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Coast Guard



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19 July 2018

Subj: Promulgation of Concept Plan for Responding to Sea Disposed Military Munitions

This plan has been prepared to provide a guidance framework for the response to a maritime incident involving sea disposed discarded military munitions. Sea disposed military munitions, both conventional and chemical, are encountered during routine commercial fishing operations (particularly dredging-type fishing methods) outside of chartered dumping areas, and at times, in relatively shallow water. Although most encounters are resolved with the suspected munition being thrown back overboard with no incident, some result in the exposure of a crewmember to hazardous materials, resulting in injury, and potential for contamination of the vessel and catch. There is also a risk, albeit minimal relative to the aforementioned scenarios, of a potentially dangerous sea-disposed military munition remaining onboard a vessel bound for port.

This Concept Plan aims to provide the planning considerations, guidance, and resources that can be applied to the emergency situation at hand. Every incident is different, and poses its own set of unique challenges and variables. Although this plan is not meant to be the "100%" solution, the goal is to provide a "running start" for decision makers and response personnel. **The complex nature of responding to emergencies involving military munitions in the maritime environment will require a risk-informed/risk-based approach, and timely, effective, and collaborative engagement with federal, state, local, and private stakeholders.** The desired end-state is a response operation concluded in a safe, secure, and successful manner, followed by a smooth transition to normal operations, and in a manner that upholds the public trust and confidence.

The development of this Concept Plan was made possible by the support and contributions from a number of partners and stakeholders. Those efforts are sincerely appreciated. Future updates, suggestions, or changes, may be coordinated through the Sector Delaware Bay Chief of Contingency Preparedness.

A handwritten signature in blue ink, appearing to read "S. E. Anderson".

S. E. Anderson  
Captain, U.S. Coast Guard  
Commander, Sector Delaware Bay

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# References

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- (a) National Response Framework
- (b) National Contingency Plan, 40 CFR Part 300
- (c) U.S. Coast Guard Marine Environmental Response and Preparedness Manual, COMDTINST M16000.14 (series)
- (d) Contingency Preparedness Planning Manual, Volume 4: Incident Management and Crisis Response, COMDTINST M3010.24
- (e) Policy for Countering Weapons of Mass Destruction, COMDTINST 3400.5
- (f) Weapons of Mass Destruction and Catastrophic Hazardous Material Releases, COMDTINST 3400.3 (series)
- (g) Critical Incident Communications, COMDTINST M16600.3
- (h) Coast Guard Incident Management Handbook
- (i) DoD Directive 6055.9M, Ammunition and Explosives Safety Standards
- (j) DoD Directive 3025.18, Defense Support of Civil Authorities (DSCA)
- (k) Department of the Army Memorandum of 21 April 2009: Munitions Response Terminology

# Situation

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This Concept Plan (CONPLAN) provides guidance to Coast Guard Sector Delaware Bay for coordinating a response to an incident involving sea-disposed conventional or chemical Discarded Military Munitions (DMM), as a result of the incidental recovery of such material during maritime activities. This includes the potential encountering of, and exposure to, chemical agents (CA), and the potential or known presence of chemical warfare material (CWM), described as chemical munitions or CA in containers. In response to a DMM incident, Sector Delaware Bay will use all available resources, and conduct operations in concert with partner response agencies using risk informed decision making, to save or assist lives, mitigate and/or prevent further contamination of public/private property or the environment, contain the threat posed to public safety, stabilize the incident(s), and protect the environment and food supply.

## **General**

### ***Brief History of Sea Disposal of Military Munitions***

- (1) The Department of Defense (DoD) disposed of excess, obsolete, unserviceable, and captured enemy munitions in deep water off the shores of the United States until 1970. Congress prohibited the practice with the passage of the Marine Protection, Research, and Sanctuaries Act of 1972. Prior to the 1970s, munitions disposal was generally limited to burning, burial on-land, or disposal at sea. At the time, sea disposal was considered one of the safest alternatives available to dispose of munitions.
- (2) The U.S. Armed Forces established policies for munitions disposal beginning in 1917. These policies, which defined depths and locations of disposal sites, became more stringent over time in an effort to reduce the possibility of recovery and accidental contact by the public. In 1944, the War Department required the disposal of CWM to occur in water at least 300 feet deep and 10 miles from shore and established specific criteria for conventional munitions disposal. By December 1945, the Department increased the disposal depth requirement to 6,000 feet for CWM and 3,000 feet for explosives and ammunition. The Department also published disposal locations in a notice to mariners and on nautical charts.
- (3) Although most sea disposal operations were to occur in deep water, research shows that at least one vessel (the USS Elinor) was known to have disposed of DoD military munition off the mid-Atlantic coast after World War I. The USS Elinor, which returned to the United States from Europe in 1919, subsequently transited from the mouth of the Chesapeake Bay to New York Harbor between 11 and 14 February 1919, disposing her cargo of CWM approximately 40 nautical miles beyond the mouth of the Chesapeake Bay in 102 feet of water along the way. The USS Elinor, which disposed of 75-mm munitions (mustard rounds), may be the source of recently recovered munitions in the Sector Delaware Bay AOR, however, this is not known for certain.

## *Past Responses*

From August 2016 to August 2017, Sector Delaware Bay responded to two incidents involving DMM/CWM onboard commercial fishing vessels (CFV). Both incidents involved fishing vessel crewmembers being exposed to CA as a result of the incidental handling of DMM recovered during permitted commercial fishing operations. These exposures led to one hospitalization of a crew member, and both incidents required medical treatment of symptomatic crewmembers for chemical burns caused by a likely CA (presumed to be a sulfur mustard agent), after the vessels had returned to port.

Anecdotal information obtained through interviews by Coast Guard and Food and Drug Administration (FDA) officials with fishermen engaged in shellfish fisheries suggests that DMM (both CWM and conventional) are encountered frequently.

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### *21 August 2017*

Sector Delaware Bay received a report from the Master of a 145-foot commercial fishing vessel that a crewmember was being treated at an Atlantic City hospital for a chemical blister on his forearm. The blister injury was believed to have been a result of handling a munition recovered during commercial clamming offshore. The vessel had arrived to port in Atlantic City the previous day, and offloaded its catch of 5,300 bushels of clams. The clams were transported from Atlantic City to Sea Watch International in Milford, Delaware, for processing. None of the other crew members were displaying symptoms of exposure. The injured crewmember was treated and released from the hospital. During interviews, the Master indicated that the vessel pulled up a box of approximately 20 munitions approximately 28 nautical miles East of Long Branch, New Jersey during clamming operations. The box was caught in the vessel's hopper, broke apart, and the canisters entered the sorting belt mechanical system from the hopper. The canisters and other metallic items were retrieved from a magnet by crew members, and discarded overboard. Responders from the Atlantic City Fire Department Hazardous Materials (HAZMAT) team, and Atlantic Strike Team, performed testing for chemical agents onboard the vessel, with negative results. Federal and State officials worked with Sea Watch to embargo and quarantine the catch, which was later destroyed. The reported GPS coordinates for the recovered material were 40-09.568N 073-06.277W.

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### *9 August 2016*

The Environmental Protection Agency (EPA) and state of New Jersey notified the Coast Guard that a crewmember from an 80-foot commercial fishing vessel was receiving treatment for 2nd degree burns and blistering of his upper extremities. These injuries eventually required a skin graft and physical therapy/rehabilitation. Reportedly, the crewmember was suspected to have come into contact with a hazardous substance from a military munition recovered from the sea floor while clam fishing on August 2<sup>nd</sup>. When the fishing vessel returned to port, the crewmember sought medical attention for developing symptoms. Following the notification, Coast Guard Sector Delaware Bay issued a Captain of the Port (COTP) Order to the vessel requiring the vessel to remain in port to allow responders to inspect it for harmful or hazardous substances. Working in conjunction with other federal, state and local agencies, specialized response personnel from the Coast Guard's Atlantic Strike Team conducted extensive testing for harmful or hazardous substances onboard the vessel on Aug 10th. All tests were negative. The COTP order was subsequently removed, allowing the vessel to return to operation at the owner or operator's discretion. Additionally, the FDA worked with state agencies and the processing plant to track down

clams that had been processed from the vessel's offloaded catch. A total of 704 cases of clam chowder base had been made from the catch, of which 512 were still at the plant, and a truck was transporting 192 cases to a distributor in New Hampshire. All clams were subsequently returned to the plant and destroyed. Involved agencies included Coast Guard Sector Delaware Bay, the Coast Guard Atlantic Strike Team, the FDA, FBI Field Office Atlantic City, NOAA Scientific Support Coordinator, New Jersey Office of Emergency Management, New Jersey Department Environmental Protection, New Jersey Department of Health, Delaware Department of Health, and Delaware Department of Natural Resources and Environmental Conservation.

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## *6 June 2010*

Incidents involving CWM encounters have also occurred in other COTP zones. For example, on 6 June 2010, while conducting routine clam dredging operations off the coast of Long Island, NY, a commercial fishing vessel dredged up two WW1 era sulfur mustard canisters. While attempting to return the canisters to the ocean, one struck the gunwale of the vessel, fell to the deck, and broke open releasing its contents onto the deck. The vessel continued fishing operations and later returned to the port of New Bedford, MA. Two crewmembers experienced blister symptoms and sought medical care. The vessel's catch was offloaded, and while the vessel was transiting back to sea, the Coast Guard received notification of possible CA (mustard) contamination onboard. The vessel was subsequently ordered to a nearby anchorage outside of New Bedford Harbor. The response included multiple local, state and federal agencies, an incident-specific meeting of the Regional Response Team 1, and formation of a Unified Command.

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### *Area of Concern*

**Area of Operation.** In response to an incident involving DMM covered by this plan, primary areas of operation will include onboard the vessel, waters and port areas immediately surrounding the vessel, and vessel crewmembers. In some cases, the catch that was onboard a fishing vessel at the time the DMM was encountered may have been transferred off the vessel prior to initiation of response operations. In these cases, the area of operation will extend to a holding area onshore, the processing facility, and vehicles used to transport the catch from the vessel to the facility.

**Area of Interest.** Vessels that are particularly susceptible to recovering DMM from the sea floor include dredging type vessels engaged in clam and ocean quahog fisheries. Accordingly, areas of interest include clam and quahog fishing grounds off the coast of New Jersey and Delaware, transit routes between the coastline and the fishing grounds, vessel homeports and/or offloading facilities, and processing facilities. Enclosure (2) provides a geographical reference for areas of interest noted in this plan.

- (1) As of the date of this plan, there were roughly 290 dredging type commercial fishing vessels on the regional Coast Guard Commercial Fishing Vessel Examiner's roster. Primary homeports for these vessels in Sector Delaware Bay's AOR include Cape May, Atlantic City, Point Pleasant, and Barnegat Light, however, fishing vessels homeported elsewhere in the mid-Atlantic or Northeast regularly fish in the Sector Delaware Bay zone. There were 1459 unique fishing vessel landings of surf clams, ocean quahog, or sea scallops, made by 163 vessels, in New Jersey in 2016. Anecdotal information suggests there are approximately 20-30 dredging type vessels regularly engaged in shellfish fisheries in the Sector's AOR at a given time.



- (2) Common companies involved in shellfish *landing* in NJ and MD:
  - a. Atlantic Cape Fisheries: 301 Channel Dr, Point Pleasant Beach, NJ.
  - b. Atlantic Cape Fisheries: 985 Ocean Drive, Cape May, NJ.
  - c. Surfside Products in Point Pleasant, Atlantic City, and Ocean City MD.
  - d. LaMonica Fine Foods in Atlantic City, NJ.
  - e. Sea Watch International in Atlantic City, NJ.
  - f. Common pier/offloading locations used by these vessels include Barneys and Dockside Packing in Gardners Basin (Atlantic City, NJ), dock space in Delta Basin (Atlantic City, NJ), and facilities along the Manasquan River (Point Pleasant Beach, NJ).
  
- (3) Primary shellfish *processing* companies/plants in NJ, DE and RI:
  - a. Atlantic Cape Fisheries: 985 Ocean Drive, Cape May, NJ / Processing 16 Broadcommon Rd, Bristol RI.
  - b. Surfside Products. 2838 High St, Port Norris, NJ.
  - c. LaMonica Fine Foods. 48 Gorton Rd, Millville, NJ.
  - d. Sea Watch International LTD. 242 S. Rehoboth Blvd, Milford, DE.

**Area of Responsibility.** Coast Guard Sector Delaware Bay's Area of Responsibility (AOR) is described in 33 CFR 3.25-05. The Captain of the Port (COTP) Delaware Bay Zone includes an area of responsibility that encompasses the eastern two-thirds of Pennsylvania, the southern half of New Jersey below a line from Trenton to Long Branch, and the State of Delaware. The COTP Zone extends seaward in a southeasterly direction from the New Jersey and Delaware coasts to the 200 nautical mile exclusive economic zone boundary. Sector Delaware Bay includes the major ports of Wilmington, DE and Philadelphia, PA and major river systems such as the Susquehanna and Delaware Rivers. The AOR also includes several locks and dams, active shipyards, major deep draft cargo ports, and the waters of multiple lakes, rivers and coastal waterways.

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### ***Incident Impact***

An incident involving DMM and CWM may result in unique and potentially significant impacts in a number of ways, to include:

- (1) Injury to vessel crewmember(s).
- (2) Contamination of vessel.
- (3) Contamination of catch/threat to food supply.
- (4) Disruptions to a vessel's operation, waterway, marina and/or pier/facility. These disruptions may stem from operational controls, such as safety zones or Captain of the Port Orders, necessary to provide for public safety and/or to facilitate an emergency response.
- (5) Public safety/health concerns (real or perceived).
- (6) Risk to responders.
- (7) The response may exceed or overwhelm the capabilities or resources of local fire departments/HAZMAT teams and/or require a joint federal, state and/or local response. Additionally, depending on the time of year, Level A or B personal protective equipment (PPE) may pose health and safety risks for responders that may need to be mitigated.

## *Pre-Incident Conditions*

- (1) On 22 August 2016, the Coast Guard Inspections and Compliance Directorate issued Marine Safety Alert 11-16 titled “Dangerous Bycatch from Bygone Days, Discarded Munitions Remain a Present-Day Hazard!” The alert addressed the extreme hazards that potentially exist today caused by discarded munitions, particularly for commercial fishermen engaged in dredging and trawling. The alert also recommended the fishing fleet review and follow the Maritime Industry 3R Explosive Safety Guide, and report discoveries to the National Response Center.
  - (2) The Army’s 3R Explosive Safety Guide for Maritime Industry is guidance produced by the Army in July 2013. The 3Rs (Recognize, Retreat, Report) Guide is tailored for the maritime community (see enclosure 3). This guide provides mariners with information on the actions to take should they recover or suspect they have recovered a munition during maritime operations.
  - (3) Sector Delaware Bay created a Quick Response Card (QRC) for the Sector Command Center and Sector Response personnel to help guide information collection and initial response actions for an incident involving munitions (see enclosure 4).
  - (4) Since the August 2016 incident, Sector Delaware Bay Prevention Department and Commercial Fishing Vessel Examiner have used Safety Alert 11-16 and 3R Guide to raise awareness among, and provide guidance to, the commercial fishing fleet in this AOR. In fact, the 3R guide was posted on the bridge of the vessel involved in the August 2017 incident.
  - (5) At the time of the writing of this plan, the Office of the Assistant Secretary of the Army for Safety, Environment, and Occupational Health’s Director for Munitions and Chemical Matters was working with the FDA to provide training on handling sulfur mustard contamination to certain (as yet undetermined) medical facilities, and, pending funding availability, a train-the-trainer program for vessel captains.
  - (6) The NJ Department of Health (NJDOH) created an infographic to educate NJ coastal clammers on the dangers of munition contact. This product was distributed via clammer and harvester inspectors, as well as a publicly available link:  
[http://www.nj.gov/health/ceohs/documents/njdoh\\_fishing\\_munitions.pdf](http://www.nj.gov/health/ceohs/documents/njdoh_fishing_munitions.pdf)
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## *Support from Other Agencies*

Federal, state, and local agencies will play a key role in DMM and/or CWM response operations. The Coast Guard may receive support from, or provide support to, one or more of the following:

### *Federal*

#### **Department of Defense (DOD) Contacts (in Order of Priority During a Response)**

- (1) Naval Weapons Station Earl, NJ: The Explosive Ordnance Disposal (EOD) detachment at Naval Weapons Station Earl is a six-person team equipped, trained and responsible for identifying (confirming/denying presence of) DoD military munitions, determining the threat, limiting the spread of contamination, and rendering it safe. The EOD has a 9-meter (29' 6") rigid hull boat, and normally launches on maritime missions from Atlantic Highlands, NJ, although the boat is trailerable and can launch from an alternate boat ramp. The EOD has a 1-2 hour ramp-up time (may be longer on weekends/holidays), and has a two-person team available on 24/7 duty. The EOD is dispatched through the Regional Operations Center (757-322-2609), but may also be reached directly at 732-866-2291. The team is not equipped or responsible for decontamination actions onboard the vessel or catch. If the recovered munition is determined to contain an unknown liquid fill, EOD will assist in coordinating further disposition (20<sup>th</sup> CBRNE may be contacted for assistance). If the vessel is at sea, EOD can, if the risk is acceptable and if authorized by higher DoD authority, dispose of the munition at sea.
- (2) 20<sup>th</sup> CBRNE Operations Center: 410-436-6200. Responsible for determining and executing safe disposition, removal, and transport of munition, once rendered safe by an Explosive Ordnance Disposal team.
- (3) The Navy On Scene Coordinator (NOSC) that covers Sector Delaware Bay's zone is Commander Navy Region Mid-Atlantic, 1510 Gilbert Street, Norfolk, VA 23511. Contact may be made through the Regional Operations Center at 757-322-2609.
- (4) The Office of the Assistant Secretary of the Army for Safety, Environment, and Occupational Health's Director for Munitions and Chemical Matters, 703-697-5564.
- (5) Additional U.S. Army Contacts (Consult Navy EOD, 20<sup>th</sup> CBRNE Operations Center, and Atlantic Strike Team to determine additional notifications based on incident):
  - Army Operations Center: 703-697-0218 or 703-695-4695.
  - Army National Guard 21<sup>st</sup> Civil Support Team (CST).
  - Chemical Material Activity's Director, Recovered Chemical Material Directorate, 410-436-1083.
  - Edgewood Chemical Biological Center's Director for Operations for Program Integration, 410-436-9570.
  - U.S. Forces Command's Director, Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Analytical Remediation Activity, 410-436-9570.

## **Department of Homeland Security (DHS)**

- (1) **National Response Center (NRC)**. The NRC is a part of the federally established National Response System and staffed 24 hours a day by the U.S. Coast Guard. It is the designated federal point of contact for reporting all oil, chemical, radiological, biological and etiologial discharges into the environment, anywhere in the United States and its territories. The NRC also takes maritime reports of suspicious activity and security breaches within the waters of the United States and its territories. Reports to the NRC activate the National Contingency Plan (NCP) and the federal government's response capabilities. It is the responsibility of the NRC staff to notify the pre-designated On Scene Coordinator assigned to the area of the incident and to collect available information on the size and nature of the release, the facility or vessel involved, and the party(ies) responsible for the release. The NRC maintains reports of all releases and spills in a national database. The NRC can be contacted at 800-424-8802.
- (2) **National Strike Force (NSF)**: Units of the NSF maintain the capability to support incident management operations, and specialized response capabilities. The Atlantic Strike Team, located at Joint Base McGuire-Dix-Lakehurst, is one of three strike teams of the NSF. AST is a vital national asset comprised of a unique, highly trained cadre of Coast Guard professionals who maintain and rapidly deploy with specialized equipment and incident management skills, including maritime environmental response, weapons of mass destruction (WMD), and Chemical, Biological, Radiological, Nuclear, Explosive (CBRNE) response. The Public Affairs Information Assist Team (PIAT), also operates under the National Strike Force. The AST can be dispatched via communications with the District 5 command center, Critical Incident Reporting, and/or via the NSF command center (NSFCC) at 252-331-6000.
- (3) **Coast Guard Incident Management Assist Team (IMAT)**. The IMAT, also part of the NSF, is designed to support tactical incident responses. This team represents the highest level of ICS experience and qualifications in the Coast Guard and its members are available upon request to assist operational or incident commanders during significant contingencies. The IMAT may be requested through the District 5 command center, Critical Incident Reporting mechanisms, and/or via the NSFCC.

## **Department of Justice (DOJ)**

- (1) **Federal Bureau of Investigation (FBI)**. The FBI is the lead Federal agency for criminal investigations of terrorist acts or terrorist threats, as well as intelligence collection activities within the United States. The FBI's Newark office, which includes a WMD Coordinator, has jurisdiction for incidents occurring on the Jersey Shore (Atlantic, Cumberland, and Cape May Counties). A satellite office with minimal staffing is located in Northfield, NJ. For a CWM/DMM incident, the FBI's investigative priorities include: possession of WMD (location, and who has access to it), and whether or not there are indicators that those involved intended to locate and retrieve the DMM. The Newark office does not have HAZMAT Level A capability, but could help source it through the FBI or other partners if needed. The Newark office receives NRC reports, but may also be reached directly at (973) 792-3000.

## **Department of Health and Human Services (HHS)**

- (1) **Food and Drug Administration (FDA)**: The FDA is responsible for protecting the public health by ensuring the safety, efficacy, and security of the nation's food supply. The FDA manages the National Shellfish Sanitation Program (NSSP), which is the federal/state cooperative program for the sanitary control of shellfish produced and sold for human consumption. The purpose of the NSSP is to promote and improve the sanitation of shellfish (oysters, clams, mussels, and scallops), moving in inter-state commerce. The cognizant FDA office for New Jersey and Delaware under the NSSP is the Shellfish Sanitation Branch 2, Office of State Cooperative Programs, in Voorhees, NJ, 856-290-4019. For CWM/DMM response, the FDA coordinates with designated state shellfish regulatory officials, as well as the owner/operator of the vessel and offloading/processing facilities, to coordinate the identification, status, isolation/embargo, and disposition of the shellfish catch.
- (2) **Office of the Assistant Secretary for Preparedness and Response (ASPR)**: Regional Emergency Coordinators (RECs) serve as ASPR's primary representatives throughout the country at the regional level. The main role of the RECs is relationship building, planning for effective federal emergency responses, and facilitation of preparedness and response activities for public health and medical emergencies. ASPR and the REC are an additional resource that the state health department will engage for situational awareness and resource support (if needed). Region II covers New York and New Jersey (212-264-4494). Region III covers Delaware (215-861-4413).
- (3) **Centers for Disease Control and Prevention (CDC)**: The CDC provides independent oversight to the U.S. Army's chemical weapons elimination program and serves as an important element in ensuring the safe destruction of chemical warfare material for protection of public health. The CDC also recommends exposure limits for chemical warfare agents. During a response, the CDC may be able to provide additional resources and expertise for environmental or responder monitoring, medical guidelines and recommendations, and disposal. Contact/more info: [www.cdc.gov/nceh/demil](http://www.cdc.gov/nceh/demil); 800-232-4636.

## **Environmental Protection Agency (EPA)**

- (1) **Environmental Protection Agency (EPA)**: The EPA's Environmental Response Team (ERT) has the capability to conduct on-site health and safety assessments (including chemical, biological and physical treatment and monitoring) to determine if immediate threats to personnel safety exist. Coast Guard commanders who have reason to suspect threats to physical safety exist shall contact the ERT via the National Response Center (NRC) at 1-800-424- 8802.

## **National Oceanic and Atmospheric Administration (NOAA)**

- (1) **National Weather Service (NWS)**: The NWS provides weather, water, climate data, forecasts and warnings for the protection of life and property. The NWS office that services the Sector Delaware Bay AOR is NWS Mount Holly, which can be reached at [www.weather.gov/phi](http://www.weather.gov/phi), 609-261-6604, and [nws.er.ph.operations@noaa.gov](mailto:nws.er.ph.operations@noaa.gov).
- (2) **NOAA Scientific Support Coordinator**: The NOAA SSCs are part of NOAA's Office of Response and Restoration. NOAA SSCs are interdisciplinary scientific teams that support the Federal On Scene Coordinator, and respond to oil and chemical spills in U.S. waters. NOAA

SSCs help the On-Scene Coordinator make timely operational decisions. The team is headquartered at NOAA's campus in Seattle; however, members are located around the country to represent the team at spills, drawing on the team's spill trajectory estimates, chemical hazards analyses, and assessments of the sensitivity of biological and human-use resources. OR&R staff members also represent NOAA on the National Response Team and Regional Response Teams. NOAA SSC locations are mostly associated with Coast Guard Districts. The Region Five SSC covers Sectors New York, Delaware Bay, Maryland-National Capital Region, Hampton Roads, and North Carolina.

### State

**New Jersey Department of Environmental Protection (NJDEP):** NJDEP administers the state's environmental protection, conservation, and emergency response efforts. NJDEP may be reached at 877-927-6337, or through the Regional Operations and Intelligence Center (ROIC) at 609-963-6900.

**New Jersey Department of Health (NJDOH):** The NJDOH Office of Emergency Management has responsibility to coordinate the emergency activities of the Department and its components; the OEM Duty Officer can be reached at 609-341-4973 or [hccdutyofficer@njlincs.net](mailto:hccdutyofficer@njlincs.net). NJDOH OEM would lead Department efforts and activities for these situations, including alerting/notifying other Department units that have specific responsibilities, such as liaising with hospitals and EMS agencies, epidemiology and disease monitoring, and public information. One unit of note is the NJDOH Consumer, Environmental and Occupational Health Service (CEOHS), which serves the communities and workers through activities aimed at improving the health and well-being of the public. At the core of its mission are preventive initiatives to decrease disease and injury by reducing exposure to chemical, physical and biological hazards. CEOHS activities are organized into three programs: Environmental and Occupational Health Surveillance, Food Safety and Public Protection, and Environmental and Occupational Health Assessment. The NJDOH CEOHS is the State Shellfish Regulatory Official listed on the FDA's Interstate Certified Shellfish Shippers List.

**New Jersey Office of Homeland Security and Preparedness (NJOHSP):** Leads and coordinates New Jersey's counterterrorism, cybersecurity, and emergency preparedness efforts, and can be contacted at 609-584-4000.

**New Jersey Office of Emergency Management (OEM) and State Police (NJSP):** NJSP includes a Homeland Security Branch, comprised of an Emergency Management Section (Office of Emergency Management) and Special Operations Section. The Emergency Management Section plans, directs, and coordinates emergency operations within the state. The Marine Services Bureau, under the Special Operations Branch, is the primary provider of full-time law enforcement services for New Jersey waterways and contiguous land areas. State resources can be coordinated through the Regional Operations and Intelligence Center (ROIC) at 609-963-6900.

[1] The NJ OEM's Emergency Management Section also includes the Hazardous Materials Response Unit (HMRU). This unit can provide direct support in decontamination, environmental monitoring, scene management, and resource acquisition. The HMRU provides round the clock response capabilities to hazardous materials, clandestine laboratories, and CBRNE incidents throughout NJ. Its mission is to assist local, other state and federal agencies in determining the extent of the incident and when necessary, document, collect, and analyze any material(s) or hazardous evidence. HMRU is highly mobile and carries state of the art diagnostic and field analytical testing equipment with reach back capability. This reach back capability allows for the information and findings in the field

to be transmitted and viewed by specialists in a specific field.

**Delaware Emergency Management Agency (DEMA):** Lead state agency for coordination of comprehensive emergency preparedness, training, response, recovery and mitigation services. DEMA is a division within the Department of Safety and Homeland Security. DEMA can be contacted at 302-659-3362.

### **Delaware Department of Natural Resources and Environmental Conservation (DNREC)**

- [1] DNREC Office of Environmental Protection includes the Division of Waste and Hazardous Substances, and Division of Water. Response personnel from these divisions may be included in an emergency CWM response occurring in Delaware State waters.
- [2] DNREC's Shellfish Program is the State Shellfish Regulatory Official listed on the FDA's Interstate Certified Shellfish Shippers List, and is responsible for protecting public health by minimizing the risk of food borne illness due to the consumption of shellfish. The Program Coordinator can be reached at 302-739-9939.

### **Local**

**Fire Departments:** Some municipal fire departments have specialized HAZMAT units, many of which are trained in WMD response. State/municipal HAZMAT capabilities should be coordinated through the cognizant state office of emergency management or regional operations/dispatch center.

**Emergency Medical Services (EMS):** Local EMS organizations are responsible for responding to requests for medical assistance, depending upon the severity of the incident in terms of number of casualties and extent of exposure. EMS personnel may be restricted from responding to a site by the Lead Federal Agency (LFA) until protective capabilities for responders are available.

**Harbormaster:** Local harbormasters are usually employed by the town in which the harbor is located. They may be part of the local law enforcement agency or may have powers delegated to them directly by the town or city council. Harbormasters may be able to readily facilitate movement of vessels within the harbor and clear dock space as needed for the response.

### **Private**

**Vessels:** The Master of a vessel has a vested interest in the safety of their vessel, crew, and cargo. In the event suspected CWM, encountered during normal fishing activity, hazards a crewmember or vessel, the Master may contact local authorities via 911 and/or Sector Delaware Bay Command Center via phone, VHF channel 16, or other means. The Master may also provide advice to the Incident Commander on the use of personnel and equipment. The Master and crew can also provide crucial information regarding the vessel's construction, cargo, firefighting systems, fishing configurations/cargo hold filtration systems, etc. It should be noted that a vessel's owner may be a different person than the master. In these cases, the owner may be an additional stakeholder to consider/engage.

**Shellfish Processing Facilities:** Shellfish Processing Facilities regularly used for processing shellfish in this AOR are addressed in the Situation paragraph above. The processing plants have protocols in place to deal with DoD military munitions encountered during processing at the plant. An encounter with DoD

military munitions should be reported to local law enforcement. Law enforcement will request EOD support of an explosives or munitions emergency. The responding EOD team will follow applicable EOD procedures when addressing the munitions encountered.

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### *Assumptions*

- (1) Timely notification(s) will enable a swift, effective, and comprehensive multi-agency response.
  - (2) Fishing vessels will be inclined to return to their intended next port of call/homeport. If the vessel has been engaged in fishing, the vessel Master will want to go to the dock where they offload catch.
  - (3) An incident(s) will be significant enough to require the commitment of Federal, state and local forces.
  - (4) An incident(s) involving CWM will require an atypical response that may create unease for decision makers and political officials.
  - (5) The source of contamination (i.e. the military munition) will be reasonably ascertained through information collection efforts, photo evidence, and/or on scene evaluation by a trained EOD team.
-



## *Legal Considerations*

- (1) 14 USC 2: Provides the Coast Guard authority to engage in planning for HAZMAT and CBRNE incidents. One of the Coast Guard's primary duties is enforcing or assisting to enforce all applicable federal laws upon the high seas and waters subject to United States jurisdiction.
- (2) 14 USC 88 (b). Provides the Coast Guard authority to render aid and save life and property in the event of a marine-related emergency, within the capability of available Coast Guard resources.
- (3) 14 USC 89: Authorizes the Coast Guard to make inquiries, examinations, inspections, searches, seizures, and arrests upon the high seas and waters over which the United States has jurisdiction, for the prevention, detection, and suppression of violations of U.S. laws.
- (4) 14 USC 141: Authorizes the Coast Guard to utilize its personnel and facilities to assist, upon request, other Federal, state, and local agencies.
- (5) Ports and Waterways Act (33 USC 1223-1225). Delegates authority to the Captain of the Port (COTP) to direct the anchoring, mooring, or movement of a vessel; to specify times of vessel entry, movement, or departure to, from, or through ports, harbors, or other waters; to restrict vessels operation in hazardous conditions to vessels which have particular operating characteristics or capabilities; or to direct the handling, loading, discharge, storage and movement including, emergency removal, control and disposition of explosives or other dangerous cargo or substances, on any bridge or other structure on or in the navigable waters of the United States or any land structure immediately adjacent to those waters.
- (6) Clean Water Act: Pre-designates the Coast Guard COTP, as the Federal On Scene Coordinator (FOSC) for pollution discharge response and removal. Under this authority, the FOSC may coordinate and direct all public and private efforts directed at removal or elimination of imminent and substantial threats to the environment. Among the actions that may be taken, are the immediate removal and disposal of vessels, structures, and/or floating debris.
- (7) Intervention on the High Seas Act (33 USC 1471): Extends the Coast Guard's authority to take similar preemptive or corrective FOSC action onto the high seas (i.e., beyond the 12-mile territorial sea).
- (8) The Magnuson Act, 50 USC 191: Provides Coast Guard District Commanders and Captains of the Port (COTP) with broad authority in situations which may affect the safety and security of vessels, harbors, ports, and waterways.
- (9) The Ports and Waterways Safety Act, 33 USC 1221 through 1236: Gives the Coast Guard jurisdiction to control vessel or waterfront facility operations to prevent physical or environmental damage to any U.S. port.
- (10) 40 CFR 300.120: On-Scene Coordinators and Remedial Project Managers, general responsibilities. Includes a provision that states "DoD will be the removal response authority with respect to incidents involving DoD military weapons and munitions or weapons and munitions under the jurisdiction, custody, or control of DoD."

# Execution

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For incidents occurring offshore or in the coastal zone involving real or potential hazardous material, it is anticipated that the Coast Guard will assume the Federal On Scene Coordinator role under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), *40 CFR Part 300*. **Incidents known to involve DoD military weapons and munitions should also involve a DoD On Scene Coordinator to serve as the removal response authority, in accordance with 40 CFR 300.120.** Due to the complexity, number of assisted/assisting agencies, and potential response duration, a NIMS ICS Unified Command structure should be considered early in the response. Normally, Sector Delaware Bay will initially dispatch a response team, comprised of at least two persons, at least one of whom will be a qualified Pollution Responder, to coordinate initial on scene Coast Guard response efforts on behalf of the COTP/FOSC. Additionally, Coast Guard deployable specialized forces, such as those operating under the National Strike Force, may be consulted and/or requested through established Coast Guard request for forces channels, and will operate in accordance with established policies and procedures.

The response operation(s) may involve *time-phasing*. These phases are discussed in further detail below.

- [1] Phase I: Discovery/Notification.
- [2] Phase II: Evaluation and Stabilization.
- [3] Phase III: Rescue Operations (if applicable).
- [4] Phase IV: On Scene Assessment, Mitigation, and Decontamination.
- [5] Phase V: Reconstitution.

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## *Pre-Scripted Response Functions / Priorities*

- A. **Safety of human life, including crew, public, and emergency responders.**
- B. **HAZMAT Response**, including disposition of DMM munition (if still onboard), testing for chemical agent, and decontamination.
- C. **Food safety.**
- D. **Stakeholder outreach.**
- E. **Media relations.**
- F. **Information management.**
- G. **Investigation.**

[\*] NOTE: Additional priorities, listed in the NCP, include:

- *Stabilizing the situation to preclude the event from worsening.*
  - *The response must use all necessary containment and removal tactics in a coordinated manner to ensure a timely, effective response that minimizes adverse impact to the environment.*
-

## *Pre-Scripted Response Objectives*

- A. Provide for the safety, security, protection, and health/welfare of responders, subjects of the incident, and public.
  - B. Control, isolate, and secure/remove the source of contamination.
  - C. Prepare for and execute decontamination measures.
  - D. Mitigate impacts to the food supply.
  - E. Identify and mitigate impacts to the marine transportation system.
  - F. Establish an incident management team that can manage a coordinated response effort.
  - G. Initiate/manage effective outreach strategy to keep the public, stakeholders, and media informed.
- 

## *Pre-Scripted Key Procedures & Decision Points Checklist*

- Name the incident.
  - Identify all organizations that should comprise a Unified Command (UC)
  - Identify assisting agencies.
  - Identify whether source of contamination is still present onboard, status, and hazards (for example: is there a possibility the DMM could be fused or present an explosive hazard).
  - Identify risk(s) to the vessel, crew, and public.
  - Coordinate appropriate control actions for vessel or crew.**
  - Develop courses of action (COAs) and recommended action, in conjunction with Unified Command and assisting agencies, for placement of vessel, if underway.**
- 

## *Limitations and Constraints Checklist*

- Weather, including sea state, visibility, wind, and temperature.
  - Availability of specialized resources (i.e. HAZMAT response).
  - Lack of tactics, techniques and procedures (TTP)/training/organic capability for offshore hazmat/decon response.**
  - Multi-jurisdiction.
  - Night operations.
  - PPE requirements.
  - Responder fatigue given PPE, weather, and/or Operational Tempo (OPTEMPO).
  - Public perception.
-

## ***Commander's Critical Information Requirements***

- (1) Death or injury of responder or vessel crewmember.
  - (2) Location of any contaminated, or potentially contaminated catch or food products.
  - (3) Media interest/coverage prior to first official release of information from Coast Guard or UC.
  - (4) Ordnance remaining onboard a vessel.
  - (5) Request for MEDEVAC for crewmember symptomatic of blister agent exposure.
  - (6) Media on scene at location of vessel/decon efforts.
  - (7) Real or potential impact to marine transportation system, navigable channel, anchorage, and/or marina area due to waterway control actions, hazard onboard vessel, or response operations.
- 

### ***Phase I: Discovery/Notification***

Phase I involves the discovery of a real or potential threat in the maritime environment, and the initial report made to the Coast Guard of the incident. Discovery may occur while the vessel is underway and engaged in fishing operations, while returning to port, or after returning to port when a crewmember(s) begins to exhibit signs of chemical blister agent exposure.

Initial Coast Guard notification may be received directly from the vessel's master (either while still at sea, or after returning to port), from a NRC report, and/or from another entity such as federal, state or local response agency, hospital, etc. Regardless of timing or method of Coast Guard notification, a report should be made to the Coast Guard Sector Delaware Bay Command Center in Philadelphia, and to the NRC, as soon as possible. Upon notification, the Sector Delaware Bay Command Center will collect key information about the incident and vessel(s) involved, make internal notifications, and initiate the Coast Guard's response actions in accordance with the QRC (enclosure 4).

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### ***Phase II: Initial Evaluation and Initiating the Response***

Phase II involves evaluating the incident, characterizing the threat, and stabilizing a potentially fluid situation enough so that tactical response strategies may be formed and coordinated with other response partners.

**Communications with the Vessel:** The vessel Captain and crew need to know that CA contamination can spread. The Captain and crews should follow the guidance in the 3Rs Guide for Mariners. Potentially contaminated crew must be decontaminated before transport to medical services, to avoid contamination of the transport vehicle (cab, ambulance, etc.) or medical facility (see page 19). Additional first aid guidance for CA may be found in enclosure (5).

**Evaluate the incident and threat:** If the munition remains onboard or personnel have been exposed to a chemical agent, the level of concern, and complexity of response, are significantly elevated. In these cases, it may be prudent to direct the vessel to remain offshore, or proceed to a suitable anchorage area, until the cognizant Navy EOD team can evaluate the presence and severity of a potential explosive or chemical agent hazard – and respond accordingly. The presence or potential of crew injuries must also be

factored into this evaluation. Evaluation of the threats and hazards by trained experts, such as the Navy EOD team, followed by close collaboration/consultation between decision makers, will be critical to properly identifying **risk-based** initial response actions. A Navy EOD team will normally take 4-8 hours to deploy a vessel along the New Jersey shore (after notification). The location of the incident, weather, and status of the team at time of notification may extend the response time. Therefore, initial evaluation will be done remotely to the extent possible, while the team is being mobilized, based upon all available information.

### The Munition May Offer Important Clues About Hazards

**Note:** According to the Naval EOD, a missing cone and/or scoring on the base of a suspected chemical munition canister are indicators that the munition is **not** fused (i.e. does not present an explosive threat). If it is feasible and safe to do so, the vessel crew should be directed to provide photos of the DMM to the Coast Guard or UC. Photos taken from onboard the vessel could provide valuable initial clues to subject matter experts as to the type of munition and potential threat posed. However, sea growth and deterioration may make initial visual confirmation difficult or impossible.



A new 5-inch  
38 caliber  
projectile

**Consider Initial Control Actions:** For scenarios involving a DMM/CWM onboard a vessel that is still underway, **one of the first critical decision points will be where to direct the vessel.** Consider Coast Guard operational controls on the vessel, crew, and/or waterway in order to protect life and/or property, or to facilitate a response (to include COTP Order and/or Safety Zones). If a crew member or the vessel has become contaminated by CA, the contaminated crew member needs to be controlled and decontaminated prior to leaving the vessel (see page 19 and enclosure 5).

### Control Actions on Vessel – Trade Offs

**Note:** The decision to keep a vessel offshore and away from port will be based upon a number of complex factors, and may need to be thoroughly evaluated by decision makers in a short amount of time. The potential threat to public safety, based upon the totality/confidence of the information available at the time, should be evaluated, and weighed against the fact that **suitable response options are reduced, and risks to responders are exponentially elevated, in an offshore environment.** Additional factors that may influence the ability to direct or keep a vessel offshore include: current/forecasted weather/sea state, vessel Master's level of concern/apprehension, health issues/injuries onboard, status of fuel/provisions onboard, and ability of vessel to anchor or station-keep. See page 22 for further discussion. It is necessary to determine, as best as possible initially based on all known facts, the true nature and extent of current and potential danger posed by the threat. This will include consensus among experts and decision makers as to the known or suspected substance, method of transfer/contamination, explosive/vapor threats, calculated danger/hot zones, etc. **Understanding and articulating “most probable” and “worst case” threats will become critical during stakeholder consultation and risk-based decision making, particularly for MEDEVAC and/or where to place vessel.**

#### **Initiate the Response:**

- **Limit or prevent injury to those on scene as a top priority.** Determine early, through command center communications with the vessel, if exposure to personnel has occurred or may occur, and provide information to reduce potential effects of exposure onboard the vessel. Information for the neutralization of a suspected chemical agent, and decontamination, must be immediately available to the vessel Captain if needed. See page 19 and Enclosure (5).
- **Remove or neutralize the threat.** Sulfur Mustard, for example, has a freezing point of 58.1°F. Suspected sulfur mustard can be rendered inert, and therefore risks associated with a damaged or leaking canister significantly reduced, at these (or lower) temperatures. If safe to do so, the vessel crew may consider securing a canister in an enclosed container with sea water or ice, or

- freezing the canister or discharged liquid fill with CO2 from an upwind position. CO2 is available on many commercial fishing vessels in the form of a portable fire extinguisher.
- ***Give the vessel initial instructions.*** As a default position, the vessel should be directed to start proceeding towards port, at the master’s discretion, and if safe to do so. The vessel should remain at least 1 nautical mile (NM) offshore until a full picture of the situation can be established. The nature of the situation may require a Captain of the Port order.
  - ***Contact/dispatch a Coast Guard response team.*** This team will normally be comprised of at least two persons, at least one of whom will be a qualified Pollution Responder, and additional unit representatives, as necessary.
  - ***Contact/coordinate with DoD response teams and subject matter experts*** (whether or not munition is onboard the vessel), if source of contamination is believed to have been from a DoD munition source. Contact the following, in order of priority (see page 7 for contact info).
    - [1] Naval Weapons Station Earl EOD Team.
    - [2] 20<sup>th</sup> CBRNE Operations Center.
    - [3] Navy OSC.
  - ***Complete internal notifications.***
  - ***Continue/complete external notifications.*** At a minimum, during this phase, timely notifications should be made to the following (see pages 7-11 for contact info):
    - [1] FDA.
    - [2] State environmental response agency(ies).
    - [3] State departments of health.
    - [4] State shellfish regulatory/response agencies.
    - [5] FBI.
    - [6] NOAA SSC.
- Note: Many of these agencies will receive the National Response Center report; however, follow-on coordination at the local level will be expected. Supporting agencies may expand depending on the nature of the event.*
- ***Consider initiating Critical Incident Communications*** with the Coast Guard chain of command.
  - ***Assemble initial unified response structure***, even if done remotely at first.
  - ***Consider activation of Sector Incident Management Team.***
  - ***Assess resource requirements/shortfalls.***
  - ***Engage Coast Guard Public Affairs.***

### **DoD Standard Operating Procedure**

**Note:** When military munitions are discovered outside DoD’s munitions logistics management system, authorized officials (e.g., federal, tribal, state, and local law enforcement officers) may request DoD support for an explosives or munitions emergency response. The DoD Military Service that first becomes aware of an incident involving DoD military munitions will, if necessary, take immediate action to prevent or limit damage or injury.

If a recovered munition contains a liquid fill and the vessel is in port or the munitions is on land, the responding DOD EOD unit, regardless of Service, is required to contact the 20th CBRNE. The 20<sup>th</sup> CBRNE will dispatch the Chemical Analytical Remediation Activity (CARA) to assess non-intrusively, the munition, package it in a specialized container, and transport it to the nearest military installation within the state capable of safe storage of Category II munitions.

When a known chemical munition or munition with an unknown liquid fill is involved, the need for support from, and close coordination with, other DoD agencies on the response action is **mandatory**. Such agencies include the 20th CBRNE, the Chemical Material Activity’s Director, Recovered Chemical Material Directorate (RCMD), and the Office of the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health (ODASA (ESOH)).

### **Phase III: Rescue Operations**

Phase III, if applicable, involves the rescue operation (i.e. MEDEVAC or MEDICO) for a vessel's crewmember(s) at sea. The trigger for a rescue operation would normally be a request from the vessel Master to provide medical advice (i.e. or MEDICO) remotely, or a request to perform a medical evacuation of a crewmember from the vessel using a Coast Guard helicopter or boat.

Mustard agent penetrates the skin within two minutes. Therefore, decontamination of a person for mustard agents must occur in the first 1-2 minutes of exposure in order to prevent or decrease any tissue damage (skin, eyes, and/or airways).

#### **Emergency First Aid and Gross Decontamination Onboard a Vessel**

Note: Gross decontamination efforts done at sea by a vessel's crew may include extensive flushing/wash down with salt water and/or fresh water (performed from an upwind position), wash down of the vessel with bleach solution, and/or steps consistent with those addressed in enclosure (5). Additional to the guidance provided in enclosure (5), a 0.5% bleach solution may be safely applied to skin if soap/water is not available or enough. Gross decontamination of a person or vessel should be done for as long as necessary until the substance is no longer visible. The affected area of the body (including any blistering) should also be dressed with a clean, dry dressing.

According to a U.S. Public Health Service (USPHS) officer (CG Flight Surgeon involved in MEDEVAC discussions), an at-sea emergency MEDEVAC *may* be recommended for a crewmember exhibiting signs of moderate to severe exposure, described as extensive coverage (i.e. a limb or multiple portions of body), or symptoms of eye/respiratory issues. Patients with moderate to severe exposure will need to be treated by a hospital with a burn center as soon as possible to increase chances of survival. For minor cases (i.e. skin redness or irritation), a MEDEVAC may not be recommended, since the medical gain of expedited removal and transport to a medical facility is likely not enough to outweigh the risk of the operation (as compared to the transit time of the vessel to return to port on its own). Minor exposures require treatment at a hospital with an Intensive Care Unit (ICU). In any event, there will be substantial risk vs. gain, and operational risk management discussions that will take place between the Sector, District 5, Flight Surgeon, and resource provider (i.e. Air Station), to fully evaluate the circumstances of a potential MEDEVAC mission. This evaluation will involve gross decontamination measures reported to have been completed by the vessel's crew, confidence in those measures, and risks to responders vs. potential gain of the mission. Typically, MEDEVAC consultations among decision makers involves considering and weighing the following:

- Type/nature of medical emergency.
- Type of medical care a patient needs.
- The location that medical care can be received
- How urgent/quickly that medical care is needed.
- Whether or not that window can be met by a Coast Guard asset.

Key elements that will factor into the MEDEVAC recommendation, and risk vs. gain discussions, include:

- Time of exposure.
- Extent/degree of exposure (including approximate coverage of body).
- Extent/nature of blistering/burns.
- Decontamination/first aid actions taken onboard the vessel, and on the exposed crewmember(s).
- Eye or respiratory symptoms.

- Status of the source of contamination (i.e. canister).

Additional questions to ask the vessel Master to help establish facts for risk-based decision making include:

- When was the source of contamination first handled?
- What was done onboard the vessel after the munitions were handled?
- What was done with the munition(s)?
- When did the crewmember(s) first start developing symptoms?
- What was done with the crewmember(s) after they developed symptoms?
- Where were they on the vessel from time of exposure to the time of symptoms?
- Were these places washed down/sanitized? If so, how and when?
- What is the status of the person's clothing, gloves, etc that were being worn at the time of exposure?

### MEDEVAC

**Note:** If the source of the contamination is contained/removed, and gross decontamination of the vessel and exposed crewmembers has occurred on scene by the vessel crew, a MEDEVAC *may* be considered (after standard MEDEVAC consultations and concurrence from the supporting unit). Rescue personnel should use universal precautions. Universal precautions are to treat any bodily fluid as if it may be contaminated. Suitable PPE includes medical gloves (i.e. Nitrile gloves), eye protection, and a surgical mask. Treatment rendered by Coast Guard responders would be supportive in nature (oxygen, pain meds, and monitoring vitals) as there are no specific antidotes for mustard agents.

Most USPHS Flight Surgeons have completed the Army's Medical Management of Chemical and Biological Casualties course. This level of training equips Flight Surgeons with the ability to discuss and make recommendations on first aid and treating casualties, recognizing the severity and level of urgency, risks of further contamination transfer, and mitigating those risks for first responders. Flight surgeons will provide a recommendation as to the medical need and urgency of a MEDEVAC, based on all available information about the patient's status and stability. Additional policies on MEDEVAC can be found in section 4.7 of the Coast Guard Search and Rescue Addendum. The final decision to conduct a MEDEVAC rests with the aircraft commander, cutter commanding officer, or coxswain on scene. For a scenario such as this, the commanding officer/officer in charge (or their representative) of the recommended MEDEVAC asset's unit will be involved in the MEDEVAC decision making, along with the Search and Rescue Mission Coordinator, Flight Surgeon, and District 5 Command Center/Chief of Incident Management. If desired, additional expertise/consultation may be received from a DoD Medical Officer, or the 20<sup>th</sup> CBRNE Operations Center (see page 7 for contact info).

It is expected that a MEDEVAC would only be considered (and necessary) for cases involving severe symptoms, and when there is high confidence among all stakeholders that the mission will not put responders at risk of contamination. If there is reason to believe the environment is still contaminated, the only option will be to extract the crewmember(s) pier-side via an established decontamination station/process.

### **Phase IV: On scene assessment and mitigation**

To facilitate a timely and effective response by a trained HAZMAT team, access for emergency medical services, and appropriate catch offloading capabilities, the **vessel subject to the response should be brought to a shoreside facility appropriate for the size and type of vessel as soon as safely**

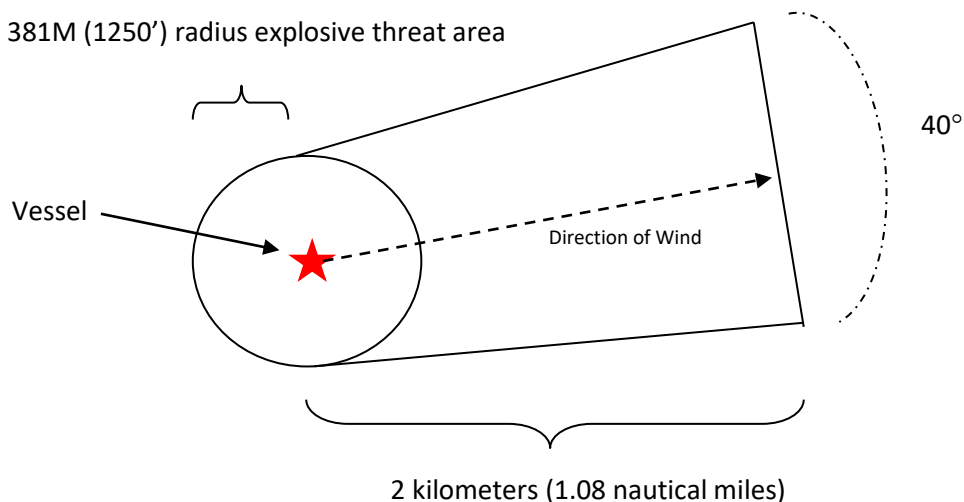


**practicable.** Remaining offshore, or at an anchorage, significantly reduces options for a suitable HAZMAT response, and increases risk for the vessel's crew and emergency responders.

However, if the source of contamination (i.e. military munition shell/casing) is still onboard, or there is a compelling public safety concern due to the possibility of an explosive threat, un-identified munition, and/or chemical vapor threat, remaining offshore or proceeding to an anchorage (if the vessel is capable of anchoring) may be the safest interim option until the threat can be determined and mitigated by trained response personnel (EOD Team). Once determined, the EOD team will be able to secure or package the munition, in conjunction with the 20<sup>th</sup> CBRNE.

### **Worst Case Exclusion Zone and Threat Analysis**

**Note:** Early consultation with the Navy EOD will be needed to evaluate and determine prudent/required exclusion areas around a vessel or threat (i.e. standoff distance), based on what they may be able to deduce from the munition's characteristics. Pending a more thorough evaluation of the threat, the **default worst case exclusion zone for an unknown munition threat, or unanalyzed (but possible) explosive threat**, can be used as a rule of thumb. (Source: Initial Exclusion Area for an Unknown Chemical Source, as per EOD AEDOPS.



Exclusion Zones, and subsequent decontamination hot/warm/cold zones will be further refined/determined (and likely vastly reduced from the default explosive and downwind exclusion area depicted in the graphic). The zone refinement will be accomplished by the EOD, in conjunction with the Defense Threat Reduction Agency (DTRA). Upon further evaluation of the scene, munition(s), and/or HAZMAT involved, the EOD can obtain sophisticated modeling and analysis on the explosive and vapor threat from DTRA. Inputs to this analysis will include type/number of munitions, assumed/known chemical liquid fill (if applicable), actual vs. potential volume of released chemical liquid fill, and current/projected environmental conditions.

The Atlantic Strike Team is trained and equipped for chemical agent confirmation sampling. This means the ability to confirm the presence of a chemical agent (i.e. an indicator turning a particular color based on detection of a particular chemical agent group), but not identification of exact type of agent. The AST's primary tool used for confirmation testing is M8/M9 detection paper for field level rudimentary sampling. Definitive analysis to pinpoint the actual chemical agent requires lab testing. The 20<sup>th</sup> CBRNE and Civil Support Team have access to lab based testing; however, this will likely take some time to accomplish.

### ***Offshore EOD Team Response***

The Navy EOD team is capable of responding to an offshore/coastal incident. Their primary surface resource is a trailerable 9-meter (29-foot) rigid hull response boat, with operational limitations of 10-15kt

winds and 3-foot seas. A response to a possible chemical munition will require a minimum of five personnel, but ideally will include the full six-person EOD team.

**For incidents involving a potential explosive or dangerous vapor threat onboard a vessel, it is anticipated that the Coast Guard will order the vessel to remain at least one nautical mile offshore (based on the criteria for initial exclusion area for unknown chemical source).** Actual position for a given incident will be driven largely by the current and future prevailing wind and sea conditions. It may become necessary to weigh the risks of keeping the vessel offshore in bad weather, where there may be increased hazards to the crew and responders, versus the risks of bringing the vessel to a more protected harbor/back bay location.

For an offshore EOD response, the EOD team will need, and request, at a minimum, the following assistance from the Coast Guard:

- (1) Coast Guard escort/support vessel (Buoy Tender (preferred) or Medium Endurance Cutter). **If the situation will not require a decontamination element**, a Patrol Boat or Fast Response Cutter may be adequate to support the EOD team's vessel and crew. This asset will be needed to provide a stable support tie-off platform for the smaller EOD boat, assist with logistics/messing needs, and stage equipment. It is also anticipated that this vessel will be needed to embark a National Strike Force contingent to provide additional support, expertise, and equipment back-up for the EOD team. This Coast Guard vessel may also be part of an offshore safety zone presence. Additional boat(s) may be required for safety zone enforcement.
- (2) Ability to perform decontamination of up to five EOD personnel from the support vessel.
- (3) Potential need for air supply bottle swap (Strike Team support).
- (4) Advice/recommendations for a boat ramp/launch site, staging of equipment, and/or parking/logistics support at the nearest Coast Guard station.

#### **Limitations of the Navy EOD Team's Capabilities**

**Note:** The EOD is only capable of and equipped for "hasty decontamination" for themselves following entry to analyze or render a munition safe. Hasty decontamination is typically reserved for limited use for lifesaving extraction of a casualty or injury. A trained and equipped HAZMAT/Decontamination team will be needed to operate in tandem with the EOD, particularly for prolonged responses.

### ***Limitations of an Offshore HAZMAT Response***

A HAZMAT response in an offshore/maritime environment would be extremely complex, dangerous, lengthy, resource-heavy, and expensive. Barring a very unique/compelling circumstance, the physical hazards of an offshore HAZMAT operation to both responders and vessel crew will outweigh the public health/safety threat posed by a chemical agent, such as Sulfur Mustard, onboard a vessel.

The following is a list of limitations and constraints that should be considered:

- (1) The use of sodium hypochlorite (bleach) is a prominent decontamination agent. However, when used on metal deck surfaces and mixed with large quantities of salt water, it creates a "black ice" effect on chemical protective boots. This increases the safety concerns for HAZMAT responders transferring between vessels, traversing decks/fish holds, etc.
- (2) Sea spray and wet/running machinery surfaces could cause run off of hydraulic fluid, solvents, and fuel oils. These could lead to false positives with chemical detection paper to a greater

degree than if the vessel were moored with the machinery disengaged and dry.

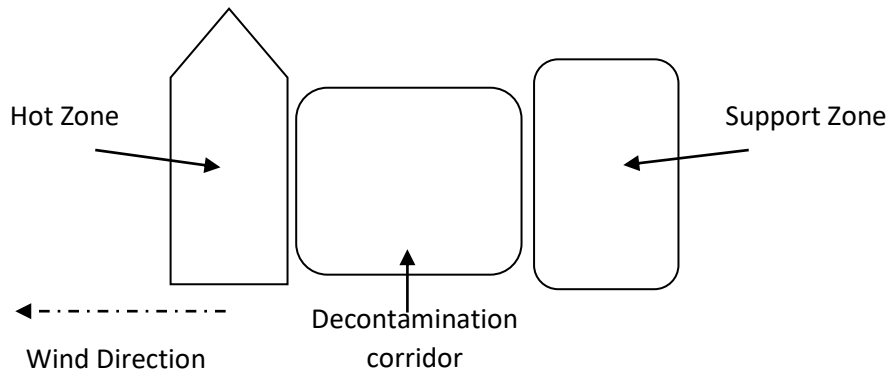
- (3) Logistics of decontamination water and support materials will be a factor. Decontamination water will either need to be dumped overboard, or retained onboard. Retaining onboard may require the capacity to retain hundreds of gallons of water onboard.
- (4) The minimum personnel footprint for a full HAZMAT response will require an empty buoy tender deck or large deck barge. Personnel required for an NFPA/OSHA compliant operation beyond a basic EOD entry support is anticipated to include:

- a. HAZMAT Team Lead
- b. HAZMAT Safety Officer
- c. (2) Entry Personnel
- d. (2) Decon Personnel
- e. (2) Rescue personnel
- f. (1) Support zone/medic
- g. (2-4) back up personnel for the next entry team
- h. Medical team of at least two Emergency Medical Technicians (EMTs).
- i. Until initial detection rules out the potential of air-borne contaminants, the HAZMAT team would default to level B entry, which requires at least one air bottle per person per entry.

- (5) Generally speaking, a HAZMAT entry and decontamination operations will require the establishment of a **Hot Zone, Decontamination Corridor, and Support Zone**. The size, orientation, etc, of these zones is dynamic and will be case-specific. However, the establishment of these zones in the maritime environment will be particularly challenging, and currently void of formalized or tested tactics, techniques, and procedures within the Coast Guard, DHS, or DoD.

- a. Hot Zone: Contaminated vessel (and potentially the area immediately surrounding the vessel).
- b. Decontamination Corridor: Area that contains the decontamination equipment (including water source(s)), upwind of the hot zone, and easily accessible to/from the hot zone and support zone.
- c. Support Zone (Cold Zone): Safe area for the staging and support of responders and equipment, prior to/following entry and/or decontamination.

**Basic Schematic for Full HAZMAT DECON Operation in a Stable Environment**



The ability to establish these zones in a dynamic maritime environment that is susceptible to changing weather and sea conditions is a significant limitation. This may need to be mitigated by bringing the

vessel to a dock, or if absolutely necessary, to a protected (i.e. back bay) location, along with a barge/support vessel(s) that may be anchored to the sea floor by spud or alternative method.

### ***Bringing a Vessel to Port***

**Unless early analysis and consultations with DoD subject matter experts indicate an explosive and/or compelling public health hazard, the vessel should ultimately be brought to a pier (preferably a pier that normally accommodates that vessel type) so that an adequate response may be carried out.**

Vessel homeports and shellfish offloading docks typically have sufficient space to support a response, and provide easy “brow” access and normal logistics support equipment for vessels. Homeports and offloading docks provide facilities to offload, segregate, and secure a catch that may be contaminated by CA until determination of its disposition. However, bringing a potentially hazardous vessel to port should only be done once safety controls are considered and put in place, to adequately control/isolate the vessel, vessel crew, and catch. Alternatively, military facilities *may* be considered. However, potential impacts to that unit’s readiness as a result of placing a vessel at their facility, including the potential for a prolonged response, must be considered and weighed against other options.

#### ***Military Facilities:***

- (1) Coast Guard Station Atlantic City is centrally located both for the vessel and responders. The station has adequate pier space to moor a fishing vessel, and has ample room for emergency response resources and gross decontamination. Access to facilities can be controlled and secure. The Station is also located next door to the NJSP marine division. Local HAZMAT and emergency medical resources are immediately available. Draft restrictions are 6’-10’ mean low to high tide. Channel depths in Absecon Inlet are 34-40’ mean high water, down to 15’ mean high water approaching Gardiner Basin and Station Atlantic City, according to NOAA chart 12316. There are no designated anchorages near Atlantic City. Small vessels regularly anchor just off the Station outside of the inlet channel, however, depth of water would likely be a limiting factor for sizeable fishing vessels. Accordingly, if keeping the vessel away from port is necessary, offshore is the primary option available in Atlantic City.
- (2) For incident occurring near Point Pleasant, remaining offshore or anchored outside Manasquan inlet is preferred. Station Manasquan does not have the availability to moor a vessel larger than approximately 50-feet in length. Alternatively, Station (small) Shark River in Avon By the Sea, NJ could potentially support larger vessels. This location provides a secure facility, and ample space for an emergency ordnance/hazmat response. However, Shark River is especially prone to weather and sea conditions, and may not offer suitable protection from the elements for a complex response needing stable conditions. Additionally, the station is closely flanked by houses on all sides, so this option would not be a good option for cases involving contamination or a potential explosive threat.
- (3) Naval Weapons Station Earl, NJ, located within Sandy Hook Bay, has a large pier (“49 Foxtrot Pier”). This pier is located within the secure footprint of Naval Weapons Station Earl, has ample space, and is co-located with the Naval Weapons Station EOD. This pier *could* support a complex, multi-agency DMM response onboard a vessel; however, will require substantial collaboration with, and approval from, the DoD via the Navy OSC. Naval Weapons Station Earl is also located within the Sector New York Captain of the Port zone, which will require additional intra-Coast Guard coordination and consensus.

## ***Food Safety Actions***

States have the authority to place a vessel's catch under embargo (i.e. seizure), either at the dock or at a processing facility. Once under embargo, and if product is still at the processing facility, products are marked and isolated from other product in refrigerated storage until a decision is made for disposition. If already processed (i.e. canned) and shipped out from the facility, embargoed product may be subject to recall under the authority and coordination of FDA and state health officials. The Coast Guard is **not** the agency responsible for determining the fate of the catch. This decision is made through collaboration among the FDA, State Health officials, and processing facility (if applicable). As part of the decision making process, the Coast Guard may be asked to provide information pertaining to the vessel, nature of reported encounter with the hazardous substance, and response/remediation efforts.

### **Phase V: Reconstitution**

The reconstitution phase will occur after response activities have concluded. Activities expected to occur in this phase include:

- (1) Cancellation of control actions on vessel, crew, facility, and/or waterway.
  - (2) Medical screening/de-briefs for responders.
  - (3) Demobilization support, including refueling and re-provisioning Coast Guard resources, decon station break-down and replenishment, and transportation of gear to home unit.
  - (4) De-briefings, hotwash, and after action reports. After-action reports, including lessons learned that may help improve this plan over time, should be forwarded to the Sector's Planning Staff office within 30 days of case conclusion.
  - (5) Case documentation, including accounting of expenditures.
  - (6) Repayment of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) fund by Responsible Party, if applicable.
-

# Administration and Logistics

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## *Funding*

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) fund, operated by EPA, provides broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA funding is authorized for removal actions, and remedial actions. The CERCLA fund may be opened in order to initiate response actions, if the source of the chemical contamination is not known, or not confirmed to be from DMM/CWM. However, if the source is a confirmed DoD munition, the DoD will be consulted for continued funding and/or reimbursement of the CERCLA fund through the National Pollution Funds Center (NPFC). In all cases, the cognizant NOSC should be contacted early on in the response for further response and funding coordination.

The Navy OSC should be consulted to determine the role and method of contact for the cognizant DoD Claims division or servicing legal division for follow on tort claims.

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## *Public Affairs*

District 5 is responsible for coordinating all Coast Guard public affairs activities, which will at first be accomplished through close coordination with “at the ready” Coast Guard public affairs support within the Sector, including Public Affairs Detachment personnel assigned in Atlantic City, and the Sector’s collateral duty Public Affairs Officer.

- (1) Coast Guard Public Affairs staff will:
  - a. Support the lead agency's public affairs strategy regarding the release of information pertaining to response plans, operations, or response force makeup.
  - b. Notify District 5 External Affairs and begin a draft press release for distribution for partner agency and Sector Delaware Bay command staff review. Ideally, an initial press release will be issued within the first day of the response. Timing and content of press releases will depend largely on the circumstances of the incident. It is customary for the Coast Guard to issue an initial (brief) press release, followed up by a subsequent release that contains more details. Press releases early in the response are intended to address the facts known about the incident, vessel involved, crew composition, location, public health information (if applicable), and the Coast Guard’s role/actions. Names of additional agencies involved, their responsibilities, and agency POCs for the media (names and contact info), should be provided (normally in the subsequent press release). Due to the length of time required for joint release reviews and approvals, it is recommended that public affairs stakeholders (i.e. response agencies addressed by the press release and/or needing to be part of the review/approval process) be identified, along with agency POCs, as early as possible.
  - c. Draft public affairs guidance, and provide support for interviews and/or press conferences.

- d. The Navy OSC will identify the DoD public affairs office/contact for general military munitions matters/questions.
- (2) During the two prior incidents involving DMM in this zone, the public affairs posture remained “response to query.” Due to some OGA sensitivities and considerations for these cases, joint approval is required, and therefore the overall public affairs posture may not be as pro-active as the normal Coast Guard posture. In both prior cases, the uncertainty surrounding the source of contamination, and final determination of the catch’s fate, were among the key factors influencing public affairs posture and strategy for some partner agencies.
- (3) Other public Affairs offices likely to be involved:
- a. State Department(s) of Environmental Protection.
  - b. State Health Department(s).
  - c. Food and Drug Administration.
  - d. Local fire department or first responders.
  - e. National Strike Force.
  - f. NOAA
  - g. EPA

## ***Medical Services***

Acute care hospitals are capable of providing treatment to patients with injuries stemming from blister agent exposure. However, depending on the extent and seriousness of the injury, a trauma center or a burn center (for serious cases) may be necessary to deliver required care.

### **Hospitals in Southern New Jersey:**

- (1) AtlantiCare Regional Medical Center (**Level 2 Trauma Center; helo pad**): 1925 Pacific Ave, Atlantic City, NJ, 609-345-4000.
- (2) AtlantiCare Regional Medical Center (**helo pad**): 65 W. Jimmie Leeds Rd, Pomona, NJ, 609-652-1000.
- (3) Shore Medical Center (**helo pad**): 100 Medical Center Way, Somers Point, NJ, 609-653-3500
- (4) Southern Ocean Medical Center (M-F 0800-1800): 1140 Route 72 West, Manahawkin, NJ, 609-978-8900.

### **Hospitals in Northern New Jersey:**

- (1) Jersey Shore University Medical Center, Neptune (**Level 2 Trauma Center; helo pad**): 1945 Route 33, Neptune City, NJ, 732-775-5500.
- (2) Ocean Medical Center (no helo pad, grass field only): 425 Jack Martin Blvd, Brick, NJ, 732-840-2200.
- (3) Community Medical Center (no helo pad): 99 NJ-37, Toms River, NJ, 732-557-8000.
- (4) CentraState Medical Center (**helo pad**): 901 W Main St, Freehold, NJ, 732-431-2000.

### **Burn Centers:**

- (1) Burn Center at St. Barnabas Medical Center (**helo pad**): 94 Old Short Hills Rd, Livingston, NJ, 973-322-5920. Note: St. Barnabas is the closest burn center to Point Pleasant, however, requires flight through complicated airspace. Staten Island University Hospital (718-226-6988 or 718-226-9000) may be a better choice.
- (2) Temple University Hospital (**helo pad**): 3401 N Broad St, Philadelphia, PA, 215-707-2000.

- (3) Nathan Speare Regional Burn Treatment Center at Crozer-Keystone Health Center (**helo pad**):  
1 Medical Center Blvd, Chester, PA, 610-447-2800.

**Level 1 Trauma Centers:**

- (1) Cooper Hospital, Camden NJ
- (2) Robert Wood Johnson, New Brunswick NJ
- (3) University Medical Center, Newark NJ
- (4) Staten Island University Hospital, Staten Island NY (Burn Center)
- (5) Harlem Hospital Center, Manhattan NY (Burn Center)
- (6) Cornell Presbyterian Medical Center, Manhattan NY (Burn Center)
- (7) Bellevue Hospital Center, Manhattan NY
- (8) Brookdale Hospital Medical Center, Brooklyn NY
- (9) Kings County Hospital Center, Brooklyn NY
- (10) St. Vincent's Hospital, Manhattan NY

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***Situation Reports***

Standard Coast Guard Command Center information management procedures (i.e. internal briefing matrix, and use of internal databases) will be used until such time as formal Situation Reports (SITREPs) are deemed to be required and/or the case becomes managed under ICS with an Incident Action Plan. The format and timeline for reports will be determined in consultation with District 5 Command Center or IMT (if established). For a prolonged case, it is anticipated that the first formal SITREP will be required within 6-10 hours of case initiation. The anticipated format is an ICS 209, which may be modified to meet the nature of the case. District 5 will provide SITREP transmission instructions, however, it is anticipated that SITREPs will be transmitted to the District via email to the District Command Center, or uploaded to the District 5 IMT CG Portal site. Additional guidance, resources, and templates, can be found on the District 5 IMT Portal site: <http://cglink.uscg.mil/d9867a69>. Depending on the seriousness of the case, media attention, etc, it is also recommended that the Sector Commander provide informal verbal briefings to the District 5 Commander and/or Chief of Staff, as appropriate.

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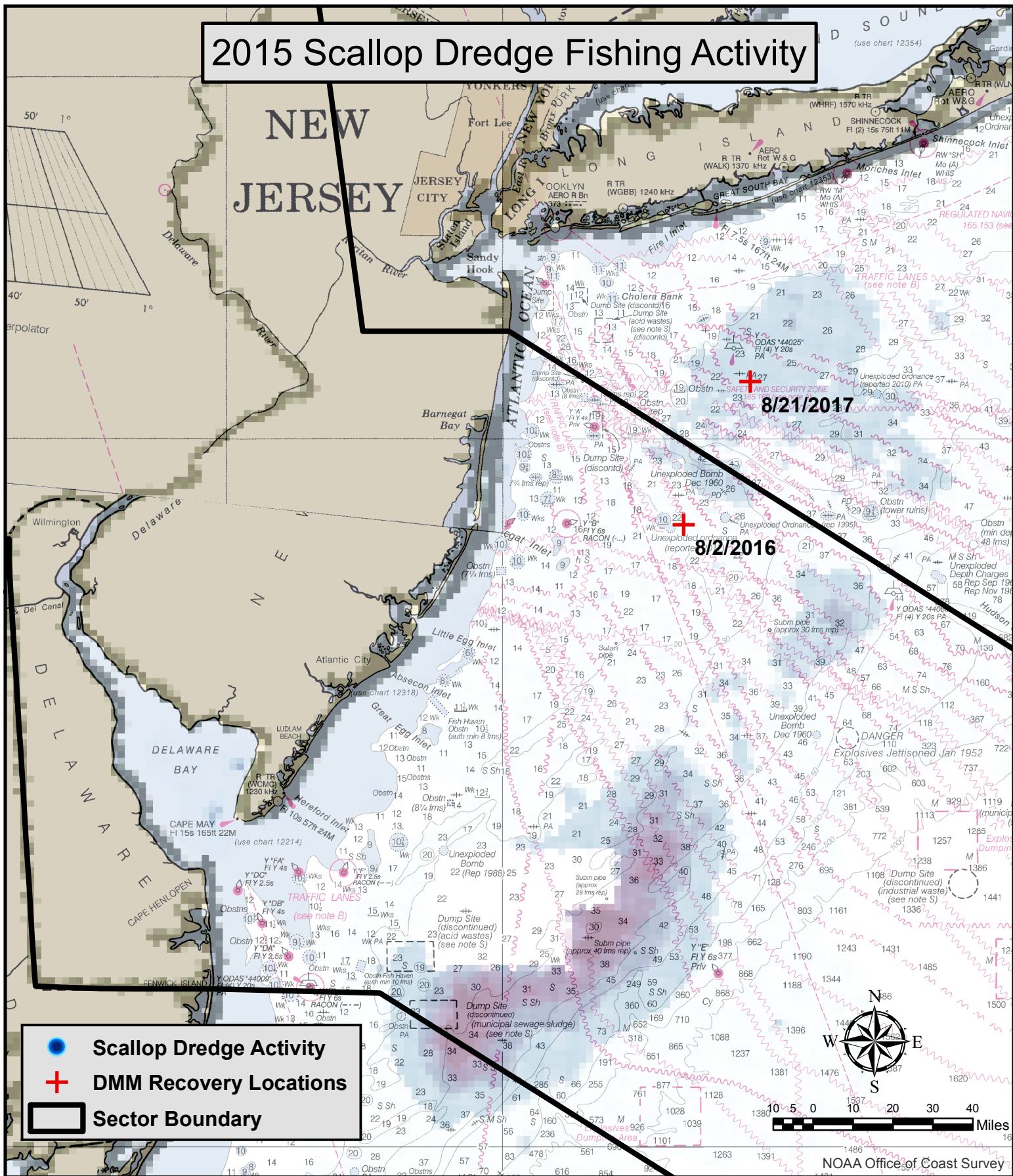
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## List of Acronyms

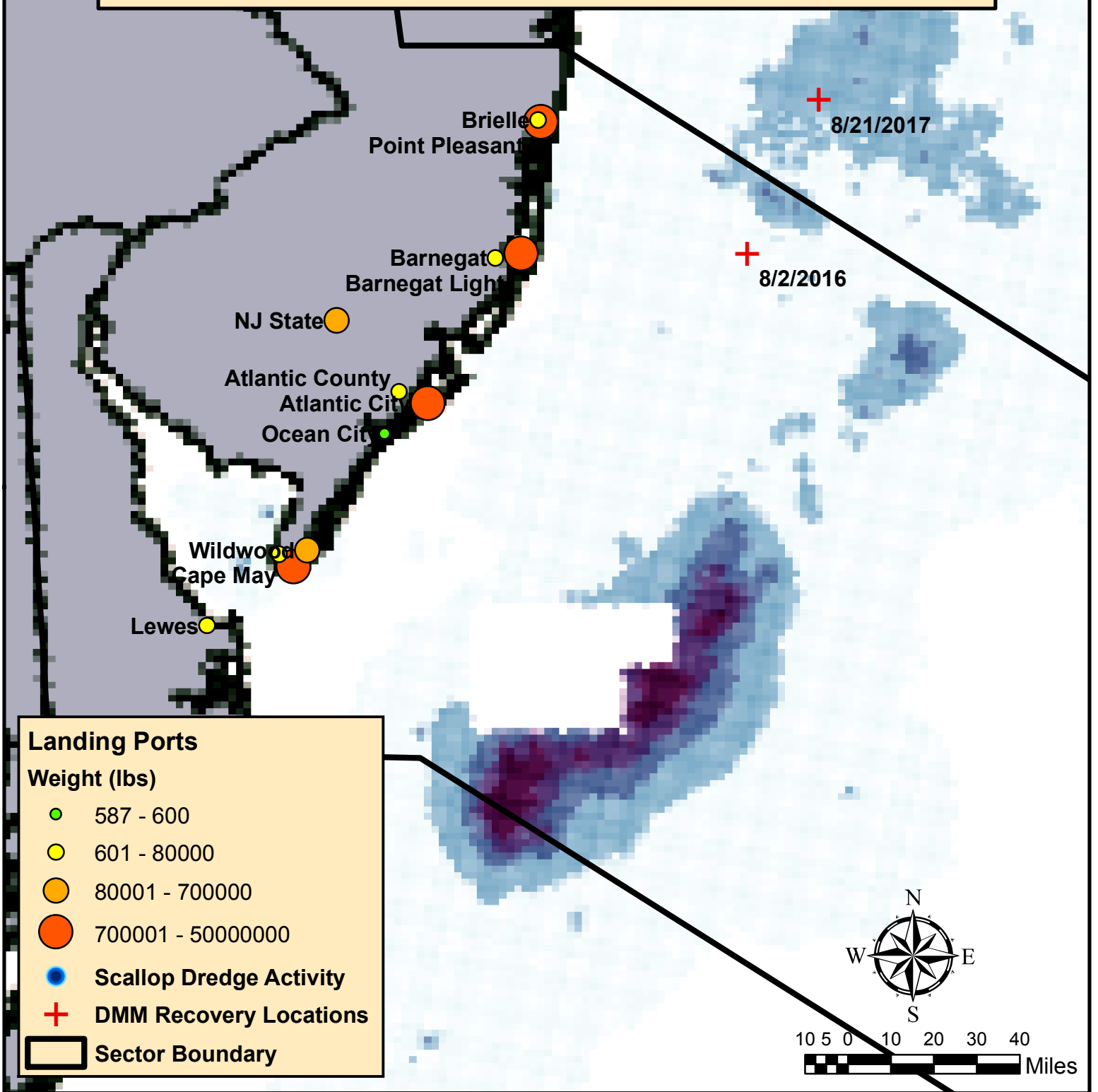
3R	Recognize, Retreat, Report	NIMS	National Incident Management System
AOR	Area of Responsibility	NJDEP	NJ Dept of Environmental Protection
ASPR	Assistant Secretary for Preparedness and Response	NJDOH	NJ Dept of Health
CA	Chemical Agents	NJOEM	NJ Office of Emergency Management
CARA	Chemical Analytical Remediation Activity	NJOHSP	NJ Office of Homeland Security and Preparedness
CBRNE	Chemical, Biological, Radiological, and Nuclear, and Explosives	NJSP	NJ State Police
CDC	Centers for Disease Control	NM	Nautical Mile
CEOHS	Consumer, Environmental and Occupational Health Service (NJ)	NOAA	National Oceanic and Atmospheric Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	NOAA SSC	NOAA Scientific Support Coordinator
CFV	Commercial Fishing Vessel	NOSC	Navy On Scene Coordinator
COA	Course of Action		
CONPLAN	Concept Plan	NPFC	National Pollution Funds Center
COTP	Captain of the Port	NRC	National Response Center
CST	Civil Support Team	NRF	National Response Framework
CWM	Chemical Warfare Material	NSF	National Strike Force
DECON	Decontamination	NSFCC	National Strike Force Coordination Center
DEMA	Delaware Emergency Management Agency	NSSP	National Shellfish Sanitation Program
DHS	Department of Homeland Security	NWS	National Weather Service
DMM	Discarded Military Munitions	ODASA ESOH	Office of the Deputy Asst Secretary of the Army for Environment, Safety and Occupational Health
DNREC	Delaware Natural Resources and Environmental Conservation	OGA	Other Government Agency
DoD	Department of Defense	OPTEMP	Operational Tempo
DTRA	Defense Threat Reduction Agency	OSHA	Occupational Safety and Health Administration
EMS	Emergency Medical Services	PIAT	Public Information Assist Team
EMT	Emergency Medical Technician	POC	Point of Contact
EOD	Explosives Ordnance Disposal	PPE	Personal Protective Equipment
EPA	Environmental Protection Agency	QRC	Quick Response Card
FBI	Federal Bureau of Investigation	RCMD	Recovered Chemical Material Directorate
FDA	Food and Drug Administration	REC	Regional Emergency Coordinator
FOSC	Federal On Scene Coordinator	ROIC	Regional Operations and Intelligence Center
HAZMAT	Hazardous Materials	SITREP	Situation Report
HMRU	Hazardous Materials Response Unit	TTP	Tactics, Techniques, and Procedures
ICS	Incident Command System	UC	Unified Command
ICU	Intensive Care Unit	USPHS	US Public Health Service
IMAT	Incident Management Assist Team	WMD	Weapon of Mass Destruction
IMT	Incident Management Team		
LFA	Lead Federal Agency		
MEDEVAC	Medical Evacuation		
MEDICO	Medical Communication		
NCP	National Contingency Plan		
NFPA	National Fire Protection Association		

# 2015 Scallop Dredge Fishing Activity



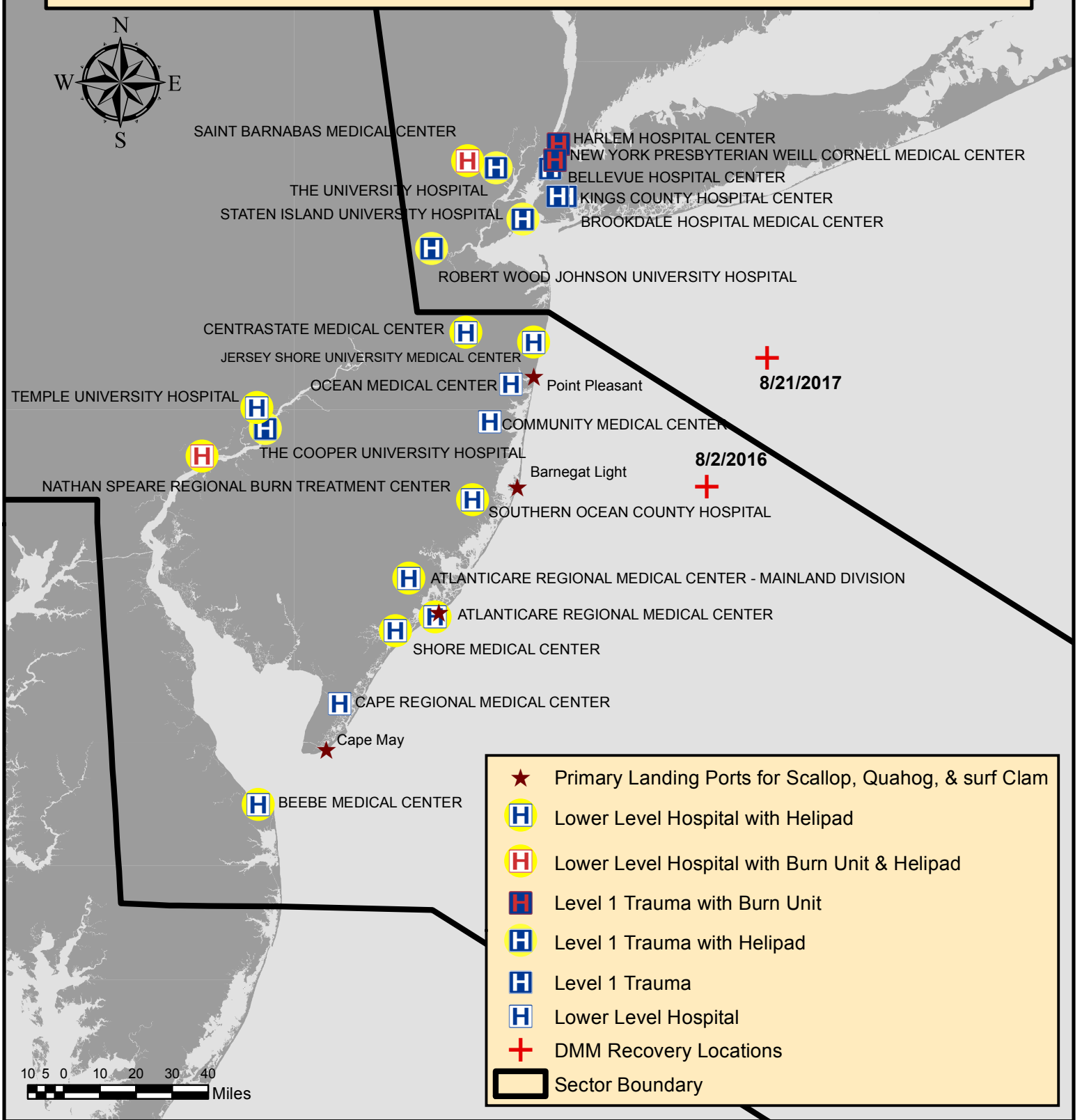
The two Sector Delaware Bay responses to suspected chemical DMM exposure, from August 2016 to August 2017, are depicted in the locations in which commercial fishing vessels reported recovery from the sea floor. Commercial fishing activity footprints are generated by the Northeast Fisheries Science Center (NEFSC) based on reported vessel track information. This map overlays 2015 NEFSC Scallop Activity by weight (lbs) and a National Oceanic and Atmospheric Administration (NOAA) raster nautical chart.

# 2016 Scallop, Quahog, and Surf Clam Landings in New Jersey and Delaware Ports



This map overlays 2016 commercial fisheries landing data and 2015 NEFSC Scallop Activity by weight (lbs). Landings for NJ and DE are displayed according to how many combined pounds of scallops, quahogs, and surf clams were offloaded in each port. Cape May, Point Pleasant, Atlantic City, and Barnegat Light were the most productive ports by at least an order of magnitude. The two Sector Delaware Bay responses to suspected chemical DMM exposure, from August 2016 to August 2017, are depicted in the locations in which commercial fishing vessels reported recovery from the sea floor. Commercial fishing activity footprints are generated by the Northeast Fisheries Science Center (NEFSC) based on reported vessel track information.

# CONPLAN Emergency Medical Facilities by Capabilities



This map overlays major medical facility capabilities, major landing ports, and 2015 NEFSC Scallop Activity by weight (lbs). Hospitals are displayed based on trauma level, access to a burn unit, and access to a helipad. The two Sector Delaware Bay responses to suspected chemical DMM exposure, from August 2016 to August 2017, are depicted in the locations in which commercial fishing vessels reported recovery from the sea floor.

# 3Rs Explosives Safety Guide

## Maritime Industry



**During maritime operations (e.g., fishing, clamming or dredging), nets, bottom tending gear, and dredges may catch or dredge munitions from the ocean. Munitions pose a potential, but real danger to vessels and crews as well as to commercial and recreational divers.**

Vessel crews often tell tales about catching suspicious items in a net or dredging gear. Lucky crews live to spin their own tales, while others become the subject of a tragic tale.

In July 1965, such a tragedy took place aboard the fishing vessel (*FV Snoopy*). The *FV Snoopy* was trawling for scallops off the coast of North Carolina when it caught a large cylinder in her net. A witness said he could clearly see a long round object swaying in the net amidships, over the deck.

What happened next is unclear, but an explosion caused the loss of the *FV Snoopy* and eight of her crew.

What went wrong? Was it preventable? Could something have been done to save the *FV Snoopy* and her crew?

While all these questions were asked, no one but the *FV Snoopy*'s crew actually knows what happened. However, this tale is meaningful if others learn from it.

If you encounter or suspect you have encountered a munition at sea, follow the 3Rs of explosives safety (Recognize, Retreat, Report).



*Unexploded ordnance recovered during dredging*



*A new torpedo (top) and a heavily corroded torpedo on the sea floor (bottom).*



## Recognize

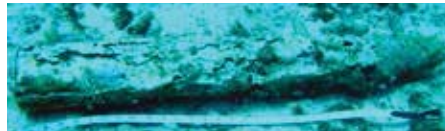
The military has conducted live-fire training and combat operations at sea for centuries. Prior to 1970, the U.S. military and the militaries of other nations sea-disposed excess, obsolete and unserviceable munitions either en route to port or as part of a planned disposal. In 1970, militaries of the United States and other countries stopped the practice, now allowing it only during an emergency. Mariners should be prepared for an encounter with munitions during commercial operations, such as fishing, clamming or dredging. By following the 3Rs and using common sense, mariners will know what to do if they inadvertently recover a munition.

Munitions may be encountered anywhere, not just in charted hazard areas. Munitions that may be encountered include mines, torpedoes, depth charges, artillery shells, bombs and missiles. Munitions may contain explosives or chemical agents, both potentially posing serious dangers to a vessel and her crew.



*Various recovered projectiles*

- All munitions, including those that have been in the sea or fresh water for many years, should be considered extremely dangerous.
- In some cases, munitions that have been in water for a long time have become more sensitive.
- Whether encountered at sea or on land, munitions might explode when moved, disturbed, or handled.
- Munitions submerged in sea or fresh water for any length of time may:
  - Look new and be easy to identify;
  - Be heavily rusted or encrusted with sea growth and be difficult to identify.



*Projectile and cartridge case on sea floor*

### **MUNITIONS ARE DESIGNED TO BE DANGEROUS**

In support of its mission, the Department of Defense (DoD) designs military munitions to kill or seriously injure people, or destroy equipment (e.g., vessels). To protect yourself from the potential hazards associated with munitions, avoid

known disposal areas by heeding warnings on nautical charts and following the 3Rs of explosives safety (Recognize, Retreat, Report). (Note: This guide includes drawings and photos of some munitions to help crews recognize suspect munitions.)

## CHEMICAL MUNITIONS AND CHEMICAL AGENTS

In the early 1900s, the Department of War, now DoD, developed chemical munitions to kill, seriously injure, or incapacitate an enemy. In the past, the United States and other countries sea-disposed chemical munitions and chemical agents in bulk containers, such as 55-gallon drums. As a result, some munitions or containers recovered from the sea may contain chemical agents.

Vessel crews should be alert for following signs that a chemical munition or chemical agents are present:

- Unusual odor from equipment or fish;
- Stinging sensations in the eyes;
- Burning or irritated skin;
- Presence of an oily liquid;
- Corroded containers or suspicious clay-like lumps.



*Recovered chemical munition*



*Chemical munition recovered from clambed*

## IF YOU SUSPECT A CHEMICAL MUNITION OR AGENT IS PRESENT, ACT IMMEDIATELY TO PROTECT THE CREW AND VESSEL.

- Move all crew members upwind;
- Steam into the wind to carry any contaminants away from the crew;
- Close all doors and hatches;
- Shut down all ventilation systems;
- Flush the area thoroughly with water to wash suspect chemical agent overboard;
- Contact the U.S. Coast Guard (USCG) for immediate assistance;
- Do not steam into port, unless the USCG advises you to do so.



*An aerial bomb prepared for shipping (above). An aerial bomb on the sea floor (below).*





## IF YOU SUSPECT CONTAMINATION BY CHEMICAL AGENTS

If you suspect a crew member has come in contact with a chemical agent, immediately:

- Remove any contaminated or potentially contaminated clothing and place it in a plastic bag (double bag, if possible) and seal it or just throw the clothing overboard. (Similar actions should be taken with contaminated or potentially contaminated tools.)
- Rinse the crew and the immediate area with large amounts of water. (If possible, use warm soapy water.)

Every effort should be made to prevent the spread of chemical contamination. Chemical agent-contaminated clothing and tools may expose other crew members to chemical agent and spread the contamination to other areas on the vessel. Crew members should not work in areas known or suspected to be contaminated by chemical agent. Vessels that may have come in contact with chemical agents should not bring their catch ashore until the state's department of environmental health has determined it is safe to do so.



*Munitions on the sea floor*

## Retreat

Because munitions present a potential explosive or chemical agent hazard, they should not be moved, disturbed or handled. However at sea, and depending on the circumstances, specific action may be required to protect the vessel and her crew.

- Avoid bringing munitions (or suspect munitions) onboard, whenever possible.
- If a munition is ensnared or fouled in gear, retreat by carefully returning the munition to the water or by cutting away the gear.
- If the munition cannot be carefully returned to the water, secure it onboard, and move the crew upwind and as far away from the munition as possible.
- Limit the number of crew members securing the munition, and avoid bumping or dropping the munition. Remember that each action carries some risk!



A new 5-inch 38 caliber projectile (above). Recovered 5-inch 38 caliber projectiles (below).



### Munitions Recovered, but Not Yet Onboard

- Immediately stop all operations;
- Do not bring the munition or gear containing it onboard, if possible;
- Do not allow the munition to come or remain alongside the vessel where wave action could cause the munition to contact the hull;
- If a munition is caught in the gear, but has not been brought onboard, try to lower it safely back into the water, note the position and report it to the USCG. In:
  - Shallow water (less than 130 feet), lower the munition to the bottom, buoy off the net or dredge recovery lines and remain in the area while awaiting assistance.
  - Deep water, stream the munition as far aft as possible, maintain steerageway, as necessary and remain in the immediate area while awaiting assistance.

### Munitions Recovered and Brought Onboard

If gear is brought over the deck with a munition or suspected munition, but it remains suspended and it can be safely secured in place or nearby, immediately:

- Secure the munition with guy lines to prevent movement;
- Keep the crew upwind and away from the area.

If a suspect munition is brought onboard:

- Keep crew members upwind and as far away as possible.
- Minimize handling, and decide whether it is safest to:
  - Carefully return it to the water, or
  - Retain it onboard.

If returned to the water, note and report position to USCG.

If retained onboard:

- Keep the crew upwind and away from the munition.
- Minimize handling, and avoid disturbing (hitting, dropping or bending) any part of the munition;
- Secure the munition on deck with lines and/or by chocking it to prevent movement, but do this as far away as possible from heat sources, vibrations and the crew;
- Cover the munition with a tarp or wet cloth to reduce the potential for:
  - Deterioration of metal parts and release of its fill;
  - Explosives to dry out and become sensitive to shock.
- Request assistance (Channel 16 - 156.800 MHz).



A new rifle grenade (above). A recovered grenade (below). Item is about four inches long.



**NEVER BRING A MUNITION INTO PORT, UNLESS DIRECTED TO DO SO**

## Report

Careful observation and accurate reporting of the situation is necessary, so that proper instructions and assistance can be provided. However, never attempt to clean or open a munition to get a better description or tamper with a munition in any way. Information you provide may be combined with other reports to produce a Notice to Mariners and/or update nautical charts.

When a munition or suspect munition is encountered, the vessel's captain should notify the USCG (Channel 16 - 156.800 MHz) and provide the below information, as soon as possible. (Note: If a munition is encountered while in port, call 911.) Report:



Floating mine washed ashore

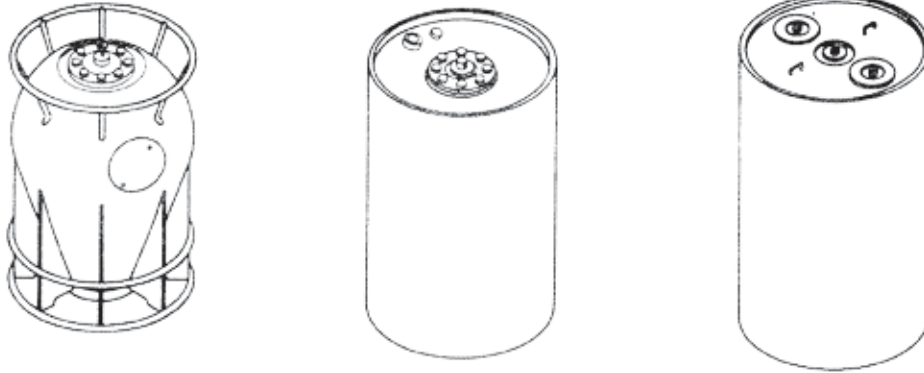
- The vessel's position (use World Geodetic System 1984 [WGS-84] for reporting). If the exact position is unknown, give approximate coordinates, or a range and bearing from a charted feature.
- The activity (e.g., fishing, clamming, dredging) being conducted when the munition was encountered.
- A general description of the munition's key features (i.e., size, shape, fins, markings) and overall condition, if observed or known.
- Any unusual odors.
- The action taken (e.g., secured munition on deck, munition carefully returned to water, washed off deck where munition was placed) to protect the crew.
- If the munition was returned to the water, provide:
  - The position where it was returned to the water: the water depth, buoys or markings used, if any; and whether the location is near or within a charted disposal area;
  - A description, if appropriate, of any entanglement (e.g., net, dredge);
  - A description of surface or sub-surface structures within 1,000 yards.

**THE US COAST GUARD WILL NOTIFY AN EXPLOSIVE ORDNANCE DISPOSAL UNIT TO ARRANGE FOR SUPPORT.**

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**DEPTH CHARGES**

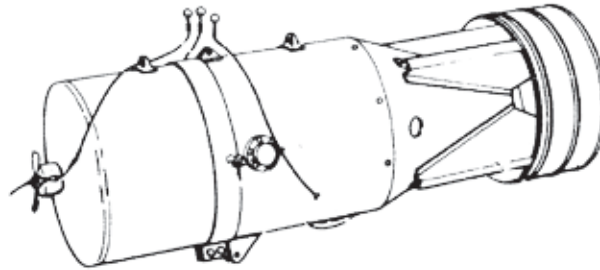
Length 28" / Diameter 18" to 25"



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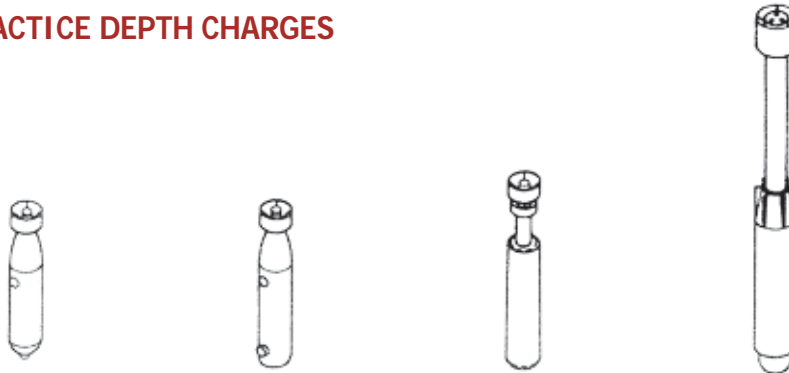
**DEPTH BOMB**

Length 50" to 59" / Diameter 15" to 18"



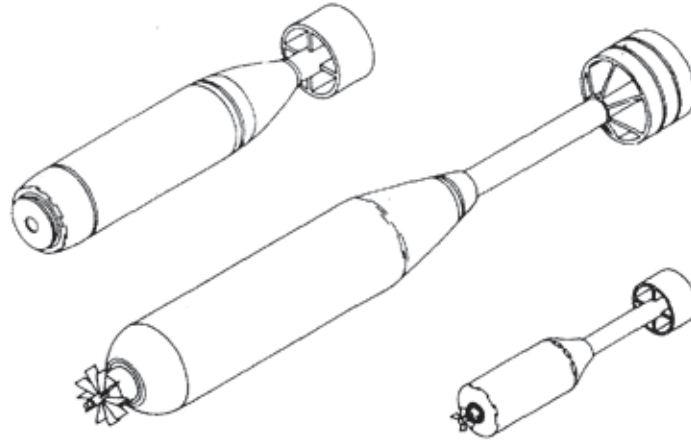
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**PRACTICE DEPTH CHARGES**



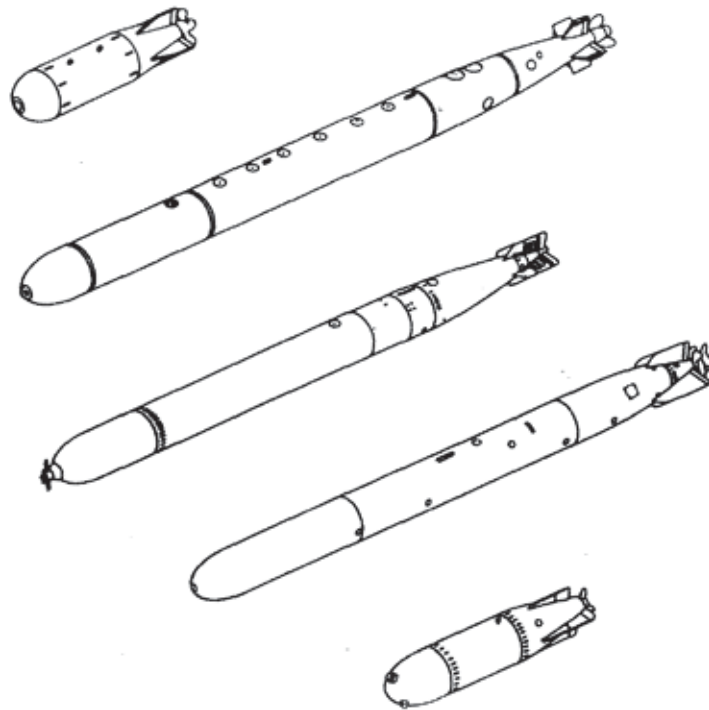
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**PROJECTED ANTI-SUBMARINE-WARFARE WEAPONS**



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**REPRESENTATIVE TORPEDOES**

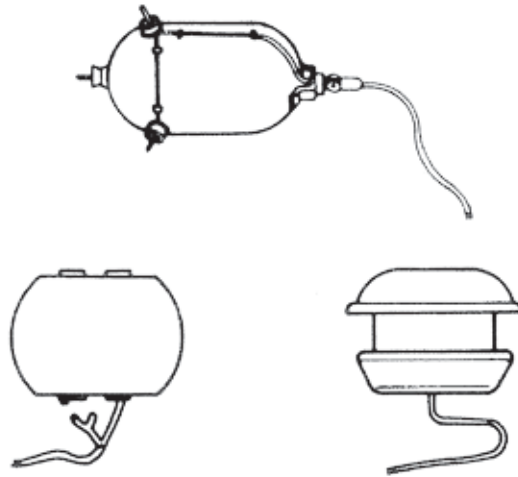


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## MISCELLANEOUS MINE FLOATS

Length 10" to 24"

Diameter 12" to 18"

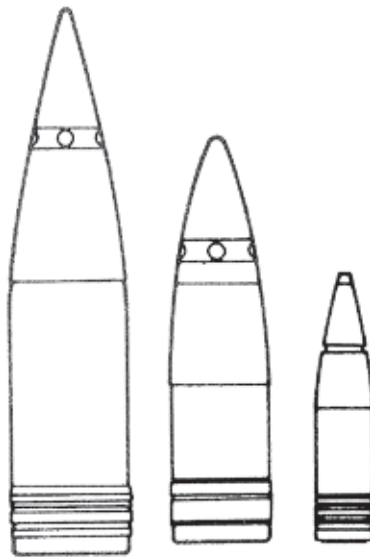


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## PROJECTILES

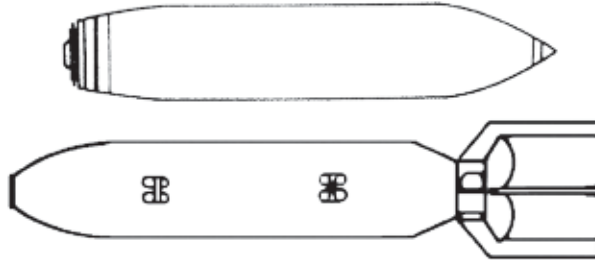
Lengths 20 mm to 16"

3" to 5" in Diameter (Typically)



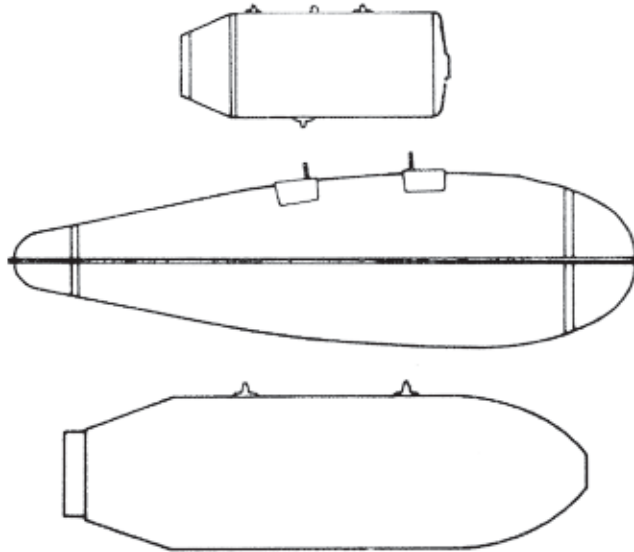
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**AERIAL BOMBS**



Bomb Body Lengths 39" to 97"

Diameter 7" to 19"



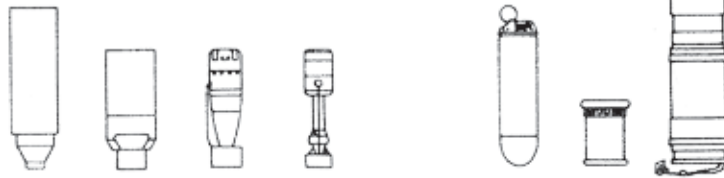
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**MARKERS AND SIGNALS**



Lengths 10" to 18" (Approximately)

Diameter 2" to 5" (Approximately)



## Don't Forget

- Munitions are dangerous and may not be easily recognizable!
- Avoid operational and former military ranges, and disposal areas!
- Do not bring munitions on-board!
- Never bring a munition into port, unless directed to do so by USCG!

## Follow the 3Rs

### Recognize

When you may have encountered a munition and that munitions are dangerous.

### Retreat

If you know or suspect you have encountered a munition, carefully return it to the water or secure it and keep the crew away from the immediate area.

### Report

Immediately notify the USCG of the vessel's or munition's location and provide a description of the munition.

#### Emergency contacts:

- In port: Call 911
- At sea: Use Channel 16 (156.800 MHz)



(Insert contact information here)

For additional information call  
U.S. Army Technical Center for Explosives Safety  
at (918) 420-8919

or see

the US Army's UXO Safety Education website  
[www.denix.osd.mil/uxo](http://www.denix.osd.mil/uxo)



<b>Incident Involving Sea Disposed Discarded Military Munitions or UXO</b>		Date/Time
Short Title:		MISLE
Watchstander:		CIC
<b>AWARENESS:</b>		
<b>REPORTING SOURCE INFORMATION</b>		
Name:		Phone:
Address:		
Affiliation with vessel:		
<p style="color: red;"><b>Emergency Crew Safety / First Aid Info (provide to Master as necessary):</b></p> <ul style="list-style-type: none"> <li>If canister is producing smoke, <u>it could be White Phosphorous</u>, which is <u>self-igniting</u> upon contact w/ oxygen. <u>Remove</u> overboard immediately if safe to do so and/or <u>retreat</u>.</li> <li>Mustard agent penetrates skin within two minutes. Decon of a person must occur in the first 1-2 minutes to limit tissue damage.</li> <li>Remove contaminated clothing. Thoroughly flush/wash skin with soap and salt water or fresh water from upwind position. A 0.5% bleach solution may be applied to skin. Do this for as long as necessary until substance is no longer visible.</li> <li>Dry affected portion of body and dress with clean dry dressing.</li> <li>Wash down potentially contaminated portions of vessel with water and bleach.</li> <li>Note areas of vessel that were accessed by contaminated crew member prior to onboard decon efforts.</li> </ul>		
<b>VESSEL INFORMATION</b>		
Name:		Doc/IMO#
Type:		POB:
Length:		Flag:
Hull Material:		H/P:
Hull Material:		POSN:
Hull Material:		Fuel o/b:
Catch onboard (type/quantity):		
On Scene Weather/Seas:		
Vessel intentions/destination and ETA:		
<b>ORDNANCE DESCRIPTION- (WITHOUT COMING IN CONTACT)</b>		
Shape:	Diameter:	Weight:
Color:	Visible Markings:	

<b>Condition:</b>	
<b>Is object leaking? NO:</b> _____	<b>YES:</b> _____ <b>DESCRIBE:</b> _____
<b>Suspected Type (conventional, chemical, etc):</b>	
<b>Current location of ordnance on/near vessel:</b>	
<b>Location where device was recovered or thrown back overboard (Lat/Long):</b>	
<b>Evaluate Impact/Exposure to Crew Member(s)</b>	
<b>Did the object come into contact with any of the crew?</b> <input type="checkbox"/> Y <input type="checkbox"/> N <b>If yes, are they exhibiting any health impacts or signs of HAZMAT exposure (burning, blistering, difficulty breathing, etc)?</b>	
<b>Do any of the crew require emergency medical attention? <i>If yes, refer to MEDEVAC / MEDECO QRC.</i></b>	
<b>When was munition handled:</b>	
<b>Extent/Degree of Exposure:</b>	
<b>When did crew member start developing symptoms:</b>	
<b>What portions of vessel did crew member access between contact and symptoms?</b>	
<b>Decon/First Aid performed onboard vessel (describe):</b>	
<b>Eye or respiratory symptoms?</b>	
<b>Where is the contaminated crew member's clothing?</b>	
<b>ADDITIONAL INFORMATION:</b>	
<b>Is the item caught in nets/vessel hopper? If so can crew be kept clear?</b>	

**Is the item or vessel endangering or impacting human safety or a navigable channel?**

**For notifications of possible exposure after-the-fact (i.e. vessel already returned to port):**

\_\_\_\_\_ **Did exposed crew seek medical attention?**

**Location:** \_\_\_\_\_

\_\_\_\_\_ **What is the status of the catch?**

**Name of company or facility catch transported to:** \_\_\_\_\_

\_\_\_\_\_ **Remind vessel Capt of responsibility to report injury to I/O via CG-2692 form.**

**INITIAL ACTIONS**

\_\_\_\_\_ If the crew jettisons the item, do not do so in or around a navigable channel, jettison in deep water, and notate Lat/Long of where the ordnance was dropped.

\_\_\_\_\_ If object is onboard vessel u/w, advise reporting party to remain at sea or proceed to safe anchorage until a plan can be developed based on the nature of the situation.

\_\_\_\_\_ Ask R/S to photograph the item if safe to do so (smart-phone); send to CC if able.

\_\_\_\_\_ Initiate a comms schedule.

\_\_\_\_\_ Create MISLE Notification.

\_\_\_\_\_ Make initial notifications to initiate response:

INITIALS	TIME	NOTIFICATION	PHONE NUMBERS
<b>COAST GUARD</b>			
		NRC	<b>800-424-8802</b>
		Incident Management Division Chief or Duty IMD. <i>Consult IMD on who will make RDH notification.</i>	Duty MER: <b>215-778-4533</b> IMD Chief: <b>215-778-4102</b>
		Duty I/O	<b>267-273-8314</b>
		Duty MI (for inspected vessel)	<b>215-908-9999</b>
		Response Department Head (RDH)	<b>215-778-5538</b>
		Duty PAO	<b>757-434-6043</b>
		D5 (CC)	<b>757-398-6390</b>
		<i>Refer to CCIR for additional internal phone/text notifications.</i>	
		Consult IMD to determine additional SCC notifications to assist the response and inter-agency coordination.	

**OPERATIONAL EXECUTION**

\_\_\_\_\_ Monitor all response operations and log in MISLE. All updates to Chain of Command shall be made via the SCC.

\_\_\_\_\_ GAR score from responding unit(s). \_\_\_\_\_  Green(0-23)  Amber(24-44)  Red(45-60)  
 Concerns \_\_\_\_\_

**CC GAR**

CC GAR Scores	Supervision:	Planning:	Crew Selection	Total GAR Score: _____ <input type="checkbox"/> Green <input type="checkbox"/> Amber <input type="checkbox"/> Red (0-23)   (24-44)   (45-60)
	Crew Fitness:	Environment:	Complexity:	
<b>*TRANSFER TO DUTY IMD/MER*</b>		<b>NAME:</b> _____	<b>CONTACT:</b> _____	
<b>PLANNING / RESPONSE CONSIDERATIONS (IMD/RESP initial actions/considerations)</b>				
<p>____ Upon notification, IMD will conduct preliminary investigation to determine details and magnitude of case. IMD Chief will then request conference call with FOSCR, RDH and additional key staff via SCC to discuss best course of action. Brief shall include:</p> <ul style="list-style-type: none"> <li>○ Actions taken or recommended for Navy EOD and/or State/Local agencies.</li> <li>○ Resources on-scene or enroute (other agencies, etc.)</li> <li>○ Federal, State, Local notifications made/planned.</li> <li>○ Intentions of vessel and/or person on scene.</li> <li>○ Vessel control actions recommended (COTP order, etc).</li> <li>○ Disposal at sea options (in consultation w/ EOD).</li> <li>○ Discussion regarding establishing safety zone.</li> <li>○ Has the CERCLA fund been opened to deal with this if a suspected WMD is involved?</li> <li>○ Consider recommending/hosting (or participating in) inter-agency coordination conference call.</li> </ul> <p>____ Typical scenario addressed by this QRC is vessel that, during fishing or other operations, has picked up an item believed to be unspent or disposed-of munitions/ordnance. Of particular concern are munitions that may be fused/explosive or may contain chemical agents.</p> <p style="text-align: center;"><b><u>Primary 'buckets' of concern: Crew, Vessel, Catch, Ordnance Identification/Disposition.</u></b></p> <p>____ <b><u>NWS Earle EOD:</u></b> Responsible for identifying military ordnance and determining/eliminating the threat. The team can determine if the ordnance is fused or not, as well as potential threat of chemical contamination. If military ordnance, the team is then responsible for coordinating actions to render it safe and disposition (via the 20<sup>th</sup> CBRNE division). However, they are not equipped or responsible for decon actions on vessel or catch. Team normally launches from Atlantic Highlands NJ w/ a 2-4 hr ramp-up time. Their 29' vessel is trailerable and can be launched from alternative locations. A launch from points on the Jersey shore could be 4-8+ hour lead time depending on location, team status at time of notification, weather, etc.</p> <p>____ Consider use of IMSS to create ICS-201 for incidents that may become more complex/long duration, managed under ICS, etc.</p>				
<b>ADDITIONAL NOTIFICATIONS AS INITIATED/TASKED BY IMD</b>				
		<i>NAVY WEAPONS STATION EARLE, NJ          Explosive Ordnance Disposal Mobile Unit 12          (suspected military ordnance at sea)</i>		<b>Primary: 757-322-2609          (Regional Operations Center)           732-866-2291 (office</b>

			<b>direct)</b>
		US ARMY National EOD Notification <i>(Ordnance on land, land source)</i>	<b>410-436-6200</b> (24h)
		<u>ONLY IF ABOVE DOD NUMBERS ARE OUT OF SERVICE:</u> Pentagon Watch Desk	<b>703-697-0218</b> (24h)
		USCG Atlantic Strike Team Notification Only <i>Discuss need for Civil Support Team.</i>	<b>609-724-0008</b> (Dial 0 for 24 hour number)
		For incidents impacting NJ waters: NJ OEM (ROIC). <i>Confirm that OEM can/will make additional notifications as appropriate (HAZMAT unit, DEP, State Police, Health Dept.) Provide call-back number for SCC.</i>	<b>1-609-963-6900</b> Ext: 1
		For incidents impacting DE waters: DEMA. <i>Confirm that DEMA will notify HAZMAT unit, DNREC, State Police, Health Dept. Provide call-back number for SCC.</i>	<b>1-302-659-3362</b> or <b>1-302-834-4531</b>
		NOAA SSC	<b>800-759-8888</b>

**CONCLUSION**

\_\_\_\_\_ Ensure that all MISLE entries are up to date IAW MISLE check sheet and pass case to the Incident Management Division for final dissemination.

**POLICY/PROGRAM INFORMATION**

- (a) USCG Sector Delaware Bay Area Contingency Plan
- (b) 40 CFR 300, National Contingency Plan
- (c) Sector Delaware Bay "Responding to a Maritime Incident Involving Sea-Disposed Discarded Military Munitions" CONPLAN.
- (d) Weapons of Mass Destruction and Catastrophic Hazardous Materials Releases, COMDTINST 3400.3B
- (e) Critical Incident Communications, COMDTINST 3100.8A

Agent Characteristics	<p><b>Agent Classification:</b> Schedule 1 Chemical Warfare Blister (Vesicant) Agent; <b>CAS:</b> 505-60-2; <b>Formula:</b> C<sub>4</sub>H<sub>8</sub>Cl<sub>2</sub>S; <b>Molecular Weight:</b> 159.08 g/mol.</p> <p><b>Description:</b> Sulfur mustard is sometimes called "mustard gas" but is actually a yellow to brown oily liquid with a garlic, onion, horseradish or mustard-like odor. It is a blister (vesicant) agent that will have delayed health effects on the order of hours, and is reported to be a known human carcinogen. It can be manufactured at different concentrations; with impurities, additives, or thickening materials that will all affect physical properties, appearance, persistence and analytical detection limits. Distilled mustard (HD) is considered the most potent form and is the basis of this QRG. Environmental breakdown products of HD, including thiodiglycol (TDG) and hydrochloric acid, are relatively non-toxic, but some decontamination by-products can be toxic (e.g., sulfones).</p> <p><b>Persistence:</b> HD is considered a "semi-persistent" chemical warfare agent with liquid deposition on surfaces lasting for hours to days. Persistence will depend upon amount and purity of the agent, method of release, environmental conditions, and the types of surfaces and materials impacted. Under certain environmental conditions, HD liquid may go through a partial hydrolysis that results in an outer protective coating around "globules" that are resistant to further hydrolysis and can persist for decades if not physically disturbed. Porous, permeable, organic or polymeric materials such as carpets and vinyl tiles can act as "sinks" for absorbing HD vapors and liquids, prolonging persistence.</p> <p><b>Physical properties are listed at/near STP unless otherwise indicated. Conversion Factors:</b> ppm = mg/m<sup>3</sup> x 0.1538; mg/m<sup>3</sup> = ppm x 6.503</p>																														
	<table border="1"> <thead> <tr> <th>Vapor Density</th> <th>Vapor Pressure</th> <th>Volatility</th> <th>Boiling Point</th> <th>Freezing Point</th> <th>Flash Point</th> <th>Liquid Density</th> <th>Aqueous Solubility</th> <th>Non-aqueous Solubility</th> </tr> </thead> <tbody> <tr> <td>5.4 (air = 1)</td> <td>0.072 mm Hg (68°F/20°C)</td> <td>610 mg/m<sup>3</sup> (68°F/20°C)</td> <td>-422°F/217°C</td> <td>58.1°F/14.5°C</td> <td>223°F/106°C</td> <td>1.27 g/mL (77°F/25°C)</td> <td>0.92 g/L (72°F/22°C)</td> <td>Common solvents, alcohols, gasoline, oils, fats</td> </tr> </tbody> </table>							Vapor Density	Vapor Pressure	Volatility	Boiling Point	Freezing Point	Flash Point	Liquid Density	Aqueous Solubility	Non-aqueous Solubility	5.4 (air = 1)	0.072 mm Hg (68°F/20°C)	610 mg/m <sup>3</sup> (68°F/20°C)	-422°F/217°C	58.1°F/14.5°C	223°F/106°C	1.27 g/mL (77°F/25°C)	0.92 g/L (72°F/22°C)	Common solvents, alcohols, gasoline, oils, fats						
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Release Scenarios	<p><b>AIR RELEASE SCENARIOS ARE ASSUMED MOST PROBABLE; HOWEVER, OTHER RELEASE SCENARIOS AND EXPOSURE ROUTES SHOULD BE CONSIDERED.</b></p> <p><b>Open Areas:</b> HD is difficult to disperse in air due to low volatility; however, it may be possible to disperse HD as a vapor/aerosol plume if an appropriate heat/explosive device is employed. The low volatility of HD would limit the size and extent of plume dissipation, posing localized hazards. <b>HD has a freezing point at 15°C (58°F), so the re-aerosolization of liquids and solids, as ambient temperatures rise, may present a real hazard.</b> HD vapors are heavier than air, so vapors can accumulate in lower terrains.</p> <p><b>Water/Water Systems:</b> HD released into water may dissolve and hydrolyze with a half-life of about 8.5 minutes at 25°C, but in sufficient amounts (relative to water volume) HD may also form globules surrounded by a protective outer layer resistant to hydrolysis. These globules may settle out or be entrapped, persisting for years and posing a contact hazard to anyone disturbing them. Areas in which the globules may persist include stagnant volumes of water as small as puddles formed by precipitation events. Water systems, plumbing, surfaces and equipment that have contacted HD globules, must be evaluated for decontamination.</p> <p><b>Indoor Facility:</b> HD is a semi-persistent agent with low to moderate volatility, and would be difficult to distribute effectively throughout a building or facility from a point source. Liquid HD will result in localized areas of surface contamination. HVAC system intakes near to liquid HD should be investigated for contamination from HD vapors and aerosols. HD vapors are heavier than air so vapors can accumulate in lower levels or utility corridors inside the buildings.</p>																														
Health Effects	Onset	Onset and severity of effects depend on dose, duration and route of exposure (not all signs/symptoms may develop). The effects caused by HD are not typically fatal immediately, but can require substantial supportive medical care as there is no antidote, and secondary infections from blisters/tissue damage may also be fatal. HD produces effects by causing DNA damage/cell death in seconds (this is not like an acid burn). Despite the immediate DNA damage actual signs/symptoms are delayed 1-48 hours after exposure, so those exposed may not be aware.																													
	Signs/Symptoms	Symptoms will vary depending on exposure route; however, the following is a general list of all possible symptoms. The severity of effects depends upon the dosage. <b>Mild:</b> Effects delayed 1-48 hours (severity depends on dose): Eye irritation (tearing, grittiness), runny nose, sneezing, nosebleed, hoarseness, hacking cough. <b>Moderate:</b> Effects delayed 1-24 hours: Mild effects plus reddening and swelling of eyelids, severe cough, shortness of breath, reddening of skin. <b>Severe:</b> Effects delayed 1-24 hours: Upper respiratory/lung damage may occur at high concentrations and longer exposure durations.																													
	Exposure Routes	<p><b>Inhalation:</b> Injury develops slowly, intensifies over several days. Vapor exposure is absorbed in mucous membranes (mouth, throat and lungs).</p> <p><b>Skin:</b> Direct contact with HD liquid can cause redness or blisters in 2-24 hours. Warm and sweaty skin areas (underarms, groin) are most susceptible to exposure.</p> <p><b>Eyes:</b> Eyes are the most sensitive to HD injury; effects noted after 1-12 hours include irritation, burning, gritty feeling, itching, weeping, reddening, lid swelling, light sensitivity, pain and corneal injury. High concentration effects are extremely painful and generally require extended medical treatment.</p> <p><b>Ingestion:</b> Consumption of contaminated food or drink could cause burning, nausea and vomiting.</p>																													
Effect Levels	<p><b>Air: Acute Exposure Guideline Levels (AEGs)</b> for general population one-time exposure emergency scenarios for HD (complete definitions are available in Key References Cited/Used in NRT Quick Reference Guides for Chemical Warfare Agents):</p> <table border="1"> <thead> <tr> <th>AEGL Level in mg/m<sup>3</sup>, at various exposure durations</th> <th>10 min.</th> <th>30 min.</th> <th>1 hr.</th> <th>4 hr.</th> <th>8 hr.</th> </tr> </thead> <tbody> <tr> <td><b>AEGL 1: Threshold mild effects</b></td> <td>0.40</td> <td>0.13</td> <td>0.067</td> <td>0.017</td> <td>0.0083</td> </tr> <tr> <td><b>AEGL 2: Potentially irreversible effects or impaired ability to escape</b></td> <td>0.60</td> <td>0.20</td> <td>0.10</td> <td>0.025</td> <td>0.013</td> </tr> <tr> <td><b>AEGL 3: Threshold for severe effects/medical needs/increasing potential for lethality</b></td> <td>3.9</td> <td>2.7</td> <td>2.1</td> <td>0.53</td> <td>0.27</td> </tr> </tbody> </table> <p><b>Exposure Guidelines:</b> IDLH = 0.7 mg/m<sup>3</sup>; STEL = 3.0 x 10<sup>-3</sup> mg/m<sup>3</sup>; <b>Worker Population Limit (WPL)</b> [an 8-hr time-weighted average occupational value] = 4.0 x 10<sup>-4</sup> mg/m<sup>3</sup>; <b>General Population Limit (GPL)</b> [a 24-hr time-weighted average] = 2.0 x 10<sup>-5</sup> mg/m<sup>3</sup>. <b>Soil: Industrial Exposure Scenario</b> = 0.3 mg/kg (10<sup>-4</sup> cancer risk); <b>Residential Exposure Scenario</b> = 0.01 mg/kg (10<sup>-5</sup> cancer risk). <b>Drinking Water:</b> Provisional Advisory Levels (PAL-1) for HD are not available due to the rapid hydrolysis of dissolved HD to TDG. In the absence of PALs, the U.S. Army's Military Exposure Guidelines (MEGs) may be used; the MEG at 5 L/day, for 7 days = 140 µg/L.</p>							AEGL Level in mg/m <sup>3</sup> , at various exposure durations	10 min.	30 min.	1 hr.	4 hr.	8 hr.	<b>AEGL 1: Threshold mild effects</b>	0.40	0.13	0.067	0.017	0.0083	<b>AEGL 2: Potentially irreversible effects or impaired ability to escape</b>	0.60	0.20	0.10	0.025	0.013	<b>AEGL 3: Threshold for severe effects/medical needs/increasing potential for lethality</b>	3.9	2.7	2.1	0.53	0.27
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Personnel Safety	Note	Personal Protective Equipment (PPE) selection (levels A-D), medical surveillance requirements, First Aid options and personnel decontamination may vary depending upon the amount and purity of agent, site conditions and the release scenario. Additional information on personnel safety and PPE selection criteria can be found at: <a href="http://www.cdc.gov/niosh/ershdb">www.cdc.gov/niosh/ershdb</a> . We also recommend that responders check their own internal procedures (i.e., SOPs) if they have them.																													
	Medical	<b>Pre-incident:</b> Annual physical and respiratory function exams. <b>During Incident:</b> Conduct periodic on-site medical monitoring, observe for any signs and symptoms as per Health Effects section above and treat accordingly as per First Aid section below.																													
	First Aid	Immediately remove person from affected area and remove contaminated clothing and articles. Wash bare skin immediately with water, or warm, soapy water if available, at normal household pressures (~50-60 psi) for three minutes, ensure thorough soaking. Rinse eyes exposed to liquid agent with potable water for 15 minutes. <b>Antidote: NO ANTIDOTE AVAILABLE.</b> Send person for follow-up medical attention and evaluation; <b>be aware effects are delayed 1-48 hours.</b> If cleared to resume work, continue to monitor for signs/symptoms and treat accordingly.																													
	PPE	<b>GENERAL INFORMATION:</b> NIOSH-certified Chemical, Biological, Radiological, Nuclear (CBRN) Self Contained Breathing Apparatus (SCBA), Air Purifying Respirators (APR) or Powered Air Purifying Respirators (PAPR), full-face masks, & protective clothing should be used. Pre-incident training & exercises on the proper use of PPE are recommended. Per NIOSH guidance - <b>LEVEL A:</b> Recommended for the initial response to an HD incident. Level A provides the greatest level of skin (fully encapsulating suit), respiratory (SCBA), & eye protection when the contaminant identity or concentration is unknown. Select Level A when the HD concentration is unknown or above the IDLH or AEGL-2, & when there is a potential of ocular or dermal exposure. <b>LEVEL B:</b> Provides the highest level of respiratory protection (SCBA) when a lesser level of skin protection is required. Select Level B when the HD concentration is unknown or above the IDLH or AEGL-2 & dermal exposure is less of a risk. Level B differs from Level A in that it incorporates a non-encapsulating, splash-protective, chemical-resistant outer suit that provides protection against most liquids but is not airtight. <b>LEVEL C:</b> Select Level C when the contaminant identity & concentration are known & the respiratory protection criteria factors for the use of APR or PAPR (i.e., < IDLH, warning properties) are met. Level C may be appropriate when decontaminating personnel or equipment. <b>LEVEL D:</b> Select Level D when the contaminant is known & the concentration is below the appropriate occupational exposure limit or less than AEGL-1 for the stated duration times. <b>Downgrading PPE levels can be considered only when the identity and concentration of the contaminant and the risks of dermal exposure are known, and must be accompanied by on-site monitoring.</b>																													
Field Detection	<p><b>Real-time field screening tools (results not confirmatory or quantitative):</b> Caution should be given to equipment that has not been properly evaluated. False positive and false negatives may occur in the presence of interferents common in the environment. The following is a summary of minimum screening concentration ranges for equipment procured by many EPA and HAZMAT response teams. Other screening tools may be used by these teams &amp; other agencies &amp; responders, some with similar capabilities &amp; limitations.</p> <p><b>NOTE: Detection equipment does not measure contaminant levels. Rather, they detect the presence of HD at levels as listed below.</b></p> <table border="1"> <thead> <tr> <th>Minimum Screening Ranges</th> <th>CAM/ICAM</th> <th>AP2C/AP4C</th> <th>APD-2000</th> <th>Dräger (CDS Kit)</th> <th>M256/M256A1</th> <th>M272 (water)</th> </tr> </thead> <tbody> <tr> <td>ppm</td> <td>0.3</td> <td>0.03-0.142</td> <td>0.3</td> <td>0.15</td> <td>0.31-0.46</td> <td>2.0 mg/L</td> </tr> <tr> <td>mg/m<sup>3</sup></td> <td>0.1-2</td> <td>0.2-1</td> <td>0.22-2</td> <td>1</td> <td>2-3</td> <td>NA</td> </tr> </tbody> </table>							Minimum Screening Ranges	CAM/ICAM	AP2C/AP4C	APD-2000	Dräger (CDS Kit)	M256/M256A1	M272 (water)	ppm	0.3	0.03-0.142	0.3	0.15	0.31-0.46	2.0 mg/L	mg/m <sup>3</sup>	0.1-2	0.2-1	0.22-2	1	2-3	NA			
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mg/m <sup>3</sup>	0.1-2	0.2-1	0.22-2	1	2-3	NA																									

Sampling	<p><i>Note: This section on sampling contains general guidelines and does not replace the need for a site-specific sampling plan (See Key References Cited/Used)</i></p> <p><b>Sampling Concerns:</b> Detection, sampling equipment and procedures, and analytical techniques will be site-specific and depend on: 1) physical state of the agent; 2) type of surfaces contaminated (e.g., porous vs. non-porous); 3) the purpose of sampling (e.g., characterization, decontamination efficacy and clearance); and 4) specific laboratory requirements. Few laboratories currently have capability to determine HD, particularly for large numbers of samples and in all types of media. The U.S. Environmental Protection Agency (EPA) has set up mobile and fixed labs and analytical assets for chemical agent analysis of environmental samples under their Environmental Response Laboratory Network (ERLN), see ANALYSIS section below (<a href="http://www2.epa.gov/emergency-response/environmental-response-laboratory-network">www2.epa.gov/emergency-response/environmental-response-laboratory-network</a>). For sampling questions, call the EPA/HQ-EOC at 202-564-3850.</p>
	<p><b>Sample Locations and Planning:</b> Initially consider air monitoring to ensure worker safety and to determine if there is a vapor plume that could impact other areas. Characterization sampling is initiated by targeted or judgmental sampling to identify "hot spots," potential agent flow paths, and media or objects potentially acting as sinks. Additional biased or random sampling can be used to determine the extent of potential contamination or to verify the efficacy of decontamination. More thorough probabilistic sampling (e.g., grid, statistical approach) may be required for the clearance phase or if there are large uncertainties about the area impacted or the amount released. Because HD is a semi-persistent liquid, sample priorities should include surfaces that are potentially contaminated with aerosol/liquid (e.g., release site, low lying areas) and that humans are likely to contact or where vegetation is used as food.</p>
	<p><b>Note:</b> HD breaks down in most environmental conditions to numerous breakdown products, especially TDG, which may be used as a marker to determine the extent of contamination of the parent HD. See ANALYSIS section below to ensure sampling procedures are compatible with all analytes.</p> <p><b>Types of Samples:</b></p> <p><b>Air (Vapors are heavier than air):</b> Samples are collected using appropriate solid phase absorbent (tubes) or air sampler (e.g., SUMMA canister) at breathing zone level (~5 ft.) to assess inhalation exposure and at ground levels (~6 in.) to assess off gassing at surfaces.</p> <p><b>Water:</b> Water should be collected in appropriate containers with addition of appropriate de-chlorinating agents and preservatives.</p> <p><b>Soil:</b> For localized hot spot areas where soil deposition may occur (i.e., aerosol or liquid droplets), surface soil samples should be taken from a non-vegetated area to a depth of less than one inch. Sub-surface soil samples are typically not necessary unless a large amount of liquid was poured on the ground, or if an underlying aquifer is endangered.</p> <p><b>Surface Wipes:</b> Wipe samples are often desired to indicate absence of HD on non-porous surfaces. Concurrent air monitoring is recommended.</p> <p><b>Bulk:</b> For hot spot areas where liquid HD deposition may occur on porous surfaces (e.g., concrete, asphalt), actual pieces or cores of contaminated surface may be obtained using appropriate tools (scabbling, coring or drills) for subsequent laboratory extraction analysis. Bulk samples of suspected sink materials may be recommended to rule out secondary vapor phase desorption or absorption of HD into these materials.</p> <p><b>Other Sample Matrices:</b> Contact EPA/HQ-EOC at 202-564-3850 for sampling instructions.</p>
	<p><b>Sample Packaging and Shipping:</b> The packaging and shipping of samples are subject to strict regulations established by DOT, CDC, USPS, OSHA and IATA. Contact the sample-receiving laboratory to determine if they have additional packaging, shipping or labeling requirements.</p>
Analysis	<p><b>CAUTION: Many labs may not be able to perform analysis on all matrices (e.g., wipes and soil).</b> The ERLN will use uniform, compatible sample prep and analytical methods. (See <a href="http://www2.epa.gov/emergency-response/environmental-response-laboratory-network">www2.epa.gov/emergency-response/environmental-response-laboratory-network</a>). For access to the nearest ERLN laboratory specially trained and equipped for HD analysis, contact the EPA/HQ-EOC at 202-564-3850.</p>
Decontamination/Cleanup	<p><b>Decontamination/Cleanup Planning:</b> Once site controls are in place, develop a site-specific decontamination/cleanup plan. Decontamination may require a "tiered approach" using a variety of techniques and products. Call the EPA/HQ-EOC at 202-564-3850 for more information.</p> <p><b>General Considerations:</b> A cost vs. benefit evaluation should be undertaken for each decontamination strategy and approach that considers: public safety, total cost, impact on the facility, wastes generated, as well as the time the facility or item will be out of service and any socio-economic, psychological, and/or security impacts that may result. Large volumes of decontamination wastes may be generated that will need to be collected, treated and disposed of properly. Waste handling and disposal must be addressed as early in the decontamination and cleanup process as possible (see Waste Management section below).</p> <p><b>Disposal Option:</b> The urgency to restore a facility as quickly as possible may result in the outright and timely removal and disposal of contaminated materials. Certain materials may be resistant to decontamination formulations, or may be cheaper to discard and replace than to decontaminate and restore.</p> <p><b>Monitored Natural Attenuation:</b> HD degrades via natural processes. Environmental monitoring must be maintained during decontamination and recovery phases. Monitored natural attenuation may require institutional controls (e.g., access restriction and contaminant containment measures). The time to achieve clearance must be considered in the overall cost/benefit evaluation. This option is more passive than other options but is non-destructive to materials.</p> <p><b>Fix-in-Place Option:</b> The contaminated area may be resistant to decontamination products or may be unable or impractical to be treated. Physical barriers can be used to separate and immobilize the agent contamination from coming into contact with the environment or the public. This can be a temporary or permanent solution.</p> <p><b>Decontamination Strategy:</b> A decontamination strategy can be developed by designating contaminated areas into three broad categories: 1) surfaces or hot spots, 2) large volumetric spaces, and 3) sensitive equipment or items. Areas in each category may be treated using one or more unique decontamination processes in a tiered approach to the overall site-specific decontamination strategy.</p> <p><b>Surfaces/Hot Spots:</b> This category is for areas smaller in size but with higher levels of agent contamination. They may require more rigorous decontamination products and methods. In contrast to the rapid hydrolysis when HD is dissolved in water, <b>the hydrolysis of HD on surfaces is slow.</b> 1) Hypochlorite solutions are effective but can be very corrosive to certain surfaces and materials and should be rinsed thoroughly afterwards. Household bleach solutions (≥5% sodium hypochlorite) are very effective for HD with efficacy achieved with contact time of 15-60 minutes depending on surface material. Calcium hypochlorite, present in commercial products, such as HTH (10% hypochlorite solution), is better for surfaces with high concentrations of liquids in localized areas. 2) Proprietary decontamination foams and gels such as DF-200®, CASCAD®, Decon Green®, or L-Gel® have been reported to be effective against HD on the order of minutes to hours, but not all have been thoroughly tested. Availability, cost and the need for specialized equipment may limit their use early in the response.</p> <p><b>Large Volumetric Spaces:</b> This category is for areas larger in size but with lower levels of agent contamination. They may require less aggressive but more broadly applied decontamination products and methods. 1) Monitored Natural Attenuation is more passive than other decontamination options and is non-destructive to materials. This option may be preferable given the scope and severity of contamination. 2) Forced or Hot Air ventilation methods are recommended for vapor plume contamination or low concentration of HD in large volumetric spaces or open areas; efficacy typically can be achieved in hours to days with less waste and adverse impacts to materials. 3) Fumigation with modified vaporous hydrogen peroxide (VHP®) has been reported to be effective against HD. HVAC systems in large indoor spaces may require a separate decontamination strategy that could include the use of Hot Air ventilation or fumigation.</p> <p><b>Sensitive Equipment and Items:</b> 1) Forced or Hot Air ventilation may be used for HD and can be used either in-situ or ex-situ to decontaminate these items. 2) modified VHP® fumigation can be used on these items with less corrosion to electronics than dilute hypochlorite solutions.</p> <p><b>CAUTION:</b> Decontamination products may have unique safety/PPE requirements due to their own toxicity or that of breakdown products during use (e.g., bleach results in chlorine vapors). Strong oxidizers, such as hypochlorite, may react violently with organics. Under oxidizing conditions (i.e., bleach), <b>HD can break down into several toxic by-products, such as mustard and vinyl sulfones.</b> Hydrolysis of HD releases Cl ions that can affect the pH of solutions. Formulations should be chosen that do not allow the formation of these toxic breakdown products. Dirt, grime and other coatings can reduce the efficacy of decontamination; pre-cleaning surfaces with soap and water may be needed before the application of decontamination formulations <b>but resulting pre-cleaning rinsates may contain and spread agent.</b></p> <p><b>Verification of Decontamination:</b> Site and situation specific. Please contact EPA/HQ-EOC at 202-564-3850 for further assistance.</p>
Waste Management	<p><b>CAUTION:</b> Federal requirements for transporting hazardous materials and procedures for exemptions are specified in <a href="http://www.fmcsa.dot.gov/safety-security/hazmat/complyhmrregs.htm#hmp">www.fmcsa.dot.gov/safety-security/hazmat/complyhmrregs.htm#hmp</a>. These regulations differ from state-to-state. Detailed state regulations can be found at <a href="http://www.envcap.org">www.envcap.org</a>. Current resources on packaging, labeling and shipping are available at: <a href="http://www.phmsa.dot.gov/hazmat">www.phmsa.dot.gov/hazmat</a>.</p> <p><b>Waste Management:</b> Under the Resource Conservation and Recovery Act (RCRA), waste generally is classified as hazardous waste (subtitle C) or solid waste (subtitle D). Under RCRA's statutory authority, a waste is considered hazardous if it: (A) causes or significantly contributes to an increase in mortality or an increase in serious, irreversible or incapacitating reversible illness or (B) poses a substantial, present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed. The RCRA regulations generally define a waste as hazardous if it is: (1) a listed waste (40 CFR§261.21, §261.32), (2) exhibits specific characteristics (§261.21-261.24) or (3) is a spilled or discarded commercial chemical product (§261.33). The States (except for Alaska and Iowa) have the primary responsibility to implement the hazardous waste regulations and can impose more stringent requirements than the Federal program, so it is critical to open a dialogue with regulators as early as possible. Several states (CO, IN, KY, MD, OR, UT) have their own waste designations for CWA, which may be applicable for the cleanup of contaminated residues. HD is not a hazardous waste under the Federal regulations, but state codes may apply for HD-contaminated residues, soils and debris. Management of toxic decomposition products, associated residual decontamination solutions, local waste acceptance criteria, and transportation and handling requirements should be considered. The EPA has developed I-WASTE, a web-based tool that contains links to waste transportation guidance, treatment and disposal facilities, state regulatory offices, packaging guidance, and guidance to minimize the potential for contaminating the treatment or disposal facility. Access to this decision support tool requires pre-registration (<a href="http://www2.ergweb.com/bdrtool/login.asp">www2.ergweb.com/bdrtool/login.asp</a>).</p>