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DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

DOCKET NUMBER
PROPOSED RULE PR 71
(65 FR 44360)

REPLY TO
ATTENTION OF:

30 September 2000

Safety and Occupational
Health Office (385-11)

Secretary
U.S. Nuclear Regulatory Commission
Attention: Rulemaking and Adjudication Staff
Washington, D.C. 20555

Enclosed for your review are comments in response to an NRC request for comment on "Major Revision to 10 CFR Part 71: Compatibility with ST-1- The IAEA Transportation Safety Standards – Other Transportation Safety Issues, Issues Paper, and Notice of Public Meetings". If you have any questions please contact Mr. Brian Hearty, phone 402-697-2478, or Mr. Rick Waples, phone 402-697-2560, both of our Hazardous, Toxic and Radioactive Waste Center of Expertise, in Omaha, Nebraska. I can be reached at 202-761-8565.

Sincerely,

Enclosure

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Template = SECY-067

SECY-02

Comments in response to an NRC request for comment on "Major Revision to 10 CFR Part 71: Compatibility with ST-1- The IAEA Transportation Safety Standards – Other Transportation Safety Issues, Issues Paper, and Notice of Public Meetings"

Issue 1: NRC has requested comment on "what risks and safety impacts might occur in shipments because of possible confusion or erroneous conversion between the currently utilized English units and SI units" and "what sort of transition period would be needed to allow for the conversion to exclusive use of SI units?"

Comment

The current NRC Metrification Policy allows for dual-unit systems and USACE and their contractors typically have utilized this in preparing their shipping documents and labeling their radioactive shipments. The use of the NRC dual-system of units accomplishes at least two important objectives:

1)In the event of a DOT incident, both units (SI & U.S. standard or customary) are immediately available to the emergency responders to assist in determining the radiation risks and potential exposure problems. USACE is uncertain that the majority of Federal, state and local emergency responders and state transportation enforcement agencies use radiation survey meters (ionization chamber) that measure in SI units. In the event of an emergency, it would seem appropriate to continue the policy of the dual-system of units until there is a nationwide standardization on using SI units. USACE recognizes the benefits of using SI units and the predominate use of the SI system in the nuclear power and medical fields. However, without an indication on nationwide implementation of SI units by the all entities involved in transporting radioactive material (e.g. transportation enforcement, emergency responders, and disposal facilities) it would appear appropriate to maintain the dual-system policy with a phase in period. Is there information available on the quantity of radiation survey meters in use by Federal, state, or local emergency responders and transportation enforcement agencies? What would be an estimated cost to replace the radiation survey meters that don't measure in SI units?

2)For many hazmat employees not involved in the daily use of SI units, the dual-system of units is an educational aid in improving their working knowledge on the equivalency of the two separate systems of measure. This practice should continue for a phase in period of at least 5 years if the decision is made to use exclusively SI units. The current transport index (TI) directly corresponds to the radiation survey meter that is measuring in mrem/h (requires rounding to the next tenth). There remains the potential for confusion by the hazmat personnel when readings are converted from Sieverts to rems or rems to Sieverts. A factor of 100 difference in the numbers may cause packages to be mistaken as non-hazardous or as very hazardous and inadvertantly labeled as such.

The current regulations require the licensee to use SI units on shipping papers or in SI units followed by U.S. standard units in parentheses. However, the NRC also requires the licensee to use U.S. standard units in record keeping (10 CFR 20.2101) even

when the shipping papers require the use of SI units. USACE is not a licensee for the majority of cleanup activities they are performing that require the transportation of radioactive material, but we require substantive compliance with 10 CFR under Army Regulations for all radioactive materials and radiation generating devices.

Issue 2: The NRC is requesting comment on the potential provisions of ST-1 for exempting materials with a low potential hazard from transportation regulations. If the International Atomic Energy Agency (IAEA) provisions are adopted, the exemption of natural material and ore containing naturally occurring radionuclides would continue provided the material is not intended to be processed for the use of these radionuclides, and the activity concentration of the material does not exceed 10 times. The proposed regulation would allow material that exceeded the exempt activity limit but which did not exceed 30 times the exempt activity limit to be transported as Low Specific Activity material (LSA-I).

Comment

At present, the DOT exempts material with radioactivity that does not exceed 70 becquerels per gram (2 nanocuries per gram) from regulation as a Class 7 radioactive material. This exemption has been used by non-transportation activities for use as a regulation of other activities as well. For example, several hazardous waste disposal facilities regulated under the Resource Conservation and Recovery Act (RCRA) have utilized this standard as the limit for the acceptance of material containing radioactive residuals (not regulated under the Atomic Energy Act or by state regulations) under their permit. Some of the disposal facility permits are written precluding the disposal of soil and/or debris containing a DOT Class 7 radioactive material instead of an actual specific activity limit. A revision to the DOT definition of a radioactive material may eliminate certain disposal facilities from consideration without sufficient scientific or technical justification. USACE is executing the cleanup of Formerly Utilized Sites Remedial Action Program (FUSRAP) sites that have residual radioactive contamination from the Manhattan Engineers District/Atomic Energy Commission early atomic weapons program. The cleanup program is estimated to require the excavation and disposal of 2 million cubic yards of soil containing low-activity radioactive residuals. Approximately 1.6 million yards of material is not anticipated to be regulated by the NRC or Agreement states. Since October of 1997, approximately 20% of the low-activity radioactive residuals, not regulated under the Atomic Energy Act, has been sent to RCRA hazardous waste landfills for disposal. Changing the definition of what a DOT Class 7 radioactive material may preclude a significant portion of the FUSRAP material from being placed in RCRA hazardous waste landfills in their permit states they may not accept Class 7 radioactive material. Under the current competitive disposal pricing, the impact on eliminating RCRA facilities could result in a disposal cost increase for just FUSRAP of at least $6 million. USACE negotiated a disposal contract at 30% less than DOE was able to do with the same contractor. The negotiations included competitive bidding between various disposal sites including RCRA facilities. Without competition in the disposal field, this disposal contract would be at least 30% higher than its present The proposed rule also states that material must not exceed 30 times the exempt activity to be shipped as LSA-I material in an industrial package. The proposed rule could have a significant

impact on the method of transporting FUSRAP material by rail to the disposal facilities if the FUSRAP material would not be able to be transported by a lined gondola rail car or an intermodal container. The packaging requirements are a major area of concern for transporting FUSRAP material that is primarily soil and debris with low-activity radioactive residuals commingled in the material.

USACE believes the present regulations under DOT are protective of transportation workers and the public under ordinary transport and incident/spill scenarios. The proposed regulation does not present data or justification to determine if there will be a significant increase in safety to the transportation workers, drivers, or general public during the transportation of the material or in the event of a DOT incident/spill. An actual USACE cleanup, using actual and maximum values for concentrations and activities of radionuclide contaminants is presented to compare the potential doses to the driver and public under the two regulatory schemes.

Actual remediation data

FUSRAP material: clam shells with radioactive contamination
Contaminants: Uranium, (U_{234}, U_{235}, and U_{238})

Volume: 20 cubic yards
Activity: U_{234} = 422.5 pCi/g (15.61 Bq/g), U_{235}=20.4 pCi/g (0.74 Bq/g), and U_{238} =9.9pCi/g (0.333 Bq/g)

Assumed Average Density: 1.7 grams per cubic centimeter

Calculated Concentration: U_{234} = 718.25 pCi/cm^3 (26.54 Bq/cm^3), U_{235} = 34.68 pCi/cm^3(1.25 Bq/cm^3), and U_{238} = 6.83 pCi/g (0.57 Bq/cm^3),

Assume material is loaded in a 40ft. by 8 ft. trailer (1.ft. deep of clam shells)
Assume trailer wall thickness is 2mm of Aluminum

Using the above data in the Microshield 5.0 Dose Calculation software yields a dose to the driver of 0.08 microrentgens per hour, and a dose to a person one meter from the side of the trailer of 0.25uR/hr.

Using the same radioactive contamination but filling the trailer full (40'x 8' x 8') /27ft^3 per cubic yard = 95 cubic yards. (This would be impossible due to capacity and load limits). The model shows the driver would receive a dose of 0.3 uR/hr and the dose to a person standing 1 meter from the trailer would be 0.94 uR/hr.

Maximum Case

Material: clam shells
Contaminants: Uranium (U_{234}, U_{235} & U_{238})
Volume: 20 cubic yards
Activity ratio: U_{234}, = 93.3%, U_{235} =4.5%, & U_{238} = 2.2%
Concentration ratio: = Activity Ratio

Assume material loaded in 40ft. x 8 ft. trailer (1.6ft. depth for 20cy)

Assume trailer wall thickness is 2mm of Aluminum

If the limiting factor in the proposed regulation is the activity per consignment:

Under the proposed regulation, the maximum allowed activity for the contaminants is U_{234} = 9330Bq, U_{235} = 450Bq, & U_{238} = 220 Bq. This would correspond to a volume of approximately 350 cm^3 of the material Using the Microshield 5.0 Dose Calculation software, the dose to a person 1 meter from the trailer is 3.9 x 10^{-6} uR/hr. If the volume is increased to the point where the activity concentration becomes the limiting factor, the consignment size becomes 1000 grams or 588 cm^3, the dose to the driver of 0.16 uR/hr and the dose to a person 1 meter from the trailer is 0.16 uR/hr, assuming the contamination is next to the trailer wall.

The intent of the previous calculations is to demonstrate that the dose to the public (walking past the trailer) and the driver from the present situation is negligible, and any reduction of that dose is not justified by the increased cost. The proposed rule will require regulation of transportation of these FUSRAP remediated soils, significantly increasing transportation costs and eliminating some disposal options, all the while providing no significant benefit in reduced dose.

Another dose assessment situation is a DOT incident where the radioactive material is spilled. The vast majority of the spilled radioactive material will be in a localized area at the accident scene. Remediation of the spill would be the equivalent of the remediation of the project site.

The final item of concern for issue 2 is the cost of the additional testing necessary to properly characterize the mixture of radionuclides. A significant amount of testing will need to shift to the laboratory when a mixture of radionuclides is present. The proposed rule will require additional time to perform the necessary calculations to determine if the material is radioactive material in accordance with ST-1 requirements.