

September 13, 2007

Ms. Kristine K. Preston, Acting Director
Safety/Rad Waste Directorate
Department of the Army
Headquarters, U.S. Army Joint Munitions Command
1 Rock Island Arsenal
Rock Island, IL 61299-6000

SUBJECT: REVIEW OF REQUEST TO DISPOSE OF CAMP DOHA WASTE PER 10 CFR PART 40.13, "UNIMPORTANT QUANTITIES OF SOURCE MATERIAL" AT U.S. ECOLOGY OF IDAHO (TAC No. J00807)

Dear Ms. Preston:

On June 5, 2007, the U.S. Army submitted a request to dispose of approximately 5,600 m³ of waste consisting of a mixture of sand and depleted uranium that was generated in a fire at Camp Doha, Kuwait, at U.S. Ecology's RCRA - permitted disposal facility in Idaho. This request included a dose assessment of the dose associated with the transfer and disposal of the material at U.S. Ecology. The U.S. Nuclear Regulatory Commission (NRC) Office of Federal and State Materials and Environmental Management Programs (FSME) acknowledged receipt of your request in letter dated July 9, 2007. Subsequently, the U.S. Army submitted an amendment to its original dose assessment in letter dated August 13, 2007, that contained calculated doses for an additional transfer scenario for the material. The U.S. Army indicated that all submittals related to this request could be made available electronically for public inspection in the NRC's document system (ADAMS).

Based on the sampling results provided, NRC staff agrees that this waste material qualifies as "unimportant quantities of source material" (i.e., containing less than 0.05 weight percent of source material) under 10 CFR Part 40.13(a). As indicated in our attached Safety Evaluation Report, the staff has verified that the expected dose to a member of the public due to transfer and disposal of the Camp Doha waste will be well below 25 mrem/yr. Therefore, the staff accepts the U.S. Army's dose assessment and approves its plans to dispose of waste at the U.S. Ecology Idaho facility.

In addition, based on a review of the U.S. Army's proposal and consultations with the NRC FSME staff, the NRC Office of International Programs (OIP) concludes that under these unique circumstances, it is appropriate to waive the 10 CFR Part 110.27(c) requirement for a specific license to import radioactive waste. The NRC OIP hereby grants an exemption from the requirement for a specific import license and authorizes the return of the material to the United States under a general import license based on the determination in accordance with 10 CFR Part 110.10(a) that the return of the contaminated sand from Kuwait under general import license: is authorized by law, is not inimical to the common defense and security, and does not constitute an unreasonable risk to the public health and safety. This exemption from 10 CFR 110 specific import license requirements applies only to the return of this material to the United States, and will remain in force as long as the U.S. Army complies with Federal and State requirements that apply.

K. K. Preston

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Therefore, no additional NRC action is required for the transfer of this material for disposal at U.S. Ecology in Idaho. It is noted, however, that other requirements, such as those imposed by the State of Idaho, may apply to the transfer and disposal of this material. As such, we strongly suggest that you contact Idaho State officials on this matter to ensure compliance with State requirements.

If you have any questions, please contact James Kennedy at (301) 415-6668, or by e-mail at jek1@nrc.gov.

Sincerely,

/RA/

/RA/

Stephen Dembek, Branch Chief
Export Controls and
International Organizations Branch
Office of International Programs

Scott Flanders, Deputy Director
Environmental Protection and Performance
Assessment Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management
Programs

Enclosure: Safety Evaluation Report

Docket No.: 030-36062
License No.: 42-27737-01

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SAFETY EVALUATION REPORT
DEPARTMENT OF ARMY REQUEST TO DISPOSE OF UNIMPORTANT QUANTITIES OF
SOURCE MATERIAL FROM CAMP DOHA, KUWAIT AT US ECOLOGY'S IDAHO FACILITY
August 21, 2007

BACKGROUND

On June 5, 2007 (ML072260483), the Department of the Army (Army) requested confirmation that a specific exemption under 10 CFR 40.14 was not required for some contaminated material to be disposed at the U.S. Ecology Idaho (USEI) disposal facility. The contaminated material is a mixture of sand and depleted uranium that was generated by a fire at Camp Doha, Kuwait in 1991. The concentrations of depleted uranium are less than 0.05% by weight and thus, exempt from regulation under 10 CFR 40.13(a). On August 13, 2007, the Army amended its request with additional analysis for an alternate port of entry to the U.S. with another mode of unloading the cargo to rail car gondolas, which is now the preferred mode of transport.

As a matter of policy, the U.S. Nuclear Regulatory Commission (NRC) does review the safety implications of a licensee disposing of unimportant quantities of source material at a site other than an Atomic Energy Act-licensed disposal facility. The Army supplied, as part of their request, a safety assessment of the shipment from Kuwait, via either the Port of Houston, TX or a Northwest port of entry, to the USEI disposal facility and the resulting potential doses to members of the public either during transport or disposal. Consistent with Commission policy [Federal Register: August 28, 2002 (Volume 67, Number 167), Proposed Rules, Page 55175-55179], such a request for transfer would normally be approved if the dose to a member of the general public is unlikely to exceed 0.25 millisieverts per year (mSv/yr), or 25 millirem per year (mrem/yr).

EVALUATION

The licensee supplied information on the source term of the waste and provided multiple scenarios to evaluate different possible exposures for members of the public. These scenarios include dose to the transportation workers, U.S. Ecology worker, and post closure dose to the general public. The USEI site is licensed by the State of Idaho for permitted Resource Conservation and Recovery Act (RCRA) disposal and is not licensed by the NRC for disposal of low-level waste. The State RCRA permit does allow the disposal of exempted radioactive material including uranium as either naturally occurring radioactive material or unimportant quantities of source material.

SOURCE TERM

The waste, which is a mixture of sand and depleted uranium, is contained in 5,101 "Super sacks," each containing approximately 1.1 cubic meters. Surveys of the material indicate that the average concentration is 0.37 +/- 0.33 Becquerels per gram (Bq/g), or 10 +/-9 picocuries per gram (pCi/g), with a maximum activity of 4.9 Bq/g (134 pCi/g). As a conservative assumption, the Army's analysis utilizes the maximum activity for all calculations of dose. The staff finds this approach to be conservative and acceptable for the dose analysis.

SCENARIOS

The analysis performs dose assessment for multiple scenarios to locate the critical group. Several different transportation worker doses are calculated including dock workers, truck drivers, and fork lift operators at the Port of Houston. For the preferred transport through an unidentified northwest United States port, the analysis conservatively estimated dose to a worker stationed within the cargo hold while all 5,101 supersacks are removed from the hold. Similar to the Port of Houston detailed analysis of separate subgroups, the analysis evaluates the dose to several exposure groups at USEI including surveyors, excavator operators, truck drivers, and cell workers. Post-closure analysis has also been included in the analyzed scenarios. Overall, the staff finds the breadth and selection of scenarios to be an excellent example of a complete analysis of scenarios, except that the analysis did not consider or discuss the potential dose to inadvertent intruders.

For most of the scenarios the only applicable pathway is external exposure as the waste will be either in bags in sea-land containers, the operators are remote to the bags, or the workers are wearing approved Occupational Safety and Health Administration (OSHA) respiratory protection. In addition, the analysis demonstrates that the air pathway can be neglected, as the maximum air concentrations are a small fraction of the overall dose.

The staff performed a simple scoping analysis for the potential dose to inadvertent intruders. This scoping analysis assumed that someone would intrude into the site and then live on the site, which is generally the most conservative type of intrusion scenario. It is assumed that the waste was disposed at the top of a cell without any other waste present to reduce the concentrations. It is further assumed that the cover material would only result in a factor of four reduction in the concentration due to inadvertent mixing as the site was disturbed, resulting in an average concentration of 0.09 Bq/g (2.5 pCi/g). To convert the concentration to dose, the staff used the screening criteria provided in NUREG-1757, Volume 2, "Consolidated Decommissioning Guidance - Characterization, Survey, and Determination of Radiological Criteria", Appendix H, which provides a conservative concentration equivalent to 0.25 mSv/yr (25 mrem/yr). The resulting dose is 0.045 mSv/yr (4.5 mrem/yr), which is significantly below the 25 mrem/yr policy threshold. As further refinement of the analysis would reduce the dose, the staff chose not to calculate refined dose estimates of the intruder scenario. After considering this scoping analysis, the staff finds the overall scenario and pathway approach to be acceptable.

MODELS AND PARAMETERS

The analyses provided use Microshield and RESRAD, as appropriate, for each of the scenarios. Appropriate site-specific parameters are used in the RESRAD analysis. The analyses used more realistic work exposure times when compared to other analyses for disposal requests staff has reviewed, however, the analyses assumed that the workers were always exposed to highest measured concentrations. The staff finds this approach to be acceptable.

RESULTS

The breadth of scenarios and their resulting doses are summarized below, except for the results of the staff's scoping analyses.

Table 1. Summary of Dose Assessment Results

Scenario	Dose (mSv)	Dose (mrem)
Dock Worker (Houston)	8×10^{-5}	8×10^{-3}
Truck Driver (Houston)	6×10^{-5}	6×10^{-3}
Fork Lift Operator (Houston)	4×10^{-5}	4×10^{-2}
Loader (NW port)	2×10^{-3}	2×10^{-1}
Gondola Operator (USEI)	8×10^{-5}	8×10^{-3}
Excavator Operator (USEI)	2×10^{-4}	2×10^{-2}
Surveyors (USEI)	1×10^{-4}	1×10^{-2}
Truck Driver (USEI)	2×10^{-4}	2×10^{-2}
Cell Workers (USEI)	9×10^{-5}	9×10^{-3}
Post-Closure Dose	0	0

CONCLUSIONS

On June 5, 2007, the Army requested confirmation that a specific exemption under 10 CFR 40.14 was not required for some contaminated material to be disposed at the USEI disposal facility. The contaminated material is a mixture of sand and depleted uranium that was generated by a fire at Camp Doha, Kuwait in 1991. The concentrations of depleted uranium are less than 0.05% by weight and thus, exempt from regulation under 10 CFR 40.13(a). On August 13, 2007, the Department of the Army amended their request with additional analysis for an alternate port of entry to the U.S. with another mode of unloading the cargo to rail car gondolas.

The staff reviewed the dose assessments provided by the Army and found them acceptable. The licensee used a conservative source term assumption and investigated a wide range of possible exposure scenarios. The largest dose calculated by the licensee was a conservative bounding scenario calculated for a loader stationed within the cargo hold during the entire unloading process. This scenario resulted in a dose to the individual of 0.002 mSv (0.2 mrem). The staff agrees with the licensee's conclusion that doses would be less than a few millirem to any members of the public (including transportation workers and site workers at USEI) from this request, and correspondingly less than the Commission's policy of 25 mrem/yr. Because the individual doses are so small to USEI workers, there are no concerns that this request will greatly affect the annual cumulative dose from all exempted and naturally occurring radioactive material received at the USEI disposal facility.