# **CSEPP**

# **Chemical Stockpile Emergency Preparedness Program**



# **Medical Resource Guide**

# May 29, 2012







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# Introduction: A Guide to This Document

# **CSEPP** Medical Preparedness

The Chemical Stockpile Emergency Preparedness Program (CSEPP) enhances medical preparedness within a community that stores or is in the process of destroying chemical weapons. The Chemical Weapons Convention—drafted in 1992, effective April 29, 1997, and to which the United States and 175 other countries are members—prohibits stockpiling and production of chemical weapons. A history of CSEPP and its legacy may be accessed on the Legacy page of the <u>CSEPP Portal</u> at <u>https://www.cseppportal.net/subsites/Legacy.aspx</u>.

A critical component of any community's ability to respond to an incident involving the release of a chemical agent is the ability to meet the medical needs of those individuals who may have been exposed to the agent. While the chance that such an incident would occur off-post is considered extremely unlikely, a coordinated response by the emergency medical system (EMS) and hospitals is essential.

CSEPP medical preparedness standards were initially developed based on a Federal Register publication entitled <u>Centers for Disease Control and Prevention</u> (CDC) Recommendations for Civilian Communities Near Chemical Weapons <u>Depots: Guidelines for Medical Preparedness</u>. CDC's recommendations, published in 1995, presented minimum standards for medical preparedness for civilian communities that might be exposed to chemical warfare agents during the incineration or storage process. Additional community guidance was described in CSEPP Policy Paper 15, Revised, entitled Off-Post Medical Preparedness Capability (April 2000), and updates continue to be driven by regulatory or accreditation changes, equipment and technology improvements, identification of issues and ideas, and dissemination of process improvements.

As the construction of agent-processing facilities near completion in Kentucky and Colorado, local CSEPP medical preparedness will continue to require community- and state-level coordination of healthcare systems that involve the U.S. Army, the Federal Emergency Management Agency (FEMA), on- and offpost medical providers, first responders, and hospitals, as well as various state, local, and public health agencies. Sites that have reached the conclusion of agent destruction still have CSEPP preparedness requirements that extend through the processing of munitions and the removal of all declared agents.

# The Purpose and Rationale of the Guide

This CSEPP Medical Resource Guide was developed to provide the pre-hospital and hospital communities with an all-hazards approach to emergency preparedness that emphasizes chemical recognition, decontamination, and treatment. This guide includes tools, regulations, guidelines, references, and web

#### **CSEPP** Medical Resource Guide

links. (Because web links to web pages are frequently updated, the majority of resources are linked directly to the referenced document in PDF format when available publicly.) This document will be hosted on the CSEPP Portal to ensure that the integrity of the resources listed remains intact and that members of the remaining CSEPP communities in Kentucky and Colorado have access to comprehensive information.

This guide identifies many fundamental documents necessary for the CSEPP medical community to assist with planning, including standards and guidelines, planning tools, a comprehensive medical concept of operations (CONOPS), response and recovery information, and learning strategies. This guide features three general steps to assist with the development of emergency management plans:

1. Pre-incident Planning and Preparedness

Medical preparedness staff has identified a comprehensive discussion of plans, regulations, and accreditation organizations that deliver guidance to emergency management. Training and exercises provide additional guidance to appropriate emergency response efforts.

2. Incident Response and Recovery

Medical preparedness staff has provided a detailed discussion of the medical CONOPS and recommendations to aid in the transition from response to recovery.

3. Learning Strategies

Medical preparedness staff has compiled a collection of best practices and opportunities for improvement.

# National-Level Planning and Guidance

#### National Incident Management System

Homeland Security Presidential Directive (HSPD) 5 directed the Secretary of the U.S. Department of Homeland Security (DHS) to develop the National Incident Management System (NIMS), which, in 2004, established standardized incident-management processes, protocols, and procedures for all responders to use to coordinate and conduct response actions. NIMS training is required for all federal, state, local, tribal, and nongovernmental personnel, and is recommended for private-sector personnel with a direct role in emergency management and response, including all emergency-services–related disciplines such as EMS, hospitals, public health, fire service, law enforcement, public works/utilities, skilled support personnel. To be eligible for federal preparedness funding, jurisdictions had to be in full NIMS compliance by September 30, 2006.

Hospitals receiving federal preparedness and response grants, contracts, or cooperative agreement funds for Fiscal Year (FY) 2007 had until September 30,

2008, to fully implement all NIMS activities (described on page 2). Further guidance for hospitals and healthcare facilities to comply with NIMS may be found at <u>http://www.fema.gov/pdf/emergency/nims/hospital\_faq.pdf</u>.

NIMS training is available online at <a href="http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm">http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm</a>.

The guidance within the NIMS Training Program is not absolute. Incident and/or event complexity determines emergency and incident response personnel responsibilities as well as recommended audience for NIMS curriculum coursework delivery. The NIMS Training Program training recommendations reflect the following five levels of complexity identified in Table 1:

#### **Table 1: Incident Complexity**

	•	This type of incident is the most complex, requiring national resources for safe and effective management and operation.
	•	All command and general staff positions are filled.
	•	Operations personnel often exceed 500 per operational period and total personnel will usually exceed 1,000.
e T	•	Branches need to be established.
Ŋ	•	A written incident action plan (IAP) is required for each operational period.
F	•	The agency administrator will have briefings, and ensure that the complexity analysis and delegation of authority are updated.
	•	Use of resource advisors at the incident base is recommended.
	•	There is a high impact on the local jurisdiction, requiring additional staff for office administrative and support functions.
	•	This type of incident extends beyond the capabilities for local control and is expected to go into multiple operational periods. A Type 2 incident may require the response of resources out of area, including regional and/or national resources, to effectively manage the operations, command, and general staffing.
2	•	Most or all of the command and general staff positions are filled.
be	•	A written IAP is required for each operational period.
Ť	•	Many of the functional units are needed and staffed.
	•	Operations personnel normally do not exceed 200 per operational period and total incident personnel do not exceed 500 (guidelines only).
		The agency administrator is responsible for the incident complexity analysis, agency administration briefings, and the written delegation of authority.
	•	When incident needs exceed capabilities, the appropriate Incident Command System (ICS) positions should be added to match the complexity of the incident.
~	•	Some or all of the command and general staff positions may be activated, as well as division/group supervisor and/or unit leader level positions.
Type 3	•	A Type 3 Incident Management Team (IMT) or incident command organization manages initial action incidents with a significant number of resources, an extended attack incident until containment/control is achieved, or an expanding incident until transition to a Type 1 or 2 IMT.
	•	The incident may extend into multiple operational periods.
	•	A written IAP may be required for each operational period.

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Type 4	•	Command staff and general staff functions are activated only if needed. Several resources are required to mitigate the incident, including a task force or strike team. The incident is usually limited to one operational period in the control phase. The agency administrator may have briefings, and ensure the complexity analysis and delegation of authority is updated. No written IAP is required but a documented operational briefing will be completed for all incoming resources. The role of the agency administrator includes operational plans including objectives and priorities.
Type 5	•	The incident can be handled with one or two single resources with up to six personnel. Command and general staff positions (other than the incident commander) are not activated. No written IAP is required. The incident is contained within the first operational period and often within an hour to a few hours after resources arrive on scene. Examples include a vehicle fire, an injured person, or a police traffic stop.

Organizations should use their jurisdictions' hazard/threat analyses to determine the "types" of incidents that are most likely and tailor their NIMS training to meet their needs (Figure 1). For example, if a jurisdiction faces significant and frequent threats, such as hurricanes or hazardous materials incidents, their training program should prepare responders for those threats. The National Integration Center (NIC) assumes that most jurisdictions will have, at a minimum, Type 4 incidents.



#### NIMS Courses

#### Figure 1: NIMS Training Determined by Incident Complexity

Individuals who may be assigned supervisory roles during Type 1, 2, and 3 incidents should take the following training, at a minimum:

- ICS-100
- ICS-200
- ICS-300
- ICS-400
- Independent Study (IS)-700
- IS-800
- Appropriate ICS position-specific courses

Individuals who may be assigned supervisory roles during a Type 4 incident should take at least the following training:

- ICS-100
- ICS-200
- IS-700

Individuals who may be assigned supervisory roles during a Type 5 incident should take at least the following training:

- ICS-100
- IS-700

Figure 2 illustrates the recommended progression of NIMS training from baseline courses (ICS-100, IS-700) to the advanced ICS and all-hazards position-specific coursework.





#### Figure 2: Training for Field (ICS) Personnel

The guidelines in Table 2 further assist with the determination of training needs for emergency management and response personnel in the field:

Incident Type(s)	Core Courses	Additional Courses
1, 2	<ul> <li>ICS-100</li> <li>ICS-200</li> <li>ICS-300</li> <li>ICS-400</li> <li>IS-700</li> <li>IS-800</li> <li>G-191 (ICS/EOC Interface)</li> </ul>	<ul> <li>Position-specific ICS courses (based on individual assignment or expected assignment)</li> <li>E/L-947 Emergency Operations Center (EOC)— IMT Interface Course</li> <li>Training based on jurisdiction risk and/or specific interest</li> </ul>
3	<ul> <li>ICS-100</li> <li>ICS-200</li> <li>ICS-300</li> <li>ICS-400</li> <li>IS-700</li> <li>IS-800</li> </ul>	<ul> <li>Position-specific ICS courses (based on individual assignment or expected assignment)</li> <li>G-191</li> <li>E/L-947</li> <li>Training based on jurisdiction risk and/or specific interest</li> </ul>
4	<ul> <li>ICS-100</li> <li>ICS-200</li> <li>IS-700</li> </ul>	<ul> <li>Position-specific ICS courses (based on individual assignment or expected assignment</li> <li>Training based on jurisdiction risk and/or specific interest</li> </ul>
5	<ul><li>ICS-100</li><li>IS-700</li></ul>	<ul> <li>Position-specific ICS courses (based on individual assignment or expected assignment</li> <li>Training based on jurisdiction risk and/or specific interest</li> </ul>

Table 2: ICS	Field	Operations	Training	Needs
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#### **National Response Framework**

The <u>National Response Framework (NRF</u>) establishes a comprehensive allhazards approach to enhance the ability of the United States to manage domestic incidents. The NRF incorporates best practices and procedures from various incident-management disciplines, including homeland security, emergency management, law enforcement, firefighting, public works, public health responder and recovery worker health and safety, emergency medical services, and the private sector, and incorporates them into a unified structure. NRF forms the basis

of how the federal government coordinates with state and local governments and the private sector during incidents. NRF emergency support function (ESF) 8, entitled "<u>Public Health and Emergency Medical</u> <u>Services Annex</u>," provides an overview of available federal medical response assistance.

An additional resource useful in preparing an allhazards plan is FEMA's <u>Comprehensive</u> <u>Preparedness Guide (CPG) 101</u>. This is a companion document to the NRF and provides specific



explanation of formats that can be used to write an emergency operations plan (EOP) and other preparedness documents.

#### **CSEPP Programmatic and Planning Guidance**

Two additional documents developed for CSEPP program managers and planners in 2008 provide specific guidance as follows:

- <u>CSEPP Programmatic Guidance</u> addresses existing CSEPP policies for inclusion in site preparedness and response programs.
- <u>CSEPP Planning Guidance</u> addresses planning considerations and identifies key elements for inclusion in site plans.

Specific on-line resource guidebooks contain additional materials useful to planners and participants; for example, guidance for writing press releases may be found in the "Public Affairs Planning Guidance Compendium Workbook." These resource guidebooks are numerous and can be accessed through the CSEPP Portal; they are also referenced in CSEPP Planning Guidance and CSEPP Programmatic Guidance documents.

# **Community Profile Tool**

The CSEPP Community Profile Tool provides a self-assessment of capabilities throughout the community, including its medical systems. Each community completes this profile as a "snapshot" of its capabilities. Capabilities in the medical community include, but are not limited to:

- Communications systems
- Public affairs
- First response and transportation medical services (fire and EMS)
- Medical facilities
- Screening, decontamination, registration, and congregate care of evacuees
- 24-hour operability

A community profile policy example, CSEPP Policy Paper Number 19, is located on the CSEPP Portal medical page.

# Step 1: Pre-Incident Planning and Preparedness

# State and Local Planning

CSEPP guidance requires each state to develop and maintain an EOP to be integrated with NIMS and the NRF. A CSEPP segment, usually developed within each state's EOP, describes the community's response to a CSEPP event and details the jurisdictions involved. A separate county plan describes the local response to a CSEPP event and the responsibilities of the various jurisdictions. The community usually describes the medical response to a CSEPP event in this plan and describes the resources and coordination that will take place.

If off-post populations are affected by a chemical release, local medical service providers will need to provide specialized screening and care for large numbers of people who may or may not have been exposed to a chemical agent. According to CSEPP Planning Guidance, the following conditions should be considered in developing CSEPP medical planning:

- Emergency medical, public health, and hospital services could be asked to evaluate and treat a large number of actual or potential casualties.
- The chemical agent treatment and resources may create a significant extension of normal duties and may overwhelm the local medical and EMS community.
- Preparation for medical response should include written plans, policies, Memoranda of Agreements (MOAs), Memoranda of Understandings (MOUs), and procedures at CSEPP hospitals.
- Care of chemical casualties may involve identification of the agent, decontamination, administration of an antidote (if appropriate), and definitive care.
- Chemical agent exposure may result not only in potential medical consequences but also emotional and psychological sequelae.
- In cases of chemical agent casualties, removal of remains (both human and animal) will need to be anticipated.

#### **Emergency Management Assistance Compact**

Mutual-aid agreements (MAAs) for medical support at the state level exist through an interstate process called the Emergency Management Assistance Compact (EMAC). Ratified by the U.S. Congress, EMAC provides form and structure to support interstate mutual aid. Issues such as accreditation of personnel and indemnification are covered by this agreement. EMAC is administered by the National Emergency Management Association and integrates with both state and federal agencies during disasters. EMAC activation is requested at the state level.

Additional information on EMAC may be found online at <u>http://www.emacweb.org</u>.

#### Agreements

Various agreements may be developed to provide resources for all agencies that participate in the CSEPP program. For example, MOAs or MOUs may be developed to enhance the planning or response process. The original CSEPP guidance document for developing MOAs and MOUs was developed in 1999 and may be reviewed on the CSEPP Portal.

Generally speaking, an MOU is used when different agencies are acting cooperatively and in parallel to accomplish a joint end; whereas an MOA is used when one agency is specifically supporting the activities of another. MOAs that establish responsibilities for providing recurring reimbursable support should be supplemented with support agreements to further define the support, the basis for reimbursement for each category of support, the billing and payment process, and other terms and conditions of the agreement. An example of a hospital-specific MOA may be reviewed on the CSEPP Portal medical page.

According to DA PAM 50-6 section 6-2, the installation medical authority, in coordination with the installation or activity commander, should develop MOAs with civilian medical treatment facilities, federal medical treatment facilities, and ambulance services to ensure that appropriate off-post resources may be available in the event of a chemical accident or incident (CAI). Each MOA should detail the level of training healthcare providers will receive, who will provide this training, and how frequently refresher training will be offered. MOAs should also specify how and by whom casualties would be transported to off-post medical facilities and any other contingency plans for casualty evacuation. MOAs with each off-post medical facility should detail the quantities and type of unique medical supplies required to support chemical accident or incident response and assistance (CAIRA) operations and whether these will be prepositioned or provided with patients as they are transported. Each off-post medical facility with which an MOA is developed should participate in a CAIRA exercise at least annually. MOAs should be reviewed and updated in writing annually based upon lessons learned during the CAIRA exercise.

MAAs are a different type of agreement between two agencies in which each signing agency agrees to provide mutual support in a specified area when requested and available.

Interservice or intraservice support agreements (ISSAs) are used when one federal activity is providing support to another federal activity. Interservice agreements exist between federal activities that are not in the same military service or defense agency but are both within the U.S. Department of Defense (DOD). ISSAs exist between federal activities or units within the same military service or defense agency.

Intergovernmental or interagency agreements (IGAs) are agreements between different levels or branches of government or between an activity within the DOD and a non-DOD federal agency.

# **CSEPP** Medical Planning at the Community Level

#### Introduction

Preparing for an unlikely off-post chemical incident should incorporate federal regulations, state regulations, and agency accreditation standards. Medical planning for each CSEPP community involves integration of pre-hospital and hospital services. The CSEPP medical program includes not only hospitals but

also public health resources and first responders such as law enforcement, fire, and EMS. Local emergency managers can also provide important information.

#### **First Responders**

The provision of on-scene medical care and decontamination by first responders may include firefighters, EMS, and police officers. First responder emergency services are regulated by state licensing or certification requirements, standard operating procedures, and contractual agreements. Emergency services plans and procedures should be well integrated into the community-wide response to a chemical incident to include integration with community hospital planning.

#### **Hospitals**

The hospital's emergency planner should have a clinical background or access to medical subject matter experts and understand the principles of emergency management. The planner should know where to access local plans and formulate a relationship with the local emergency manager. CSEPP planning has been most effective when hospital plans are integrated into community and state plans.

#### **Public Health**

The role of public health in any chemical or biological incident is of paramount importance. Public health services provide cornerstone resources for early detection, diagnosis, and treatment of health concerns, and strategies for protection against health threats. Public health activities occur at a local, county (regional), tribal, state, and federal level. Public health strategies for a healthy community include planning, preparedness, and response and recovery activities.

More specifically, CDC determined that the public health preparedness capabilities should be aligned with the 10 Essential Public Health Services model developed by the U.S. Department of Health and Human Services (DHHS). CDC

conducted a mapping process that determined that several of the public health preparedness capabilities aligned with multiple essential public health services. Thus, the state and local preparedness capabilities align with both the DHS target capabilities and the DHHS 10 Essential Public Health Services, with a focus on public health capabilities critical to preparedness (Figure 3). The public health

preparedness capabilities defined by CDC also directly align with 21 of the NHSS capabilities.



Figure 3: Aligning State and Local Preparedness Capabilities

Each of the public health preparedness capabilities identifies priority resource elements that are relevant to both routine public health activities and essential public health services. While demonstrations of capabilities can be achieved through different means (e.g., exercises, planned events, and real incidents), jurisdictions are encouraged to use routine public health activities to demonstrate and evaluate their public health preparedness capabilities. The above information and more can be found in the Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response document, <u>Public Health</u> <u>Preparedness Capabilities: National Standards for State and Local Planning</u>, dated March 2011.

### Tools

#### **CSEPP Multi-Hazard Medical Curriculum**

An all-hazards approach for medical responders in CSEPP communities has been developed. Using a modular approach, it builds content based on the educational requirements of the student. Individual modules are chemical, biological, radiological signs/symptoms and treatment, special considerations for mass-casualty incidents, decontamination, and personal protective equipment. Information contained in these modules is important to communities to provide answers to planning and response issues. The curriculum is available on the CSEPP Portal's Medical page at:

https://www.cseppportal.net/subsites/Medical.aspx.

#### **Medical Evaluation Guidelines**

Medical Evaluation Guides (MEGs) for pre-hospital and hospital planners have been created for self-assessment purposes. The CSEPP EMS and Hospital MEGs are all-hazard, comprehensive guides that outline the critical elements of a medical response plan. These tools, which are available on the CSEPP portal, guide pre-hospital and hospital planners in performing an inventory of their capabilities.

# Standards and Regulations

Various standards and regulations govern pre-hospital entities and healthcare facilities hazardous materials operations. First responders/receivers must comply with all regulations that pertain to hazardous materials event sites and emergency response activities, including casualty reception areas. The standards and regulations include, but are not limited to:

- Occupational Safety and Health Administration (OSHA)
  - 29 Code of Federal Regulation (CFR) §1910.120
  - 29 CFR §1910.134
- Environmental Protection Agency (EPA)
  - 40 CFR 311

- Emergency Medical Treatment and Active Labor Act (EMTALA)
- Health Insurance Portability and Accountability Act (HIPAA)
- NFPA 472: Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents
- NFPA 473: Competencies for EMS Personnel Responding to Hazardous Materials/Weapons of Mass Destruction Incidents

#### **Occupational Safety and Health Administration**

Specific regulations (29 CFR §1910.120 and 29 CFR §1910.134) apply to emergency response personnel who may encounter hazardous substances. Hazardous materials exposure, heat, and physiologic stress are part of the hazards that exist for personnel who perform rescue, triage, decontamination, and related activities.

#### First Responders: Personal Protective Equipment Regulatory Requirements

First responders who wear personal protective equipment (PPE) as part of their community's response to a hazardous materials incident are required to complete training and medical evaluation prior to donning any equipment. OSHA regulations must be a part of any CAI planning. States may elect to develop their own standards with respect to the wearing of PPE. However, at a minimum, state standards must be equal to or exceed federal (OSHA) standards, which govern multiple aspects of hazardous materials responses, including fit testing for tight-fitting respirators, medical evaluations, employee training, PPE, decontamination operations, and incident management.

#### Hospital First Receivers: PPE Regulatory Requirements

The OSHA document <u>Best Practices for Hospital-Based First Receivers of</u> <u>Victims from Mass Casualty Incidents Involving the Release of Hazardous</u> <u>Substances</u> provides practical information to help hospitals address employee protection and training as part of emergency planning for mass-casualty incidents involving hazardous substances. Individuals who believe they have sustained chemical contamination may arrive at the hospital and require decontamination before medical care can be provided. First receivers at hospitals are different than first responders in the sense that first responders respond to the incident site and first receivers do not. This being the case, there may be slight differences in what is required of each entity in respect to level of training, regulations, and standards of practice. The Best Practices document includes guidance on victim decontamination, personal protective equipment, and employee training.

#### **Environmental Protection Agency**

The EPA through Title 40 (Protection of Environment) Part 311 (Worker Protection) extends application of 29 CFR§ 1910.120 standards to state and local worker populations. 40 CFR §311.1 states that the provisions found in 29 CFR §1910.120 apply to state and local government employees engaged in hazardous waste operations in states that do not have a state plan approved, and 40 CFR

§311.2 states that an employee in 40 CFR §311.1 is defined as a compensated or non-compensated worker who is controlled directly by a state or local government, as opposed to an independent contractor. A copy of 40 CFR Part 311 can be accessed online through the EPA website.

#### **Emergency Medical Treatment and Active Labor Act**

In 1986, Congress enacted EMTALA to ensure public access to emergency services regardless of an individual's ability to pay. EMTALA obliges Medicareparticipating hospitals that offer emergency services to provide a medicalscreening examination when a request is made for examination or treatment for an emergency medical condition, including active labor, regardless of an individual's ability to pay. Hospitals are then required to provide stabilizing treatment for patients with emergency medical conditions or, if a hospital is unable to stabilize a patient within its capability or if the patient requests, implement an appropriate transfer. EMTALA guidelines are applicable in a disaster but have been modified in recent catastrophic disaster events, such as during Hurricanes Katrina and Rita<sup>1</sup>. All healthcare providers should continue to treat disaster victims equally without consideration or discrimination based on financial considerations. The most up-to-date revisions to EMTALA can be accessed online.

#### Health Insurance Portability and Accountability Act

The HIPAA Privacy Rule recognizes the legitimate need for public health authorities and others responsible for ensuring public health and safety to have access to protected health information to carry out their public health mission. HIPAA guidelines were enacted to define and limit circumstances in which an individual's protected health information may be used or disclosed by healthcare providers, health plans, and healthcare clearinghouses.

Persons who are displaced as a result of a disaster may need ready access to healthcare and a means of contacting family and caregivers. DHHS published the *Hurricane Katrina Bulletin: HIPAA Privacy and Disclosures in Emergency Situations*, dated September 2, 2005, to emphasize how the HIPAA Privacy Rule allows patient information to be shared to assist in disaster relief efforts, and to assist patients in receiving the care they need.

Providers and health plans covered by the HIPAA Privacy Rule can share patient information in the following ways:

- Treatment: To provide treatment and seek payment for services rendered.
- Notification: To identify and locate family members, guardians, or anyone else responsible for the individual's care, and to notify these parties of the individual's location, general condition, or death. In addition, when a health care provider is sharing information with a disaster relief organization (e.g., the American Red Cross) that is authorized by law or by its charter to assist in disaster relief efforts, it is unnecessary to obtain the patient's permission to

<sup>&</sup>lt;sup>1</sup> http://www.flu.gov/planning-preparedness/federal/h1n1emergency10242009.html

share that information if doing so would interfere with the organization's ability to respond to the emergency.

- Imminent Danger: To prevent or lessen a serious and imminent threat to the health and safety of person or the public—consistent with applicable laws and provider's standards of ethical conduct.
- Facility Directory: Healthcare facilities maintaining a directory of patients can tell people who call or ask about individuals whether the individuals are at the facility, their location in the facility, and general conditions.

# **Hospital Accreditation**

# The U.S. Department of Health and Human Services Centers for Medicare and Medicaid Services

DHHS is the U.S. government's principal agency for protecting the health of all Americans and providing essential human services, especially for those who are least able to help themselves. The Center for Medicare and Medicaid Services



themselves. The Center for Medicare and Medicaid Services (CMS) is a DHHS agency that administers the Medicare and Medicaid programs and has established programs and standards that address the requirements for hospitals. To receive Medicare, Medicaid, or third-party reimbursement (insurance), hospitals are subject to survey and certification by the state survey agency or are deemed to meet federal requirements on the basis of accreditation by an organization whose program has CMS approval at the time of accreditation survey and accreditation decision. More information is available regarding this rule (42 CFR§482) online. Below are examples of accrediting organizations.

# The Joint Commission

The Joint Commission (JC) is an independent, nonprofit organization that issues and administers standards for accreditation of healthcare organizations and programs, including



hospitals. Although accreditation by JC is voluntary, many CSEPP hospitals use JC as an accrediting entity. Emergency Management Standards have evolved as a section within the Environment of Care standards to a standalone chapter (2008). The standards address a variety of emergency management requirements that hospitals need to meet, including all-hazards planning, emergency accreditation of providers, testing of emergency preparedness plan by exercise or drills, emergency power, water, supplies, etc. JC standards are proprietary. A link to an overview of these standards may be found online at

http://www.jointcommission.org/standards\_information/jcfaqdetails.aspx?StandardsFAQId=70&StandardsFAQChapterId=63.

# Healthcare Facilities Accreditation Program

The Healthcare Facilities Accreditation Program (HFAP) is a recognized alternative to accreditation by CMS or JC. Accreditation by HFAP is voluntary. HFAP is a service of the American Osteopathic Association and has been providing medical facilities with an objective review of their services since 1945. HFAP has been accrediting



healthcare facilities for more than 30 years under Medicare and is recognized nationally by the federal government, state governments, insurance carriers, and managed-care organizations. HFAP accreditation information may be accessed online at <u>http://www.hfap.org.</u>

#### Det Norske Veritas Healthcare, Inc.

On September 26, 2009, Det Norske Veritas Healthcare, Inc. (DNVHC) was recognized as an alternative to accreditation by CMS, JC, or HFAP. Accreditation by DNVHC is voluntary. DNVHC was established in 1864 in Norway and started operating in the United States in 1898. DNVHC's hospital accreditation program integrates National Integrated Accreditation for Healthcare Organizations (NIAHO) standards with International Organization for Standardization (ISO) 9001



Quality Management System Standards. NIAHO requirements speak directly to the CMS conditions for hospital participation. There are eight sections to the structure of the ISO 9001 Quality Management System Standards including five interactive sections: quality management system; management responsibility; resource management; service realization; and measurement, analysis, and improvement.

ISO 9001 requires six documented procedures to meet compliance standards: control of documents, control of records, internal audit, control of nonconforming product, corrective action, and preventative action. NIAHO quality management system requirements address specific procedures in detail to ensure that hospital organizations comply with the ISO 9001 standard. Additional information on emergency preparedness requirements may be found online at <a href="http://dnvaccreditation.com/pr/dnv/default.aspx">http://dnvaccreditation.com/pr/dnv/default.aspx</a>.

#### **Critical Access Hospitals**

Rural hospitals face unique challenges. To help meet the costs associated with providing healthcare in rural environments, the Medicare Rural Hospital Flexibility Program, a special classification called "critical access hospital" (CAH) was developed. A limited number of CSEPP hospitals are located in rural areas and fall under this category. A facility that meets the following criteria may be designated by CMS as a CAH if the facility:

- Is located in a state that has established with CMS a Medicare rural hospital flexibility program; and
- Has been designated by the state as a CAH; and

- Is currently participating in Medicare as a rural public, non-profit, or for-profit hospital; or was a participating hospital that ceased operation during the 10year period from November 29, 1989 to November 29, 1999; or is a health clinic or health center that was downsized from a hospital; and
- Is located in a rural area or is treated as rural; and
- Is located more than a 35-mile drive from any other hospital or CAH (in mountainous terrain or in areas with only secondary roads available, the mileage criterion is 15 miles); and
- Maintains no more than 25 inpatient beds; and
- Maintains an annual average length of stay of 96 hours per patient for acute inpatient care; and
- Complies with all CAH Conditions of Participation, including the requirement to make available 24-hour emergency care services 7 days per week.

More information is available in the following Code of Federal Regulations:

• 42 CFR 485.606 Designation and certification of CAHs.

# **CSEPP** Medical/Decontamination Training

Medical training is provided as part of existing state and local CSEP programs. A coordinated approach that includes state and local departments of health, emergency management agencies, hospitals, and first-responder agencies has worked well in many communities. Individual hospitals and pre-hospital entities should also consider conducting additional training to meet agency or organizational requirements. To assist the CSEPP community with providing a more flexible approach to all-hazards training, a comprehensive, All-Hazards Medical Curriculum was developed by the former Medical Integrated Process Team (MIPT). The content was most recently revised in 2011. This and other training resources for the CSEPP medical communities can be found on the CSEPP training website at <a href="https://www.orise.orau.gov/CSEPP">www.orise.orau.gov/CSEPP</a>.

Specific training requirements for individuals who will wear PPE and/or participate in patient decontamination are prescribed by OSHA. OSHA training requirements for hazardous materials are described below.

# OSHA Hazardous Materials (HazMat) Training for Pre-Hospital Providers

Many EMS duties do not require entry into an area where hazardous materials are present and pose a threat of contamination. In addition, many EMS agencies or units within an agency may only perform intra-facility transports, which do not require response to an emergency incident that may involve the release of hazardous materials. For this reason, OSHA recognizes that Hazardous Waste Operations and Emergency Response (HAZWOPER) training may not be needed in respect to those entities. However, OSHA does recognize the need for HAZWOPER training for any EMS agency or units within an agency that have an emergency response duty where hazardous materials may be present. EMS personnel who may, at any time, arrive first on the scene of a hazardous materials release should be trained to recognize the danger and provide scene safety, notification, and communication tasks until appropriately trained personnel arrive. They should not attempt rescue or treatment of contaminated patients. These personnel, at a minimum, are required to receive HAZWOPER first responder awareness level training.

EMS personnel who may be required to respond to hazardous material releases and provide rescue, treatment, or decontamination of contaminated patients are required, at a minimum, to receive HAZWOPER first responder operations level training. Further information is available in the "OSHA Best Practices for Protecting EMS Responders during Treatment and Transport of Victims of Hazardous Substance Releases."

#### **OSHA HazMat Training for Hospital Providers**

HazMat training for hospital providers are presented in Table 3 below:

Mandatory Training	First Receivers Covered
First Responder OPERATIONS LEVEL Initial training Annual refresher	<ul> <li>All employees with designated roles in the hospital decontamination zone, including:</li> <li>Decontamination staff, including decontamination victim inspectors; clinicians who will triage and/or stabilize victims prior to decontamination; security staff; set-up crews; and patient-tracking clerks</li> </ul>
Briefing at the time of the incident	Other employees whose roles in the hospital decontamination zone were not previously anticipated (i.e., who are called in incidentally), for example, medical specialists or tradespersons such as electricians
First Responder AWARENESS LEVEL Initial training Annual refresher	<ul> <li>Security personnel, set-up crews, and patient-tracking clerks assigned only to patient receiving areas proximate to the decontamination zone where they might encounter but are not expected to have contact with contaminated victims, their belongings, equipment, or waste</li> <li>Emergency Department clinicians, clerks, triage staff, and other employees associated with emergency departments who might encounter self-referred contaminated victims and their belongings, equipment, or waste without receiving prior notification that such victims have been contaminated</li> </ul>
Recommended Training	Personnel Covered
Training similar to that outlined in the Hazard Communication standard	Other personnel in the hospital post-decontamination zone who reasonably would not be expected to encounter or come in contact with unannounced contaminated victims, their belongings, equipment, or waste (e.g., other Emergency Department staff such as housekeepers)

#### **Table 3: OSHA Training Requirements**

# **CSEPP** Exercises

#### Introduction

There are three types of federally managed CSEPP Exercises: full-scale exercises (FSE), functional exercises (FE) that are scalable, and tabletop exercises (TTX). They are discussed below. An FSE is held every other year; FEs are held in the years in between FSEs. TTXs are conducted as required to meet programmatic needs at either the national or community needs.

- An FSE is a mandatory, federally evaluated demonstration of a community's full capabilities to respond to a chemical emergency.
- FEs are federally managed and held every other year, during years when a FSE does not take place. The scale of the exercise will be determined by the community and the Co-Directors. Like the FSE, an FE initiating event should be related to the local stockpile.
- A Tabletop Exercise can be used to assess plans, policies, and procedures or to assess types of systems needed to guide the *prevention* of, *response* to, or

*recovery* from a defined incident. HSEEP guidance should be consulted for conduct of a Table Top Exercise. Tabletop exercises do not include field play and typically do not involve use of a Simulation Cell (SimCell).

Army installations will exercise their full, emergency response capability every year. Installations have an Army-mandated schedule of exercises (e.g., quarterly CAIRA exercises). Current Army regulations require at least two CAIRA exercises per calendar year that will incorporate the appropriate government and/or non-government off-installation emergency response authorities/agencies identified in plans as having jurisdiction in the Immediate Response Zone (IRZ). The CSEPP exercises are conducted annually to test the entire emergency response effort (to include select off installation emergency response capabilities), evaluate the interaction of all components, and demonstrate the ability of communities to respond to a CAI in concert with installation procedures. CSEPP exercise staff will assess on- and off-installation response procedures in accordance with established exercise objectives. Off-post jurisdictions are encouraged to participate in those or other exercises they consider appropriate.

Annual off-post community exercises provide medical providers with an important opportunity to update their emergency preparedness policies and procedures, observe the implementation of the emergency preparedness policies and procedures, identify the availability of equipment and supplies, evaluate their capabilities, assess their coordination with response organizations, and examine their integration within the local emergency management organization.

#### **Exercise Evaluation: Emergency Response Outcomes**

CSEPP exercises are evaluated according to a standardized set of outcomes. Comprehensive information on exercises is located in the <u>Chemical Stockpile</u> <u>Emergency Preparedness Program: Exercise Policy & Guidance</u> document dated June 19, 2009, also referred to as the Exercise Blue Book, which can be found on the CSEPP Portal.

Eight CSEPP emergency response outcomes (EROs) are evaluated during a CSEPP exercise:

- 1. Preparedness
- 2. Emergency assessment
- 3. Emergency management
- 4. Hazard mitigation
- 5. Protection
- 6. Victim care
- 7. Emergency public information
- 8. Remediation and recovery

#### **CSEPP** Medical Resource Guide

Each ERO is supported by a series of tasks. Completion of the tasks should lead to achievement of the desired outcome. For each task, the Exercise Blue Book has an exercise evaluation guide (EEG) to assist in the evaluation and analysis of the community response. The medical component of chemical agent preparedness is covered under Outcome 6, Victim Care.

Participation by the medical component of the CSEPP communities is evaluated as part of the CSEPP exercise evaluation process and for adherence to standards that are related to accreditation and/or regulatory agencies. Emergency operations plans and decontamination team medical surveillance records are reviewed prior to participation in a CSEPP exercise.

Following a CSEPP exercise, a comprehensive report is written to provide timely feedback that enables continued improvement of emergency preparedness at the state and local levels and by the Department of Army (DA) installation. In addition to narrative analysis, the following classifications identify strengths and areas needing improvement:

- Strengths are actions that clearly exceed applicable written requirements, or in the judgment of the evaluator, display unusual initiative or commendable performance;
- **Observations** are emergency responses and actions that in the judgment of the evaluator could be improved; and
- **Findings** are emergency responses and actions that deviate from applicable laws, regulations, policies, other written requirements, standards of care and practices, or that directly affect public health and safety.

The report provides a means for recommending improvements, tracking performance, and addressing Findings noted in prior exercises.

#### **Tracking Exercise Performance**

#### Corrective Action Program (CAP) System

The states will use the HSEEP Corrective Action Program (CAP) to track all CSEPP exercise Findings. The CAP System is a web-based tool that enables Federal, state, and local emergency response and Homeland Security officials to develop, prioritize, track, and analyze corrective actions following exercises or real-world incidents. The primary goal of the system is to help officials resolve preparedness gaps or deficiencies in a systematic manner, ultimately strengthening national preparedness. Users should use existing DHS/CAP guidance to implement this program. States will brief the status of their Corrective Actions during scheduled IPT Meetings. DHS/FEMA-CSEPP HQs will be selected as the Event Administering Authority (EAA). The FEMA Regional Exercise Codirector shall be selected as the Exercise Sponsor in the CAP system.

### CSEPP Exercise and Training Analysis Tool (CETAT)

The CSEPP Exercise and Training Analysis Tool (CETAT) is an additional tool that can be used to track exercise performance. The CETAT database enables CSEPP sites to identify and track functional issues and assess NIMS compliance. CETAT has also improved training and exercise effectiveness of its sites, allowing critical information to be shared with its respective community response partners.

CETAT contains after-action report data from all sites beginning with 2005 and including additional after-action reports as they become available.

- CETAT provides quality data management for all CSEPP sites and their IPT partners:
  - Tracks CSEPP findings and observations
  - Tracks corrective actions by EROs
  - Identifies NIMS-related issues, such as information sharing and responder safety
  - Examines trends relating to functional procedures, such as decontamination and PPE
  - Identifies recommended training solutions by site and across the CSEPP community
  - Documents and tracks growth and improvement
- Users identified the following advantages of CETAT:
  - Data is centralized
  - Use of designations for "Finding" and "Observation" is more consistent
  - Access and searches are fast and efficient
  - CETAT identifies root causes
  - Useful aid in IPT meetings with community response partners
  - Exercise planning materials are enhanced for evaluators

Additional information and access to CETAT is available through the CSEPP Portal.

# **ERO-6 Victim Care**

Each EEG for victim care is assigned a number listed below based on the following identifying information: the first letter is A for Army or C for community or off-post jurisdiction; the first number (1–8) represents one of the eight EROs; the second number is a chronological listing of the EEG; and the final letter is E (for emergency operations center [EOC]), F (for field), or J (for joint information center [JIC]).



#### **CSEPP Medical Resource Guide**

- A.6.1.F Provide Immediate Emergency Aid at the Incident Site
- A.6.2.F Prepare Medical Facility to Receive Patients
- A.6.3.F Provide Emergency Triage, Treatment, and Stabilization in the Field
- A.6.4.F Make Victim Status Reports
- A.6.5.E Track the Location and Status of Victims
- A.6.6.F Decontaminate Patients in the Field
- A.6.7.F Transport Patients to a Medical Treatment Facility
- A.6.8.F Treat Patients at a Medical Treatment Facility
- A.6.9.E Notify Next of Kin
- A.6.10.F Collect and Decontaminate Human Remains
- A.6.11.E Coordinate Disposition of Human Remains
- C.6.1.E Communication—EOC/JIC Medical Representative
- C.6.1.F Communication—Medical Staff
- C.6.2.F Prepare Medical Treatment Facility to Receive Patients
- C.6.3.F Pre-Decontamination Triage
- C.6.4.F Decontamination and Post-Decontamination Triage
- C.6.5.F Transport Evacuees/Patients to a Shelter or Medical Treatment Facility
- C.6.6.F Treat Patients at a Medical Treatment Facility
- C.6.7.F Collect and Decontaminate Human Remains
- C.6.8.E Track the Location of Evacuees, Patients, and Fatalities

#### **Recommendations for a Full-Scale Exercise**

It is suggested that the following elements be included in each hospital and field decontamination site's extent-of-play agreements. Responder/receiver organizations should consider demonstrating:

- A very limited use of simulation (the only situations where simulation should occur are in the administration of medications and when, in the opinion of the evaluators, a safety risk exists)
- A Demonstration stressing its emergency preparedness systems with multiple patients presenting with chemical and conventional illness and injury
- A Demonstration stressing its emergency preparedness systems with multiple patients exhibiting psychological signs and symptoms
- Emergency triage, patient tracking, and stabilization prior to decontamination
- Ambulatory and non-ambulatory decontamination or the demonstrated rational of why decontamination is not needed

- Patient tracking throughout the continuum of care
- Decontamination and antidote administration identification processes
- Treatment of casualties, including antidote therapy, if indicated
- Patient disposition
- Collection and decontamination of human remains
- Disposition of human remains
- Use of the ICS and its EOC or Hospital Command Center (HCC)
- PPE donning and doffing procedures
- Proper use of equipment, i.e., chemical agent detectors
- Communication with the joint information system (JIS)

#### **Exercise and Drill Safety Measures**

Safety measures in exercises and drills are important to participants in a CSEPP exercise. Safety concerns identified from past exercises include the use of the DuoDote<sup>™</sup> auto-injector syringe, patient transport, decontamination processes, medical screening, and respiratory protection programs. The DuoDote auto-injector syringe has replaced the Mark I antidote kit off-post as a means to provide atropine and pralidoxime to patients who have symptoms of nerve agent or organophosphate (OP) insecticide exposure. Throughout the history of CSEPP exercises, the treatment of patients demonstrating signs and symptoms of nerve agent or OP exposure has been thoroughly demonstrated and documented. Treatment may include administration of the DuoDote auto-injector trainer syringes have been recommended to be used versus "live" DuoDote auto-injector syringes. Participants are encouraged to maintain accurate inventories of live DuoDote auto-injectors; however, during exercises or drills, these resources should be stored in a location where they will not enter operations.

Victim safety during an exercise should not deviate from normal protocol. Occasionally, for example, during the excitement of an exercise, providers may overlook securing victims appropriately to backboards and stretchers as recommended to prevent injury. All victims should be briefed to communicate to exercise participants any concerns they may have regarding their handling, treatment or safety.

During exercises, participants are encouraged to carefully review their processes to meet the needs of the potentially contaminated victims in a safe and noninvasive manner. This includes ensuring that all decontamination equipment is functional, warm water is provided for safety and comfort, proper materials are available to protect victims from the elements, and no invasive interventions occur. Responder safety must also be considered to include OSHA-compliant respiratory protection, pre- and post-entry medical screening, operations-level training, and heat strain and stress considerations. One of the functions of the Safety Officer during exercises is to supervise individuals who are wearing PPE and identify individuals who are exhibiting signs of heat stress before it becomes a problem. Exercises should be conducted as realistically as possible to ensure that there is close correlation between the challenges of exercises and those of real-world incidents.

# Step 2: Incident Response and Recovery

#### Medical Concept of Operations

Medical preparedness should be based on plans and procedures that detail the medical CONOPS and coordinated response actions to prepare for and respond to a CAI. Medical plans and procedures should be integrated with state and local response plans and those of the Army installations. These plans should include anticipated response, necessary resources, and appropriate training. The CONOPS should consider at a minimum the following factors:

- The continuum of victim care begins on-post or at any entry point into the medical system (which includes EMS) and continues until final patient disposition occurs
- The number and type of potentially exposed individuals in the projected plume area
- The implementation of protective action strategies (e.g., evacuation, sheltering, and collective protection)
- Medical screening, triage, appropriate treatment, and transport to CSEPP hospitals or medical facilities for exposed individuals, including plans for administration of antidote where necessary
- Strategies for the appropriate use of decontamination equipment
- Procedures for decontamination of patients and emergency responders per OSHA standards
- Integration with existing hazardous material and/or CAI response plans, mass casualty incident plans, and other disaster plans
- Strategies for incorporation of public health into community planning, response, and recovery efforts
- Management of a CAI using ICS
- Integration of a medical component into the JIS

# Triage

Triage is derived from the French word *trier* (to sort). Triage methods currently exist in military, pre-hospital, and hospital environments. However, mass-casualty incidents may require a streamlined approach to identify and categorize victims.

One common systematic approach is simple triage and rapid treatment (START). START provides a simple algorithm to assess respirations, perfusion, and mental status and make a determination of a triage category based on a four-level system: immediate, delayed, minor, or expectant. The categorization is color-coded to assist with secondary and tertiary triage processes that provide additional assessment and treatment of victims and assign evacuation priorities and resource allocation to victims. The START system is easily converted to a flow chart that can be laminated and used as a tool during mass casualty incidents. Victims can be identified using tags or colored flag tape. START information can be accessed at <a href="http://www.remm.nlm.gov/startadult.htm">http://www.remm.nlm.gov/startadult.htm</a>.

JumpSTART is a simple modification to START principles addressing the unique physiological differences in pediatric patients. The algorithm is comparable to START, using the same primary assessment parameters and assigning the same four-level triage categories. Furthermore, JumpSTART can be easily converted to a flow chart to provide a useful tool for initial triage during mass-casualty incidents. START and JumpSTART information and chart downloads can be accessed at <a href="http://www.jumpstarttriage.com">http://www.jumpstarttriage.com</a>.

Regularly scheduled mass-casualty training will improve a provider's level of comfort in using the mass-casualty triage system and performing a primary triage assessment. Local EMS and clinic providers from the Army Storage Depot should be invited to participate in these training sessions. Practice could be scheduled for a specific recurring day, such as the first Wednesday of the month, to elevate the skill level of all healthcare providers in the community. Additionally, each CSEPP community should consider the use of a common triage tag to allow interoperability among all local agencies. It may also be beneficial to depict the local mass-casualty system on a laminated flow chart for responder reference.

#### Treatment

Patient treatment standards for mass casualty incidents include the application of processes that are learned in certification programs such as Basic Life Support, Advanced Cardiac Life Support, Pediatric Advanced Life Support, Advanced Trauma Life Support, Trauma Nursing Core Curriculum<sup>TM</sup>, Pre-Hospital Trauma Life Support, Basic and Advanced Disaster Life Support, and Advanced Burn Life Support. Healthcare providers are encouraged to always remember standards of practice and local protocols.

The Bluegrass Community, with its nerve agent stockpile, should develop consistent protocols that direct the administration of nerve agent antidote to victims who are exhibiting nerve agent effects. As health effects from an OP insecticide/ herbicide or military nerve agent (GA, GB, GD) exposure occur quickly, a field expedient nerve agent antidote kit has been developed consisting of a single, drug-filled, auto-injector syringe called a DuoDote auto-injector syringe. An auto-injector syringe consists of a pressure-activated coiled spring mechanism that triggers the release of a needle (and syringe contents) for an

intramuscular (IM) injection of the antidote solution(s). The DuoDote autoinjector syringe replaces the Mark I antidote kit, which consisted of two separate syringes: a dark-green–colored atropine auto-injector containing 2 milligram (mg)/0.7 milliliter (ml) of atropine and a beige-colored pralidoxime chloride (2PAM CL) auto-injector containing 600 mg/2 ml of 2PAM CL. The Mark I antidote kit is no longer being manufactured for civilian use; however, it is still used by the on-post medical community. The DuoDote auto-injector syringe is a single auto-injector syringe that contains two chambers that separately contain 2.1 mg (0.7 ml) of atropine and 600 mg (2.0 ml) of pralidoxime chloride (see Figure 4). Information on the DuoDote auto-injector syringe and the drugs contained in it may be found in the <u>Guidelines and Injection Instructions for DuoDote<sup>TM</sup> Auto-Injector</u>.



Figure 4: DuoDote<sup>™</sup> Auto-Injector Syringe

Atropine is an anticholinergic drug (muscarinic antagonist) that helps to block the effects of acetylcholine. Acetylcholine stimulates the muscarinic smooth-muscle receptors in the cardiac muscle, secretory glands, peripheral autonomic ganglia, and the central nervous system (CNS). An easy way to remember the muscarinic effects is by the pneumonic "SLUDGE" (salivation, lacrimation, urination, defecation, gastrointestinal distress, and emesis). Blurred vision, constricted pupils (miosis), and bronchospasm are also common muscarinic symptoms. Atropine helps to dry secretions, which in turn will aid with breathing, decrease vomiting and diarrhea, and increase heart rate.

CNS effects, which are commonly seen as seizures, require a separate drug intervention such as with IM or intravenous (IV) diazepam. U.S. Army Chemical Materials Agency guidance recommends 2–5 mg IV or 10 mg IM. IV doses of diazepam greater than 30 mg may be needed to treat nerve-agent–induced seizures. Anticonvulsants routinely used in the treatment of status epilepticus such as Dilantin (phenytoin), phenobarbital, or valproic acid are not effective in treating seizures from nerve-agent intoxication. Resistant seizures may best be treated using midazolam (another benzodiazepine). IM/IV diazepam is not a CSEPP-supplied drug.

Pralidoxime chloride reactivates the enzyme acetylcholinesterase, which has been inactivated by exposure to nerve-agent or OP compounds. It needs to be administered soon after exposure to OP/nerve agents because the chemical changes caused by exposure to the agent will become permanent with time in a process called "aging." Both atropine and pralidoxime may be administered intravenously in the hospital setting but require careful cardiac and hemodynamic monitoring.

Furthermore, the Bluegrass and Pueblo Communities with their mustard agent stockpiles should develop consistent protocols that direct care to victims who are exhibiting mustard agent intoxication. Decontamination, being the initial step in the treatment of mustard-exposed casualties, either vapor or liquid, should be accomplished within the first two minutes following exposure to prevent cellular damage. Other clinical symptoms of mustard agent intoxication along with their treatment follow.

Erythema may appear as early as 2 or as late as 24 to 48 hours after exposure, depending on the intensity of exposure. For mild erythema, no treatment is usually needed. The objective is to prevent secondary infection. More marked erythema with associated pain and itching can be treated with systemic analgesics and antihistamines to provide symptomatic relief.

Small blisters in non-critical areas should be left intact. If the blister is about to rupture, use a good aseptic technique to drain the blister (blister fluid itself is not a vesicant) then cover it lightly with a sterile dressing. Antibiotic ointment should be applied to larger lesions to prevent infection. For large areas of vesication, hospitalization may be required, and frequent, careful debridement needed.

Unlike thermal burns, chemical burns do not require large amounts of fluid replacement. Do not over hydrate; however, some fluid replacement may be necessary since patients frequently do not drink adequate amounts of fluids to stay hydrated.

The main goals of eye treatment for mustard exposed victims are to prevent infection, corneal scarring, and loss of vision. Since mustard fixes to tissue within the first two minutes after exposure, irrigation of the eyes with saline during this timeframe is helpful in removing any remaining mustard around the eyelids, on the face, or on the eyelashes.

The treatment of inhalation exposures to sulfur mustard follows the same precepts that are applied to other inhalation injuries. First priority is given to ensuring the establishment of a patent airway and appropriate airway management. Irritation of the nose, sinuses, and throat, as well as hoarseness or a non-productive cough, are early symptoms of airway involvement. These symptoms may progress, depending on the degree of mustard exposure.

Further information regarding Department of the Army guidance for treatment of chemical casualties may be found in the memorandum "<u>Implementation Guidance</u> <u>Policy for Revised Airborne Exposures Limits for GB, GA, GD, GF, VX, H, HD, and HT</u>."

# Personal Protective Equipment

PPE delivers different levels of protection. Table 4 (derived from information on OSHA's website) compares these different levels; additional information may be found at the U.S. Department of Labor's OSHA webpage entitled "<u>General</u> <u>description and discussion of the levels of protection and protective gear</u>."

Level	<b>Respiratory Protection</b>	Dermal Protection	Purpose
Level A	Positive-pressure, full- face-piece, self- contained breathing apparatus (SCBA) or positive-pressure- supplied air respirator with escape SCBA approved by the National Institute for Occupational Safety and Health (NIOSH)	Totally encapsulating chemical protective suit, coveralls, outer and inner chemical-resistant gloves, and chemical- resistant boots with steel toe and shank	To deliver the greatest level of skin, respiratory, and eye protection
Level B	Positive-pressure, full- face-piece SCBA or positive-pressure- supplied air respirator with escape SCBA approved by NIOSH	Hooded chemical- resistant clothing, coveralls, outer and inner chemical-resistant gloves, and outer boots with chemical-resistant with steel toe and shank	To deliver the greatest level of respiratory protection but a lesser level of skin protection
Level C	Full-face or half-mask, air-purifying respirators approved by NIOSH	Hooded chemical- resistant clothing, coveralls, outer and inner chemical-resistant gloves, and outer boots with chemical-resistant with steel toe and shank	The concentration and type of airborne substance is known and criteria for using air- purifying respirators are met or OSHA first- receiver criteria is met
Level D		Coveralls; boots or shoes; additional optional items (gloves, hard hat, etc.)	To provide a work uniform affording minimal protection

Table 4:	Examples	of PPE by	y Level of	Protection
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# Decontamination

#### Introduction

Emergency plans should incorporate provisions for performing effective decontamination after a chemical agent release. Planners should address the personnel, resources, and procedures needed to ensure that decontamination

#### **CSEPP** Medical Resource Guide

actions will be timely and effective. The expenditure of decontamination resources will vary over the course of the emergency.

Considering decontamination of hazardous substances requires an understanding of the concepts of hazardous exposure vs. contamination with a hazardous substance. Patients exposed to a dangerous substance may suffer serious effects, but may not actually have the substance physically present on their skin, hair, or clothing when they are assessed and treated by medical care personnel. The key factor is the physical state of the contaminating substance. A patient who has been exposed to and breathed in chlorine gas, for example, may be in severe respiratory distress, but may no longer harbor any chlorine gas which could endanger care providers. A patient, in contrast, whose skin and clothing are covered with a corrosive solid or liquid chlorine compound has not only been exposed, but is physically contaminated with a substance that could be transferred to care personnel, causing additional exposure and injury. While residual gas or vapor may cause exposure of care providers, hazardous materials in a solid or liquid physical state are much more likely to require diligent decontamination to prevent secondary casualties.

To further illustrate the difference between hazardous exposure vs. contamination, consider the concept that applies to radiological hazards. A person who receives a chest x-ray, for example, has been exposed to ionizing radiation, but cannot spread radiation to anyone else. A person who has radioactive dust on his or her skin or clothing, however, can pass the source of radiation (the contamination) on to others.

During the response phase, when the critical objective is to minimize injury,

decontamination activities should focus on people, critical support animals (e.g., service animals), and essential equipment (e.g., ambulances) that may have been contaminated. All other animals and property suspected of being contaminated should be considered of secondary importance.

The need for decontamination is affected by the type of chemical agent released, its form (vapor or liquid),



and the quantity involved. Significant contamination is more likely to result from agent released in liquid (including droplet and aerosol) form than in vapor form. The remaining U.S. chemical stockpile consists of VX and GB (nerve agents) and H, HD, and HT (blister agents). Nerve agent GB presents little contamination hazard because it is not likely to be encountered in liquid form off-post and is not persistent. Nerve agent VX and mustard agents H, HD ,and HT, on the other hand, are more likely to be encountered in liquid form and are quite persistent; thus, they pose a greater potential for contamination. Only releases of very large amounts of chemical agent would result in hazardous levels of contamination in off-post areas.

Decontamination of a person has two objectives: minimization of the health effects to that person and prevention of the spread of contamination to other people. Minimizing the health effects to the contaminated person requires that decontamination be performed within the first few minutes of exposure. It is also important to prevent secondary contamination. To ensure that both of these aspects are addressed, decontamination plans should provide for immediate self-and buddy-decontamination by potentially contaminated individuals and for thorough decontamination at Army Installations.

Decontamination is an integral part of the treatment of people contaminated with nerve agent. A person exposed to low levels of nerve agent vapor may require only dry decontamination, which is removal of clothing, with or without the addition of hair washing, and some observation. A severe exposure to vapor or any exposure to a liquid nerve agent requires immediate wet decontamination. Significantly, symptomatic patients will require antidote administration and supporting medical attention.

Immediate decontamination is the only recognized method of reducing the health effects of exposure to mustard agent. Mustard agent is highly reactive chemically with living tissue, and the reaction is irreversible for all practical purposes. In addition, there is no known antidote for mustard poisoning. Army manuals that discuss therapy for various chemical warfare agents emphasize that immediate decontamination, within two minutes, is the best form of treatment for mustard agent exposure. Please refer to the Implementation Guidance Policy for Revised Airborne Exposures Limits for GB, GA, GD, GF, VX, H, HD, and HT.

#### **Decontamination Planning Checklist**

The EOP should contain guidance on decontamination. The plan should:

- Identify the agencies responsible for decontamination;
- Identify possible decontamination personnel and resource needs and formalize arrangements to address these needs;
- Set priorities that will be used to guide the assignment of decontamination personnel and resources;
- Specify how the Army and other Federal, state, and local agencies will cooperate in off-post decontamination;
- Include provisions to ensure that decontamination of potentially contaminated people is both timely (to minimize health effects to those people) and thorough (to minimize the spread of contamination to other people);
- Establish procedures for educating and informing the public of procedures for decontamination;
- Include plans for situating, staffing, and equipping decontamination sites providing an appropriate sequence of decontamination functions at all needed

locations (accessing sufficient supplies of non-contaminated water is particularly critical);

- Include provisions to train, equip, and clothe emergency medical personnel to safely decontaminate any injured person prior to placement of injured person in a transport vehicle;
- Include provisions for minimizing cross-contamination hazards presented by companion animals; and
- Identify officials and agencies responsible for establishing and implementing a strict quarantine of all potentially contaminated materials and property not immediately decontaminated.

#### **Decontamination Process**

General principles for guiding emergency responder policies, procedures, and actions after a chemical agent incident are the following:

- Eighty-five percent of decontamination is performed when clothing and personal effects are removed.
- Flush open wounds with sterile water and cover before general decontamination.
- Decontaminate with soap and water from the head down.
- Thoroughly wash hair and warm, moist areas of the body (i.e., axilla, groin).
- Limit contamination and potential spread of skin-borne bacteria—such as methicillin-resistant *Staphylococcus aureus* (MRSA)—by using copious amounts of water and separate sponges or washcloths for each person being decontaminated. These precautionary steps should also extend to training iterations and exercises.

#### **Gross Decontamination**

Firefighters have resources (aerial or other master-stream devices or hose lines) that many times are immediately available and can provide an expedient approach to mass decontamination by using large amounts of water in a low-pressure deluge. Temperature considerations that could increase the risk of hypothermia are an important component of decision-making processes before implementing this method.

#### **Casualty Prioritization for Decontamination**

Victims of chemical agent exposure can be sorted into ambulatory and nonambulatory triage categories and should be prioritized for decontamination. Ambulatory casualties are defined as victims able to understand directions, talk, and walk unassisted and are usually triaged as minimal. Non-ambulatory casualties are defined as victims who are unconscious, unresponsive, or unable to move unassisted. In addition, non-ambulatory victims may require airway management techniques, cervical spinal immobilization techniques, and/or fracture stabilization. Non-ambulatory victims also require additional decontamination personnel to provide thorough, safe decontamination.

#### **Technical Decontamination**

According to OSHA, all PPE-clad responders leaving a contaminated area should be appropriately decontaminated, and all contaminated clothing and equipment leaving a contaminated area should be appropriately disposed of or decontaminated. This process is commonly referred to as "technical decontamination."

#### **Decontamination Site Design**

Decontamination site design, other than at the incident site, should incorporate principles of zone identification and ingress/egress issues. Identification and clear demarcation of zones will prevent cross contamination hazards for patient treatment providers working in the cold zone. Figure 5 demonstrates a sample decontamination corridor with zone identification and directional flow of victims.



#### Figure 5: Sample Decontamination Site Design

#### **Incident Command System**

ICS is a management system for organizing emergency response developed in the 1970s by Firefighting Resources of Southern California Organized for Potential Emergencies (FIRESCOPE). The FIRESCOPE ICS was used as a foundation for NIMS development. NIMS provides a framework for including each individual agency's ICS in a formal reporting structure based upon the complexity and magnitude of the incident. The classic ICS framework comprises five functional areas: command, operations, planning, logistics, and finance/administration. Figure 6 gives an example of the top-level structure of a basic ICS framework.



#### Figure 6: Incident Command System Structure

According to OSHA, minimal ICS requirements for hazardous materials incidents include the assignment of an Incident Commander and a Safety Officer.

#### **Hospital Incident Command**

The Hospital Emergency Incident Command System (HEICS) was created by the California Emergency Management Services Authority and provided for the development of an incident command structure in healthcare facilities based on external agency incident command systems. HEICS was last revised on October 19, 2006 and renamed Hospital Incident Command System (HICS); the latest revision provides NIMS compliance. Figure 7 gives an example of the top-level structure of the HICS framework.

The key revisions include an additional command staff position, described below; updated and expanded job action sheets; NIMS compliant forms; hazard-specific planning (internal and external scenarios) and operational guidance; and information addressing NIMS compliance. Hospitals that choose to implement HICS meet some but not all of the NIMS requirements. HICS provides assistance with planning, responding, decision-making, and documentation. Information on HICS may be found in the <u>Hospital Incident Command System Guidebook</u>.

HICS command staff includes the Incident Commander, Liaison Officer, Public Information Officer, and Safety Officer. In addition, there is a position titled Medical Technical Specialist. This is actually a generic name for 10 potential consultants that may be assigned to the HCC as pertinent to the event. Those specialists designated by HICS include the following:

- Biological/infectious disease
- Chemical
- Radiological

- Clinic administration
- Hospital administration
- Legal affairs
- Risk management
- Medical staff
- Pediatric
- Medical ethicist



**Figure 7: Hospital Incident Command Structure** 

# NIMS Implementation Activities for Hospitals and Healthcare Systems

NIMS implementation activities for hospitals and healthcare systems were most recently revised in 2007. All hospitals and healthcare systems receiving federal preparedness and response grants, contracts, or cooperative agreements (e.g., Bioterrorism Hospital Preparedness Program, DHS grants) must work to implement NIMS. Hospital and healthcare systems are defined as all facilities that receive medical and trauma emergency patients on a daily basis. These facilities do not include non-hospital receivers (e.g., nursing homes, assisted-living communities, long-term care facilities, and specialty hospitals such as psychiatric or rehabilitation facilities).

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NIMS implementation activities for hospital and healthcare systems are as follows:

- Organizational Adoption
  - Adoption of NIMS
- Command and Management
  - ICS
  - Multi-Agency Coordination System (MACS)
  - Public Information System (PIS)
  - Preparedness Planning
  - NIMS Implementation Tracking
  - Preparedness Funding
  - Revise and Update Plans
  - MAAs
- Preparedness Training
  - IS 700 NIMS
  - IS 800 NRF
  - IS 100 and 200
- Preparedness Exercises
  - Training and Exercises
  - All-Hazard Exercise Program
  - Corrective Actions
- Resource Management
  - Response Inventory
  - Resource Acquisition
- Communication and Information Management
  - Standard and Consistent Terminology

#### Incident Recovery

The phases of a chemical event are not distinct and do not identify a single point in time when all response phase actions terminate and recovery phase actions begin. Not only do phases overlap, recovery planning should commence during the response phase. Recovery medical services include preventing disease, treating victims acutely affected by the chemical event, and assisting community recovery via long-term physical and mental health services. Jurisdictions should also ensure that tracking a surveillance of chronic health effects in affected



populations is addressed. Guidelines for medical services during recovery are listed in Section 2.6 of the <u>Recovery Plan Workbook</u> located on the CSEPP Portal, which also contains comprehensive information on incident recovery.

# **Step 3: Learning Strategies**

#### Introduction

This section identifies best practices and opportunities for improvement identified through CSEPP community exercises and after-action discussions, which provide unique opportunities to develop innovative ideas and reveal concerns.

The Best Practices section of the Medical Resource Guide is compiled from strengths that have been identified in annual CSEPP community federal exercises and documented in exercise report processes; it is a resource for all CSEPP communities to use to improve the management of chemical casualties. The Opportunities for Improvement section of the Medical Resource Guide is generated from common concerns identified in annual CSEPP community federal exercises and documented in exercise report processes; it provides guidance for CSEPP communities in their planning process.

# **Best Practices**

- Evaluation of past CSEPP community exercises has identified best practices related to:
  - Support
    - Critical incident stress management provided by trained mental health professionals
    - Spiritual support by facility chaplain
  - Antidote administration time documented on armband
  - Medical screening performed and documented at shift onset to expedite PPE dress-out time
  - Preliminary decontamination performed with an aerial master stream device
  - Communication
    - Overhead page to limit non-critical telephone usage
    - Facility operator had scripted release and telephone number to give to callers
    - Pre-recorded decontamination direction via a public address system at the entry to the decontamination site
  - Treatment
    - All-hazards approach to victims who were scanned with a radiation detection device

• Laminated posters identified signs and symptoms of nerve-agent exposure and treatment protocols

# **Opportunities for Improvement**

Opportunities for improvement include some common issues identified below. Common issues are also identified in the CETAT database.

- Antidote administration
  - Lack of DuoDote
  - Lack of diluent to reconstitute 2PAM CL (in bulk doses)
  - Lack of sharps containers to dispose of used needles
- Personal Protective Equipment
  - Improper maintenance, care, and use of respirators, e.g., dead batteries, lack of replacement batteries, storage plugs left on filters
  - PPE worn during decontamination set-up promoting heat stress for responders
  - Work/rest cycles not observed and PPE stay times too long, promoting heat stress for responders
  - Lack of medical screening
  - Lack of respiratory protection program
  - Interaction with victims prior to decontamination while not wearing PPE
  - Lack of documentation of training records for decontamination team
  - Lack of back-up decontamination team
  - Lack of appropriate levels of PPE led to an inability to properly staff decontamination team
- Decontamination
  - Lack of establishment of control zones resulting in unprotected responders entering warm and hot zone
  - Use of bleach as decontamination liquid
  - Lack of privacy in decontamination area
  - Lack of appropriate water temperature promoting hypothermia in victims
- Treatment
  - Lack of pre-decontamination triage
  - Lack of adequate assessment/treatment performed prior to decontamination

- Unsafe patient movement techniques, i.e., not securing patients to backboard
- Tracking
  - Lack of patient tracking system
  - Lack of system for tracking personal belongings
- Incident Command System
  - Failure to designate a Safety Officer

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# Acronyms and Abbreviations

2PAM CL	pralidoxime chloride
AOA	American Osteopathic Association
ASPR	Assistant Secretary for Preparedness and Response
CAI	chemical accident or incident
CAIRA	chemical accident or incident response and assistance
САН	critical access hospital
CAP	Corrective Action Program
CETAT	CSEPP (Chemical Stockpile Emergency Preparedness
	Program) Exercise and Training Analysis Tool
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
СМА	Chemical Materials Agency
CMS	Center for Medicaid and Medicare Services
CNS	central nervous system
CONOPS	concept of operations
CPG	Comprehensive Preparedness Guide
CSEPP	Chemical Stockpile Emergency Preparedness Program
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
DHHS	U.S. Department of Health and Human Services
DHS	U.S. Department of Homeland Security
DOD	U.S. Department of Defense
DNVHC	Det Norske Veritas Healthcare, Inc.
EAA	Event Administering Authority
EC	Environment of Care (JC specific standard)
EEG	exercise evaluation guide
EMAC	Emergency Management Assistance Compact
EMI	Emergency Management Institute
EMS	emergency medical services or system
EMTALA	Emergency Medical Treatment and Labor Act
EOC	emergency operations center
EOP	emergency operations plan
EPA	Environmental Protection Agency
ERO	emergency response outcome
ESF	emergency support function
F	field
FE	functional exercise
FEMA	Federal Emergency Management Agency
FIRESCOPE	Firefighting Resources of California Organized for
	Potential Emergencies
FME	federally managed exercise
FRCA	Finding Requiring Corrective Action
FSE	full-scale exercise
FY	Fiscal Year
GA	nerve agent (Tabun)

GB	nerve agent (Sarin)
GD	nerve agent (Soman)
Н	mustard-blister agent
HAZWOPER	hazardous waste operations and emergency response
HCC	Hospital Command Center
HEICS	Hospital Emergency Incident Command System (now the
	Hospital Incident Command System [HICS])
HFAP	Healthcare Facilities Accreditation Program
HICS	Hospital Incident Command System
HIPAA	Health Insurance Portability and Accountability Act
HSPD	Homeland Security Presidential Directive
HD	mustard-blister agent
HT	mustard (thickened)-blister agent
IAP	incident action plan
ICS	Incident Command System
IGA	Intergovernmental or interagency agreement
IM	intramuscular
IMT	Incident Management Team
IPT	integrated process team
IRZ	immediate response zone
IS	independent study
ISO	International Organization for Standardization
ISSA	Interservice or intraservice support agreement
IV	intravenous
JC	Joint Commission
JIC	Joint Information Center
JIS	Joint Information System
JumpSTART	Jump simple triage and rapid treatment
MAA	mutual-aid agreement
MACS	Multi-Agency Coordination System
MEG	Medical Evaluation Guideline
mg	milligram
MIPT	medical integrated process team
ml	milliliter
MOA	memorandum of agreement
MOU	memorandum of understanding
MRSA	methicillin-resistant <i>Stanhylococcus aureus</i>
NIAHO	National Integrated Accreditation for Healthcare
	Organizations
NIC	National Integration Center
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety and Health
NRF	National Response Framework
NRP	National Response Dian
	organophosphate
OF	Organophosphate
USHA	Occupational Safety and Health Administration

PIS	Public Information System
PPE	personal protective equipment
SCBA	self-contained breathing apparatus
SNS	Strategic National Stockpile
START	simple triage and rapid treatment
TTX	table-top exercise
VX	nerve agent

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# **Medical Resources and References**

#### **Books and Articles**

Some of these articles are available from fee-based organizations. Books are also fee-based items.

American Society of Testing Materials International. (2009). *Standard guide for hospital preparedness and response*. Author: West Conshohocken, PA.

Amlôt, R., Larner, J., Matar, H., Jones, D. R., Carter, H., Turner, E. A., et al. (2010). Comparative analysis of showering protocols for mass-casualty decontamination. *Prehospital and Disaster Medicine*, *25*(5), 435–439.

Arad, M., Epstein, Y., Krasner, E., Danon, Y. L., & Atsmon, J. (1991). Principles of respiratory protection. *Israel Journal of Medical Sciences*, 27(11-12), 636–342.

Baker, D. J. (1999). The pre-hospital management of injury following mass toxic release. A comparison of military and civil approaches. *Resuscitation*, 42(2), 155–159.

Borak, J., & Sidell, F. R. (1992). Agents of chemical warfare: Sulfur mustard. *Annals of Emergency Medicine*, *21*(3), 303–308.

Breeding, D. C. (1998). Issues in glove selection. *Occupational Health and Safety*. 67(5), 60-64, 66, 68 passim.

Centers for Disease Control and Prevention. (2002). *Crisis and emergency risk communication*. Author: Atlanta, GA.

Chemical Stockpile Emergency Preparedness Program. (1999). *Memorandum of agreement and memorandum of understanding (MOU/MOA) guide*. Argonne National Laboratory: Argonne, IL.

Clarke, S. F., Chilcott, R. P., Wilson, J. C., Kamanyire, R., Baker, D. J., & Hallett, A. (2008). Decontamination of multiple casualties who are chemically contaminated: A challenge for acute hospitals. *Prehospital and Disaster Medicine*, *23*(2), 175–181.

Dunn, M. A., & Sidell, F. R. (1989). Progress in medical defense against nerve agents. *Journal of the American Medical Association*, 262(5), 649–652.

Fatz, R. J. (2004, June 18). *Implementation guidance policy for new airborne exposures limits for GB, GA, GD, GF, VX, H, HD, and HT* (memorandum). Retrieved September 12, 2011, from <u>http://www.hnd.usace.army.mil/safety/organization/Implementation%20Guidance</u> %20Policy%20for%20New%20AELs%20(w-AMC%20Supplement).pdf Freyberg, C. W., Arquilla, B., Fertel, B. S., Tunik, M. G., Cooper, A., Heon, D., et al. (2008). Disaster preparedness: Hospital decontamination and the pediatric patient—guidelines for hospitals and emergency planners. *Prehospital and Disaster Medicine*, *23*(2), 166–173.

Jane's Information Group. (2003). *Jane's chem-bio handbook* (2nd ed.). Author: Coulsdon, Surrey, United Kingdom.

Krenzelok, E. P., Allswede, M. P., & Mrvos, R. (2000). The poison center role in biological and chemical terrorism. *Veterinary and Human Toxicology*, 43(5), 297–300.

Gervais, J. (2006). Emergency management: What's new? *Nursing Management*, *37*(7): 13.

Hall, H. I., Dhara, V. R., Kaye, W. E., & Price-Green, P. (1996). Public health consequences of hazardous substance releases. *Toxicology and Industrial Health*, *12*(2), 289–293.

Hendler, I., Nahtomi, O., Segal, E., Perel, A., Wiener. M., & Meyerovitch, J. (2000). The effect of full protective gear on intubation performance by hospital medical personnel. *Military Medicine*, *165*(4), 272–274.

Holstege, C. P., Kirk, M., & Sidell, F. R. (1997). Chemical warfare. Nerve agent poisoning. *Critical Care Clinics*, 13(4), 923–942.

Joint Commission. (2010). 2011 comprehensive accreditation manual for hospitals (CAMH): The official handbook. Author: Oakbrook Terrace, IL.

Marklund, L. A., Graham, A. M., Morton, P. G., Hurst, C. G., Motola, I., Robinson, D. W., et al. (2010). Collaboration between civilian and military healthcare professionals: A better way for planning, preparing, and responding to all-hazard domestic events. *Prehospital and Disaster Medicine*, 25(5), 399–412.

Merrill, D. G., & Mihm, F. G. (1982). Prolonged toxicity of organophosphate poisoning. *Critical Care Medicine*, *10*(8), 550–551.

Merritt, N., & Anderson, M. J. (1989). Malathion overdose: When one patient creates a departmental hazard. *Journal of Emergency Nursing*, 15(6), 463–465.

Munro, N. B., Watson, A. P., Ambrose, K. R., & Griffin, G. D. (1990). Treating exposure to chemical warfare agents: Implications for healthcare providers and community emergency planning. *Environmental Health Perspectives*, 89, 205–215.

Momeni, A. Z., Enshaeih, S., Meghdadi, M., & Amindjavaheri, M. (1992). Skin manifestations of mustard gas: A clinical study of 535 patients exposed to mustard gas. *Archives of Dermatology*, *128*(6), 775–780.

Nakajima, T., Ohta, S., Fukushima, Y., & Yanagisawa, N. (1999). Sequelae of sarin toxicity at one and three years after exposure in Matsumoto, Japan. *Journal of Epidemiology*, *9*(5), 337–343.

Okudera, H., Morita, H., Iwashita, T., Shibata, T., Otagiri, T., Kobayashi S., et al. (1997). Unexpected nerve gas exposure in the city of Matsumoto: Report of rescue activity in the first sarin gas terrorism. *American Journal of Emergency Medicine*, *15*(5), 527–528.

Okumura, T., Suzuki, K., Fukuda, A., Kohama, A., Takasu, N., Ishimatsu S., et al. (1998). The Tokyo subway sarin attack: Disaster management, Part 1: Community emergency response. *Academic Emergency Medicine*, *5*(6), 613–617.

Okumura, T., Suzuki, K., Fukuda, A., Kohama, A., Takasu, N., Ishimatsu S., et al. (1998). The Tokyo subway sarin attack: Disaster management, Part 2: Hospital response. *Academic Emergency Medicine*, *5*(6), 618–624.

Petinaux, B. (2009). Financial burden of emergency preparedness on an urban, academic hospital. *Prehospital and Disaster Medicine*, 24(5), 372–375.

Savoia, E., Biddinger, P. D., Burstein, J., & Stoto, M. A. (2010). Inter-agency communication and operations capabilities during a hospital functional exercise: Reliability and validity of a measurement tool. *Prehospital and Disaster Medicine*, *25*(1), 52–58.

Sidell, F. R., & Borak, J. (1992). Chemical warfare agents: II. Nerve agents. *Annals of Emergency Medicine*, 21(7), 865–871.

Sidell, F. R. (1990). What to do in case of an unthinkable chemical warfare attack or accident. *Postgraduate Medicine*, 88(7), 70-84.

Smith, W. J., & Dunn, M. A. (1991). Medical defense against blistering chemical warfare agents. *Archives of Dermatology*, *127*(8), 1207–1213.

Tafuri, J., & Roberts, J. (1987). Organophosphate poisoning. *Annals of Emergency Medicine*, *16*(2), 193–202.

United States Department of Health and Human Services. (2011). *Critical Access Hospitals*. Retrieved December 21, 2011, from https://www.cms.gov/center/cah.asp.

#### **CSEPP** Medical Resource Guide

United States Department of Health and Human Services. (2005). *Hurricane Katrina Bulletin: HIPAA Privacy and Disclosures in Emergency Situations*. Retrieved December 12, 2011, from <a href="https://www.cms.gov/Emergency/Downloads/katrinahipaapolicy.pdf">https://www.cms.gov/Emergency/Downloads/katrinahipaapolicy.pdf</a>.

Vogt, B. M., & Sorenson, J. H. (2002). *How clean is safe? Improving the effectiveness of decontamination of structures and people following chemical and biological incidents.* Oak Ridge National Laboratory: Oak Ridge, TN.

Weinbroum, A. A., Rudick, V., Paret, G., Kluger, Y., & Ben Abraham, R. (2000). Anaesthesia and critical care considerations in nerve agent warfare trauma casualties. *Resuscitation*, 47(2), 113–123.

Wright, P. (1991). Injuries due to chemical weapons. *British Medical Journal*, 302(6770), 239.

Yokoyama, K., Araki, S., Murata, K., Nishikitani, M., Okumura, T., Ishimatsu, S., et al. (1998). Chronic neurobehavioral and central and autonomic nervous system effects of Tokyo subway sarin poisoning. *Journal of Physiology, Paris, 92*(3-4), 317–323.

### **Resources and References Available as CD-ROMs and DVDs**

Agency for Toxic Substances and Disease Registry. (2003). *Managing hazardous materials incidents, including ToxFAQs*<sup>TM</sup>. CD-ROM. Author: Atlanta, GA.

National Institute for Occupational Safety and Health. (2005). *Pocket guide to chemical hazards and other databases*. CD-ROM. Author: Washington, DC.

Chemical Stockpile Emergency Preparedness Program (CSEPP) programmatic, medical, protective action, and public affairs training materials in video format are available on the following website: www.emc.ornl.gov/CSEPPweb/CSEPPTraining.html

#### **Resources and Reference Web Links**

American Osteopathic Organization: http://www.osteopathic.org

Centers for Medicare and Medicaid Services: https://www.cms.gov

Chemical Stockpile Emergency Preparedness Program (CSEPP) Portal: <u>https://www.cseppportal.net</u>

Det Norske Veritas hospital standards: <u>http://dnvaccreditation.com/pr/dnv/register-download.aspx</u>

Emergency Management Assistance Compact (EMAC): http://www.emacweb.org

Emergency Medical Treatment and Active Labor Act (EMTALA): <a href="https://www.cms.gov/EMTALA">https://www.cms.gov/EMTALA</a>

Environmental Protection Agency (EPA): http://www.epa.gov

Federal Emergency Management Agency (FEMA): http://www.fema.gov

Federal Emergency Management Agency (FEMA) Chemical Stockpile Emergency Preparedness Program (CSEPP) resource: <u>http://orise.orau.gov/CSEPP</u>

Federal Emergency Management Agency (FEMA) NIMS Training: http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm

Firefighting Resources of California Organized for Potential Emergencies (FIRESCOPE): <u>http://www.firescope.org</u>

Health Insurance Portability and Accountability Act (HIPAA) privacy and security rules: <u>http://www.hhs.gov/ocr/privacy</u>

Healthcare Facilities Accreditation Program (HFAP): http://www.hfap.org

Hospital Incident Command System (HICS): http://www.emsa.ca.gov/HICS

Joint Commission: http://www.jointcommission.org

JumpSTART Pediatric MCI Triage Tool: http://www.jumpstarttriage.com

National Incident Management System (NIMS): http://www.fema.gov/pdf/emergency/nims/NIMSWhatsNew.pdf

National Response Framework (NRF): http://www.fema.gov/emergency/nrf

START Triage information: http://www.start-triage.com

U.S. Army Chemical Materials Agency: http://www.cma.army.mil

U.S. Army Materiel Command: http://www.army.mil/info/organization/unitsandcommands/commandstructure/amc/

U.S. Army Soldier and Biological Chemical Command. (2003). *Guidelines for Mass Casualty Decontamination During a Terrorist Chemical Agent Incident*: <u>http://www.edgewood.army.mil/downloads/cwirp/ECBC\_cwirp\_gls\_mass\_casualty\_decon.pdf</u>

U.S. Department of Homeland Security: http://www.dhs.gov

# **CSEPP Emergency Management State Web-based Resources**

References are for states still active in CSEPP as of February, 2012.

#### Colorado

http://www.pueblosheriff.org/esb/ http://county.pueblo.org/government/city/department/pueblo-city-county-healthdepartment/csepp http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251595684909

#### Kentucky

http://kyem.ky.gov/ http://www.madison-county-ema.com http://chfs.ky.gov/dph/

# Additional Resources Referenced or Linked in This Guide

California Emergency Medical Services Authority (EMSA). (2006). *Hospital Incident Command System Guidebook*. http://www.emsa.ca.gov/HICS/files/Guidebook glossary.pdf.

Chemical Stockpile Emergency Preparedness Program (CSEPP). CSEPP Portal: Legacy. <u>https://www.cseppportal.net/subsites/Legacy.aspx</u>.

Chemical Stockpile Emergency Preparedness Program (CSEPP) (2008). *CSEPP Planning Guidance*.

https://www.cseppportal.net/CSEPP\_Portal\_Resources/CSEPP\_Planning\_Guidan ce\_rev\_June\_2008.pdf.

Chemical Stockpile Emergency Preparedness Program (CSEPP) (2008). *CSEPP Programmatic Guidance*. <u>https://www.cseppportal.net/CSEPP\_Portal\_Resources/CSEPP\_Programmatic\_G</u> <u>uidance\_rev\_June\_2008.pdf</u>.

Chemical Stockpile Emergency Preparedness Program. (2009). *Exercise Policy & Guidance*. Change 1, October 15, 2009. https://www.cseppportal.net/CSEPP\_Portal\_Resources/Blue\_Book\_6-19-09\_change1\_15Oct09.pdf.

Chemical Stockpile Emergency Preparedness Program. (2000). *Off-Post Medical Preparedness Capability*. CSEPP Policy Paper 15, Revised.

Chemical Stockpile Emergency Preparedness Program (CSEPP). *Recovery Plan Workbook*. <u>https://www.cseppportal.net/default.aspx</u>.

Centers for Disease Control and Prevention, Public Health Service. (1995). *CDC Recommendations for Civilian Communities Near Chemical Weapons Depots: Guidelines for Medical Preparedness*. Federal Register. Vol. 60, No.123. http://www.gpo.gov/fdsys/pkg/FR-1995-06-27/pdf/95-15657.pdf.

Centers for Disease Control and Prevention, Office of Public Health Preparedness and Response. (2011). *Public Health Preparedness Capabilities: National Standards for State and Local Planning*. <u>http://www.cdc.gov/phpr/capabilities/Capabilities\_March\_2011.pdf</u>.

Federal Emergency Management Agency. (2010). *Developing and Maintaining Emergency Operations Plans: Comprehensive Preparedness Guide (CPG) 101.* Version 2.0. <u>http://www.fema.gov/pdf/about/divisions/npd/CPG\_101\_V2.pdf.</u>

Emergency Support Function (ESF) 8. (2008). *Public Health and Medical Services Annex*. <u>http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf</u>.

Federal Emergency Management Agency. (2007).*NIMS Implementation Activities for Hospital and Healthcare Systems Implementation FAQs*. http://www.fema.gov/pdf/emergency/nims/hospital\_faq.pdf.

Federal Emergency Management Agency. NIMS Resource Center: NIMS Training. http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm.

Joint Commission. (2008). Standards FAQ Details. <u>http://www.jointcommission.org/standards\_information/jcfaqdetails.aspx?StandardsFAQId=70&StandardsFAQChapterId=63</u>.

Meridian Medical Technologies. (2007). *Guidelines and Injection Instructions for DuoDote™ Auto-Injector*. <u>http://www.doh.state.fl.us/demo/ems/DuoDotePPT-</u> <u>Guidelines\_Scientific3F.pdf</u>.

Occupational Safety and Health Administration (OSHA). (2005). *Best Practices for Hospital-Based First Receivers of Victims from Mass Casualty Incidents Involving the Release of Hazardous Substances*. OSHA 3249-08N. http://www.osha.gov/Publications/osha3249.pdf.

Occupational Safety and Health Administration (OSHA). "General description and discussion of the levels of protection and protective gear." Occupational Safety and Health Standards. Standard Number: 1910.120 App B. http://www.osha.gov/pls/oshaweb/owadisp.show\_document?p\_table=STANDAR DS&p\_id=9767

#### **CSEPP** Medical Resource Guide

Radiation Emergency Medical Management (REMM), United States Department of Health and Human Services. "START Adult Triage Algorithm." http://www.remm.nlm.gov/startadult.htm.

United States Department of the Army. (2003). *Chemical Accident or Incident Response and Assistance (CAIRA) Operations*. DA PAM 50-6. http://www.apd.army.mil/pdffiles/p50\_6.pdf.

United States Department of the Army. (2004). "<u>Implementation Guidance Policy</u> for Revised Airborne Exposures Limits for GB, GA, GD, GF, VX, H, HD, and <u>HT</u>."

http://www.hnd.usace.army.mil/safety/organization/Implementation%20Guidance %20Policy%20for%20New%20AELs%20%28w-AMC%20Supplement%29.pdf.

United States Department of Health and Human Services. (2005). "Hurricane Katrina Bulletin: HIPPA Privacy And Disclosures In Emergency Situations." <u>http://www.hhs.gov/ocr/privacy/hipaa/understanding/special/emergency/katrinanh ipaa.pdf</u>.

United States Department of Homeland Security. (2008). *National Response Framework*. <u>http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf</u>.