

POLICY ISSUE NOTATION VOTE

February 16, 2011

SECY-11-0023

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: JURISDICTION FOR MILITARY OPERATIONAL RADIUM-226

PURPOSE:

Inform the Commission of jurisdictional issues related to military radium-226 and recommend approaches to resolve those issues.

SUMMARY:

The Energy Policy Act of 2005 (EPAct), Pub. L. No. 109-58, 119 Stat 594 (2005), expanded the U.S. Nuclear Regulatory Commission's (NRC's) regulatory authority over byproduct materials as defined in the Atomic Energy Act of 1954, as amended (AEA), to include certain naturally-occurring and accelerator-produced radioactive materials (NARM) such as radium-226. NRC's final rule (72 FR 55864; October 1, 2007) entitled, "Requirements for Expanded Definition of Byproduct Material," hereinafter referred to as the NARM rule, implemented some of the provisions of the EPAct. In the Statement of Considerations (SOC) for the NARM rule, NRC discussed its jurisdiction over radium-226 used by the military and committed to interact with the military to develop a joint understanding of the military's uses of radium-226 and to resolve any potential issues arising from NRC's interpretation of the EPAct. Since the publication of the NARM rule, NRC staff has engaged in discussions with various branches of the military, and these discussions have resulted in the identification of jurisdictional issues that have complicated ongoing military remediation, decontamination, and disposal activities. In particular, the potential for dual regulation under the AEA and the Comprehensive

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Environmental Response, Compensation, and Liability Act (CERCLA) and lack of finality of military remediation exist under current conditions. Furthermore, there are potential implications for health and safety from the unregulated sites being remediated and the uncharacterized military sites with suspected radium-226 contamination. This paper discusses these issues and recommends approaches to clarify and implement NRC's regulatory jurisdiction over certain types of radium-226 used by the military.

BACKGROUND:

The EPAct expanded the definition of byproduct material to include certain discrete sources of radium-226, other discrete sources of naturally occurring radioactive material, and certain accelerator-produced radioactive material under NRC jurisdiction (collectively, these materials are referred to as NARM). The focus of this paper is on discrete sources of radium-226 used by the military for military operations because the scope of the NRC's jurisdiction over those sources has been the subject of recent inquiries from the military. Specifically, Section 651(e)(3)(A) of the EPAct (§11e.(3) of the AEA; 42 U.S.C. 2014(e)) amended the definition of byproduct material to include "any discrete source of radium-226 that is produced, extracted, or converted after extraction, before, on, or after [August 8, 2005,] for use for a commercial, medical, or research activity." On November 30, 2007, NRC implemented this provision of the EPAct by amending the definition of byproduct material in 10 CFR Parts 20, 30, 50, 72, 150, 170, and 171 to be consistent with the EPAct. Additionally, NRC established a definition for the term "discrete source" to be used for the purposes of the new definition of byproduct material as this term was not specifically defined by the EPAct. Accordingly, NRC's regulations in 10 CFR Parts 20, 30, 110, and 150 define a discrete source as "a radionuclide that has been processed so that its concentration within a material has been purposely increased for use for commercial, medical, or research activities." The SOC for the NARM rule noted that "once a discrete source meets the definition of *Byproduct material*, any contamination resulting from the use of such discrete sources of this byproduct material will also be considered byproduct material." 72 FR at 55871.

The SOC for the NARM rule also included a discussion of NRC's jurisdiction over military radium-226 and explained that NRC has jurisdiction over radium-226 used by the military in medical or research activities, or in a manner similar to a commercial activity, but that NRC does not have jurisdiction when radium-226 is used by the military in military operations because to do otherwise would "vitiate any distinction that the EPAct intended to make for military use . . ." 72 FR at 55867. As explained in the SOC, the term "military operations" covers what is traditionally understood as the military's primary mission for national defense, including warfare, combat, battlefield missions, and training for such missions. In addition, the SOC expanded the traditional understanding of "military operational" material to include "material still under control of the military, i.e., in storage, or material that may be subject to decontamination and disposal." *Id.* This expanded meaning of "military operational" does not apply to other byproduct or source material used by the military.

In accordance with the Commission's directives contained in the May 14, 2007, staff requirements memorandum for the NARM rule (SRM-SECY-07-0062; M070514), the SOC provided that NRC would interact with the U.S. Department of Defense to obtain a common understanding of the uses of discrete sources of radium-226 and resolve any potential conflicts on a case-by-case basis. See *also* 72 FR at 55867. Consequently, the staff has had numerous

interactions with the military services on this matter and has learned about historical uses and current military activities and management of discrete sources of radium-226. These interactions have led staff to believe that a generic solution is required in order to assure that NRC regulations are appropriately implemented.

DISCUSSION:

1. Past and Present Military Uses of Radium-226

According to the military, radium-226 was historically used as a luminescent material in paint, markers, and instruments on ships, aircraft, and land vehicles involved with traditional military operations. During and after World War II, many military bases were responsible for equipment maintenance and had facilities for the removal, repair, and replacement of radium-226 dials, gauges, and paint. The military also explained that although radium-226 is no longer used in traditional military operations and has not been used for decades, some radium-226 components, such as dials and gauges in older aircraft, remain in service. Military radium-226 is generally considered a legacy issue that involves controlling or remediating radium-226 contamination as well as storing and decontaminating equipment containing radium-226. Radium-226 contamination typically has been found in soils, sewer lines, storm drains, outfalls into surface waters, on-site burials, and on building surfaces. Personnel markers and deck markers used on ships also contained radium-226, and many were disposed of in on-site burials. Markers, dials, and gauges in burials are typically highly degraded such that their original uses either for military operations, research, or medical activities cannot be identified. Records of disposal and burial contents typically do not exist. Currently, the major activities associated with radium-226 include investigating, remediating, and disposing of radium-226 contamination at both Base Realignment and Closure (BRAC) sites and active installations. Most remediation activities are conducted under the CERCLA process. Enclosure 1 provides additional information about military activities involving radium-226.

2. Jurisdictional Issues

As previously noted, the SOC for the NARM rule expanded the category of radium-226 excluded from NRC jurisdiction by revising the traditional definition of the term “military operational” material to include “material still under control of the military, i.e., in storage, or material that may be subject to decontamination or disposal.” 72 FR at 55867. This expanded definition led to questions from the military and the State of California about NRC’s jurisdiction over some of the military’s ongoing and planned activities. In particular, new issues emerged from the staff’s discussions about the military’s ongoing remediation activities at the Navy’s Hunters Point Shipyard (HPS) site and the Air Force’s McClellan site in California. After remediation, these sites or portions of these sites are planned to be released to the public for redevelopment, similar to other BRAC sites. The following key issues have been identified by the staff based on interactions with the military and the State of California and are described more fully in Enclosure 2.

- Potential for unnecessary dual regulation under the AEA and CERCLA and lack of finality of the military remediation if NRC is not involved during military remediation and before the transfer of remediated property to non-military owners;

- Potential for significant impacts to community redevelopment and reuse of remediated military property unless NRC is involved during remediation;
- Regulatory uncertainty and inconsistent understanding regarding NRC's jurisdiction unnecessarily complicates military remediation;
- Regulatory uncertainty regarding jurisdiction over storage and decontamination of equipment and items containing radium-226; and
- Potential implications for health and safety from the unregulated sites being remediated and the uncharacterized sites with suspected radium-226.

3. Recommended Clarification of Radium-226 Under Military Control that should be subject to NRC Regulation

The staff recommends issuing guidance clarifying which discrete sources of radium-226 under military control (described below) are subject to NRC regulation under the NARM rule as byproduct material. As the guidance would provide a newly clarified agency interpretation, notice and an opportunity for public comment would be published in the *Federal Register*, prior to its finalization. This clarification of the SOC ambiguity would align the NRC's regulatory oversight of military radium-226 with the oversight given to other radionuclides under military control. The clarification would also resolve the issues identified above. Enclosure 2 explains how each issue would be resolved. The staff considered the option of maintaining the status quo by not issuing a clarification. This option was not considered feasible because of the potential implications for public health and safety. Also, continued regulatory uncertainty and lack of finality of military remediation resulting from the status quo could substantially inhibit or delay completing remediation of these facilities and returning the land to beneficial use. Therefore, this option is not presented for further consideration.

Discrete sources of radium-226 under military control that would be subject to NRC regulation include:

- Contamination

Examples include contamination in structures; soil; groundwater; sewers or storm drains; targets and associated contamination on firing ranges; and degraded devices and residue from radium paint shops buried in landfills. NRC's jurisdiction should apply to radium-226 contamination that has been confirmed based on survey data or records that document the existence of the contamination. Contamination that is only suspected, based on historical activities conducted on a military base, should be identified and appropriately controlled by the military. These suspected sites should come under NRC's jurisdiction when confirmed. Contamination can be on active military installations where remediation has either not started or where parcels are being remediated. The military's remediation activities associated with contamination can also be on BRAC sites that are planned for transfer to the public and redeveloped by local governments or others after remediation (e.g., HPS and McClellan sites).

- Items or equipment not currently used in traditional military operations or no longer intended for future use in traditional military operations.

Examples include vehicles, aircraft, or other equipment in storage that the military could decontaminate by removing radium-226 instruments, dials and/or components in preparation for release of the equipment or vehicles to the public. Similarly, items in storage also include items such as dials or gauges that the military decides are no longer intended for future use in traditional military operations.

In the recommended guidance, the staff would resolve an existing ambiguity by clarifying that military radium-226 that originated from a commercial supplier is byproduct material except during its use by the military in traditional military operations. When the commercially-produced radium-226 is no longer being used for traditional military operations or is not intended for future traditional military operational use, it would revert to its initial classification as byproduct material. Under this clarification, the SOC discussion that contamination resulting from degradation of byproduct material would also be considered byproduct material would therefore apply to military radium-226 contamination. In addition, the storage of material or equipment not intended for future military operations, removal of dials and gauges after their usable life, and remediation of radium-226 are similar to commercial activities and are consistent with the SOC statement “that other military possession and uses of radium-226 in a manner similar to commercial use, e.g., military museums, are subject to NRC’s regulatory authority.” For the above reasons, the clarification is consistent with the definition of byproduct material in the EPAct and the NRC’s regulations. Finally, as noted previously, the above clarifications are consistent with NRC’s practice of regulating military radioactive material except when the material is used or useful in traditional military operations.

4. Recommended Implementation of NRC Authority for Military Radium-226

The staff recommends the following regulatory approaches.

- Contamination

The staff recommends a graded approach outlined below for implementing NRC regulation of confirmed radium-226 contamination. This approach provides levels of regulatory involvement appropriate for the broad range of site-specific conditions expected, such as: the radionuclides present; the type and extent of contamination; the remediation status and types of remedies; and EPA or State oversight. This approach provides a flexible yet consistent framework for the military services. The staff also considered other implementation options as noted below.

No ongoing or planned remediation. Confirmed contamination on sites that are currently not being remediated or where remediation would be done in the future would be included as a possession-only permit under the existing Air Force or Navy Master Materials Licenses (MMLs) or an Army possession-only license under the appropriate regulations for the radionuclides present.

Remediation of National Priorities List (NPL) sites. For military remediation of sites listed on the NPL, NRC would use the Commission's approved approach for the HPS site where NRC determined that it could rely on the CERCLA process and the Federal regulatory oversight by the U.S. Environmental Protection Agency (EPA) (SECY-08-0077). These sites would not be actively regulated, although the Air Force and Navy sites would be permitted under the Air Force and Navy MMLs and the Army sites would be licensed. NRC would, instead, take a limited involvement approach to stay informed as it now does for the HPS site and the McClellan site. The Navy and Air Force would continue their existing role under CERCLA for these sites. However, NRC would reserve the option of providing comments to EPA, if necessary, to justify continued reliance on the CERCLA process and EPA oversight. If the staff determines that the CERCLA process and EPA oversight is no longer sufficient, the staff would more actively regulate the site as appropriate. The staff considered the option of immediately regulating these sites, but prefers the Commission's approved approach for the HPS site because it would avoid or minimize dual regulation.

Remediation of non-NPL sites. NRC would actively regulate sites not listed on the NPL that are remediated by the military because EPA generally does not provide regulatory oversight for these sites. Thus, there is currently no independent Federal oversight of the remediation of these sites. Regulation would be conducted under the existing Navy and Air Force MMLs and under existing Army licenses or another appropriate licensing approach that would be established. The Navy and Air Force would permit these sites under the MML. NRC would continue its existing oversight of the Navy and Air Force MML programs, but would also review and approve key remediation/decommissioning documents for more complex sites, such as sites with groundwater contamination or restricted use sites that use institutional controls and engineered barriers. Existing NRC oversight would continue for military contractors who have NRC service provider licenses and who conduct remediation activities. Furthermore, for those non-NPL sites where the military is required to remediate using the CERCLA process, NRC would coordinate its decommissioning process with the CERCLA process to minimize dual regulation. For those sites where remediation under the CERCLA process has already started, NRC would work with the military on a site-specific approach to ensure safety and minimize the impact on military schedules. Sites where remediation has been completed by the military would not be regulated except if new information indicates that additional remediation is needed to protect public health and safety and the environment. The staff considered, but rejected, the option of relying on the military remediation with only limited State involvement, because independent and consistent Federal oversight is needed to ensure finality under the AEA. Agreement States do not have authority to regulate AEA material possessed by Federal entities under their Section 274 agreements. However, Agreement States can assist other agencies in the CERCLA remediation process.

- Items and equipment

NRC would regulate military equipment decontamination activities and items in storage where the military has determined that there is no future traditional military operational use for this material. Regulation would be under the Navy and Air Force MMLs and either existing Army commodity licenses or another appropriate licensing approach.

The staff would take appropriate actions to implement the above recommendations, including the key actions described in Enclosure 3. The staff and military would work together, as appropriate, on the implementation actions.

AGREEMENT STATE AND MILITARY COORDINATION:

The issues, proposed resolution approaches, and significance to the Agreement States were discussed in a monthly teleconference with the Organization of Agreement States and Conference of Radiation Control Program Directors and a separate teleconference with five Agreement States where military installations with radium-226 are located. Representatives from the Agreement States did not raise any concerns regarding the staff's approach to clarifying NRC's jurisdiction for military radium-226. The Agreement State representatives appreciated that NRC was considering how to reduce dual regulation regarding this matter.

Representatives of the military services have been discussing these issues with the staff since 2007. Comments were obtained from the Radioisotope Committee Secretariats for the Air Force and Navy and the Radiation Safety Officer for the Army. These representatives support NRC jurisdiction for both radium-226 contamination and items and equipment no longer intended for use in military operations. The Army, however, believes that there would be no appreciable gain in public health and safety when compared to the cost to the Army of licensing items and equipment. The staff believes that the costs to the Army could be minimized by using existing licenses and appropriate regulatory options during the licensing process.

RECOMMENDATION:

The staff recommends that the Commission approve the preparation of a guidance document and *Federal Register* notice that:

1. Clarifies the radium-226 under military control that would be subject to NRC regulations, and
2. Describes the regulatory approaches described in section 4 above that would be used to implement NRC authority for radium-226 contamination and radium-226 in items and equipment.

RESOURCES:

The current decommissioning resource level for Headquarters and the Regions would be maintained. The budget prioritization process would be used to reallocate resources needed to implement the regulatory approach for the radium-226 sites. Furthermore, as work on existing decommissioning sites is completed and resources become available, work on the military radium sites would be added. During fiscal year (FY) 2011, the staff estimates that about 0.4 full-time equivalent (FTE) would be needed to interact with the military on the implementation actions. During FY 2012 and FY 2013, 2.0 to 3.0 FTE each year are estimated for Headquarters and the Regions for regulatory oversight of the decommissioning of new sites. The interactions with the military during FY 2011 are expected to provide additional site-specific information and details about the sites and regulatory approach that would be used for refining future resource needs.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objections. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA Michael F. Weber for/

R. W. Borchardt
Executive Director
for Operations

Enclosures:

1. Military Uses of Radium-226
2. Description of Radium-226 Jurisdictional Issues and Recommended Resolution
3. Key Actions to Implement the Radium-226 Jurisdictional Clarification

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