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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

June 28, 2001

Reply To
Attn Of: ECL-113

JUL 02

Kathleen Hain, Director
Environmental Restoration Program
Department of Energy
Idaho Operations Office
850 Energy Drive
Idaho Falls, Idaho 83401-1563

Re: Potential Applicable or Relevant and Appropriate Requirements for the INEEL OU 7-13/14 RI/FS.

Dear Ms. Hain:

On October 16, 2000, EPA identified two sets of requirements as potential ARARs for the INEEL OU 7-13/14 RI/FS. These requirements are found in 10 CFR 61 Licensing Requirements for Land Disposal Facilities (technical requirements) and 40 CFR191 Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes. The purpose of EPA's identification of these potential ARARs was to ensure their consideration in the development of risk assessments and remedial alternatives for OU 7-13/14 and to ensure that data gathering and treatability studies supported decisionmaking consistent with these and other ARARs.

Subsequently, EPA, DOE, and the State of Idaho managers for OU 7-13/14 have held discussions regarding the use of these requirements as ARARs. Based on those discussions, EPA believes the substantive portions of these requirements to be relevant and appropriate with regard to the OU 7-13/14 RI/FS. Compliance with ARARs is a threshold criterion for remedy selection under CERCLA and as ARARs, these requirements would need to be met or waived for any remedy applied to OU 7-13/14.

EPA has determined that 10 CFR 61 and 40 CFR 191 (as well as related sections of 40 CFR 194) are relevant and appropriate for OU 7-13/14 because these requirements address problems and situations sufficiently similar to OU 7-13/14 and are well-suited to the conditions of the site. In making this determination, EPA considered the purposes of the requirements, the media regulated, the substances regulated, the activities regulated, exemptions to the requirements, the

types of sites regulated, the type and size of facility regulated, and use of affected resources.

A discussion of the basis for EPA's position on this matter is attached. If you have any questions, please contact me at 206-553-7261.

Sincerely,

Wayne Pierre, INEEL Project Manager

encl

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Relevance and Appropriatness of Substantive Requirements of 10 CFR 61, 40 CFR 191, and 40 CFR 194 as ARARs for INEEL Subsurface Disposal Area TRU Pits & Trenches

INTRODUCTION

The Subsurface Disposal Area (SDA) is an area of approximately 90 acres at DOE's 890 mi^2 Idaho National Engineering and Environmental Laboratory (INEEL) which has been in use since the 1950's. Up until 1970, DOE disposed of plutonium (i.e., TRU) wastes from their Rocky Flats Plant (RFP) in Colorado in primarily 6 shallow burial pits of approximately 12 acres in total area. Since 1970, these wastes are managed as retrievable storage and are currently being shipped to WIPP, a deep geologic isolation for permanent disposal (i.e. in the Waste Isolation Pilot Plant in New Mexico). The pre-1970's RFP waste disposed at INEEL sit upon fractured bedrock which is within 20 feet of the surface. The current landfill cover consists of a few feet of overburden.

Based on DOE's inventory of buried TRU-contaminated wastes, INEEL has by far the largest amount of buried plutonium, in terms of radioactive content, of any of the DOE sites. An estimated 634,000 curies of TRU are buried within 12 acres of shallow pits in the SDA. For comparison, Hanford has the next largest inventory of TRU wastes at 67.800 curies. INEEL's 634,000 curies of TRU translates into 1,000kg of Pu-239 within 12 acres. In terms of TRU definition, i.e., wastes >100nCi/g TRU, the average for these 12 acres area is 2,000nCi/g TRU in shallow land burial. If this estimate was transferred into 55-gal drum equivalents it would equal approximately 132g of TRU per drum. By comparison, the WIPP acceptance limit is 200g of TRU per 55-gal drum. Unfortunately, averaging doesn't apply to this area. Based on historical data combined with assays of the post-1970's TRU waste, currently being prepared for WIPP, the waste is not homogeneous and much of the 12 acre volume is soil. Selected waste types like graphite molds and RFP Series 741 sludges may contain Pu-239 overloaded 55-gal drums in the range of >1kg. Based on available landfill waste placement records many of these potentially overloaded wastes were confined to a relatively small number of shipments. For example, there is one report in 1966 of a single shipment of 49 drums of graphite mold wastes being disposed of within a 300 ft^2 area in Pit 5.

The discussion above clearly shows that the buried RFP wastes at INEEL go beyond what is acceptable disposal practice for significantly lesser concentrated TRU wastes at WIPP. It also shows the potential for localized areas within this INEEL disposal area to contain critical amounts of fissile material which may represent a future human health concern. The purpose of this paper is to evaluate the relevance and appropriateness of selected regulations at 10 CFR 61, 40 CFR 191 and 40 CFR 194 in determining remedial action goals and evaluating feasible remedial action alternatives for TRU pits and Trenches in the SDA at INEEL (TRUP&T).

Relevant and Appropriate Requirements

The regulations in 10 CFR 61 are not applicable to DOE under the Atomic Energy Act as amended. 40 CFR 191 and 40 CFR 194 are not applicable based on the time period when INEEL buried transuranic wastes. Relevant and appropriate requirements, while not applicable to a hazardous substance, pollutant, or contaminant, remedial action, location, or other circumstance at a CERCLA site, nevertheless address problems or situations sufficiently similar to those encountered at the CERCLA site such that their use is well-suited to the particular site. Determining whether a requirement is both relevant and appropriate is essentially a two-step process. First, to determine relevance, a comparison is made between the action, location or chemicals covered by the requirement and related conditions at the site, release or potential remedy. Second, to determine whether the requirement is appropriate, the comparison is further refined by focusing on the nature of the substances, the characteristics of the site, the circumstance of the release, and the proposed remedial action. EPA uses the following criteria for the analysis of relevant and appropriate requirements.

1. Whether the purpose for which the requirement was created is similar;

2. Whether the media regulated or affected by the requirement are similar;

3. Whether the substances regulated by the requirement are similar;

4. Whether the entities or interests affected or protected are similar;

5. Whether the actions or activities regulated by the requirement are similar;

6. Whether any variances, waivers, or exemptions are available for the circumstances;

7. Whether the type of place regulated is similar;

8. Whether the type and size of structure or facility regulated is similar; and

9. Whether any consideration of use or potential use of affected resources in the requirement is similar.

10 CFR Part 61

Background:

10 CFR 61 (Licensing Requirements for Land Disposal of Radioactive Wastes) establishes criteria for licensing land disposal of radioactive wastes. It contains performance objectives applicable to any method of land disposal and specific technical requirements for near-surface (within 30 meters of surface) disposal. 10 CFR 61 defines waste categories based on concentration and halflife. Isolation requirements are based on class and are evaluated to protect future intrusion. The most dangerous class (Class C) requires isolation at greater depth (or alternatively intruder barriers such as concrete caps).The technical requirements (Subpart D) are

explicit that "Waste that is not generally acceptable for near-surface disposal is waste for which form and disposal methods must be more different, and in general more stringent, than those specified for Class C waste." TRU wastes would be managed as more stringent than Class C wastes.

The substantive elements of 10 CFR 61 are relevant to the TRUP&T because they address the same action-specific and chemical-specific problems (i.e. land disposal of radioactive waste). They identify protective closure and post-closure standards for identifying a protective residual risk, analogous to the RCRA 40 CFR 264.310 standards for landfill closures, when hazardous wastes have been identified as contaminants of concern. The substantive elements of 10 CFR 61 are appropriate because of the similarity in the nature of the substances involved (radioactive waste), the characteristics of the site (near-surface land environement), the circumstance of the release (disposal of waste), when compared to conditions at the TRUP&T.

The substantive elements dealing with waste classification (10 CFR 61.55(a)(2)(iv)) are based on analysis of impacts to the public, including impacts to inadvertent intruders. Although not a substantive requirement, it is instructive to note that the Performance Objective at 10 CFR 61 Subpart C Section 42 identifies concern for exposure to individuals from inadvertent intrusion. More specifically, it requires that the facility protect any individual inadvertently intruding at any time after active controls are removed. This is accomplished by matching technical requirements including waste classification and criteria for waste form and concentration to disposal options. This is analogous to the CERCLA baseline risk assessment in theory, and includes the potentially harmful effects from radiation fields.

Substantive Requirements for Land Disposal Facilities:

10 CFR 61 Subpart D:

This regulation contains several relevant and appropriate substantive requirements which apply at existing land disposal sites like the TRUP&T. The following requirements are identified as RARs:

Citation	10 CFR 61 RARs Requirement	Comments
10 CFR 61.50(a)(4)-(6), (9)-(11)	Disposal site suitability requirements for land disposal:	Specifies minimum standards for near-surface disposal sites
10 CFR 61.51(a)(4)-(6)	Disposal site design for land disposal:	Specifies requirements for design including covers.
10 CFR 61.52(a)(4)-(8)	Land disposal facility operation and disposal site closure:	Provides disposal requirements based on waste classification.

Citation	10 CFR 61 RARs Requirement	Comments
10 CFR 61.55(a)(2)(iv)	Waste classification	Identifies wastes that are not generally acceptable for near-surface disposal.
10 CFR 61.59(b)	Institutional control:	Identifies that institutional controls should not be relied upon beyond 100 years after transfer of control.

Summary:

The substantive elements of 10 CFR 61, and the technical analysis on which they are based, provide important criteria which are both relevant and appropriate for the unique circumstance of remedial actions addressing landfill disposals of long-lived transuranic wastes at INEEL. These criteria include limitations on the assumed effectiveness of institutional controls, limitations on the assumed effectiveness of engineered intrusion barriers, evaluation of potential risk to inadvertent intruders, and identification of wastes which are not suitable for near-surface disposal.

40 CFR 191

Background:

40 CFR 191 (Environmental radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes) establishes criteria for land disposal of transuranic wastes. It contains performance objectives applicable to any method of land disposal. 40 CFR 191 provides criteria for disposal of transuranic radioactive wastes including compliance time frames, individual protection requirements, containment requirements, and release limits for containment. In particular, 40 CFR 191 specifically addresses substantive requirements for compliance including the use of intruder scenarios and probabilistic criteria for the fraction of transuranic waste potentially released to the environment.

The substantive elements of 40 CFR 191 are relevant to the INEEL SDA because they address problems and situations (i.e. isolation of transuranic wastes in concentrations exceeding 100 NCI/g) that are similar to those at the SDA. 40 CFR 191 requirements are appropriate because they are well suited to the conditions of the site (transuranic waste disposals). Comparing 40 CFR 191 and CERCLA responses at the SDA: (1) The purposes of the requirements includes protection of the general population from releases of radioactivity which is also one of the purposes of CERCLA actions at the sites. (2) The medium (land with potential impacts on groundwater) is the same in both cases. (3) The substances regulated are the same. (4) The activities (transuranic waste disposal) are the same. (5) There are no exemptions to the requirements of 40 CFR 191 that would preclude its use as an ARARS at the SDA. (6) The type of site regulated and affected by 40 CFR 191 is similar to the SDA. (7) The type and size of structures involved is not an issue and (8) The use or potential use of resources is the same.

40 CFR 191 RARs		
Citation	**Requirement**	**Comments**
191.13(a)	Containment requirements:	Provides containment requirements based on specified probabilities of release of specific quantities of radio nuclides.
191.14(a)-(e)	Assurance requirements:	Standard for assuring that the containment requirements are met.
191.15(a)	Individual protection requirements:	Provides radiation dose limits to the public for a period of 10,000 years, assuming undisturbed performance.
191.24(a)	Disposal standards:	Requires design to provide protection to drinking water standards for 10,000 years.
Appendix C to Part 191 -	Guidance For Implementation of Subpart B: Describes EPA assumptions regarding the implementation of Subpart B.	Although not an ARAR, this is implementing guidance for the ARARs listed above

Summary:

The substantive elements of 40 CFR 191 provide important criteria which are both relevant and appropriate for the unique circumstance of remedial actions addressing disposals of transuranic wastes at INEEL. These criteria provide requirements for wastes which are not suitable for near-surface disposal, including containment and assurance requirements to prevent unacceptable releases during the long period of time required because of the halflife of transuranic wastes. These criteria can provide a basis for assessment of the unique circumstance where transuranic wastes similar to those addressed by 40 CFR 191 are disposed in near-surface facilities.

40 CFR 194

Background:

40 CFR 194 (Criteria for the Certification and Re-Certification of the Waste Isolation Pilot Plant's Compliance with 40 CFR Part 191 Disposal Regulations) includes specific requirements for demonstrating 40 CFR 191 compliance.

Citation	40 CFR 194 RARs Requirement	Comments
40 CFR §194.32(b)	Scope of performance assessments:	Requires consideration of mining and drilling.
40 CFR §194.33(a)	Consideration of drilling events in performance assessments:	Specifies assumptions to be used for consideration of drilling.
40 CFR §194.41(b)	Active institutional controls:	Specifies That institutional controls not be considered beyond 100 years after disposal.
40 CFR §194.43	Passive institutional controls:	Specifies passive institutional controls including markers and records.
40 CFR §194.44(c)	Engineered barriers:	Requires evaluation of engineered barrier alternatives.

Summary:

The substantive elements of 40 CFR 194 provide important specific criteria for evaluation of compliance with 40 CFR 191 and are relevant and appropriate to TRU waste disposal sites.