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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

GUIDELINES FOR SAFE RESPONSE TO HANDLING, STORAGE, AND TRANSPORTATION ACCIDENTS INVOLVING ARMY TANK MUNITIONS OR ARMOR WHICH CONTAIN DEPLETED URANIUM

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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Headquarters, Department of the Army, Washington, D.C.

21 July 1996

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CHAPTER 1

GENERAL

1-1. PURPOSE AND COVERAGE.

a. In view of the complicating factors that may arise in an emergency, it is impossible to establish simple rules of procedures to cover all situations. However, in any emergency, the primary concern must always be the protection of personnel.

b. This bulletin provides guidance for personnel on actions recommended prior to, during, and after notification of an accident involving ammunition and/or armor containing depleted uranium (DU). This guidance is intended for use to minimize ingestion of toxicological material and external contamination. Even though radiation doses resulting from the use and handling of DU are usually far below the regulatory limits, an effective program is necessary to assure they are maintained As Low As Reasonably Achievable, in accordance with Nuclear Regulatory Commission (NRC) direction. Information contained in this bulletin should be incorporated into local emergency procedures where applicable. Local emergency procedures should be preplanned and rehearsed on a regular basis.

c. This bulletin is intended for use with the following Army ammunition items, and any future developed items which contain DU:

CARTRIDGE	25MM	APFSDS-T	XM919	weight of DU = classified
CARTRIDGE	105MM	APFSDS-T	M774	weight of DU = 7.41 lb
CARTRIDGE	105MM	APFSDS-T	M833	weight of DU = 8.08 lb
CARTRIDGE	105MM	APFSDS-T	XM900E1	weight of DU = classified
CARTRIDGE	120MM	APFSDS-T	M827	weight of DU = 6.90 lb
CARTRIDGE	120MM	APFSDS-T	M829	weight of DU = 8.69 lb
CARTRIDGE	120MM	APFSDS-T	M829A1	weight of DU = classified

1-2. CHEMICAL AND RADIOACTIVE CHARACTERISTICS OF DU: All uranium extracted from ore is composed of three primary isotopes of uranium. They are 234-Uranium, 235-Uranium, and 238-Uranium, abbreviated U234, U235, U238, respectively. The proportion of each of these isotopes in natural uranium is 0.0057 percent U234, 0.7204 percent U235, and 99.2739 percent U238. The proportions of each of these isotopes in DU is 0.0005 percent U234, 0.25 percent U235, and 99.75 percent U238. DU is a by-product of the uranium enrichment process, during which natural uranium is enriched by increasing the percentage of the U235 isotope. Uranium enriched in the U235 isotope is of use to the nuclear industry as fuel for nuclear reactors. DU, no longer of use to the nuclear industry for recovery of the U235 isotope, is useful for non-nuclear applications. Properties which make DU of interest in military use are its high density and strength; ease and relatively low cost of fabrication; and

its availability. The radioactive emissions from DU are the result of spontaneous radioactive decay forming daughter atoms. Uranium decays by alpha particle emission. The daughter atoms which are formed during the decay emit alpha, beta, and gamma radiations. Thus, since radioactive decay is a continuing process, the radiation emitted from DU consists of alpha, beta, and gamma radiation.

1-3. REQUIRED NOTIFICATION DU MUNITIONS. HQ, Industrial Operations Command (IOC), ATTN: AMSIO-DMW, Rock Island, IL 61299-7630, maintains Nuclear Regulatory Commission (NRC) license, SUC 1380, which authorizes storage of Army DU ammunition at Army installations. The following describes accidents and incidents requiring notification to the license Radiation Protection Officer (RPO). Telephonic notifications can be made to the license RPO, Defense Switched Network (DSN) 793-2965/2969, commercial (309) 782-2965/2969. These are not secure lines, therefore, if classified information must be discussed, a call back will be made from a secure line after the initial notification. After duty hours call the ACALA staff duty officer, DSN 793-5621, commercial (309) 782-5621. Accidents and incidents involving ammunition items containing DU components will be reported in accordance with Army procedures to the local RPO. The local RPO will report any accident or incident to the license RPO. The license RPO will report accidents and incidents to the NRC as required. Reports to the NRC will be made to the NRC Regional Office serving the license RPO regardless of the location of the accident or incident.

a. The following types of accidents and incidents will be reported as expeditiously as possible, throughout the Army accident reporting systems, to the local RPO and license RPO:

(1) Theft or loss of control of ammunition items containing DU components.

(2) Functioning of ammunition items containing DU components.

(3) Fires, explosions, or accidents involving storage structures, transport vehicles, or Army weapons systems that contain ammunition items containing DU components, where the ammunition items are or could be damaged.

(4) Accidents or incidents that damage or expose the DU components to the environment, or release DU to the environment.

Initial notification for the above types of accidents and incidents will be made telephonically or by priority message with a written follow-up report within 45 days. When required, the license RPO will contact the NRC and HQ, AMC, ATTN: AMCSF-P, within one hour of initial notification to the license RPO. Follow-up reports will be submitted to the NRC as the situation requires.

b. The following types of accidents and incidents will be reported within 30 days, through the Army accident reporting system, to HQ, AMC, ATTN: AMCSF-P, and license RPO: HQ, IOC, ATTN: AMSIO-DMW: (1) Fires or explosions involving storage structures, transport vehicles, or Army weapons systems that contain ammunition items containing DU components that are not reportable under the Army accident reporting system, where the ammunition items are not damaged.

(2) Accidents or incidents that cause damage to storage structures, transport vehicles, or Army weapons systems, that contain ammunition items containing DU components, that are reportable under the service accident reporting system, where the ammunition items are not damaged.

(3) Accidents or incidents that damage ammunition items containing DU components without damaging or exposing the DU components to the environment, that are reportable under the service accident reporting system.

(4) Accidents or incidents that result in an actual or potential radiation exposure from material covered by this bulletin in excess of the applicable limits for exposure to ionizing radiation.

c. Interim or final written reports will be transmitted throughout the local RPO-to the license RPO within 30 days of the accident or incident. If an interim report is submitted, a final report will be submitted as expeditiously as possible. When required, the license RPO will provide the NRC with an interim or final report within 45 days of the accident or incident. If an interim report is submitted to the NRC, the license RPO will forward a final report within 15 days of its receipt by the licensee. Unless specifically directed otherwise, only unclassified information will be transmitted to the NRC.

1-4. REQUIRED NOTIFICATION DU ARMOR: Accidents and incidents involving the DU armored tank will be reported immediately through the Army accident reporting system to the local RPO or Nuclear, Biological and Chemical (NBC) Non-Commissioned Officer (NCO). The local RPO or NBC NCO will report any accident or incident to the TACOM RPO, DSN 786-7635/6121, commercial (810) 574-7635/6121. The above lines are not secure lines, therefore, if classified information must be discussed, a call back will made from a secure line after the initial notification. After duty hours call the TACOM staff duty officer, DSN 786-5935/5511, commercial (810) 574-5935/5511. Address of command is: Commander, U.S. Army Tank-Automotive and Armaments Command (TACOM), ATTN: AMSTA-CZ, Warren, MI 48397-5000. The TACOM RPO will report any accidents and incidents to the NRC, as required. TACOM maintains the NRC license, SUB-1536, which authorizes possession and use of DU armored tanks.

a. The following types of accidents and incidents will be reported as expeditiously as possible, through the Army accident reporting system, to the local RPO and TACOM RPO:

(1) Theft or loss of control of DU armored M1A1 tanks.

(2) Fires, explosions, or accidents where DU armored M1A1 tanks are or could be damaged.

(3) Accidents or incidents that damage or expose the DU armor to the environment, or release DU to the environment.

(4) Accidents or incidents that result in an actual or potential radiation exposure from DU armor in excess of the applicable limits for exposure for ionizing radiation.

b. Initial notification for the above types of accidents/incidents will be telephonically or by priority message with a written follow-up report within 15 days. Interim or final written reports will be transmitted through the local RPO to the TACOM RPO within 30 days of the accident or incident. If an interim report is submitted, a final report will be submitted as expeditiously as possible. When required, the TACOM RPO will contact the NRC and HQ, AMC, ATTN: AMCSF-P. Follow-up reports will be submitted to the NRC as the situation requires, by the TACOM RPO. Unless specifically directed otherwise, only unclassified information will be transmitted to the NRC. Accident/incident reports shall include the following:

(1) Name of person reporting.

(2) Phone number of person reporting.

(3) Location of accident site.

(4) Date and time of accident.

(5) Organization involved in accident.

(6) Equipment involved.

(7) Property damaged and/or contaminated.

(8) Extent of injuries/overexposure.

(9) Narrative description of accident.

(10) Cause of accident (if known).

(11) Type of collision (rollover, jackknife, head on, etc.) and vehicle speed.

(12) Fire involved (yes or no).

(13) Did weather conditions contribute to accident?

(14) Did defective equipment contribute to accident? What component and how is it defective?

(15) Individuals and agencies known to have been notified and the response being made.