

RESPONSE PHASE DECONTAMINATION FOR CSEPP[©] TRAINING GUIDE

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Based on
CSEPP Planning Guidance Appendix L

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Introduction

Decontamination should be considered an integral part of the necessary planning for emergency response. Adherence to the response phase decontamination guidelines will reduce the potential for injury and save lives during the emergency response phase immediately following a significant agent release. Decontamination (decon) of people exposed to chemical agent must begin in the first stages of response, possibly concurrently with the implementation of protective actions.

Target Audiences

Training materials have been designed to prepare personnel to perform the functions identified in Appendix L on Response Phase Decontamination for the Chemical Stockpile Emergency Preparedness Program (CSEPP) Planning Guidance and Standards. After analysis of the CSEPP Planning Guidance on Response Phase Decontamination, the following personnel were targeted for training materials: program participants, decon station personnel, emergency medical personnel, and CSEPP trainers. This document has been prepared to assist the trainer in preparing all personnel to perform their job functions related to decon.

This document is divided into sections. The Introduction explains why decon is important and who should be trained in decon. The next section provides basic information on what decon is. Also addressed in this section is how the new Response Phase Decontamination Standards of the CSEPP Planning Guidance affect local procedures. The next sections discuss how training has been developed for performing self and buddy decon; decon station procedures; decon by emergency medical personnel; and a planner's checklist for use in planning for decon within the CSEPP framework.

Why Is This Important?

Remember that adherence to the decontamination guidelines will save lives during the emergency response phase immediately following a significant agent release. Immediate decon of persons is the best defense against chemical agent effects.

What is Meant by Response and Recovery Phase?

The phases of a chemical event are not distinct. There is no single point in time when all response phase actions terminate and recovery phase actions begin. These actions overlap through much of the event. The following definitions are provided to all planners

to assign responsibilities and eliminate duplication in their plans. Though many of these activities may take place in both phases, Appendix L specifically addresses the Response Phase.

Response Phase

The response phase of a chemical agent event covers the initial action in response to an actual or potential chemical agent release. It covers the actions taken to eliminate the source of the release, lifesaving measures for affected personnel, safety measures for potentially affected personnel, and initial security measures taken to preclude the exposure of additional personnel.

The response phase covers the period from the initial recognition of an actual or possible chemical agent event until all of the following actions have been accomplished:

- The source of the chemical agent event is no longer discharging new chemical agent into the environment. Residual contamination may exist, and the residual contamination may still be a hazard.
- All personnel requiring medical attention beyond first aid have entered into the medical care system.
- There is no additional (new) risk to the public. This can be due to the reduction of the hazard, evacuation of the hazard area, or both actions.
- Security measures are in place to ensure the personnel will not inadvertently enter the hazard area.

Recovery Phase

The recovery phase is the period from the end of the response phase until

- The affected area can be reoccupied without protective equipment, and there is not present a short- or long-term health risk to humans.
- Other typical operations, (e.g., agriculture, grazing livestock) can be conducted without any restrictions stemming from the chemical event.

The recovery phase is covered by Appendix M.

Phase Objectives

The response phase objectives are:

- Lifesaving and minimization of injury to personnel.
- Preventing the spread of contamination to key response elements and facilities (e.g., shelters, ambulances and hospitals).

The recovery phase objectives are:

- Reduction of hazard to the level where unrestricted use of facilities, lands, and waters are possible without risk to human health.

Key Concepts

The most important points to remember are:

- In order for decontamination to be effective, it must be done immediately and it must be done right.
- The most likely place to perform decontamination of people is at the scene: often this is self and buddy decon.

General Decontamination Procedures:

- Undiluted household bleach is the recommended solution for removing and neutralizing the nerve/blister agent.
- Blot, don't wipe. Rinse with water afterwards.
- Handle contaminated clothing and other personal items carefully.

What is Decontamination

“Decontamination” means to reduce or remove contamination. For the purposes of this guide, decontamination (decon) focuses on eliminating, or reducing, the harmful effects caused by exposure to nerve or blister agents.

Any method of decontamination is based on one or more of the following principles:

- destroy the agent by bringing about a chemical change (neutralizing);
- remove the agent;
- shield the agent physically so that it cannot harm anyone.

Decontamination is defined in Sect. 10 of the CSEPP Planning Guidance and in *Chemical Accident or Incident Response and Assistance (CAIRA) Operations* (Dept. of the Army 1991) as “the process of decreasing the amount of chemical agent on any person, object, or area by absorbing, neutralizing, destroying, ventilating, or removing chemical agents” to a safe level. The response phase decon standards use this definition in addressing decon for which the primary purpose is to eliminate an immediate threat to human life.

The Cause Of Injury: The Agent

Keep in mind during this training that the cause of the injury is a chemical warfare agent. If the cause of injury was fire, electricity, or some other life threatening mechanism, your most immediate action would be to remove yourself or others from the cause of the injury. With chemical agents you must not only remove yourself and others from the agent source, but you must also remove agent from contaminated personnel.

In order to accomplish this, your decon tactics must be two-fold: (1) remove people from the environment containing the agent, and (2) remove the agent from the people by getting the agent off the individuals and neutralizing what is already on the skin at the same time. This is accomplished by following decon procedures, as described in Appendix L of the CSEPP Planning Guidance and Standards.

CSEPP Decontamination Standards

The CSEPP Decontamination Standards are **planning standards**, not operational standards; and therefore address **how to plan for decon** in the event of a significant chemical agent release. They address priorities and procedures for decon planning, but do not provide specific identification of the sites or areas that may require decon capability or policy on provision of resources to those locations. These policies and guidelines may be affected by the results of ongoing studies regarding liquid agent deposition.

This planning, and the standards, must include several categories of decon targets. For example, the standards include planning requirements for the treatment (handling, decontamination, or disposal) of the following categories:

- people
- essential equipment (e.g., ambulances)
- other requirements (will be accomplished during the recovery phase)

Undoubtedly the most important and urgent decon issue is the first category listed above: people. This category is covered by the Response Phase Decontamination Standards and will always be the focus of this training.

With the exception of decon of people and possibly animals that provide critical support to humans (e.g., Seeing Eye dogs), extensive decon efforts would not be required for most chemical agent release scenarios. Only liquid releases (including droplet and aerosol releases) of chemical agent pose the risk of significant environmental contamination; vapor is generally not considered a significant source of contamination that poses an immediate threat to human health. Hazardous contamination from a vapor release would be limited to materials, such as clothing, in contact with or in very close proximity to the human body and should be best dealt with during personal decon. Because agent in liquid form (droplet and aerosol) usually settles out of the atmosphere relatively quickly, significant contamination would generally be confined to a short distance from the point of release. Off-post contamination presenting a significant risk to the public would most likely occur only in the event of a very large liquid release in the atmosphere—a type of event that is not evident in the planning base.

How To Decontaminate People

When dealing with people who have been exposed to an agent, there are two important criteria:

- **do it fast, and**
- **do it right.**

Do It Fast

Unfortunately, the presence of chemical agent on a person's skin, hair, or clothing is often not readily apparent. Tests to determine the presence of contamination take time; yet **personal decon must be undertaken immediately if health consequences are to be minimized.** The standards recommend that all people in areas at risk of exposure to agent be trained to decontaminate themselves and the people around them within minutes after an exposure to chemical agent (i.e., self- and buddy-aid).

This first criterion is quite significant to emergency medical personnel: decon treatment ranks high on the first-aid priority list. There is no time to transport or wait for help; **decon must begin immediately.**

The toxic properties of nerve and mustard are destroyed by contact with household bleach over a period of time. Household bleach neutralizes both nerve and blister agents. On average, decon for one person takes one (1) gallon of bleach. The most desirable decon solution is bleach; in the absence of bleach, a good expedient method would be to the use of lots of (lukewarm) soapy water. **CAUTION:** Bleach solution is never used in, or around, the eyes; use plain water instead. The household bleach should be rinsed from the person with clean water.

Do It Right

The other criteria for effective decon concerns thoroughness—it must be done right. Effective decon is critical not only in minimizing the adverse health effects to the exposed person but also in avoiding secondary or cross-contamination. Cross-contamination could result in exposure to the care provider, another person, or the already exposed person (being re-exposed after being decontaminated).

To assist in ensuring thorough decon of all exposed people, the standards call for the establishment of official decon stations staffed by trained personnel with ready access to all equipment and materials needed to decon, monitor, and care for exposed persons. **The ability of decon stations to reduce toxic response is severely limited because of the time lag between agent exposure and the exposed person's arrival at the station; therefore, expedient self and buddy decon should precede the thorough supervised decon unless the exposed person has immediate access to the decon station.**

Decontamination Priorities

The local decon plan will include a list of priorities for decon or other treatment of people to guide the allocation of resources in the aftermath of a chemical agent release producing contamination. The organization(s) responsible for the decon of each category of people will be identified. The responsible organizations may include departments of the jurisdiction's government, agencies of other levels of government (e.g., the Army or the state government), private contractors, or volunteers.

People will be decontaminated first, and essential equipment, e. g., ambulances, will be given second priority. Other requirements will be accomplished during the Recovery Phase. Decontamination during the Recovery Phase will be addressed in Appendix M of the CSEPP Planning Standards.

The priority for the decon of people is outlined in the Response Phase Decontamination Standards. The following suggests, in descending order of urgency, the categories for victims of agent exposure:

- People who are known or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury.
- People who are exhibiting signs/symptoms of agent exposure.
- People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention.
- People who are suspected of being contaminated but show no signs of agent toxicity.

Animals that are known or suspected to be contaminated that provide critical support to humans (e.g., Seeing Eye dogs) should also be decontaminated.

Self And Buddy Decontamination

Self and Buddy Decontamination, as the name implies, means that a person decontaminates him/herself or teams up with another and the two decontaminate each other. Anything you can do to quickly reduce the amount of agent contamination on your own or your buddy's body is far better than waiting to be "officially" decontaminated by special decontamination personnel. Effective decontamination is critical not only in minimizing the adverse health effects to the exposed person but also in preventing the spread of agent contamination to other people or objects.

The unit on Self and Buddy Decontamination is appropriate for a CSEPP audience or program participant. The training plan and materials for this unit are contained in Appendix A of this document.

Decontamination Station Operation

A personnel decontamination station is to be established at each reception center, at each host hospital identified in the evacuation plan, and at other locations as needed. Personnel at the decontamination station will impound and secure potentially contaminated vehicles brought by evacuees and thoroughly decontaminate potentially contaminated evacuees and injured persons. Personnel serving at these stations must be trained, equipped, and clothed to decontaminate potentially contaminated people while incurring minimal risk of self-contamination.

The unit containing the training directed toward decontamination station personnel can be found in Appendix B of this document.

Decontamination By Emergency Medical Personnel

Emergency medical personnel should be trained, equipped, and clothed to safely decontaminate any injured person suspected of being contaminated before placing the person into a vehicle for transport to a care facility. Emergency medical personnel should decontaminate injured persons even if they have already performed self or buddy decontamination.

The unit in Appendix C of this document provides training for emergency medical personnel to meet this standard.

Decontamination Planning

Appendix L of the CSEPP Planning Guidance provides standards on **how to plan for decon** in the event of a significant chemical agent release. As such, it addresses priorities and procedures for decon planning. However, these planning standards provide neither policy on provision of resources, nor specific identification of the sites or areas that may require decon capability. The CSEPP planner must develop a decon plan as a part of the overall emergency plan. Formal training in how to prepare a decon plan is not necessary, but Appendix D of this document provides a Planner's Checklist for Decontamination Planning and some related materials that might be useful in an overview of the planning function: vu-graphs or slides, and review questions. In addition, the planner might benefit from review of the training materials prepared for those expected to perform decon or from taking the Decontamination training.

References and Additional Training Resources

If you are using these materials in a stand-alone environment, as opposed to teaching them as a part of the ACT FAST or Chemical Awareness courses, you may want to use the video listed below as a part of your training. It might be useful to review the materials from these courses as a good information resource on why decontamination is suggested for CSEPP programs.

Copenhaver, E. D., A. P. Watson, et al., *Chemical Stockpile Agent Characteristics and Effects (Video)*, , Oak Ridge National Laboratory, Oak Ridge, TN, January, 1993.

Copenhaver, E. D., A. P. Watson and E. Sample, *ACT FAST: Agent Characteristics and Toxicology, First Aid and Special Treatment*, ORNL/M-2097, Oak Ridge National Laboratory, Oak Ridge, TN, June 1992.

Copenhaver, E. D., A. P. Watson (ORNL), G. D. Graves, R. C. Rempes, P. Carnithan, and J. R. McDaniel (USADACS), *CSEPP Chemical Awareness*, ORNL/M-2099, Oak Ridge National Laboratory, Oak Ridge, TN, June 1992.

Johnson, M. L. and A. F. Twitty, *CSEPP Chemical Awareness Computer Aided Instruction*, Data Systems Research and Development Program, Technical Operations, Center for Intelligent Systems, Oak Ridge K-25 Site, Oak Ridge, Tennessee, K/DSRD-1331, March 1993.

Jones, E., *Instructor's Guide and Lesson Plan for CSEPP Chemical Awareness*, ORNL/M-2100, Oak Ridge National Laboratory, Oak Ridge, TN, June 1992.

Jones, E., *Instructor's Guide and Lesson Plan for ACT FAST: Agent Characteristics and Toxicology, First Aid and Special Treatment*, ORNL/M-2098, Oak Ridge National Laboratory, Oak Ridge, TN, June 1992.

Twitty, A. F. and M. L. Johnson, *Act Fast Characteristics and Toxicology First Aid and Special Treatment Computer-Aided Instruction*, Data Systems Research and Development Program, Applied Technology Center for Intelligent Systems, Oak Ridge K-25 Site, Oak Ridge, Tennessee, for Oak Ridge National Laboratory.

U. S. Army and Federal Emergency Management Agency, *Planning Guidance and Standards for the Chemical Stockpile Emergency Preparedness Program (CSEPP)*.

U. S. Army and Federal Emergency Management Agency, *Planning Standards for Response Phase Decontamination for the Chemical Stockpile Emergency Preparedness Program*, Appendix L of CSEPP Planning Guidance, February 3, 1994 (see Appendix H of this document).

U. S. Army and Federal Emergency Management Agency, Appendix M of CSEPP Planning Guidance (in draft, 1994).

Appendix A.

SELF AND BUDDY DECONTAMINATION

Appendix A. Self and Buddy Decontamination

Training Plan

Audience

This unit is directed toward CSEPP program participants—anyone who needs to know how to do self and buddy decon in the event of a chemical release.

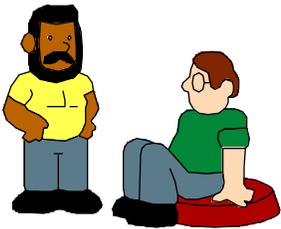
Strategy

This unit can be used for read-and-review self study, for formal classroom review, or for step-by-step detailed demonstration of the skills needed for self and buddy decon. The following sections provide handouts, vu-graphs or slides, and review questions. If demonstration of skills is desired, trainees may practice on each other. Another option is to practice with mannequins; Appendix E contains a design and pattern for making relatively inexpensive mannequins for practicing decon skills. The Review Questions can be used as a self-study review or, if needed, as examination questions on the knowledge base of this unit.

Handout

Because it is basically a step-by-step listing of what to do, these materials have been condensed as a single-page, two-sided handout that describes these steps. The information is also given in pocket-card and wall-chart form, and the steps are covered by vu-graphs or slides that can be used alone or in the Chemical Awareness or ACT FAST Courses to cover self and buddy decon.

The student handbook follows, and pocket-card and wall-chart versions are enclosed.



SELF AND BUDDY DECONTAMINATION©



When decontaminating people who may have been exposed to a chemical agent, there are two important criteria: **DO IT FAST** and **DO IT RIGHT!** The presence of chemical agent on a person's skin, hair, or clothing is often not readily apparent. **Personal decontamination must be undertaken immediately if health consequences are to be minimized.**

Anything you can do within minutes to quickly reduce the amount of agent contamination on your own or your buddy's body is far better than waiting to be "officially" decontaminated by special decon personnel. Effective decon is critical not only in minimizing the adverse health effects to the exposed person but also in preventing the spread of agent contamination to other people or objects.

With possible chemical agent exposure you must (1) **remove people from the environment** containing the agent, and (2) **remove the agent from the people** by getting the agent off the individuals and neutralizing what is already on the skin at the same time. Self and Buddy Decon, as the name implies, means that a person decons him/herself or teams up with another and the two decon each other. Buddy Decon is best because it is easier and allows for more thorough rinsing of places that are difficult to reach by oneself (back, buttocks and back of legs).

1. Before decontaminating, remove all clothing and other items from contact with the body. Contaminated clothing normally removed over the head should be cut off. Decon hands using undiluted household bleach. Remove eyeglasses or contact lenses. Use contact lens removers if available. If you or your buddy can't safely evacuate without eyeglasses, eyeglasses may be expediently decontaminated by soaking them in undiluted household bleach for 5 minutes and rinsing thoroughly with plain water.



2. Before decontaminating, remove all items from contact with the body. Include hearing aids, artificial limbs, jewelry, watches, toupees, wigs, etc. Place into plastic bags. If an artificial limb is required to evacuate, remove it, wipe it down with bleach, allow it to air for 5 minutes or longer, rinse it with clean water, and reattach it. Place any artificial limbs not required for evacuation in plastic bags. Carry only critical items such as eyeglasses or artificial limbs to the decon station.



3. Flush eyes with lots of lukewarm water.



4. Gently wash face and hair with soap and lukewarm water; then thoroughly rinse with lukewarm water.

5. Decon other body surfaces likely to have been contaminated:



—Use undiluted household bleach followed by a clear-water rinse.

Blot (not swab or wipe) with a cloth soaked in undiluted household bleach; then wash with lukewarm soapy water and rinse with clear lukewarm water.

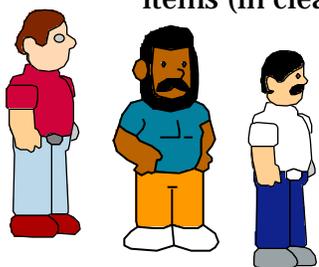
—**In the absence of bleach, wash with lots of lukewarm soapy water and rinse with clear lukewarm water.**

—If mustard exposure is suspected, body crevices and warm, moist areas such as underarms should be deconned carefully.

6. Change into uncontaminated clothing. Clothing stored in dry closets is likely to be uncontaminated. Place contaminated items in plastic bags.



7. Proceed to the nearest decon station, carrying only critical items (in clean plastic bag).



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Vu-graphs or Slides

The following sequence of vu-graphs or slides is suggested for use in this unit:

Title: DECON 1

General: DECON 2 through DECON 12

Specific: DECON 15 through DECON 21

Full-size copies are included in Appendix G for use in making vu-graphs, and color slides are enclosed.

Review Questions

Assess understanding of the material presented in this training by completing the following questions.

Multiple Choice

1. Decontamination is done by
 - a. removing the agent
 - b. neutralizing the agent
 - c. shielding the agent physically so that it cannot harm anyone
 - d. reducing the amount of agent to as little as possible, even if some small amount remains
 - e. all of the above

2. The most important and urgent category for decontamination is
 - a. the general environment
 - b. drinking water
 - c. foodstuffs
 - d. people

3. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
 - b. prevent the agent molecules from multiplying and causing uncontrolled, widespread injuries
 - c. keep the contamination centralized on one person instead of spreading to several others
 - d. reverse the effects of the agent and prevent secondary contamination

4. The MOST EFFECTIVE method for performing decontamination is
- hospital only
 - designated Decontamination Station only
 - self and buddy decontamination followed by supervised decontamination
 - none of the above
5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
- They should be thrown away since they can not be adequately decontaminated.
 - Look them over carefully; if they do not appear to be contaminated, keep them.
 - Handle all articles as though they are contaminated; wrap in plastic bags; and take only those items critically needed (such as eyeglasses).
 - Label each item with the person's name and whether or not the article has been decontaminated, wrap in a bleach soaked cloth and take with person.
6. Because agent vapors penetrate a victim's clothing, the decontamination procedure requires that
- all clothing be removed
 - all clothing that has been contaminated by the agent be removed
 - decontaminant solution be poured over the victim making sure to drench all clothing
 - special decontamination of that part of the clothing that is penetrated with the agent
7. When using decontaminant solution to decon yourself or your buddy, you should
- wash your face and hair with undiluted bleach solution
 - leave the decontaminant solution on your body for 15 minutes
 - remove eyeglasses, wigs, hearing aids, and artificial limbs first
 - always dilute bleach with water before using

- 8. Eyes are quite susceptible to the effects of the chemical agents. When performing self and buddy decon, one should**
 - a. flush eyes with diluted bleach solutions
 - b. flush eyes with lots of plain water
 - c. leave eyes alone since any effects on them have already occurred
 - d. bandage the eyes to lessen the effects

- 9. When rinsing a blister agent victim with decontaminant solution, pay particular attention to**
 - a. blisters which appear immediately
 - b. body crevices where the agent tends to be more reactive
 - c. how quickly the skin dries out due to atropine injections
 - d. the fluid inside the blisters that could further contaminate the victim

Appendix B.

DECONTAMINATION STATION OPERATIONS

Appendix B. Decontamination Station Operations

Training Plan

Audience

This unit is directed toward CSEPP personnel who need to know the procedures for performing decon within a decon station in the event of a chemical release.

Strategy

This unit can be used for read-and-review self study, for formal classroom review, or for step-by-step detailed demonstration of the skills needed for decon station operations. The following sections provide handouts, vu-graphs or slides, and review questions. If demonstration of skills is desired, trainees may practice on each other. Another option is to practice with mannequins; Appendix E contains a design and pattern for making relatively inexpensive mannequins for practicing decon skills. Once decon stations are available, the personnel should demonstrate their ability to perform these skills (e.g., during exercises) and be checked off against a checklist periodically (approximately every two years). The Review Questions can be used as a self-study review or, if needed, as examination questions on the knowledge base of this unit.

Handout

Because it is basically a step-by-step listing of what to do, the handout materials have been developed as a procedures checklist. The information is also given in a wall-chart form, and the steps are covered by vu-graphs or slides that can be used alone or in the Chemical Awareness or ACT FAST Courses to cover decontamination station procedures.

The trainee handout follows, and wall-chart versions are enclosed.

DECONTAMINATION STATION PROCEDURES©

When decontaminating people who may have been exposed to a chemical agent, there are two important criteria: **DO IT FAST** and **DO IT RIGHT!** The presence of chemical agent on a person's skin, hair, or clothing is often not readily apparent. **Personal decontamination must be undertaken immediately if health consequences are to be minimized.** Anything the exposed person can do within minutes to quickly reduce the amount of agent contamination on the body is far better than waiting to be "officially" decontaminated by special decon personnel. Effective decon is critical not only in minimizing the adverse health effects to the exposed person but also in preventing the spread of agent contamination to other people or objects. People should proceed through the decon station even if they have already performed self or buddy decon.

Most people can go through the decon sequence with minimal assistance from attendants. Those who are impaired by agent exposure, injury, poor health, or other handicaps may require the assistance of an attendant or special equipment (e.g., mesh stretcher for the injured, boatswain's chair for wheelchair users).

1. Separate potentially contaminated persons by gender if possible. Young children should be permitted to accompany a parent of either sex.

Decon should be performed according to the priorities stated below:

Priority 1: People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury.

Priority 2: People who are exhibiting signs/symptoms of agent exposure.

Priority 3: People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention.

Priority 4: People who are suspected of being contaminated but show no signs of agent toxicity.

2. Collect personal property such as billfolds and items such as wigs, hearing aids, and artificial limbs. Remove all clothing. Any clothing normally removed over the head should be cut off.

Attendants should bag and seal items in an agent-impermeable bag, label it with person's name and other identification, and place bag in secure storage for later disposition.



3. Remove eyeglasses and contact lenses. Interview or evaluate wearer to determine if wearer has been in an agent-contaminated area.
 - Decon hands before removing contact lenses. Use contact lens removers if available.
 - Collect contact lenses for later disposal. Do not decon contact lenses.
 - Decon eyeglasses in metal frames by soaking for 5 minutes in undiluted household bleach and rinsing thoroughly.
 - Eyeglasses in plastic or composite frames should be placed in agent-impermeable bag labeled with person's name and id number for later disposition.



NOTE: If eyeglass wearers would be significantly impaired without corrective lenses, remove lenses from porous frames as time permits, decon, remount in uncontaminated frames, and return to owners. Time constraints and lack of new frames may preclude this option.

4. **Blot** skin areas (excluding face) exposed to agent with undiluted household bleach. Collect any runoff for disposal.
5. Step under a shower (lukewarm water recommended) and, following the instructions of attendant, first flush face and eyes with lots of water, then wash face and rest of body with soapy water and rinse. All runoff must be collected and disposed of correctly.
6. Following shower, attendants should check person for signs/symptoms of agent exposure and follow medical screening guidelines for treatment. Additional decon may be necessary.



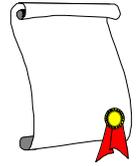
Complete decontamination of mustard victims is needed even if there are no immediate signs or symptoms, since onset of symptoms may be delayed for several hours. Body crevices and warm, moist areas are very susceptible to effects of mustard—decon these carefully.

7. Following confirmation of successful decon, person should proceed to an area designated for first aid and re-dress. Attendants will monitor or treat any injuries and provide replacement clothing (disposable paper garments and booties or clean used clothing from Goodwill, Salvation Army, etc.).
8. The person should then be directed to holding area for observation of agent exposure symptoms. Decontaminated persons should generally be kept separate from uncontaminated persons; however, in some cases uncontaminated persons, such as a parent, may join decontaminated dependents. Observe nerve agent victims for at least 30 minutes and mustard victims for 4 to 6 hours before releasing from observation area.



9. Each person undergoing decon at station should be marked by casualty tag, hospital bracelet, or by writing directly on chest or forehead with indelible marker, with indication of specific treatment, decon, and completion time.

10. Each person processed through station should also be provided with certificate indicating
 - description of decon actions taken,
 - time decon completed,
 - time person released from observation area, and
 - description of any medical treatment administered in conjunction with decon.



Decon station personnel should also retain copy of certificate.

Vu-graphs or Slides

The following sequence of vu-graphs or slides are suggested for use in this unit:

Title: DECON 1

General: DECON 2 through DECON 12

Specific: DECON 25 through DECON 31, DECON 10, DECON 32 through DECON 44

Full-size copies are included in Appendix G for use in making vu-graphs, and color slides are enclosed.

Review Questions

Assess understanding of the material presented in this training by completing the following questions.

Multiple Choice

1. Decontamination is done by
 - a. removing the agent
 - b. neutralizing the agent
 - c. shielding the agent physically so that it cannot harm anyone
 - d. reducing the amount of agent to as little as possible, even if some small amount remains
 - e. all of the above

2. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
 - b. prevent the agent molecules from multiplying and causing uncontrolled, widespread injuries
 - c. keep the contamination centralized on one person instead of spreading to several others
 - d. reverse the effects of the agent and prevent secondary contamination

3. The MOST EFFECTIVE method for performing decontamination is
 - a. hospital only
 - b. designated Decontamination Station only
 - c. self and buddy decontamination followed by supervised decontamination
 - d. none of the above

4. How are the standards for decontamination (do it fast; do it right) affected when the number of exposed persons changes from 1 to 20?
- thoroughness is not required
 - the standards do not change—decontamination must still be fast and accurate
 - two decontamination waiting lines must be formed instead of one
 - additional time is required, and allowable, in order to decontaminate each victim
5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
- They should be thrown away since they can not be adequately decontaminated.
 - Look them over carefully; if they do not appear to be contaminated give them back to the victim.
 - Handle all articles as though they are contaminated; wrap articles in agent-impermeable bags and label bag with person's name.
 - Label each item with the person's name and whether or not the article has been decontaminated, wrap in a bleach soaked cloth and send with person.
6. Because agent vapors can penetrate a victim's clothing the decontamination procedure requires
- all clothing be removed
 - all clothing that has been contaminated by the agent be removed
 - decontaminant solution be poured over the exposed person, making sure to drench all clothing
 - special decontamination of that part of the clothing that is penetrated by the agent

7. Decontaminated persons should be kept
 - a. separate from all others until they have re-dressed
 - b. separate from others until the emergency is over
 - c. separate, except uncontaminated persons such as parents may join a decontaminated dependent
 - d. not necessary to separate them after decontamination

8. To document decon treatment, the person who has been decontaminated should
 - a. have treatment marked on a casualty tag, hospital bracelet, or on the body (chest or forehead with indelible marker)
 - b. be given a special badge that indicates that decon has occurred
 - c. be given a certificate indicating what decon actions taken
 - d. a. and c. above

9. When rinsing a blister agent victim with decontaminant solution, pay particular attention to
 - a. blisters which appear immediately
 - b. body crevices where the agent tends to be more reactive
 - c. how quickly the skin dries out due to atropine injections
 - d. the fluid inside the blisters that could further contaminate the victim

Matching

Items 10 through 13 each describe a different decontamination priority category. Identify the order in which each category of people, in Column A, should be handled by selecting the correct sequence shown in Column B.

	Column A Decontamination Priority	Column B Sequence
___	10. People who are exhibiting signs/symptoms of agent exposure	a. FIRST
___	11. People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	b. SECOND
___	12. People who are suspected of being contaminated but show no signs of agent toxicity	c. THIRD
___	13. People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	d. FOURTH

Appendix C.

DECONTAMINATION BY EMERGENCY MEDICAL PERSONNEL

Appendix C. Decontamination By Emergency Medical Personnel

Training Plan

Audience

This unit is directed toward CSEPP emergency medical personnel who need to know the procedure for performing decon in a field environment in the event of a chemical release.

Strategy

This unit can be used for read-and-review self study, for formal classroom review, or for step-by-step detailed demonstration of the skills needed for field decon by emergency medical personnel. The following sections provide handouts, vu-graphs or slides, and review questions. If demonstration of skills is desired, trainees may practice on each other. Another option is to practice with mannequins; Appendix E contains a design and pattern for making relatively inexpensive mannequins for practicing decon skills. The personnel should demonstrate their ability to perform these skills (e.g., during exercises) and be checked off against a checklist periodically (approximately every two years). The Review Questions can be used as a self-study review or, if needed, as examination questions on the knowledge base of this unit.

Handouts

Because it is basically a step-by-step listing of what to do, the handout materials have been developed as a procedures checklist. The information is also given in a wall chart form, and the steps are covered by vu-graphs or slides that can be used alone or in the Chemical Awareness or ACT FAST Courses to cover procedures for decon by emergency medical personnel.

The trainee handout follows, and pocket-card and wall-chart versions are enclosed.



DECONTAMINATION BY EMERGENCY MEDICAL PERSONNEL©

When decontaminating people who may have been exposed to a chemical agent, there are two important criteria: **DO IT FAST** and **DO IT RIGHT!** The presence of chemical agent on a person's skin, hair, or clothing is often not readily apparent. Personal decontamination must be undertaken immediately if health consequences are to be minimized. Anything the exposed person can do to quickly reduce the amount of agent contamination on the body is far better than waiting to be "officially" decontaminated by special decon personnel. Effective decon is critical not only in minimizing the adverse health effects to the exposed person but also in preventing the spread of agent contamination to other people or objects. Emergency medical personnel should decon injured persons even if they have already performed self or buddy decon.

Emergency medical personnel should be trained, equipped, and clothed to safely decon any injured person suspected of being contaminated before placing the person into a vehicle for transport to a care facility. Protective clothing and equipment should be approved for use with chemical agents.

Decon should be performed according to the priorities stated below:

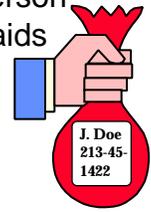
- Priority 1:** People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury.
- Priority 2:** People who are exhibiting signs/symptoms of agent exposure.
- Priority 3:** People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention.
- Priority 4:** People who are suspected of being contaminated but show no signs of agent toxicity.

Procedures for dealing with persons should incorporate standard medical procedures for the injury involved. Caregivers should also:

1. Remove outer clothing of person by cutting clothing and lifting person free of clothing onto wire stretcher or one with non-absorbent surface.



2. Remove rest of clothing by cutting it and pulling it from underneath person and removing personal belongings such as billfolds or wigs, hearing aids and artificial limbs. Place items in agent-impermeable bag, seal and label it with person's name and other pertinent identification. Place bag in secure storage location for later disposition.



3. Remove eyeglasses and contact lenses and place in agent-impermeable bag labeled with person's name and an id # for later disposition.

4. Remove potentially contaminated bandage material, exercising extreme care when removing bandages that are used to control hemorrhages.

5. Blot (not swab or wipe) body surfaces with lots of undiluted household bleach (5%) or with reagents (i.e., a special decon solution) from Army's skin decon kit, and washing face and eyes with clear water.



Complete decontamination of mustard victims is needed even if there are no immediate signs or symptoms, since onset of symptoms may be delayed for several hours. Body crevices and warm, moist areas are very susceptible to effects of mustard—decon these carefully.

6. Decontaminate chemical protective clothing of care provider.
7. Each person undergoing decon or medical treatment should be marked by casualty tag, hospital bracelet, or by writing directly on chest or forehead with indelible marker with indication of specific treatment and completion time.
8. Apply fresh bandages where necessary to control bleeding and place injured person in transport vehicle.



Vu-graphs or Slides

The following sequence of vu-graphs or slides are suggested for use in this unit:

Title: DECON 1

General: DECON 2 through DECON 12

Specific: DECON 50 through DECON 62

Full-size copies are included in Appendix G for use in making vu-graphs, and color slides are enclosed.

Review Questions

Assess understanding of the material presented in this training by completing the following questions.

Multiple Choice

1. Decontamination is done by
 - a. removing the agent
 - b. neutralizing the agent
 - c. shielding the agent physically so that it cannot harm anyone
 - d. reducing the amount of agent to as little as possible, even if some small amount remains
 - e. all of the above

2. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
 - b. prevent the agent molecules from multiplying and causing uncontrolled, widespread injuries
 - c. keep the contamination centralized on one person instead of spreading to several others
 - d. reverse the effects of the agent and prevent secondary contamination

3. The MOST EFFECTIVE method for performing decontamination is
 - a. hospital only
 - b. designated Decontamination Station only
 - c. self and buddy decontamination followed by supervised decontamination
 - d. none of the above

4. How are the standards for decontamination (do it fast; do it right) affected when the number of exposed persons changes from 1 to 20?
 - a. thoroughness is not required
 - b. the standards do not change—decontamination must still be fast and accurate
 - c. two decontamination waiting lines must be formed instead of one
 - d. additional time is required, and allowable, in order to decontaminate each victim

5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
 - a. They should be thrown away since they can not be adequately decontaminated.
 - b. Look them over carefully; if they do not appear to be contaminated give them back to the victim.
 - c. Handle all articles as though they are contaminated; wrap articles in agent-impermeable bags and label bag with person's name.
 - d. Label each item with the person's name and whether or not the article has been decontaminated, wrap in a bleach soaked cloth and send with person.

6. Because agent vapors can penetrate a victim's clothing, the decontamination procedure requires
 - a. all clothing be removed
 - b. all clothing that has been contaminated by the agent be removed
 - c. decontaminant solution be poured over the exposed person, making sure to drench all clothing
 - d. special decontamination of that part of the clothing that is penetrated by the agent

7. Emergency medical personnel who treat or decon persons suspected of being exposed to chemical agent should not do so unless
 - a. a general emergency has been declared
 - b. the path of the chemical release has been determined
 - c. the type of chemical release has been announced
 - d. they are trained, equipped, and clothed to decon and treat persons safely

8. To document decon treatment, the person who has been decontaminated should
 - a. be told what treatment she/he has received
 - b. have treatment marked on a casualty tag, hospital bracelet, or on the body (chest or forehead with indelible marker)
 - c. be given a special badge that indicates that decon has occurred
 - d. none of the above

9. When should injured person be deconned?
 - a. not at hospital
 - b. before placing in transport vehicle
 - c. on way to hospital
 - d. none of the above

10. When rinsing a blister agent victim with decontaminant solution, pay particular attention to
 - a. blisters which appear immediately
 - b. body crevices where the agent tends to react faster
 - c. how quickly the skin dries out due to atropine injections
 - d. the fluid inside the blisters that could further contaminate the victim

Matching

Items 11 through 14 each describe a different decontamination priority category. Identify the order in which each category of people, in Column A, should be handled by selecting the correct sequence shown in Column B.

	Column A Decontamination Priority	Column B Sequence
___	11. People who are exhibiting signs/symptoms of agent exposure	a. FIRST b. SECOND c. THIRD d. FOURTH
___	12. People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	
___	13. People who are suspected of being contaminated but show no signs of agent toxicity	
___	14. People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	

Appendix D

PLANNER'S CHECKLIST FOR DECONTAMINATION PLANNING

Appendix D. Planner's Checklist for Decontamination Planning

Training Plan

Audience

This unit is directed toward CSEPP planners who need to know what resources and procedures are required for performing decon in the event of a chemical release, and what information must be included within the Decontamination Plan.

Strategy

Appendix L of the CSEPP Planning Guidance provides standards on **how to plan for decon** in the event of a significant chemical agent release. As such, it addresses priorities and procedures for decon planning. However, these planning standards do not provide specific identification of the sites or areas that may require decontamination capability or policy on provision of resources to decon locations. The CSEPP planner must develop a decon plan as a part of the overall emergency plan. Formal training in decon procedures is not necessary, but planners are provided a Planner's Checklist for Decontamination Planning and some related materials that might be useful in an overview of the planning function: vu-graphs or slides, and review questions. In addition, the planner should be given the handouts from the training materials prepared for those expected to perform decon for review. If a state elects to run formal training for planners, a Class Exercise is recommended; it is explained later.

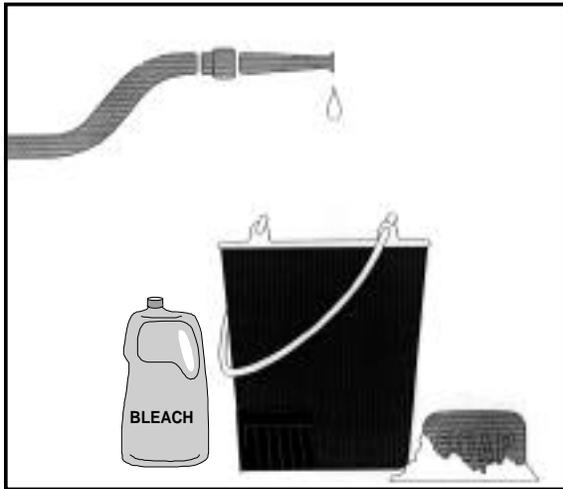
Handout

The planner needs a much different checklist than those who will be performing decon, though he/she must also be aware of those hands-on decon activities to be performed. The planner should be given (1) the other handouts to review in order that the guiding principles and procedures are understood, and (2) a planner's checklist that can serve as an organizing tool for use in developing and documenting the decon plan. This step-by-step listing is loosely organized around the categories of information called for in the Plan: Agencies Involved, Resources, and Procedures. The steps are covered by vu-graphs or slides that are not likely to be used in existing ACT FAST or Chemical Awareness courses but could be useful in reviewing the planning functions.

Class Exercise

To give practical experience to the planners in a classroom setting, the following exercise might be included in their training:

1. Ask planners to bring their CSEPP Decontamination Plans with them to class, if they have one.
2. Put those planners with a plan into one group and have them critique each other's plans against the checklist. This group should then report on their findings to the whole class.
3. Put those planners without a plan into another group and let them develop an outline or strategy to guide them in preparing their plans (e.g., who to speak with, what questions to ask, how to implement, etc.). This group should then report their findings to the whole class.



PLANNER'S CHECKLIST FOR DECONTAMINATION PLANNING©

Appendix L of the CSEPP Planning Guidance provides standards on **how to plan for decontamination** in the event of a significant chemical agent release. As such, it addresses priorities and procedures for response phase decontamination planning. However, these planning standards do not provide specific identification of the sites or areas that may require decontamination capability or policy on provision of resources to decon locations. Recovery phase decontamination will also be addressed in Appendix M of the Planning Guidance. These activities are considered to be distinct from decontamination activities necessary to save lives during the acute phase of emergency response.

The following requirements are detailed in Appendix L.

DECONTAMINATION PLAN

- incorporate a decontamination plan into the hazard-specific appendix of a jurisdiction's Emergency Operations Plan. The decontamination plan may be developed separately by the jurisdiction or jointly with the Army installation and other state and local jurisdictions in the IRZ and PAZ. (Standard L-1)

Decontamination Plan Content

- ___ describe the agencies to be responsible, resources to be available, and procedures to be followed when dealing with agent-contaminated people and animals that provide critical support to humans. (Standard L-1)

Agencies Responsible

- ___ identify the organization(s) responsible for the **decontamination of people and of animals that provide critical support of humans** (e.g., Seeing Eye dogs). May include departments of the jurisdiction's government, agencies of other levels of government, private contractors, or volunteers. (Standard L-2)
- ___ identify officials and agencies responsible for establishing and implementing a strict quarantine of all potentially contaminated materials and property that will not be immediately decontaminated. (The strict quarantine will prohibit entry by the unprotected public until responsible officials determine through monitoring and sampling that unrestricted reentry and use by the public is safe. Criteria specified in Appendix M of Planning Guidance.) (Standard L-9)

Resources

- ___ provide for a personnel decontamination station to be established at each reception center and at each host hospital identified in the evacuation plan and at other locations as needed. Each decontamination station will
 - ___ be located where adequate supplies of water and electricity are/can be made available;
 - ___ be designed to contain and collect all used decontamination solutions and rinse water for later disposition. (Standard L-5)
- ___ staff the decontamination station with personnel who are trained, equipped, and clothed to decon potentially contaminated people while incurring minimal risk of self-contamination. Each decontamination station will
 - ___ be adequately staffed and equipped to decontaminate the maximum number of contaminated individuals expected to arrive at the decontamination station (Standard L-5);
 - ___ be capable of being staffed quickly after the public has been alerted and notified of the emergency (at a minimum, sufficiently staffed to detain and provide expedient decontamination to potentially contaminated individuals until full operability achieved) (Standard L-5);

- ___ have the capability to perform decontamination concurrently with life-saving first aid for people suffering from agent exposure or other injury (Standard L-5);
- ___ be capable of screening people who have been decontaminated, as well as other evacuees, for symptoms of chemical agent toxicity (Standard L-5);
- ___ describe how the jurisdiction will obtain sufficient quantities of water for decontamination activities. The water may come from any source. (Standard L-10)

Procedures

- establish guidelines for determining when decontamination is needed, what decontamination resources are available, and which decontamination concerns must be addressed first through pre-event planning.
- ___ include a list of priorities for the decontamination or other treatment of people to guide the allocation of resources in the aftermath of a chemical agent release producing contamination. (Standard L-2)
- ___ have evaluation procedures for deciding which individuals require decontamination as well as procedures for immediately decontaminating people (including infants and individuals who are injured, handicapped, or elderly) likely to have been contaminated by chemical agent. (Standard L-5)
- ___ have operating procedures for handling the personal property of potentially contaminated persons. (Standard L-5)
- ___ describe the jurisdiction's plans for **educating the public on personal self-decontamination and decontamination of others** (i.e., self- and buddy-decontamination). These plans should apply to all people in areas at risk of exposure to agent . (Standard L-3)
 - ___ Public education program may include
 - ___ instructions on self- and buddy- decontamination,
 - ___ list of necessary supplies, and
 - ___ guidance on other means of expedient personal decontamination;

- ___ Public information releases at the time of the emergency should clearly identify the population segments that should perform self- and buddy-decontamination. ___ should be recommended for all people who are or have been within the chemical agent plume or have come in contact with people, animals, or objects (e.g., vehicles) that have been in the plume.

- ___ coordinate with all of jurisdiction's other emergency preparedness procedures and especially with those for reentry, monitoring, and medical services. Plans for reentry will prescribe maximum residual agent concentrations that may remain when unrestricted public use of areas and objects can be permitted. The interaction between decontamination and the provision of medical services is particularly important. Medical attention, including decontamination, must be provided to all people who need it; however, procedures must be in place to prevent the spread of contamination to health care providers and facilities (e.g., ambulances and hospitals).

- ___ incorporate requirements of federal and state laws that could, for example, limit the kinds and quantities of decontamination solutions that could be used in a particular area or require containment and treatment of the decontaminant runoff.

2-3-94

Vu-graphs or Slides

The following sequence of vu-graphs or slides are suggested for use in this unit:

Title: DECON 1

General: DECON 2 through DECON 12

Specific: DECON 66 through DECON 79

Full-size copies are included in Appendix G for use in making vu-graphs, and color slides are enclosed.

Review Questions

Assess understanding of the material presented in this overview by completing the following questions.

Multiple Choice

1. CSEPP Planning Guidance Appendix L on Decontamination addresses

- a. content of decon plan
- b. priorities and procedures for decon planning
- c. identifying officials and organizations responsible for carrying out decon actions
- d. all of the above

2. Appendix L on Response Phase Decontamination does not

- a. identify specific sites/areas that may require decon capabilities
- b. put forth a policy on provision of resources
- c. require identification of agencies responsible, resources needed, and procedures
- d. a. and b. above

3. Decontamination is done by

- a. removing the agent
- b. neutralizing the agent
- c. shielding the agent physically so that it cannot harm anyone
- d. reducing the amount of agent to as little as possible, even if some small amount remains
- e. all of the above

4. The most important and urgent category for decontamination is
 - a. the general environment
 - b. drinking water
 - c. foodstuffs
 - d. people

5. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
 - b. prevent the agent molecules from multiplying and causing uncontrolled, widespread injuries
 - c. keep the contamination centralized on one person instead of spreading to several others
 - d. reverse the effects of the agent and prevent secondary contamination

6. The MOST EFFECTIVE method for performing decontamination is
 - a. hospital only
 - b. designated Decontamination Station only
 - c. self and buddy decontamination followed by supervised decontamination
 - d. none of the above

7. How are the standards for decontamination (do it fast; do it right) affected when the number of victims changes from 1 to 20?
 - a. thoroughness is not required
 - b. the standards do not change—decontamination must still be fast and accurate
 - c. two decontamination waiting lines must be formed instead of one
 - d. additional time is required, and allowable, in order to decontaminate each victim

- 8. Strict quarantine of all potentially contaminated materials and property within the designated contamination zone that will not be immediately decontaminated will be implemented except for:**
 - a. crops and forage
 - b. persons
 - c. meat and milk products from animals
 - d. billfolds and personal property carried out of zone by evacuees

- 9. Because agent vapors can penetrate a victim's clothing the decontamination procedure requires**
 - a. all clothing be removed
 - b. all clothing that has been contaminated by the agent be removed
 - c. decontaminant solution be poured over the victim making sure to drench all clothing
 - d. special decontamination of that part of the clothing that is penetrated by the agent

Matching

Items 10 through 13 each describe a different decontamination priority category. Identify the order in which each category of people, in Column A, should be handled by selecting the correct sequence shown in Column B.

	Column A Decontamination Priority	Column B Sequence
___ 10.	People who are exhibiting signs/symptoms of agent exposure	a. FIRST b. SECOND c. THIRD d. FOURTH
___ 11.	People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	
___ 12.	People who are suspected of being contaminated but show no signs of agent toxicity	
___ 13.	People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	

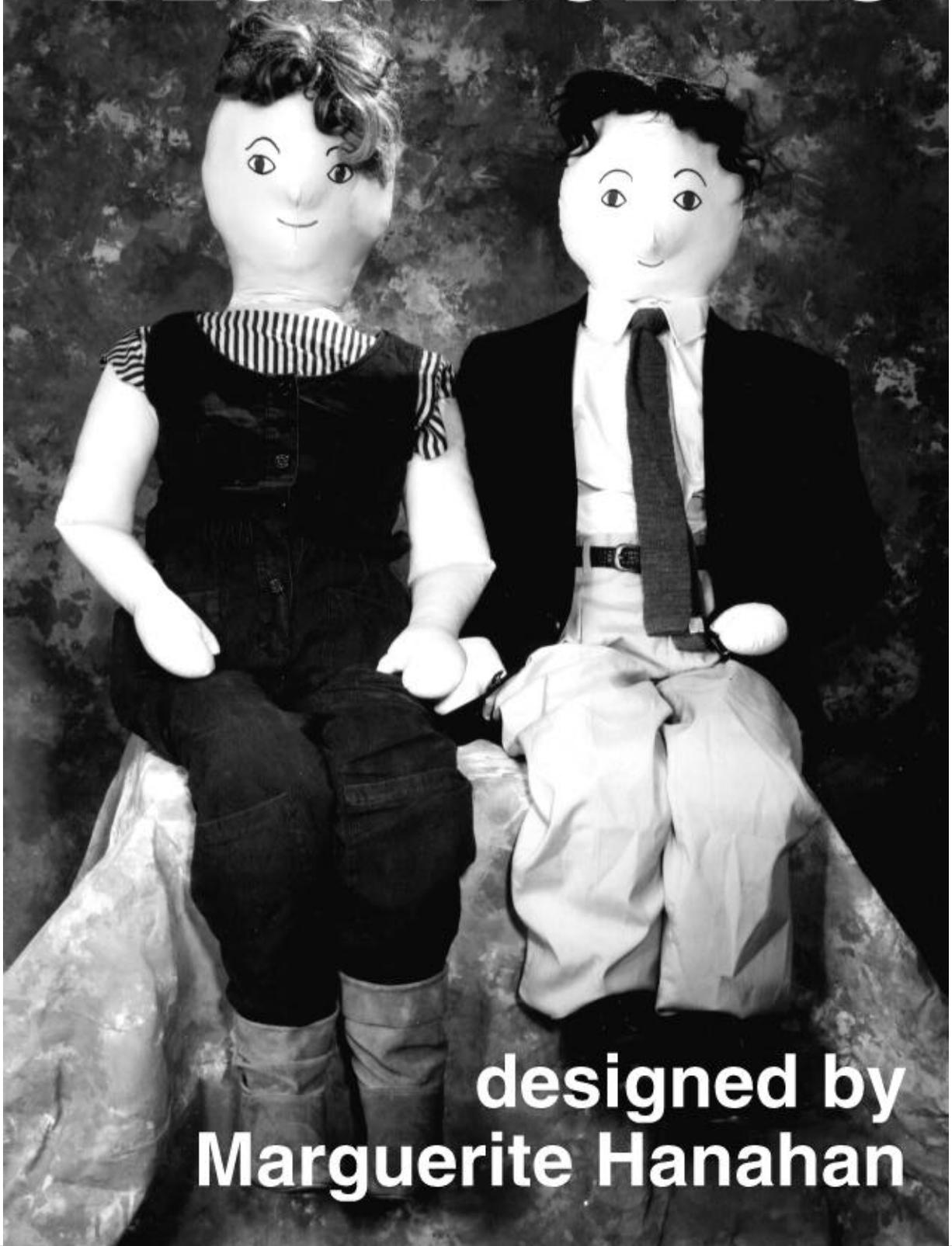
The Response Phase Decontamination Standards call for jurisdictions to identify both resources and procedures needed if a personnel decon station is established. In Questions 14–19, match the items listed in Column A to the appropriate category listed in Column B.

	Column A <u>Activity</u>	Column B <u>Category</u>
___ 14.	immediate performance of decon of persons likely to have been exposed to chemical agent	a. Resources b. Procedures c. Both of the above d. None of the above
___ 15.	collection and containment of all used decon solutions and rinse water	
___ 16.	adequate water and electricity	
___ 17.	handling personal property of exposed persons	
___ 18.	trained, equipped, and clothed staff	
___ 19.	priorities for decon	

Appendix E.

DECONTAMINATION TRAINING AIDS: DECON DOLLIES

DECON DOLLIES



designed by
Marguerite Hanahan

DECON DOLLIES

**Designed by
Marguerite Hanahan**

Prepared for the
Federal Emergency Management Agency
Chemical Stockpile Emergency Preparedness Program
Training Management Team
Washington, DC

Prepared by the
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831-6206
managed by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

and

Moreland, Inc.
Knoxville, Tennessee

DECON DOLLIES

Materials

- Pattern (Enclosed)
- 3 yards of 36-in. rubber sheeting
- 5 - 20 oz. bags polyester filling
- Thread
- Permanent Markers for facial features

Note: DO NOT use pins except outside of seam lines. They make holes that allow water to penetrate.

Directions

1. With right sides together stitch head front together from A to B.

2. Stitch front head to body front.

3. Stitch back head to body back.

4. With right sides together, place body front to body back. Stitch leaving free area where arms attach (between marked circles) and at lower edge (Illustration A). Turn body right side out.

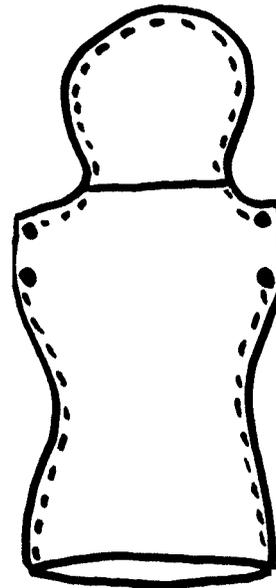


Illustration A

5. ARMS: Put two arm sections right side together. Stitch leaving upper edges free. Turn right side out. Stuff lower part of arm firmly. Stitch across arm on line indicated. Stuff upper part of arm to within about

1-1/2 inches of top. Baste raw edges together.

Turn in seam allowances on body front and back at arm openings. Insert arms into body. Stitch close to edges of body thru all thicknesses to secure arms (Illustration B).

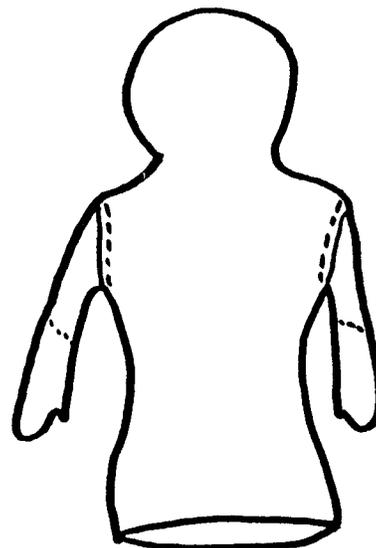


Illustration B

DECON DOLLIES

6. LEGS: Put two leg sections right sides together. Stitch around leaving upper edges free. Turn right side out. Stuff lower part of leg firmly. Put seams together so that they are in the front and back of leg. Stitch across leg on line indicated. Stuff upper part of leg to within 1-1/2 inches of top. Baste raw edges together (Illustration C).



Illustration C

7. Stitch legs to body with right sides together. Turn seam toward body. Stuff body firmly. Turn in seam allowance on body back and hem over seam (Illustration D).

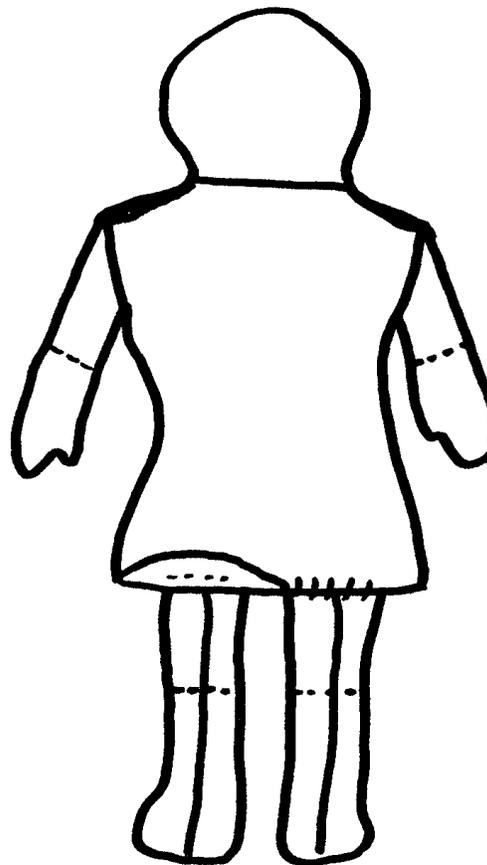


Illustration D

DECON DOLLIES



Acknowledgements

Description written by Ruth Ann Hanahan

Composition by Cynthia Coomer and
William Clevenger

Photography by Lewis McCrary

Facilitated by Edith Jones



Appendix F.

ANSWER KEYS FOR REVIEW QUESTIONS

ANSWER KEY FOR REVIEW ON SELF AND BUDDY DECONTAMINATION

Multiple Choice

1. Decontamination is done by
 - e. all of the above
2. The most important and urgent category for decontamination is
 - d. people
3. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
4. The MOST EFFECTIVE methods for performing decontamination are
 - c. self and buddy decontamination followed by supervised decontamination
5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
 - c. Handle all articles as though they are contaminated; wrap in plastic bags; and take only those items critically needed (such as eyeglasses).
6. Because agent vapors penetrate a victim's clothing the decontamination procedure requires that
 - a. all clothing be removed
7. When using decontaminant solution to decon yourself or your buddy, you should
 - c. remove eyeglasses, wigs, hearing aids, and artificial limbs first
8. Eyes are quite susceptible to the effects of the chemical agents. When performing self and buddy decon, one should
 - b. flush eyes with lots of plain water
9. When rinsing a blister agent victim with decontaminant solution, pay particular attention to
 - b. body crevices where the agent tends to react faster

ANSWER KEY FOR REVIEW ON DECONTAMINATION STATION OPERATIONS

Multiple Choice

1. Decontamination is done by
 - e. all of the above
2. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
3. The MOST EFFECTIVE methods for performing decontamination are
 - c. self and buddy decontamination followed by supervised decontamination
4. How are the standards for decontamination (do it fast; do it right) affected when the number of exposed persons changes from 1 to 20?
 - b. the standards do not change—decontamination must still be fast and accurate
5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
 - c. Handle all articles as though they are contaminated; wrap articles in agent-impermeable bags and label bag with person's name.
6. Because agent vapors can penetrate a victim's clothing the decontamination procedure requires that
 - a. all clothing be removed
7. Decontaminated persons should be kept
 - c. separate, except uncontaminated persons such as parents may join a decontaminated dependent
8. To document decon treatment, the person who has been decontaminated should
 - d. a. and c. above
(a. have treatment marked on a casualty tag, hospital bracelet, or on the body [chest or forehead with indelible marker];
c. be given a certificate indicating what decon actions taken)
9. When rinsing a blister agent victim with decontaminant solution, pay particular attention to
 - b. body crevices where the agent tends to react faster

Matching

	Column A Decontamination Priority	Column B Sequence
__b_ 10.	People who are exhibiting signs/symptoms of agent exposure	a. FIRST
__c_ 11.	People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	b. SECOND
__d_ 12.	People who are suspected of being contaminated but show no signs of agent toxicity	c. THIRD
__a_ 13.	People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	d. FOURTH

**ANSWER KEY FOR REVIEW ON
DECONTAMINATION BY EMERGENCY MEDICAL PERSONNEL**

Multiple Choice

1. Decontamination is done by
 - e. all of the above
2. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
3. The MOST EFFECTIVE methods for performing decontamination are
 - c. self and buddy decontamination followed by supervised decontamination
4. How are the standards for decontamination (do it fast; do it right) affected when the number of exposed persons changes from 1 to 20?
 - b. the standards do not change—decontamination must still be fast and accurate
5. Which of the following statements best describes the proper handling of the exposed person's personal articles?
 - c. Handle all articles as though they are contaminated; wrap articles in agent-impermeable bags and label bag with person's name.
6. Because agent vapors can penetrate a victim's clothing the decontamination procedure requires that
 - a. all clothing be removed
7. Emergency medical personnel who treat or decon persons suspected of being exposed to chemical agent should not do so unless
 - d. they are trained, equipped, and clothed to decon and treat persons safely
8. To document decon treatment, the person who has been decontaminated should
 - b. have treatment marked on a casualty tag, hospital bracelet, or on the body (chest or forehead with indelible marker)
9. When should an injured person be deconned?
 - b. before placing into transport vehicle
10. When rinsing a blister agent victim with decontaminant solution, pay particular attention to
 - b. body crevices where the agent tends to react faster

Matching

	Column A Decontamination Priority	Column B Sequence
__b_ 11.	People who are exhibiting signs/symptoms of agent exposure	a. FIRST
__c_ 12.	People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	b. SECOND
__d_ 13.	People who are suspected of being contaminated but show no signs of agent toxicity	c. THIRD
__a_ 14.	People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	d. FOURTH

ANSWER KEY FOR REVIEW ON DECONTAMINATION PLANNING

Multiple Choice

1. CSEPP Planning Guidance Appendix L on Decontamination addresses
 - d. all of the above
2. Appendix L on Decontamination does not include
 - d. a. and b. above
(a. specific identification of sites/areas that may require decon capabilities;
b. policy on provision of resources)
3. Decontamination is done by
 - e. all of the above
4. The most important and urgent category for decontamination is
 - d. people
5. It is critical that decontamination be done quickly and correctly in order to
 - a. minimize adverse effects to the exposed person and prevent secondary contamination
6. The MOST EFFECTIVE methods for performing decontamination are
 - c. self and buddy decontamination followed by supervised decontamination
7. How are the standards for decontamination (do it fast; do it right) affected when the number of victims changes from 1 to 20?
 - b. the standards do not change—decontamination must still be fast and accurate
8. Strict quarantine of all potentially contaminated materials and property within the designated contamination zone that will not be immediately decontaminated will be implemented except for:
 - b. persons
9. Because agent vapors can penetrate a victim's clothing the decontamination procedure requires that
 - a. all clothing be removed

Matching

	Column A	Column B
	Decontamination Priority	Sequence
__b_ 10.	People who are exhibiting signs/symptoms of agent exposure	a. FIRST
__c_ 11.	People who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention	b. SECOND
__d_ 12.	People who are suspected of being contaminated but show no signs of agent toxicity	c. THIRD
__a_ 13.	People who are known to be or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury	d. FOURTH
	Column A	Column B
	<u>Activity</u>	<u>Category</u>
c 14.	immediate performance of decon of persons likely to have been exposed to chemical agent	a. Resources
c 15.	collection and containment of all used decon solutions and rinse water	b. Procedures
a 16.	adequate water and electricity	c. Both of the above
c 17.	handling personal property of exposed persons	d. None of the above
c 18.	trained, equipped, and clothed staff	
b 19.	priorities for decon	

Appendix G.

**VU-GRAPHS/SLIDES FOR DECONTAMINATION
(See Response Phase Decontamination for CSEPP Slides)**

APPENDIX L

PLANNING STANDARDS FOR RESPONSE PHASE DECONTAMINATION FOR THE CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM

APPENDIX L

PLANNING STANDARDS FOR RESPONSE PHASE DECONTAMINATION

Preface

The purpose of this appendix is to provide standards on how to plan for decontamination in the event of a significant chemical agent release. As such, it addresses priorities and procedures for decontamination planning. However, these planning standards provide neither policy on provision of resources, nor specific identification of the sites or areas that may require decontamination capability. These policies and guidelines will be determined by the results of ongoing studies regarding liquid agent deposition.

PHASES OF A CHEMICAL RESPONSE

The phases of a chemical event are not distinct. There is no single point in time when all response phase actions terminate and recovery phase actions begin. These actions overlap through much of the event. The following definitions are provided to all planners to assign responsibilities and eliminate duplication in their plans.

Response Phase

The response phase of a chemical agent event covers the initial action in response to an actual or potential chemical agent release. It covers the actions taken to eliminate the source of the release, lifesaving measures for affected personnel, safety measures for potentially affected personnel, and initial security measures taken to preclude the exposure of additional personnel.

The response phase covers the period from the initial recognition of an actual or possible chemical agent event until all of the following actions have been accomplished:

- a. The source of the chemical agent event is no longer discharging new chemical agent into the environment. Residual contamination may exist,

and the residual contamination may still be a hazard.

- b. All personnel requiring medical attention beyond first aid have entered into the medical care system.
- c. There is no additional (new) risk to the public. This can be due to the reduction of the hazard, evacuation of the hazard area, or both actions.
- d. Security measures are in place to ensure the personnel will not inadvertently enter the hazard area.

Recovery Phase

The recovery phase is the period from the end of the response phase until

- a. The affected area can be reoccupied without protective equipment, and there is not present a short- or long-term health risk to humans.
- b. Other typical operations, (e.g., agriculture, grazing livestock) can be conducted without any restrictions stemming from the chemical event.

OBJECTIVES

Response Phase Objectives

Lifesaving and minimization of injury to personnel.

Preventing the spread of contamination to key response elements and facilities (e.g., shelters, ambulances and hospitals).

Recovery Phase Objectives

Reduction of hazard to the level where unrestricted use of facilities, lands, and waters are possible without risk to human health.

DECONTAMINATION PRINCIPLES

Decontaminate as soon as possible. This minimizes the effect on personnel and allows for normal operation of equipment/facilities as soon as possible.

Decontaminate only what is necessary. Decontamination requires a significant amount of time and decontamination material. It is essential that limited decontamination assets be focused on high priority operations.

Decontaminate as close to the contaminated area as possible. This will limit the spread of contamination.

DECONTAMINATION PRIORITIES

First priority - People

Second priority - Essential equipment (e.g., ambulances)

Third priority - Other requirements. These will be accomplished during the recovery phase.

The remainder of this standard will focus on decontamination during the response phase. Decontamination during the recovery phase will be addressed in reentry/restoration standards (Appendix M).

DEFINITION AND SCOPE OF DECONTAMINATION

The recommended standards in this appendix address two concerns regarding the decontamination of people:

1. **Individuals must be decontaminated as soon as possible.** Available studies (Sidell 1990, Leffingwell 1990; Watson and Munro 1990; Munro et al. 1990; U.S. Dept. of the Army 1989) stress that immediate action to remove or neutralize the agent is necessary to minimize adverse health impacts of exposure. The decontamination of exposed people must begin within a very few minutes after exposure if severe injury or death is to be avoided. The proposed standards

respond to this requirement by recommending that all people in areas at risk of exposure to agent be provided with information that would enable them to decontaminate themselves and the people around them immediately after an exposure to chemical agent (i.e., self- and buddy-aid).

2. **Individuals must be completely decontaminated.** Thorough decontamination of every potentially contaminated person is necessary both to minimize adverse health effects to that person and to avoid secondary contamination. To assist in ensuring thorough decontamination of all potentially contaminated people, the standards call for the establishment of official decontamination stations staffed by trained personnel with ready access to all equipment and materials needed to decontaminate, monitor, and care for exposed individuals.

For users of these standards, “decontamination” is defined in Sect. 10 of this Planning Guidance and in *Chemical Accident or Incident Response and Assistance (CAIRA) Operations* (Dept. of the Army 1991) as “the process of decreasing the amount of chemical agent on any person, object, or area by absorbing, neutralizing, destroying, ventilating, or removing chemical agents” to a safe level. The following standards employ this definition to address decontamination for which the primary purpose is to eliminate an immediate threat to human life.

With the exception of decontamination of people, extensive decontamination efforts would not be required for most chemical agent release scenarios. Only liquid forms (including droplet and heavy aerosol forms) of chemical agent pose the risk of significant contamination; vapor is generally not considered a significant source of contamination that poses an immediate threat to human health. Hazardous contamination from a vapor release would likely be limited to materials, such as clothing, which are in contact or very close proximity to the human body and should be best dealt with during personal decontamination. Because agent in liquid form (droplet and aerosol) settles out of the atmosphere relatively quickly, significant contamination would generally be confined to a relatively short distance from the point of release. Off-post contamination presenting a significant risk to the public would most likely occur only in the event of a very large liquid release in the atmosphere—a type of event that is not evident in the planning base.

INTEGRATION OF DECONTAMINATION INTO EMERGENCY PLANNING

Decontamination is closely linked to other aspects of the emergency preparedness program. In particular, a jurisdiction's plans for decontamination must be carefully coordinated with all its other emergency preparedness procedures and especially with the procedures it develops for reentry, monitoring, and medical services. Plans for reentry will prescribe maximum residual agent concentrations that may remain when unrestricted public use of areas and objects can be permitted. The interaction between decontamination and the provision of medical services is particularly important. Medical attention, including decontamination, must be provided to all people who need it; however, procedures must be in place to prevent the spread of contamination to health care providers and facilities (e.g., ambulances and hospitals).

In addition to its interrelationships with other aspects of the CSEPP program, decontamination must respect and integrate the requirements of numerous federal and state laws. These laws could, for example, limit the kinds and quantities of decontamination solutions that could be used in a particular area or require containment and treatment of the decontaminant runoff.

The decontamination standards presented in this appendix are derived from a variety of sources, including both policy documents and technical studies. Planners involved in CSEPP are encouraged to review some or all of the source documents listed in the references.

Because of the technical nature of some aspects of decontamination planning, a glossary is provided at the end of this appendix. This glossary supplements that found in Sect. 10 of the Planning Guidance.

STANDARDS

L-1. Each jurisdiction will incorporate a decontamination plan into the hazard-specific appendix of its EOP. The plan will describe the agencies to be responsible, resources to be available, and procedures to be followed to deal with agent-contaminated people and animals that provide critical support to humans. The decontamination plan may

be developed separately by the jurisdiction or jointly with the Army installation and other state and local jurisdictions in the IRZ and PAZ.

- L-2. The decontamination plan will include a list of priorities for the decontamination or other treatment of people to guide the allocation of resources. The organization(s) responsible for decontamination of each category of people will be identified. The responsible organizations may include departments of the jurisdiction's government, agencies of other levels of government (e.g., the Army or the state government), private contractors, or volunteers. The following list of priorities (in descending order of urgency of decontamination, treatment, or disposal) is offered as a candidate (see Watson, et al. 1992 for detailed guidelines on prioritizing symptomatic people):
- a. people who are known or suspected of being contaminated and who require prompt medical attention due to agent exposure or other severe injury,
 - b. people who are exhibiting signs/symptoms of agent exposure,
 - c. people who are known to be contaminated but are not exhibiting signs/symptoms and don't urgently require medical attention,
 - d. people who are suspected of being contaminated but show no signs of agent toxicity,
 - e. animals that are known or suspected to be contaminated and that provide critical support to humans (e.g., Seeing Eye dogs);
- L-3. The decontamination plan will describe the jurisdiction's plans for educating the public on personal **self-decontamination procedures and decontamination of others** (i.e., self- and buddy-decontamination). These plans should apply to all people in areas at risk of exposure to agent. Elements of the program may include
- a. a public education program may include (1) instructions on self- and buddy-decontamination, (2) a list of necessary supplies, and (3) guidance on other means of expedient personal decontamination (see L-4).
 - b. public information releases at the time of the emergency should clearly identify the population segments that should perform self- and buddy-decontamination. These measures should be recommended for all people who are or have been within the chemical agent plume or have come in contact with people, animals, or objects (e.g., vehicles) that have been in the plume.

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- L-4. Self- and buddy-decontamination procedures include
- a. removal of eyeglasses and contact lenses. Hands should be decontaminated before removing contacts. Contact lens removers could be used to minimize the risk of cross-contamination. If the wearer cannot evacuate safely without the use of eyeglasses, eyeglasses may be expediently decontaminated by soaking in undiluted household bleach for 5 minutes and rinsing thoroughly with plain water. Eyeglasses suspected of being contaminated and not required for safe evacuation should be placed in a plastic bag and carried to the decontamination station. All contact lenses suspected of being contaminated should be placed in a plastic bag and carried to the decontamination station,
 - b. removal of all external extraneous items from contact with the body. Such items include hearing aids, artificial limbs, jewelry, watches, toupees, and wigs,
 - c. flushing the eyes with large amounts of lukewarm water,
 - d. gently washing the face and hair with soap and lukewarm water, followed by a thorough rinse with lukewarm water,
 - e. decontaminating other body surfaces likely to have been contaminated using one of the following measures:
 - (1) the most desirable decontamination would use undiluted household bleach followed by a clear-water rinse. Procedures include blotting (not swabbing or wiping) with a cloth wetted in undiluted household bleach followed by washing with lukewarm soapy water and rinsing with clear lukewarm water,
 - (2) in the absence of bleach, a good expedient method would be washing with copious amounts of lukewarm soapy water and rinsing with clear lukewarm water,
 - f. changing into uncontaminated clothing. Contaminated clothing that would normally be removed over the head (e.g., undershirts) should be cut off.
 - g. instructions to proceed to the nearest decontamination station.
- L-5. The decontamination plan will provide for a personnel **decontamination station** to be established at each reception center and at each host hospital identified in the evacuation plan and at other locations as needed. Personnel at the decontamination station will impound and secure potentially contaminated vehicles brought by evacuees and thoroughly decontaminate potentially contaminated evacuees and injured persons. Each decontamination station will

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- a. be located where adequate supplies of water and electricity are available or can be made available;
 - b. be staffed by personnel who are trained, equipped, and clothed to decontaminate potentially contaminated people while incurring minimal risk of self-contamination. Protective clothing and equipment should be approved for use with unitary chemical warfare agent (see Appendix H, “Planning Standards for Emergency Worker Operations”);
 - c. be staffed and equipped to decontaminate the maximum number of contaminated individuals expected to arrive at the decontamination station;
 - d. be capable of being staffed quickly after the public has been alerted and notified of the emergency. The initial staff should, at a minimum, be sufficient to detain and provide expedient decontamination to potentially contaminated individuals until the decontamination station can achieve full operability;
 - e. have evaluation procedures for deciding which individuals require decontamination as well as procedures for immediately decontaminating people (including infants and individuals who are injured, handicapped, or elderly) likely to have been contaminated by chemical agent. Persons who should be decontaminated at the station include, in order of priority,
 - (1) all people who exhibit any signs or symptoms of exposure to mustard or nerve agent,
 - (2) all people who may have been exposed to mustard or nerve agent, regardless of whether they exhibit signs or symptoms of exposure. People designated as possibly exposed will be identified through a brief interview by decontamination station personnel and will include all people who
 - evacuated from an area within the plume,
 - traveled through any portion of the plume area while evacuating, or
 - have come in contact with any people, animals, or objects that had been located in or traveled through the plume and had not been decontaminated;
 - (3) all people whose contamination status cannot be clearly determined by interview or other available means.
 - f. have the capability to perform decontamination concurrently with life-saving first aid for people suffering from agent exposure or other injury;
 - g. be capable of screening people who have been decontaminated as well as other evacuees for symptoms of chemical agent toxicity;

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- h. have operating procedures for handling the personal property of potentially contaminated persons. Potentially contaminated personal property will be identified as to ownership and impounded (for later disposition) at a secure location separate from uncontaminated property;
 - i. be designed to contain and collect all used decontamination solutions and rinse water for later disposition.

L-6. Each decontamination station will be designed, equipped, and staffed to provide a sequence of decontamination functions for all potentially contaminated individuals. Most people should be able to proceed through the decontamination sequence on their own with minimal assistance (other than oral instructions) from attendants. However, those who are impaired by agent exposure, injury, poor health, or other handicap may require the assistance of an attendant or special equipment (e.g., mesh stretcher for the injured, boatswain's chair for wheelchair users). One or more mobile decontamination units may be incorporated into the decontamination station for the purpose of decontaminating people, provided that the mobile units have been shown to be functionally equivalent to fixed facilities in performing the required decontamination actions within the available time. The decontamination station will provide the following sequence of functions:

- a. if sufficient resources are available, potentially contaminated individuals should be separated by gender. Males and females should enter separate decontamination facilities that provide visual screening but do not restrict the flow of fresh air (although young children should be permitted to accompany a parent of either sex). If available resources are not adequate to provide separate facilities for each gender, decontamination should be performed according to the priorities stated in standard L-5.e., without regard to gender;
- b. each individual should relinquish personal property (e.g., billfold and external extraneous items) and remove all clothing. Any clothing (e.g., undershirts) that would normally be removed over the head should be cut off. Attendants wearing suitable chemical protective clothing should remove the personal property, place it in an agent-impermeable bag, seal the bag, and label it with the individual's name and any other pertinent identification (e.g., social security number), and place the bag in a secure storage location for later disposition;
- c. potentially contaminated eyeglasses and contact lenses should be removed. To reduce unnecessary disposal of corrective lenses that have not been contaminated, the wearer should be interviewed or otherwise evaluated to

determine if he/she has been in an agent-contaminated area. Eyeglasses and contact lenses that are determined to be potentially contaminated will be removed and handled according to the following procedures:

- (1) hands will be decontaminated by blotting with undiluted household bleach then thoroughly rinsed with water before removing contact lenses. Contact lens removers could be used to minimize the risk of cross-contamination.
 - (2) contact lenses should be collected for later disposal in an environmentally sound manner (no attempt should be made to decontaminate contact lenses),
 - (3) eyeglasses in metal frames may be decontaminated by soaking for 5 minutes in undiluted household bleach followed by thorough rinsing, and
 - (4) eyeglasses in plastic or composite frames should be placed in an agent-impermeable bag labeled with the individual's name and an identification number for later disposition when and if resources can be made available without impeding the decontamination of people. (Suggested disposition: Some eyeglass wearers would be significantly impaired without corrective lenses. Thus, we recommend special treatment for eyeglasses in porous frames such as plastic or plastic composite. We suggest that, if time and resources permit, the lenses be removed from such frames, decontaminated by soaking for 5 minutes in undiluted household bleach and rinsing with plain water, re-mounted in uncontaminated frames, and returned to their owners);
- d. the individual should then blot skin areas (excluding the face) that may have been contaminated with decontamination solution (e.g., undiluted household bleach);
 - e. the individual should then step under a shower (lukewarm water recommended) and, following the instructions of an attendant, first flush the face and eyes with copious amounts of water, then wash the face and remainder of the body with soapy water and rinse;
 - f. following the shower, attendants should check the individual for any signs or symptoms of agent exposure and follow medical screening guidelines for treatment. Additional decontamination may be necessary. A special effort should be made to decontaminate suspected mustard victims because of the extended latent period between exposure and the appearance of effects. State and local decontamination plans should incorporate personnel monitoring guidelines;
 - g. following confirmation of successful decontamination, the individual should proceed to an area designated for first aid and re-dress. Attendants will monitor or treat any injuries and provide replacement clothing (e.g., disposable paper

garments and booties or clean used clothing obtained from Goodwill, Salvation Army, etc.);

- h. the individual should then be directed to a holding area for observation of any agent exposure symptoms. Decontaminated individuals should generally be kept separate from uncontaminated individuals; however, in some cases it may be prudent to allow uncontaminated individuals to join decontaminated dependents;
- i. each individual to have undergone decontamination at the station should be marked (e.g., by a casualty tag, hospital bracelet, or by writing directly on the chest or forehead with an indelible marker) with an indication of the specific treatment that was applied to the individual and the time at which decontamination was completed;
- j. each individual processed through the station should be provided with a certificate indicating
 - (1) a description of the decontamination actions taken,
 - (2) the time decontamination was completed,
 - (3) the time the individual was released from the observation area, and
 - (4) a description of any medical treatment administered in conjunction with decontamination.

Decontamination station personnel should also retain a copy of the certificate.

- L-7. Emergency medical personnel should be trained, equipped, and clothed to safely decontaminate any injured person suspected of being contaminated before placing the person in the ambulance for transport to a care facility. Protective clothing and equipment should be approved for use with chemical warfare agents (see Appendix H, “Planning Standards for Emergency Worker Operations”). Procedures for dealing with injured individuals who are potentially contaminated should incorporate standard medical procedures for the injury involved and should also include
 - a. removing the outer clothing of the injured person by cutting the clothing and lifting the person free of the clothing onto a wire stretcher or a stretcher with a non-absorbent surface (e.g., a disposable backboard with drainage holes),
 - b. removing remaining clothing by cutting it and pulling it from underneath the person,
 - c. removing any potentially contaminated bandage material, exercising extreme care when removing bandages that are used to control hemorrhage,

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- d. removing eyeglasses and contact lenses (contact lens removers could be used to minimize the risk of cross-contamination) as well as any other external extraneous items,
 - e. blotting (not swabbing or wiping) potentially contaminated body surfaces with copious amounts of 5% bleach solution (e.g., undiluted household bleach) or with reagents from the Army's M258A1 or M291 skin decontamination kit and washing the face and eyes with clear water,
 - f. decontaminating the chemical protective clothing of the care provider, and
 - g. applying fresh bandages where necessary to control bleeding and placing the injured person in the ambulance.
- L-8. Because companion animals accompanying evacuees represent a possible pathway for human exposure to chemical agents, emergency response plans must include provisions for minimizing the cross-contamination hazards presented by companion animals. Planning guidance for decontamination of companion animals will be presented in Appendix M, "Planning Standards for Reentry." Additional resource material is available in Watson and Munro (1990).
- L-9. The decontamination plan will identify the officials and agencies responsible for establishing and implementing a strict quarantine of all potentially contaminated materials and property that will not be immediately decontaminated. The strict quarantine will prohibit entry by the unprotected public until responsible officials determine through monitoring and sampling that unrestricted reentry and use by the public is safe. Criteria for making this determination and methods to deal with the types of potentially contaminated materials and property listed above are specified in Appendix M, "Planning Standards for Reentry."
- L-10. The decontamination plan will describe how the jurisdiction will obtain sufficient quantities of non-contaminated water for decontamination activities. Massive amounts of water may be required if the contaminated area or number of contaminated people is sizable. The water may come from any source.

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GLOSSARY

contamination—chemical agent (typically in liquid form; including droplets and/or aerosols) deposited on skin, clothing, or any other material that constitutes a source of potential agent exposure until it is neutralized, removed, or degrades naturally. (Compare to Exposure.)

dose—the quantity of agent absorbed by the body. Often expressed in mass units of agent per body weight or surface area exposed (e.g., mg/kg or mg/m²). (Compare to Exposure.)

exposure—contact by a person or animal with chemical agent in either liquid or vapor form through inhalation, contact with eyes or the skin, or ingestion of contaminated food or water. Exposure to agent in liquid form (including droplet and/or aerosol form) can result in contamination. (Compare to Contamination.)

household bleach—off-the-shelf chlorine bleach available for domestic purposes. Contains 5% NaOCl (sodium hypochlorite) in water. A strong oxidant with a high (i.e., alkaline) pH.

liquid agent—any chemical agent in undiluted form; includes droplets and heavy aerosols. Only VX or the vesicant agents are likely to be encountered in liquid form.

reentry—entry of persons to an affected area following a hazardous materials incident. Reentry can be restricted (entry of monitoring crews) or unrestricted (unlimited public access).



DECONTAMINATION BY CSEPP EMERGENCY MEDICAL PERSONNEL©

Begin immediately to decon, even if person has already performed self or buddy decon. Must be trained, equipped, and clothed to decon injured person before placing into transport to care facility. Perform decon according to these priorities:

- Priority 1:** Contaminated and require prompt medical attention due to agent exposure or other severe injury
- Priority 2:** Exhibiting signs/symptoms of agent exposure
- Priority 3:** Contaminated but not exhibiting signs/symptoms and don't urgently require medical attention
- Priority 4:** Suspected of being contaminated but show no signs of agent toxicity.

DECON PROCEDURES:

1. Remove person's outer clothing by cutting clothing and lifting person free onto wire stretcher or one with non-absorbent surface.
2. Remove rest of clothing by cutting it and pulling it from underneath person and removing personal items such as billfolds or wigs, hearing aids and artificial limbs. Place in agent-impermeable bag, seal and label with person's name, other id, and store for later disposition.

3. Remove eyeglasses and contact lenses; place in agent-impermeable bag labeled for later disposition.



4. Remove bandage material, exercising extreme care when removing bandages used to control hemorrhages.

5. Blot (not swab or wipe) body surfaces with lots of undiluted household bleach (5%) or with reagents from Army skin decon kit; wash face and eyes with clear water.

Carefully decon persons with suspected mustard exposure. Body crevices and warm, moist areas are very susceptible to effects of mustard.

6. Decon chemical protective clothing of care provider.



7. Mark person with casualty tag, hospital bracelet, or by writing directly on chest or forehead with indelible marker indicating specific treatment and completion time.

8. Apply fresh bandages where necessary to control bleeding and place injured person in transport vehicle.





CHEMICAL STOCKPILE EMERGENCY
PREPAREDNESS PROGRAM
(CSEPP)

SELF AND BUDDY DECON©

Begin immediately. **Don't wait to be "officially" decontaminated by special decon personnel. Buddy Decon is easier and allows for more thorough rinsing of places difficult to reach.**

DECON STEPS:

- **Remove all clothing, cutting off that normally removed over head. Decon hands using undiluted household bleach. Remove eyeglasses/contact lenses. If eyeglasses needed to evacuate, soak in bleach 5 minutes; rinse thoroughly with plain water.**
- **Remove hearing aids, artificial limbs, jewelry, watches, toupees, and wigs from body. If artificial limb needed to evacuate, remove it, wipe down with bleach, air it 5 min, rinse it, and reattach it.**
- **Flush eyes with lots of lukewarm water.**
- **Gently wash face & hair with soap/lukewarm water; thoroughly rinse with lukewarm water.**
- **Decon other body surfaces with bleach. Blot (not swab or wipe) with cloth soaked in bleach. If don't have bleach, wash and rinse with lukewarm water.**
- **Put on uncontaminated clothing. Clothing stored in drawers/closets unlikely to be contaminated.**
- **Place contaminated items in plastic bags.**
- **Proceed to nearest decon station, carrying only critical items (in plastic bag).**