

**2015  
RATIONALE**

**PART U**

**LICENSING REQUIREMENTS FOR URANIUM AND THORIUM PROCESSING**

Introduction

U.S. Nuclear Regulatory Commission (NRC) regulations in 10 CFR Part 40 governing source material processing were promulgated in the early 1980s. Subsequent amendments have incorporated ground water and air quality protections and controls. The title of this Part has been modified to uranium and thorium processing to encompass the major activities regulated by Agreement States: source material milling and *in situ* leaching.

On April 12, 1999, the NRC published a final rule in the Federal Register [64 FR 17506] to amend 10 CFR Part 40 of its regulations “Radiological Criteria for License Termination of Uranium Recovery Facilities”. The criteria were added to Part U, Appendix A, Criterion 6, (6).

Specific Provisions

Sec. U.1 and U.2 - Purpose and Scope.

Part U contains the special licensing requirements for natural uranium and natural thorium processing and disposal.

The purpose is kept brief and is modified from U.S. Nuclear Regulatory Commission 10 CFR 40.1. The Nuclear Regulatory Commission’s more lengthy wording is shortened somewhat.

The scope is condensed from 10 CFR 40.2 and the introduction to 10 CFR Part 40, Appendix A. In the “specific technical requirements” phrase of U.2a., “construction,” “monitoring, and financial assurance” are added.

U.2d. was added that is consistent with 10 CFR 40.3.

Sec. U.3 - Definitions.

The definitions of “aquifer”, “as expeditiously as practicable considering technological feasibility”, “available radon barrier technology”, “byproduct material”, “closure”, “closure plan”, “compliance period”, “dike”, “disposal area”, “existing portion”, “factors beyond the control of the licensee”, “final radon barrier”, “ground water”, “leachate”, “licensed site”, “liner”, “milestone”, “operation”, “point of compliance”, “reclamation plan”, “surface impoundment”, and “uppermost aquifer” are from the introduction to 10 CFR Part 40, Appendix A.

The definitions of “commencement of construction”, “decommission”, “principal activities”, “residual radioactive material”, “source material”, are adopted from 10 CFR 40.4. Source material

milling replaces the comparable Part 40 definition of “uranium milling.”

The definitions of “source material mill tailings” and “source material milling” were added after consultation with the NRC.

#### Sec. U.4 - Special Requirements for Issuance of Specific Licenses For Source Material Milling.

The basic or general requirements for specific licenses are in Part C of these regulations. Part U contains the special requirements for issuance of a source material processing license. The applicant submittals to the Agency must be complete and accurate, as in the requirement in 10 CFR 40.9a. Failure to clearly demonstrate how the requirements and objectives of Part U, in particular Appendix A, is a ground for refusing to accept an application. The application must describe (1) the proposed project or action, (2) site characteristics including geology, topography, hydrology and meteorology, (3) radiological and non-radiological impacts of the proposed project or action, including waterway and groundwater impacts, (4) environmental effects of accidents, (5) tailings disposal and decommissioning, and (6) site and project alternatives.

Sec. U.4b. requires the applicant, analogous to the requirement in 10 CFR 40.31(h), to provide “written specifications describing the means employed to meet” requirements during the operational phase of any project. U.4b.i., U.4b.ii. and U.4b.iii. are brought forward from Appendix A, Criterion 8, for emphasis. U.4c. is brought forward from the introduction to Criterion 7 of 10 CFR Part 40, Appendix A. At least one full year (prior to any major site construction) of baseline monitoring data on a source material processing site and its surroundings is required. U.4b.iii. provides options for “environment” instead of “unrestricted areas” to be more proactive in preventing future legacy sites. U.4c. also makes clear that the specifications to be included in the application are to provide for an operational monitoring program to measure or evaluate compliance with applicable standards and regulations, to evaluate performance of control systems and procedures, to evaluate environmental impacts of operation, and to detect potential long-term effects. U.4d. makes clear that the application must also include detailed proposed specifications relating to the source material processing operations and the disposition of tailings or wastes resulting from such milling activities to achieve the requirements and objectives set forth in the criteria listed in Appendix A to this Part U.

#### Sec. U.5 - Pre-licensing Construction.

Unless an exemption is sought and granted, no construction is to be commenced until the license has been issued. The application is to be filed with the Agency at least nine months prior to the anticipated commencement of construction of the plant and is to be accompanied by the environmental report required by U.6.

#### Sec. U.6 - Applicant’s Environmental Report.

An environmental report meeting requirements like those of 10 CFR 51.45 is required for the types of action listed in U.6c. It is to include all information needed by the Agency to evaluate the short-term and long-range environmental impact of the project and activity, so that the Agency may weigh environmental, economic, technical, and other benefits against environmental costs, while considering available alternatives. The actions outlined in U.6c. (2-4) requiring an environmental

report are adapted from 51.22(c)(9).

Sec. U.6d. allows a supplement to applicant's environmental report, as provided by 10 CFR 51.60(a) (62 FR 26730). The applicant may incorporate a prior environmental report by reference or by updating or supplementing the information previously submitted to reflect any significant environmental change, including any significant environmental change resulting from operational experience or a change in operations or proposed decommissioning activities. By Sec. U.6e., an applicant who can demonstrate that no significant environmental impact will result from the licensed activity can be granted an exemption of the requirement to submit an additional environmental report or supplement.

#### Sec. U.7 - Transmittal of Applicant's Environmental Report for Review and Comment.

The Agency is required to transmit the applicant's environmental report for review and comment to federal, state, and local agencies having expertise in and jurisdiction over the proposed project and activity. Sec. U.7 also requires that written comments and reports of reviewing agencies be considered by the Agency in its decision-making review process on the license application request, as well as any available federal environmental impact statement (EIS). Sec. U.7b. provides that in reviewing the application and applicant's environmental report, the Agency shall consider applicable regulations and permits of federal, state, and local regulatory agencies.

#### Sec. U.8 - Environmental Impact Analysis.

The Udall compromise during passage of the Uranium Mill Tailings Radiation Control Act of 1978 required, although Agreement States are not required to follow federal EIS procedures, the licensing Agency must prepare a written analysis of the impact of the licensed activity on the environment. The written analysis is to be available to the public at the time of public notice of hearing. The analysis is to include (1) an assessment of the radiological and non-radiological impacts to the public health, (2) an assessment of any impact on any waterway and ground water, (3) consideration of alternatives to the activities to be conducted, and (4) consideration of the long-term impacts of the licensed activities.

Sec. U.8c. makes clear that the independent environmental impact analysis, or any part of it, is to be prepared directly by, or under supervision of, the Agency.

#### Sec. U.9 - Financial Assurance Arrangements.

Part U references the financial assurance requirements found in 10 CFR Part 40, Appendix A, Criterion 9 for reclamation and closure and in Criterion 10 for long term care. Prior to issuance of the license, the operator must establish financial assurance arrangements to (1) ensure decontamination and decommissioning of the facility and (2) provide a fund adequate to cover the payment of the cost for long-term care and monitoring. A requirement to provide the financial assurance prior to commencement of operations was included. Each state should ensure that they not only have authority to receive and hold financial assurances, but also to execute them, spend the money if necessary, or give back the money if not needed. If the legislation clearly differentiates between the two types of funds, (decontamination and decommissioning versus long-term care), then it may not be possible to combine the two types of financial assurances. [State specific requirements

can be included as a license condition.]

Sec. U.10 - Operational Requirements.

Enhanced from but consistent with the U.S. Nuclear Regulatory Commission's 10 CFR Part 40, Appendix A, Part U explicitly requires each licensee authorized to receive, possess and use source material for milling or byproduct material to operate in accordance with the procedures required by U.4b., monitoring required by U.4c., and the technical requirements and objectives of Appendix A to this Part U.

Sec. U.10b. makes explicit the NRC requirement that each licensee submit a report to the Agency within 60 days after January 1 and July 1 of each year, specifying the quantity of each of the radioactive materials released to unrestricted areas in liquid and in gaseous effluents during the previous six months of operation, and such other information as the Agency may require to estimate maximum potential annual radiation doses to the public resulting from effluent releases. If quantities of radioactive materials released during the reporting period are significantly above the licensee's design objectives previously reviewed as part of the licensing action, the report shall cover this specifically.

Sec. U.10c. is included to incorporate 40.60 reporting requirements into Part U.

Sec. U.11 - Decommissioning Requirements.

Consistent with other decommissioning planning requirements of these regulations, a plan for completion of decommissioning is required to describe (1) planned decommissioning activities, (2) methods used to assure protection of workers and the environment against radiation hazards during decommissioning, (3) the planned final radiation survey; and (4) the details of costs for decommissioning, including comparison of the cost estimate with present funds set aside for decommissioning and provisions to ensure adequate funds are available. The timely decommissioning requirements found in 10 CFR 40.36 have been included here.

APPENDIX A: CRITERIA RELATING TO THE OPERATION OF MILLS AND THE DISPOSITION OF RADIOACTIVE TAILINGS OR WASTES

These technical criteria, as required by U.4b., establish technical, ownership, and long-term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. The term "financial assurance" was added to the topics the regulations cover for completeness.

Criterion 1 states the broad objective of siting and design decisions--permanent isolation of tailings and associated contaminants by minimizing disturbance and dispersion by natural forces, and to do so without ongoing "active maintenance". Criterion 2 addresses avoidance of the proliferation of small waste disposal sites. By Criterion 3, the "prime option" for disposal of tailings is placement below grade, either in mines or specially excavated pits. Criterion 4 specifies the site and design criteria that must be adhered to whether tailings or wastes are disposed of above or below grade.

Criteria 5, 7 and 13, including the Table of Hazardous Constituents appended as secondary groundwater protection standards to Criterion 13, provide for groundwater protection. Criteria 6 and 8 specify radiological and other criteria applicable to site and disposal operation and reclamation. Criterion 9 and 10 address financial assurance requirements. Criterion 11 and 12 are designated as “NRC” and are being designated as “Reserved” in Part U.

In paragraph 5 of the introduction, it is necessary to add the sentence: “Proposed alternatives to specific regulations in this Part U require notice and opportunity for hearing before the U. S. Nuclear Regulatory Commission.” Elsewhere throughout Appendix A, where 10 CFR Part 40 refers to “the Commission” or “NRC”, Part U refers to the “Agency”. Where 10 CFR Part 40 uses “must”, Part U prefers “shall.”

#### MATTERS FOR FUTURE CONSIDERATION

The Nuclear Regulatory Commission is currently developing a rulemaking for regulatory requirements for groundwater protection for in-situ leach operations (RIN: 3150-AI40). The EPA is considering revising 10 CFR 192 in 2012 with respect to groundwater protection. NRC has published changes to decommissioning planning and financial assurance requirements (Federal Register, January 22, 2008) that will impact uranium and thorium recovery and Part U.

CRCPD and OAS representatives have been on the NRC’s Staff Level Working Group Rule Making Team in order to ensure consistency between Part U and NRC revised regulations, as well as commenting on draft and draft final rules. Other benefits will be timely production of the parallel Suggested State Regulation and the contributions of state experience.