



COMPENDIUM OF POTENTIAL ALTERNATIVE TECHNOLOGIES TO OPEN BURNING AND OPEN DETONATION OF HAZARDOUS WASTE EXPLOSIVES

As of January 3, 2025

EPA 530-R-25-002

This compendium is intended for use by open burning/open detonation (OB/OD) facility owners and operators as a starting point in their literature search for potential alternatives to the use of OB/OD for the destruction of explosive hazardous waste (e.g., munitions, fireworks, flares). This is not an all-inclusive list of potentially available technologies, nor does it substitute for an alternative technology evaluation for a specific explosive hazardous waste stream. There are other technologies that may be considered during the initial literature gathering phase. Additionally, users of this compendium must recognize that (1) alternative technologies are site- and explosive hazardous waste stream-specific; and (2) there are several criteria, data, and studies that must be assessed and considered when determining if an alternative technology is safe and available for a specific explosive hazardous waste stream. While a technology may have been implemented for a particular explosive hazardous waste stream at one facility, it may not be determined to be safe or available for use at another facility with a larger demilitarization or treatment requirement or a different or similar explosive hazardous waste stream. This compendium includes technologies that have been implemented as well as those that have not.

Please note, technologies presented in the following tables that were implemented at Department of Defense (DoD) facilities were approved only for use at the specific facility and for the specific explosive hazardous waste stream. The DoD Explosives Safety Board (DDESB) is required under federal law (10 U.S.C. § 172) to develop, implement, and oversee the DoD explosives safety program. In addition to its oversight and approval authorities, the DDESB is the recognized explosives safety expert for all of DoD's munitions-related operations including treatment of hazardous waste explosives and munitions. As such, the DDESB must approve any alternative technology to OB or OD to be used by DoD for a specific explosive hazardous waste stream and at a specific location.

The compendium is a living document and may be updated in the future as more information or additional potential technologies are identified.

The following tables are organized according to the explosive hazardous waste that either has a documented identified technology or an implemented technology. For the tables, the **column header** notes are as follows:

Treatment Technology^A where A = Technology vendor and manufacturer names are included when available in the source documents.

Waste Type may include reference numbers where ^{1, 2, 3} =

- 1—Pyrotechnic substance or article containing both an explosive substance and an illuminating, incendiary, tear-producing, or smoke-producing substance. Flares or signals.
- 2—Propellant explosive substance or other deflagrating explosive substance or article containing such explosive substance.
- 3—Secondary detonating explosive substance or black powder article without a means of initiation and without a propelling charge. Typically contains nitroglycerine, dichloromethane, or nitrodiphenylamine.

Source Documents denoted by [] and corresponding number:

[1] U.S. Army. 2021. “Aberdeen Proving Ground—J-Field OD Unit and OBF OB/OD Units—Evaluation of Alternatives to OB/OD, Revision 2.” March 26.

[2] U.S. Air Force Material Command. 2020. “Alternative Technologies to Open Burn/Open Detonation Explosive Ordnance Disposal Range Open Burn/Open Detonation Units Edwards Air Force Base, California.” November.

[3] U.S. Environmental Protection Agency. 2019. “Alternative Treatment Technologies to Open Burning and Open Detonation of Energetic Hazardous Wastes, Final Report.” Office of Resource Conservation and Recovery, EPA 530-R-19-007. December. <https://www.epa.gov/hwpermitting/report-about-alternative-technologies-open-burning-and-open-detonation-energetic>.

[4] Southwest Research Group. 2017. “Final Review Report: Alternatives for the Disposal of Energetic Waste at the Clean Harbors Colfax LLC Open Burn Open Detonation Facility, Colfax, Louisiana.” April.

- [5] Southwest Research Group. 2017. “Final Review Report: Alternatives for the Disposal of Energetic Waste at the Clean Harbor's Colfax LLC Open Burn Open Detonation Facility, Colfax, Louisiana.” June.
- [6] Northrop Grumman. 2022. “Energetic Waste Stream and Alternative Technology Evaluation ATK Launch Systems LLC Bacchus Facility NIROP.” March.
- [7] National Aeronautics and Space Administration (NASA). 2017. “Goddard Space Flight Center Wallops Flight Facility Wallops Island, Virginia.” January.
- [8] TLI Solutions. 2020. “Open Burning and Open Detonation Re-evaluation of Alternative Technologies, Blue Grass Army Depot.” December.
- [9] US Department of Army. Undated. “Alternative Technologies to Open Burning of Propellants, Radford Army Ammunition Plant.”
- [10] National Academies of Sciences, Engineering, and Medicine. 2019. “Alternatives for the Demilitarization of Conventional Munitions.” January.
- [11] U.S. Army Defense Ammunition Center. 2012. “Hazard Classification of United States Military Explosives and Munitions, Revision 15.” June. (An updated version is available at: <https://www.quantico.marines.mil/Portals/147/Docs/Safety/Yellow%20Book%20Rev%2019%20Dated%20February%202021.pdf>).
- [12] BAE Systems, Ordnance Systems Inc. 2018. “Evaluation of Open Burning at HSAAP Phase One.” December.
- [13] US Department of the Army. 2019. “Final Report Thermal/Non-Thermal Solutions to Open Burning Holston Army Ammunition Plant (HSAAP).” March 28.
- [14] US Navy. 2020. “Revised Evaluation of Alternative Technologies to Open Detonation for Treatment of Energetic Wastes at the Burro Canyon Naval Air Weapons Station, China Lake, CA.” April 28.
- [15] US Navy. 2022. “Updated Evaluation of Alternative Technologies to Open Detonation for Treatment of Energetic Wastes at the Burro Canyon Naval Air Weapons Station, China Lake, CA, Revised Report.” April 26.
- [16] Missouri Division of Environmental Quality. 2021. “Missouri Hazardous Waste Management Facility Permit for EBV Explosives Environmental Company dba General Dynamics Ordnance and Tactical Systems Munitions Services, Permit Number MOD985798164, May 26.”
- [17] Louisiana Department of Environmental Quality. 2023. “Revised Draft Hazardous Waste Operating Renewal Permit for Clean Harbors Colfax, LLC, Permit Number LAD981055791-OP-RN-2.” March.
- [18] Kentucky Department for Environmental Protection. 2020. “Class 3 Hazardous Waste Storage & Treatment Permit Modification Request, Change in Rocket Management and Miscellaneous Permit Updates for the Blue Grass Chemical Agent-Destruction Pilot Plant Blue Grass Army Depot, Richmond, Kentucky.” November.
- [19] Maryland Department of the Environment. 2022. “Solid Waste Program Controlled Hazardous Substance Permit, U.S. Army Garrison Aberdeen Proving Ground, Maryland.” May.
- [20] General Dynamics-EBV Explosives Treatability Response. 2022. “EBV Explosives Environmental Company, Joplin Missouri.” October.

- [21] Clean Harbors Colfax, LLC. 2022. "Revisions to Responses to NOD #1, RCRA Hazardous Waste Permit Renewal Application." January.
- [22] U.S. EPA. 2015. "Request for Approval of an Amended Time-Critical Removal for M6 and CBI Propellant at the Explo Systems, Inc. Site, Minden, Webster Parish, Louisiana Memorandum." March.
- [23] Pennsylvania Department of Environmental Protection. 2022. "US Army Letterkenny Depot Air Quality Program." October.
- [24] Dynasafe Demil Systems. 2023. "Dynasafe Capabilities PowerPoint Presentation." May.
- [25] PIKA International, Inc. "Fort Wingate Depot Disposition of Energetics and MEC." <http://www.pikainc.com/case-histories/fort-wingate-depot-activity-mec/>.
- [26] PIKA International, Inc. "Thermal Convection." <http://www.pikainc.com/innovative-technologies/thermal-convection-system/>.
- [27] PIKA International, Inc. "Pine Bluff Time-Critical White Phosphorus Clean-up." <http://www.pikainc.com/case-histories/pine-bluff-tc-wp-clean-up/>.
- [28] PIKA International, Inc. "Equipment D&D at Lake City AAP." <http://www.pikainc.com/case-histories/lake-city-aap-atk-scrap-decontamination/>.
- [29] PIKA International, Inc. "Indiana AAP Building and Equipment D&D." <http://www.pikainc.com/case-histories/indiana-aap-dd-of-explosives-contaminated-buildingsequipment/>.
- [30] PIKA International, Inc. "In Situ Thermal Decontamination Operations." <http://www.pikainc.com/case-histories/in-situ-thermal-decontamination-of-energetics-contaminated-structures/>.
- [31] PIKA International, Inc. "Small Arms Ammunition Demilitarizing and Recycling." <http://www.pikainc.com/services/small-arms-ammo-demilitarization-and-recycling/>.
- [32] Missouri Department of Natural Resources. "EBV Explosives Environmental Co. Class 2 Hazardous Waste Permit Modification Request Public Comment Period, July 18, 2022, to Sept. 16, 2022." <https://dnr.mo.gov/content/ebv-explosives-environmental-co-class-2-hazardous-waste-permit-modification-request-public-comment-period-july-18-2022-sept-16-2022>.
- [33] Indiana Department of Environmental Management. 2014. "Hazardous Waste Management Permit, Crane Naval Surface Warfare Center, Class 1 Modification." January.
- [34] Indiana Department of Environmental Management. 2018. "Hazardous Waste Management Permit, Draft Class 3 Permit Modification." August.

[35] U.S. Department of Transportation. (49 CFR 173.52([b])). August 14, 2023.

[36] MuniRem Environmental (MRE). Case Studies MuniRem Technology: Safe and Cost-Effective Neutralization and Remediation of Explosives and Other Energetics.
<https://munirem.com/wp-content/uploads/2019/03/MuniRem-Case-Studies-Booklet.pdf>

[37] MuniRem Environmental. MuniRem Application to Destroy Bulk Explosives and in Demilitarization.

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Large-cased munitions contain more than 45 kilogram (kg) (100 lb) of explosive material per item. Casings for these munitions may be thick or thin. This category includes bombs, rocket motors, warheads, large projectiles, sectioned munitions, and all-up missiles.									
60-millimeter (mm) Projectile			1.2	No information provided	Controlled Detonation Chamber transportable model T-60	Implemented [3]	No [3]	Reactive bed, porous ceramic filter, and a catalytic oxidizer operating at 1095 degrees Celsius (°C)	[2] [3] [5] [7] [8] [18] [24]
				No information provided	Dynasafe Static Detonation Chamber (SDC-1200:semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Medium-cased munitions contain between 227g to 45 kg (0.5 and 100 lb) of explosive materials per munition. The casings for these munitions may be thick or thin. This category includes bomblets, warheads, rocket motors, medium projectiles, propellant charges for projectiles, grenades, mines, flares, sectioned munitions, all-up missiles, and numerous other types of munitions and explosives.									
20 mm High-Explosive-Incendiary (HEI) Cartridge				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, high-efficiency particulate (HEPA) filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and the air pollution control system (APCS) stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
40 mm HEI Cartridge				Band-saw cutting [16]	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [21]
				Band-saw cutting [16]	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high-efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
66 mm Rocket or Missile Components (1.5 12 lb NEW)			1.1E	Disassembly by robotic implements	Controlled Detonation Chamber (transportable models T-10, T-25, T-30, T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [18] [19] [24]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [1]	No [19]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Water washout to remove explosive material					
81 mm Large Caliber Cartridge or Projectile (1.5 lb NEW)				Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000:	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water washout to remove explosive material	fixed)				
84 mm Large Caliber Cartridge or Projectile (1 lb NEW)		HC	1.2	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Water washout to remove explosive material					
90 mm Large Caliber Cartridge or Projectile (17 lb NEW)		HC	1.2	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water jet slurry to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Mechanical cutting to remove explosive material					
				Water washout to remove explosive material					
105 mm Large Caliber Cartridge or Projectile (4.5 lb NEW)		HC	1.1E	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000:	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water washout to remove explosive material	fixed)				
107 mm Rocket or Missile Component (1.5 to 12 lb NEW)		H HR		Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Water washout to remove explosive material					
120 mm Large Caliber Cartridges or Projectiles (6 to 21 lb NEW)		HC	1.1E	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [7] [8] [18] [24]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water jet slurry to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Mechanical cutting to remove explosive material					
				Water washout to remove explosive material					
122 mm Large Caliber Cartridges or Projectiles (3 lb NEW)		HC		Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000:	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water washout to remove explosive material	fixed)				
155 mm Large Caliber Cartridges or Projectiles (2 to 25 lb NEW)			1.2.D	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [18] [24]
				Cryofracturing to remove explosive material					
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [18]	Yes [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Water washout to remove explosive material					
165 mm Large Caliber Cartridges or Projectiles (2 to 25 lb NEW)		HC, HP	1.1F	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Implemented [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3] [5] [8] [18] [24]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water jet slurry to remove explosive material					
				Mechanical cutting to remove explosive material					
				Water washout to remove explosive material					
Airdropped Cluster Bomb Units		HB	1.1D	Reverse assembly (manually or by robotic implements)	Controlled Detonation Chamber D-100 (fixed)	Implemented	Yes [18]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3] [18]
				Cryofracturing to remove explosive material					
Airdropped Projectiles or Warheads		HB	1.1D	Reverse assembly (manually or by robotic implements)	Controlled Detonation Chamber D-100 (fixed)	Implemented	Yes [18]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3] [18]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Fixed Ammunition				Delink belts of ammunition [16]	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [20]
				Delink belts of ammunition [16]	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Anti-Tank Mines		HI	1.1D	Reverse assembly (manually or by robotic implements)	Controlled Detonation Chamber (fixed models: D-100, D-200)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3]
				Cryofracturing to remove explosive material					
Anti-Personnel/ Material Grenades (Hand Incendiary Grenade AN M14—11.91 lb)		HI	1.1E	Reverse assembly (manually or by robotic implements)	Controlled Detonation Chamber (fixed models: D-100, D-200)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3]
				Cryofracturing to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Anti-Personnel/ Material Bomb Loaded Units		HI	1.1D	Reverse assembly (manually or by robotic implements)	Controlled Detonation Chamber D-100 (fixed)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[2] [3] [8]
				Cryofracturing to remove explosive material					
Anti-Tank Guided Missile (ATGM) Flight Motors (1.5 to 12 lb NEW)		HR	1.3C	Disassembly by robotic implements	Controlled Detonation Chamber D-100 (fixed)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [7] [8] [10]
				Cryofracturing to remove explosive material					
				Water jet slurry cutting to remove explosive material					
				Mechanical cutting (band saws) to remove explosive material	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [3]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	
Water washout to remove explosive material									

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
AN-M43A2, Signal, Illumination Flare				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [21]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
ATGM Initiators (1.5 to 12 lb NEW)			1.4S	Disassembly by robotic implements	Controlled Detonation Chamber (transportable model T-60)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [7][8] [10]
				Cryofracturing to remove explosive Material					
				Water jet slurry cutting to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Mechanical cutting (band saws) to remove explosive material	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [3]	No	Spray tower, venturi scrubber, a packed bed scrubber tower, HEPA filter, and induced-draft fan	
				Water washout to remove explosive material					
ATGM Warheads (1.5 to 12 lb NEW)			1.1D	Disassembly by robotic implements	Controlled Detonation Chamber	Identified	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [7] [8] [10]
				Cryofracturing to remove explosive material					
				Water jet slurry cutting to remove explosive material					
				Mechanical cutting (band saws) to remove explosive material	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Water washout to remove explosive material					
Brooke projectiles (6.4 inch)				Removal of main charge and unscrewing fuze or drilling into fuze body	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Dahlgren Mortars (9 inch)				Removal of main charge and unscrewing fuze or drilling into fuze body	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Fireworks			1.1G [20]	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS Stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Fireworks			1.3G [20]	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16] [17]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Fireworks			1.4G [20]	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Hellfire Eject and Flight Motors (1.5 to 12 lb NEW)			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [1]	No [3]	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[1] [2] [3] [10]
Hellfire Initiators (1.5 to 12 lb NEW)				Disassembly by robotic implements	Controlled Detonation Chamber (transportable models T-10, T-25, T-30, T- 60)	Identified [1]	No [3]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [10]
Hellfire Warheads (1.5 to 12 lb NEW)				No information provided	Controlled Detonation Chamber (transportable model T-60)	Identified [1]	No [3]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [10] [24]
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Incendiary Ammunition (Liquid or Gel)				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [7] [10] [16]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
L8A3 Red Phosphorus Grenade				Drilling into round to remove red phosphorus	Red/White Phosphorous to Phosphoric Acid Conversion Plant at Crane Army Ammunition Activity	Implemented [36]	Permitted [34]	Wet dust collector, dry cartridge filtering system, venturi wet scrubber, cartridge baghouse, and a jet pulse	[2] [3] [33] [34] [35] [36]
L8A3 White Phosphorus Grenade				Drilling into round to remove red white phosphorus	Red/White Phosphorous to Phosphoric Acid Conversion Plant at Crane Army Ammunition Activity	Implemented [35]	Permitted [34]	Wet dust collector, dry cartridge filtering system, venturi wet scrubber, cartridge baghouse, and a jet pulse	[2] [3] [33] [34] [35] [36]
M18A1, Claymore Mine				Cut open [20]	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [21]
				Cut open [20]	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
M-37 Spin Double-based Motors (Composed Primarily of Nitroglycerine [NG] and Nitrocellulose [NC])			1.3C	Ultra-high pressure water jet technology to disassemble motor	ARCTECH Actodemil Hydrolysis (semi-portable)	Identified [3]	No	NOx gas controlled with wet scrubber and proprietary ActoHAX reagent	[2] [3] [4] [7]
				Munitions shredding for size reduction [2]					
				High pressure washout to remove explosive material [37]	MuniRem (portable)	Identified [3]	No	MuniRem Environmental, Inc (MRE) claims no emissions	
				Cryogenic washout to remove explosive material [37]					
M825 White Phosphorus Canisters				Underwater cutting of canisters	PIKA International Thermal Convection System	Implemented [27]	No		[27]
Nike Double-Based Motors (Composed			1.3, 1.4	Slurry preparation	General Dynamics Industrial Supercritical	Identified [10]	No	Vendor claims no emissions	[2] [3] [7] [10]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Primarily of NG, NC, and Lead)				Cryogenic washout to remove explosive material	Water Oxidation (iSCWO) (fixed)				
				High pressure washout to remove explosive material					
				Ultra-high pressure water jet technology to disassemble motor	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [10]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	
Orion Composite Motors (Composed Primarily of Ammonium Perchlorate, Aluminum, and a Rubberized Binder)		HM, LR	1.3C	Ultra-high pressure water jet technology to disassemble motor	ATK Launch Systems Ammonium Perchlorate Washout Removal System	Identified	No	Venturi scrubber with packed bed scrubber, paired with magnesium hydroxide to neutralize HCl off-gas	[2] [6] [7] [10]
				High pressure washout to remove explosive material					
				Cryogenic washout to remove explosive material					

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Removal of explosive material with washout	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	
Rocket Motors				If >6 lbs NEW, demil by cutting required [20]	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16] [17]
				If >6 lbs NEW, demil by cutting required [20]	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Rocket Motor, Chaparral			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [10]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[2] [6] [7] [10]
Rocket Motor 5 in. MK22-2/3/4F, Liner Demo Charge			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [10]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[2] [7] [8] [10]
Rocket Motor, 2.75 in. MK40 Mod 5			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration D-100 (fixed)	Implemented [8]	Yes [8]	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[2] [7] [8] [10]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Rocket Motor, 2.75 in. MK66-2			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Implemented [8]	Yes [8]	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[2] [7] [8] [10]
Safety Device, Electrically Initiated (Airbags, Seatbelt Pretensioners)			9	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Safety Device, Chemically Initiated				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented	Yes [16]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Shaped Charges				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Shaped Charges without Detonators				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Smoke Grenades				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Smoke Signals				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
T45E7 Adapter Booster				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [10] [16] [17] [20] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Taurus Double based Motors (Composed Primarily of NC, NG, Lead, and Carbon Black)			1.3C	Ultra-high pressure water jet technology to disassemble motor	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [7]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[2] [3] [7] [8][10]
				High pressure washout to remove explosive material					
				Cryogenic washout to remove explosive material					
TOW Eject and Flight Motors (1.5 to 12 lb NEW)			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [10]	No	Spray tower, venturi scrubber, a packed bed scrubber tower, HEPA filter, and induced-draft fan	[1] [2] [10]
TOW Initiators (1.5 to 12 lb NEW)				Disassembly by robotic implements	Controlled Detonation Chamber (transportable models T-10, T-25, T-30, T-60)	Identified [3]	No [3]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [10]
TOW Warheads (1.5 to 12 lb NEW)				No information provided	Controlled Detonation Chamber D-100	Identified [3]	No [3]	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [10] [24]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Viper Eject and Flight Motors (1.5 to 12 lb NEW)			1.3C	No information provided	Contained Burn Chamber in static burn/static firing configuration (fixed)	Identified [3]	No	Spray tower, venturi scrubber, packed bed scrubber tower, HEPA filter, and induced-draft fan	[1] [2] [3] [10]
Viper Initiators (1.5 to 12 lb NEW)				Disassembly by robotic implements	Controlled Detonation Chamber (transportable models T-10, T-25, T-30, T-60)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [10]
Viper Warheads (1.5 to 12 lb NEW)				No pretreatment required	Controlled Detonation Chamber (transportable models T-10, T-25, T-30, T-60)	Identified [3]	No	Reactive bed, porous ceramic filter, and catalytic oxidizer operating at 1095 °C	[1] [2] [3] [5] [8] [10] [24]
					Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Small thin-cased munitions contain 227 grams (g) (0.5 lb) or less of explosive material per item. This category includes cartridge-actuated devices, propellant-actuated devices, exploding bolts, fuzes, small projectiles, bullets, bomblets, booster pellets, detonators, igniters, leads, thermal batteries, and numerous other small munitions and explosives.									

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Bag Charges				Cut open to remove NC Propellant	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				Cut open to remove NC propellant	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Black Powder Charges		PC	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
					Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Blasting Caps (Less than 1 lb NEW)	ML45	HX	1.4B	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21] [24]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
					El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Detonators/ Blasting Caps (Less than 1 lb NEW)		HX	1.4B	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [8] [10] [16] [17] [21] [24]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Implemented [16]	Yes [16]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Detonating Train				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Flares and Flare Waste				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [8] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0478, Substances explosive, not otherwise specified (N.O.S.), 1			1.3G	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack induced-draft fan, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0485, Substances Explosive, N.O.S.,1			1.4G	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Flexible Detonating Cord				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Flight and Launch Motors				No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[2] [3] [4] [5] [8] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				Slurry preparation	Decineration	Identified [3]	No	Wet scrubber, electrically preheated catalytic thermal oxidizer, induced-draft fan, and stack	
				Cryofracture [4]					
FMU-54A/B Fuze, Bomb, Inertia Tail				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [3]	Yes [17]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16] [17]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
FMU-139A/B Fuze, Bomb, Inertia Tail				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [3]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16] [17]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Fuzes		HX		No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [17]
					Contained Burn Chamber	Identified [3]	No		
GGU-2/A Gas Prss Prop. Act. Gen.				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [8] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Hexachloroethane smokes				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [8] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Hexachloroethane smokes (continued)				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	[16] [36] [37]
				Soak in binary solvent of EtOH and water	MuniRem	Implemented [36] [37]	No	Not Required	
Igniters (Less than 1 lb NEW)				No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [10]
Ignition Cartridges (Less than 1 lb NEW)				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	[1] [2] [3] [4] [5] [10] [17] [21] [24]
				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	
Impulse Cartridge BBU-368				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Impulse Cartridge ARD 446-1				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Impulse Cartridge, MK107 MOD01				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Infrared Aircraft Flares				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16] [32]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
M158, Ground Illuminating Red Star Flares	L306		1.3G	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
M206 Aircraft Countermeasure Flare	L410			No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented	Yes [16]	Induced-draft fan, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Mechanical Time Fuzes (Less than 1 lb NEW)		HX	1.1D	Disassembly by robotic implements	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [10] [17]
				No information provided	Contained Burn Chamber	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Mortar Charges			1.1C	No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	[1] [2] [3] [4] [5] [9] [10] [17] [21] [24]
				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	
Mortar Flare Candles (4.2 inch Mortars)				Wet shredding under solution of MuniRem	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Point-Detonating Fuzes (Less than 1 lb NEW)				Disassembly by robotic implements	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [10]
Power Device, Explosive			1.4S	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Primers (Less than 1 lb NEW)		PB		No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [10]
Propelling Charges			1.2C	Cut open to remove NC propellant	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [8] [10] [16]
Propelling Charges for Cannon				Cut open to remove NC propellant	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16] [17]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				Cut open to remove NC propellant	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Residues and Floor Sweepings from Reactive Armor Tile Testing				Slurry preparation	Decineration	Identified [3]	No	Wet scrubber, electrically preheated catalytic thermal oxidizer, induced-draft fan, and stack	[1] [2] [3] [5] [10]
Black Powder Contaminated Equipment				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	[25] [28] [29]
Sporting Ammunition			1.4S	Delink long belts of ammunition [16]	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[2] [10] [16]
				Delink long belts of ammunition [16]	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				Delink long belts of ammunition [16]	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Tracers				No information provided	Rotary Kiln Incinerator (fixed)	Identified [5]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [17] [21] [24]
				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [3]	No	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
				Slurry preparation	Decineration	Identified [3]	No	Wet scrubber, electrically preheated catalytic thermal oxidizer, induced-draft fan, and stack	
				Cryofracture					
AN/AI				No information provided	Rotary Kiln Incinerator (fixed)	Identified [1]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10] [18] [24]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No pretreatment required	Dynasafe Static Detonation Chamber (SDC-1200: semi-portable, SDC-2000: fixed)	Identified [1]	No [18]	Cyclone, thermal oxidizer, quench, aqueous scrubbers, and carbon filters	
Amatol (50% TNT, 50% Ammonium Nitrate)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Ammonium Nitrate Emulsion			5.1	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Ammonium Nitrate Emulsion (Solidified)				Soak in warm water and MuniRem-EDS	MuniRem (Portable)	Implemented [36]	No	Not Required	[36] [37]
Ammonium Perchlorate (AP) (Non-Aluminum)		HE	5.1	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
AP (Aluminum)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
AP Composite Propellant (MK-6)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
AP Composite Propellant (MK-6)				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
(continued)								stack	
AP Contaminated Equipment				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	[25] [28] [30]
Black Powder		HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Boosters without Detonators				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
C-4		HE	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10] [16]
Clean Burn Igniter (CBI) (Unstable NC)				Apply solution of MuniRem reagent to render safe	MuniRem	Implemented [36]	No	Not Required	[22] [36] [37]
Composition A-3		HE	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[2] [3] [9] [10]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Composition B		HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Composition C-3				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	[25] [28]
Diazodinitrophenol (DDNP) & Composition-B				Solution of MuniRem Reagent	MuniRem	Implemented [36]	No	Not Required	[36] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Nitrate salt-based Eutectic (DEMN)			1.5	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
Double Base (50% NC)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Dynamite		HE	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
Sweating Dynamite		HE	1.1D	Apply solution of MuniRem reagent to render safe	MuniRem	Implemented	No	Not Required	[37]
Emgel			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
Explosive D (Ammonium Picrate)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Firework Chemicals and Oxidizers (Barium, Sulphur, Potassium Dichromate, Ammonium Perchlorate)				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Fireworks				Wet shredding of fireworks in mixture of MuniRem and water	MuniRem	Implemented [36]	No	Not Required	[36] [37]
H-6				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]
HBX (48/31/17/4 RDX-TNT-A1-WAX)		HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter,	[2] [3] [9] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
								induced-draft fan, and stack	
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Hexolite (Dry or Wet <15%)				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
High Explosives				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[2] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
HMX			1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[2] [3] [9] [10] [12] [16] [17] [21] [25] [28]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	
HMX, Desensitized				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[2] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
								stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
IMX-104 and IMX-104 Sludge				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]
LF-2 Sheet Explosive			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
LX-14 Plastic Bonded Explosive (PBX)			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
M1 (85% NC)	M035	HE	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[2] [3] [9] [10] [16] [17] [25]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
					Contained Burn Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	
M-3 Propellant				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
M6 Propellant				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]
M6 (87.7% NC)	M130	HE	1.4B	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter,	[2] [3] [5] [9] [10] [16] [17] [20] [21] [22]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
								induced-draft fan, and stack	
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				Munitions shredding for size reduction [2]	ARCTECH Actodemil Hydrolysis (semi-portable)	Implemented [5]	No [22]	NOx gas controlled with wet scrubber and proprietary ActoHAX reagent	
M-9 Propellant	M256	HE	1.3C	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[2] [3] [9] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
M32A1E1 Propellant				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
M-43 Propellant				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
MK-23 Propellant				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
NG or Picrite <20% by Weight Water				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
NG Mixture, Desensitized <30%				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Octol (75% HMX, 25% TNT)			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10] [16]
PAX-21				Size reduction in MuniRem and water	MuniRem	Implemented [36]	No	Not Required	[36] [37]
PBXN-110 Propellant				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
								stack	
Pentolite			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]
PETN	MM26 - MM29	HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [9] [10] [16] [17] [21] [25] [28]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	
PETN with >15% Phlegmatizer				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
PETN in Water				None	MuniRem	Implemented [36]	No	Not required	[36] [37]
Picric Acid (Explosive D)				No information provided	Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	[25] [28]
				No information provided	MuniRem	Implemented [36]		Not required	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Primasheet 1000 (PETN-Based Flexible Sheet Explosive)		HX	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10] [16]
RDX (Cyclonite/ Hexogen)	MM31 - MM40	HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21] [25] [28]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
					Thermal Convection System	Implemented [25]	No	Secondary combustion, HEPA particulate filter	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Smokeless Powder				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Smokey Sam, Propellant				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [5] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Solid Propellant				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0473, HMX or RDX, Dry or Unphlegmatized			1.1A	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0475, Diethylene Glycol Dinitrate, 3			1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0477, Substances Explosive N.O.S., 2			1.3C	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0479,Substances Explosive N.O.S., 2			1.4C	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
UN0480, Substances Explosive N.O.S., 3			1.4D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack induced-draft fan, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
UN0482, Substances, Explosive, Very Insensitive N.O.S., 3			1.5D	No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [9] [10] [16] [37]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Tetranitromethane Waste (P112)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and	Tetranitromethane Waste (P112)
TNT (2,4,6-Trinitrotoluene)	M030	HE	1.1D	No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [9] [10] [16] [17] [21] [25] [28]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Thermal Convection	Implemented [25]	No	Secondary combustion, HEPA particulate filter	
TNT Mixed with Aluminum				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack Induced-draft fan, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
TOVEX	MY77	HE	1.1D	No information provided	Rotary Kiln Incinerator (fixed)	Identified [3]	No	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack	[1] [2] [3] [9] [10]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Triple Base (M30- 28% NC)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Tritonal (79% TNT, 21% Aluminum)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Tritonal (with 2.5% Calcium Stearate)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [17] [21]
Wet Nitrocellulose fines				None	MuniRem	Implemented [36]	No	Not required	[36] [37]
Potentially explosive-contaminated materials are other wastes associated with explosives and munitions manufacturing, testing, and use (such as cotton rags, gloves, and post-test debris) and explosive-contaminated containers (such as wood crates, cardboard boxes, velostat bags, and cellulose drums).									

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Cartridge Case, Empty Primer				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	[1] [2] [3] [4] [5] [10] [16]
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Diesel and Dunnage				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [21]
				No information provided	Car Bottom Furnace	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
Energetic Residues (Indoor Training Ranges)				Spray solution of MuniRem reagent	MuniRem	Implemented [36]	No	Not required	[36] [37]
Explosives Contaminated Soil (TNT, RDX, HMX)				In-Situ Soil mixing	MuniRem	Implemented [36]	No	Not required	[36] [37]
Primary and/or Secondary Explosives Contaminated Equipment				Initial spray of MuniRem solution to desensitize material	MuniRem	Implemented [36]	No	Not required	[36] [37]
Lead Azide				None	MuniRem	Implemented [36]	No	Not required	[36] [37]
Lead Styphnate				None	MuniRem	Implemented [36]	No	Not required	[36] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Manufacturer’s Waste (65% Propellant)				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Implemented [21]	Yes [17]	Thermal oxidizer, cyclone gas chamber, gas cooler, dry sorbent injection, baghouse, HEPA filter, induced-draft fan, and stack	[1] [2] [3] [4] [10] [16] [17] [20] [21]
				No information provided	Rotary Kiln Incinerator (fixed)	Implemented [16]	Yes [16]	Dry scrubber, afterburner, cyclone particle separator, gas cooling system, high- efficiency filter baghouse, induced-draft fan, and stack, primary cartridge filter, HEPA filter, and APCS stack	
				No information provided	Contained Thermal Treatment Chamber	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
				No information provided	Static Kiln	Implemented [16]	Yes [16]	Induced-draft fan, primary cartridge filter, 99.99 percent efficient HEPA filter, and APCS stack	
NC Floor Sweepings				No information provided	MuniRem neutralization	Implemented [36]	No	Not Required	[36] [37]
Perchlorate Contaminated Soil				Tilling bacteria-rich nutrients into contaminated topsoil	MuniRem Surface Application and Mobilization of Nutrient Amendments (SAMNAS)	Implemented [36]	No	Not Required	[36] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
Picric Acid Contaminated Water				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Reactive Armor Tile and Residue (Excess Armor Tiles, Used or Impacted Tiles, Residues, or Floor Sweepings from Tile Testing)		HA		Water jet slurry cutting to reduce size	MuniRem neutralization (Portable)	Identified [1]	No	Vendor claims no emissions	[1] [2] [3] [10] [17]
				Mechanical cutting to reduce size					
				Slurry preparation					
				No information provided	El Dorado Engineering Contained Burn Chamber (fixed)	Identified [1]	No	High temperature afterburner, selective non-catalytic reduction system for NOx, wet scrubber, induced-draft fan, and stack	
Tetrazine				Apply solution of MuniRem reagent to render safe	MuniRem	Implemented [36]	No	Not Required	[36] [37]
TNT (Aged) in pipes				Flushing of bulk material in MuniRem	MuniRem	Implemented [36]	No	Not Required	[36] [37]
Trinitroresorcinol				Apply solution of MuniRem reagent to render	MuniRem	Implemented [36]	No	Not Required	[36] [37]

Explosive Hazardous Waste Description				Pretreatment Technology	Treatment Technology ^A	Identified or Implemented Technology	Permitted Technology (Yes/No)	Air Pollution Control Device(s)	Source Documents
Type	DODIC [11]	MIDAS Family Code [3]	UN Hazard Class/ Division Number [11]						
				safe					
TBN (Trinitrobenzene)				No information provided	MuniRem	Implemented [36]	No	Not Required	[36] [37]

Mobile Treatment Units (MTUs) Manufacturers and Vendors				
Enviro Safe Demil	Mobile Response Unit© (MRU)	https://envirosafedemil.com/technology-%26-environment	Versatile and proven, variants of ESD’s Mobile Response Unit© (MRU) system are widely used for safely decontaminating explosive contaminated materials, thermal destruction of small arms ammunition (SAA), and disposal of combustible energetic contaminated materials.	The system is designed for decontaminating explosives contaminated material and destruction of SAA by direct heating for sufficient time and temperature to render the discharged materials to be inert and safe for general release and recycling (material documented as safe {MDAS}). The MRU's emissions are more environmentally-friendly and provide superior control and reliability versus “open burning”.
Gradient Technologies	UXO Site Remediation	https://gradtech.com/demilitarization/#uxoremediations	Unexploded Ordnance (UXO), munitions, and discarded military munitions (DMM) may be encountered at nearly all active DoD military installations and former DoD military installations that have been transferred from DoD control that had live-fire training, testing ranges, or munitions operating facilities (e.g., production, demilitarization, research and development). DoD has transferred many closed installations to other government agencies or back to the general public. To help ensure the safe use of properties that are being or have been transferred from DoD control, a munitions response (clean up) is often required.	Gradient Technology developed a mobile technology package to assist with the safe and efficient processing of munitions and UXO at these sites. The system uses High Pressure Waterjet Technology to (1) aid in accessing the munitions to determine whether they pose an explosive hazard; and (2) process those munitions determined to pose an explosive hazard. The equipment package includes all of the required tooling, utilities, control network, and hazardous material collection and containment equipment to enable safe operations by the site personnel from remote control locations.
PIKA International, Inc		https://www.pikainc.com/innovative-technologies/thermal-convection-system/	PIKA is always searching for safer, more effective methods of dealing with the many explosive contaminants and hazards. One of the processes PIKA has designed and successfully implemented is the thermal processing of explosives contaminated structures and equipment by using PIKA’s one-of-kind Thermal Convection System (TCS). The TCS allows PIKA to remotely desensitize and decontaminate structures and equipment rendering them safe to demolish, reuse or recycle.	

Mobile Treatment Units (MTUs) Manufacturers and Vendors				
El Dorado Engineering	Transportable Flashing Furnace (TFF)	https://www.eldoradoengineering.com/thermal-disposal/transportable-flashing-furnace-tff/	Operations involving (1) removal of munitions and UXO; (2) remediation of explosive processing buildings; and (3) handling military live-fire training and test range target debris, often produce metal parts with explosive residue contamination. Such material is considered MPPEH and must be managed, inspected, and processed to avoid its release to the public until it can be documented as safe (MDAS). EDE's flashing furnace thermally decontaminates explosives contaminated material so it can be documented as safe and sent to metal recyclers. Up to 10,000 pounds of contaminated metal can be flashed per hour. The furnace can be installed in a fixed location or can be trailer mounted for field applications such as munitions response actions or in support of munitions operating facilities.	
Kobe Steel	DAVINCH Lite 24 Transportable Explosive Destruction system	https://kobelco.us/index.html	Used primarily for chemical demilitarization overseas; tested in United States and DDESB approved but never operated for treatment. (Currently unavailable in the United States.)	
TWB Designs	eMACS – Environmental Mobile Ammunition Combustion System	https://www.twbdesigns.com/	eMACS produces clean separation and retrieval of recyclable lead and brass providing significant cost recovery, and also eliminates storage problems while addressing any health and safety concerns.	The eMACS was designed as a compact, affordable and portable burner capable of disposing 60 lbs of ammunition per hour. Current best practice for disposal of pyrotechnics and commercial explosives is accomplished by incineration. This method consists of burning small quantities of single-type explosives over a bed of combustible material, such as wood chips, in a screen covered pit. The enclosed design of eMACS not only introduces enhanced safety features during the incineration process, but also ensures that any particulate released during the burning inside the chamber is consumed before venting to the outside atmosphere, thereby addressing environmental concerns.

Mobile Treatment Units (MTUs) Manufacturers and Vendors				
Mistral Security, Inc	ARC – Total Containment Vessels	https://www.dgstytems.nl/blast-management/arc#	Mistral Security, Inc.’s Total containment vessel product line, ARC, provides full protection against blast and fragmentation with repeated detonation capability. Gas-Tight (GT) models are also available. (The Gas-Tight models are capable of containing biological/Chemical explosive threats.) The ARC Series is widely used by the Military EOD and Police Bomb Squads for safely containing and transporting explosive devices.	
NABCO	Total Containment Vessels	https://www.brsinnovations.com/pages/mobile-thermal-treatment-unit	NABCO’s line of self-closing Total Containment Vessels (TCVs) allow EOD technicians to safely contain, transport and dispose of explosive devices. The vessel can be remotely opened and closed providing safer stand-off for the technician.	*BRS Innovations advertises services using NABCO TCVs here: https://www.brsinnovations.com/pages/mobile-thermal-treatment-unit . Website states NABCO’s Mobile Thermal Treatment Unit (MTTU) is an innovative and clean alternative to open burning of household hazardous waste, including brass ammunition, shotgun shells, CS/CN canisters, and flares. The MTTU provides a safer means for recycling and reclamation of metals from ammunition, and its mobility allows for regional and statewide treatment options, further reducing the transportation of hazardous waste through communities.
Jakusz	EVA Container	https://jakusz.com/en/offer/devices-for-storing-and-transporting-hazardous-materials/police/23/eva-gas-tight-container/	The gas-tight explosion-proof EVA container installed on the trailer is resistant to multiple detonations of explosives in the equivalent of up to 8 kg of TNT. The container is equipped with a decontamination system that allows for the retention and neutralization of toxic gases.	

Mobile Treatment Units (MTUs) Manufacturers and Vendors				
MuniRem Environmental	Chemical neutralization and disposal	https://www.muni-rem.com/	MuniRem is a portable, versatile chemical that safely neutralizes and destroys civil and military explosives into non-hazardous end products. MuniRem reagents also destroy bulk chemical warfare agents and remediate heavy metals in soil and groundwater. Applications include demilitarization, decontamination of explosive-contaminated building fixtures and equipment, and remediation of explosive-contaminated soil, sediment, sludge, spent carbon media, and water.	MuniRem products are shipped worldwide in powder form by road, air, and ocean cargo freight. Information on the types and applications is available at MuniRem Environmental’s website: https://www.munirem.com/technologies/munirem-reagents/ .
Sergeant Shred	Mobile Ammunition Destruction System	sensitiveassetsolutions@gmail.com (William Metcalf “Sergeant Shred”)	Munitions are safely shredded in zero-emissions enclosed tanks under a water solution of MuniRem reagent, where the propellant and primer are destroyed upon contact with the solution of MuniRem®. The by-products are recyclable scrap metal and nonhazardous wastewater. Another portable model uses the same process to destroy fireworks and flares.	Sensitive Asset Solution and MuniRem Environmental offer mobile ammunition destruction equipment as a safe, portable solution for small arms, fireworks, flares, and similar energetic materials.