



**USAEC**  
**SITE**  
**ASSISTANCE**  
**VISITS (SAVs)**

**LESSONS LEARNED**

**February 2002**



**REPORT DOCUMENTATION PAGE**

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# Acronyms

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A&E	Ammunition and Explosives
ACR	Ammunition Condition Report
AEC	Army Environmental Center
AEDA	Ammunition Explosives and Dangerous Articles
AFOP	Ammunition Found On Post
AIN	Ammunition Information Notice
AMO	Authorized Military Official
AR	Army Regulation
ASP	Ammunition Supply Point
BMP	Best Management Practice
CBT	Computer-Based Training
CC-V	Condition Code V
CE	Conditionally Exempt
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DA	Department of the Army
DAC	Defense Ammunition Center
DAIR	Deployable Automated Incident Reporting
DDA	Designated Disposition Authority
DDESB	Department of Defense Explosives Safety Board
Demil	Demilitarization
DENIX	Defense Environmental Network and Information Exchange
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DoDI C	Department of Defense Identification Code
DOT	Department of Transportation
DQO	Data Quality Objective
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DUSD(I E)	Deputy Under Secretary of Defense for Installation and Environment

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## Acronyms (Continued)

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EOD	Explosive Ordnance Disposal
EPA	U.S. Environmental Protection Agency
FFCA	Federal Facilities Compliance Act
MACOM	Major Command
MAP	Munitions Action Plan
MI DAS	Munitions Item Disposition Action System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPPEH	Material that Presents a Potential Explosive Hazard
MR	Military Munitions Rule
MRI P	Munitions Rule Implementation Policy
NAR	Notice of Ammunition Reclassification
OACSI M	Office of the Assistant Chief of Staff for Installation Management
OB	Open Burning
OD	Open Detonation
ODCSLOG	Office of the Deputy Chief of Staff for Logistics
ODUSD(ES)	Office of the Under Secretary of Defense, Environmental Security
OEESCM	Operational and Environmental Executive Steering Committee for Munitions
OSC	Operations Support Command
PCB	Polychlorinated Biphenyl
POL	Petroleum, Oils, and Lubricants
QASAS	Quality Assurance Specialist, Ammunition Surveillance
QRP	Qualified Recycling Program
RCRA	Resource Conservation and Recovery Act
REC	Regional Environmental Coordinator
RFMSS	Range Facilities Management Support System
R3	Resource Recovery and Recycling
SAV	Staff Assistance Visit
SOP	Standing Operating Procedure
SQG	Small Quantity Generator
TO	Technical Order
TRI	Toxics Release Inventory
TSC	Trade Security Controls

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## Acronyms (Continued)

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TSCA	Toxic Substances Control Act
TSD	Treatment, Storage, and Disposal
TSDF	Treatment, Storage, and Disposal Facility
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
UXO	Unexploded Ordnance
WMM	Waste Military Munitions



# 1.0 INTRODUCTION

From October 2000 through May 2001, an integrated government team led by the Army Environmental Center (AEC) conducted a series of Staff Assistance Visits (SAVs) to installations representing five Major Commands (MACOMs).

## 1.1 Purpose and Goals

This Lessons Learned document describes the observations and findings of the SAV team members, highlighting systemic areas of noncompliance and issues of concern and providing specific instructions for improvement as they relate to:

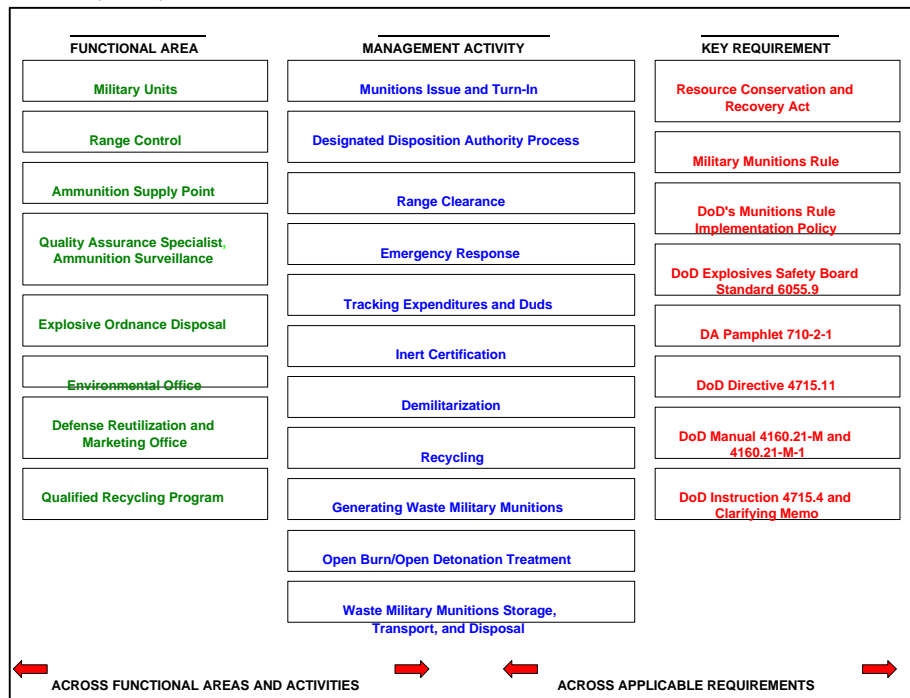
- The Military Munitions Rule (MR),
- The Department of Defense (DoD)'s MR Implementation Policy (MRI P), and
- Other ancillary federal, DoD, and Department of the Army (DA) regulations and requirements.

The primary goal is to improve regulatory compliance and consistent implementation of DoD and DA policy. Potential

benefits include reduced compliance costs due to penalties and fines, improved efficiencies in managing munitions-related wastes, and reduced risk to human health and the environment.

## 1.2 Scope and Applicability

The lessons learned detailed in this document address the key waste military munitions (WMM) requirements and make recommendations for improvements throughout the WMM management system. The figure depicts the multitude of requirements and affected activities and highlights the challenges of MR implementation and compliance. Most importantly, the figure underscores the necessity for communication and



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cooperation across multiple functional areas.

### 1.3 Overview

Detailed in this document are the lessons learned during the conduct of a series of SAVs sponsored and led by AEC and performed by an integrated Army team augmented by contractor support. The SAVs were structured to promote open discussion, address installation concerns, and identify issues that must be further addressed by command and support activities.

Government team members included representatives of the following:

- Office of the Deputy Chief of Staff for Logistics (ODCSLOG),
- Office of the Assistant Chief of Staff for Installation Management (OACSIM),
- Defense Reutilization and Marketing Service (DRMS),
- Defense Ammunition Center (DAC), and
- U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM).

These team members provided insight and led discussions during field visits and supplemented the training component through classroom presentations on related "special topics."

The government team was augmented by contractors to support the MR and Toxics Release Inventory (TRI) training

### Special Topics

Agency	Topic Presented
Defense Reutilization and Marketing Service (DRMS)	Ammunition Explosives and Dangerous Articles
Defense Ammunition Center (DAC)	Brass Deformers
Deputy Chief of Staff for Logistics (DSCLOG)	Management and Disposition of Range and Munitions Residues
AEC	<ul style="list-style-type: none"><li>• Range Scrap Characterization</li><li>• Environmental Compliance Planning - Key to Sustainable Ranges</li><li>• Propellant Burning</li></ul>
Assistant Chief of Staff for Installation Management (ACSIM)	DoDD 4715.11

#### *Lead Agencies Provide Insight on Topics of Interest*

components of the SAVs and to assist in facilitating discussions during the field visits.

### 1.4 Document Organization

Section 2 provides background material; it introduces the Army Improvement Plan for MR implementation as the impetus for the SAVs, provides a brief overview of other MR-related initiatives, and describes the primary regulatory drivers, policies, directives, and instructions guiding MR implementation within the Army. Individuals who have attended MR training, and those who are generally familiar with the content of the rule and ancillary requirements, may want to move directly to Sections 3 and/or 4.

Section 3 highlights the key MR issues and provides EPA's regulatory interpretation. This section is recommended even for those familiar with the requirements of the MR as a forward to Section 4.

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Section 4 presents the core elements of the document, including the observations and findings of the SAV team members and associated lessons learned.

Section 5 concludes the document, and Section 6 provides a help directory for those requiring further assistance regarding issues related to the MR and WMM management.

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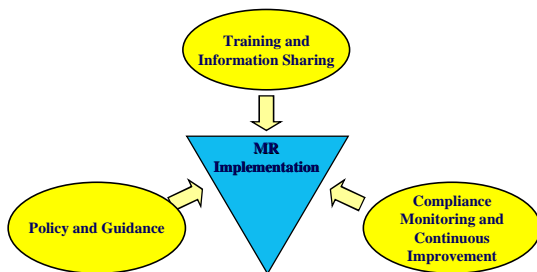
## 2.0 BACKGROUND

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### 2.1 Army Improvement Plan for MR Implementation

In June 1999, the OACSIM and the ODCSLOG formed the Munitions Rule Working Group. The joint leadership of the group reflects the perspective that environmental managers support the total Army program and resulted in a change from a predominantly environmental presence to a combined effort supported by logistics, munitions, and environment. In April 2000, the lead agencies of the Munitions Rule Working Group signed a memorandum to develop an Army Improvement Plan for MR Implementation. The plan identified three fundamental areas requiring improvement and established a framework to ensure that the improvement goals for each area were met.

#### Improvement Plan for MR Implementation



The SAVs and this Lessons Learned document support both the training and continuous improvement components of the plan.

### 2.2 Concurrent Improvement Initiatives

The following is a brief description of the status of other DoD initiatives supporting the Army Improvement Plan for MR Implementation.

#### Material that Presents a Potential Explosive Hazard (MPPEH) Directive and Implementing Guidance

The Office of the Deputy Under Secretary of Defense for Installation and Environment [DUSD(IE)] is in the process of staffing a directive on MPPEH, and the Operational and Environmental Executive Steering Committee for Munitions (OEESCM) is developing implementing guidance. The directive will address responsibilities for funding, oversight, technology, training, and demilitarization (demil) standards. The guide will identify procedures to safely manage MPPEH to include inspection and certification, segregation, security, custody, and accountability.

#### Munitions Action Plan

The OEESCM reviews and updates the MR Improvement Plan on a continuing basis. The OEESCM has additionally developed its Munitions Action Plan (MAP) to identify actions that will help maintain the combat readiness of the armed forces through improved environmental

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stewardship and enhanced explosives safety compliance across the complete munitions life cycle. Implementation of the MAP supports the objectives of the MR.

### AEC Initiatives

The AEC leads a number of efforts supporting the training and information sharing and compliance monitoring components of the Improvement Plan. As such, AEC has:

- I. In cooperation with the DAC, developed the MR Computer-Based Training (CBT) Programs.
- II. Provided funding for contractor-provided, installation-initiated training through the U.S. Army Corps of Engineers and has been instrumental in establishing MR information on Army, Defense Environmental Network and Information Exchange (DENIX), and other DoD web sites.
- III. Communicated on a continuing basis with state regulating agencies to promote adoption of the MR through its Regional Environmental Offices.
- IV. Led efforts to identify and characterize solid waste generated by military personnel during the intended use of munitions items on training ranges. The primary objective of the Range Scrap (Firing Point) Study Project is to inventory and characterize scrap items generated as a result of Army training and mission activities on ranges at the firing point and develop environmental best

management practices (BMPs) from handling to final disposition. The overall goal is to promote a consistent approach to the management of the residue items and do so in accordance with environmental regulations. The Range Scrap (Firing Point) Study Project is being implemented in three phases.

A. Phase I (Data Review and Inventory Report) presents the regulatory framework for managing range scrap and the inventory of solid waste and residual material generated during training exercises.

B. Phase II (Characterization Strategy Report) of the project utilizes the regulatory framework and inventory developed in Phase I to present:

- The characterization scheme for residual material;
- Analytical recommendations and requirements for each scrap item;
- Data quality objectives (DQOs) for characterizing range scrap;
- Rationale for the characterization and characterization profiles for the inventory; and
- Data quality, reporting requirements, and an approach for interpreting the results to satisfy the project DQOs.

C. Phase III (Waste Profiles and BMPs) of the project will utilize the data developed from Phase II to further emphasize the development of BMPs for the inventory and provide data to buyers, recycle companies, scrap dealers, and

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disposal and treatment facilities. Phase III will result in the development of profile sheets for each range scrap item, identifying data, hazardous waste determination, characterization data, waste management options, applicable BMPs, and analytical results.

The Phase I and II reports as well as the Waste Profile Notices are available on DENIX (*user account and password required*).

### DRMS Initiatives

The DRMS provides primary contract oversight for the removal of munitions-related scrap metal from Army ranges. As such, it has a particular interest to ensure that items removed from the installation are free of explosive hazards. Recent efforts to improve range scrap management include the incorporation of guidance on the disposition of range residue in DoD 4160.21-M, the requirement to obtain dual signatures on inert certifications, and the institution of formal procedures for on-site sales to include a formal Memorandum of Understanding (MOU) detailing responsibilities and pre-award meetings held with potential purchasers, DRMS, and the generator.

### DAC Initiatives

DAC supports ammunition management through engineering, training, logistics, and explosives safety support. DAC efforts in support of MR implementation include the following:

- I. Engineering: Developed policy identifying parameters for small arms ammunition deformer operations (refer to Section 2.3.10).
- II. Training: The DAC Training Directorate prepares CBT products and distributed more than 3,000 copies of the Munitions Rule training CD (MR2), May 2000. Additional copies of the CD are available from the Training Directorate or from the DAC web site at [www.dac.army.mil/as/produ.html](http://www.dac.army.mil/as/produ.html).
- III. Logistics: As part of the Worldwide Ammunition Review and Technical Assistance Program, the DAC Operations Directorate conducts ammunition logistics reviews as directed by ODSCLOG. Since FY 1998, ODSCLOG directed assessment of MR implementation as part of all on-site reviews. The resulting review report contains the assessment and is signed by the Chief, Munitions Division, ODSCLOG. Any findings noted must be addressed in the installation's formal response to the review report.
- IV. Explosives Safety: The DAC Technical Center for Explosives Safety is involved in developing certification standards and is the Army's technical agent for reviewing explosives safety site plan submissions.

## 2.3 Regulatory Drivers, Policies, Directives, and Instructions

Published regulations, policies, directives, and instructions that guided the SAV

team in its evaluation of WMM management procedures are described below.

### 2.3.1 Regulations Under the Resource Conservation and Recovery Act (RCRA), as amended

RCRA is a federal law giving the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from "cradle to grave," to include its generation, transportation, treatment, storage, and disposal (TSD). RCRA sets forth a framework for the management of non-hazardous wastes. RCRA was amended in 1992 with the Federal Facilities Compliance Act (FFCA), directing EPA to consult with DoD to develop regulations that identify when conventional and chemical military munitions become hazardous waste under RCRA and provide for their safe storage and transportation. The regulations developed by EPA interpreting the requirements of RCRA are contained within Title 40 of the Code of Federal Regulations (CFR). The text of the regulations developed in response to the FFCA is commonly known as "The Military Munition Rule" and is contained in Part 266 of 40 CFR.

#### 2.3.1.1 States Authorization

An important aspect of the RCRA program is that EPA may delegate

authority to a state to run its own hazardous waste program. An authorized state may impose requirements that are consistent with or more stringent than federal requirements, but may not adopt regulations that are less stringent.

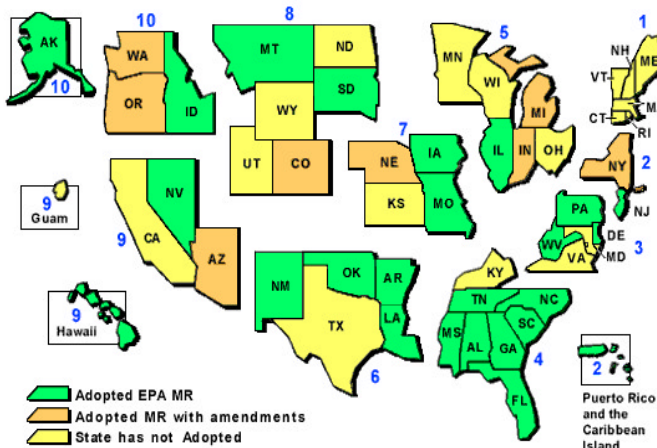
The effect of the state's authority in regard to the MR is as follows:

- The "more stringent" requirements of the Rule became effective in all states in August 1997.
- The "less stringent" requirements became effective in non-authorized states in August 1997 and upon adoption by authorized states.
- In EPA's view, many aspects of the Rule are merely clarifications - neither more nor less stringent than regulatory requirements applicable to other materials. Formal adoption of these provisions by states is not required in order for them to be applicable. Some states may interpret the provisions differently than EPA.

More Stringent	Neither More Nor Less Stringent	Less Stringent
Military installations must retrieve munitions fired off-range or keep records of the event	When military munitions are not a waste	Conditional Exemption for transportation
Military personnel responding to immediate threats involving military munitions must maintain records of the response	When used/unused military munitions become a solid waste	Conditional Exemption for storage
	Storage under Subpart EE Exemptions from RCRA for emergency responses	

### ***Many Aspects of the MR are Clarifications of How Existing Requirements Apply to Munitions***

## State Adoption Status



### A Number of States Have Adopted the Federal Rule as Written

(Current as of July 2001, contact AEC for updates.)

#### 2.3.1.2 Solid Waste Defined

The RCRA framework is constructed upon the definitions of solid and hazardous waste. For the purposes of RCRA, a solid waste is a discarded material that is not otherwise excluded by the regulation.

#### 2.3.1.3 Recycling Exclusions and Exemptions

RCRA offers a number of exemptions and exclusions for specific waste items such as recycled materials. EPA encourages waste recycling by minimizing the regulatory burden of managing recyclables. Recycling exemptions and exclusions are of particular interest to those managing scrap metal resulting from military range activities.

Under RCRA, generators of scrap metal can either take advantage of:

- An exclusion from the definition of regulatory solid waste for "excluded

processed scrap metal" under 40 CFR 261.4(a)(13) or

- Use process knowledge to declare scrap metal resulting from range operations as hazardous waste and take advantage of an exemption from the bulk of RCRA Subtitle C requirements for "recycled scrap metal" under 40 CFR 261.6(a)(3)(ii).

In order for range residue to qualify for the exclusion, (1) the state must have adopted it and (2) it must be "processed." Processing includes, but is not limited to, sorting and segregation, demilitarization (cutting), and inerting.

The scrap metal exemption is less favorable than the exclusion because it provides that scrap metal is a "solid waste," so RCRA jurisdiction applies, even if the bulk of the requirements do not.

#### 2.3.1.4 Hazardous Waste Determination

Generators of solid wastes are required under RCRA to conduct a hazardous waste determination (i.e., determine whether it is hazardous and what hazardous traits it possesses.)

A hazardous waste is a solid waste that is either specifically listed in RCRA or displays one of four hazardous characteristics.

Listed hazardous wastes are wastes from generic industrial processes, wastes from certain sectors of industry, and unused pure chemical products. With few exceptions, military munitions are not



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listed wastes, but many display one or more of the four hazardous characteristics:



- Ignitable wastes are those that easily catch fire and sustain combustion,
- Corrosives are those that are extremely acidic or basic,
- Reactivity identifies wastes that explode or undergo violent reactions, and
- Toxicity describes those wastes that leach specific toxic chemicals when subjected to the Toxicity Characteristic Leaching Procedure (an EPA-specified test method).

### 2.3.1.5 Hazardous Waste Management

Once a material is identified as a hazardous waste, RCRA regulates how these must be accumulated, stored, transported, treated, and disposed of.

- Hazardous waste generators may accumulate wastes for 90 days [180 days for small quantity generators (SQGs)]. Storage in excess of these timelines requires a permit.
- On-site transportation is not regulated under RCRA. Off-site transportation requires proper shipping papers (manifest), an EPA ID number, and compliance with Department of Transportation (DOT) standards, among other requirements.

- A facility that treats, disposes, or stores hazardous waste in excess of 90 days is defined by RCRA as a Treatment, Storage, or Disposal Facility (TSDF). Such facilities are required to obtain an operating permit and must comply with strict standards for design, location, preparedness and prevention, contingency planning, recordkeeping, reporting, and closure.

### 2.3.1.6 The Military Munitions Rule

The development of the MR was primarily driven by two conflicting concerns:

- DoD concerns that RCRA regulations, when left to the interpretation of agencies unfamiliar with DoD mission requirements or procedures, could be applied in a manner that substantially undermines its national defense mission.
- Stakeholder concerns that military activities involving munitions are insufficiently regulated and potentially adversely affecting the environment.

Key provisions of the MR include:

- Defines military munitions as all ammunition products and components produced or used by or for DoD or the U.S. Armed Services for national defense and security (Although the definition excludes wholly inert items, items that in and of themselves are inert are considered military munitions once employed as a component of a military munition);

- Identifies when military munitions ARE and ARE NOT waste (e.g., when used for their intended purpose);
- Provides for safe transportation and storage of such WMM and conditional exemptions (CE) from RCRA requirements when DoD transportation and storage standards are met; and
- Codifies long-standing exemptions to RCRA requirements for explosives or munitions emergency response personnel.

Additional detail regarding these provisions is provided in Section 3.

### **2.3.2 DoD Policy to Implement EPA's Military Munitions Rule (MRIP), July 1998**

The MRIP interprets the requirements of the MR and establishes an overarching policy for the management of WMM that is consistent among DoD components. It describes the practices and procedures for implementing the MR. Key issues addressed by the MRIP and not otherwise addressed by the MR include the following:

- Foreign munitions used as part of treaty and defense agreements with other nations (e.g., during training and testing with foreign military organizations) are military munitions and subject to the MR.
- Munitions items recovered through amnesty are not waste unless and until declared such by the Designated Disposition Authority (DDA).

- Non-military munitions (produced for the civilian community) that are acquired for use by DoD for national defense or security are military munitions subject to the MR.
- The DDA evaluation process removes the authority to designate unused military munitions as waste from installation personnel and assigns it to the DDA. The Army DDA is responsible for overall management of DoD's demil accounts. As such, the DDA has a macro-level perspective regarding munitions disposition opportunities, including sales to foreign services and recycling.
- DoD requires senior explosive ordnance disposal (EOD) officials to coordinate an MOU through their Regional Environmental Coordinator (REC) with appropriate state or federal authorities to establish roles and responsibilities for emergency responses.

#### **DDA Evaluation Process**

1. Installation munitions managers request disposition of munitions items through the completion of an Ammunition Condition Report (ACR).
2. The DDA is responsible for providing specific disposition instructions.
3. Should the DDA declare a munitions item as WMM, the item will be assigned Condition Code V (CC-V). CC-V was approved by the Operations Support Command (OSC) in May 2001 for use in identifying WMM. Ammunition Information Notice (AIN) 41-01 specifies the use of the code.
4. Once munitions are assigned the CC-V, they must be managed as a solid waste and in compliance with the MR.

- In addition to DoD component mandated explosives training, personnel engaged in munitions or explosives emergency responses involved in Level 1 or 2 responses should receive training equivalent to 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response." Installations are required to maintain training records.

**2.3.3 Department of Defense Directive (DoDD) 6055.9, 29 July 1996; Department of Defense Explosives Safety Board (DDESB) and DoD Component Explosives Safety Responsibilities; and DoD 6055.9-STD, DoD Ammunition and Explosives Safety Standards**

The directive defines the responsibilities of the DDESB and authorizes the standard. The standard describes the procedures for safe management of ammunition and explosives.

The standard includes Chapter 14, which addresses DDESB storage requirements for WMM in addition to those required by the MR. Specifically, it requires that ammunition storage units that are permanently taken out of service be closed in a manner resembling those required for permitted TSDFs. A closure certification is required to be submitted to the federal or state regulating authority stating that, as a minimum, the explosives safety requirements of Chapter 12 of DoDD 6055.9 have been

**Ammunition and Explosives Safety Standard, DoD 6055.9-STD**

Chapter	Title	Content
1	Introduction	Policy, scope, waivers, and exemptions
2	Effects of Explosions and Permissible Exposures	Effects of blast pressure, primary and secondary fragments, thermal and chemical hazards, and their permissible human health and structural exposures
3	Hazard Classification and Compatibility Groups	Storage principles based on compatibility groups
4	Personnel Protection	Establishes hazard protection principles for all operations and operational facilities exposed to ammunition and explosives hazards during industrial, processing, manufacturing, maintenance, renovation, demilitarization, and similar operations
5	Facilities Constructing and Siting	Features to limit the damaging effects of potential explosions
6	Electrical Standards	Per code
7	Lightning Protection	Per code
8	Hazard Identification for Fire Fighting and Emergency Planning	Establishes standard fire fighting hazard identification measures to ensure a minimum practicable risk in fighting fires of ammunition and explosives
9	Quantity-Distance	Minimum protective distances related to quantity of explosives
10	Theater of Operations Quantity-Distance	For deployments
11	Chemical Agent Standards	Sets standards for protecting workers and public from harmful effects of chemical agents
12	Real Property Contaminated with Ammunition, Explosives or Chemical Agents	Policies and procedures to protect personnel from ammunition, explosives, or chemical agent contamination of real property, including identification and control and remediation procedures
13	Mishap Reporting and Investigation Requirements	Initial, follow-up, and investigation reports
14	Special Storage Procedures for Waste Military Munitions	Establishes standards in addition to the WMM storage standards set forth in the MR

met and WMM and residues are removed in a manner that is protective of the public and the environment and consistent with the planned use of the property. The storage unit may continue to be used to store non-WMM as long as WMM and residues are removed.

**2.3.4 DoDD 4715.11, Environmental and Explosives Safety Management on DoD Active and Inactive Ranges, August 1999**

DoDD 4715.11 represents a consolidation of existing requirements for active and inactive ranges. The directive establishes policy and assigns responsibility for sustainable use and management of ranges as well as the protection of DoD personnel and the public from explosive

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safety hazards on active and inactive ranges. The directive requires services to establish and maintain inventories of active and inactive ranges, include sustainable range use in management plans at the activity or installation level, and assess the environmental impacts from munitions use.

Provisions of the directive that directly relate to the MR and other federal regulatory compliance drivers include:

- Maintain permanent munitions expenditure records;
- Conduct range clearance consistent with reasonably anticipated future land use prior to changing use;
- Establish safe and efficient range residue recycling and disposal procedures;
- Use targets that contain no hazardous materials [e.g., petroleum, oils, and lubricants (POLs), radium dials, batteries];
- Respond promptly to protect personnel and property from explosive hazards on and off the installation; and
- Respond in accordance with DDESB and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements to munitions constituents released from active and inactive ranges to off-range areas posing imminent and substantial endangerment to human health and the environment.

Two computer-based tools, the Range Facilities Management Support System (RFMSS) and the Deployable Automated

Incident Reporting (DAIR) system, are currently used throughout DA to track range operations and EOD incidents, respectively.

**2.3.5 DoD Manual 4160.21-M, Defense Reutilization and Marketing Manual; DoD Manual 4160.21-M-1, Demilitarization and Trade Security Controls Manual; DoDD 2030.8, Trade Security Controls - DoD Excess & Surplus Personal Property; and DoD Demil Program Management Bulletin 99-005**

The Defense Logistics Agency (DLA) has established these policies and procedures in its capacity to ensure that critical and sensitive military unique and dual use items and material are properly identified and are demilitarized and/or controlled when released from DoD control. Demil and Trade Security Controls (TSC) are applicable to WMM that are being released from DoD control.

Two key issues addressed in these procedures, and often confused, are:

- Inert certification and
- Demilitarization.

Inert certification is the process whereby a designated and technically qualified individual inspects an item to ensure that it is free of an explosive hazard and supplies his/her signature to certify that the inspection is complete. The procedures to complete an inert certification are specific to the item itself and may range from a visual

inspection to the employment of mechanical means to verify the absence of explosive material or to initiate an explosive element. For example, munitions fragments are visually inspected, a rod is inserted into bomb dummy units to ensure the spotting charge has functioned, and shock tubes must be initiated on-range utilizing an initiating device in order to be certified inert. As the procedures vary, so do the technical qualifications of the personnel performing the inert certification. Proper training is essential to ensure safety of the personnel conducting the certification as well as those receiving the item for disposition.

DoD is currently developing guidance regarding the qualifications for, and conduct of, inert certification (refer to the discussion regarding MPPEH in Section 2.2).

Demilitarization is the act of destroying the offensive or defensive advantages inherent in certain types of military equipment. The processes used to conduct demilitarization are also unique to the item and are specified in DoD Manual 4160.21-M-1 and DoDD 2030.8.

DoD Demil Program Management Bulletin 99-005, issued April 1999, requires two signatures on inert certifications for property such as ammunition explosives and dangerous articles (AEDA) residue, range residue, property containing explosives, ammunition scrap, fired shell

casings and cartridges, and containers previously containing AEDA (e.g., ammo boxes, bandoleers, ammo pouches).

1. TOTAL PRICE	2. SHIP FROM		3. SHIP TO	
UNIT PRICE	DOLLARS	CENTS	4. MARK FOR	
6. DOC DATE	6. NBRFC	7. FRT RATE	8. TYPE CARGO	9. PS
10. QTY. RECD	11. LP	12. UNIT WEIGHT	13. UNIT CUBE	14. LFC
15. SE				
16. FREIGHT CLASSIFICATION NOMENCLATURE				
17. ITEM NOMENCLATURE				
18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE	
22. RECEIVED BY			23. DATE RECEIVED	

We certify and verify that the AEDA residue, range residue, and/or explosive containers property listed has been 100 percent properly inspected by us and to the best of our knowledge and belief, are then and/or free of explosives or other dangerous materials.

Signature 1 \_\_\_\_\_ Signature 2 \_\_\_\_\_

Unit Address \_\_\_\_\_

Telephone Number \_\_\_\_\_

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 27 ADDITIONAL DATA  
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PREVIOUS EDITION MAY BE USED  
 DD FORM 1348-1 (JUL 91)

**DoD Form 1348-1 With Completed Inert Certification (Dual Signatures)**

### 2.3.6 Department of Defense Instruction (DoDI) 4715.4, Pollution Prevention, June 1996

DoDI 4715.4 implements policy, assigns responsibility, and prescribes procedures for implementation of pollution prevention programs throughout DoD. The instruction authorizes installation commanders, as appropriate, to sell directly recyclable and other Qualified Recycling Program (QRP) materials or to consign them to the Defense Reutilization and Marketing Office (DRMO) for sale. The DoDI authorizes installations to directly sell firing-range-expended brass or mixed metals gleaned from firing range cleanup. Expended brass must be crushed, shredded, or otherwise destroyed prior to public sale.

### 2.3.7 Office of the Under Secretary of Defense Memorandum, Recycling of Firing-Range Scrap Consisting of Expended Brass and Mixed Metals Gleaned from Firing Range Clearance Through Qualified Recycling Programs, May 1998

The Office of the Under Secretary of Defense, Environmental Security [ODUSD(ES)] memorandum sought to clarify definitions and procedures described in DoDI 4715.4 and describes other requirements for scrap AEDA processed through the QRP.

### 2.3.8 DA PAM 710-2-1, Using Unit Supply System

DA PAM 710-2-1 provides procedures to issue, account for, turn in, and process live ammunition and ammunition related residue created "at the firing line and back." The pamphlet identifies procedures to ensure security and control of munitions items and prevents the illicit disposal of unused munitions. Units that request and receive ammunition from an Ammunition Supply Point (ASP) must maintain training ammunition management and control documents.



Control documents (forms) are used to manage training ammunition, to control issue of ammunition, and to ensure that unexpended ammunition, as well as residue, is controlled until returned to the ASP. DA PAM 710-2-1 discusses the appropriate use of each form in detail. The following are key procedures for ensuring compliance with DA PAM 710-2-1:

- After all personnel have turned in ammunition and residue in the field, a safety inspection must be conducted to ensure that they do not have in their possession, in their equipment, or in their vehicles any live ammunition or residue.
- DA Form 581 for live ammunition must contain a statement certifying that all ammunition received was either expended or turned in.

REQUEST FOR ISSUE AND TURN-IN OF AMMUNITION									
For use of this form, see AR 710-2, the appropriate Agency in DCS/DSG									
1. ISSUE		3. DOCUMENT NO.		4. LOCAL USE		5. PAGE		6. FOR LOCAL USE	
2. TURN IN		OF							
7. WAREHOUSE		8. RECEIPT FROM		9. DATE MATRONS RECEIVED (YYYYMMDD)		10. PRIORITY		11. ALLOCATION PERIOD	
12. ITEM CODE		13. NON		14. HAZARDOUS		15. DATE		16. SIGNATURE	
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However, the nature of many training and/or maneuver exercises prevent the collection of all residue.

- An effective amnesty program must be established.

The procedures described above are vital in preventing mismanagement of unused military munitions and the unnecessary generation of WMM.

### **2.3.9 Army Regulation (AR) 385-64, U.S. Army Safety Program**

AR 385-64 sets explosives safety standards to protect military and civilian

Army employees, the public, and the environment. The regulation is to be used with DA PAM 385-64 and implements DoD 6055.9-STD. It also sets forth procedures for transporting ammunition or explosives over public highway.

### **2.3.10 Message/DALO-ZA/DACS-SF, 180712Z Jul 00, subj: Brass Deformers (Shredders).**

The policy identifies parameters for small arms ammunition brass deformer operations and requirements for explosives safety siting, certification, and approved standing operating procedures (SOPs).

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## 3.0 KEY MUNITIONS RULE ISSUES

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Section 2.3.1 briefly describes the RCRA regulations and introduces the MR. Additional discussion and clarification of the key MR issues is provided below.

### 3.1 Military Munitions as Solid Waste

#### **KEY ISSUE #1: At what point do unused military munitions become subject to RCRA?**

Materials are hazardous waste if they are (1) solid waste and (2) meet the criteria for hazardous waste. In addressing Key Issue #1 within the MR, EPA focused on the first point, and made no changes to the definition of hazardous waste. In accordance with RCRA, a product (i.e., unused) becomes a solid waste when the owner shows an intent to discard by:

- Removing it from storage for disposal or treatment prior to disposal,
- Declaring it to be a waste, or
- When it is damaged or deteriorated to the point it cannot be used or reprocessed for beneficial use.

This same logic was applied to military munitions to identify at what point they are no longer product, but have become a solid waste. The MR defines this point in the context of three specific categories of munitions:

- Unused munitions,
- Munitions used for their intended purpose, and
- Used or fired munitions.

#### 3.1.1 Unused Munitions

DoD stockpiles munitions for use in training or war. These are recognized as products comparable to unused commercial products stored by manufacturers for their customers. Unused munitions may be removed from storage magazines, removed from their original containers, issued to using units and individuals, and transported to ranges. If the munitions are not fired, they may be collected and returned to the ASP for reconciliation and returned to the stockpile. Still the munitions are products and not waste.

DoD also holds munitions in its Demil accounts at its depots. These materials are undergoing evaluation to determine whether they can be returned to service, repaired, sold, or recycled. Similarly, commercial manufacturers may separate off-specification or expired product from other stock to determine whether shelf lives can be extended or the material can be reprocessed for other uses. Classification of a munition in one of the DoD Demil accounts does not constitute a decision to discard the material, and they remain products and not waste. Even ammunition that is classified as unserviceable (Condition Code H) may be



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returned to service after further review or reprocessing. The application of Condition Code H also does not constitute a decision to discard or declaration of a waste.

Unused munitions and their components that are in the process of being disassembled or recycled are also not "discarded." Disassembly or recycling operations are not considered to be waste management activities.

Additionally, munitions in storage at the ASP awaiting response from the DDA to a disposition request are not waste. In response to the disposition request, the DDA often directs the ASP to ship the munitions item to depot for evaluation or for disassembly or recycling. These munitions are not shipped for destruction and are not solid waste.

To identify at what point unused military munitions do become solid waste, EPA applied the basic RCRA principle of intent to discard. Therefore, unused military munitions become solid waste when:

**1. Abandoned by being disposed of, burned or incinerated, or treated prior to disposal.**

An unused munition or munition component is clearly discarded at the point where it is treated or disposed of [e.g., by open burning/open detonation (OB/OD)]. Munitions treatment and disposal facilities are strictly regulated by EPA and must have permits to operate.

Unused munitions are also discarded when they are buried or landfilled, becoming a solid waste at the time of burial. Since most unused munitions display some hazardous characteristic, burial of unused munitions generally results in illegal disposal of a hazardous waste (e.g., placing a hazardous munitions item in a landfill permitted only to receive solid waste results in a violation of the landfill permit). When unused munitions are unearthed, they must be managed as a solid and potentially hazardous waste.

Munitions are also abandoned when they are intentionally discarded. For example, soldiers may bypass normal turn-in procedures and carry unused munitions items off-range. When improperly discarded (e.g., in dumpsters), these munitions become a solid waste and a likely hazardous waste as well.

**2. Removed from the stockpile for the purposes of disposal or destruction.**

EPA has determined that a clear intent to discard is demonstrated when military munitions are removed from storage for the purpose of disposal or destruction. These munitions become solid waste at the point where they pass through the doorway of the storage unit; therefore, this provision has been termed the "igloo door rule." If shipped to another installation for disposal or treatment prior to disposal, these military munitions must be transported as waste, not product.

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**3. Leaking or deteriorated to a point where they are no longer products and have no recycling potential.**

In rare instances, unused munition items held in stockpile may become deteriorated or damaged to a point where the item manager determines that it has no future value (this determination must be coordinated through the appropriate DDA). When an item, held in stockpile, reaches such a condition, it becomes a regulatory solid waste and must be managed as such.

**4. Declared a waste by the DDA or Authorized Military Official (AMO).**

DDAs and/or the AMO have the authority to declare unused military munitions as waste. This is generally accomplished through the issuance of a Notice of Ammunition Reclassification (NAR), AIN, Technical Order (TO), or other similar document that provides a description of the item, its regulatory status as a waste, and instructions for disposition.

DoD generates little in the way of unused WMM because it is typically managed through the DDA process. This process minimizes the generation of WMM at the installation level, maximizes DoD's resource recovery and recycling (R3) capabilities, and ensures a uniform DoD approach that is consistent with the requirements of the MR.

**3.1.2 Munitions Used for their Intended Purpose**

**KEY ISSUE #2: Should RCRA hazardous waste management standards apply to the use of munitions in weapons testing or military training exercises?**

Under RCRA, the use of products for their intended purpose does not constitute waste management and is not subject to regulation, even when the products are inherently hazardous and are directly applied to environmental media. Analogies may be drawn to dynamite placed on or under the soil surface during road construction or pesticide applied to crops.

**Training**

The MR makes it clear that the conduct of military training, including training of EOD personnel to conduct combat destruction and training to destruct excess propellant bags, is considered proper and intended use of military munitions.

**Test and Evaluation**

Similarly, the testing of munitions or use of munitions to test weapons systems clearly falls within the definition of use of a product for its intended purpose. EPA also recognizes the removal of a used or fire munition from a testing or training

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range for further testing and evaluation as an extension of the test and not a waste management activity. The munitions items or components become waste when they are discarded.

### **Range Clearance**

EPA additionally recognizes that range clearance is an intrinsic part of training or testing and that range management is a necessary part of the safe use of munitions. Therefore, range clearance operations conducted within the boundaries of active and inactive ranges are not waste management activities and not subject to RCRA regulation. In regard to the destruction of unexploded ordnance (UXO) as a part of range clearance, EPA's position is that it makes no difference from an environmental perspective whether the ordnance exploded on impact or was detonated by an EOD specialist and recognizes on-range UXO destruction as part of range clearance activities as use for intended purpose.

### **Records**

During the public comment period prior to final promulgation of the MR, EPA received many comments regarding the potential for the military to take advantage of MR allowances to conduct waste management activities under the guise of training (sham training). The primary tools available to regulating agencies assessing RCRA compliance are facility and record inspections. Military activities can, therefore, anticipate that regulating agencies may turn to training

manuals, training schedules, and munitions forecasts to assess the validity of training requirements and ensure against sham training. Test plans may be inspected to determine whether munitions disposition is thoroughly addressed. Accurate ASP records of munitions issues, turn-in, reconciliation (e.g., DA Form 581, 5811-R), and ACRs are invaluable in demonstrating MR compliance.

### **3.1.3 Used or Fired Munitions**

#### **KEY ISSUE #3: In what way (if any) do RCRA requirements apply to used or fired munitions on and off military ranges?**

As explained above, munitions used for their intended purpose are products not subject to RCRA regulation. Used or fired munitions are solid waste when they meet the definition of discarded material.

The MR identifies three circumstances under which used/fired military munition become WMM, specifically when:

- Transported off-range;
- Recovered, collected, and then disposed of by burial or landfill; and
- Fired and lands off-range and not promptly rendered safe and/or retrieved.

In general, when a munition item is fired from a weapon or weapons system, a component of the munition may fall or remain at the point of fire (e.g., small arms cartridge casing) and a secondary

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component (e.g., projectile) lands downrange. Used/fired military munitions components are systematically policed and removed from the various firing points to ensure supply chain accountability. Military munitions components landing downrange may remain indefinitely within an impact area or may be removed as part of a range clearance operation.

### **Transported Off-Range**

EPA has determined that an intent to discard is demonstrated when used munitions components are removed from the boundaries of an active or inactive range [or the site of use, when the site of use is not a range (e.g., a testing facility)] for the purpose of reclamation, treatment, disposal, or storage prior to reclamation, treatment, or disposal.

Used munitions transported off-range to be repaired or reused or to undergo evaluation (e.g., malfunction or misfire investigations or further testing off the range) are not solid waste, but may become waste after the required evaluation is complete and the owner demonstrates an intent to discard.

### **Buried/Landfilled**

Burial or landfilling of used/fired munitions demonstrates a clear intent to discard and is permissible only when done in full compliance with DoD regulations and applicable federal, state, or local environmental regulations.

### **Fired Off-Range**

Military munitions fired off-range and not promptly rendered safe (if necessary) and retrieved are solid waste because firing off-range is not considered to be intended use of the product, and failure to recover is evidence of an intent to discard. If the munition is deeply buried or cannot be located, the operator of the installation is required to maintain a record of the event as long as the threat remains. At a minimum, the record must include:

- The date the munition was fired off-range or the date the installation or responsible activity commander became aware that a munition was fired off-range;
- The type and quantity of munitions fired off-range;
- The location of the munition (if the exact location is unknown, the area where the munitions are believed to be located);
- The date and nature of the response actions taken; and
- The nature of any remaining threat, including an estimate of how long that threat will remain.

DoD generates vast quantities of fired WMM in the form of dummy bombs, cartridge casings, munitions fragments, and a variety of munitions components to include clips, bands, spoons, etc. Although used or fired WMM requires initial special handling to ensure that inert certification and demil requirements are met (refer to Section 2.3.5), once accomplished, these WMM must be

managed in accordance with applicable federal, state, and local solid and/or hazardous waste regulations. Since most WMM are metallic, recycling is encouraged to the extent practicable. Generators are encouraged to take advantage of scrap metal recycling exclusions and exemptions to avoid the bulk of RCRA regulations as discussed in Section 2.3.1.3.

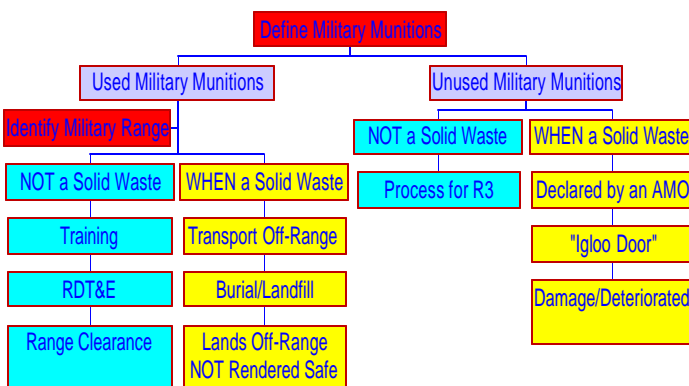
To provide centralized data, the AEC has performed characterization on common DA range residue items generated at the firing point and within the maneuver areas. Waste profile notices generated from range residues may be obtained through the AEC web site as discussed in Section 2.2.

### 3.3 Emergency Responses

#### KEY ISSUE #4: How does RCRA address emergencies involving explosive materials, including military munitions?

The MR clarifies EPA's long standing policy exempting emergency response specialists from RCRA generator, transporter, and permit requirements during the conduct of an immediate response. These are situations where military munitions that are not properly secured or under DoD control potentially threaten human health, the environment or property. In those situations that do not require an "immediate response" but pose an "imminent and substantial endangerment" the regulating agency may issue an emergency permit. EOD or TEU personnel must determine whether the response action can be delayed without compromising safety or increasing risk long enough to obtain an emergency permit. DoD has designated an immediate response - Level 1 and emergency response actions that can be delayed - Level 2. Emergency permits may be issued orally, but are followed by a written permit within 5 days and do not exceed 90 days in duration.

#### In Summary....



### 3.2 Military Munitions as Hazardous Waste

As previously mentioned, the MR made no changes to the standard RCRA hazardous waste determination as it applies to military munitions. Once a military munitions item or component is designated as a solid waste, the generator is subject to the requirements of RCRA and is required to conduct a hazardous waste determination per 40 CFR 261 (refer to Section 2.3.1.4).

Generators may rely on their own knowledge or experience to make the determination, utilize published or documented data, or as a last resort, turn to laboratory testing.

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The intent of the MR's emergency response provisions is to alleviate regulatory concerns that may impede emergency responses. The rule stresses that the emergency response expert has both the authority and responsibility for determining whether an emergency exists.

More specifically, emergency response specialists responding to an explosives or munitions emergency that poses an immediate threat to human health, public safety, property, or the environment are not required to comply with:

- Standards Applicable to Generators of Hazardous Waste (40 CFR 262);
- Standards Applicable to Transporters of Hazardous Waste (40 CFR 263); or
- Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (40 CFR 264).

These exemptions allow EOD personnel to transport items posing an immediate threat to a safer location (e.g., an open space or EOD range) without a RCRA manifest or ID number and allows the use of a specific site, even on a repeat basis, without a RCRA permit.

Once the emergency response is ended, contamination of environmental media, resulting from the response, may require to be addressed by the appropriate environmental support activity, owner, or operator of the property.



*The Need for a RCRA Permit Hinges on the Nature of the Response (Emergency vs. Routine) Rather Than on the Number of Times a Site is Used*

### **3.4 WMM Storage and Transportation**

**KEY ISSUE #5: What storage and transportation standards are needed to ensure protection of human health and the environment for hazardous waste munitions?**

In developing standards for storage and transportation of hazardous WMM, EPA recognized that existing military standards and practices for munitions generally provide protection that is comparable to or better than what RCRA regulations would provide.

The storage of military munitions is regulated under standards overseen by the DDESB, an organization independent of the Services within DoD. Upon review of the DDESB standards, EPA concluded that the technical design and operating standards meet or exceed RCRA standards in virtually all respects. EPA additionally recognized that the military

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transportation safety record is good. Therefore, EPA created exemptions from RCRA hazardous waste requirements for hazardous WMM stored and transported in accordance with existing DoD standards and requirements and as long as certain specified conditions are met.

**NOTE: As noted in Section 2.3.1.6, the CEs for storage and transportation of WMM are the "less stringent" aspects of the rule and are, therefore, not applicable in states that have either not adopted the rule or chosen not to adopt these specific aspects of the rule.**

Because typical RCRA regulations do not address unique ammunition and explosives (A&E) safety concerns, EPA endorsed DoD 6055.9-STD, DoD Explosives Safety Standards, for the storage of A&E. All military munitions (whether WMM or not) must be stored per DoD 6055.9-STD.

The MR offers two new options for the storage of hazardous WMM, a CE from certain RCRA requirements for conventional WMM stored under the jurisdiction of DDESB and a new RCRA unit standard (40 CFR 264-265, Subpart EE, Hazardous Waste Munitions and Explosives Storage).

Therefore, the storage options available for hazardous WMM include:

- 90-day storage (180 for SOGs);
- Permitted storage (in compliance with all applicable provisions in 40 CFR 264-265, Subparts A-H, and one of the following specific unit standards:

- Subpart EE – Hazardous Waste Munitions and Explosive Storage;
- Subpart DD – Containment Buildings;
- Subpart I – Management of Waste in Containers; or comparable regulations adopted by authorized states; or
- CE storage (in those states that have adopted the CE provision).

Although installations have flexibility in the use of CE for storage and transportation of WMM, DoD policy requires CE be used if available and applicable to a particular situation. If an installation does not use CE, it must comply with RCRA storage/transporter requirements.

Failure to comply with any of the CE conditions will result in the immediate loss of CE. The loss of CE will subject the hazardous WMM to RCRA hazardous waste regulation and could result in an enforcement action.

When CE is lost for any hazardous WMM, the installation may, after meeting all requirements for CE, apply to the appropriate federal or state environmental regulatory authority for reinstatement.

### **3.4.1 Conditional Exemption for Storage**

WMM may be stored under CE only when proper administrative, reporting, design, and operational requirements are met. CE storage (i.e., the igloo, not necessarily the entire storage area) is not available for chemical agents or munitions, and the storage site designated to store CE

WMM must be free of waivers issued by the DDESB.

Chapter 14 of DoD 6055.9-STD explains the DDESB standards for the special storage procedures for WMM and are reflected in the CE requirements outlined in MRI P Chapter 7.

### 3.4.2 Conditional Exemption for Transportation

The CE for the transportation of hazardous WMM may only be used for shipments of WMM in states that have adopted the CE. DoD policy is that WMM will only be shipped under CE when all states along a planned shipment route have adopted the CE. Although installations have flexibility in the use of CE for transportation of WMM, DoD policy requires CE be used if available and applicable to a particular transportation requirement. Should an installation elect not to use CE, it must comply with RCRA transporter requirements to include use of a hazardous waste manifest.

The CE is applicable to WMM that would normally be considered hazardous waste and subject to RCRA, when all of the following are met:

- The WMM are not chemical agents/munitions.
- The WMM must be transported from a military owned or operated installation or activity to a military owned or operated TSDF (to include CE storage). Shipments to a commercial facility are not eligible for CE.
- The WMM are transported per the DoD and DOT shipping controls applicable to the transport of military munitions.
- The transporter provides the appropriate federal or state environmental regulatory authority:
  - An oral notice, within 24 hours from the time the transporter becomes aware of either any loss or theft of the WMM or any failure to meet one of the above conditions that may endanger health or the environment.
  - A written submission, within 5 days from the time the transporter becomes aware of any such incident that describes the circumstances of loss or theft of the WMM or failure to meet one of the above conditions.

#### *The Necessary DoD and DOT Shipping Documents for CE for WMM*

Title	DD Form No.	Comment
Signature and Tally Record	1907	
Motor Vehicle Inspection Report (Transporting Hazardous Materials)	626	
Government Bill of Lading		The MR incorrectly cites this form as GSA Standard Form 1109. DoD and DOT only require this form for shipments by commercial transport.
Shipping Paper and Emergency Response Information for Hazardous Materials Transported by Government Vehicles	836	The MR incorrectly cites this form as "Special Instructions for Motor Vehicle Drivers." DoD and DOT require this form for shipments by military transport.
DoD Single Line Item Release/Receipt Document	1348-1A	The MR inadvertently omitted this form from the list of DoD and DOT shipping controls. DoD and DOT require this form for shipments by military transport.
Requisition Tracking Form	1348	Although this Form is not a DoD shipping control applicable to the transport of military munitions, the MR cited it as such. DoD has requested technical amendments to the MR to correct these errors in the list of shipping controls.



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The CE applies to WMM transported by

- Military personnel and
- Commercial carriers who have:
  - Signed a contractual agreement with the Military Traffic Management Command and
  - Operate under the DoD and DOT system of shipping controls.

If the intended recipient does not receive the WMM shipped under CE within 45 days of the day it was shipped, the owner or operator of the receiving facility must report this to EPA or the appropriate state agency within 5 days (i.e., 50 days from the shipment date).

# 4.0 LESSONS LEARNED

The lessons learned described herein are based on observations made by team members at the various installation activities visited during the SAVs. The issues are organized to follow the flow of military munitions from issue through ultimate disposal, and relate to the requirements and procedures detailed in previous sections. Recommendations are intended to improve compliance and consistency throughout the DA.

## Typical Activities Visited and Related Areas of Interest

Activity	Areas of Interest
Ammunition Supply Point (ASP)	Ammunition turn -in and reconciliation DDA process Applicable forms and procedures Ammunition storage Amnesty program Range residue collection procedures
Explosive Ordnance Disposal (EOD)	Emergency response procedures History of events Emergency permitting OB/OD treatment operations EOD range clearance and incident documentation Personnel training and record documentation Inert certification
Environmental Office	Compliance deficiencies related to munitions Incidents of munitions found on-post and off -post Buried munitions Identification of active and inactive ranges OB/OD permitting status and compliance issues Hazardous WMM management
Residue Yard	Residue collection and segregation Contractor-operated operations Tracking mechanisms (Forms) Waste streams collected Inert certification Container management Security Demilitarization procedures Ultimate disposal Regulatory framework applied to scrap metal recycling Hazardous waste determinations
WMM Storage Facility	Satellite Accumulation Points (90 day) Permitted and/or conditionally exempt storage areas
Range Control and Ranges	Munitions expenditures tracking mechanisms and procedures On -range scrap piles and scrap pile management Range clearance procedures UXO incidents Incidents of rounds fire off -range
Qualified Recycling Program (QRP)	QRP policies WMM waste streams recycled Distribution of proceeds Small arms ammunition brass deformers
Defense Reutilization and Marketing Yard	DRMO policies and procedures Distribution of proceeds WMM sales and service

## 4.1 Issues Related to Unused Munitions

### 4.1.1 Discarded Munitions

The ASP issues military munitions to units and personnel scheduled to train on military ranges. Units forecast their munitions needs based on military specialty training requirements. Unused munitions and fired munitions residues are required to be returned to the issuing ASP - a closed loop and accountable supply chain. The process of munitions issue and turn-in is controlled through the use of numerous forms as discussed in Section 2.3.8. Nonetheless, instances where unused military munitions are removed from the range and subsequently abandoned or disposed of are common, particularly on large training installations. Numerous instances of Ammunition Found On Post (AFOP) were reported to SAV team members. The team identified that some installations were unaware of the



**Live Ammunition in a Solid Waste Landfill**



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prohibition against discarding unexpended munitions in permitted solid waste landfills. Such actions present potential environmental compliance problems for the installation.

Unused munitions and fired munitions residues that are discarded or abandoned become a waste at the time of abandonment. Failure to return unused ammunition and hazardous ammunition residue to the ASP is not only a violation of Army regulation, but when improperly disposed of (e.g., in dumpsters), is a violation of RCRA and could result in enforcement actions.



***Command  
Emphasis is  
Essential!***

Command emphasis is essential to ensure that troops comply with established munitions issue and turn-in procedures as described in Section 2.3.8. Installations, particularly those that host large numbers of off-site troops, must stress munitions turn-in procedures and potential liabilities associated with noncompliance during pre-training briefs and throughout range training operations.

To this end, installations and military commanders should enforce and reinforce:

- Proper certifications using DA Form 581 and 5811-R,
- Field safety inspections (shake down) of personnel,
- Thorough policing of firing points and segregation of live and expended ammunition, and
- Proper use and availability of amnesty.

#### **4.1.2 Amnesty Program**

An effective amnesty program reduces potential safety hazards and illegal munitions disposal (refer to Section 2.3.8). Unused munitions obtained through amnesty are not discarded and not a waste. Unused military munitions received through amnesty are managed through the DDA process and are most often returned to the stockpile. Unfortunately, as observed at a number of installations, amnesty boxes introduce the potential for receipt of WMM and non-military munitions.

WMM removed from the range must be managed in accordance with the MR. Installation options for managing non-military munitions obtained through amnesty include the following:

- Non-military munitions acquired via amnesty should always be managed per DA PAM 385-64, Ammunition and Explosives Safety Standards.
- Where serviceable non-military munitions are similar to standard issue

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military munitions, items may generally be incorporated into the military supply chain utilizing the DDA process.

- Where appropriate, non-military munitions may be transferred to local law enforcement agencies for their use.
- Non-military munitions that are waste (i.e., damaged or deteriorated) must be managed in accordance with federal, state, and local regulations, including RCRA, and disposed of through the DRMO per DoD 4160.21-M. Non-military munitions are not eligible for management under the MR (unless acquired for use by DoD for national defense or security).



*One Installation Limits Unwanted Items by Limiting the Amnesty Box Opening*

#### **4.1.3 Designated Disposition Authority Process**

The DDA process, described in Section 2.3.2, is key to the Army's military munitions management program. This program allows DoD to manage munitions at a macro-level and reduces the military munitions waste stream (and associated costs) by maximizing exclusions and exemptions for recyclable materials. The

program, however, remains open to the scrutiny of the EPA and states regulatory programs. Regulating agencies inspecting MR compliance at the installation level will look to accurate and detailed ASP records demonstrating effective use of the DDA process to identify and manage WMM.

Unused munitions that are unserviceable or cannot be used for their intended purpose, and used munitions that have malfunctioned or misfired, are not waste unless and until so designated by the DDA. These items are reported to the DDA on an ACR, stored in accordance with DDESB while awaiting disposition and, in most cases, are shipped off-site per DDA instructions for further evaluation or R3. During the SAVs, instances of delayed completion of ACRs, ranging from months to years, were noted.



*Munitions Items May Deteriorate Over Time at the ASP*

Failure to complete ACRs (requesting waste designation and disposition) in a

timely manner may be viewed by regulators as taking advantage of the leniency allowed by the MR and threatens the entire program.

AMMUNITION CONDITION REPORT				REQUIREMENT CONTROL SYMBOL	
For use of this form, see DA PAM 738.785; the proponent agency is DCISLOG				CSGLD-1702	
1. THRU: (Include ZIP Code)		2. DATE OF REPORT		3. PAGE ____ OF ____ PAGES	
4. TO: (Include ZIP Code)		5. UNIT IDENTIFICATION CODE			
6. FROM: (Include ZIP Code)		7. COMMODITY <input type="checkbox"/> CHEM <input type="checkbox"/> GM <input type="checkbox"/> CONV			
8. NOMEN - MODEL ITEM REPORTED	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT	
9. NOMEN - MODEL EQUIP INSTALLED/USED ON	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT	
10. QTY INSPECTED	11. QUANTITY DEFECTIVE	12. PRESENT COND CODE		13. ECON REPAIRABLE <input type="checkbox"/> YES <input type="checkbox"/> NO	
14. USE <input type="checkbox"/> WR <input type="checkbox"/> TNG		15. ESTIMATED REPAIR/MAINT/DISPOSAL UNIT COST DIRECT LABOR \$      GAE \$      OTHER \$			

Delays in the issuance of disposition instructions by the DDA were also noted. Such delays may jeopardize the regulatory status of the item. That is, extended storage of an otherwise unusable item could be interpreted as abandonment or discard and result in enforcement action.

Installations must ensure that the DDA process is implemented in a manner that fulfills the intent of the MR.

- ASPs should develop and implement SOPs detailing the requirements of the DDA process, including timelines for the completion of ACRs.
- ASPs must maintain and retain accurate and complete records.
- Records should be included in routine internal Quality Assurance inspections.
- ASPs must store military munitions that have had ACRs completed and

are awaiting disposition instruction in accordance with DDESB storage standards.

#### 4.1.4 Condition Code V

Should the DDA declare an item as waste, the item will be assigned the newly approved CC-V.

SAV team members fielded numerous questions regarding CC-V. The Army Materiel Command/OSC approved the use of CC-V on 1 May 2001. AIN 41-01 specifies the use of the code as follows: WMM will be assigned CC-V only under the authority of a designated DoD or Service DDA. The waste munitions must meet criteria of waste munitions under the MRI P, be safe to store and ship based on DDESB and DOT criteria, and have a current serviceability inspection.

Hazardous WMM must be stored, transported, treated, and disposed of in accordance with RCRA:

- Storage options offered under RCRA are discussed in Section 3.4. RCRA storage timelines apply unless the wastes are stored in a CE storage facility.
- On-site transportation of hazardous WMM is not regulated, but off-site transportation is (refer to Sections 2.3.1.5 and 3.4.2).
- Treatment and disposal of hazardous WMM is a RCRA regulated activity requiring a RCRA permit (refer to Section 2.3.1.5).

311806Z MAY 01  
FROM CDR MAC ROCK ISL IL //SOSMA-SNS//  
UNCLAS 740(A)  
SUBJECT: AMMUNITION INFORMATION NOTICE (AIN) 41-01, CONDITION CODE V  
(VICTOR)

- A. DOD MUNITIONS RULE IMPLEMENTATION POLICY (MRIP) FOR EPA MUNITIONS RULE, 1 JULY 1998.
- B. AMCAM-LG MEMO, SUBJ: SUPPLY CONDITION CODE FOR UNSERVICEABLE (WASTE MILITARY MUNITIONS), 14 MAY 99.
1. AIN 40-01 WAS TRANSMITTED ON 311414Z MAY 01.
  2. REFER TO REF A (GLOSSARY) FOR TERMS/DEFINITIONS/ACROYNMYS.
  3. THIS AIN HAS APPLICATION TO MUNITIONS IN DOD CUSTODY IN THE CONUS, HAWAII AND ALASKA, US TERRITORIES OR POSSESSIONS. (INCLUDES GUAM, PUERTO RICO AND VIRGIN ISLES.)
  4. THE DEFENSE MANAGEMENT STANDARDS OFFICE OF THE DEFENSE LOGISTICS AGENCY HAS APPROVED A SUPPLY CONDITION CODE FOR USE IN IDENTIFYING WASTE, MILITARY MUNITIONS (WMM). SUPPLY CONDITION CODE V (VICTOR) HAS BEEN ASSIGNED.
  5. EFFECTIVE THE DATE OF THIS MSG, BASED ON REF B, WMM WILL BE ASSIGNED CC-V PER MRIP. DUE TO THE SENSITIVITY AND DIFFICULTY IN REVERSING WMM DESIGNATIONS, ASSIGNMENT WILL ONLY OCCUR UNDER THE COORDINATED AUTHORITY OF A DESIGNATED DOD OR SERVICE DESIGNATED DISPOSITION AUTHORITY (DDA). PRIOR TO THE CUSTODIAL CC-V REQUEST, THE WMM MUST MEET CRITERIA OF WMM UNDER THE DOD MILITARY MUNITIONS RULE IMPLEMENTATION POLICY AND MUST HAVE A CURRENT INSPECTION.
  6. MUNITIONS CC-V WILL BE ASSIGNED ON A CASE-BY-CASE BASIS AS DIRECTED BY THE DOD/OR APPLICABLE ARMY DDA. QASAS PERSONNEL ARE NOT AUTHORIZED TO UNILATERALLY ASSIGN CC-V TO MUNITIONS NOR TO REVERSE CC-V. ONCE MUNITION IS ASSIGNED CC-V IT WILL BE CONSIDERED A WMM AS DEFINED BY THE MILITARY MUNITIONS RULE. CHANGE FROM CC-V TO OTHER CC WILL BE DIRECTED BY APPROPRIATE DDA BASED ON REQUESTS DESCRIBED ABOVE. MUNITIONS RECEIVED AS CC-V WILL NOT BE ASSIGNED CC-K OR A SIMILAR CC TO INDICATE BACKLOG. CC-V WILL BE RETAINED. MUNITIONS CC-V CONDITION CODE CHANGE REQUESTS WILL BE MADE ON DA FORM 2415, AMMUNITION CONDITION REPORT (ACR) AND FORWARDED TO THE APPROPRIATE DDA IDENTIFIED BELOW.
  7. UXO OR MISFIRED AMMUNITION WILL NOT BE REPORTED FOR DISPOSITION VIA ACR. USED AMMUNITION WILL BE ADDRESSED AS PART OF NORMAL RANGE MAINTENANCE. QUESTIONS FOR DISPOSITION OF RANGE RESIDUE SHOULD BE DIRECTED TO YOUR HHQ. DOD DDA POSITION IS THAT CRIMINAL/NEGLECTFUL ACTS ARE NOT REFLECTIVE OF THE SERVICE DISPOSAL POLICY AND MUNITIONS WILL NOT BE ASSIGNED CC-V DIRECTLY AS A RESULT OF THESE TYPES OF ACTIONS. WMM DESIGNATION, IF APPROPRIATE, WILL BE DDA DIRECTED AFTER INVESTIGATION IS COMPLETE.
  8. FOR PURPOSES OF CLARIFICATION OF PARA 7 - THE FOLLOWING COMMENTS APPLY:
    - A. BURIAL AND THEFT: BURIAL OR THEFT OF MUNITIONS IS NOT AN AUTHORIZED ACT AND WHEN FOUND TO OCCUR, AN IMMEDIATE INVESTIGATION IAW AR 15-6 IS WARRANTED SINCE NEGLIGENCE AND POSSIBLE CRIMINAL PENALTIES APPLY.
    - B. FOR MUNITIONS RECOVERED AFTER BEING ABANDONED, BURIED OR STOLEN AS A RESULT OF NEGLIGENT ACTS. IF THE INCIDENT RESULTED FOLLOWING ISSUE BY DA 581 TO AN ASSIGNED DURING NORMAL COURSE OF TRAINING OR OPERATIONS WHERE A MUNITION IS ABANDONED, BURIED OR STOLEN, MUNITIONS ITEMS WILL BE INSPECTED BY EOD/QASAS TO DETERMINE IF THE ITEM CAN BE REUSED AS DESIGNED/INTENDED OR RECOVERED.
    - C. IF REUSE/RECOVERY IS NOT FEASIBLE, AND THE ITEM IS UNUSED/UNDAMAGED AND CONSIDERED SAFE TO STORE/TRANSPORT, SUBMIT ACR FOR DISPOSITION.
    - D. IF UNSAFE OR IF PHYSICAL DAMAGE OR TAMPERING IS INDICATED, APPLY A LEVEL 1 OR 2 EMERGENCY RESPONSE AND CC-V WILL BE APPLIED BY CUSTODIAN AS PART OF FINAL RECORD.
  9. THE DATE OF THE APPROVAL DIRECTIVE (E.G. ACR RESPONSE FROM DDA) IS THE DATE OF GENERATION OF THE WMM AND UNLESS EXEMPTED BY USE OF CONDITIONAL EXEMPTION FOR STORAGE OR TRANSPORT, ALL RCRA PROVISIONS APPLY.
  10. DEPOTS/PLANT OPERATIONS - PRODUCTION PLANNERS PERFORMING MAINTENANCE/DEMIL/MODIFICATION/RETROFIT AND REIMBURSIBLE MUNITIONS OPERATIONS SHALL ASSURE THAT SOPS REFLECT DISPOSITION OF COMPONENTS SHOWING APPROPRIATE MRIP COMPLIANCE.

## AIN 41-01, Condition Code V

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#### 4.1.5 EOD Support

With the exception of a valid Level 1 emergency, military munitions that have been designated as hazardous waste must not be destroyed by EOD without a permit. These items must be disposed of in a permitted treatment facility or, in limited circumstances, may be destroyed under an emergency permit coordinated with the regulating agency. During the SAVs, it was noted that some installation activities did not have a clear understanding of EOD's authority under the MR.

For example: EOD provides crucial support to munitions test activities by ensuring that munitions components are safe to handle by test personnel and that test sites are safe to enter. During the conduct of the test, EOD may be required to inert or destroy munitions or their components to ensure explosives safety. In accordance with the MR, munitions test activities are considered "use for intended purpose" (refer to Section 3.1.2) and proper EOD actions associated with the test are not regulated activities. However, when the test is complete and military munitions or their components can no longer be used or reused, they become waste and must be managed and disposed of accordingly.

In general, EOD personnel were observed to be extremely knowledgeable of their obligations under MR. Nonetheless, in order to ensure EOD does not conduct unauthorized waste treatment, installations should:

- Prepare detailed test plans that incorporate WMM management and disposal requirements and outline EOD support requirements,
- Prepare EOD SOPs incorporating MR requirements, and
- Provide MR training to all personnel managing WMM.

#### 4.1.6 Use of Unserviceable Ammunition for Emergency Destruction and Combat Disposal

As described in Section 3.1.1, unserviceable ammunition is not a solid waste and therefore may be issued for use in training. Though no examples of improper use of unserviceable ammunition were noted during the SAVs, the ODCSLOG guidance on the following page is provided due to the number of questions raised regarding the subject during training.

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SUBJECT: USE OF UNSERVICEABLE AMMUNITION FOR EMERGENCY DESTRUCTION AND COMBAT DISPOSAL TRAINING

1. MESSAGE PROVIDES DA GUIDANCE ON THE USE OF UNSERVICABLE AMMUNITION FOR EMERGENCY DESTRUCTION AND COMBAT DISPOSAL TRAINING. REQUEST ADDRESSEES DISTRIBUTE THIS MESSAGE TO ALL INSTALLATION TRAINING, AMMUNITION LOGISTICS, AND ENVIRONEMENTAL PERSONNEL.

2. CERTAIN MILITARY UNITS (E.G., EOD AND AMMUNITION UNITS) MUST MAINTAIN PROFICIENCY, KNOWLEDGE, AND SKILLS IN THE DESTRUCTION OF AMMUNITION AND EXPLOSIVES AS PART OF THEIR MILITARY MISSION.

(A) IT IS ACCEPTABLE FOR SUCH UNITS TO USE UNSERVICEABLE MUNITIONS IN TRAINING REQUIRED TO MAINTAIN THEIR PROFICIENCY. AUTHORIZATIN, FROM THE OPERATIONS SUPPORT COMMAND, FOR THE USE OF SUCH AMMUNITION IS NOT REQUIRED.

(B) UNSERVICEABLE MUNITIONS USED IN TRAINING:

(1) MUST BE DETERMINED SAFE FOR TRANSPORT AND HANDLING BY LOCAL QASAS AND MAY NOT BE SUSPENDED FROM ISSUE, USE, OR MOVEMENT.

(2) MUST BE SUPPORTED BY A DOCUMENTED TRAINING

REQUIREMENT. (AS AN EXAMPLE: AN EOD UNIT HAS A REQUIREMENT TO TRAIN THREE PERSONNEL IN PROCEDURES FOR DESTRUCTION OF 155MM ROUNDS. THE ASP HAS A 40 UNSERVICEABLE ROUNDS AND THE TRAINING PLAN IS FOR EACH SOLDIER TO PREPARE, PRIME, AND DETONATE 2 ROUNDS EACH. IN THIS TRAINING SCENARIO, ONLY 6 ROUNDS ARE AUTHORIZED FOR ISSUE.)

(C) THE USE AND DESTRUCTION OF UNSERVICEABLE MUNITIONS AS PART OF A LEGITIMATE TRAINING SCENARIO DOES NOT VIOLATE THE MILITARY MUNITIONS RULE. HOWEVER, ALL SUCH TRAINING MUST BE FORECASTED. UNSERVICEABLE MUNITIONS OF THE TYPE FORECASTED, OR SUITABLE SUBSTITUTES, SHOULD BE SUBSTITUTED FOR SERVICEABLE MUNITIONS, WHEN AVAILABLE. ALL TRAINING REQUIREMENTS WILL BE DOCUMENTED AND THE RECORDS RETAINED FOR 3 YEARS.

3. AT NO TIME, WILL TRAINING BE 'TAILORED' TO FIT WHAT IS AVAILABLE IN THE UNSERVICEABLE ACCOUNT. THIS COULD BE CONSIDERED AS 'SHAM' TRAINING AND BECOME SUBJECT TO ACTION UNDER THE MUNITIONS RULE. (RECOMMENDED THAT COORDINATION BETWEEN LEGAL, ENVIRONMENTAL, AND LOGISTICAL ELEMENTS OCCUR PRIOR TO ANY TRAINING THAT INVOLVES USE OF UNSERVICEABLE AMMUNITION.)

### ODCSLOG Memo Regarding Use of Unserviceable Ammunition



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## 4.2 Issues Related to Used or Fired Munitions

### 4.2.1 Range Clearance

The MR recognizes the recovery, collection, and on-range destruction of UXO and munitions fragments in support of range sustainability as a necessary extension of the "use for intended purpose" (refer to Section 3.1.2). Section 2.3.1.1 addresses state authority and the concept that some aspects of the MR, including those regarding range clearance, are simply clarifications of EPA policy. States may interpret these differently than EPA.

For example, in one state, EOD is required to obtain an emergency permit prior to conducting any on-range UXO destruction, clearly counter to EPA's view of range clearance.

States may take similar contrary views in regard to accumulation of range residue. Though the MRI P authorizes on-range collection of WMM, prolonged

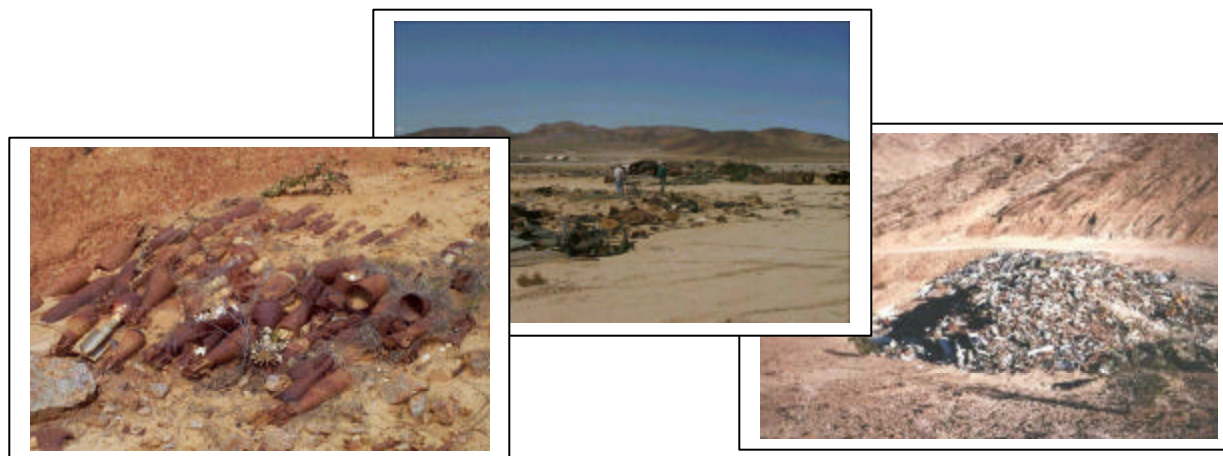


*On-Range Destruction*



accumulation of range residue on military ranges could be construed as abandonment or an intent to discard and result in enforcement action.

SAV team members observed both controlled and uncontrolled accumulation of range residues. Controlled accumulation generally occurred within the confines of a residue yard or compound. Uncontrolled accumulation occurred throughout military ranges, often beginning as "temporary" storage



*Range Clearance Operations Conducted Without Proper Planning Have Resulted in Vast Piles of Range Residue on Military Ranges*

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or small and inconspicuous piles that, at times, grew to larger piles.

Such uncontrolled accumulation introduces the potential for commingling of other wastes with the military munitions waste stream. On-range collection authorized by the MRI P does not extend to other waste streams. Accumulation of non-military munitions solid wastes can result in the generation of solid waste management units and associated regulatory action. The introduction of hazardous wastes could result in even greater penalties.

Range managers planning range clearance operations involving the collection and accumulation of range residue must coordinate the actions with appropriate activities (e.g., environmental and logistics) and identify disposal mechanisms prior to initiating the operations.



*Uncontrolled Accumulation Results in Commingling of WMM and Other Waste Streams*

#### 4.2.2 Range Residue Management

Range residues have historically been buried or accumulated in remote locations

on ranges. However, regulatory drivers, environmental concerns, and range sustainment issues have provided an impetus to recycle and/or dispose of range residues. DoDD 4715.11 specifically requires that DoD components establish safe and practical methods for recycling or disposing of range residues in accordance with DoD Manual 4160.21-M.

During the SAVs, residue yard management procedures and facilities were observed to range from poor to excellent. The following are examples of both good and bad practices observed and comments regarding the requirements for each.

**Good:** Proper waste segregation of hazardous, Toxic Substances Control Act (TSCA), solid, and recyclable waste streams.

**Bad:** Little or no waste stream segregation.

Waste segregation at the point of generation demonstrates an intent to comply with waste-specific management requirements.

**Good:** Proper segregation and collection of hazardous waste streams.



**Bad:** Mismanagement of hazardous waste streams.



Range scrap may include a variety of regulatory waste streams, to include hazardous wastes that are not recyclable (M5 HC Smoke Pot, smoke grenades, batteries), TSCA waste [polychlorinated biphenyls (PCBs), asbestos], hazardous and non-hazardous wastes that are recyclable (munitions casings, clips), solid wastes (wooden boxes, cardboard), and others. Each waste stream must be managed in accordance with federal, state, and local regulatory requirements. Refer to Sections 2.3.1 and 2.3.6.

**Good:** Certification properly performed in accordance with MACOM procedures (i.e., 100% in field, 100% at ASP, and verification sampling by Quality Assurance Specialist, Ammunition Surveillance (QASAS), or other designated personnel).



*A second 100% inspection is conducted at the ASP by unit personnel under supervision by ASP.*

**Bad:** Installations lacking inert certification procedures and personnel to perform it.

Range residue may pose an explosives safety hazard and must be thoroughly inspected by technically qualified personnel. Most MACOMs require dual 100% inspections followed by a verification sampling. The accomplishment of such inert certification must be certified and verified in accordance with DLA requirements. Refer to Sections 2.3.5 and 4.2.2.1.

**Good:** Secured compounds...outside



.....or inside.



**Bad:** Minimal security, if any.



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Once certified, the range residue must be properly secured in order to retain the integrity of the certification. Security is required to mitigate the potential for UXO to become co-mingled with range residue that has already been certified.

**Good:** Demilitarization conducted in accordance with DoD requirements.

**Bad:** No demilitarization procedures in place.

Demilitarization is required for range residues as discussed in Sections 2.3.5 and 4.2.2.2.

**Good:** Contracts in place that address all pertinent issues, including inert certification, demilitarization, trade security, recycling proceeds, and hazardous waste management.

**Bad:** Contracts do not incorporate requirements for compliance.

Contracts to be established for range residue removal must be reviewed and approved by knowledgeable staff, to include legal, environmental, and DRMO.

**Good:** Range residues accumulated in containers with covers.



or in a covered facility.



**Bad:** Accumulation of range residues on the soil surface.



Designation of a range residue item for recycling does not release the operator from their requirement to manage the item responsibly. Recyclable range residues may potentially contain toxic or hazardous constituents that could adversely impact human health and the environment when mismanaged (e.g., the over-accumulation of residue items on the ground surface exposed to the elements, which could potentially lead to release of hazardous constituents). BMPs, such as covered storage, containers, etc., are encouraged to demonstrate good stewardship and legitimize the recycling activities.

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#### 4.2.2.1 Inert Certification

The primary hurdle to moving range residue off ranges and out of residue yards, identified to the SAV team members, is lack of personnel who will perform inert certification. Although Army EOD units will perform inspections and responses on an emergency basis, they will not routinely certify residue and sign inert certifications. Where certifications were being accomplished, these were generally completed by QASAS, Range Operations, or contractor personnel with training in ammunition handling or EOD.

Range scrap may pose an explosive hazard and must be thoroughly inspected by technically qualified personnel. The accomplishment of the inert certification must be certified and verified on DD Form 1348-1 (dual signatures) in accordance with DLA requirements, as discussed in Section 2.3.5. Once certified, the range residue must be properly secured in order to retain the integrity of the certification.

DA is currently developing guidance regarding the conduct of certification and the qualifications of personnel completing them (refer to the discussion of MPPEH in Section 2.2). Meanwhile, current DA policy is that a local determination (i.e., by the Garrison Commander, Training Board, or other) will be made to designate qualified personnel to certify residue.



***Fragments Collected From the Range are Certified as Inert, Placed in Closed Containers, and Locked to Retain the Integrity of the Certification***

#### 4.2.2.2 Demilitarization

As discussed in Section 2.3.5, demil requirements must be applied to range residues where appropriate per DoD Manual 4160.21-M-1. Demil and TSC requirements are necessary to ensure that procedures for management of government-owned end items are met and are required whether the residues are sold through DRMO or any other contract mechanism.

Where sale of range residue is accomplished through the DRMO, DRMO is responsible for ensuring that demil and TSC requirements are met. This is accomplished through qualified buyers that provide an End-Use Certificate demonstrating compliance. For example, residues may be sold directly to a smelter operator who bypasses specific demil requirements such as cutting or drilling by destroying the whole-up item in a smelter and certifying the destruction on an End-Use Certificate.

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Where residues were contractually removed and sold outside of the DRMO, SAV team members observed that in some cases demil requirements were haphazardly applied.



*Holes are Drilled in Projectiles as Required by the Demil Manual*

#### **4.2.2.3 Recycling**

As discussed in Section 2.3.1.3, exclusions and/or exemptions offered under federal and state hazardous waste regulations allow generators to avoid the bulk of RCRA regulations while managing hazardous scrap metal recyclables. To fully take advantage of these recycling provisions and document a legitimate recycling program, generators are encouraged to address the following EPA evaluation factors:

- Value of the reclaimed material,
- Degree the item is like analogous raw material,
- Guaranteed end market,
- Degree of further processing required, and
- Management to minimize loss of material.

As previously discussed, sales may be accomplished either through the DRMO or other contract mechanisms. Currently, there is a DLA/DRMS moratorium on accepting downrange scrap into the DRMO yard. However, the local DRMO can arrange for a sale-in-place for range scrap at the range or range yard. The process includes:

- Establishment of a formal Memorandum of Agreement (MOA) detailing responsibilities for the disposal processing of range residue materials and
- Conduct of a pre-award meeting including potential purchasers, DRMS, and the generator.

Under the MOA, the generating activity has the responsibility for:

- Segregating and safeguarding range residue;
- Providing a list of ordnance that was used on the range associated with the residue;
- Inspecting and certifying the material as safe or inert; and
- Ensuring that material has been demilitarized and contains no radioactive residue, among other requirements.

This agreement calls on the DRMO to:

- Handle sales procedures,
- Provide technical assistance in identifying property needing demilitarization, and
- Review the adequacy of demilitarization actions.

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Authorization from DLA is required prior to conducting direct sales of Army property, and sales profits may only be used to offset the costs of the contract.

QRP as they relate to WMM are described in Sections 2.3.6 and 2.3.7.



Where a contractor accomplishes the sale, specific contract mechanisms that allow Army property to be "abandoned to the contractor" must be in place in order to benefit from recycling sales. Additionally, the contractor must demonstrate that satisfactory management control processes are used (i.e., purchaser must be cleared, end-use certificates are required, and demil requirements must be met).

***Ammo Boxes and Sabot Pedals are Among the Non-QRP Eligible Items That Installations Desire to Sell***

Whatever processes are selected to perform range residue recycling, these should be fully described in the installation's Integrated Solid Waste Management Plan.

SAV team members observed that established QRP policies and procedures regarding munitions-related QRP-eligible items and use of QRP proceeds are not well understood or consistently implemented. Specifically, some installations have a desire to sell non-QRP eligible items through their QRP.

#### **4.2.2.4 Qualified Recycling Programs**

A number of installations process a portion of the WMM waste stream through their QRP. Requirements for

#### **4.2.2.5 Small Arms Ammunition Brass Deformers**

QRP policies require that small arms ammunition be deformed to meet demil requirements prior to sale. Observations indicate that installations have purchased brass deformers, but have not implemented required procedures to ensure proper operation of the units. Installations who have purchased brass deformers must implement the procedures discussed in Section 2.3.10.



***Deformers In  
Use to Meet  
QRP Sales  
Requirements***



Specific requirements per the memorandum referenced in Section 2.3.10 are shown below.

- Operation will be treated as an ammunition operation and conducted by trained, experienced ammunition personnel.
- Deformers will be used only to render spent cartridge cases incapable of being reloaded or reused, and not to control the release of live rounds.
- Explosives-free determinations will be made prior to processing through the deformer.
- Prior to operation, the installation will perform a risk assessment (per DA PAM 385-64) and prepare SOPs to ensure safety.
- Deformers will be sited per Army and DoD explosives safety requirements. A explosives safety site plan will be submitted for approval prior to operation for new units.
- Deformers will be situated to ensure there is no direct line of sight between the crushing element and any personnel.

- Operators will impose operational limits to ensure that the manufacturer's stated capabilities for the deformer are not exceeded.
- Warning signs will be placed to state that deformers will not be used to process spent cartridges known to have been generated from .50 cal Armor Piercing ammunition.
- Industrial safety concerns (e.g., hearing protection) will be addressed.
- Operators will be properly trained.
- Procedures will be implemented to minimize the potential accumulation of propellant on processed brass and inside the deformer.
- Safe and compliant methods will be used for disposing of waste generated during the cleaning and maintenance of the deformer.

#### **4.3 WMM Disposition**

##### **4.3.1 Generator Requirements**

In accordance with RCRA, it is the responsibility of the generator to correctly identify hazardous waste streams (refer to Section 2.3.1.4) and maintain detailed and current records of the quantity and type of waste generated. Failure to identify the hazardous waste stream ultimately results in mismanagement and the potential for fines and penalties. Installation personnel were observed to be generally aware of the requirement, but unsure of the mechanisms available to complete the characterization. As a result, some waste streams were mismanaged.



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In order to address this issue, the logistics community is attempting to expedite the release of AINs and/or similar notices when hazardous WMM are identified. The guidance issued in regard to smoke pots (shown on following page) is an example.

The primary resource for laboratory analyses of WMM is the AEC Firing Point Range Scrap Study, described in Section 2.2. This study, accessible at [www.aec.army.mil](http://www.aec.army.mil), provides installation environmental managers with the necessary information to conduct a proper hazardous waste determination.

Only a limited number of items tested thus far have proven to be hazardous wastes. However, the study is not comprehensive and many items are yet to be characterized.

User knowledge is an acceptable means of completing a determination, but requires technical expertise. Installations may rely on the specific knowledge of QASAS or other ammunition handlers, consult with knowledgeable persons such as those at AEC or USACHPPM, or turn to published documentation in Technical Manuals or in the Munitions Items Disposition and Action System (MIDAS). MIDAS is a database developed and maintained by the DAC that provides chemical constituent information for munitions in the demil account. MIDAS

may be accessed at the following web site: [www.dac.army.mil](http://www.dac.army.mil) (*password protected*).

Installations may, at times, be required to fund their own hazardous waste analyses. These analyses should be conducted in a manner consistent with the AEC-developed characterization procedures, and results should be provided to AEC for further validation and dissemination.

#### **4.3.2 Hazardous WMM Storage**

As discussed in Sections 2.3.1.5 and 3.4, hazardous WMM must be accumulated and stored in accordance with RCRA Satellite Accumulation Point requirements, 90-day storage requirements, in a CE storage facility, or in a permitted Hazardous Waste Storage Facility.

SAV team members observed instances of proper and improper storage of hazardous WMM. In particular, the Army has determined that expended M5 HC Smoke Pots are a hazardous waste and should be managed accordingly.

A practice that was questioned during the SAVs and later interpreted was that of utilizing CE storage for used or fired munitions. It is the interpretation of DoD that CE storage may be used to store not only unused hazardous WMM, but used munitions and residues as well.

AIGs  
856  
7539  
7481  
9892  
7406

UNCLAS

SUBJECT: MANAGEMENT AND DISPOSAL OF EXPENDED SMOKE-POTS

1. MESSAGE PROVIDES COORDINATED ODCSLOG, ODCSOPS, AND OACSIM GUIDANCE ON THE HANDLING, STORAGE, AND DISPOSITION OF EXPENDED SMOKE POTS. DISTRIBUTE TO ALL INSTALLATION TRAINING, AMMUNITION LOGISTICS, AND ENVIRONMENTAL PERSONNEL.
2. EXPENDED SMOKE POTS REMOVED FROM THE RANGE MUST BE MANAGED PER EXPLOSIVES SAFETY AND ENVIRONMENTAL REQUIREMENTS.
3. WHEN EXPENDED SMOKE POTS ARE REMOVED FROM THE RANGE, QUALIFIED PERSONNEL (AS IDENTIFIED BY THE INSTALLATION COMMANDER) MUST INSPECT AND CERTIFY THAT THEY ARE FREE OF EXPLOSIVES (INCENDIARY) HAZARDS PER DOD 4160.21-M, CHAPTER 4 PARAGRAPH B3. INSPECTION METHODS INCLUDE A 100 PERCENT VISUAL INSPECTION, MECHANICAL VENTING, AND USE OF DEPTH GAUGES. ONCE CERTIFIED, EXPENDED SMOKE POTS SHOULD BE SECURED AND SEGREGATED FROM NON-CERTIFIED MATERIALS AND MANAGED PER PARAGRAPH 6 BELOW.
4. WHEN REMOVED FROM THE RANGE, EXPENDED SMOKE POTS ARE SOLID (AND POTENTIALLY HAZARDOUS) WASTE. INSTALLATIONS ARE RESPONSIBLE FOR PERFORMING AND DOCUMENTING A HAZARDOUS WASTE IDENTIFICATION FOR ALL SOLID WASTE GENERATED AT THE INSTALLATION.
5. THE U.S. ARMY ENVIRONMENTAL CENTER'S HAZARDOUS WASTE STUDY NO. 37-7016-97/98, JULY 1997-FEBRUARY 1998, PROVIDES MUCH OF THE ANALYTICAL DATA NECESSARY FOR CONDUCTING THE HAZARDOUS WASTE IDENTIFICATION FOR EXPENDED SMOKE POTS. FOR A COPY OR MORE INFORMATION ON THIS STUDY CONTACT TIM ALEXANDER, (410) 436-1207, [TAALEXAN@AEC.APGEA.ARMY.MIL](mailto:TAALEXAN@AEC.APGEA.ARMY.MIL). THIS STUDY INDICATES THAT EXPENDED M5-HC SMOKE POTS THAT ARE REMOVED FROM THE RANGE ARE HAZARDOUS WASTE DUE TO TOXICITY OF RESIDUALS AND THAT OTHER EXPENDED SMOKE GENERATING MUNITIONS MAY ALSO QUALIFY AS HAZARDOUS WASTE. (NOTE: AEC IS CONDUCTING HAZARDOUS WASTE IDENTIFICATIONS ON A NUMBER OF OTHER EXPENDED MUNITIONS ITEMS. THE RESULTS OF THIS STUDY WILL BE AVAILABLE IN LATE CY 99.)
6. INSTALLATIONS THAT GENERATE EXPENDED M5-HC SMOKE POTS SHOULD ESTABLISH A MANAGEMENT SYSTEM TO ENSURE STORAGE, TRANSPORTATION, AND DISPOSAL OF THESE ITEMS AS HAZARDOUS WASTE MUNITIONS. INSTALLATIONS MAY MANAGE THESE ITEMS PER EITHER OF THE FOLLOWING:
  - A. "NORMAL" HAZARDOUS WASTE REGULATORY REQUIREMENTS TO INCLUDE CONTAINERIZING, HAZARDOUS WASTE LABELING, ESTABLISHING 90-DAY OR SATELLITE HAZARDOUS WASTE ACCUMULATION POINTS, MANIFESTING, AND TRANSPORTATION PER RCRA.
  - B. THE CONDITIONAL EXEMPTION FOR STORAGE AND TRANSPORTATION OF MUNITIONS WASTE, CONTAINED IN EPA'S MILITARY MUNITIONS RULE FOR WASTE MILITARY MUNITIONS UNDER THE JURISDICTION OF THE DOD EXPLOSIVES SAFETY BOARD. THE CONDITIONAL EXEMPTIONS FOR STORAGE AND TRANSPORTATION UNDER THE EPA'S MILITARY MUNITIONS RULE (62 FEDERAL REGISTER 6621, FEBRUARY 12, 1997) REQUIRES STRICT COMPLIANCE WITH DOD 6055.9-STD, AMMUNITION AND EXPLOSIVES SAFETY STANDARDS AND THE DOD POLICY TO IMPLEMENT THE EPA'S MILITARY MUNITIONS RULE, 1 JULY 98.
7. THE DEFENSE REUTILIZATION AND MARKETING OFFICE (DRMO) WILL PERFORM DISPOSAL SERVICE AND WILL ARRANGE FOR SERVICE CONTRACTOR PICK-UP OF EXPENDED SMOKE POTS AT THE GENERATING INSTALLATION. THE GENERATING ACTIVITY WILL PROVIDE THE VERIFICATION AND CERTIFICATION DOCUMENT TO THE DRMO PER INSTRUCTIONS IN DOD 4160.21-M, CHAPTER 4, PARAGRAPH B3(8). DRMOS CANNOT ACCEPT THE EXPENDED SMOKE POTS FOR DISPOSAL WITHOUT THE CERTIFICATION.
8. THE ODCSLOG POINT OF CONTACT IS MR. BRIAN HELMLINGER, (703) 614-7033, MR. [BRIAN.HELMILINGER@HQDA.ARMY.MIL](mailto:BRIAN.HELMILINGER@HQDA.ARMY.MIL). THE OACSIM POINT OF CONTACT IS MS. CONNIE VANBROCKLIN, (703) 693-0546, [CONNIE.VANBROCKLIN@HQDA.ARMY.MIL](mailto:CONNIE.VANBROCKLIN@HQDA.ARMY.MIL).

## ***Smoke Pot Management and Disposal Guidance***



***M5 HC Smoke Pots, Determined to be Hazardous, are Properly Accumulated at a Satellite Accumulation Point and Disposed of as a Hazardous Waste***

### **4.3.3 Hazardous WMM Transportation**

As discussed in Sections 2.3.1.5 and 3.4, on-site transportation (i.e., within the boundaries of a facility that shares an EPA ID number) is exempt from RCRA regulation - transport of residue from the range to the ASP, for example.

Off-site transport of hazardous WMM, that is not otherwise exempted because it is being recycled, must be accomplished in accordance with federal and state hazardous waste transportation regulations. Transporters must comply with either traditional transportation requirements or the transportation CE offered under the MR. Where the transportation CE is available, all specified conditions of the CE must be met.

During the SAVs, instances were noted where hazardous WMM were transported from a remote range (not contiguous) over public highways to a host installation or were transported from one military installation to another. Transportation of

a WMM must comply with either the CE or traditional RCRA transporter requirements.

### **4.3.4 Disposal**

The MR offers no exemptions, exclusions, or less stringent requirements for treatment or disposal of military munitions that are hazardous waste. A facility that treats or disposes of hazardous WMM must comply with the facility standards for TSDFs and the permitting requirements of 40 CFR 270.

Although the same EOD personnel who conduct emergency responses are often responsible for treatment operations at OB/OD facilities as well, the exclusions and exemptions offered by the MR during emergency responses do not extend to treatment and disposal operations. EOD personnel with such dual responsibilities must ensure that they are properly trained to the standards required by both and that the recordkeeping requirements for both are met.

### **4.4 EOD Training**

To ensure compliance with the MRIP, EOD personnel should receive training equivalent to 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response. Additionally, training regarding the state-specific requirements is recommended for all EOD personnel. Requirements, particularly those for emergency permits, vary from state to state. For example, in some states, an emergency permit is required prior to conducting on-range UXO clearances,

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whereas other states have waived all requirements for emergency permits, even for Level II responses.

#### **4.5 Recordkeeping and Reporting**

Recordkeeping and reporting are essential components of the RCRA regulations. Regulating agencies will rely on records review to assess MR compliance. It is, therefore, essential that installation activities initiate standard recordkeeping procedures and ensure that records are accurate and complete. Applicable recordkeeping requirements are discussed throughout the previous sections and summarized below.

##### **Military-Unique Records**

- ASP records, including those documenting issue, turn-in, reconciliation, disposition requests and disposition instructions, WMM storage inventories and inspections, and other DDESB storage records.
  - Unit training records documenting specific training requirements and rationale for munitions forecasts.
  - EOD records documenting EOD-unique training requirements, validating EOD munitions and explosives forecasts.
  - EOD records documenting EOD incident responses to include response actions to munitions fired off-range, emergency response actions on and off-installation, and UXO clearance operations on and off-installation.
  - DDESB inspection records and approval plans.
- DoD transportation records and forms.
  - DD Form 1348-1 documenting inert certification and disposition.

##### **RCRA Records**

- Hazardous waste generation by type and volume.
- Recycling records demonstrating a valid recycling program to include volumes removed.
- Hazardous waste manifests.
- TSDF permits and records where applicable.

##### **DoD Records**

- The RFMSS is being effectively used at a number of installations to track munitions expenditures by Department of Defense Identification Code (DODIC). No other systems were observed. Expenditure reporting was observed to be a standard requirement to clear the ranges at all of the installations visited. Expenditure tracking is only as accurate as the data provided by the unit at the completion of the training exercise and should therefore be stressed in pre-range use in-briefs and classes. Proper use and maintenance of RFMSS ensures compliance with the expenditure tracking requirements of DoDD 4715.11.
- UXO clearance operations and EOD incidents on and off-range are tracked by EOD on its DAI R system, although SAV team members did note

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that these records were, at times, incomplete and not permanently maintained. DoDD 4715.11 requires

that DoD components maintain permanent records of all UXO clearance operations or EOD incidents conducted on the range.

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## 5.0 CONCLUSION

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During the conduct of the SAVs, approximately 250 installation personnel representing five MACOMS - Forces Command, Training and Doctrine Command, Army Test and Evaluation Command, the National Guard Bureau, and U.S. Army Pacific Command - and the host installations, as well as active, reserve, and civilian personnel from various off-site installations received MR training. Individuals represented all affected activities, to include the ASP, QASAS, Range Control, Test Facilities, DRMO, EOD, Environment, Safety, Legal, and military units. This multi-disciplinary training effort emphasized the need for communication and cooperation across all affected functional areas.

Installations observed to be most compliant with MR and related requirements were those where communication among installation support activities was a priority as evidenced through either formal committees with routine meeting schedules and/or SOPs staffed among all affected activities. However, even where support activities worked together closely, issues of noncompliance were manifested among the untrained troops.

In order to improve MR implementation, the following is recommended:

- A MR working group should be formed at each installation. An effective working group will consist of representatives from the functional areas listed above as well as a representative from Training and Operations. The working group identifies MR issues and seeks appropriate guidance where needed to resolve them.
- Training and operations committee members translate the requirements identified by the committee through command channels to the military staff and personnel training on the installation.
- Military staff incorporate requirements into training and range-use briefings and SOPs.
- Command emphasis at all levels reinforces the standard procedures.

Installation-level working groups should forward potential deviations between the state's interpretation and the MRI P through command channels and to the DoD component REC.

Individuals listed in the Help Directory in Section 6 can provide assistance in addressing specific concerns or inquiries.

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## 6.0 HELP DIRECTORY

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### **Office of the Director for Environmental Programs**

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