As of: January 24, 2012
Received: January 20, 2012
Status: Pending_Post
Tracking No. 80f9e66e
Comments Due: January 20, 2012
Submission Type: Web

PUBLIC SUBMISSION

Docket: NRC-2011-0266
Notice of Availability of Draft Interim Staff Guidance

Comment On: NRC-2011-0266-0001
Draft Interim Staff Guidance: Evaluations of Uranium Recovery Facility Surveys of Radon and Radon Progeny in Air and Demonstrations of Compliance

11/21/2011
76FR72006

Document: NRC-2011-0266-DRAFT-0005
Comment on FR Doc # 2011-29987

Submitter Information

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Name: Sarah
Address: P.O. Box 344
Organization: Uranium Watch

General Comment

See attached file(s)

Attachments

UW_NRC_InterimGuidancePart20_comments.120120

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = D. Schmidt (dws2)

Uranium Watch

76 South Main Street, # 7 | P. O. Box 344
Moab, Utah 84532
435-259-9450

January 20, 2012

Via Federal Rulemaking Web site

Ms. Cindy Bladey
Chief, Rules, Announcements, and
Directives Branch
Office of Administration
Mail Stop: TWB–05–B01M
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555–0001

RE: Docket ID NRC–2011–0266. Comments on *Evaluations of Uranium Recovery Facility Surveys of Radon Progeny in Air and Demonstrations of Compliance with 10 CFR 20.1301*, September 2011

Dear Ms. Bladey:

Below please find comments on the Nuclear Regulatory Commission (NRC) Staff Interim Guidance: *Evaluations of Uranium Recovery Facility Surveys of Radon Progeny in Air and Demonstrations of Compliance with 10 CFR 20.1301*, September 2011. These comments will focus on how this guidance and 10 C.F.R. § 20.1301 relate to the White Mesa Uranium Mill, the only currently active conventional uranium mill in the United States. The Mill is regulated by the State of Utah, as an NRC Agreement State since 2004. These comments are submitted on behalf of Uranium Watch and Living Rivers, Moab, Utah.

1. BACKGROUND

1.1. The Staff Interim Guidance on Radon and Compliance with §20.1301 (Interim Guidance) states:

> Uranium recovery (UR) facility licensees, including in-situ recovery (ISR) facilities and conventional uranium mills, are required to perform surveys of radiation levels in unrestricted and controlled areas, and to perform surveys of radioactive materials in effluents released to unrestricted and

> controlled areas to demonstrate compliance with the dose limits for individual members of the public, in 10 CFR 20.1301.

This requirement for radiation surveys is found in 10 C.F.R. § 20.1302(a). However, 10 C.F.R. § 20.1302(b) states:

> (b) A licensee shall show compliance with the annual dose limit in Sec. 20.1301 by--
> (1) Demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit; or

Therefore, it is unclear how the requirement to make surveys of radiation levels at appropriate locations applies to licensees that demonstrate Section 20.1301 compliance by "calculation," rather than "measurement," as allowed by Section 20.1302(b). Information provided in the rest of the Interim Guidance does not adequately clarify this.

1.2. Currently, the NRC is not regulating any operating conventional uranium mill, though there are some proposed. Currently licensed operating uranium mills are in NRC Agreement States (Utah and Colorado), with only one active mill. The NRC must be sure that the Interim Guidance also properly covers the compliance issues associated with conventional uranium mills.

1.3. The "Flowchart of Radon and Radon Progeny Surveys and Compliance with § 20.1301" (page 3) does not shed much light on the surveys and compliance with Section 20.1301 for conventional mills. This is particularly so considering how compliance is demonstrated at existing uranium mills and lack of measurement of radon and radon progeny to demonstrate compliance or to confirm dose calculations. The NRC must develop a flowchart that is applicable to conventional uranium mills and their reality.

1.4. The NRC should replace the phrase "NRC staff reviewers" with "NRC or Agreement State staff reviewers" and work with staff in Colorado and Utah to implement the provisions of the Interim and Final Guidance in any Agreement State that regulates uranium recovery and 11e.(2) byproduct disposal facilities

2. ACCEPTANCE CRITERIA

2.1. Regulatory Guidance. Some of the regulatory guides (page 4) were developed in the 1980s. Some of the information in the guidances is difficult for a member of the public to understand, and it is likely that the guidances and the assumptions that they are based on are not fully up to date. The NRC must seriously consider developing new guidance documents. This would be guidance that is written in such as manner as to be comprehensible to a member of the public and be based on current data, assumptions, and

information.

3. OVERVIEW OF METHODS FOR DEMONSTRATING COMPLIANCE WITH 10 CFR 20.1301

3.1. The Interim Guidance (page 5) states, "For either of the two basic compliance methods (i.e., in §20.1302(b)(1) and 1302(b)(2)), licensees must address doses from all pathways of exposures and for the most exposed individual members of the public." It also states, "Licensees must also address all sources, including point and diffuse or area sources, of radiation and radioactive effluents."

What is not clear is how the MILDOS-AREA Model addresses doses from all pathways of exposure and from all radiation and radioactive effluent sources, both on and offsite, at any specific conventional uranium mill. The licensee for the White Mesa Uranium Mill (San Juan County, Utah) used the MILDOS-AREA Model to demonstrate compliance in 2007. The report on the compliance was included in the 2007 White Mesa Mill License Renewal Application. According to the licensee and its contractor, their use of the model was based on certain assumptions, measurements and calculations.[1] The licensee did not include complete data and information regarding the results of surveys of radiation levels in all unrestricted and controlled areas and surveys of all radioactive materials in effluents released to unrestricted and controlled areas.

There is no indication that the Utah Division of Radiation Control (UDRC) reviewed that data and information carefully to make sure that all sources of radioactive emissions were identified and properly measured and that the data was accurate and complete. Even if the 2007 dose was properly calculated, there have been major changes to the Mill operation in the past 5 years, assuring that that 2007 dose assessment is totally out of date.

3.2. The MILDOS-AREA Model is not something that a member of the public can readily understand. Therefore, is it very difficult for a member of the public to determine whether the licensee properly considered all relevant data and information in the dose calculations. For example, it is not clear how the licensee used the data from the yearly assessment of the radon emissions from existing tailings impoundments to demonstrate compliance with 40 C.F.R. Part 61, Subpart W, to calculate the mill dose. It is not clear if the licensee included emissions from production wastewater ponds and emissions from uranium and other radioactive particulates that have migrated offsite.

3.3. The Interim Guidance (page 6) states: "Licensee demonstration of compliance with the public dose limit must be performed on an annual basis."

Currently, in the State of Utah, a uranium mill licensee is not required to demonstrate compliance with Section 20.1301 annually, or in accordance with any compliance schedule. In fact, the licensee for the White Mesa Mill last demonstrated compliance in 2007, when the licensee performed MILDOS-AREA Modeling for the

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[1] White Mesa License Renewal Application, Volume 4, Appendix C, February 28, 2007. http://www.radiationcontrol.utah.gov/Uranium_Mills/IUC/Denison_IUC/VOLUME%205.pdf

license renewal application. The previous MILDOS calculation was performed in 1991. Since 2007 there have been a number of changes to the operation of the mill that would result in an increase in radon and other radioactive emissions, yet the licensee has not submitted, and the UDRC has not demanded, further compliance demonstrations. Even in 2007, the licensee did not include the types of information that the NRC believes should be included in a demonstration of compliance report and reviewed by the regulatory agency.

3.4. A licensee must be required to submit a new estimation of the dose limit for any changes in the mill operations that would result in additional doses to the public; for example, the operation of an additional mill circuit, the installation of a new waste water pond, the operation of a new tailings impoundment, and the dewatering and drying out of a tailings impoundment during closure. Major changes in mill operations can result in emissions that cause an exceedance of the offsite dose, and that exceedance might not be apparent for up to a year if the licensee is only required to submit annual compliance reports.

3.5. In reviewing an annual Section 20.1301 compliance report, the NRC or Agreement State should take into consideration the licensees compliance with 40 C.F.R. Part 61 Subpart W. Section 61.252(b)(1) of Subpart W allows only two operational tailings impoundments at any one time. The White Mesa Mill currently has three tailings impoundments in operation and a fourth one that is authorized to receive tailings. Therefore, the Utah Division of Air Quality (which administers and enforces Subpart W) and the UDRC are ignoring that Subpart W requirement for the White Mesa Mill.

3.6. In October 2011 the UDRC released a draft Safety Evaluation Report (SER) for the renewal of the White Mesa Mill, responsive to the timely 2007 license renewal application. That SER discussed Radiation Safety at the Mill, and discussed compliance with 20 C.F.R. § 20.1101, but did not discuss the Mills compliance with Sections 20.1301 and 20.1302. Clearly, there is a disconnect between Agreement State administration and enforcement of Sections 20.1301 and 20.1302 and the NRC's understanding of these requirements as outlined in the Interim Guidance.

3.7. The NRC should establish a specific time and the specific documentation that the licensee must submit to demonstrate compliance with the Section 20.1301 public dose limit. The annual compliance reporting date and document should be incorporated into the Part 20 regulations, so that there will be no misunderstandings.

3.8. The NRC staff working on this guidance should communicate with the NRC State Programs staff to make sure that Agreement States that have authority for uranium mills properly administer and enforce the 10 C.F.R. §§ 20.1301 and 20.1302 requirements, including annual licensee compliance demonstrations.

4. CONDUCTING A TECHNICAL REVIEW OF RADON COMPLIANCE ASSESSMENTS

4.1. Section 4.2.1. of the Interim Guidance states that "one approach to surveying Rn-222 in air is to measure radon concentration outdoors at the unrestricted area boundary or receptor location." The guidance does not mention the means by which such radon measurement would be accomplished. There are apparently, problems associated with accurate measurement of radon at the site boundaries. According to the White Mesa Mill licensee, "Due to the unavailability of monitoring equipment to detect the new 10 CFR Part 20 standard, and with the approval of NRC, Radon 222 monitoring at BHV stations was discontinued in 1995."[2] The Interim Guidance must discuss the issue of monitoring equipment to measure outdoor radon concentrations.

4.2. Sections 4.2.2 and 4.2.3 discuss the use of measurements and calculations to determine compliance. The White Mesa Mill licensee uses a combination of facility operational process parameters and measurement and/or calculation of radon and other radioactive sources as input in the MILDOS-AREA Model. However, as discussed above in at 3.2 and 3.3, there are problems with the use of this Model at the White Mesa Mill. These problems include:

- The need for the licensee to measure radon in air or some other indicator sufficient to verify that the predicted concentrations are not exceeded.
- MILDOS-AREA Model only considers the radioactivity from the U-238 decay chain. The U-235 decay chain and the Th-232 decay chain are not considered. Therefore, the model underestimates the dose from uranium and ignores any dose from Th-232, Th-228, and progeny. Thousands of tons of wastes from other mineral processing operations (alternate feed) that contain thorium-232 and progeny were processed and disposed of at the White Mesa Mill.
- Failure to take into consideration the radionuclide emissions from all onsite and offsite sources associated with the mill.
- Failure to consider higher radionuclide emissions from alternate feed in the MILDOS-AREA calculations.
- Failure to make annual compliance calculations and submit those calculations results for agency review.
- Failure to make dose calculations when there are changes in the mill operation that would cause siginificant additional radioactive emissions.
- Failure of regulatory agency to review the methodology used by the licensee to determine compliance.
- Radioactive emission data is collected, but there is no way of determining how that data is used in the MILDOS-AREA Model to determine compliance.
- Lack of sufficient information for an independent person to determine whether the MILDOS-AREA Model input parameters and data are complete and accurate and the

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[2] State of Utah Radioactive Material License No. UT1900479, White Mesa Mill, Blanding, Utah Semi-Annual Effluent Monitoring Report for Period, January 1, 2011 through June 30, 2011.

resulting calculations are correct.

The NRC must address the numerous problems associated with the use of the MILDOS-AREA model as a methodology of determining Section 20.1301 compliance.

4.3. The Final Guidance must include a complete list of the specific emission sources at conventional mills that must be measured and taken into consideration in any calculations to demonstrate compliance. This list must take into consideration all potential sources of radon at conventional mills, such as waste water ponds, alternate feed storage areas, and contaminated soils both on and offsite.

4.4. It would be advisable for the NRC to take a hard look at how the MILDOS-AREA Model has been used to determine compliance at the White Mesa Mill and Cotter Mill (Colorado) in the past. The NRC should evaluate the 2007 Compliance information provided to the UDRC in the 2007 License Renewal Application (the last time that the licensee make a compliance determination) and evaluate it for completeness and accuracy.

4.5. Section 4.3 of the Interim Guidance (page 13) states: "In the current regulatory regime, tailings must meet a radon flux (fluence rate) standard." This Environmental Protection Agency radon flux standard (40 C.F.R. Part 61 Subpart W) only applies to mill tailings impoundments that existed prior to December 15, 1989, and that are currently operational. The Section 61.252 radon flux standard does not apply to tailings impoundments that are going through the closure and reclamation process (non-operational) and newer impoundments that meet the requirement for a maximum of 40-acres or use continuous disposal of the tailings, pursuant to Section 61.252(b)(1) and (2). This should be reflected in the Final Guidance.

4.6. The NRC and Agreement State staff should be required to provide a written review and approval of the licensee's annual 10 C.F.R. Section 20.1201 compliance report and compliance determination.

5. RULEMAKING

5.1. The NRC should incorporate some of the Interim Guidance requirements into Part 20 via a rulemaking. This would assure that Agreement States and Agreement State licensees comply with the Final Guidance requirements. The rulemaking would include requirements for annual demonstration of compliance and the information that should be included in that report, and set out in Section 3.3 (pages 6 and 7) of the Interim Guidance. It should also include a requirement for a written agency review and written determination of compliance, based on the licensee's compliance report.

Thank you for this opportunity to provide comments. If you have any questions, please feel free to contact Sarah M. Fields at 435-259-9450 or sarah@uraniumwatch.org.

Sincerely,

Sarah M. Fields
Program Director
Uranium Watch

John Weisheit
Conservation Director
Living Rivers
PO Box 466
Moab, Utah 84532