

# WMD AND HAZARDOUS MATERIALS RESPONSE AND DECONTAMINATION

## **Capability Definition**

Weapons of Mass Destruction (WMD) and Hazardous Materials Response and Decontamination is the capability to assess and manage the consequences of a hazardous materials release, either accidental or as part of a terrorist attack. It includes testing and identifying all likely hazardous substances onsite; ensuring that responders have protective clothing and equipment; conducting rescue operations to remove affected victims from the hazardous environment; conducting geographical survey searches of suspected sources or contamination spreads and establishing isolation perimeters; mitigating the effects of hazardous materials, decontaminating on-site victims, responders, and equipment; coordinating off-site decontamination with relevant agencies, and notifying environmental, health, and law enforcement agencies having jurisdiction for the incident to begin implementation of their standard evidence collection and investigation procedures.

## **Outcome**

Hazardous materials release is rapidly identified and mitigated; victims exposed to the hazard are rescued, decontaminated, and treated; the impact of the release is limited; and responders and at-risk populations are effectively protected.

## **Relationship to National Response Plan Emergency Support Function (ESF)/Annex**

This capability supports Emergency Support Function (ESF) #10: Oil and Hazardous Materials Response.

## **Preparedness Tasks and Measures/Metrics**

<b>Activity: Develop and Maintain Plans, Procedures, Programs, and Systems</b>	
<b>Critical Tasks</b>	
Res.B2b 1.1	Develop plans, programs, agreements, and requirements for responding to hazardous material incidents
Res.B2b 1.2	Develop plans, programs, criteria, and protocols for conducting decontamination
Res.B2b 1.3.1	Pre-identify resources (personnel and equipment) to provide rapid initial size-up of hazardous materials incident
ResB2b 1.4	Assist in developing a communications plan for hazardous materials in emergencies, related to specific hazards, health guidance, educational materials, etc.
Res.B2b 1.5	Ensure plans are in place for self-presenting contaminated victims off-site (e.g., hospitals)
<b>Preparedness Measures</b>	<b>Metrics</b>
WMD/HazMat Response and Decontamination plans are based on a formal assessment of risks and vulnerabilities.	Yes/No
Risk analysis is completed for potential hazmat vulnerabilities, including fixed facilities	Yes/No

and transportation-related emergencies	
Frequency with which Emergency Response Plan is reviewed	Every 12 months
Local Emergency Planning Commission is functional	Yes/No
Frequency with which pre-planned hazards and targets are reviewed and updated	Every 12 months
Plans for pre-identified and equipped hazmat personnel to respond to hazmat incident and provide initial rapid hazmat incident size-up within 30 minutes from notification (< 2hrs if regional resource) are in place	Yes/No
Hazmat personnel are equipped and trained for weather prediction and hazard pluming	Yes/No
Redundant hazmat response teams and equipment are available (or accessible through mutual aid agreements) to provide resiliency in the event of a large-scale incident	Yes/No
WMD/HazMat plans address substance identification equipment (e.g. bases, vapors, liquids, solids, biologicals like white powder).	Yes/No
WMD/HazMat plans address personnel needs (e.g. work/rest cycles, medical, psychological, financial assistance, etc).	Yes/No
WMD/HazMat plans address demobilization (e.g. debrief personnel, repackage equipment).	Yes/No
Jurisdiction's hazmat team(s) has current protocol to coordinate with emergency medical services (EMS) on victim care post-decontamination (identification of substance, administration of antidotes, etc.)	Yes/No
Jurisdiction's hazmat team(s) has current protocol to coordinate with law enforcement for evidence collection and crime scene control	Yes/No
Emergency response and command vehicles and Incident Command Posts are equipped with Emergency Response Guidebook, NIOSH pocket guidebook, and discipline-related references relevant to the region	Yes/No

<b>Activity: <i>Develop and Maintain Training and Exercise Programs</i></b>	
<b>Critical Tasks</b>	
Res.B2b 2.1.1	Develop and implement training related to detection and reporting of hazardous material
Res.B2b 2.1.2	Provide appropriate hazmat response training to field staff and managers of State/local programs having involvement in hazmat response
ResB2b 2.2	Develop and implement exercise programs for WMD/hazardous materials response and decontamination
<b>Preparedness Measures</b>	<b>Metric</b>
Percent of police, fire, EMS , first responders (other than those assigned to hazmat responses) that are trained to hazmat awareness level	100%
Percent of first responders assigned to hazmat operations that are trained to hazmat operations level (in accordance with 1910.120 (g) or NFPA 472)	100%
Percent of personnel assigned to hazmat technician responsibilities who are trained to the hazmat technician level (in accordance with 1910.120 (g) or NFPA 472)	100%
Percent of personnel assigned to hazmat specialist responsibilities who are trained to the	100%

hazmat specialist level (in accordance with 1910.120 (g) or NFPA 472)	
Percent of personnel assigned to manage hazmat who are trained to hazmat management level (in accordance with 1910.120 (g), NFPA 471 and NFPA 472) for detection equipment, including flammability, toxicity, radiations, chemical warfare agents (CWAs) and biologicals	100%
Percent of personnel assigned to manage hazmat who are trained to hazmat management level (in accordance with 1910.120 (g), NFPA 471 and NFPA 472) for substance identification equipment, for bases and vapors, liquids, solids and biologicals (white powder)	100%
Hazmat personnel are equipped and trained for weather prediction and hazard pluming	Yes/No
Jurisdiction's hazmat team(s) trains regularly with EMS to ensure proper coordination of victim care post-decontamination (identification of substance, administration of antidotes, etc.)	Yes/No
Jurisdiction's hazmat team(s) trains regularly with law enforcement to ensure proper coordination for evidence collection and crime scene control	Yes/No

### **Performance Tasks and Measures/Metrics**

#### **Activity: Direct WMD and Hazardous Material Response and Decontamination Tactical Operations**

**Definition: In response to notification of WMD/hazmat event or contamination, provide management and coordination of hazmat response and decontamination operations through demobilization and/or transition to recovery operations.**

#### **Critical Tasks**

Res.B2b 3.1	Receive alert/activation order for WMD and Hazardous Materials Response and Decontamination
Res.B2b 3.2	Establish and implement on-scene management for hazmat material response
Res.B2b 3.2.4	Provide a hazmat technical expertise team for emergency operations for both industry and public
Res.B2b 3.4.7	Implement a hazmat response (e.g., implement plans, programs, agreements, and requirements)
Res.B2b 3.2.7	Coordinate technical, administrative support, personnel, facilities, communications, and information
Res.B2b 3.2.6.2	Provide required Personal Protection Equipment to WMD/hazmat responders in coordination with safety officer
Res.B2b 3.2.5.4	Develop a site safety plan
Res.B2b 3.2.6.1	Observe the scene and review/evaluate hazard and response information as it pertains to the safety of all persons on the scene and responding
Res.B2b 3.2.6	Coordinate with safety officer to ensure the safety of on-scene WMD/hazmat responders
Res.B2b 3.4.7	Coordinate and support decontamination activities on-site
Res.B2b 3.4.7.4	Coordinate with and provide technical guidance to entities performing off-site decontamination
Res.B2b 3.4.7.5	Coordinate with hospitals to develop plans for managing/decontaminating self-presenting contaminated victims

Res.B2b 3.2.8	Coordinate resource management of hazmat equipment, supplies, and personnel
Res.B2b 3.4.7.6	Request decontamination technical assistance resources
Res.B2b 3.2.6.3	Coordinate with safety officer to brief hazmat branch/group personnel on-site-specific occupational safety and health issues involving hazmat/WMD releases
Res.B2b 3.4.7.7	Issue instructions for self-decontamination, where appropriate, expedient and possible
Performance Measures	
Number of loss-time injuries (per deployment) of WMD/hazmat Response and Decontamination personnel during rescue efforts	<1
Time in which tactical plan is developed, based on the incident action plan (IAP), and for implementation by the State, region, and/or local WMD/hazmat Response and Decontamination	Within 2 hours from arrival on scene

**Activity: *Activate WMD and Hazardous Material Response and Decontamination***  
**Definition: In response to activation, mobilize and arrive at the incident scene to begin operations.**

Critical Tasks	
Res.B2b 4.1	Initiate WMD/hazmat procedures
Res.B2b 4.2	Assemble personnel and equipment at designated location
Res.B2b 4.3	Transport team (personnel and equipment) to scene
Res.B2b 4.3.1	Conduct initial approach and positioning of responders
Res.B2b 4.3.2	Implement/integrate WMD/hazmat resources into ICS organization
Res.B2b 3.2.5.5	Initiate initial public protective actions (PPA)
Performance Measures	
Team is coordinated/incorporated into ICS upon arrival	Yes/No
Time in which initial hazmat size-up is completed	Within 30 minutes from notification of incident
Time in which regional assets (e.g., Type I hazmat Team or Type III or IV Incident Management team) arrive on scene, if requested by IC	Within 2 hours from asset request
Time in which State assets (e.g., Type I hazmat Team or Type II or III Incident Management team) arrive on scene, if requested by IC	Within 12 hours from asset request
Time in which Federal assets (e.g., Type I hazmat Team or Type I or II Incident Management team) arrive on scene, if requested by IC	Within 24 hours from asset request
Time in which Radiological Emergency Preparedness Program (REPP) Response Teams appropriate for the incident size involving a radiological hazard are deployed	Within 24 hours from asset request
Time in which Radiological Assistance Program (RAP) Teams are deployed	Within 2 hours from asset request

**Activity: Identify the Hazard**

**Definition:** Upon arriving on scene, begin to assess site, sample, identify, and characterize WMD/hazmat and contamination situation, conduct hazard analysis to determine potential consequence and risk, develop plans for safety and hazmat/decontamination operations, and set up hazmat zones.

**Critical Tasks**

Res.B2b 5.1.1	Notify law enforcement for guidance on collection and management of evidence from potential crime scenes	
Res.B2b 5.1	Initiate hazmat response	
Res.B2b 5.2	Survey the incident scene	
Res.B2b 5.2.1	Identify hazmat and the extent/scope of the incident	
Res.B2b 5.5.3	Analyze weather forecast to conduct hazard zone prediction	
Res.B2b 5.2.2	Conduct contamination surveys	
Res.B2b 5.2.3	Assess hazmat release situation	
Res.B2b 5.2.3.1	Conduct oil and hazmat assessment	
Res.B2b 5.5.2	Monitor movement of hazardous releases and formulate predictions on dispersion and characteristics over time	
Res.B2b 5.5	Characterize consequences and risk	
Res.B2b 5.3	Identify and establish perimeter and hazmat zones (hot, warm, cold)	
Res.B2b 5.4	Conduct ongoing assessments and predictions	
<b>Performance Measures</b>		<b>Metric</b>
Time in which area is isolated and public access is controlled		Within 15 minutes from arrival on scene
Time in which hazardous materials or category involved are identified		Within 30 minutes from arrival on scene

**Activity: Assess Hazard and Evaluate Risk**

**Definition:** Assess the hazards present, evaluate the level of risk to both responders and the public, and develop and Incident Action Plan (IAP) to address the response problem

**Critical Tasks**

Res.B2b 5.5.1	Collect, prioritize, and manage data and information from all sources
Res.B2b 5.5.1.1	Develop incident monitoring and sampling strategy based upon a realistic assessment of operational hazards
Res.B2b 5.5.1.2	Conduct sampling operations
Res.B2b 5.5.1.3	Identify, classify, and verify suspected non-biological WMD/hazmat samples through the use of at least two (preferably three) different instrument technologies
Res.B2b 5.5.2	Use plume dispersion models and other analytical tools to generate ongoing WMD/hazmat dispersion assessments

Res.B2b 5.5	Implement risk evaluation process that adequately addresses the risk of various actions to both responders and the public
Res.B2b 3.2.5.1	Develop and implement an Incident Action Plan (IAP) specific to WMD/hazmat issues based upon the risk evaluation process
Res.B2b 5.3	Establish and identify visually an isolation perimeter (outer perimeter) to isolate the area and deny entry
Res.B2b 5.3.1	Establish a hot zone (inner perimeter) to identify high hazard area(s) where responders will operate
Res.B2b 5.3.2	Establish other hazard control zones, based upon scope and nature of the event
Res.B2b 5.3.3	Make offensive or defensive reconnaissance operations, as necessary, to gather intelligence on the situation
Res.B2b 5.4	Conduct ongoing assessments and predictions
Performance Measures	
Time in which preliminary estimate of number of victims exposed to toxic/hazardous material and source identification is obtained	Within 2 hours from arrival on scene
Time in which the at-risk population is identified and protective action recommendations are made	Within 1 hour from arrival on scene
Time in which the WMD/hazmat elements of the overall IAP are developed	Within 1 hour from arrival on scene

<b>Activity: <i>Conduct Rescue Operations</i></b>	
<b>Definition: Once on-scene and equipped with protective and response equipment, implement rescue operations.</b>	
Critical Tasks	
Res.B2b 6.1	Determine the nature and priority of rescue operations and the numbers involved
Res.B2b 6.1.1	Identify personnel and equipment requirements to initiate rescue operations
Res.B2b 6.2	Implement safe and effective tactics to accomplish rescue operation objectives
Res.B2b 6.2.1	Extricate and rescue victims within the hot zone
Res.B2b 6.2.2	Coordinate rescue efforts with law enforcement to ensure safety of rescuers
Res.B2b 6.3	Implement secondary public protective actions (PPAs)
Res.B2b 6.3.1	Identify personnel and equipment requirements to initiate product/agent control operations
Res.B2b 6.3.2	Implement safe and effective tactics to accomplish product/agent control objectives
Res.B2b 6.3.3	Implement safe and effective tactics to support product/agent control objectives
Performance Measures	
Time in which contaminated victims are rescued from contaminated area	Within 2 hours from arrival on scene

**Activity: Conduct Mitigation Activities**

**Definition:** Once on scene and equipped with protective and response equipment, implement operations plan to minimize contamination.

<b>Critical Tasks</b>	
Res.B2b 7.1.3	Identify appropriate PPE based on suspected hazardous material
Res.B2b 7.1.1	Coordinate with safety officer to monitor responders for exposure to hazmat
Res.B2b 7.1.2	Coordinate with safety officer to monitor and control the operating time of rescuers assigned to the hot zone to minimize rescuer exposure
Res.B2b 7.1	Secure the contamination source and affected areas
Res.B2b 7.2	Monitor and track compliance with containment requirements
<b>Performance Measures</b>	<b>Metric</b>
Time in which implementation of initial action plan and objectives is initiated	Within 4 hours from arrival on scene
Time in which hazmat/WMD contamination is contained	Within 12 hours from arrival on scene

**Activity: Conduct Decontamination and Clean-up /Recovery Operations**

**Definition:** Upon arrival on scene and with the requisite equipment, initiate response operations to reduce the level of on-scene contamination, minimize the potential for secondary contamination beyond the incident scene, and ensure an effective transition to clean-up and recovery operations.

<b>Critical Tasks</b>	
Res.B2b 8.1	Identify assets required for decontamination activities
Res.B2b 8.2	Identify the type of contaminants, nature of response operations, and the required type/level of decontamination operations
Res.B2b 8.4.5	Implement plans, procedures, and protocols to ensure on-site individual gross decontamination of persons and household pets affected by the incident
Res.B2b 8.4.6	Provide a means to allow medical treatment facilities and shelter managers to readily identify people who have received gross decontamination
Res.B2b 8.3.1	Establish decontamination sites for victims
Res.B2b 8.4.1	Screen affected persons
Res.B2b 8.4	Implement emergency decontamination operations
Res.B2b 8.4.2	Decontaminate victims exposed to chemical, biological, radiological, nuclear, or explosive (CBRNE) materials
Res.B2b 8.4.7	Implement technical decontamination operations for injured, contaminated victims
Res.B2b 8.4.7.1	Implement technical decontamination of human remains
Res.B2b 8.4.8	Implement technical decontamination operations in support of WMD/hazmat entry and response activities
Res.B2b 8.4.9	Implement decontamination operations to address incident-specific scenarios and requirements

Res.B2b 8.4.9.1	Decontaminate pets, if resources are available
Res.B2b 8.5.1	Coordinate livestock decontamination
Res.B2b 9.2.3	Monitor clean areas within the contamination control line
Res.B2b 9.2.2	Monitor the exit points for hazmat contaminate movement outside the isolation zone
Res.B2b 9.2.4	Coordinate with environmental authorities to ensure the appropriate decontamination area clean-up and disposal of waste materials
Res.B2b 9.2	Decontaminate affected facilities and equipment used for technical decontamination
Res.B2b 9.4.1	Perform clean-up operations
Res.B2b 9.4.2	Implement hazmat disposal plan
Performance Measures	
Performance Measures	Metric
Victims are provided maximum amount of privacy within site and situational constraints	Yes/No
Percent of victims provided clothing, blankets, and protection from the elements as needed	100%
Time in which technical decontamination of first responders on-site is performed (depending on substance)	Within 2 hours from end of work period
Time in which technical decontamination of off-site victims (e.g., at hospitals and designated decontamination stations) is performed (depending on substance)	Within 2 hours from arrival
Time in which technical decontamination of household pets off-site (e.g., at designated decontamination stations) is performed (depending on substance)	Within 2 hours from arrival
Time in which technical decontamination of human remains is performed	Within 24 hours from end of work period
Time in which technical decontamination of facilities and equipment is performed	Within 24 hours from end of work period

**Activity: Demobilize WMD and Hazmat Response and Decontamination**

**Definition: Upon completion of response phase transition to recovery operations, inventory equipment, complete paperwork, pursue rehabilitation, and conduct post-event analysis (e.g., lessons learned) in accordance with incident demobilization plan.**

**Critical Tasks**

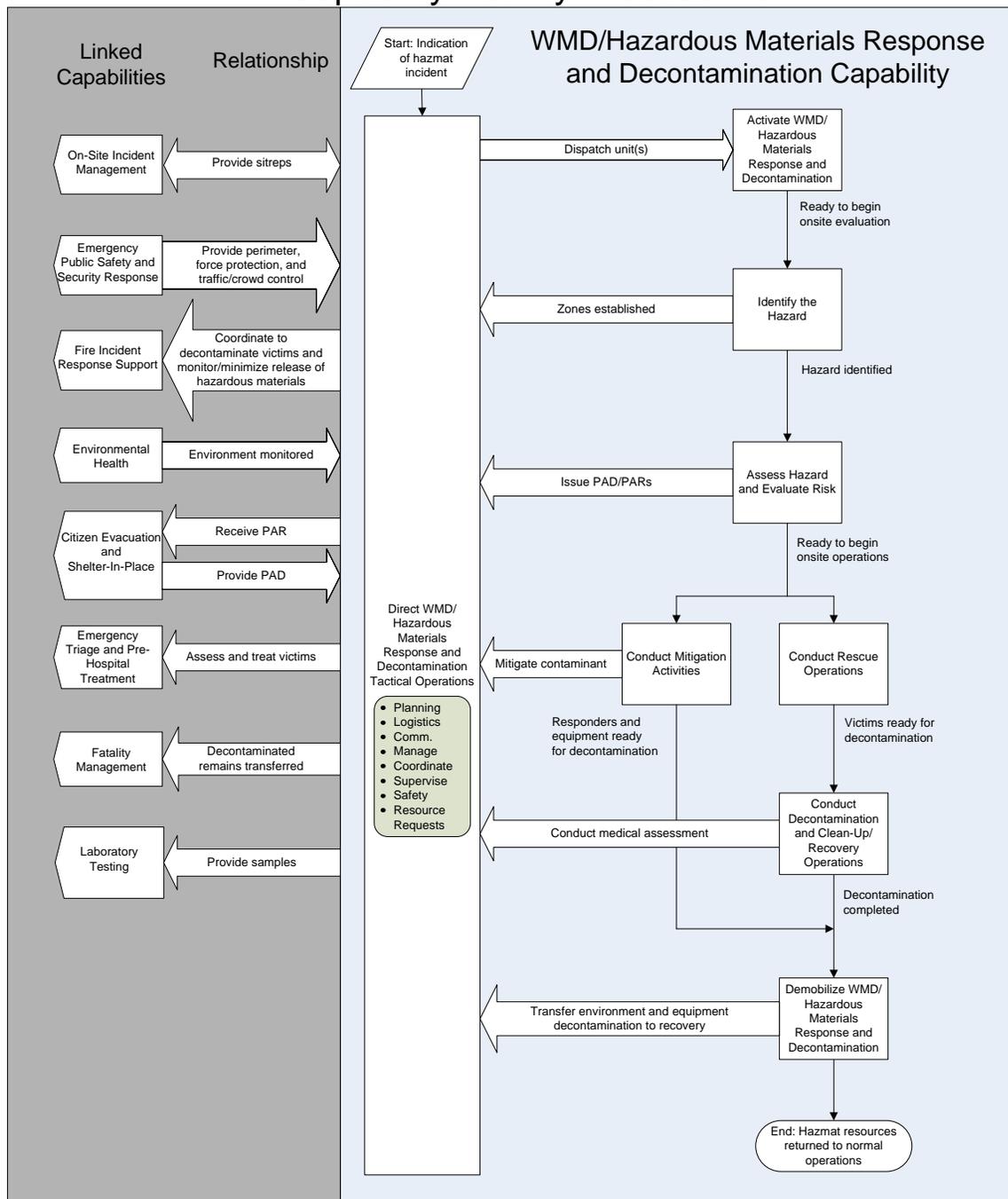
Res.B2b 10.1.1	Transfer command for emergency response phase to authority having jurisdiction (AHJ) for post-emergency clean-up and recovery operations
Res.B2b 10.1.2	Work through IC/UC to ensure that incident-specific evidence collection and investigation protocols are clearly understood and communicated to all responders
Res.B2b 10.1	Inventory WMD/hazmat equipment cache and restore to service
Res.B2b 10.2	Demobilize WMD/hazmat base of operations
Res.B2b 10.3	Arrange transportation for demobilized WMD/hazmat personnel and equipment
Res.B2b 10.4.1	Implement a formal post-incident analysis process (based upon local procedures)

Res.B2b 10.4	Debrief WMD/hazmat capability personnel
Res.B2b 10.4.2	Conduct and incident critique for incident responders
Performance Measures	Metric
Time in which equipment cache is re-inventoried and packaged for transport	Within 12 hours from start of demobilization process
Time in which base of operations is returned to original conditions	Within 12 hours from start of demobilization process
Percent of WMD/hazmat Response and Decontamination task force debriefed	100%

### ***Linked Capabilities***

Linked Capability	Relationship
On-Site Incident Management	WMD and Hazmat Response and Decontamination integrates itself into the local Incident Command/Unified Command system.
Emergency Public Safety and Security Response	WMD and Hazmat Response and Decontamination relies upon Emergency Public Safety and Security Response assistance to secure WMD/hazmat and decontamination sites, safely divert public from the area, and to provide security support for the WMD/hazmat and decontamination base of operations.
Fire Incident Response Support	WMD and Hazmat Response and Decontamination coordinates with Fire Incident Response Support to decontaminate on-site victims and coordinates with hazmat on tactics to monitor and minimize release of hazardous materials during firefighting operations.
Environmental Health	WMD and Hazmat Response and Decontamination relies upon Environmental Health to monitor environmental public safety from decontamination and other hazmat response operations.
Citizen Evacuation and Shelter-In-Place	WMD and Hazmat Response and Decontamination relies upon Citizen Evacuation assistance to help plan for and implement the protective actions recommended by the IC in consultation with the WMD/hazmat team to both protect and decontaminate evacuees.
Emergency Triage and Pre-Hospital Treatment	WMD and Hazmat Response and Decontamination relies upon Emergency Triage and Pre-Hospital Treatment to transfer care of victims that have been decontaminated from WMD/hazmat.
Fatality Management	WMD and Hazmat Response and Decontamination notifies Fatality Management of location of decontaminated remains encountered from WMD/hazmat exposure.
Laboratory Testing	WMD and Hazmat Response and Decontamination provides Laboratory and Testing with samples for testing.

## Capability Activity Process Flow



### Resource Element Description

Resource Elements	Components and Description
Type III Hazmat Entry Team	Per NIMS
Type II Hazmat Entry Team	Per NIMS
Type I Hazmat Entry Team (extrication)	Per NIMS, with capabilities for extrication
Type I Hazmat Entry Team (decontamination)	Per NIMS, with capabilities for decontamination
EPA Radiological Emergency Response Team (RERT)	The (RERT), based in EPA's Office of Radiation and Indoor Air and regional offices, responds to emergencies involving releases of radioactive materials by providing environmental measurement and guidance activities; monitoring, sampling, and laboratory activities; and providing State and local authorities with advice on protecting local residents from exposure to harmful radiation levels.
Federal Radiological Monitoring and Assessment Center (FRMAC)	The Department of Energy (DOE) FRMAC coordinates Federal radiological monitoring and assessment activities with those of State and local agencies.
Hazmat Information/Research Group/Team	Reference/research function performs the compiling and interpretation of technical information related to products, agents, containers, excreta and provides relevant information to the hazmat Branch Director or Group Supervisor.
Hazmat Medical Group/Team	Part of the logistics section for the provision of medical services for response personnel
Hazmat Resources Group/Team	The "resources group" technically would be within the planning section and be termed the resources unit and would reside outside of the hazmat structure. Resources on the scene would be assigned to the staging area manager.
Hazmat Liaison Officer	
Hazmat Specialists	Single resources that will be assigned as needed and defined in 29CFR1910.120

### Planning Assumptions

- Although applicable to several of the 15 National Planning Scenarios, the capability planning factors were developed from an in-depth analysis of the Toxic Industrial Chemical scenario. Other scenarios were reviewed to identify required adjustments or additions to the planning factors and national targets.
- This capability applies to a wide range of incidents and emergencies, including those caused by an improvised nuclear device, aerosol anthrax, a blister agent, a nerve agent, and a radiological dispersal device. Additional measures and metrics need to be developed for a nuclear incident.
- If decontamination is ongoing during the early stages of a catastrophic incident, persons undergoing decontamination will have logistical, medical, and mental health needs that will need to be addressed quickly.

- Decontamination priorities will be set up using the following priorities, in order of importance: life safety, incident stabilization, and property conservation.
- All fires are extinguished in 4-day response phase.
- Water-based oil release may extend beyond the 96-hour limit. Assets will be on scene, but containment operations may not be able to begin immediately on arrival.
- Three operational response areas: port, refinery, and downwind
- The response phase is 96 hours.
- Local response time: 0–2 hours
- Regional response time: 2–12 hours
- State response time: 12–24 hours
- Federal response time: 24+ hours
- “Zero hour” (incident clock) = time incident occurred
- Unconstrained need: consider all assets required for response, do not factor response time or asset availability into planning.
- Planning factors are based on scenario and planning assumptions for a level III hazardous materials (hazmat) incident, where there are 1,000 injuries, 350 deaths, 25,000 sheltered, 10,000 evacuated, and 100,000 self-evacuated. About half of equipment and facilities are damaged (of three refineries). Two ships sank, the port was damaged near improvised explosive device (IED) sites, and property was damaged in the downwind area.
- A significant number of individuals exposed to a plume cloud or contaminant agent will flee the scene before first responders arrive. It may prove difficult to determine which of those individuals require decontamination, and to ensure such individuals present themselves for decontamination.
- The United States has approximately 64 nuclear stations supported by the Radiological Emergency Preparedness Program (REPP). No less than 30 REPP response teams should be able to respond to an “improvised nuclear device” scenario within 24 hours.
- Quantity of resources is achievable through mutual aid.
- Each jurisdiction is expected to sponsor and support community emergency response teams (CERTs).
- The projected effects of contamination resulting from a catastrophic incident are generally based on an estimated population density of 2,000 people per square mile, but may increase for major urban areas.
- Large-gathering situations (e.g. National Security special events, sporting events, conventions, etc.) create higher localized population densities.
- Biological agents typically have delayed symptoms. As such there will rarely be an on-site incident requiring response when a biological agent is released.
- Health care facilities are the most likely locations for managing a biological incident.
- Secondary contamination will be a major concern. Hospital emergency rooms may close if patients are admitted without proper decontamination. Other secondary contamination issues include control of runoff of fluids used in decontamination, and the handling of contaminated clothing and personal effects. In addition, the secondary contamination of first responders, even those wearing personal protective equipment, can occur during the removal of patients from a hazardous area, during the performance of basic life support functions, or when initial responders are unaware that a hazardous material is involved.
- The psychological dimensions of being exposed to a contaminant, and subsequent decontamination may present social management challenges and concerns. Of greatest concern are the short- and long-term psychological consequences resulting from actual exposure to chemical, biological, and radiological substances, and which subsequently produce negative health effects. Short-term stress symptoms may be a prelude to long-term, debilitating, post-traumatic stress disorder.

**Planning Factors from an In-Depth Analysis of a Scenario with Significant Demand for the Capability (Toxic Industrial Chemical)**

Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
Type 1 Hazmat Entry Team (extrication)	Can conduct: 3 victim extrications per hour per team 12 victim extrications over a 4-hour period per team	1,000 injuries (downwind area) 350 deaths 2 response areas: port and downwind. <i>Note: cannot respond in level A in a fire environment (this excludes refinery response area).</i> 4-hour rescue phase	Type 1 hazmat Entry Team (extrication)
Type 1 hazmat Entry Team (decontamination)	Can conduct: 10 victims decontaminated/ per hour per team (5-man team) 40 victims decontaminated per team in a 4-hour rescue phase	1,000 injuries (downwind area) 350 deaths Two response areas: port and downwind. <i>Note: cannot respond in level A in a fire environment (excludes refinery response area).</i> 4-hour rescue phase	Type 1 hazmat Entry Team (decontamination)
EPA Radiological Emergency Response Team (RERT)	Phase I CMRT Phase II CMRT	4-hour readiness posture (6-10 hour response time) Up to 500 members, round-the-clock operations capacity, 24-36 hour response time	
Federal Radiological Monitoring and Assessment Center (FRMAC)		2-hour call-up (working hours), 4-hour call-up (non-working hours)	27 teams in 8 DOE regions
Hazmat Information/Research Group/Team	1 team per 12-hour shift for all response areas	96-hour response phase (8 shifts)	1 Hazmat Information/Research Group/Team
Hazmat Medical Group/Team	1 team per 12-hour shift per response area	96-hour response phase (8 shifts) 2 response areas: port and downwind	1 Hazmat Medical Group/Team
Hazmat Resources Group/Team	1 team per 12-hour shift per response area	96-hour response phase (8 shifts) 2 response areas: port and downwind	1 Hazmat Resources Group/Team
Hazmat Liaison Officer	1 officer per 12-hour shift per response area	96-hour response phase (8 shifts) 2 response areas: port and downwind	hazmat Liaison Officer
Hazmat Specialists	1 specialist per response area per 12-hour shift	96-hour response phase (8 shifts) 2 response areas: port and downwind	Hazmat Specialists

**Target Capability Preparedness Level**

Resource Element Unit	Type of Element	Number of Units	Unit Measure (number per x)	Lead	Capability Activity supported by Element
Type I Hazmat Entry Team (extrication)	NIMS-Typed Resource Organization	20	Per UASI Area, based on risk	Local (City)	Identify and Evaluate On Scene Conduct Rescue Operations
Type I Hazmat Entry Team (extrication)	NIMS-Typed Resource Organization	1	Per county	Local (County)	Identify and Evaluate On Scene Conduct Rescue Operations
Type I Hazmat Entry Team (decontamination)	NIMS-Typed Resource Organization	20	Per UASI Area	Local (City)	Identify and Evaluate On Scene Conduct On-site Gross Decontamination Conduct On-site Technical Decontamination
Type I Hazmat Entry Team (decontamination)	NIMS-Typed Resource Organization	1	Per county	Local (County)	Identify and Evaluate On Scene Conduct On-site Gross Decontamination Conduct On-site Technical Decontamination
EPA Radiological Emergency Response Team (RERP)	Federal Team	1	Nationally	Federal (EPA)	Identify and Evaluate On Scene Conduct Mitigation Activities
Federal Radiological Monitoring and Assessment Center (FRMAC)	Federal Organization	27	Nationally	Federal (DOE)	Identify and Evaluate On Scene Conduct Mitigation Activities
Hazmat information/research group/team	Non-NIMS Resource Organization	2	Per UASI Area	Local (City)	Direct Tactical Operations
Hazmat medical group/team	Non-NIMS Resource Organization	2	Per UASI Area	Local (City)	Conduct Rescue Operations
Hazmat resources group/team	Non-NIMS Resource	2	Per UASI Area	Local (City)	Direct Tactical Operations

Resource Element Unit	Type of Element	Number of Units	Unit Measure (number per x)	Lead	Capability Activity supported by Element
	Organization				
Hazmat liaison officer	Personnel	2	Per UASI Area	Local (City)	Direct Tactical Operations
Hazmat specialist	Personnel	1	Per county	Local (County)	Identify and Evaluate On Scene Conduct Mitigation Activities

## References

1. Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120. Occupational Safety and Health Administration. November 2002.  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9765](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765).
2. National Response Plan. U.S. Department of Homeland Security. December 2004.
3. National Incident Management System. U.S. Department of Homeland Security. March 2004.  
<http://www.dhs.gov/interweb/assetlibrary/NIMS-90-web.pdf>.
4. Homeland Security Exercise and Evaluation Program, Volume II: Exercise Evaluation and Improvement. U.S. Department of Homeland Security, Office for Domestic Preparedness. October 2003.  
<http://www.ojp.usdoj.gov/odp/docs/HSEEPv2.pdf>.
5. Hazardous Materials Emergency Planning Guide. National Response Team. 2001.  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=9765](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9765).
6. NFPA 471: Recommended Practice for Responding to Hazardous Materials Incidents. National Fire Protection Association. 2002. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=471>.
7. NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials Incidents. National Fire Protection Association. 2002. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=472>.
8. NFPA 473: Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents. National Fire Protection Association. 2002.  
<http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=473>.
9. NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association, 2004 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1710>.
10. NFPA 1720: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments, National Fire Protection Association, 2004 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1720>.
11. NFPA 1561: Standard on Emergency Services Incident Management System, National Fire Protection Association, 2005 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1561>.
12. NFPA 1500: Standard on Fire Department Occupational Safety and Health Programs, National Fire Protection Association, 2002 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1500>.
13. Homeland Security Presidential Directive/HSPD-8: National Preparedness.. December 2003.  
<http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html>.
14. National Oil and Hazardous Substances Pollution Contingency Plan. Environmental Protection Agency. 1994.  
<http://www.epa.gov/oilspill/pdfs/40cfr300.pdf>.
15. 2004 Emergency Response Guidebook: A Guidebook for First Responders during the Initial Phase of a Dangerous Goods/Hazardous Materials Incident. U.S. Department of Transportation.  
<http://hazmat.dot.gov/pubs/erg/gydebook.htm>.

16. Superfund Amendments and Reauthorization Act, Title III, The Emergency Planning and Community Right-to-Know Act. Environmental Protection Agency. 1986.
17. The 2004 Standardized Equipment List. The Interagency Board for Equipment Standardization and Interoperability. 2004. <http://www.iab.gov/downloads/AnnualReport2003.pdf>.
18. Resource Typing Definitions–I: First 60 Resources. National Mutual Aid and Resource Management Initiative. U.S. Department of Homeland Security, Federal Emergency Management Agency. January 2004. [http://www.fema.gov/pdf/preparedness/initial\\_60\\_rtd.pdf](http://www.fema.gov/pdf/preparedness/initial_60_rtd.pdf).
19. DHS, Office for Domestic Preparedness, Metropolitan Medical Response System (MMRS) Program, <http://mmrs.fema.gov>.
18. NFPA 1021: Standard for Fire Officer Professional Qualifications. National Fire Protection Association. 2003. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1021>.
19. NFPA 1561: Standard on Emergency Services Incident Management System. National Fire Protection Association. 2003. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1561>.
20. NFPA 1600: Standard on Disaster/Emergency Management and Business Continuity Programs. National Fire Protection Association. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1600>.
21. NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. National Fire Protection Association. 2004. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1710>.
22. NFPA 1720: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments. National Fire Protection Association. 2004. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1720>.
23. NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials Incidents, National Fire Protection Association, 2002 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=472>.
24. NFPA 1201: Standard for Providing Emergency Services to the Public, National Fire Protection Association, 2004 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1201>.
25. NFPA 1403: Standard on Live Fire Training Evolutions, National Fire Protection Association, 2002 edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1403>.
26. NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, National Fire Protection Association, 2002 edition.
27. NFPA 1901: Standard for Automotive Fire Apparatus, National Fire Protection Association, 2003 Edition. <http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=1901>