



U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

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INFORMATION MEMORANDUM TO THE CHIEF OF STAFF

From: Stacey L. Gerard, Acting Assistant Administrator/Chief Safety Officer
x64433 *Stacey Gerard*

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Safety
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Re: Exemption DOT-E 9649: Depleted Uranium Explosive Munitions

SUMMARY

Exemption DOT-E 9649, which has been in use for almost twenty years, authorizes the Department of Defense (DOD) to classify depleted uranium munitions under the lowest category of radioactive material (limited quantity) and transport them in packages which have no radiological hazard markings or labels, provided DOD transports the munitions in accordance with DOD approved radiation safety plans.

As part of the two year exemption review and renewal process, Hazardous Materials Safety (HMS) reexamined the basis for the exemption and conducted a new safety analysis. HMS determined that: the radiation levels currently allowed by the exemption significantly exceed those specified by current international radiation protection standards; DOD safety plans (developed by each individual service branch) do not provide any substantial radiation protection measures for routine transport; DOD is unable to provide relevant shipping data (i.e. quantities of munitions shipped, packages used, dose rates, etc.) for depleted uranium munitions transported under this exemption in the last two years; and it is therefore possible that transport workers, service members and the public, may unknowingly be exposed to radiation slightly above regulatory limits.

Accordingly, HMS intends to notify DOD on or about May 23, 2005 of its intent to phase out the exemption over the next two years. HMS will continue to offer its assistance in transitioning to full compliance with the hazardous materials regulations (HMR) and will consider any DOD application for limited regulatory relief. It is likely that DOD will object to this action and may raise the issue to the Secretary. It should be noted this renewal request has also received Congressional, local government and media interest.

BACKGROUND

In 1986, the Department of Transportation approved DOD's request for exemption from full compliance with the HMR for the transport of munitions containing projectiles manufactured of depleted uranium metal. This exemption authorizes DOD to classify these munitions under the lowest category of radioactive material (limited quantity) and transport them in packages which have no radiological hazard markings or labels provided DOD transports the munitions in accordance with its radiation safety plans. In support of the original request, DOD stated that the radiological risk posed by these munitions did not warrant standard hazmat communications, packages marked both radioactive and explosive posed a significant security risk (munitions could be mistaken for nuclear weapons), and packages marked radioactive and explosive may create friction with foreign governments and foreign nationals may refuse to handle such packages.

As required by the Federal hazardous materials transportation law, exemptions are granted for two-year periods, at which time grantees must request renewal. The request for renewal shall certify that the provisions of the original application remain valid or provide an updated application and include a statement describing all relevant shipping and incident experience since issuance of the most recent renewal. If the applicant files for renewal at least 60 days prior to the expiration date of the current revision, the exemption will not expire until HMS has acted upon the request.

Receipt of the renewal request initiates a complete technical review of the application and any public comments received. HMS has completed the technical reevaluation of the exemption and approximately 200 comments received from members of Congress, first responders, special interest groups and the general public. A reevaluation summary is included as an attachment. As DOD filed its renewal in accordance with HMR provisions, DOD has continued to use the exemption during the current review process.

FOLLOW-UP

Although HMS's safety analysis would support denial of DOD's application, HMS believes the current pace of U.S. military operations and the lead time and funding associated with a major revision of a military transport program warrant an extended transition period. Accordingly, HMS intends to notify DOD on or about May 23, 2005 of its intent to phase out the exemption over the next two years. Along with this notification, HMS will offer its technical expertise and assistance in transitioning to full compliance with the HMR. HMS will also consider any DOD application for limited regulatory relief.

The Chief of Staff

REVIEWED _____

COMMENTS _____

DATE _____

cc: The Deputy Secretary

ATTACHMENT - REEVALUATION SUMMARY DOT-E 9649

INTRODUCTION

The Office of Hazardous Materials Safety (OHMS) has conducted a technical reevaluation of DOT-E 9649, granted to the Department of Defense (DOD) since 1986. DOT-E 9649 provides an exemption from full compliance to the Hazardous Material Regulations (HMR) to transport Class 1 military explosive munitions containing projectiles manufactured of depleted uranium metal. The reevaluation included the:

- Historical exemption basis
- Current knowledge of the hazard and appropriate safety measures
- Review of approximately 200 comments
- Operational lessons learned during the life of the exemption

BACKGROUND

In 1986, DOD requested an exemption to full compliance with the HMR to transport Class 1 military explosive munitions containing projectiles manufactured of depleted uranium metal. In support of their request, DOD stated that the:

- 1) Radiological risk posed by these munitions did not warrant standard hazmat communications.
- 2) Packages marked both radioactive and explosive posed a significant security risk (munitions could be mistaken for nuclear weapons).
- 3) Packages marked radioactive and explosive may create friction with foreign governments and foreign nationals may refuse to handle such packages.

The original exemption was issued on October 9, 1986 and has been renewed approximately every two years since then. The exemption has allowed DOD to categorize the radioactive component of the munitions as a Limited Quantity (rather than Low Specific Activity - I) radioactive material and exhibit contact radiation dose rates of up to five times the value allowed under the HMR. The exemption required compensatory safety plans to be enacted by DOD that were believed to provide an equivalent level of safety to the HMR. The most significant effect of the exemption was to provide relief from the display of standard radiation hazard communications on the packages. In March 2004, DOD requested renewal of DOT-E 9649 for an additional two years.

On June 24, 2004, OHMS requested additional technical information from DOD regarding the classification of the material as Limited Quantity rather than Low Specific Activity material, including a listing of all relevant shipping and incident experience as required by the HMR. OHMS also requested DOD to update their application in light of the recent revision of the Class 7 (Radioactive Material) portions of the HMR that would become effective October 1, 2004. Additionally, an OHMS representative met with DOD

personnel at Ft. Eustis, VA in February 2005 to reiterate the need for this information to be provided and to be available to answer questions regarding the exemption process.

The public notice regarding this exemption renewal request resulted in approximately 200 comments from national and local government offices, first responder organization members, interest groups, and citizens, including:

- U.S. Senator Maria Cantwell
- U.S. Senator Patty Murray
- Mayor, Port Townsend, WA
- Alleghany County Board of Legislators, NY
- Legislator, Dutchess County, NY
- Environmental Health Department, Aspen, CO
- Emergency Communication/Emergency Management, Ulster, NY
- DUinKY Awareness Campaign
- Peace and Justice Office of the Sisters of St. Joseph of Nazareth, MI
- Port Townsend Depleted Uranium Team
- Ban Depleted Uranium
- Public Citizen
- "Depleted" Uranium Weapons Network of the Hudson Mohawk Region
- Phil Berrigan Depleted Uranium Group
- Women's International League for Peace and Freedom

The comments specifically questioned the:

- 1) Continued appropriateness of the exemption regarding the absence of hazard communications that would aid emergency response personnel.
- 2) Accuracy and completeness of the recent DOD request that stated no shipments had been made using the exemption during the previous two years.
- 3) DOD compliance with the terms of the exemption.

On March 15, 2005, OHMS received an email from the Surface Deployment and Distribution Command (SDDC) stating that DOD senior leadership had yet to formalize a final position on the renewal of DOT-E 9649. However, SDDC recommended that the exemption should be renewed with no substantive changes in order to preclude disruption of munitions transport to the warfighter and to minimize costs, as it was believed there was no decrease in safety transporting the material without standard hazard communications. On March 24, 2005 OHMS received a formal written reply from the SDDC to the June 2004 OHMS request for additional information described previously. The SDDC letter included corrected shipping/incident experience, an updated request based on the HMR revision, limited material composition information, and their reasoning why a continued exemption is justified.

ANALYSIS

The radiation levels allowed by the exemption are a significant multiple (5) of that allowed by the HMR and the International Atomic Energy Agency (IAEA) safety regulations, upon which the domestic regulations are founded. The radiation hazard posed by depleted uranium is not a great risk, but OHMS believes its presence in consolidated quantities needs to be communicated. Depleted uranium emits ionizing radiation that, with the consolidated modal quantities of munitions transported, results in appreciable levels of external radiation exposure to transport workers in routine proximity to the material and potentially internal ingestion and inhalation radiation exposures to first responders in accident conditions. The recent DOD submittal provided a dose rate study on specific munitions prepared for typical transport configurations, i.e., unit palletization and modal transport. OHMS believes the results of this study contraindicate the appropriateness of continuing the exemption in the long term, without modification, primarily due to the consolidated modal quantities of munitions transported. Pallet contact radiation dose rates are generally twice, and in one case, over four times the regulatory limit for Limited Quantity materials. However, pallet and modal conveyance dose rates at one meter are generally a multiple of three to six times justifiable Limited Quantity classification, and for one sized round, six to eleven times. In the case of this latter round, inappropriate radiation exposures could occur to transport workers by being in the vicinity of the material for just 100 hours per year. In all these cases, the graded approach to transport safety of radioactive material is circumvented and transport workers and members of the public could unknowingly receive radiation exposures that are not consistent with the optimization principle of radiation protection to maintain exposures as low as reasonably achievable. OHMS concurs with DOD that the explosive hazard of depleted uranium munitions is more significant than the radiological hazard. However, OHMS believes exemption from the communication standards in the HMR and international regulations is no longer commensurate with the radiological hazard of the munitions, given the consolidated quantities transported and the fact that the linear no-threshold model of radiation dose/effect is the accepted radiation protection standard both domestically and internationally.

DOD has apparently not remained in compliance with the requirements set forth in the exemption. The Navy has apparently not had a required safety plan in place for some number of years and the safety plan submitted on March 24, 2005 is still identified as a draft document. Although the exemption has required safety plans for the radiological hazard for normal transportation, DOT believes the plans submitted by DOD contain no substantive safety provisions for routine transport. For example, the draft Navy safety plan submitted states no special handling is required despite the exemption section that does require a safety plan for routine transport.

Based on available information, OHMS believes the DOD has been using this exemption internationally, in violation of a specific requirement of the exemption that it is for domestic use only. An exemption to the HMR provides relief from the domestic transport regulations of the United States of America and is not recognized internationally. Depleted uranium munitions transported internationally in the same manner as the exemption allows would need relief from the international transport regulations. In this case, the relief would be a special arrangement issued by the U.S. Competent Authority

against the IAEA transport regulations. Under the IAEA regulations, this special arrangement would be issued by the U.S.A and approved by the Competent Authority of each respective country a shipment enters or passes through. If a special arrangement were to be sought, it is not known if multilateral approval would be granted by all foreign countries needed and, based on past experience with less controversial special arrangements, the time frame to secure approval or disapproval would be at least a year. Additionally, OHMS believes dual communication standards for domestic and international transport would increase the difficulty and cost of transport.

DOD has provided details of modern technology security compensatory measures implemented since the original application, such as Constant Surveillance Service, DOD Driver Identification Requirement, etc. OHMS believes these measures provide adequate compensatory safety measures only under accident conditions domestically. Due to increased radiation protection standards over the last two decades, current DOD compensatory measures, in conjunction with exempted requirements, do not fulfill present-day radiation protection obligations for routine transport.

During the OHMS representative's visit to Ft. Eustis a technical question arose concerning the Limited Quantity depleted uranium requirement that the outer surface of the depleted uranium be enclosed in an inactive sheath made of metal or other durable protective material. The recent DOD written response only confirmed one sized round is so sheathed. Whether the remaining rounds are so sheathed is still not known.

OHMS has received conflicting documentation on the shipping experience and incidents that are required by the HMR for the material shipped under this exemption. The March 2004 renewal request stated no shipments had been made using this exemption for the previous two years. It has since been learned that hundreds of shipments had been made during this time. SDDC has stated they have encountered reporting difficulties with the Services in the past, which they claim now have been rectified.

CONCLUSION

OHMS has concluded that the lack of immediate radiation risk and minimal short term radiation risk does not warrant immediate termination of the exemption. However, OHMS believes the exemption needs to be revised to incorporate increased requirements and further justification by DOD or phased out. This conclusion is based upon evidence of inappropriate radiation safety measures currently allowed by the exemption in light of increased radiation protection standards, DOD safety plan inadequacies, misuse of the domestic exemption internationally, DOD inability to detail the munition composition, and past reporting errors.

Given that revision of the exemption requires further justification, safety plan finalization, open issue clarification, and identification of compensatory measures for radiation protection as well as development of a special arrangement approval for international transport, OHMS recommends phase out of the exemption. This phase out would require newly manufactured material to come into full compliance with the HMR in one year and all depleted uranium munitions come into full compliance within two years.