

# RESPONDER SAFETY AND HEALTH

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## **Capability Definition**

Responder Safety and Health is the capability that ensures adequate trained and equipped personnel and resources are available at the time of an incident to protect the safety and health of on scene first responders, hospital/medical facility personnel (first receivers), and skilled support personnel through the creation and maintenance of an effective safety and health program. This program needs to comply with the Occupational Safety and Health Administration's (OSHA) "HAZWOPER" standard (29 CFR 1910.120, as implemented by EPA or State authorities) and any other applicable Federal and State regulations. The program also needs to be integrated into the Incident Command System (ICS) and include training, exposure monitoring, personal protective equipment, health and safety planning, risk management practices, medical care, decontamination procedures, infection control, vaccinations for preventable diseases, adequate work-schedule relief, psychological support, and follow-up assessments.

This capability identifies the critical personnel, equipment, training, and other resources needed to ensure that all workers are protected from all hazards, including fire (heat and products of combustion), CBRNE (chemical, biological, radiological, nuclear, or explosive) materials, electrical hazards, collapsed structures, debris, acts of violence, and others.

The Responder Safety and Health capability is a critical component of safe overall emergency management. First responders include police, fire, emergency medical services (EMS), and other emergency personnel, as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators). This extended definition includes a very broad set of workers and a wide range of likely response-related activities, resulting in an increased number of potential hazards and exposures. Building the ability to protect all responders from all hazards is a substantial undertaking that involves prevention, preparedness, response, and recovery efforts.

This capability supports both the Safety Officer position identified in the National Incident Management System (NIMS)/incident command system (ICS) and the Worker Safety and Health Support Annex to the National Response Plan (NRP). The Type 1 Safety Officer described in this capability has yet to be fully defined (to include managing all of the hazards that first responders are likely to face), but the concept used is the same as the "Disaster Safety Manager" described in *Protecting Emergency Responders: Safety Management in Disaster and Terrorism Response* (NIOSH, 2004). In addition, the list of services that are critical for this capability is consistent with the actions specified under the Worker Safety and Health Support Annex and in the *Guidelines for Haz Mat/WMD Response, Planning and Prevention Training* (FEMA, 2003).

During the response to any incident, employers are responsible primarily for the safety and health of their employees. However, the ICS creates a unified safety and health organization under the Safety Officer. In large-scale incidents, because of the number and varieties of hazards and workers, the Safety Officer would be used more as a Safety Manager. This technical capability therefore does not prescribe a certain level of preparedness for any particular organization, rather it specifies the need for personal protective equipment (PPE), Safety Officers, and so forth and allows local entities to determine the best way to obtain the needed resources (e.g., through mutual aid, State resources, Federal resources) for the first 72 hours of the "initial response" operations.

## **Outcome**

No illnesses or injury to any first responder, first receiver, medical facility staff member, or other skilled support personnel as a result of preventable exposure to secondary trauma, chemical/radiological release, infectious disease, or physical and emotional stress after the initial incident or during decontamination and incident follow-up.

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

This capability supports the following Emergency Support Functions (ESFs) and Annex:

- ESF #3: Public Works and Engineering
- ESF #5: Emergency Management
- ESF #6: Mass Care, Housing, and Human Services
- ESF #8: Public Health and Medical Services
- ESF #9: Urban Search and Rescue
- ESF #10: Oil and Hazardous Materials Response
- ESF #11: Agricultural and Natural Resources
- ESF #12: Energy
- ESF #13: Public Safety and Security
- Worker Safety and Health Support Annex

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

<b>Activity: Develop and Maintain Plans, Procedures, Programs and Systems</b>	
<b>Critical Tasks</b>	
Res.B1b 1.1	Develop and adopt agency/jurisdiction safety and health program(s)
Res.B1b 1.2	Conduct a detailed analysis of 15 planning scenarios to ensure that all workers are protected in performing the tasks from all hazards
Res.B1b 1.3	Establish plans and procedures for identifying sources of additional equipment and expertise if the safety and health program is overwhelmed
<b>Preparedness Measures</b>	<b>Metrics</b>
Safety and health program is in place that includes a personal protective equipment (PPE) component that adequately addresses respiratory protection and exposure protection for initial response	Yes/No
Safety and health program addresses acquisition of additional respiratory protection items for reinforced response or long term incidents	Yes/No
Safety and health program is in place that ensures initial responders are equipped with properly maintained PPE in adequate supply	Yes/No
Safety and health program ensures access to backup/cache equipment, when necessary for reinforced on long term incidents	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes: <ul style="list-style-type: none"><li>▪ Procedures to identify and assess hazards</li></ul>	Yes/No

### Activity: Develop and Maintain Plans, Procedures, Programs and Systems

<ul style="list-style-type: none"> <li>▪ Detection/exposure monitoring</li> <li>▪ Selection/distribution of personal protective equipment (PPE)</li> <li>▪ Health and safety planning</li> <li>▪ Risk management practices</li> <li>▪ Medical care</li> <li>▪ Decontamination procedures</li> <li>▪ Infection control</li> <li>▪ Vaccinations for preventable diseases</li> <li>▪ Adequate work-schedule relief</li> <li>▪ Psychological support</li> <li>▪ Medical follow-up assessments</li> </ul>	<p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p> <p>Yes/No</p>
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### Activity: Develop and Maintain Training and Exercise Programs

Critical Tasks	
Res.B1b 2.1.1	Provide all required health and safety training, including pre-incident training and site/incident specific training, and exercises to develop and maintain appropriate knowledge and expertise for responders
Preparedness Measures	Metric
Percent of responders adequately trained to respond to anticipated emergencies (e.g. 15 planning scenarios)	100%
Safety Officer(s) have the training and experience necessary to manage hazards associated with all 15 planning scenarios	Yes/No
Percent of responders capable of using PPE (e.g., responders are fitted and medically cleared to use necessary PPE) so that they have the necessary health and safety training to perform their anticipated tasks (e.g. awareness level, technician level, etc.) in response to an incident	100%
The pre-incident safety and health training program is evaluated through emergency response exercises (e.g., did each responder have the necessary health and safety training to perform their task in the exercise?)	Yes/No
An Incident Specific Health and Safety Plan is developed during exercises as a way to measure responder safety and health readiness. <i>[These plans can include identifying and assessing hazards, detection/exposure monitoring, selection/distribution of personal protective equipment (PPE), communication of hazards/protection among response organization, maximum exposure limits, applied engineering controls, incident specific training, medical surveillance/monitoring (including psychological first aid), etc.]</i>	Yes/No

## Performance Tasks and Measures/Metrics

### Activity: *Direct Responder Safety and Health Tactical Operations*

**Definition:** Upon dispatch of responders, provide management and coordination of Responder Safety and Health capability, through demobilization.

Critical Tasks	
Res.B1b 3.3.1	Monitor routine and emergency communications within the incident command structure at all times
Res.B1b 3.3.2	Maintain routine and emergency communications within the incident command structure at all times during the incident
Res.B1b 3.1	Maintain coordination and communication between agencies and departments regarding responder safety and health
Res.B1b 3.7	Contribute to development of the incident action plan (IAP) to establish priorities, procedures, and actions to be accomplished to meet the incident objectives. To Ensure that safety and health requirements are addressed, Safety Officer develops and reviews components (i.e., safety analysis, site safety and control plan, medical plan, safety message, etc.) of the IAP
Res.B1b 3.2	Provide technical specialists as needed to support the Incident Command System
Res.B1b 3.2.2	Contact and work with subject matter experts (SMEs) from the public/private agencies and academia who may be able to assist with safety issues at the incident
Res.B1b 3.4.2	Assess the availability of resources/assets provided by public, private and volunteer organizations
Res.B1b 3.4.3	Request additional safety and health resources through mutual aid
Res.B1b 3.6	Coordinate and support decontamination activities
Res.B1b 3.4.4	Utilize ordering systems to obtain additional needed resources
Performance Measures	Metric
Number of injuries/illnesses in response to the incident	Zero

### Activity: *Activate Responder Safety and Health*

**Definition:** In response to IC recognition of the complexity or hazards in the incident, mobilize and designate Safety Officer to begin operations or continue IC-initiated operations.

Critical Tasks	
Res.B1b 4.1	Designate Safety Officer within the Incident Command System
Res.B1b 4.1.1	Assume responsibility for supervision and management of the safety assistants based on severity and complexity of the incident
Performance Measures	Metric
Time until Safety Officer is designated within the ICS structure (separate from IC, who	Less than 60 minutes

may hold this role for a period of time)	from arrival of responders
Time to initiate deployment actions for Assistant Safety Officers or Safety SME s to provide technical assistance to incident safety official	Within 1-3 hours from arrival of responders

**Activity: *Identify Safety/PPE Needs and Distribute PPE***

**Definition:** Upon appointment as Safety Officer, assess safety and health hazards, inform IC of needs, and develop site-specific safety and health plan.

<b>Critical Tasks</b>		
Res.B1b 5.1.2	Observe the scene and review/evaluate hazard and response information as it pertains to the safety of all persons at the location	
Res.B1b 5.4.1	Identify responder safety and health resources required	
Res.B1b 5.4.2	Provide the Incident Command (IC) and Incident Command System (ICS) staff with observation-based recommendations for the safety of on-site personnel	
Res.B1b 5.1	Perform an incident safety analysis	
Res.B1b 5.1.1	Identify and prioritize the operations, hazards, and exposures of greatest risk to site personnel and coordinate with the Incident Command (IC) to develop specific actions to address them and protect site personnel	
Res.B1b 5.2	Assist the incident commander (IC) in developing an incident safety and control plan to respond within the capabilities of available response personnel, taking into account available resources such as personal protective equipment (PPE), monitoring equipment, and control equipment	
<b>Performance Measures</b>		<b>Metric</b>
Percentage of hazards detected/identified and characterized		100%
Time to complete an initial incident safety analysis		Less than 60 minutes from responder arrival

**Activity: *Site/Incident Specific Safety and Health Training***

**Definition:** Site/Incident specific training provides necessary understanding of the hazards identified and assessed in the incident, and the necessary precautions. Site/Incident specific training builds upon pre-incident training, but tailors curriculum to the tasks/hazards of the incident. Site/Incident specific training should reflect policies and procedures specified in the incident specific health and safety plan. Site/Incident specific training needs to have a flexible approach (training may need to be conducted outside of a classroom setting) and should be conducted prior to commencing response activities.

<b>Critical Tasks</b>		
Res.B1b 6.1	Provide incident/site-specific training	
Res.B1b 6.2	Implement site-specific incident health and safety plan, including after-action care as needed for on-scene personnel	
Res.B1b 6.3	Provide required PPE	
<b>Performance Measures</b>		<b>Metric</b>

Time to provide on-site training for emergency workers responding to an incident	Prior to assignment to work at incident
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**Activity: *Ongoing Monitoring of Responder Safety and Health***

**Definition:** Upon assignment of responders to the incident, maintain continuous monitoring of responder safety and health, proper functioning of PPE and equipment, awareness of on-site hazards, oversee decontamination, document all actions and injuries/illnesses, and provide for emergency and psychological medical care.

**Critical Tasks**

Res.B1b 7.1.1	Ensure that the exposure monitoring (personnel and environment) specified in the health and safety plan and related standard operating procedures (SOPs) is performed
Res.B1b 7.4.1	Monitor hazardous site operations and insure that personnel have the PPE and training needed to perform their tasks in a safe manner and follow the safety-related requirements identified in the incident action plan (IAP)
Res.B1b 7.5.2	Assist the Incident Command (IC) and Incident Command System (ICS) staff in implementing exposure monitoring and enforcing safety considerations
Res.B1b 7.5	Identify and implement all corrective actions necessary to ensure the safety and health of all site personnel
Res.B1b 7.3	Coordinate with Incident Management/EOC to ensure that medical unit is established on site
Res.B1b 7.5.5	Alter, suspend, or terminate any activity judged to be an imminent danger or immediately dangerous to life and health
Res.B1b 7.4.1	Monitor hazardous site operations and ensure that personnel perform their tasks in a safe manner and follow the safety-related requirements identified in the incident action plan (IAP)
Res.B1b 7.6	Ensure recording and reporting of any and all injuries and illnesses

**Performance Measures**

**Metric**

Time until the medical unit was successfully opened and operated within an ICS structure	Less than 30 minutes from initial responder's arrival onsite
Percentage of personnel wearing the required PPE for site entry and work	100%
Percentage of workers who have their representative exposure to hazardous substances quantified and recorded	100%
Percentage of personnel who have been adequately decontaminated	100%
Percentage of affected personnel treated for injuries and illnesses through a medical unit	100%
Percentage of affected personnel diagnosed and treated through trained and credentialed psychological service provider	100%

**Activity: *Demobilize Responder Safety and Health***

**Definition: Upon completion of assigned mission, evaluate responder safety and health status before demobilization and conduct follow-up analysis of health after responder returns to normal duty.**

<b>Critical Tasks</b>	
Res.B1b 8.1	Conduct post-incident analysis of responder health and safety
Res.B1b 8.2	Coordinate with long-term health care to monitor psychological and medical status of exposed responders
Res.B1b 8.3	Coordinate with long-term health care to provide comprehensive stress management strategies, programs, worker crisis counseling, substance abuse services, and mental and behavioral health support
Res.B1b 8.1.4	Provide worker crisis counseling, substance abuse services, and mental and behavioral health support
Res.B1b 8.1.2	Debrief hazardous materials branch/group and all other exposed personnel on site-specific occupational safety and health issues involving hazardous materials/WMD releases
Res.B1b 8.1.3	Participate in the incident critique process and identify critical safety and health-related observations of incident activities
<b>Performance Measures</b>	<b>Metric</b>
Number of emergency workers who develop physical symptoms or illness secondary to the incident	Zero
Percentage of workers that are treated for mental health or stress-related symptoms secondary to the incident.	100%
Percent of behavioral hazards identified and mitigated (e.g., human/animal remains are covered)	100%

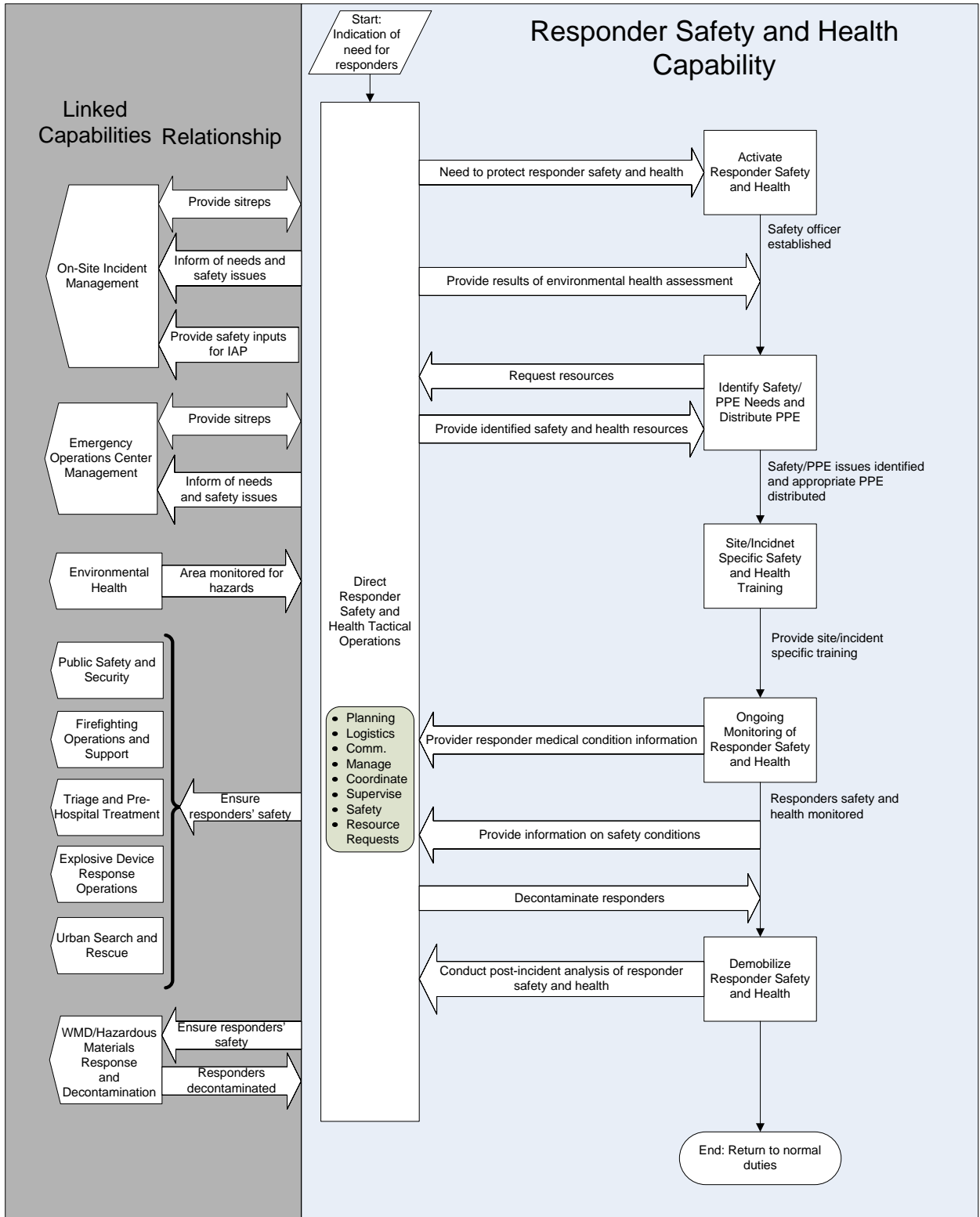
***Linked Capabilities***

<b>Linked Capability</b>	<b>Relationship</b>
On-Site Incident Management	The IC will be responsible for protecting the safety and health of on-site responders until the Safety Officer is appointed, at which time, the IC will receive guidance from the Safety Officer.
EOC Management	The EOC may house an Assistant Safety Officer or Safety Manager and serve to coordinate responder safety and health among different entities and both on-site and off-site.
Critical Resources and Logistics	Protecting responder safety and health will require supply caches and/or agreements/contracts for the timely delivery of supplies, such as PPE, equipment, and trained personnel.
Environmental Health	Environmental health personnel will be provided awareness training for safety and health hazards through a range of response activities and may also be exposed to on-site safety and health hazards.

Linked Capability	Relationship
Public Safety and Security	Public safety and security personnel will provide protection for responders, but may also be exposed to on-site safety and health hazards.
Firefighting Operations and Support	Responder firefighters and support personnel will be exposed to safety and health hazards posed by the fires, as well as other on-site safety and health hazards.
Triage and Pre-Hospital Treatment	Responders performing triage will be exposed to safety and health hazards on site.
Explosive Device Response Operations	Explosive device response operations personnel will need protection from the safety and health hazards posed by the device, as well as from secondary safety and health hazards on site.
WMD/Hazardous Materials Response and Decontamination	Hazardous materials response personnel responding to hazardous materials or WMD events and providing decontamination services will be exposed to on-site safety and health hazards.
Urban Search and Rescue	Responders performing urban search and rescue will be exposed to on-site safety and health hazards.



# Capability Activity Process Flow



## Capability Element Description Details

Capability Elements	Components and Description
Type 1 Safety Officer	As defined in the NIMS document, a member of the command staff responsible for monitoring and assessing safety hazards or unsafe conditions, and for developing measures for ensuring personnel safety. The Safety Officer monitors incident operations and advises the IC on all matters related to operational safety, including the health and safety of emergency responder personnel. May appoint Assistant Safety Officers as needed.
Specialized Safety Officer	Specialization needs determined by each UASI region and county based on their own specialized hazards and risks (e.g., jurisdictions with nuclear reactors may need specialized Safety Officers trained in radiation/nuclear hazards).
Specialized subject matter expert	To include Certified Industrial Hygienist, Public Health Service, radiological expert, biological expert, engineer, etc.
Analytical laboratories	Laboratory capability to analyze 1,000 samples of any CBRNE agent per day and to provide supplement field instruments for hazard detection/characterization
Training centers	Locations (including mobile units) to train (and maintain proficiency of) all responders up to minimum training requirements prior to an incident
Equipment caches	To include PPE, monitoring/detection equipment
Respiratory Fit-test Mobile Units	Manufacturer approved mobile fit test units to allow for needed fit testing in the field
Medical Unit	See NIMS/FIRESCOPE for definitions

## Planning Assumptions

- Although applicable to several of the 15 National Planning Scenarios, the capability factors were developed from an in-depth analysis of the aerosolized anthrax scenario. Other scenarios were reviewed to identify required adjustments or additions to the planning factors and national targets.
- The jurisdiction may have limited Safety Officers with high-level expertise and experience in a specialized subject area, such as radiation, hazardous materials (HazMat), building/structure collapse, biohazard, and so forth.
- Mental health services will be sought by victims and responders in and near the affected area, as well as (on a lesser scale) throughout the Nation.
- Standards, training, and certification are limited for high-level (national-State) Safety Officers.
- Various Federal and State safety and health laws and regulations and related national consensus standards may overlap with one another, conflict in their requirements, and have gaps in their requirements or coverage. This program assumes compliance with the Occupational Safety and Health Administration's (OSHA) "HAZWOPER" standard (29 CFR 1910.120, as implemented by EPA or State authorities) and any other applicable Federal and State regulations.
- The larger and/or more complex the incident the more likely that the local initial first responders safety and health programs will be unable to cope effectively and will need outside assistance from regions, State and Federal agencies.

- The more unusual or out of the ordinary the incident the more likely the local initial first response safety and health programs will be less able to cope effectively and will need outside assistance from regions, State and Federal agencies.
- Limited funding, staffing and levels of equipment will negatively impact an agency/jurisdiction's ability to train and sustain appropriate levels of training.
- The larger and/or more complex the incident the more likely that the designation of a Safety Officer and Assistant Safety Officers will be needed.
- The more unusual or out of the ordinary the incident the more likely that the safety officer will need assistance Safety Officers and Safety SME and that outside assistance from private sector, academia, regions, State and Federal agencies will be needed.
- The larger and/or more complex the incident the more likely there will be a significant need for safety and health management at the incident scene(s).
- With insufficient training or PPE responders may become injured or ill. Responders cannot work due to lack of PPE or training.
- Additional training and/or PPE may be needed to address new hazards/new employees.
- The larger and/or more complex the incident the more likely that there will be a significant need for safety and health management during demobilization.
- The more unusual or out of the ordinary the incident the more likely the demobilization plan will need outside assistance from the private sector, academia, regions, State and Federal agencies.
- The affected jurisdiction may have limited, inappropriate, expired, or unserviceable personal protective equipment (PPE) and training.
- Respirator-fit test documentation, fit tests with the variety of equipment available at the time of the incident, and the capability to conduct fit testing during a disaster will be limited. Even if persons are fit tested at their home agency, proof may not be available onsite at a disaster requiring additional fit testing.
- Cross-training in the use of dissimilar PPEs is limited. Responders may not have appropriate training for the additional equipment available at the time of and issued at the scene of a major disaster to supplement their initial response cache; it may differ from their home agency equipment.
- Immediate response organizations will be required to support the incident in its entirety until Federal-State safety assets become available.
- Local, regional, and State response agencies will have access to specialized resources from public- and private-sector agencies and academia.
- Data enabling the recognition/characterization of hazards associated with the incident may not be immediately available. Field instrumentation and laboratory analysis may be necessary to fully characterize hazards.
- All safety and health plans should be in place and enforced for day-to-day operations. Catastrophic incidents will cause the readdressing of day-to-day safety and health policies and plans caused by the scope, complexity or uniqueness of the incident(s).

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

Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
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Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
Type 1 Safety Officer	1 per shift	3 shifts	3
Specialized Safety Officer(s) (specialization needs determined by each Urban Area Security Initiative (UASI) region and county)	1 per team deployed	20 teams	20
Locally determined specialized subject matter expert (SME) (e.g. certified industrial hygienist (CIH), public health service (PHS), radiological, biological, engineer)	i.e., 1 biological expert		As required by incident
Analytical laboratories	500 samples per day.	100 samples per day per laboratory	5 analytical labs
Equipment caches	1 SCBA, PAPR or P100 respirator/shift per responders	3 shifts/day 3 days 50 Responders @SCBA 500 Responders @PAPR 450 Responders @P100	450 SCBAs 4,500 PAPRs 4,050 P100s
Medical	1 medical unit/5 teams	20 teams	4 medical units
Respiratory fit-test mobile units	1 per team	20 teams	20 respiratory mobile fit test units

### ***Approaches for Large-Scale Events***

All response organizations would need to be included in a single incident command system (ICS). A single “all-hazards” Safety Officer is designated by the incident commander (IC) to manage all safety operations associated with the incident. Assistants (e.g., specialized Safety Officers, subject matter experts, employer representatives, employee representatives) to the Safety Officer are designated and made part of response teams. All employers whose personnel are involved in the response are represented in the safety management structure. Equipment caches are based on local quantities, regional quantities (through mutual aid), State caches (interstate mutual aid), and national caches (e.g., prepositioned equipment program). Sources of equipment and notification/transportation of equipment have been addressed in advance. All responders need the specified training (e.g., technicians, operations, specialists) prior to the incident. Federal responders would follow the *National Response Plan* (NRP), including the Worker Safety and Health Support Annex. State and local response plans include worker safety and health coordination that is consistent with the actions specified under the Worker Safety and Health Support Annex.

## National Targets and Assigned Levels

Responsible	Element Resource Unit	Type of Element	# of Units	Unit Measure (number per x)	Capability Activity supported by Element
Federal/State/Local	Type 1 Safety Officer	NIMS Personnel	300	Nationally	Activate Responder Health and Safety Identify Safety/PPE Needs and Distribute PPE to responders Ongoing monitoring of Responder Health and Safety Demobilize
Federal/State/Local	Specialized Safety Officer	Non-NIMS Personnel	400	Nationally	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing monitoring of responder health and safety
Federal/State/Local	Specialized Subject Matter Expert (SME)	Non-NIMS Personnel	800	Nationally	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing Monitoring of Responder Health and Safety
Federal/State/Local/Private/Academic	Analytical laboratories	Non- NIMS Resource Organization		Nationally	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing Monitoring of Responder Health and Safety
Federal/State/Local/Private/Academic	Training centers	Equipment	750	25 per state	Develop and Maintain Training and Exercise Programs
Federal/State/Local/Private/Academic	Equipment caches	Equipment			Identify Safety/PPE Needs and Distribute PPE to responders
Federal/State/Local/Private	Medical Unit	NIMS Resource Organization	1	Minimum of one per incident, increased by scope, complexity and uniqueness	Ongoing Monitoring of Responder Health and Safety

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