be transferred to human or environmental receptors such that the predicted exposures of the receptors would result in the major radiological impacts of these radioactive materials.

**Disposal** means the disposal of radioactive waste without the intention of retrieval.

**Excursion** means an underground migration of leach solution beyond the production well field of an in situ leaching operation.

**Government** means the Commonwealth Government or the Government of a State or Territory.

**Handling** means any operation carried out on radioactive waste and includes solidification, compaction, separation, concentration, emplacement, chemical treatment and transportation.

**Heap leaching** means the process whereby leach solutions percolate through a pile of ore formed on a base in such a way that the leach solutions can be collected for recovery of a metal or metals.



***In situ leaching*** means the process whereby leach solutions percolate through, or are injected into, an ore body so that the leach solutions can be collected for recovery of a metal or metals.

***Inspector*** means a person duly appointed as an inspector by the appropriate authority.

***Manager*** means the person responsible for the administration and direction of a mine and/or mill.

***Mill*** means a facility used for concentrating and/or processing specified material and includes facilities for the management of mill waste within a restricted release zone.

***Mine*** means a facility engaged in the extraction: including excavation, in situ leaching, removal and storage: of specified material and includes facilities for the management of mine waste within a restricted release zone.

***Operator*** means any person, Government, or other entity which conducts or carries out operations for the mining and/or milling of specified material.

***Owner*** means any person, company, or other entity having legal responsibility for compliance with the conditions of an agreement or agreements with the Government for the mining and/or milling of specified material.

***Radioactive material*** means material which spontaneously emits ionising radiation.

***Radioactive ore*** means an ore or mineral containing uranium or thorium or their radioactive daughter products.

***Radioactive waste*** means the solid, liquid, or gaseous residues containing radioactive material, arising from the mining and/or milling of specified material, which require management such that the exposure to radiation of employees and members of the public shall be as low as reasonably achievable, and below the relevant limits prescribed in Schedules 1, 2, 3 and 4 of the Radiation Protection (Mining and Milling) Code (1980); and such other residues as are designated by the appropriate authority.

***Restricted release zone*** means an approved zone about and below a mine and/or mill from which release of radioactive material shall be minimised in accordance with the requirements of the appropriate authority.

**Specified material** means material which contains more than 0.02% of uranium or 0.05% of thorium dry weight, or other radioactive material designated by the appropriate authority.

**Tailings** means the radioactive residues resulting from processing specified material in a mill to extract a metal or metals.

**Waste management system** includes all the facilities and procedures involved in the handling, treatment, storage and disposal of radioactive wastes.

#### 4. Application

- (1) This Code applies to the management of radioactive waste arising from all operations involving the mining and/or milling of specified material, including:
  - (a) mining and/or milling operations established prior to the implementation of this Code;
  - (b) mining and/or milling operations abandoned prior to or at the time of implementation of this Code;
  - (c) mining and/or milling operations at any time temporarily suspended; and
  - (d) such other operations as designated by the appropriate authority.
- (2) The degree of compliance with the requirements of this Code for operations defined in subclauses 4(1)(a) and 4(1)(b) shall be determined by the appropriate authority, having regard to what is reasonable.
- (3) This Code applies only to the management of radioactive wastes, but in implementing its provisions due regard shall be given to the requirements of the relevant authority pertaining to non-radioactive contaminants in the wastes.

#### 5. Approvals

- (1) Prior to the commencement or recommencement of any operation to which this Code applies, approval shall be obtained from the appropriate authority for a restricted release zone.
- (2) For any operation to which this Code applies, approvals shall be obtained from the appropriate authority for a waste management programme for the life of the operation and more detailed short-term waste management programmes for such periods as designated by the appropriate authority.

The programmes shall:

- (a) provide for the management of radioactive wastes arising from all phases of the operation, including:
    - exploration,
    - development of a mine and/or construction of a mill,
    - operation of a mine, mill and associated waste management facilities,
    - decommissioning of a mine, mill and associated waste management facilities, and
    - rehabilitation of sites where radioactive wastes have been deposited;
  - (b) specify the details and performance capability of the waste management system; and
  - (c) provide an evaluation of the probability of unplanned events in which radioactive wastes might be released to the environment, and contingency plans to deal with such events.
- (3) During the life of the operation, waste management programmes shall be periodically reviewed, updated and approved as required by the appropriate authority.
  - (4) The appropriate authority shall be notified of any circumstance or condition which may require, or is likely to require, a departure from a previously approved programme(s), and approval shall be obtained from the appropriate authority to amend the programme(s) accordingly.
  - (5) Prior to any substantial changes in the scope or size of the operation, approvals shall be obtained from the appropriate authority for appropriate modifications to the short and long-term waste management programmes.
  - (6) For any operation to which this Code applies, approval shall be obtained from the appropriate authority for a pre-operational, operational, and post-operational monitoring programme.
  - (7) Prior to the permanent cessation of an operation to which this Code applies, approval shall be obtained from the appropriate authority for the final waste management programme, which shall include details for the decommissioning and final rehabilitation phases.

## **PART II: DUTIES AND RESPONSIBILITIES**

### **6. Owner, operator and manager**

- (1) The owner, operator and manager of the mine or mill shall be responsible for ensuring that the provisions of this Code are applied to the management of radioactive waste.
- (2) The manager shall be responsible for the actions of contractors in so far as they relate to the provisions of this Code.
- (3) The owner, operator and manager shall ensure that all necessary approvals are obtained from the appropriate authority and that the waste management programmes are carried out in accordance with those approvals.
- (4) The owner, operator and manager shall ensure that:
  - (a) a proposed waste management programme, together with the assessment of potential radiological impacts of the radioactive wastes arising from all stages of the mining and/or milling operation, is prepared and submitted to the appropriate authority for approval;
  - (b) a plan delineating the restricted release zone is submitted to the appropriate authority for approval;
  - (c) a monitoring programme is established to the satisfaction of the appropriate authority prior to the commencement of construction or development work at the mine or mill, maintained throughout the duration of the operation and for such further time as required by the appropriate authority;
  - (d) sufficient staff, with qualifications and experience acceptable to the appropriate authority, are employed to establish, operate and maintain the monitoring programme;
  - (e) adequate monitoring equipment and facilities are made available to allow effective operation of the monitoring programme at all times;
  - (f) such measurements, examinations and assessments are carried out, recorded and made available as required by the appropriate authority;
  - (g) inspectors are afforded the right of access and opportunity to examine equipment, working procedures, and records required by the appropriate authority to be kept by the owner/operator/manager under this Code;

- (h) effluent discharge limits required by the appropriate authority are implemented and observed; should discharge levels exceed the operational control limits the appropriate authority is to be notified immediately, and such action as required by the appropriate authority taken to return the operation to a state of compliance as soon as practicable;
- (i) approval is obtained from the appropriate authority prior to any intentional release of radioactive waste from a restricted release zone; and
- (j) any unplanned events which lead or could lead to releases of radioactive wastes will be reported promptly to the appropriate authority, and corrective action taken.

### PART III: REQUIREMENTS FOR MANAGEMENT OF RADIOACTIVE WASTES

#### **7. General**

- (1) The waste management system shall utilise the best practicable technology and be such as to ensure that the release of radioactive material will be minimised. The final disposition of radioactive wastes and the rehabilitation of the site shall be such that the need for subsequent inspection, monitoring and maintenance is minimised, and preferably rendered unnecessary.
- (2) Waste management procedures shall be such that the exposure to radiation of employees and members of the public is as low as reasonably achievable and below the relevant limits prescribed in Schedules 1, 2, 3 and 4 of the Radiation Protection (Mining and Milling) Code (1980).
- (3) Site-specific discharge limits for airborne and liquid radioactive wastes and any consequential operational control limits shall take account of critical pathways and shall be determined in accordance with the requirements of subclause 7(2).
- (4) Release of radioactive waste not controlled by the formulation of discharge limits under subclause 7(3) shall be minimised by use of best practicable technology and shall be acceptable to the appropriate authority.
- (5) Radioactive waste shall not be used for any purpose unless approved by the appropriate authority.
- (6) Measures shall be taken to limit access of fauna to the waste management systems until completion of the rehabilitation programme.

**8. Exploration**

All radioactive wastes arising from exploration activities, bulk sampling, or other operations designated by the appropriate authority, shall be managed to the satisfaction of the appropriate authority.

**9. In situ leaching**

- (1) Procedures shall be developed and implemented to maximise the recovery of all leach solutions and to restrict, to the satisfaction of the appropriate authority, the infiltration of leach solutions into groundwater or aquifers beyond the restricted release zone.
- (2) A monitoring programme shall be established and implemented to the satisfaction of the appropriate authority, so as to detect and give the earliest possible warning of excursions.
- (3) In the event of an excursion, measures shall be taken to the satisfaction of the appropriate authority to contain the excursion and restore the operation to an acceptable condition.
- (4) Solid radioactive waste from an in situ leaching operation shall be restored or disposed of in an approved waste handling facility.
- (5) Liquid radioactive waste shall not be released from an in situ leaching site except with the approval of the appropriate authority.

**10. Heap leach piles**

- (1) Heap leach piles shall be located and managed in a manner such that losses by wind of radioactive material are controlled to the satisfaction of the appropriate authority.
- (2) A leach solution collection system for heap leach piles shall be designed, constructed and operated to the satisfaction of the appropriate authority, such that seepage of the leach solution into the underlying ground is minimised by the use of best practicable technology.

**11. Ore stockpiles and waste rock**

Ore stockpiles and waste rock shall be located and managed in a manner such that the losses of radioactive material by wind, by water seepage to the underlying soils or groundwater, and by water run-off are controlled to the satisfaction of the appropriate authority.

**12. Tailings**

- (1) A design study of a tailings management system shall be submitted to the appropriate authority prior to the commencement of the milling operation.
- (2) A tailings management system shall not be commissioned except with the approval of the appropriate authority, and shall be inspected and operated in accordance with the conditions set by the appropriate authority.
- (3) Retreatment of tailings for further extraction of minerals or for any other purposes shall be in accordance with approvals granted by the appropriate authority, having regard to the requirements of this Code.

**13. Miscellaneous radioactive wastes**

Disposal of miscellaneous radioactive waste arising from mining, milling and decommissioning operations shall be undertaken to the satisfaction of the appropriate authority.

**14. Monitoring**

A monitoring programme shall include baseline, pre-operational, operational and post-operational measurements of radioactivity in air, water, soils and biota, and shall be designed and implemented to demonstrate compliance with requirements developed in accordance with this Code.

**15. Rehabilitation**

- (1) Sites where radioactive wastes arising from exploration, mining, milling and decommissioning operations have been deposited shall be rehabilitated in accordance with the approved waste management programme and to the satisfaction of the appropriate authority. Wherever appropriate, rehabilitation shall be carried out progressively.
- (2) At the cessation of in situ leaching operations, procedures as approved by the appropriate authority shall be implemented to ensure that hydrological and chemical conditions are acceptable to that appropriate authority.
- (3) Prior to the termination of the owner's, operator's or manager's responsibility, inspections and monitoring of the rehabilitated sites shall be undertaken at such intervals and for such periods of time as determined by the appropriate authority. The results of the inspections and monitoring shall be submitted to the appropriate authority. Further action as required by the appropriate authority

shall be undertaken if such inspections and monitoring reveal the condition of the site to be, or likely to become, unacceptable to the appropriate authority.

**16. Long-term management of radioactive wastes**

- (1) After termination of the owner's, operator's or manager's responsibility, such inspection, monitoring and maintenance as may be necessary shall be carried out as determined by the appropriate authority.
- (2) Restrictions upon land-use of waste disposal sites shall be applied in consultation with the appropriate authority.



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**ENDNOTES****1****KEY**

Key to abbreviations

amd = amended

app = appendix

bl = by-law

ch = Chapter

cl = clause

div = Division

exp = expires/expired

f = forms

Gaz = Gazette

hdg = heading

ins = inserted

lt = long title

nc = not commenced

od = order

om = omitted

pt = Part

r = regulation/rule

rem = remainder

renum = renumbered

rep = repealed

s = section

sch = Schedule

sdiv = Subdivision

SL = Subordinate Legislation

sub = substituted

**2****LIST OF LEGISLATION*****Mines Safety Control (Radioactive Wastes Management) Regulations (SL No. 34, 1984)***

Notified 27 June 1984

Commenced 11 July 1984 (r 2)

***Statute Law Revision Act (No. 2) 2001 (Act No. 62, 2001)***

Assent date 11 December 2001

Commenced 11 December 2001

**3****LIST OF AMENDMENTS**

sch amd Act No. 62, 2001, s 17