

POLICY ISSUE NOTATION VOTE

May 1, 2003

SECY-03-0068

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: INTERAGENCY JURISDICTIONAL WORKING GROUP EVALUATING THE
REGULATION OF LOW-LEVEL SOURCE MATERIAL OR MATERIALS
CONTAINING LESS THAN 0.05 PERCENT BY WEIGHT CONCENTRATION
URANIUM AND/OR THORIUM

PURPOSE:

To inform the Commission of the activities of the Interagency Jurisdictional Working Group (JWG) and the resulting general consensus regarding the best approach to delineate the responsibilities of the U.S. Nuclear Regulatory Commission (NRC) and other Federal agencies and the States, with regard to low-level source material or materials containing less than 0.05 percent by weight concentration uranium and/or thorium. The staff is also requesting Commission approval of: (1) the staff's recommended approach to decrease NRC responsibility by limiting NRC authority to uranium and thorium that are extracted/purposely concentrated for the use of uranium or thorium; and (2) the staff's recommendation to formally solicit comments on the recommended approach from impacted Federal agencies at a high level [i.e., U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and U.S. Department of Energy (DOE)] and individual States and coordinate with the State Department regarding impacts on international Agreements of Cooperation.

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SUMMARY:

This paper provides the Commission with information about the activities of the JWG and recommendations for the best approach to delineate the responsibilities of NRC and other Federal agencies and the States with regard to low-level source material or materials containing less than 0.05 percent by weight concentration uranium and/or thorium. There were several public meetings of the JWG, during which it obtained additional information and insights related to the regulation of low-level source material. The JWG reviewed the options in SECY-99-259, "Exemption in 10 CFR Part 40 for Materials Less Than 0.05 Percent Source Material—Options and Other Issues Concerning the Control of Source Material"; technical information, including NUREG-1717, "Systematic Radiological Assessment of Exemptions for Source and Byproduct Materials"; and the relationship of other ongoing activities to 10 CFR Part 40 (Part 40) jurisdictional issues. In evaluating the options in SECY-99-259, the JWG divided the options into three outcomes: (1) no change, (2) increase NRC regulation, and (3) decrease NRC authority. The pros and cons for each were evaluated. The general consensus of the JWG is that the best approach for regulating low-level source material is to limit NRC authority to uranium and thorium that have been extracted or purposely concentrated for the use of the uranium or thorium. All other uranium and thorium incidental to the processing of other materials would be considered NORM /TENORM¹, and would be regulated by existing standards/regulations for this material. Additionally, a material's concentration, i.e., greater or lesser than 0.05 percent by weight uranium or thorium, would no longer be used to determine if a material is licensable source material. This approach would clarify jurisdictional authorities; limit what could be described as *de-facto* dual regulation (i.e., the regulation of various components within the same material by various agencies); and provide more consistency within NRC regulations. The staff recommendations in this paper are based largely on the deliberations of the JWG.

BACKGROUND:

SECY-99-259, "Exemption in 10 CFR Part 40 for Materials Less Than 0.05 Percent Source Material—Options and Other Issues Concerning the Control of Source Material," addressed many issues concerning Part 40, including the exemption in § 40.13(a). Section 40.13(a) exempts any person who 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 0.05 percent of the mixture, compound, solution, or alloy, from the regulations in Part 40 and from the requirements for a license set forth in section 62 of the AEA of 1954.

In SECY-99-259, the staff discussed the complex issues related to the history of Part 40, including the origin of the definition of source material in the AEA as it relates to its significance as a source for the production of special nuclear material. The original definition of source

¹For purposes of this paper, NORM is naturally occurring radioactive material, excluding AEA of 1954 material; TENORM is technologically enhanced naturally occurring radioactive material, excluding AEA material. Although NORM stands for the words "naturally occurring radioactive material," some uranium and thorium, though naturally occurring, have a unique legal standing under the AEA, and are regulated separately from other naturally occurring radioactive material. When "naturally occurring radioactive material" is used in this paper, it is meant to more broadly include uranium and thorium present with NORM/TENORM.

material in Part 40 (1947) excluded all forms of uranium and thorium below the concentration limit of 0.05 percent by weight. In 1961, the definition in Part 40 was revised to its present form, to be consistent with the definition of source material in the AEA of 1954. Since that time, only ore below the 0.05 percent by weight concentration has been excluded from the definition of source material. Other forms, "chemical mixtures, compounds, solutions, or alloys," in which the uranium or thorium is by weight less than 0.05 percent of the mixture, became an "unimportant quantity," covered by the exemption in § 40.13(a), which was also added to Part 40 in 1961. The concentration appears to have been chosen on the basis of the concentrations of source material necessary to be a useful source of fissionable material.

There is no consistent definition of "ore" underlying the regulatory decisions made by the Commission. The word "ore" is not defined in Part 40 or in the AEA of 1954, as amended. Under the present regulatory scheme, and depending on the interpretation of the word "ore," materials with low concentrations of uranium and thorium could be considered AEA material exempt from regulation or might not be considered AEA material at all. The only formal Agency definition of "ore" is in guidance for use only with respect to alternate feed material. This guidance defines "ore" in terms of its use for processing for its uranium or thorium content at a uranium recovery facility. This lack of a consistent definition of ore contributes to problems with the interpretation of the definition of source material, which have resulted in numerous regulatory and legal deliberations and inconsistencies in the regulation of source material.

In SECY-99-259, the staff noted that a legislative change could resolve the issues related to the exemption in § 40.13(a) and the confusion concerning the definition of source material. The staff recommended that before requesting a legislative change, negotiations with the other agencies that could assume some responsibilities now held by NRC would be necessary. The staff sought Commission approval to interact with EPA, OSHA, and the States, to explore the best approach to delineate the responsibilities of NRC and those agencies, with regard to the regulation of low-level uranium and thorium.

The Commission issued a Staff Requirements Memorandum (SRM) dated March 9, 2000 (Attachment 1), in response to SECY-99-259. In this SRM, in Item 1, the Commission approved the staff recommendation to initiate interactions and work with EPA, OSHA, and the States, to explore the best approach to delineate the responsibilities of NRC and these agencies with regard to low-level source material or materials containing less than 0.05 percent uranium and/or thorium. The Commission indicated that the following agencies should also be involved: DOE; the U.S. Army Corps of Engineers (ACE); the U.S. Department of Interior (DOI); and the U.S. Department of Transportation (DOT). The Commission directed the staff to undertake this activity as part of the overall effort to rationally address the risks from NORM, TENORM, low-level source material, and, specifically, materials containing less than 0.05 percent uranium and/or thorium, while ensuring adequate protection of public health and safety. The staff was also directed to " . . . work with other Federal agencies and the States to evaluate existing and planned regulation of such materials and assess the willingness of these agencies to assume responsibilities for certain levels of source material and other material."

In response to the SRM, the JWG was established. As directed by the Commission, the JWG included a representative from the States [representing the Organization of Agreement States (OAS) and the Conference of Radiation Control Program Directors (CRCPD)], and representatives from EPA and OSHA. Other Federal agencies with responsibilities for similar

materials are also members of the JWG, and include DOE; ACE; DOI, Bureau of Land Management; and DOT. These representatives did not make official decisions on behalf of their respective organizations. The JWG held seven meetings, from September 2000 through March 2002, which were open to the public, at NRC Headquarters. During these meetings, the JWG discussed and evaluated the jurisdictional issues and available technical information related to the regulation of low concentrations of uranium and thorium and their decay products. Some of the specific work of the JWG is discussed in the following sections. As a result of these discussions, the JWG reached a general consensus on the best approach for regulating low-level source material, as discussed in more detail later in this paper.

A representative from the Mine Safety and Health Administration (MSHA) also attended several of the public meetings of the JWG. Additionally, there was public participation at these meetings. A representative from the Nuclear Energy Institute and representatives from different industries, such as the zirconium, ceramics, oil and gas, and waste disposal industries, etc., attended the meetings. Several of these representatives submitted comments to the JWG, which were considered by the JWG during its meetings.

The staff submitted SECY-01-0051, "Status Report on Interagency Jurisdictional Working Group Evaluating the Regulation of Low Concentrations of Uranium and Thorium," to the Commission, in March 2001, providing a status report of the JWG's activities. The staff discussed the JWG's activities at that time and provided a schedule for completing its work. On August 13, 2002, the staff provided an additional status report to the Commission, which set out some of the remaining work that needed to be completed before the staff could provide final recommendations to the Commission. As identified in this memorandum, some of the remaining work to be completed before formal Commission consideration included issues related to: (1) the definition and regulation of ore, (2) impact on some sites currently under AEA authority, such as sites on the on the Site Decommissioning Management Plan (SDMP)/complex sites list, (3) impact to international Agreements of Cooperation and coordination with the U.S. Department of State, and (4) ongoing security issues.

DISCUSSION:

To determine the best approach to delineate the NRC's and other agencies' responsibilities regarding low-level source material, the JWG began by assessing the current jurisdictional responsibilities of each agency. It analyzed available technical data, to help it evaluate worker and public health and safety. The JWG discussed three possible general outcomes: (1) making no changes, (2) increasing NRC regulation, or (3) decreasing NRC authority. Numerous ongoing NRC activities were also identified, as well as activities of other organizations, related to the regulation of NORM and source material.

Jurisdictional Issues/Planned Regulations

The Commission asked the staff to evaluate existing and planned regulation of NORM, TENORM, low-level source material, and materials containing less than 0.05 percent by weight uranium and/or thorium (SRM in response to SECY-99-259) dated March 9, 2000). To assist in this evaluation, each JWG member representing an agency that has statutory authority over the use of radioactive material prepared an informal "citation of authority" (Attachment 2). These citations of authorities were developed for the purpose of discussion and support of the JWG

activities and do not represent Agency-endorsed positions or statements. The JWG used the citations of authorities in its evaluation of existing and planned regulation, as well as in its evaluation of jurisdictional issues.

Currently, no Federal agencies have immediate plans to revise their regulations for these materials. EPA is evaluating the use of TENORM, on an industry-by-industry basis, to determine whether there is a need for education or guidance regarding the use or waste disposal of the materials, or for issues related to products resulting from these industry activities. EPA is also evaluating the need for regulation, instead of education and guidance, for each industry. Currently, about 13 States have regulations that specifically address the regulation of NORM/TENORM. Other States that have active radiation control programs, and regulate this material, do so in accordance with their general radiation protection standards.

The JWG determined that most of the materials/processes are regulated by one or more Federal and State regulatory agency(ies), based on different statutes/missions. EPA's authority focuses on general population exposure and environmental issues; OSHA's mission is to ensure worker safety, with the exception of mining, where MSHA has regulatory authority for mine worker safety. States that regulate NORM/TENORM do so for general radiation protection. The ACE authority relates to environmental restoration and compliance activities for the Department of the Army, Department of Defense, EPA, DOE, and other Federal agencies. By statute, radiological working conditions resulting from AEA materials at NRC licensed or Agreement State licensed facilities are not subject to OSHA (29 USC 653(b)) and, by regulation, are deemed to be in compliance with the radiation protection provisions of OSHA regulations [29 CFR Ch. XVII, § 1910.1096(p)]. In addition, the OSHA representative also indicated that if a facility is exempt from NRC regulations, OSHA would also consider the facility to be in compliance with its radiation protection regulations, with respect to the material covered by the exemption. Note that OSHA and NRC entered into a Memorandum of Understanding (MOU) in order to delineate the responsibilities between the two agencies to avoid duplication of effort.

Finally, the JWG determined that other Federal agencies and States have the authority to regulate most of the materials/processes, evaluated by the JWG, through their authority to regulate the radium content or other naturally occurring radioactive material contained in the materials. Most of the JWG members have indicated that regulations specifically addressing the radium content in materials will essentially address the uranium or thorium in the material, as well. This occurs either because the doses from uranium and thorium are included in the dose calculations for radium, or simply because of an inadvertent result of controlling doses from NORM. Additionally, many members of the JWG and several members of the public commented that when facilities adhere to OSHA requirements for other toxic materials and for dust control, the doses from the uranium and thorium in those materials are also greatly minimized.

Technical Information

The JWG reviewed relevant sections of NUREG-1717, "Systematic Radiological Assessment of Exemptions for Source and Byproduct Materials," published in June 2001, as part of its review of technical data, to evaluate worker and public health and safety. The staff's evaluation of relevant sections of NUREG-1717 is provided in Attachment 3. After evaluating the

assumptions and parameters used in the calculations in NUREG-1717, the staff and the JWG have concluded that workers are probably not receiving doses in the range of a few tens of mSv/year (a few rem/year) as estimated in NUREG-1717, and believe that the actual doses are around 1 mSv/year (100 mrem/year). However, NUREG-1717 does not include an analysis of all industries that use material that could contain uranium or thorium. There may be other scenarios, related to other industries, that were not evaluated, which could result in exposures to workers and members of the public, of which NRC is not aware. Additionally, there is limited information on doses to members of the public.

The JWG has also evaluated information that was provided to a working group within the CRCPD revising the Suggested State Regulations on Part N–TENORM. The JWG included and focused on Part N because the Part N working group had proposed an exemption from the Part N–TENORM regulations for the zirconium industry. As of this writing, the proposed exemptions are more limited in that they apply only to phosphate and potash fertilizer, zircon, zirconia, and zircon products for distribution, including custom-blending, possession, and use and disposal of the materials. The manufacturing or processing (i.e., mining or extraction of zirconium metal) of these materials is explicitly not exempted. The Part N working group worked with a consultant to evaluate information from the zircon industry and found that, in general, when (1) actual measurements and data from the industry are used; (2) newer dose methodologies (i.e., International Commission on Radiological Protection (ICRP) 66 and 68 are applied; and (3) other regulatory controls already in place, such as OSHA dust control regulations, are factored into the calculations, the doses are much lower than those estimated in NUREG-1717. The Part N group concluded that the doses should be below 1 mSv/year (100 mrem/year) in most situations. The consultant to the Part N working group indicated that the one exception would be for ultra-fine zircon milling and mining, with doses potentially in the range of 3-7 mSv/year (300-700 mrem/year). As of this writing, the CRCPD Executive Board was still reviewing the draft proposed revision to Part N–TENORM.

Although the general consensus of the JWG is that there is not a significant health and safety problem that warrants urgent regulatory action, it could not conclude that the exemption in § 40.13(a) provides a level of protection consistent with other NRC regulations. For example, workers in industries that are exempt from the regulations in Part 40 and from the requirements for a license are not necessarily receiving any radiation safety training or monitoring of their radiation exposures. The JWG believes that some oversight of the material covered by this exemption may be needed. Because individuals can receive doses in excess of 1 mSv/year (100 mrem/year) as a result of their jobs, a formal radiation protection program, including monitoring and training, consistent with the requirements in 10 CFR Part 19 and Part 20, for NRC-licensed facilities, may be warranted. The JWG believes that agencies other than NRC can provide this oversight.

Relationship to Other Ongoing Activities and Other Issues Related to § 40.13(a) and Regulation of NORM

The JWG was informed of other ongoing activities and other issues related to § 40.13(a) and the regulation of NORM/TENORM that it believed should be brought to the Commission's attention. Two committees are working on NORM/TENORM issues: (1) American National Standards Institute/Health Physics Society Committee on TENORM standards; and (2) Interagency Steering Committee on Radiation Standards subcommittee on

NORM/TENORM. Additionally, a National Academy of Sciences study, regarding "Improving Practices for Regulating and Managing Low-Activity Radioactive Waste," is now underway. The objective of this study is to evaluate options for improving practices for regulating and managing low-activity radioactive waste in the United States. Also, subsequent to the meetings of the JWG, the staff began working with EPA, who is considering a rulemaking that could permit disposal of certain radioactive material, such as source material and NORM, in a Resource Conservation and Recovery Act permitted facility. The staff recognizes that the Commission has submitted a legislative request to obtain jurisdiction over additional radioactive material extracted, or converted after extraction, for use in commercial or research activities. A description of some of the other ongoing activities, along with some related NRC activities identified by staff, is provided in Attachment 4. Where applicable, the impact of the interrelated activity, as compared to the recommended approach (i.e., decrease NRC authority to uranium or thorium that are purposely extracted/concentrated), is discussed.

Additionally, as part of this project, the JWG and staff identified numerous issues related to the activities of the JWG. These issues are discussed in Attachment 5, including such issues as State perspective; inconsistencies between the exemption in § 40.13(a) and other NRC regulations; the difficulty with the definition of source material and the exemption in § 40.13(a) pose when determining regulatory jurisdiction; impact on international Agreements of Cooperation; and the impact on sites where the uranium and thorium are incidental to the material of interest and contain greater than 0.05 percent by weight uranium and/or thorium and, therefore, require an NRC license.

JWG's Review of Options

The JWG's review began with evaluating the options discussed in SECY-99-259. Subsequently, the options were divided into three outcome categories: (1) no change, (2) increase NRC regulation, and (3) decrease NRC authority. The outcome categories focus on the basic outcomes that could result from the various options in SECY-99-259. After deciding on the basic outcome of "decrease NRC authority," the group focused on two options within this category: to limit NRC authority to (1) the uranium or thorium that are purposely extracted for the use of the material; or (2) uranium and thorium in materials above 0.05 percent by weight concentration. An options analysis based largely on the deliberations of the JWG is provided in Attachment 6. This analysis includes information regarding considerations used to evaluate the options in SECY-99-259, the outcome categories into which the options in SECY-99-259 were divided, and the pros and cons for the different outcome categories. Attachment 6, Table 3, compares the two options on which the JWG focused, as well as the option for "no change," with respect to the various considerations used by the staff and the JWG in evaluating the options in SECY-99-259.

In addition to the options in SECY-99-259, the JWG considered two additional options. One option discussed by the JWG was a tiered approach, using specified dose levels to determine when a person would be exempt from NRC licensing, require a general license, or require a specific license. Discussions focused on the difficulty of implementing this approach, because, based on the assumptions used, results of dose calculations for similar situations can be different. This could result in similar material being regulated differently (e.g., under an exemption, a general license, or a specific license). Additionally, this approach would place the

burden on the person possessing the material to determine when the radioactive material requires a license, and if so, what type of license.

The other option, suggested by a member of the public, was that NRC make no changes to its current regulatory approach; instead, the individual recommended that OSHA revise its regulations for the use of radioactive materials to update training requirements, specifically requiring training for workers who could receive a dose greater than 1 mSv/year (100 mrem/year). Alternatively, the suggestion was made to establish an OSHA-approved voluntary workplace training program, consistent with the requirements in 10 CFR 19.12, for the use of material under the exemption in § 40.13(a). In the aforementioned individual's view, this approach would alleviate the concern that workers are receiving radiation exposures as a result of their occupation, without receiving radiation safety training to inform them of the risks of such exposures, and ways to minimize their exposures. Although this approach could be useful, there is no indication at this time that OSHA is willing to modify its regulations.² Additionally, this training would not solve the problems with the definition of source material, discussed above, and the concentration level in § 40.13(a), nor the legal impediments the States and other Federal agencies have in regulating uranium and thorium covered under the exemption in § 40.13(a) and considered AEA material. This is discussed further in Attachment 5. Also, it would be the responsibility of an individual facility/industry organization to propose to OSHA the possibility of having OSHA-approved voluntary workplace training.

The JWG eliminated the option in SECY-99-259 for an MOU between NRC and another agency or agencies, primarily because MOUs are not legally binding. In addition, the agencies involved with an MOU must have statutory authority over the materials in question.

General Consensus of the JWG for the Best Approach for Regulating Low-Level Source Material

Based on its evaluations, the general consensus of the JWG is that the best approach for regulating low-level source material is to limit NRC authority to uranium and thorium that are extracted (i.e., purposely concentrated for the use of the uranium or thorium). Once extracted/purposely concentrated, the uranium and thorium would continue to be considered source material subject to NRC regulations. All other incidental uranium and thorium that are not extracted or purposely concentrated would be considered NORM/TENORM, and would be regulated by current standards/regulations for this material, under the regulatory programs of other agencies, such as EPA, OSHA, and the States, to the extent that these organizations choose to regulate this material. The input obtained from the various agency representatives and the CRCPD/OAS representative was generally supportive of this approach. They believe that the responsibilities for this material could fall into current regulatory programs without a great burden on agency resources. To summarize, this approach would: (1) maintain safety; (2) limit *de-facto* dual regulation; (3) provide a clearer delineation of jurisdictional authority, which will be easier for agencies, industry, and the public to understand; (4) provide for more

²Note that OSHA regulations are taken from an older version of 10 CFR Part 20 (based on ICRP 2) and do not include training requirements comparable to those in the current 10 CFR Part 19.

consistent overall regulation of naturally occurring uranium and thorium within a regulatory authority; and (5) reduce inconsistencies within NRC's regulatory program.³

Additionally, the programs of other regulatory authorities will then be able to operate in an unimpeded manner while still providing protection of worker and public health and safety, because the jurisdictional authority will be clearer, and the States and EPA could have a comprehensive program to regulate all NORM, instead of just the radium and radon component of the material, if they choose to regulate this material. However, this approach would require expenditure of NRC resources in the near term, to coordinate the proposed NRC action with affected Federal agencies and States, as well as resources associated with preparing a legislative package and associated rulemaking.

Performance Goals

As the JWG progressed in this effort, the staff considered how the options and recommendations address NRC's performance goals of: (1) maintaining safety, protection of the environment, and common defense and security; (2) increasing public confidence; (3) making NRC activities and decisions more effective, efficient, and realistic; and (4) reducing unnecessary regulatory burden. Each performance goal, as it relates to the JWG's recommended outcome and approach, is addressed as follows:

Maintain Safety, Protection of the Environment, and the Common Defense and Security

Limiting NRC authority to uranium and thorium that are extracted or purposely concentrated for that material would continue to meet the performance goal of maintaining safety, protection of the environment, and the common defense and security, for material less than 0.05 percent by weight. The staff expects that States will regulate material that is greater than 0.05 percent by weight. As discussed elsewhere in this paper, the staff will further evaluate State regulation of this material when the staff formally solicits comments on the recommendation. This limitation to the purposeful use of uranium and thorium should not adversely impact the common defense and security (see Attachment 6 for further discussion related to safeguards issues). Uranium and thorium that are incidental to a process would then be defined as NORM and would fall into the regulatory programs of other agencies (if they choose to regulate NORM), such as EPA, OSHA, and the States. Safety could be increased, if these organizations choose to regulate these materials,

³NOTE: The Commission directed the staff to evaluate the appropriate relationship between the LTR release limits and the unimportant quantities limit in § 40.13(a), in an SRM dated June 18, 2002. This SRM relates to SECY-01-0194, "AAR Manufacturing Group, Inc., and Proposed Use of Unimportant Quantities of Source Material in 10 CFR 40.13(a) as Decommissioning Criteria." The staff has been evaluating the potential inconsistencies between the dose allowed for unrestricted release by the LTR in 10 CFR 20.1402, and the dose if § 40.13(a) were used as a decommissioning criterion. Since the Commission direction in the SRM to SECY-01-0194 focused on an overall evaluation of the LTR, the staff is mainly addressing this inconsistency in the LTR Analysis paper, and the Commission should refer to that paper regarding the staff's analysis and recommendations on that issue. However, it is noted here that the implementation of the recommended approach may include eliminating the exemption in § 40.13(a), thus removing the inconsistency between the LTR and § 40.13(a).

because the States and EPA would then have comprehensive control over all aspects of naturally occurring radioactive material and not just the radium and radon components of the material.

However, even with State or EPA regulatory control, under their programs for regulating NORM/TENORM, there is the possibility that the States and EPA may have different standards for regulating NORM and TENORM. These standards may not be equivalent to NRC's regulations. Also, some States may not have any standards for regulating this material. Part of the next phase in implementing the recommended approach would be to formally survey the individual States, which would include an evaluation of the standards that would be used, to determine if the health and safety of the public would be adequately protected.

Increase Public Confidence

It is not clear how the public would react if the recommended approach were implemented. Public confidence might increase, because material that is currently covered by the exemption in § 40.13(a) could now be regulated by EPA and/or the States, within their regulatory programs for NORM/TENORM. NRC will continue to regulate the purposeful use of uranium and thorium; therefore, there should not be any significant change to NRC authority to control uranium and thorium from a strategic standpoint. All other uranium and thorium that are incidental to a process would be considered NORM and fall into the regulatory programs of other agencies, such as EPA and OSHA, and the States. These organizations would then have control over all aspects of activity involving naturally occurring radioactive material. However, it is also possible that the public would see this shift in authority as a decrease in NRC's commitment to public protection.

Make NRC Activities and Decisions More Effective and Efficient

Limiting NRC authority to the regulation of extracted uranium and thorium would make NRC activities more effective and efficient. Based on the mission of NRC, under the AEA, it could be argued that NRC authority should be limited to activities related to the recovery of uranium and thorium (primarily in support of the nuclear fuel cycle). If NRC retains authority for all materials produced once ore is processed for its uranium and thorium content, even though some of these materials may not enter the fuel cycle (e.g., materials used to make products using uranium and thorium), it would resolve the essential question of whether NRC should, or was ever intended to, regulate all uranium and thorium, given that it is ubiquitous in nature. Under the recommended approach, the uranium and thorium would not be regulated by NRC when it is an incidental component of material being processed for other reasons, such as zircon sands. This approach would be a more efficient use of NRC resources, by allowing NRC to concentrate its resources on the regulation of the purposeful use of uranium and thorium. Also, NRC's statutory approach to regulating through licensing is not the most efficient approach for regulating many of the materials that constitute NORM/TENORM. This material is ubiquitous in nature and there are many different types of processes that use this material. Applying a standard licensing approach (such as that used for other industries, like industrial radiography and well logging) to many different types of processes using the same material is often difficult to do consistently. The recommended approach would allow NORM to be regulated as a whole by the States and

EPA, instead of regulating only the radium and radon components of the material, which is also more efficient and effective.

Reduce Unnecessary Regulatory Burden

Under the recommended approach, a single regulatory authority would be in a better position to evaluate the potential hazards of uranium and thorium, which would be considered NORM, with the potential hazards of the other materials with which they are associated, such as radium and hazardous chemicals. The EPA and the States would be able to have a comprehensive program over all naturally occurring radioactive materials, and would not be limited to the regulation of radium and radon. This would reduce *de-facto* dual regulation of the material by reducing the number of agencies involved, and thereby could reduce burden on industries dealing with NORM/TENORM. However, it is recognized that individual programs of States may have different regulations/standards, procedures, scope, etc.

Staff Analysis

After the JWG meetings, the staff continued its analysis of the recommended approach, as discussed in the Commission Memorandum dated August 13, 2002. The staff further analyzed the: (1) results of ongoing security issues; (2) best method of implementing the recommended approach (i.e., by rulemaking or through a legislative change); (3) impacts of the JWG recommended approach on sites currently regulated under AEA authority, including sites on the SDMP/complex sites list; (4) impact on international Agreements of Cooperation; and (5) resources that might be saved as a result of the recommended change. These analyses are discussed below.

Security Initiatives

The staff has evaluated the ongoing work of security initiatives for any impacts that the recommended approach might have on these. At this time, it appears that the materials under consideration are well below the thresholds of material of potential security concerns. Natural uranium outside the fuel cycle and natural thorium have not been identified as material of potential concern.

Best Method of Implementation

The staff evaluated the best method of implementing the recommended approach. At this time, the staff believes that a legislative change to the AEA will be required to fully implement this approach. Agreement between the affected agencies and the States may minimize potential uncertainties with obtaining a legislative change. Also, DOE can now establish a different concentration limit for purposes of defining source material under 11z.(2) of the AEA. A legislative change to the AEA will minimize the potential for inconsistencies in the definition of source material between DOE and NRC. Before NRC requests a legislative change, the staff recommends formally contacting both the impacted Federal agencies at a high level (e.g., EPA, OSHA, and DOE), and the individual States, for their formal input and comments on this approach.

Impact on Sites Currently regulated under AEA Authority and Impact on Formerly Utilized Site Remedial Action Program (FUSRAP) Sites

The staff has evaluated the impact of its recommended approach on sites that are not purposely using uranium and thorium that would no longer be under NRC jurisdiction. Such sites include those that are on the SDMP/complex sites list and one active licensee. There are also some Agreement State licensees that would be affected; however, under the staff's recommended approach, these would remain under State jurisdiction but under different statutes and, in some cases, different regulatory programs.

If the Commission approves the staff's recommendation, the staff plans to formally survey the individual States regarding potential impacts/resource burdens on their regulatory programs. In this survey, the staff plans to specifically address jurisdiction of the SDMP/complex sites and the one active licensee, with those States where these sites are located, including possible transition of these sites, and consider issues such as funding and any liability concerns. Some States may not be willing to accept existing sites on the SDMP/complex sites list for financial and liability reasons. As noted in Option 1, the legislative change might be drafted so that NRC retains jurisdiction over those sites currently on the SDMP/complex sites list that would be impacted by the staff's recommended approach, so that the decommissioning of these sites can be completed without a change in the regulatory program. This could minimize an interruption to, or increased burden on, the decommissioning process already in place.

The processing of ore for its uranium or thorium content will continue to be subject to regulation under the AEA. The treatment of mill tailings not subject to Title II of the Uranium Mill Tailings Radiation Control Act has not yet been resolved. During the comment period with the States and other Federal agencies, particularly with DOE and ACE, this issue will need to be addressed.

Furthermore, the staff appreciates the need to avoid adverse impact on the FUSRAP program and DOE activities. The staff will coordinate the drafting of the legislative language with ACE and DOE in the interest of minimizing the impact on FUSRAP and DOE activities.

Impact on International Agreements of Cooperation

A discussion of the impacts on international Agreements of Cooperation is provided in Attachment 5. At this time, it does not appear that there will be a major impact on Agreements of Cooperation. The staff will research possible proliferation concerns and the ability for the U.S. to fully meet reporting requirements under current Agreements of Cooperation for export of material, as well as coordinate this issue with the State Department.

Resources Saved by Implementing the Staff's Recommended Approach

Implementing the staff's recommended approach should save some Agency resources in the long run, without greatly increasing costs to other Federal agencies and the States. As discussed in Attachment 5, Item 6, there are several sites, including some sites on the

SDMP/complex sites list, licensed under AEA authority, at which the material would no longer be under the AEA. The staff does not believe that NRC will gain new licensees with the recommended approach; it is not likely that anyone having a concentration of less than 0.05 percent by weight is purposely using the uranium or thorium.

The staff estimates that at least 1 FTE per year would be saved solely from eliminating the need to continue to resolve issues related to inconsistencies and jurisdictional questions. Additionally, the States would save some resources, because they deal with these same issues.

For fiscal year (FY) 2003, 5 FTEs are currently budgeted for the nine sites on the SDMP/complex sites list; a future budget associated with these sites may be reduced. Three of these nine sites are currently scheduled to complete decommissioning by the end of 2005. Some States may not be willing to accept existing sites on the SDMP/complex sites list, for financial and liability reasons, so there may not be any associated resource savings, if we request a legislative change that would retain NRC authority over these sites. Additionally, there is one active NRC licensee that would no longer be under NRC jurisdiction with the recommended approach; the staff estimates a savings of about 0.5 FTE a year, if this site were transferred to the State in which it is located.

Staff Recommendations

Based on these evaluations and the work of the JWG, the staff evaluated two options for going forward: (1) pursue the recommended approach to limit NRC authority to uranium and thorium that are extracted or purposely concentrated for the use of that material; and (2) no change. A detailed discussion of these two options and the pros and cons are provided in Attachment 6. Key pros and cons are listed below.

Option (1) - Limit NRC authority through a legislative change to uranium and thorium that are extracted or purposely concentrated for the use of that material

In considering this legislative change, it is appropriate to consider retaining authority over complex decommissioning sites where incidental uranium and thorium is on site [materials were processed for other than the uranium and thorium in the materials]. This would include the nine sites currently on the SDMP/complex sites list. In the consultation process with the States, States may propose for Commission consideration, additional sites currently under license that, at the time of decommissioning, may present complex decommissioning and decommissioning funding issues for consideration. Any sites for which NRC would retain authority would to be added to the list for inclusion in the legislation.⁴

⁴More detailed information related to the pros and cons of keeping or transferring sites currently under AEA jurisdiction will be developed after the staff has surveyed the individual States, if the Commission directs the staff to pursue the recommended approach.

Pros:

- a. Reduces inconsistencies within NRC regulations, which have raised numerous jurisdictional and regulatory questions, at significant resource costs to the Agency.
- b. Focuses NRC resources on activities directly related to uranium recovery and subsequent use of the recovered materials.
- c. Provides a clearer delineation of jurisdictional authority that will be easier for agencies, States, industry, and the public to understand.
- d. Reduces *de-facto* dual regulation.
- e. Allows EPA, OSHA, and the States to have a comprehensive control program over all aspects of naturally occurring radioactive material, rather than just the radium and radon components of the material, resulting in more consistent regulation of naturally occurring radioactive material within a State.

Cons:

- a. Costs to gather additional information, prepare a legislative package, and prepare associated rulemaking.
- b. A possibility that some industries might use higher concentrations without a concentration limit in place, resulting in a possible increase in exposures.
- c. Some costs to States and other Federal agencies to modify existing radiation control programs or to develop standards to implement this change.
- d. Potential for inconsistent regulation between different States.

*Option (2) - No Change*Pros:

- a. No NRC resources needed to gather additional information, prepare a legislative proposal, and prepare associated rulemaking.
- b. Continued licensing of uranium or thorium greater than 0.05 percent by weight concentration; persons less likely to use higher concentrations; helps ensure worker and public health and safety.

Cons:

- a. Need to further evaluate the exemptions in §§ 40.13(a), 40.13(b), and 40.13(c)(1)(vi), to determine any necessary regulatory options for addressing potential health and safety concerns.
- b. Continues inconsistencies within NRC regulations, which have raised numerous jurisdictional and regulatory questions at significant resource costs to the Agency.
- c. Delineation of jurisdictional authority is not as clear.
- d. *De-facto* dual regulation continues.
- e. EPA, OSHA, and the States continue to regulate only the radium and radon components of the material.

After further consideration of the JWG deliberations and staff analysis, the staff's recommendation for the best approach for regulating low-level source material is to limit NRC

authority through legislation to uranium and thorium that are extracted (i.e., purposely concentrated for the use of the uranium or thorium). All other uranium and thorium that are incidental to a process would be considered NORM and fall into the regulatory programs of other agencies, such as EPA and OSHA, and the States. The agency representatives and the CRCPD/OAS representative for the JWG appear amenable to this approach, and believe that responsibilities for this material could fall into current regulatory programs, without a great increase in burden on agency resources. The staff subsequently recognized that if the sites on the current SDMP/complex sites list transfer to the States, there will be more of a resource burden on the States. If more sites are identified during this process, staff will reevaluate resource burden on the States.

As noted above, there are still steps that the staff plans to take before implementing the recommended approach. Primarily, the staff recommends that contact be made at a high level with both the impacted Federal agencies (i.e., EPA, OSHA, and DOE), and the individual States, for their formal input and comments on this approach. The staff has not yet initiated such high level interactions with these organizations in the belief that these interactions should take place only after the Commission has reviewed the recommended approach and provided direction to the staff. Also, the staff did not believe it should expend additional resources of NRC staff and the other Federal agencies and individual States until the Commission has reviewed the recommended approach. This is an interim decision for the Commission; if the Commission directs the staff to continue pursuing the recommendations, the staff will provide additional information to the Commission after the next steps are completed.

RESOURCES:

The staff estimates that it will require the following resources to fully implement this approach.

1. 1.5 FTEs, over the next 1-1.5 years, to continue to pursue the recommended approach.
2. 3 FTEs total, to prepare a legislative package and, if approved by Congress, implement associated rulemaking, beyond the resources in 1. above.

All resources required in FY 2003-2004 are currently budgeted. Resources that may be required in FY 2005 and beyond will be incorporated into the budget using planning and prioritization tools of the planning, budgeting, and performance management process.

RECOMMENDATIONS:

- 1) Approve the staff's recommended approach [Option (1)] to decrease NRC authority by limiting NRC authority to uranium and thorium that are extracted/purposely concentrated for the use of uranium or thorium; and

- 2) Approve the staff's plan to formally solicit comments on the recommended approach from other impacted Federal agencies and individual States, including specifically obtaining input from the States where the sites currently regulated under AEA authority that would be affected by the recommended approach are currently located, and coordinate with the State Department regarding impacts on international Agreements of Cooperation.

/RA/

William D. Travers
Executive Director
for Operations

Attachments:

1. SRM dtd. 3/9/00
2. Citations of Authority
3. Staff Analysis of Dose Estimates in NUREG-1717
4. Relationship to Other Ongoing Activities
5. Other Issues Related to § 40.13(a) and Regulation of NORM
6. Options Analysis Based on Deliberations of the JWG

- 2) Approve the staff's plan to formally solicit comments on the recommended approach from other impacted Federal agencies and individual States, including specifically obtaining input from the States where the sites currently regulated under AEA authority that would be affected by the recommended approach are currently located, and coordinate with the State Department regarding impacts on international Agreements of Cooperation.

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