# Uranium Watch

P.O. Box 344
Moab, Utah 84532
435-260-8384

April 30, 2017

Land Quality Division
Wyoming Department of Environmental Quality
200 West 17th Street, Suite 10
Cheyenne, Wyoming 82002
http://lq.wyomingdeq.commentinput.com

RE: Comments on Wyoming Environmental Council, 17-4101 Uranium Recovery Program Rulemaking. Docket #17-4101.

Dear Sir or Madam:

**INTRODUCTION**

Below please find Uranium Watch's (UW's) comments on the Wyoming Environmental Council, 17-4101 Uranium Recovery Program Rulemaking. UW is a public interest nonprofit that focuses on uranium mining and milling issues, primarily in Utah. Utah has the only operating conventional uranium mill in the United States, an 11e.(2) byproduct material disposal operation, a mill that has been on standby since 1982, a Uranium Mill Tailings Radiation Control Act (UMTRCA) Title II mill that has not completed reclamation, three UMTRCA Title I mills that have completed reclamation, and one former Title II site where the tailings are being removed by the Department of Energy under Title I of UMTRCA. Utah has permitted and historic conventional uranium mines, primarily on federally administered land. There are no current or historic in situ leach (ISL) uranium recovery operations in Utah.

Utah became a Nuclear Regulatory Commission (NRC) Agreement State for the regulation of uranium mills and 11e.(2) byproduct disposal sites in 2004. UW has had many years of involvement in both the NRC and Utah Department of Environmental Quality, Division of Waste Management and Radiation Control (previously, Division of Radiation Control) uranium mill regulatory programs.

**COMMENTS ON PROPOSED RULES**

**1. Chapter I, General Provisions.**

1.1. Chapter 1, Section 5 (Definitions), Subsection (k) (page 1-3) defines "Alternate Feed Processing":

> (a) "Alternate Feed Processing" means the processing of any other matter other than mined natural or native matter from which source material [i.e. uranium or thorium] is extracted in a licensed uranium or thorium mill as authorized by RIS 00-023: Recent Changes to Uranium Recovery Policy dated November 30, 2000, and NRC Regulatory Issue Summary 2012-06 NRC Policy Regarding Submittal of Amendments for Processing of Equivalent Feed at Licensed Uranium Recovery Facilities, dated April 16, 2012.

**COMMENT**

1.1.1. The definition of "alternate feed processing," is based on an NRC 1995 guidance(as amended in November 2000)(Guidance), not a definition included in the Atomic Energy Act (AEA) of 1954, as amended, or any NRC regulation promulgated pursuant the AEA. Neither the AEA, nor NRC regulation requires an Agreement State to incorporate an NRC guidance into its regulations.

1.1.2. The inclusion of this definition, which only applies to the processing of materials that are **not** uranium ore, but are uranium-bearing waste materials from other mineral processing operations, at a conventional uranium mill in Wyoming is questionable for many reasons:

1.1.2.1. Wyoming does not have any operating uranium mill and UW is not aware of any proposed new mill in Wyoming.

1.1.2.2. "Alternate feed" materials have been processed at the White Mesa Uranium Mill, San Juan County, Utah, off and on since about 2017. Most of the material was from the clean up of federal Formerly Utilized Sites Remedial Action Program (FUSRAP) cleanup operations. Periodically, the Mill still receives material based on amendments to the White Mesa Mill license. At this time, except for a proposal to receive and process waste from a Sequoyah Fuels Corporation, Gore, Oklahoma, facility, there does not appear to be materials out there that a regulatory agency or licensee is trying to dispose of by paying the White Mesa Mill licensee to receive, process, and dispose of the processing waste.

With no operating uranium mill and few, if any, sources of "Alternate Feed" material, it is hard to understand why Wyoming would consider incorporating regulations related to the processing of "Alternate Feed" in its uranium recovery program.

1.1.2.3. There are numerous legal issues associated with Alternate Feed Processing that the State of Wyoming must address. *See* discussion below at Sections 1.2, 1.3, and 1.4.

1.1.2.4. In Utah there are health and safety issues related to current and historic Alternate Feed Processing. These include: 1) spills of alternate feed on public roads; 2) shipment of materials that does not meet the material description; 3) processing of materials that contain amounts of radium, fluoride, thorium-232 and thorium-228, and other constituents that are not found in conventional uranium ore; 4) receipt and storage of materials that are not packaged to withstand the rigors of lengthy storage (e.g., exposure to sunlight), resulting in container degradation and spillage; 5) lack of evidence that the tailings impoundment liners are compatible with the chemistry of the alternate feed; 6) lack of environmental assessments of the receipt, storage, processing, disposal, and long-term presence of alternate feeds; 7) disposal of large amounts of asphalt, concrete, and other debris in tailings impoundments under the guise of Alternate Feed Processing (material was washed down, the water processed in the mill circuit, and debris dumped in the tailings cell); 8) unaddressed issues related to worker exposure to chemicals in the Alternate Feed; and 9) other health, safety, and environmental issues.

1.1.2.5. The Environmental Protection Agency (EPA) standards and regulations applicable to uranium milling, promulgated pursuant to the AEA (40 C.F.R. Part 192) and the Clean Air Act (40 C.F.R. Part 61 Subpart W), were not promulgated contemplating Alternate Feed Processing at uranium mills and the disposal of the waste from such processing in licensed 11e.(2) byproduct material impoundments. There is no evidence in the *Federal Register* Notices associated with the promulgation of those regulations that the EPA considered the possibility of the processing of materials other than natural ore at licensed uranium recovery operations. Therefore, there is no evidence that EPA regulations are applicable to Alternate Feed Processing or disposal of the wastes from such processing in 11e.(2) byproduct material impoundments.

1.1.2.6. The NRC regulations applicable to uranium milling, promulgated pursuant to the AEA (10 C.F.R. Part 40), were not promulgated contemplating Alternate Feed Processing at uranium mills and the disposal of the waste from such processing in licensed 11e.(2) byproduct material impoundments. There is no evidence in the *Federal Register* Notices and environmental analysis associated with the promulgation of those regulations that the NRC considered the possibility of the processing of materials other than natural ore at licensed uranium recovery operations. Therefore, there is no evidence that NRC regulations are applicable to Alternate Feed Processing or disposal of the wastes from such processing in 11e.(2) byproduct material impoundments.

1.1.3. The State of Wyoming should not incorporate any regulations related to "Alternate Feed Processing" because 1) there is no licensed, operational conventional uranium mill in Wyoming, 2) Wyoming has not fully examined the legal implications of using its regulations to amend the AEA and NRC regulation and statutory and regulatory definitions, 3) Wyoming has not fully examined the health, safety, and environmental

issues related to "Alternate Feed Processing."

1.2. Chapter 1, Section 5 (Definitions), Subsection (ab), defines "Construction" (page 1-5), then lists a number of activities that reasonably would be considered to be "construction" activities as not being included in that definition.

**COMMENT**

1.2.1. The purpose of the exemptions to the definition of "Construction" is to allow the licensee to conduct "construction" activities related to the development of a uranium recovery operation, prior to the completion of the license application, environmental analysis, public comment, public hearing, and agency review process. This is not acceptable.

1.2.2. Apparently, Wyoming believes that to be defined as "construction" the activities must be connected to radiological health and safety and not to the overall development of the uranium recovery operation or modification of the operation. There is no statutory basis for this assumption. Further, if the licensee expends money and other resources on the development of the uranium recovery facility prior to final approval by the regulatory agency, the agency would be reluctant to withhold approval of the operation, given the impacts to the land and the environment, money and resources expended, and other commitments.

1.2.3. The proposed exemptions to the definition of "construction" appear to circumvent AEA requirements for Agreement State uranium mill and 11e.(2) byproduct material licensees. AEA statutes applicable to Agreement States, at 42 U.S.C. § 2021(o), state:

> (o) State compliance requirements: compliance with section 2113(b) of this title and health and environmental protection standards; procedures for licenses, rulemaking, and license impact analysis; amendment of agreements for transfer of State collected funds; proceedings duplication restriction; alternative requirements
>
> In the licensing and regulation of byproduct material, as defined in section 2014 (e)(2) of this title, or of any activity which results in the production of byproduct material as so defined under an agreement entered into pursuant to subsection (b) of this section, a State shall require—
>
> **(1)** compliance with the requirements of subsection (b) of section 2113 of this title (respecting ownership of byproduct material and land), and
>
> **(2)** compliance with standards which shall be adopted by the State for the protection of the public health, safety, and the environment from hazards associated with such material which are equivalent, to the extent

practicable, or more stringent than, standards adopted and enforced by the Commission for the same purpose, including requirements and standards promulgated by the Commission and the Administrator of the Environmental Protection Agency pursuant to sections 2113, 2114, and 2022 of this title, and

**(3) procedures which—**
**(A) in the case of licenses, provide procedures under State law which include—**
**(i) an opportunity, after public notice, for written comments and a public hearing, with a transcript,**
**(ii) an opportunity for cross examination, and**
**(iii) a written determination which is based upon findings included in such determination and upon the evidence presented during the public comment period and which is subject to judicial review;**

**(B)** in the case of rulemaking, provide an opportunity for public participation through written comments or a public hearing and provide for judicial review of the rule;

**(C) require for each license which has a significant impact on the human environment a written analysis (which shall be available to the public before the commencement of any such proceedings) of the impact of such license, including any activities conducted pursuant thereto, on the environment, which analysis shall include—**
(i) an assessment of the radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license;
(ii) an assessment of any impact on any waterway and groundwater resulting from such activities;
(iii) consideration of alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to such license; and
(iv) consideration of the long-term impacts, including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to such license, including the management of any byproduct material, as defined by section 2014 (e)(2) of this title; and

**(D) prohibit any major construction activity with respect to such material prior to complying with the provisions of subparagraph (C).**
[Emphasis added.]

1.2.4. The AEA prohibits any major construction activity with respect to 11e.(2) byproduct material prior to the development of 1) a written environmental analysis by the

Agreement State of the proposed licensing action; 2) an opportunity, after public notice, for written comments; 3) an opportunity for a public hearing, with a transcript and an opportunity for cross examination; and 4) a written determination which is based upon findings included in such determination and upon the evidence presented during the public comment period. These provisions address "major construction." There is no mention that "major construction" excludes actions that have no reasonable nexus to radiological health. The exemptions to the definition of "construction" by Wyoming are solely based on actions perceived as having no connection to radiological health. They include many activities that should be considered to be major construction, such as the boreholes and exploration activities, construction of fences, excavation, erection of support buildings, and building of service facilities. In sum, the proposed exemptions from the definition of "construction" are contrary to the AEA provisions at 42 U.S.C. § 2021(o)(3).

1.2.5. Although the proposed definition of "Construction" is the same as the NRC definition in Appendix A, it does not meet the AEA requirements. The State of Wyoming is not required to adopt NRC definitions whole cloth, but may adopt its own definitions, as long as the regulations are not less stringent than NRC requirements. In this instance, Wyoming must adopt a definition of "construction" that meets the AEA requirement, at a minimum.

1.3. Chapter 1, Section 5 (Definitions), Subsection (an), defines "Direct Disposal" (page 1-7):

> (an) "Direct Disposal" means disposal of non-11e.(2) byproduct material in a uranium mill tailings impoundment as authorized by RIS 00-023: Recent Changes to Uranium Recovery Policy dated November 30, 2000.

**COMMENT**

1.3.1. RIS 00-23 is not an NRC regulation and has no legal force and effect. The State of Wyoming cannot rely on a Wyoming guidance or an NRC guidance to amend the fundamental statutes and regulations applicable to uranium mills and 11e.(2) byproduct material in the AEA and the NRC and EPA regulations promulgated pursuant to that act. There is no evidence that the AEA or NRC and EPA regulations contemplated or considered the disposal of non-11e.(2) byproduct material in an 11e.(2) byproduct material impoundment. Therefore, the regulatory framework adopted by the NRC and the EPA would not apply to the disposal and perpetual care of non-11e.(2) byproduct material at a licensed uranium mill.

1.3.2. There are currently no operational conventional uranium mills and operational 11e.(2) byproduct material impoundments in Wyoming, and none is being proposed, so it is hard to understand why there is a need include a definition that is not part of 10 C.F.R. Part 40 Appendix A. There is no statutory or regulatory basis for adopting a definition that contemplates disposal of material that does not fall under EPA

or NRC regulations for uranium mills and 11e.(2) byproduct material impoundments.

1.3.3. The State of Wyoming should delete the definition of "Direct Disposal."

1.4. Chapter 1, Section 5 (Definitions), Subsection (cg), defines "Ore" (page 1-12):

> (cg) "Ore" means a natural or native matter (not a material licensed by the State) that may be mined and treated for the extraction of any of its constituents or any other matter from which source material [i.e. uranium or thorium] is extracted in a licensed uranium or thorium mill as authorized by RIS 00-023: Recent Changes to Uranium Recovery Policy dated November 30, 2000, and NRC Regulatory Issue Summary 2012-06 NRC Policy Regarding Submittal of Amendments for Processing of Equivalent Feed at Licensed Uranium Recovery Facilities, dated April 16, 2012.

**COMMENT**

1.4.1. There are currently no operational uranium mills or operational 11e.(2) byproduct material impoundments in Wyoming and none is being proposed, so it is hard to understand why Wyoming feels compelled to adopt an NRC policy that redefines the federal statutory and regulatory definition of 11e.(2) byproduct material.

1.4.2. RIS 00-23 is not an NRC regulation and has no legal force and effect. The State of Wyoming cannot rely on a Wyoming guidance or an NRC guidance to amend the fundamental statutes and regulations applicable to uranium mills and 11e.(2) byproduct material in the AEA and the NRC and EPA regulations promulgated pursuant to that act.

1.4.3. The State of Wyoming should review and make publicly available on the docket of this Rulemaking the NRC *Federal Register* Notices associated with the development of the NRC policies related to the redefinition of "ore," in the AEA and NRC and EPA definition of 11e.(2) byproduct material.

1.4.4. The NRC used a policy guidance to change the statutory and regulatory definition of 11e.(2) byproduct material outside of the legislative and rulemaking processes. The definition of 11e.(2) byproduct material states that it is the "tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." In this instance "source material" means "uranium or thorium, or any combination thereof, in any physical or chemical form."

The uranium industry wanted to be able to process uranium-bearing materials that were the wastes from other mineral processing operations and get paid to do so. So, the industry and the NRC came up with a policy that would, in effect, amend the AEA and NRC regulation without having to go through a legislative or rulemaking process. They decided that any material processed for its uranium and/or thorium content could be defined as "ore." It didn't really have to be "ore;" the NRC and the uranium industry

would just pretend it was "ore." That way the wastes from the processing of these materials (not even called ore, but called "Alternate Feed") could be defined as 11e.(2) byproduct material, and everything would be OK. They thought that the term "any ore" in the statute meant that anything that you wanted to call "ore," was "ore." In doing so, the NRC ignored a long history of the regulation of uranium milling and applicable statutes. Attached as Exhibit A is that legal and regulatory history.

1.4.5. According to the NRC Guidance redefinition, the term "ore" means "ore" or "any other matter from which source material (i.e., uranium and/or thorium) is extracted in a licensed uranium or thorium mill."Therefore, for an alternate feed material to become "ore" it must be processed in a licensed uranium or thorium mill. Before the material is processed, e.g., when it is sitting in drums or on an "ore pad" at the mill, it does not meet the NRC guidance's redefinition of "ore," because it has not been processed at a licensed mill. It only becomes "ore" retroactively, that is, after it has been processed in a licensed uranium or thorium mill. There is no claim in the guidance that alternate feed is "ore" before it is processed, or waiting to be processed. Based on the redefinition of "ore" there appears to be no specific point in time and space when the alternated feed material is actually "ore," due to this retroactive nature of the definition. The absurdity of this is apparent.

1.4.6. The NRC policy defining "ore" to mean any material that is processed to remove uranium or thorium confuses the definition of source material. Under the AEA, EPA and NRC regulation, and the proposed State of Wyoming definition, source material means "(i) Uranium or thorium, or any combination thereof, in any physical or chemical form, or (ii) Ores which contain by weight one-twentieth of one percent (0.05 percent), or more of uranium, thorium, or any combination thereof." Ore (second definition) is not regulated under the AEA, whether it contains 0.05% uranium and/or thorium or not. Also ore that contains less than 0.05% uranium and/or thorium can, and has been, processed at uranium mills. The NRC does not regulate uranium and/or thorium (first definition) if the percentage of uranium and/or thorium in the material is less than 0.05%. Waste sludges that are regulated by the NRC because their uranium and thorium source material content (first definition) exceeded 0.05% have been shipped to, stored, and processed at the White Mesa Mill. Based on the NRC policy, after the regulated source material (under the first definition) was processed, it retroactively turned into material that met the second definition of source material because, retroactively, it became ore. Again, this is a gross manipulation of the regulatory process.

1.4.7. The Guidance's redefinition of the term "ore" only applies to the issue of the whether the waste from the processing of that material can be defined as 11e.(2) byproduct material.The NRC Guidance does not state or claim that the Guidance's definition of "ore" in any manner applies to, or in any manner alters, the statutory or regulatory definition of "source material" (42 U.S.C. §2014(z)). The NRC and the State of Wyoming are not legally authorized to amend the Atomic Energy Act (AEA) definitions via a policy guidance. Nor are they legally authorized to amend NRC and EPA regulatory definitions outside of a rulemaking proceeding.

1.4.8. Alternate feed material that contains uranium and/or thorium (in any amount) contains "source material," meets the first definition of "source material." The uranium and/or thorium content of the material, not the whole of the alternate feed, is the "source material." There is no statutory or regulatory basis for determining that the alternate feed material can ever meet the second definition of "source material" as an "ore," which applies to the whole of the material, not just its uranium and thorium content

1.4.9. If the Alternate Feed material that the NRC policy defines as "ore" were just dumped out on an ore pad at the mill site, as natural, unprocessed ore is, rather than contained in drums or other shipping containers designed to contain the material, it would not be acceptable. It the Alternate Feed were really "ore" then it could be shipped, handled, and store as ore. Clearly that is not the case. The transportation, handling, and storage of Alternate Feed presents environmental and health and safety risks to workers and the public, so that it cannot be ladled, shipped, handled, and stored in the same manner as unrefined and unprocessed "ore."

1.4.10. The EPA standards Standards for Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended (40 C.F.R. Part 192 Subpart D) did not contemplate the processing of materials that did not have the same physical, radiological, and chemical characteristics and constituents as natural ore. The EPA has not amended their regulations, nor adopted any policy guidance, that states that the "ore" in the definition of 11e.(2) byproduct material includes any other matter from which uranium or thorium is extracted in a licensed mill. Therefore, there is no basis for applying EPA regulation to the wastes produced from the processing of "any other matter" at a uranium mill.

1.4.11. The EPA National Emission Standards for Radon Emissions From Operating Mill Tailings (40 C.F.R. Part 61 Subpart W) also defines "uranium byproduct material or tailings." These regulation also did not contemplate the processing of just any old uranium-bearing material and wastes at a licensed uranium mill.

1.4.12. The NRC Part 40 regulations also do not contemplate the processing of uranium bearing wastes at licensed uranium mills. These regulations and the generic environmental impact analysis, background documents, and proposed and final rules did not mention or establish any regulatory framework for the processing of feed materials other than natural ore at licensed uranium mills.

1.4.13. In sum, there is no evidence in the AEA or the EPA and NRC regulations applicable to the processing of ore and handling and disposal of the wastes for perpetual long term care contemplated the the processing of feed materials other than natural ore at licensed uranium mills.

1.4.14. It the State of Wyoming can find evidence in the statutory and regulatory history of the AEA and NRC and EPA regulations that supports the applicability of these regulations to the processing of feed material other than natural ore and disposal of the resulting wastes, then the

State should make this information available to the public. Otherwise, Wyoming should delete any definitions and other regulations that contemplate the processing of materials other than natural ore at uranium mills in Wyoming.

1.5. Chapter 1, Section 5 (Definitions), Subsection (cg), defines "Unrefined and Unprocessed Ore" (page 1-15):

> (ds) "Unrefined and Unprocessed Ore" means ore in its natural form prior to any processing, such as grinding, roasting, beneficiating, or refining. Processing does not include sieving or encapsulation of ore or preparation of samples for laboratory analysis.

**COMMENT**

1.5.1. The definition of "Unrefined and Unprocessed Ore" is the definition that should be used for "ore." Ore, at that term is used in the Wyoming Uranium Recovery Program, should mean an unrefined and unprocessed material after removal from its place in nature. "Ore" should **not** mean 1) wastes from mineral processing operations, 2) contaminated soils, 3) materials with uranium and uranium progeny that have already been processed, 4) materials that contain concentrations of radioactive and non-radioactive elements that are greater than those normally found in uranium ore removed from the ground, 5) concrete and other debris, 6) or other uranium bearing materials or wastes.

**2. Chapter 4, Licensing Requirements for Source and Byproduct Material**

2.1. Chapter 4, Section 15 (Public Notice), Subsection (a), states (page 4-15):

> (a) Upon completion of the Department's review of an application, the Department shall provide notice to the public of issuance of an initial draft decision where the license application is approved, approved with conditions, or denied.
>
> (i) The initial draft decision shall include, but is not limited to, the following:
>
> (A) A decision analysis, that includes discussions on environmental impacts; and
>
> (B) The final technical analysis conducted by the Department.

**COMMENT**

2.1.1. This section should be re-written to clarify the requirement under the AEA for "a written analysis (which shall be available to the public before the commencement of any such proceedings) of the impact of such license, including any activities conducted pursuant thereto, on the environment, which analysis shall include—

(i) an assessment of the radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license;

(ii) an assessment of any impact on any waterway and groundwater resulting from such activities;

(iii) consideration of alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to such license; and

(iv) consideration of the long-term impacts, including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to such license, including the management of any byproduct material, as defined by section 2014 (e)(2) of this title;"

2.2. Chapter 4, Section 15 (Public Notice), Subsection (a) (page 4-15).

**COMMENT**

2.2.1. Any hearing should be held close to the site of the licensed, or proposed facility. Normally, in Utah, the Utah Division of Waste Management and Radiation Control holds a hearing with an opportunity for oral comment near the White Mesa Mill in southeast Utah. If a member of the public request a more formal hearing, with a transcript and opportunity for cross-examination, that hearing is held in Salt Lake City, many miles and a day's drive from the Mill.

2.2.2. Section 15(a)(iii) should clarify what is meant by the "opportunity for cross-examination." Who, exactly, may be cross-examined by the party or parties that request a hearing? Can the applicant be cross-examined? Can the Department staff be cross examined? This should be made clear in the regulation.

2.3. Chapter 4, Section 16 (Decommissioning), Subsections (j) and (e) state (pages 4-17 and 4-18):

> (a) Specific licenses for uranium and thorium milling are exempt from subparagraph (e) of this section with respect to reclamation of tailings impoundments and/or waste disposal areas.
>
> (b) Coinciding with and in addition to the notification requirements of Section16(a) and (b) of this Chapter, the licensee shall maintain in effect all decommissioning financial assurances as required by 10 C. F. R. Part 40, Appendix A. The amount of financial assurance must be increased, or may be decreased, as appropriate, to cover the detailed cost estimate for decommissioning established pursuant to Section 17 of this Chapter.

**COMMENT**

2.3.1. Subsection (j) states that Subsection (e) does not apply to financial

assurances for uranium or thorium mill tailings impoundments and waste disposal areas. It is unclear what, exactly, the financial assurance requirements are for uranium and thorium milling tailings impoundments, if they are exempted from the Section 16(e) requirements. Clearly, financial assurances must also be required for the decommissioning of licensed uranium and thorium mill tailings impoundments and waste disposal areas.

2.4. Chapter 4, Section 16 (Decommissioning) (pages 4-17 to 4-18):

**COMMENT**

2.4.1. This section should not allow conventional uranium mills to delay decommissioning indefinitely, as apparently is the case with the Sweetwater Mill.

2.4.2. Recently, there have been issues with respect the transportation of radium-barium sludge waste from the decommissioning of Cameco Resources Smith Ranch/ Highland ISL operations (Docket No. 40-8964, License No. SUA-1548). The White Mesa Mill in Utah is allowed to receive and dispose of 5,000 cubic yards of waste from any one ISL operation. Some of the waste from the Cameco facility was improperly identified, handled, packaged, and transported. I and other citizens in southeast Utah live near, use, and conduct activities on and near the ISL waste transportation route, which is the Main Street through our small towns. The Department must review all pertinent NRC, Cameco, Department of Transportation, and Utah DWMRC documents related to these spills at White Mesa. The Department must do a much better job than the NRC to assure that ISL waste is safely handled, packaged, and transported to the White Mesa Mill. Hopefully, the recent attention given to this issue by the NRC will resolve these problems. However, the Department must continue to monitor and inspect the handling and transport of such wastes.

2.4.3. This section (and Section 17 on Decommissioning Plan) does not discuss the need for reclamation milestones for conventional mills and the enforcement of those milestones. The State of Wyoming should become familiar with the NRC and EPA regulations related to enforceable reclamation milestones and the 1991 Memorandum of Understanding (MOU) between the NRC, EPA, and NRC Agreement States.[1] The MOU is applicable to all Agreement States. A conventional mill, or a tailings impoundment at a conventional mill, should not be able to enter closure unless there is an approved reclamation plan and approved reclamation milestones.

2.4.4. Another aspect of Decommissioning is the need for continue attention to the cleanup of radiological contamination and other site impacts during the life of the operation. Decommissioning should be on a cleanup as you go basis, not a cleanup when you have to at the end of the operation. This should be made clear in Sections 16 and 17.

---

[1] 56 Fed. Reg. 55432, October 25, 1991.

I don't think I need to explain why continual cleanup of operations is important, saves money in the long run, and is more protective of public and worker health and safety and the environment.

2.4.5. The Department should start accompanying the NRC staff on inspections of uranium recovery operations in Wyoming.

2.5. Chapter 9 (Transportation of Radioactive Material).

**COMMENT**

2.5.1. Please see Comment above at Section 2.4.2 regarding transportation of ISL waste to the White Mesa Mill. There have been problems in the past will be problems in the future that will require the Department's attention.

**GENERAL COMMENTS**

3. Below are some General Comments

3.1. The State of Wyoming should include, not just incorporate by reference, applicable NRC regulations.

3.2. One of the most important elements or an effective regulatory program is the participation of the public. The most important way that the Department can encourage effective and informed public participation is by making all licensing and permitting documents readily available to the public. That means an electronic document control system that provides the public with easy, timely access to agency records. For uranium recovery operations in Wyoming, that has meant the NRC's Agencywide Documents Access and Management System electronic reading room, known as ADAMS. I am sure that the State of Wyoming took advantage of being able to readily access NRC records for Wyoming uranium licensees, rather than just having access to the document indexes in the old BRS system. Once Wyoming becomes an Agreement State for uranium recovery, it is unclear how the Department will make the licensing documents available electronically.

3.3. The DEQ must also routinely place important Uranium Recovery documents on dedicated web pages. This would provide convenient access to documents prior to and after a system for making all records readily available is up and running.

3.4. The documents to be routinely posted on a DEQ webpage should include, but not be limited to: licenses and permits; license and license amendment applications; agency requests for additional information; technical and environmental analyses of licensing actions; inspection reports; notices of violations; orders; draft and final licensing actions; public notices; reclamation plans; excursions and other reportable events; required

quarterly, semi-annual, and annual reports; and any other reports or documents required to be submitted by a license condition.
3.5. The licensee fee structure should be able to fund the systems and employees that will assure that all relevant licensing documents are made conveniently available for public use in a timely manner.

3.6. It is unclear what will happen to the thousands of uranium recovery licensees in Wyoming once Wyoming becomes an Agreement State for these operations. I would urge the Department to urge the NRC to maintain these document files on ADAMS. Unfortunately, the ADAMS documents for the uranium mills in Utah were removed as part of the response to 9/11 and never replaced. That was unfortunate for the State of Utah.

3.7. On January 17, 2017, the EPA issued a final rule that revised the "National Emission Standards for Radon Emissions from Operating Mill Tailings," 40 C.F..R Part 61 Subpart W, which was last issued in December 1989. The State of Wyoming must review those rules and determine the ways that Wyoming must supplement those rules by their own rulemaking or site specific license conditions, as authorized and contemplated by the Clean Air Act. The Department must assure that the Subpart W requirements are implemented at licensed uranium recovery operations in Wyoming, and not rely on the EPA to implement those requirements. In the past, the NRC and the State of Utah failed to assure that Subpart W requirements were met at the White Mesa Mill. Specifically, the Mill was allowed to have more than 2 tailings impoundment from 1989 to 2017 (in violation of Subpart W), when the new rule became effective and changed the limits.

3.8. In that new rule, the EPA declined to regulate the emissions from heap-leach operations during the operation of the pile by establishing a numerical emission standard. In order to meet requirement for as low as reasonably achievable radon emissions, Wyoming must establish a numerical emission standard and monitoring and reporting requirements for heap leach uranium recovery operations,

Thank you for providing the opportunity to comment. Please feel free to contact me if you have any questions.

Sincerely,

Sarah Fields
Program Director
sarah@uraniumwatch.org

Enclosure: As stated

**HISTORY OF THE STATUTORY AND REGULATORY DEFINITION OF "ORE" AND "11e.(2) BYPRODUCT MATERIAL"**

## A. STATUTES

### 1. Uranium Mill Tailings Radiation Control Act of 1978

The Uranium Mill Tailings Radiation Control Act of 1978 ("UMTRCA") (Public Law 95-604, 92 Stat. 3033 *et seq*.), amended the Atomic Energy Act ("AEA") of 1954 (Public Law 83-703, 68 Stat. 919 *et.seq*.). The AEA of 1954 was an amendment to the Atomic Energy Act of 1946 (Public Law 79-385, 60 Stat. 755 *et seq*.).

The regulatory history of UMTRCA, found in the two Congressional reports, provides information with respect "uranium mill tailings" and "ore."[1]

The Congressional Reports clearly state what was contemplated by Congress (i.e., the intent of Congress) when Congress established a program for the control of "uranium mill tailings" from the processing of "uranium ore" at inactive (Title I of UMTRCA) and

---

[1] The word, or term, "ore," as defined in several sources:

• Ore—a naturally occurring solid material from which metal or other valuable minerals may be extracted. [*Illustrated Oxford Dictionary*, DK Pub. 1998.]

• Ore—A native mineral containing a precious or useful metal in such quantity and in such chemical combination as to make its extraction profitable. Also applied to minerals mined for their content of non-metals. [*The Compact Oxford English Dictionary,* Second Edition, Oxford University Press, 2000, p. 1224:915-916.]

• Ore—a. A natural mineral compound of the elements of which one at least is a metal. Applied more loosely to all metaliferous rock, though it contains the metal in a free state, and occasionally to the compounds of nonmetallic substances, as sulfur ore. . . . *Fay* b. A mineral of sufficient value as to quality and quantity that may be mined for profit. *Fay.* [*A Dictionary of Mining, Mineral, and Related Terms*, compiled and edited by Paul W. Thrush and Staff of the Bureau of Mines, U.S. Dept. of Interior, 1968.]

• *The Oxford English Dictionary* points out that the current usage of the word "ore" goes back several hundred years. *A Dictionary of Mining, Mineral, and Related Terms* lists over 65 compound words using the word "ore," such as ore bin, ore body, ore deposit, ore district, ore geology, ore grader, ore mineral, ore reserve, ore zone. All of these terms incorporate the word "ore" as it relates to the mining of a native mineral. The term "ore," without explanation, has for many years been used in thousands, if not millions, of instances in thousands of mining, milling, geological, mineralogical, radiochemical, engineering, environmental, and regulatory publications. "Ore" like the word "water," is a word of common and extensive usage with a clear and accepted meaning.

active (Title II of UMTRCA) uranium and thorium processing facilities. *See* House Report (Interior and Insular Affairs Committee) No. 95-1480 (I), August 11, 1978, and House Report (Interstate and Foreign Commerce Committee) No. 95-1480 (II), September 30, 1978.

Under "Background and Need," HR No. 95-1480 (I) states:

> Uranium mill tailings are the sandy waste produced by the uranium ore milling process. Because only 1 to 5 pounds of useable uranium is extracted from each 2,000 pounds of ore, tremendous quantities of waste are produced as a result of milling operations. These tailings contain many naturally-occurring hazardous substances, both radioactive and nonradioactive. . . . As a result of being for all practical purposes, a perpetual hazard, uranium mill tailings present the major threat of the nuclear fuel cycle.
>
> In its early years, the uranium milling industry was under the dominant control of the Federal Government. At that time, uranium was being produced under Federal Contracts for the Government's Manhattan Engineering District and Atomic Energy Commission program. . . .
>
> The Atomic Energy Commission and its successor, the Nuclear Regulatory Commission, have retained authority for licensing uranium mills under the Atomic Energy Act since 1954. [HR No. 95-1480 (1) at 11.]

The second House Report, under "Need for a Remedial Action Program" states:

> Uranium mills are a part of the nuclear fuel cycle. They extract uranium from ore for eventual use in nuclear weapons and power-plants, leaving radioactive sand-like waste—commonly called uranium mill tailings—in generally unattended piles. [HR No. 95-1480 (2) at 25.]

2. Atomic Energy Commission and the AEA of 1946

As indicated above, the domestic uranium mining and milling industry was established at the behest of the Manhattan Engineer District and the Atomic Energy Commission ("AEC"). The AEC regulated uranium mines and uranium processing facilities, established ore buying stations, and bought ore. Mining and milling of uranium ore was done under contract to the AEC. AEC purchased uranium ore under the Domestic Uranium Program. Regulations related to the AEC's uranium procurement program were set forth in 10 C.F.R. Part 60. Part 60 was deleted from 10 C.F.R. on March 3, 1975, after the establishment of the NRC.

The AEC published a number of circulars related to their Domestic Uranium Program. The Domestic Uranium Program—Circular No. 3—Guaranteed Three Year

Minimum Price—Uranium-Bearing Carnotite-Type or Roscoelite-Type Ores of the Colorado Plateau Area" (April 9, 1948), an amendment to 10 C.F.R. Part 60, states:

> § 60.3 *Guaranteed three years minimum price for uranium-bearing carnotite-type or roscoelite-type ores of the Colorado Plateau—(a) Guarantee*. To stimulate domestic production of uranium-bearing ores of the Colorado Plateau area, commonly known as carnotite-type or roscoelite-type ores, and in the interest of the common defense and security the United States Atomic Energy Commission hereby establishes the guaranteed minimum prices specified in Schedule 1 of this section, for the delivery of such ores to the Commission, at Monticello, Utah, and Durango, Colorado, in accordance with the terms of this section during the three calendar years following its effective date.
>
> *Note:* In §§ 60.1 and 60.2 (Domestic Uranium Program, Circulars No. 1 and 2), the Commission has established guaranteed prices for other domestic uranium-bearing ores, and mechanical concentrates, and refined uranium products.
>
> *Note*: The term "domestic" in this section, referring to uranium, uranium-bearing ores and mechanical concentrates, means such uranium, ores, and concentrates produced from deposits within the United States, its territories, possessions and the Canal Zone.

10 C.F.R. Part 60—Domestic Uranium Program at § 60.5(c) states:

> Definitions. As used in this section and in § 60.5(a), the term "buyer' refers to the U.S. Atomic Energy Commission, or its authorized purchasing agent. **The term "ore" does not include mill tailings or other mill products**. . . . [Emphasis added.] [Circular 5, 14 Fed. Reg. 731 (February 18, 1949).]

It is plain that the AEC was the primary mover in the domestic uranium mining and milling program. It is plain that under the Atomic Energy Act of 1946 and 1954, the AEC regulated uranium mining and milling and established a uranium ore-buying program. It is clear that from the 1940's to 1975, the regulations in 10 C.F.R. Part 60 clearly stated that "ore" does not include mill tailings or other mill products.

3. **Statutory Definition of Source Material**

The AEA of 1946, under "Control of Materials," Sec. 5 (b), "Source Materials," (1), "Definition," provides the definition of "source material." Section 5(b)(1) states:

> Definition. — As used in this Act, the term "source material" means

> uranium, thorium, or any other material which is determined by the Commission, with the approval of the President, to be peculiarly essential to the production of fissionable materials; but includes ores only if they contain one or more of the foregoing materials in such concentration as the Commission may by regulation determine from time to time.

The AEA of 1954, Chapter 2, Section 11, "Definitions," sets forth the current statutory definition of "source material" at Sec. 11(s):

> The term "source material" means (1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 to be source material; or (2) ores containing one or more of the foregoing materials, in such concentrations as the Commission may by regulation determine from time to time.
> [42 U.S.C. Sec. 2014(z).]

Responsive to this statutory definition, in 1961 the AEC established the following regulatory definition at 10 C.F.R. § 40.4:

> Source Material means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material. [26 Fed. Reg. 284 (Jan. 14, 1961).]

The AEC made a determination, in accordance with the mandate of the AEA of 1954, that ores containing 0.05% thorium and/or uranium would meet the statutory definition of source material. At the same time that they made that determination, the AEC had a regulation that clearly stated that "ore" does not include mill tailings or other mill products. Surely, the AEC, as the administrator of a uranium ore procurement program and the developer of the uranium mining and milling industry knew what they were talking about when they used the term "ore."

Additionally, the AEC set forth certain exemptions to the regulations in 10 C.F.R. Part 40. The proposed rule that was later finalized in January 1961 states, in pertinent part:

> The following proposed amendment to Part 40 constitutes an overall revision of 10 CFR Part 40, "Control of Source Material."
>
> With certain specified exceptions, the proposed amendment requires a license for the receipt of title to, and the receipt, possession, use, transfer, import, or export of source material. . . .
>
> Under the proposed amendment, the definition of the term "source material": is revised to bring it into closer conformance with that contained in the Atomic Energy Act of 1954. "Source Material" is defined as (1) uranium or thorium, or any combination thereof, in any physical or

> chemical form, but does not include special nuclear material, or (2) ores which contain by weight one-twentieth of one percent (0.05 percent) or more of (a) uranium, (b) thorium or (c) any combination thereof. The amendment would exempt from the licensing requirements chemical mixtures, compounds, solutions or alloys containing less than 0.05 percent source material by weight. As a result of this exemption, the change in the definition of source material is not expected to have any effect on the licensing program. . . .
>
> Section 62 of the Act prohibits the conduct of certain activities relating to source material "after removal from its place of deposit in nature" unless such activities are authorized by license issued by the Atomic Energy Commission. The Act does not, however, require a license for the mining of source material, and the proposed regulations, as in the case of the current regulations, do not require a license for the conduct of mining activities. Under the present regulation, miners are required to have a license to transfer the source material after it is mined. Under the proposed regulation below, the possession and transfer of unrefined and unprocessed ores containing source material would be exempted. [47 Fed. Reg. 8619 (September 7, 1960).]

The AEC established, via a rulemaking, exemptions for source material as defined in Sec. 2014(z)(1) related to mixtures, compounds, solutions, or alloys containing uranium and/or thorium:

> (a) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound, solution or alloy. The exemption contained in this paragraph does not include byproduct material as defined in this part. [10 C.F.R. § 40.13(a), 26 Fed. Reg. 284 (Jan. 14, 1961).]

The AEC also established, via a rulemaking, exemptions for source material as defined in Sec. 2014(z)(2) related to "ore":

> b) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the act to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore. [10 C.F.R. 40.13(b), 26 Fed. Reg. 284 (Jan. 14, 1961).]

The definition of "source material" and the exemptions that are related to those

definitions stand today, 56 years later. These regulatory definitions and exemptions did not change when the Nuclear Regulatory Commission (NRC) was established in 1975 and assumed regulatory responsibility for "source material." These regulatory definitions and exemptions did not change when the AEA was amended by UMTRCA in 1978. These regulations and definitions did not change when the NRC developed their policy guidances related to the processing of wastes from various mineral processing operations (including the commingled soils and wastes from other sources) at licensed uranium recovery operations.

**4. Definition of 11e.(2) byproduct material.**

UMTRCA, among other things, amended the AEA of 1954 by adding a new definition, the definition of 11e.(2) byproduct material:

> Sec. 201. Section 11e. of the Atomic Energy Act of 1954, is amended to read as follows:
> e. The term 'byproduct material' means (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content." [42 U.S.C. Sec. 2014 (e).]

There is no evidence in the regulatory history of UMTRCA that Congress, in defining "11e.(2) byproduct material" intended to also amend the statutory definition of "source material." There is no evidence in the regulatory history of UMTRCA that the term "any ore" does not mean "any type of uranium ore" (e.g., ore containing **less than** 0.05% uranium and/or thorium and the numerous types of natural uranium-bearing minerals that are mined at uranium mines and milled at uranium mills). There is no evidence in the regulatory history of UMTRCA that Congress intended the term "any ore" to mean anything that the NRC, an NRC Agreement State, or the uranium industry wants it to mean (e.g., the wastes from mineral processing operations, including wastes mixed with soils and commingled with the wastes from other sources, even if those wastes are processed for their source material content at a uranium or thorium mill).

**B. NRC REGULATIONS**

**1. Mandate of UMTRCA**

Although both the Environmental Protection Agency (EPA) and the NRC established a regulatory program for uranium milling and the processing of ores, neither the EPA nor the NRC contemplated the processing of materials that were not "ore." Neither the EPA nor the NRC considered wastes from other mineral processing operations (including contaminated soils and wastes from other sources) in their concept of "ore," and they did

not address in any manner the processing of such wastes when promulgating their regulatory regimes for active uranium processing facilities. Further, during the various rulemaking proceedings, the public was never informed that wastes from other mineral processing operations (including commingled contaminated soils and wastes from other sources), no matter how they were defined, would be processed at licensed uranium or thorium mills. Therefore the public was given no reasonable opportunity to comment on such processing activities at uranium mills.

**2. NRC Regulatory Program, 10 C.F.R. Part 40**

Responsive to UMTRCA, the NRC incorporated the UMTRCA definition of 11e.(2) byproduct material (with clarification) into their regulations at 10 C.F.R. § 40.4:

> "Byproduct Material" means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition. [44 Fed. Reg. 50012-50014 (August 24, 1979).]

The NRC also explained the need for the new definition:

> Section 40.4 of 10 CFR Part 40 is amended to include a new definition of "byproduct material." This amendment, which included uranium and thorium mill tailings as byproduct material licensable by the Commission, is required by the recently enacted Uranium Mill Tailings Radiation Control Act. [44 Fed. Reg. 50012-50014 (August 24, 1979).]

The NRC promulgated further regulations amending Part 40, in 1980, 45 Fed. Reg. 65521-65538 (October 3, 1980). In the summary, the NRC states:

> The U.S. Nuclear Regulatory Commission is amending its regulations to specify licensing requirements for uranium and thorium milling activities, including tailings and wastes generated from these activities. The amendments to parts 40 and 150 take into account the conclusions reached in a final generic environmental impact statement on uranium milling and the requirements mandated in the Uranium Mill Tailings Radiation Control Act of 1978, as amended, public comments received on a draft generic environmental impact statement on uranium milling, and public comments received on proposed rules published in the Federal Register. [Footnotes omitted.]

There is no statement in any of the NRC regulations in 10 C.F.R. Part 40 or in any of rulemaking proceedings promulgating those regulations that wastes from other mineral

processing operations (including commingled contaminated soils and wastes from other sources) is "ore," under any circumstances, or that, under any circumstances, such wastes would be processed at licensed uranium or thorium mills and the tailings or wastes would be disposed of as 11e.(2) byproduct material in the mill tailings impoundments. The regulations promulgated by the NRC and the EPA did not contemplate this kind of activity. The National Environmental Policy Act ("NEPA") document in support of the promulgation of the NRC regulatory program for uranium mills did not contemplate this kind of activity. In the rulemaking proceedings and NEPA proceeding, the public did not have an opportunity to contemplate and comment on the processing of feed materials other than natural ore.

**3. The Final Generic Environmental Impact Statement on Uranium Milling**

The Final Generic Environmental Impact Statement on Uranium Milling ("GEIS"), NUREG-0706, September 1980, makes a clear statement regarding the scope of the GEIS and its understanding of what uranium milling entails:

> As stated in the NRC Federal Register Notice (42 FR 13874) on the proposed scope and outline for this study, conventional uranium milling operations in both Agreement and Non-Agreement States, are evaluated up to the year 2000. Conventional uranium milling as used herein refers to the milling of ore mined primarily for the recovery of uranium. It involves the processes of crushing, grinding, and leaching of the ore, followed by chemical separation and concentration of uranium. Nonconventional recovery processes include in situ extraction or ore bodies, leaching of uranium-rich tailings piles, and extraction of uranium from mine water and wet-process phosphoric acid. These processes are described to a limited extent, for completeness. [GEIS, Volume I, at 3.]

Section 3.3 of the GEIS is entitled "Prospects for Unconventional Methods of Uranium Production." GEIS at 3-8. In the discussion of unconventional methods of uranium production, there is no discussion of the non-radiological hazards associated with uranium milling and mill tailings impoundments, nor is the processing of lead sludges or other types of materials that have been processed at the White Mesa Mill as "alternate feed materials" discussed as one of the types of "unconventional methods of uranium production."

Section 4.6 of the GEIS is a discussion of "Mineral Resources and Use" and does not discuss non-radiological hazards. GEIS at 4-6 to 4-7.

Sections 6.2.1 and 6.3.1 of the GEIS, both entitled "On Air Quality," provide brief information related to three air-borne effluents from "model mills." The effluents mentioned do not include lead in any form. Additionally, the processing of wastes from mineral processing operations (i.e., the processing of feed material other than ore, as that term is used in the GEIS) are not included within the scope of the GEIS.

The GEIS is very clear about what it considers "ore" to be and gave no indication whatsoever that materials other than ore, such as the tailings or waste from mineral processing operations are considered to be "ore."

The GEIS includes a discussion of "Past Production Methods." That discussion makes reference to "ore," "ore exploration," "pitchblende ore," "crude ore milling processes," "lower-grade ores," "uranium-bearing gold ores," "high-grade ores," "ore-buying stations," and "ore reserves." GEIS, Volume I, Chapter 2, at 2-1 to 2-2. There is a lengthy discussion of "Uranium Mining and Milling Operations" that provides a description of the commonly and less-commonly "used methods of mining uranium ores." GEIS, Volume II, at B-1 to B-2. Appendix 1.

In Chapter 6, "Environmental Impacts," there is a discussion of "Exposure to Uranium Ore Dust," which states, in part:

> Uranium ore dust in crushing and grinding areas of mills contains natural uranium (U-238, U-235, thorium-230, radium-226, lead-210, and polonium-210) as the important radionuclides. [GEIS, Volume I, at 6-41.]

There is also a table giving the "Average Occupational Internal Dose due to Inhalation of Ore Dust." GEIS at 6-41, Table 6.16. Further, the GEIS discusses "Shipment of Ore to the Mill" (GEIS at 7-11), "Sprinkling or Wetting of Ore Stockpile" (GEIS at 8-2), "Ore Storage" and "Ore Crushing and Grinding" (GEIS at 8-6), "Ore Pad and Grinding" (GEIS, Vol. 3, at G-2), "Ore Warehouse (GEIS, Vol. 3, at K-3) and "Alternatives to Control Dust from Ore Handling, Crushing, and Grinding Operations (GEIS, Vol. III, at K-3 to K-3). In the NRC responses to comments there are discussions of "Average Ore Grade, Uranium Recovery" (GEIS, Vol. II, at A-12 to A-13).

The GEIS did not consider the processing of wastes from mineral processing operations at uranium or thorium mills. The GEIS gives no indication whatsoever that such wastes are "ore," even if they were processed at a uranium or thorium recovery facility for their "source material content." Clearly, the GEIS did not consider that the wastes from the processing of such wastes would meet the definition of 11e.(2) byproduct material.

Therefore, the GEIS did not evaluate, and the public did not have an opportunity to comment upon, any of the possible health, safety, and environmental impacts of the processing of other mineral processing wastes at uranium or thorium processing facilities. There was no evaluation of the transportation issues related to the transportation of such wastes, nor were reasonable alternatives to the transportation, receipt, processing, and disposal of such wastes at uranium or thorium mills ever evaluated.

**C. EPA Regulatory Standards**

UMTRCA directed the EPA to establish standards for uranium mill tailings and directed

the NRC to implement those standards. That statute, as codified in 42 U.S.C. 2022, states in pertinent part:

> Sec. 2022. Health and environmental standards for uranium mill tailings
>
> (b) Promulgation and revision of rules for protection from hazards at processing or disposal site.
>
> (1) As soon as practicable, but not later than October 31, 1982, the Administrator shall, by rule, propose, and within 11 months thereafter promulgate in final form, standards of general application for the protection of the public health, safety, and the environment from radiological and nonradiological hazards associated with the processing and with the possession, transfer, and disposal of byproduct material, as defined in section 2014(e)(2) of this title, **at sites at which ores are processed primarily for their source material content** or which are used for the disposal of such byproduct material. . . . [Emphasis added.]
>
> Requirements established by the Commission under this chapter with respect to byproduct material as defined in section 2014(e)(2) of this title shall conform to such standards. Any requirements adopted by the Commission respecting such byproduct material before promulgation by the Commission of such standards shall be amended as the Commission deems necessary to conform to such standards in the same manner as provided in subsection (f)(3) of this section. Nothing in this subsection shall be construed to prohibit or suspend the implementation or enforcement by the Commission of any requirement of the Commission respecting byproduct material as defined in section 2014(e)(2) of this title pending promulgation by the Commission of any such standard of general application. In establishing such standards, the Administrator shall consider the risk to the public health, safety, and the environment, the environmental and economic costs of applying such standards, and such other factors as the Administrator determines to be appropriate.
>
> * * *
>
> (d) Federal and State implementation and enforcement of the standards promulgated pursuant to subsection (b) of this section shall be the responsibility of the Commission in the conduct of its licensing activities under this chapter. States exercising authority pursuant to section 2021(b)(2) of this title shall implement and enforce such standards in accordance with subsection (o) of such section. [42 U.S.C. 2022(b) and (d).]

Congress directed the EPA only to establish standards for "sites at which ores are processed primarily for their source material." The EPA, as mandated by UMTRCA, finalized the "Environmental Standards for Uranium and Thorium Mill Tailings at Licensed Commercial Processing Sites" in 1983. 48 Fed. Reg. 45925-45947 (October 7,

1983). In the "Summary of Background Information" the EPA provides a discussion of "The Uranium Industry" (i.e., the industry that the regulations apply to):

> The major deposits of high-grade uranium ores in the United States are located in the Colorado Plateau, the Wyoming Basins, and the Gulf Coast Plain of Texas. Most ore is mined by either underground or open-pit methods. At the mill the ore is first crushed, blended, and ground to proper size for the leaching process which extracts uranium. . . . After uranium is leached from the ore it is concentrated . . . . The depleted ore, in the form of tailings, is pumped to a tailings pile as a slurry mixed with water.
>
> Since the uranium content of ore averages only about 0.15 percent, essentially all the bulk or ore mined and processed is contained in the tailings. [48 Fed. Reg. 45925, 45927 (October 7, 1983).]

Clearly, when the EPA developed its standards for uranium and thorium mills, they stated, with specificity and particularity, what uranium ore was, what uranium milling consisted of, and what uranium mill tailings consisted of. EPA clearly stated that the standards applied to the processing of uranium and thorium ores at uranium and thorium mills. There is no reasonable evidence that would indicate that the standards promulgated by the EPA applied to the processing of wastes from other mineral processing operations at uranium and thorium mills.

Additionally, the EPA incorporated UMTRCA's definition of 11e.(2) byproduct material, as clarified by the NRC in 10 C.F.R. 40.4, into their standards at 40 C.F.R. Subpart D, § 192.31(b). Since that time the EPA has not amended their definition of 11e.(2) byproduct material in a rulemaking proceeding, nor have they amended their definition via policy guidance. The EPA has not, in any manner, widened the use of the words "any ore" to include mineral processing wastes (that is, alternate feed material). As will be discussed below, the EPA did not sanction the NRC's policy guidance with respect new definitions of "ore" and 11e.(2) byproduct material.

Clearly, the EPA, as directed by Congress, has not in any manner contemplated the processing of wastes from other mineral extraction operations at uranium or thorium mills when establishing the "Environmental Standards for Uranium and Thorium Mill Tailings at Licensed Commercial Processing Sites."

When compiling that list of effluents and incorporating that list into 40 C.F.R. Part 192, the EPA did not in any manner contemplate the processing of wastes from other mineral extraction operations (including commingled soils and waste materials from other sources) at the mills for which they were establishing standards. The EPA did not address in any manner effluents that might result from the processing of feed materials that were the tailings and other processing wastes from other mineral extraction facilities.

In the various rulemaking proceedings that have taken place in the establishment of the EPA standards, the public was given no opportunity to consider or comment on the possibility that the EPA standards would also apply to the processing of wastes from other mineral processing operations (including commingled soils and waste materials from other sources) at uranium and thorium mills.

The EPA and the NRC, in establishing their regulatory program, contemplated the processing of ores at uranium and thorium mills. However, as shown above, processing of wastes from other mineral processing operations at uranium and thorium mills is beyond the scope of the regulatory program established by the NRC and the EPA in response to UMTRCA.

Furthermore, 10 C.F.R. Part 40, Appendix A, Criterion 8, states in part:

> Uranium and thorium byproduct materials must be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory," as codified on January 1, 1983.

There is no indication that this NRC regulation and the regulation in 40 C.F.R. Part 440 (and the enabling statute) have in any manner been amended or altered by subsequent NRC policy guidance. Therefore, any shift in the usage of the word "ore" would conflict with these statutory and regulatory authorities with respect this regulation.

**D. Regulatory History of NRC's Alternate Feed Guidance**

1. In the late 1980's the NRC was faced with a few requests to process material other than ore. At that time, and today, there are two statutes or regulations (implementing those statues) that are pertinent. First is the statutory definition of "source material" established in 1954 by the AEA, found at 42 U.S.C. Sec. 2014(z), and in the NRC regulatory definition of "source material" (established in 1961 pursuant Sec. 2014(z)), found at 10 C.F.R. 40.4:

> Source Material means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. Source material does not include special nuclear material.

The second is the definition of "byproduct material" in Section 11(e)(2) of the Atomic Energy Act of 1954, as amended, (42 U.S. C Sec. 2014(e)(2)) and the regulatory definition of "byproduct material" found in 10 C.F.R. 40.4:

> Byproduct Material means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition.

The NRC had several options, including the denial of the amendment requests. One option would have been to go to Congress and request that Congress change the definition of 11e.(2) byproduct material to read "the tailings or wastes produced by the extraction or concentration of any **material** processed primarily for its source material content." NRC Staff made a determination that they would not go to Congress to seek an amendment to the AEA of 1954.

Instead, what the NRC did was to manipulate the use of the word "ore" as it is used in the definition of 11e.(2) byproduct material. NRC proposed in a notice and comment proceeding, that a policy guidance be established for the purpose of interpreting the term "ore," as it is used in the definition of 11e.(2) byproduct material. 57 Fed. Reg. 20525 (May 13, 1992). The NRC did not institute a rulemaking proceeding to amend 10 C.F.R. Part 40.

> The Final Position and Guidance gave a new definition of ore:
>
> > Ore is a natural or native matter that may be mined and treated for the extraction or any of its constituents or any other matter from which source material is extracted in a licensed uranium or thorium mill. [60 Fed Reg. at 49,296 (September 22, 1995)]

Based on the new use of the term "ore" as put forth in the proposed guidance, not only would the definition of 11e.(2) byproduct material apply to "any ore processed primarily for its source material content" in a licensed uranium or thorium mill, but the definition of 11e.(2) byproduct material would also apply to **any material** processed primarily for its source material content in a licensed uranium or thorium mill. In other words, NRC altered the accepted meaning of the word "ore" as that word ore was used in statutory definitions.

2. On May 14, 1992, NRC Staff sent a letter to the EPA, enclosing a copy of the May 13 proposed rules and requested EPA comment on two proposed guidance documents and their associated staff analyses. Letter from Robert M. Bernero, Director, Office of Nuclear Material Safety and Safeguards, NRC, to Sylvia K. Lowrance, Director, Office of Solid Waste, EPA, May 14, 1992.

The EPA did not submit comments on the proposed policy guidances. The only documentation of EPA's response to that request for comment is quoted below and is

found in the Commission Paper[2] that forwarded the finalized guidances to the Commission for their approval.

> There was an issue that delayed finalization of the guidance documents. In an October 1992, mixed waste meeting between the NRC, the EPA, and DOE staff, EPA identified potential inconsistencies in NRC's interpretation of the definition of source material in conjunction with the exclusion of source material from the definition of solid waste in the Resource Conservation and Recovery Act (RCRA). In making its point, EPA cited the May 13, 1992, *Federal Register* Notice on the disposal of non-11e.(2) byproduct material. The staff had delayed finalization of the uranium recovery policy guidance documents, pending resolution of the source material definition issue. However, the staff has now decided that these two policy guidance documents can be finalized, independent of the source material issue, because the guidance is not dependent on the interpretation of the definition of source material.

The Proposed Position and Guidance and the Final Position and Guidance gave no indication that the NRC was amending, interpreting, or in any manner adjusting the accepted meaning of the term "ore" as that word is used in the statutory and regulatory definition of "source material." Nor was there any discussion in the various guidances related to the processing of material other than natural ore (i.e., material that is not ore at all) of how the exemptions set forth in 10 C.F.R. §40.13(a) and (b) would be impacted by guidance's new definition of “ore." There is no indication that the "source material definition issue" has ever been appropriately addressed or resolved. It is an issue that has lain in some pretty murky regulatory waters for quite some time.

Now, within a specific licensing actions, the NRC proposed to partially resolve what has never before been put before the public in either a notice and comment proceeding, a rulemaking proceeding, or via Congressional legislation. That question is: Does the new use of the term "ore," put forth in the Final Position and Guidance, affect in any manner the definition of "source material" established in the Atomic Energy Act of 1954 or affect the exemptions set forth in § 40.13(a) and (b)?

It is plain from the Atomic Energy Act of 1946 and the legislative history of the AEA of 1954 and the Uranium Mill Tailings Radiation Control Act of 1978 and the regulatory history of the AEC, EPA, and NRC rules promulgated responsive to those laws, that the Policy Guidance's new use of the term "ore" goes far beyond the accepted meaning of that term and the clear intent of Congress. Therefore, NRC could make use of the new

---

[2] "Final 'Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11e.(2) Byproduct Material in Tailings Impoundments' and Final 'Position and Guidance on the Use of Uranium Mill Feed Materials Other Than Natural Ores,'" SECY-95-221, August 15, 1995.

definition of "ore" to claim that the alternate feed material is "source material ore" or to claim that the wastes produced from the processing of that material meets the statutory definition of "11e.(2) byproduct material."

The applicability of various environmental regulations to a great degree depends upon definitions. Congress, in their legislative function, often specifically defines words or phrases related to the application of a statute to a particular material or circumstances—when there is a need for explanation. However, when using words or terms with a common and long accepted meaning, such as groundwater, mill, tailings, or "ore," no explanation or definition is necessary.

The NRC was not authorized to shift these accepted definitions at will as an expression of their "regulatory flexibility." This is especially so when such shifts result in direct conflicts with NRC's own enabling statutes and regulations, as is the case with the use of the newly defined term "ore." Additionally, NRC was not authorized to shift definitions at will when such shifts directly conflict with the statutory authority and regulations of another federal agency, in this case, the EPA.

3. The NRC issued the 1995 Final Position and Guidance and the 2000 Interim Position and Guidance without conducting any assessment of any of the health, safety, or environmental effects of establishing the new and substantively different regulatory program that resulted from the issuance of the Final Position and Guidance. At the White Mesa Mill, this new recovery program—a program that started with the processing of a few small batches of wastes from other mineral processing operations to supplement the processing of uranium ore—grew to be, during several years, the only mineral recovery program and entailed the receipt and processing of hundreds of thousands of tons of wastes from other mineral processing operations (mixed with contaminated soils and wastes from other sources) from across the country.

The adverse environmental effects (including cumulative effects) of this new program have not been adequately identified and evaluated. Therefore, there has been no opportunity to mitigate any of the adverse environmental effects. Further, no NEPA document has ever considered the reasonable alternatives to the processing of wastes from other mineral processing operations at uranium and thorium recovery facilities.

**E. UMTRCA and the AEA**

UMTRCA, as it amended the AEA in 1978, clearly specified what constitutes "any ore." What constitutes "any ore" is "any ore." The plain language of the Act and the history of the implementation of the Atomic Energy Act of 1946, as amended by the Atomic Energy Act of 1954 and the Uranium Mill Tailings Act of 1978, is all that is needed to determine what "ore" or "any ore" is. As discussed above, clearly the legislative and regulatory history of the AEA and Title 10 of the Code of Federal Regulations make plan the meaning of the term "ore" and the term "any ore."

The NRC's use of the word "ore" for waste materials from mineral processing operations is unreasonable, and not permitted under the plain language of the AEA. No federal agency can use a licensing action or a policy guidance to expand upon and substantively alter the explicit will of Congress when that will is plainly set forth in a statute or statutes. The NRC does not have the discretion to use this licensing action or a policy guidance to substantively alter the statutory definition of "source material" or the statutory definition of "11e.(2) byproduct material."

Sarah Fields
Uranium Watch
P.O. Box 344
Moab, Utah 84532
435-260-8384