

# CRITERIA AND PROCEDURES FOR RECORDING AND REPORTING INCIDENTS AT SA URANIUM MINES

## INTRODUCTION

This reporting procedure addresses those incidents involving the unplanned release of radioactive process materials, radioactive liquids or radioactive wastes associated with the physical and chemical processing of uranium ores.

Incidents that require reporting under the OHS&W Act 1986, the Dangerous Substances Act 1979 and the Environmental Protection Act 1993 shall be reported as normally required under those Acts.

The aim of this procedure is to ensure compliance with conditions attached to the Licence to mine or mill radioactive ores issued under the Radiation Protection and Control Act 1982, and to ensure radiation exposures to workers, members of the public and the environment are as low as reasonably achievable.

All written reports of incidents shall be made on the approved Incident Report Form.

It is proposed that:

- (a) The attached reporting procedure is applied as part of the radiation management plan for uranium mining operations, approved under Clause 8 of the *Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores 1987* (or as amended).
- (b) The efficacy of the procedure should initially be reviewed within 12 months. The review will take account of any changes in mine operations, technical difficulties encountered, the interaction of this procedure with the requirements of other applicable Acts and Regulations, and the appropriateness of current recording and reporting levels. The procedure should be regularly reviewed thereafter.

In applying the proposed reporting procedure, it is acknowledged that processing plants, wellfields, evaporation ponds, tailings dams, etc are 'disturbed' operational areas and will be subject to an approved clean up and rehabilitation program at the completion of the project. The reporting procedure places emphasis on events which may result in unplanned release of radioactive process materials, radioactive liquids or radioactive wastes to the 'undisturbed environment', or any unplanned exposures to workers or members of the public.

The procedure is considered 'generic'. Other site-specific requirements may also be applied to particular operations as necessary.

## REPORTING AND RECORDING PROCEDURE

The following recording and reporting conditions are to be applied:

### A. GENERAL REQUIREMENTS

#### Report

- Any defect, due to design or malfunction, discovered in the mine, mill, plant, equipment or working procedure, that is likely to lead to an urgent change in plant, equipment or work procedure in order to keep radiation doses as low as reasonably achievable.
- Release, or loss of control of radioactive process materials, liquids or wastes, leading to the accidental exposure of a worker to radioactive materials through inhalation, ingestion or significant contact.
- Unplanned dispersal to the atmosphere of any radioactive process materials through failure of a section of the plant or by an abnormal event (eg. fire or explosion).

#### Record

- The results of an investigation which reveals any defect, due to design or malfunction, discovered in the mine, mill, plant, equipment or working procedure, that is likely to cause a significant increase in radiation exposure, together with the causes and resulting actions taken.

### B. UNDISTURBED ENVIRONMENT

#### Report

- Unexpected degradation or defect in the ISL trunklines, Tailings Retention System (TRS) pipelines and structures, pipelines or structures associated with Evaporation Ponds or Storage Ponds that, unless remedied, is likely to lead to a reportable release of radioactive process materials, liquids or wastes.
- Any unplanned release of radioactive process materials, liquids or wastes to the undisturbed environment.
- ISL mining fluid underground excursions.
- Release of radioactive process materials, liquids or wastes which enter or threaten to enter an ephemeral watercourse.

#### Record

- Any unplanned release to the surface of more than 10 m<sup>3</sup> of natural groundwater.

### C. ISL WELLFIELDS

#### Report

- Any unplanned release of more than 10 m<sup>3</sup> radioactive liquids.

#### Record

- Unplanned release to the surface of more than 10 m<sup>3</sup> natural groundwater.
- Any unplanned release of more than 1 m<sup>3</sup> of radioactive liquids.
- Unexpected degradation or defect in ISL lateral lines that, unless remedied, is likely to lead to a reportable release of radioactive liquids.

### D. PROCESS PLANT

#### Report

- Any release of uranium concentrate outside secondary containment.
- Release of more than 50 m<sup>3</sup> of radioactive process materials, liquids or wastes beyond secondary containment, but contained within the engineered controls of the plant perimeter.
- Unplanned release of more than 2 m<sup>3</sup> uranium concentrate within secondary containment.

#### Record

- Unplanned release of radioactive process materials, liquids or wastes, of more than 50 m<sup>3</sup> into secondary containment or result in filling of more than 50% of secondary containment volume.
- Release of more than 10 m<sup>3</sup> of radioactive process materials, liquids or wastes beyond secondary containment, but contained within the engineered controls of the plant perimeter.
- Unplanned release of more than 0.2 m<sup>3</sup> of uranium concentrate within secondary containment.

### E. TRS, CORRIDORS AND PIPELINES

#### Report

- Unplanned release of more than 50 m<sup>3</sup> radioactive process materials, liquids or wastes within TRS banded areas and pipeline corridors.
- Unexpected degradation or defect in the TRS or evidence of leakage from Evaporation Ponds or Storage Ponds that, unless remedied, is likely to lead to a reportable release of radioactive process materials, liquids or wastes.

#### Record

- Unplanned release of more than 10 m<sup>3</sup> radioactive process materials, liquids or wastes within TRS banded areas and pipeline corridors.

## TERMS USED

<b>Report</b>	A verbal report in the first instance, followed by a written report by email or fax within 24 hours.
<b>Record</b>	Details of the event are to be recorded in an operator's log or equivalent for inspection by regulators as necessary.
<b>Radioactive Substance</b>	As defined in the <i>Radiation Protection and Control Act, 1982</i> .
<b>Uranium Concentrates</b>	Includes all concentrated uranium bearing solutions, slurries and solids from the feed to the uranium precipitation and thickening process, through to the final drummed product.
<b>Operational Areas</b>	Processing plant, tailings and evaporation ponds, ISL wellfields pipeline corridors and other areas approved by the regulators, which have clearly defined perimeters engineered to prevent the release of liquids from the site. The engineering controls may consist of bunds, drains, stormwater collection points and ponds etc.
<b>Undisturbed Environment</b>	Refers to the areas outside the approved engineering controls (eg pipes, stormwater drains and ponds, bunding of the plant or wellfield or pipeline corridors, airborne emission control equipment or the wellfield mining zone).
<b>Primary Containment</b>	Refers to pipes, tanks and vessels and other engineered containment of radioactive process materials and solutions
<b>Secondary Containment</b>	Refers to bunded process areas within the plant perimeter.
<b>Wellfield Mining Zone</b>	Refers to the ISL ore zone, bounded by approved monitoring wells.
<b>ISL mining fluid excursions</b>	As defined in the operation's <i>Environmental Management and Monitoring Plan</i> .