

RESPONDER SAFETY AND HEALTH

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 hazmat/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, or Federal resources) for the first 72 hours from 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

Activity: <i>Develop and Maintain Plans, Procedures, Programs, and Systems</i>	
Critical Tasks	
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
Preparedness Measures	Metrics
Safety and health program that includes a personal protective equipment (PPE) component that adequately addresses respiratory protection and exposure protection for initial response is in place	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 that ensures initial responders are equipped with properly maintained PPE in adequate supply is in place	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 procedures to identify and assess hazards	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes detection/exposure monitoring	Yes/No

An agency/jurisdiction safety and health program(s) is in place which includes selection/distribution of PPE	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes health and safety planning	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes risk management practices	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes medical care	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes decontamination procedures	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes infection control	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes vaccinations for preventable diseases	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes adequate work-schedule relief	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes psychological support	Yes/No
An agency/jurisdiction safety and health program(s) is in place which includes medical follow-up assessments	Yes/No

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 , site/incident specific training, and exercises to develop and maintain appropriate knowledge and expertise for responders
ResB1b 2.2.1	Conduct health and safety exercises to develop and maintain appropriate knowledge and expertise for responders

Preparedness Measures

Metric

Percent of responders 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 his or her 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. [These plans can include identifying and	Yes/No

assessing hazards, detection/exposure monitoring, selection/distribution of 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.]	
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Performance Tasks and Measures/Metrics

Activity: <i>Direct Responder Safety and Health Tactical Operations</i>	
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 on safety and health issues between agencies and departments
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
Res.B1b 3.7.1	Develop and review components (e.g., safety analysis, site safety and control plan, medical plan, safety message, etc.) of the IAP
Res.B1b 3.2.2	Contact and work with subject matter experts (SME) 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 3.4.5	Utilize ordering systems to obtain additional needed resources
Performance Measures	Metric
Percent of responders injured or falling ill in response to the incident	0%

Activity: <i>Activate Responder Safety and Health</i>	
Definition: In response to Incident Command (IC) recognition of the complexity of 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 Assistant Safety Officer(s) based

	on severity and complexity of the incident	
ResB1b 4.2	Deploy specialized response teams to provide technical assistance to Safety Officer	
Res.B1b 4.3	Ensure ongoing safety and health assessments of response operations	
Performance Measures		Metric
Time in which Safety Officer is designated within the ICS structure (separate from IC, who may hold this role for a period of time)		Within 1 hour from arrival of responders
Time in which deployment actions are initiated for Assistant Safety Officers or Safety SMEs 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

Critical Tasks		
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 command structure 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 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 PPE, monitoring equipment, and control equipment	
Performance Measures		Metric
Percent of hazards detected/identified and characterized		100%
Time in which an initial incident safety analysis is completed		Within 1 hour 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.

Critical Tasks	
Res.B1b 6.1	Ensure the availability of 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	Ensure the provision of appropriate safety and health equipment	
Performance Measures		Metric
Percent of emergency workers responding to an incident who are provided on-site training prior to assignment to work at incident		100%

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, and 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 the availability of incident/site-specific training	
Res.B1b 7.4.3	Implement site-specific incident health and safety plan, including after-action care as needed for on-scene personnel	
Res.B1b 7.4.4	Ensure the provision of appropriate safety and health equipment	
Res.B1b 7.5.2	Assist the IC and 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/Emergency Operations Center (EOC) to ensure that medical unit is established on site	
Res.B1b 7.5.5	Make recommendation to 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 IAP	
Res.B1b 7.6	Ensure recording and reporting of any and all injuries and illnesses	
Performance Measures		Metric
Time in which the medical unit is opened and operating within an ICS structure		Within 30 minutes from initial responder's arrival on-site
Percent of personnel wearing the required PPE for site entry and work		100%
Percent of workers who have their representative exposure to hazardous substances quantified and recorded		100%
Percent of personnel who have been decontaminated		100%
Percent of affected personnel treated for injuries and illnesses through a medical unit		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

Critical Tasks	
Res.B1b 8.1	Conduct post-incident analysis of responder health and safety
Res.B1b 8.2	Monitor psychological and medical status of exposed persons
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 critical incident stress management (CISM) strategies, programs, and teams
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
Performance Measures	Metric
Percent of emergency workers who develop physical symptoms or illness secondary to the incident	0%
Percent of workers with mental health or stress-related symptoms secondary to the incident who are treated	100%
Percent of behavioral hazards identified and mitigated (e.g., human/animal remains are covered)	100%

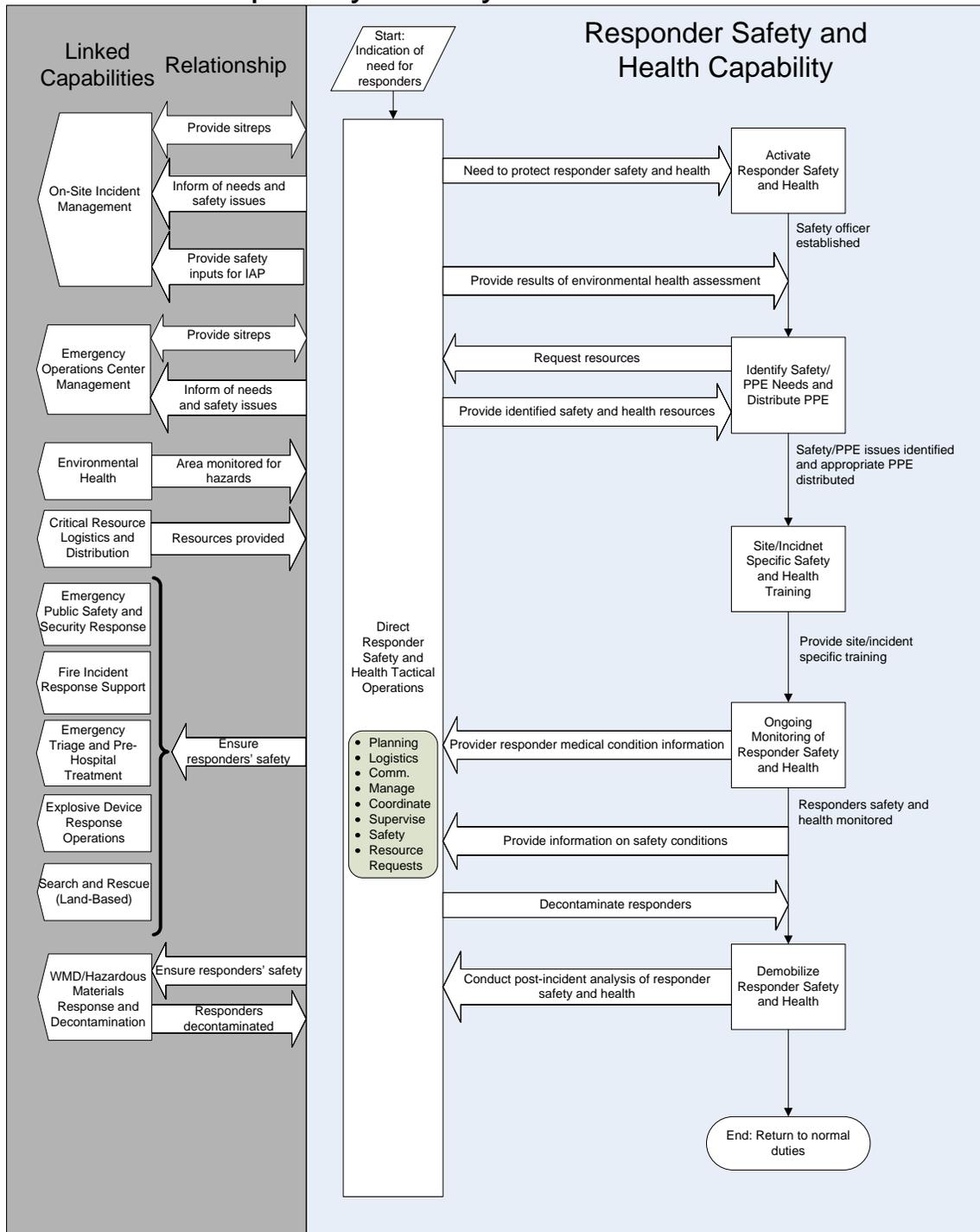
Linked Capabilities

Linked Capability	Relationship
On-Site Incident Management	The Incident Commander will be responsible for protecting the safety and health of on-site responders until the Safety Officer is appointed, at which time, the Incident Commander will receive guidance from the Safety Officer.
Emergency Operations Center Management	The EOC may house an Assistant Safety Officer or Safety Manager and serve to coordinate Responder Safety and Health among different entities both on-site and off-site.
Environmental Health	Environmental Health provides 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.
Critical Resource Logistics and Distribution	Critical Resource Logistics and Distribution provides supply caches and/or agreements/contracts for the timely delivery of supplies, such as PPE, equipment, and trained personnel.
Emergency Public Safety and Security Response	Emergency Public Safety and Security Response provides protection for responders, but may also be exposed to on-site safety and health hazards.

Target Capabilities

Linked Capability	Relationship
Fire Incident Response Support	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.
Emergency Triage and Pre-Hospital Treatment	Responders performing triage and providing treatment 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.
Search and Rescue (Land-Based)	Search and Rescue personnel will be exposed to on-site safety and health hazards.
WMD and Hazardous Materials Response and Decontamination	Personnel responding to hazardous materials or WMD events and providing decontamination services will be exposed to on-site safety and health hazards.

Capability Activity Process Flow



RESPOND MISSION: RESPONDER SAFETY AND HEALTH

Resource Element Description

Resource Elements	Components and Description
Type I 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 Urban Area Security Initiative (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 experts	To include Certified Industrial Hygienist, Public Health Service, radiological expert, biological expert, engineer, etc.
Analytical laboratories	Laboratory capability to analyze samples of any CBRNE agent per day and to provide supplemental field instruments for hazard detection/characterization
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
Training centers	Locations (including mobile units) to train (and maintain proficiency of) all responders up to minimum training requirements prior to an incident

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 SMEs 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 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 PPE 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
Type I Safety Officer	1 per shift	3 shifts per day	3 per day
Specialized Safety Officer(s)	1 per team deployed	20 teams deployed	20

Resource Organization	Estimated Capacity	Scenario Requirement Values	Quantity of Resources Needed
Specialized Subject Matter Experts	i.e., 1 biological expert		As required by incident
Analytical laboratories	100 samples per day per laboratory	500 samples per day	5 analytical labs
Equipment caches	1 SCBA, PAPR or P100 respirator per 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
Respiratory fit-test mobile units	1 per team deployed	20 teams deployed	20 respiratory mobile fit test units
Medical Unit	1 medical unit per 5 teams deployed	20 teams deployed	4 medical 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 IC to manage all safety operations associated with the incident. Assistants (e.g. specialized Safety Officers, SMEs, 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., pre-positioned 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, and 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.

Target Capability Preparedness Level

Resource Element Unit	Type of Element	# of Units	Unit Measure (number per x)	Lead	Capability Activity supported by Element
Type I Safety Officer	NIMS Personnel	300	Nationally	Federal/State/Local	Activate Responder Health and Safety Identify Safety/PPE Needs and Distribute PPE to responders Ongoing monitoring of

Resource Element Unit	Type of Element	# of Units	Unit Measure (number per x)	Lead	Capability Activity supported by Element
					Responder Health and Safety Demobilize
Specialized Safety Officer	Non-NIMS Personnel	400	Nationally	Federal/State/Local	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing monitoring of responder health and safety
Specialized Subject Matter Experts	Non-NIMS Personnel	800	Nationally	Federal/State/Local	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing Monitoring of Responder Health and Safety
Analytical laboratories	Non- NIMS Resource Organization		Nationally	Federal/State/Local/Private Sector/Academia	Identify Safety/PPE Needs and Distribute PPE to responders Ongoing Monitoring of Responder Health and Safety
Equipment caches	Equipment			Federal/State/Local/Private Sector/Academia	Identify Safety/PPE Needs and Distribute PPE to responders
Medical Unit	NIMS Resource Organization	1	One per incident, increased by scope, complexity and uniqueness	Federal/State/Local/Private Sector	Ongoing Monitoring of Responder Health and Safety
Training Centers	Training	25	per State	Federal/State/Local/Private Sector/Academia	<i>Develop and Maintain Training and Exercise Programs</i>

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