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.

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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

Military Uses of Radium-226

This enclosure summarizes information provided to the staff by the military services on military uses of radium-226, number of military installations with radium-226, and military views on the potential jurisdiction clarification.

Uses and Activities

Each of the military services provided the U.S. Nuclear Regulatory Commission (NRC) with information about past and current uses and activities involving radium-226. Excerpts from this input are as follows.

Air Force regulations prohibit the purchase of new systems or items containing radium-226. All currently known uses of radium-226 are a result of legacy programs, vehicles, and aircraft. There are several models of older aircraft, still in use, which contain dials and gauges with radium-226. Additionally, the Air Force has numerous static displays of aircraft and military vehicles containing radium-226. Decontamination activities are conducted that involve aircraft components containing radium-226, that support foreign military sales, aircraft part removal/recovery, private sales, storage, preparation for museums, and disposal. These activities are currently authorized under Air Force Radiation Material Permits (not NRC Master Materials License permits). There are also cases where targets on operational ranges may contain radium-226, although this practice also requires an Air Force Radiation Material Permit.

The Army stopped fielding radium-226 in approximately 1970; however, because of the large number of products, many items are still in inventory. Additionally, radium-226 is still found on targets on Army ranges. While current Army rules require any hazardous material to be removed from a vehicle prior to use as a target, many legacy vehicles used as targets on ranges still contain radium-226. The Army currently has 3,050 distinct types of items it has identified as containing radium-226. In many cases several types of items may be present on any one major item. These items are managed by means of a stock number associated with a specific item.

The Navy stated that it has no military operational radium-226 currently in use for warfare, combat, battlefield missions, or training for battlefield missions. In addition, the Defense Logistics Agency and the Navy supply systems do not issue any items containing radium. The Navy has considerable amounts of radium-226 at current and former shipyards, naval air stations, bombing ranges or research facilities. Examples of where radium-226 can be found include:

- Actual radioluminescent devices inadvertently left in storage or in museum or static displays;
- Residual contamination from the refurbishment process (contamination in buildings, sanitary and storm sewers, and storm drain outfalls);
- Sites where the radium-226 devices and the residue from refurbishment were processed and disposed (contaminated slag, incinerator waste, disintegrated or degraded devices, and contaminated soil in burials);
- Residual contamination from maintenance of vehicles or equipment with radioluminescent devices;

- Vehicles or equipment with radioluminescent devices used as targets on bombing ranges; and
- Facilities that conducted experimentation with radium-226.

A primary military activity today involving radium-226 is the remediation of military bases that have been identified as part of the Base Realignment and Closure (BRAC) process so that base property can be transferred to local governments or others and redeveloped for public use. For these BRAC bases, various remediation activities involving radium-226 as well as other radiological and hazardous chemical contamination are being planned or conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. Radium-226 contamination also exists on some active military bases that are not under the BRAC process, and the material remains under the military's control. Parcels on some active bases are being remediated and others could be remediated in the future. Remediation on active bases is conducted under the military's Installation Restoration Program, which is required to use the CERCLA process.

Another military activity involving radium-226 is the storage of items and equipment containing radium-226. Some of the equipment such as vehicles and aircraft are decontaminated by removing dials and gauges containing radium-226 so that the vehicles and aircraft can be released and sold to the public.

Number of Sites

The staff obtained information from the three military services regarding the estimated number of sites with only confirmed radium-226 contamination. Currently, 12 sites have been identified. There are additional sites with suspected contamination based on historical uses of radioactive material at the site. Should the recommendation for radium jurisdiction be approved by the Commission, the staff would request a list of suspected sites.

The Navy's September 2010 site list identified seven sites with confirmed radium-226 contamination. These sites are currently under investigation or remediation. One of these sites is a BRAC site that is not listed on the National Priorities List (NPL) and that would be eventually closed and transferred to a non-military owner after remediation is completed. The six remaining sites are located on active installations, and five are on the NPL and one is not listed on the NPL. The Navy believes at this time that these seven sites only contain radium-226 and no other radionuclides. The Navy list also identified 11 other sites where radium-226 is commingled with other radionuclides that are under NRC's jurisdiction (e.g., strontium-90 and depleted uranium).

The Air Force's November 2010 site list identified five sites with only confirmed radium-226 contamination. Two of these are BRAC sites, one is on the NPL list and one is not. The remaining three sites are on active installations; two are on the NPL and one is not on the NPL.

The Army's November 2010 site list response did not identify any sites with confirmed radium-226 contamination.

Views on Potential Jurisdiction Clarification

The staff has had several interactions with the military services regarding the jurisdiction of radium-226 since the Naturally Occurring and Accelerator Produced Radioactive Material rule was finalized in 2007. The Navy indicated that it looks forward to working with the NRC on developing protocols for implementation of NRC jurisdiction of radium-226 under military control. The Air Force concurs that NRC should have jurisdiction of radium-226 when the activity is not categorized as having military operational use. The Army supports NRC's jurisdiction for non-commodity items, such as radium contamination, and only those commodity items that the Army considers are no longer intended for use in military operations. However, the Army believes that requiring a license for the period of time in which such items are in holding and waiting disposal results in a cost with no appreciable gain in public health and safety.

Description of Radium-226 Jurisdictional Issues and Recommended Resolution

1. Potential for unnecessary dual regulation under the Atomic Energy Act of 1954, as amended (AEA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and lack of finality of the military remediation if the U.S. Nuclear Regulatory Commission (NRC) is not involved during military remediation and before the transfer of remediated property to non-military owners.

According to the Statement of Considerations (SOC) for the Naturally Occurring and Accelerator Produced Radioactive Material (NARM) rule, NRC would not have jurisdiction over the military's remediation of radium-226 contamination because it is considered military operational material that is under military control. However, NRC or an Agreement State would have jurisdiction for radium-226 that remains after completion of the military remediation for either unrestricted or restricted release when the land ownership (and any residual contamination) is transferred out of military control to a non-military owner. Consequently, NRC or an Agreement State could face a conflict when military control ceases of either: 1) agreeing to a remediation in which they were not involved and that could pose excessive risk to the public or environment, or 2) requiring the new owner to further remediate the site after the military remediation had been completed and the site has been transferred to a new owner. Such a circumstance could result in unnecessary dual regulation and lack of finality of the remediation completed by the military.

The staff's recommended graded regulatory approach provides options for NRC's regulatory involvement during the military's remediation process and therefore avoids the need for NRC action after the military remediation and transfer of the land out of military control to the public.

2. Potential for significant impacts to community redevelopment and reuse of remediated military property unless NRC is involved during remediation.

If NRC or an Agreement State jurisdiction became effective only after the transfer of property ownership and after completion of the military's remediation, NRC or an Agreement State would need to determine what action, if any, might be needed to ensure the property met the applicable release criteria. Even a determination that no further action is needed would take time to prepare. It is conceivable that additional actions could be identified as necessary to comply with NRC's decommissioning requirements such as additional remediation, additional institutional controls or restrictions on future land use, revised engineered barrier designs, or requests for dose assessments consistent with NRC or Agreement State guidance. The additional time required for any of these possibilities could delay redevelopment plans important to the local community and could add significant costs to complete remediation.

The recommended graded regulatory approach would involve NRC during military remediation, thereby avoiding impacts on community redevelopment, reuse, and unnecessary additional costs.

3. Regulatory uncertainty and inconsistent understanding regarding NRC's jurisdiction unnecessarily complicates military remediation.

The military and the State of California have questioned the staff about NRC's jurisdiction over military remediation of radium-226 contamination. The military also noted its difficulties, in some cases, in determining whether buried or degraded radium-226 devices in landfills were used for military operations or medical or research activities. As indicated in the NARM rule SOC, medical and research radium-226 would be subject to NRC regulation. Thus, determining whether NRC has jurisdiction for degraded devices can be uncertain and illustrates one potential complication for remediation. The Navy recently identified an example where current NRC jurisdiction is confusing to understand. This example involves radium-226 contamination in military landfills that is co-mingled with strontium-90 contamination that is under NRC jurisdiction. The Navy replaced radium-226 devices with strontium-90 as a self-luminescent material in various instruments during the early 1960s. Instruments with both radionuclides have been disposed of together in some Navy landfills, resulting in the concentration of many degraded instruments. This commingling of licensable and non-licensable material and different jurisdiction further complicates determining and explaining appropriate jurisdiction and applicable regulations.

The recommended clarification would result in clear and consistent jurisdictional determinations for all radiological contamination. Uncertainties about past uses of material or comingling of material would no longer need to be addressed. Thus, the military would be confident of their remediation process and the process for many sites would be less complicated. The clarification and NRC's graded approach would be documented in the Master Materials License (MML) Letter of Understandings (LOUs) and guidance for the Navy and Air Force and in appropriate documents for the Army.

4. Regulatory uncertainty regarding jurisdiction over storage and decontamination of equipment and items containing radium-226.

In addition to issues associated with remediation of radium-226 contamination, the military raised a question about NRC's potential jurisdiction for decontamination of Army vehicles. Specifically, the Army's question pertained to the removal of dials and gauges containing radium-226 so that trucks used by the Army in the 1960's could be released to the public. It was not clear whether the decontamination of this material should be excluded from NRC authority because the trucks were to be sold to the public and, therefore, were no longer intended for use in military operations. The decontamination activities also raised questions about the need for records of decontamination activities and radiological surveys to be retained for future historical radiological assessments in preparation for remediation of the site. Finally, this activity also raised a question about NRC's potential jurisdiction for items or equipment containing radium-226 that currently are kept in storage by the military.

The recommended clarification would result in clear and consistent jurisdictional determinations for decontamination of equipment that contains radium-226 that would be released to the public. It also clarifies jurisdiction for items and equipment in storage. Thus, the military would be confident in its storage and decontamination process and the process would be less complicated. The clarifications and NRC's regulatory approaches would be documented in the MML LOUs and guidance for the Navy and Air Force and appropriate documents for the Army.

5. Potential implications for health and safety from the unregulated sites being remediated and the uncharacterized sites with suspected radium-226.

In addition to the issues above, the following unique challenges are posed by radium-226 at this time and should be consistently addressed by the military under NRC's regulation to ensure protection of public health and safety and the environment.

- There is no independent oversight of military remediation of sites not listed on the NPL, although states are generally involved to various degrees under the CERCLA process. Agreement States do not have authority for Federally owned AEA material;
- The remediation process for non-NPL sites varies, depending on factors such as the source of funding and urgency. The CERCLA process is only used for remediation with Environmental Restoration funds;
- Lack of past requirements for maintaining historical records of radium-226 disposal and documentation of past remediation along with no characterization data presents a challenge in identifying the location and extent of "suspected" radium-226 contamination in the subsurface (e.g., onsite burials and sewer lines);
- The adequacy of specific controls for sites with "suspected" radium-226 to ensure protection is unclear, although these sites are on military property and under military control;
- Inventories of items in storage and equipment containing radium-226 are not yet complete for all the military services.

Key Actions to Implement the Radium-226 Jurisdictional Clarification

1. Prepare guidance and a *Federal Register* notice.

The staff will prepare guidance intended to inform the military services of the clarifications and regulatory approaches approved by the Commission, and will prepare a *Federal Register* notice to provide notice of the draft guidance document and an opportunity for public comment. After reviewing the comments, the staff would make appropriate revisions and issue a final guidance document and *Federal Register* notice.

2. Revise the Master Materials License (MML) letters of understanding (LOU) and guidance.

The staff will interact with the Navy and Air Force, under the existing U.S. Nuclear Regulatory Commission (NRC) MMLs, to incorporate the clarifications and regulatory approaches approved by the Commission into the MML LOU and MML guidance, which are currently in the process of being revised. This action should ensure that detailed military questions and cases are clearly addressed and documented appropriately in the LOU or MML guidance for consistent use among the military services and NRC staff.

Implementation questions will need to be addressed, such as: 1) how should NRC's decommissioning timeliness requirements be applied to sites where remediation is currently not planned or where remediation is ongoing; and 2) how should the military's use of the Comprehensive Environmental Response, Compensation, and Liability Act process and NRC's decommissioning process be coordinated to protect the public and the environment and minimize dual regulation.

3. Interact with the Army to establish an appropriate licensing approach.

The staff will interact with the Army to add radium-226 to existing licenses or establish another appropriate licensing approach. Appropriate guidance would be developed and provided to ensure that detailed Army questions are clearly addressed and to provide appropriately consistent implementation of radium-226 regulation among Army installations.

4. Resolve issues related to military disposal of radium-226 at Resource and Conservation Recovery Act (RCRA) disposal facilities.

During the development of this paper, a new issue was identified by U.S. Ecology. Specifically, military radium-226 would no longer be accepted at the U.S. Ecology Idaho RCRA disposal facility due to language in the facility's State of Idaho permit that excludes NRC regulated or licensed material unless an exemption is provided by NRC. This State of Idaho requirement exists even though the Energy Policy Act of 2005 and NRC's implementing regulation (10 CFR 20.2008(b)) include provisions for the continued use of RCRA facilities for the disposal of radium-226. The staff will continue to work with the State of Idaho, U.S. Ecology, and the military to resolve this issue and attempt to avoid disruption of ongoing or future military disposals of radium-226 at RCRA facilities.