

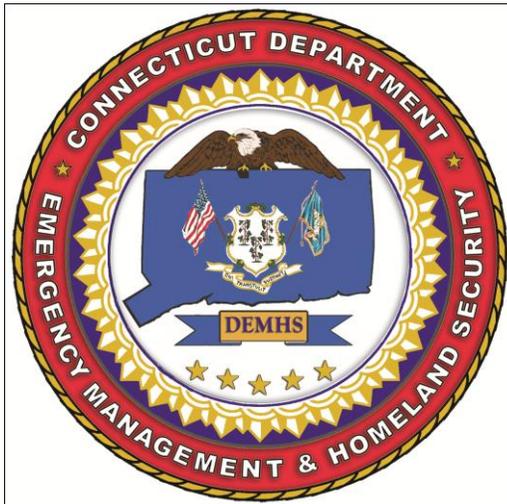
February 2009

# State of Connecticut

## Mass Decontamination Guide

&

## Mobilization Plan



## **How to Use This Guide and Mobilization Plan**

### **Section I**

This Decontamination Guide and Mobilization Plan is divided into two sections. The first section, **Section I**, details certain state demographics, planning situations, and concept of operations. The Appendices for **Section I** detail the actual procedures for the dispatching of the thirty four (34) self contained Decontamination Trailers in the state as well as a detailed guide on decontamination trailer operations. Additionally, **Section I** contains informational guides for multiple decontamination processes which include Rapid Access Mass Decontamination, suggested ambulatory / non-ambulatory decontamination, and service animal decontamination.

### **Section II**

The State of Connecticut is divided into five (5) planning Regions i.e. Regions I, II, III, IV, & V. The second section of this Guide, **Section II**, contains information from the respective Department of Emergency Management & Homeland Security (DEMHS) Regions specific to that region. This includes Regional demographics, concept of operations, significant hazard situations, e.g. chemical production plants, nuclear power plants, and any specifics involving a region wide decontamination response which may include their Regional Hazardous Materials Team, as well as identifying resource / support services. **Section II** also details decontamination plans and anticipated resource requirements for each of the Acute Care Hospitals in the respective DEMHS regions.

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## STATE OF CONNECTICUT Mass Decontamination Mobilization Plan

### **Introduction**

The State of Connecticut is comprised of 171 individual municipalities, towns and tribal nations with a total population of approximately 3.5 million residents. Located within the State's boundaries are 32 acute health care facilities. Connecticut's location and infrastructure combine a unique mixture of communications nodes, transportation corridors, tourist attractions and maritime commerce; all of which would provide excellent targets for the types of damage and disruption sought by terrorist groups and/or individuals. Approximately two-thirds of the State's population resides in its coastal communities. The population number increases significantly during the summer months with an influx of tourists to Connecticut's southern shoreline areas. The area of southeastern Connecticut includes military bases, a nuclear power plant, major defense contractors, and a pharmaceutical manufacturing company. The southwestern area of the State is considered "Metro New York" and contains vital transportation infrastructure. Both areas need special security arrangements to protect against and prevent the potential use of Weapons of Mass Destruction (WMD) and/or acts of terrorism.

The mixture of fixed and transient populations in the state requires the interoperability of equipment, training and operations as it relates to statewide domestic preparedness. Should there be either an accidental or deliberate release of a chemical, biological or radiological substance within the State, there will be a need to decontaminate people both at the scene of the release and at the primary healthcare facilities. This document contains a mass decontamination concept of operations that enables the standardization of resources throughout the State of Connecticut. The State of Connecticut Mass Decontamination Mobilization Plan does not supersede any emergency action plan or decontamination procedures currently in place at healthcare facilities for the more detailed technical decontamination process that might be employed as a baseline pre-incident process prior to a large scale event. Nor does this Plan supersede the more traditional decontamination process employed by a fire department when working at a Hazardous Materials (HazMat) scene to assure personnel safety and equipment decontamination.

### **Purpose**

Federal law enforcement and intelligence agencies warn of the extreme likelihood of terrorist events in the future having to deal with Weapons of Mass Destruction resulting in substantial loss of life and casualties. Of particular concern is the use of chemical, biological or radiological agents that would contaminate large numbers of individuals. The State of Connecticut Mass Decontamination Mobilization Plan provides information on available decontamination resources within the State as well as a process to bring those resources to bear. Although a wide variety of information related to decontamination is provided within this document, **the main focus of the Mass Decontamination Mobilization Plan is on the deployment of the 34 decontamination trailers located throughout the State. However each of the five DEMHS Regions will be responsible for the development of any specific risk and response details specific to their region.** This shall be done through the Regional

Emergency Planning Team (REPT) for each region and be included as Section II to this broader State Mass Decontamination Plan.

### **Situation and Assumptions**

Connecticut is the transportation hub for Southern New England. The State is literally bisected from north to south by I-91 and from east to west by I-84. Interstate 95 extends the entire length of the Long Island Sound shoreline passing through three of the five largest cities in the State; Stamford, Bridgeport and New Haven. Mass public transportation assets are very vulnerable in Connecticut. The State has substantial numbers of passengers serviced by AMTRAK and the Metro North Train systems. Bradley International Airport has grown significantly in recent years in the number of passengers and the amount of cargo handled. Additionally, Connecticut has three major deepwater ports; Bridgeport, New Haven and New London. A terrorist attack closing any interstate highway, the airport or any of the ports would have major economic consequences for the region at a minimum and possibly the State. Additionally, such an attack would cause a large number of human casualties.

There is an acceptable response capability for hazardous material incidents statewide and in certain large communities. However, while efforts are being taken to improve protection from acts of terrorism, there is still a lack of specialized equipment to effectively detect, identify, and defend citizens from weaponized chemical and biological agents or intentional releases of toxic industrial materials.

The State's population, facilities, and infrastructure dynamics present numerous opportunities for potential acts of WMD/terrorism. However, the possibility of a terrorist attack in Connecticut including one involving a chemical, biological or radiological weapon is considered to be low. There are no internationally recognized symbolic targets (e.g. the White House, the World Trade Center, or the Washington Monument) located in Connecticut. None of the State's cities rank in the nation's top 120 cities in terms of population.

Given the low probability of a terrorist attack occurring in the State, only general statements can be made regarding the relative risk of the State's individual municipalities to a terrorist attack. Generally speaking, larger concentrations of the types of facilities that might be targeted by terrorists (e.g. courts, government offices and buildings, abortion clinics, transportation facilities, sports facilities, special event venues, hospitals) are commonly found in the larger cities. Therefore, it is reasonable to assess the risk to larger cities (i.e. those with over 100,000 in population) as somewhat greater than the risk to small to mid-sized municipalities.

An exception to the larger cities equals greater risk statement is made in the case of Bradley International Airport and in the case of the resorts/casinos operated by the Mashantucket Pequot and Mohegan Tribal governments located in southeastern Connecticut. These three facilities are considered to be of interest, even though they are located within, or adjacent to, municipalities under 100,000 in population. These facilities are relatively high-visibility, 24x7x365 operations with a considerable amount of transient traffic during any given period of time. Similarly, the concentration of military bases, defense contractors, a nuclear power

plant, and a large pharmaceutical complex in Southeastern Connecticut requires special consideration even though the population in the surrounding area is less than 100,000.

### **Planning Factors**

1. The all hazards approach to planning and implementing decontamination efforts has the greatest chance of providing a successful outcome when an event occurs. Non-deliberate events can also create a need for Mass Decontamination procedures and equipment.
2. A WMD/terrorist incident that causes mass casualties will require a response organized under the National Incident Management System (NIMS).
3. An intentional WMD release in all likelihood will occur without advanced warning.
4. An intentional WMD release/attack may not be initially recognized as a terrorist event. The first indications of an attack may be upon manifestation and recognition of the first medical symptoms hours to days later.
5. Physical control of the incident scene requires planning and advanced coordination by all first responders.
6. On scene care of persons exposed to chemical, biological or radiological materials as well as the protection of those who have not been exposed is critical. It is of the utmost importance to alert the healthcare delivery system (primarily the 32 acute care hospitals) to these occurrences in a rapid and timely manner so that providers can implement procedures to effectively decontaminate exposed persons and limit contamination to facilities, patients, staff and others.
7. The basic concept in making gross mass decontamination work is repeated wash / rinse stages keeping the individuals moving to the next stage at appropriate intervals.
8. Intentional WMD scenes may include secondary devices meant to kill, or incapacitate first responders. The scene should be searched for such devices as soon as practical. However, life saving operations should not be delayed. Instead, first responders should remain vigilant to the possibility of such devices.
9. As with any Mass Casualty Incident (MCI), the potential for substantial loss of life is significant and survival usually is dependent on resource availability. The number of victims may exceed resource capacities.
10. There are 34 mass decontamination trailers located throughout the State of Connecticut owned and operated by State (4), local (28) and tribal (2) response entities. All decontamination trailers are available upon request to respond anywhere within the State.

11. The Mass Decontamination Units (MDU) will be designated as follows: the prefix, MDU, then the Region where the trailer is housed, followed by the trailer number, as follows:

|                          |                          |                         |
|--------------------------|--------------------------|-------------------------|
| MDU-501 Waterbury        | MDU-502 Greenwich        | MDU- 403 New London     |
| MDU-104 Stamford         | MDU-205 DEP/O.Saybrook   | MDU-106 Bridgeport      |
| MDU-307 East Hartford    | MDU-208 New Haven        | MDU-309 Bdl Int Airport |
| MDU-310 UConn Health Ctr | MDU-411 Mhntk Trb Nation | MDU-112 Fairfield       |
| MDU-513 Danbury          | MDU-414 Mhgn Trb Nation  | MDU-415 UConn Storrs    |
| MDU-516 Torrington       | MDU-317 West Hartford    | MDU-118 Norwalk         |
| MDU-219 Guilford         | MDU-420 Norwich          | MDU-321 New Britain     |
| MDU-522 New Milford      | MDU-523 Derby            | MDU-424 Brooklyn        |
| MDU-525 Sharon           | MDU-226 Meriden          | MDU-327 Middletown      |
| MDU-428 Willimantic      | MDU-329 Vernon           | MDU-230 Milford         |
| MDU-331 Bristol          | MDU-332 Manchester       | MDU-333 Southington     |
| MDU-334 Stafford         |                          |                         |
12. Based on the location and time of day of the incident, decontamination trailers may not be available to the scene or hospitals for 60-120 minutes.
13. All of the 32 acute care hospitals have established decontamination plans, systems & teams that can be activated at or near their respective emergency department entrance.
14. Mass decontamination can be accomplished using one or more processes, independently or simultaneously. (See Appendix C)
15. Preservation and chain of custody of evidence needs to be considered during decontamination operations but on a not to interfere basis with preservation of life.

### **Concept of Operations**

Detection and reporting of actual and perceived exposures requiring decontamination can be expected to occur in the following ways:

1. Reports to Public Safety Answering Point (PSAP) / Communications Centers of a real or a perceived release.
2. Discovery of a real or perceived release by emergency personnel arriving at an incident location
3. Real or perceived exposures on the part of individual(s) who choose to seek medical assistance at hospitals without the intervention of public safety agencies.

*If it is a suspected intentional release, or a forewarned event, the Incident/Unified Commander should request the proper notifications be made in accordance with the State of Connecticut Consequence Management Guide for Deliberately Caused Incidents Involving Chemical Agents, promulgated by the Department of Emergency Management and Homeland Security.*

Experience has shown that there are more incidents with perceived exposures than actual incidents with exposures. However, delaying the activation of decontamination procedures until exposure confirmation could cause critical delays in system implementation. Once the determination has been made regarding the necessity of a mass decontamination operation, the Incident/Unified Commander must initiate a rapid access mass decontamination plan using available resources and practices. Within 30 minutes of plan activation, an affected area should have the capability of decontaminating 250 persons per hour. This is usually only achieved through the standard fire department Rapid Access to Mass Decontamination as outlined in this document in Appendix C.

Decontamination Trailers have the capacity to decontaminate over one hundred (100) persons per hour; however it is expected that actual decontamination throughputs will be less than 100 persons. It should be understood that maximum achievable decontamination throughputs will be impacted by everything from chemical agent, to presenting symptomology, to population language barriers. If the deployment of mass decontamination trailers is deemed part of the response solution, a request must be made for the appropriate number of decontamination trailers to be deployed to the scene. Deployment of additional trailers to the area hospitals most likely to be impacted by the arrival of contaminated individuals should also be considered.

An Incident/Unified Commander will notify his/her inherent dispatch center to activate the mass decontamination plan. The local dispatch center will notify the Statewide Decontamination Trailer Dispatch Center. Additionally, the local dispatch center will notify the Department of Environmental Protection dispatch center, the regional Coordinated Medical Emergency Direction centers (CMED), local law enforcement, (this includes any CT State Police Resident Troopers serving the affected areas), and the Connecticut State Police Message Center as appropriate. Contact numbers for Statewide Decontamination Dispatch Center, the Department of Environmental Protection and the Department of Public Safety dispatch centers can be found in Appendix A.

For the purposes of this plan, Tolland County Dispatch (TN) is the primary Statewide Decontamination Trailer Dispatch Center (SDTDC). The Colchester Regional Dispatch Center (KX) is the secondary SDTDC. The Northwest Connecticut Public Safety Communications Center will take on the responsibility of being the SDTDC as a tertiary center. If TN is incapacitated, the secondary (and if necessary tertiary) SDTDC will be contacted immediately.

Once notified of the need for mass decontamination resources, the SDTDC will notify decontamination trailer providers to place their trailers in one of three categories: DECON ALERT, DECON STANDBY and DECON RESPOND. **Additionally, the SDTDC shall notify the CT-DEMHS Duty Officer / DEMHS Regional Coordinator of situation.**

*DECON ALERT:*

A situation where a report has been made to a responsible authority that an exposure may have taken place, but the number of exposures or the requirement for decontamination is unknown.

*DECON STANDBY:*

A situation where it has been determined that an event has occurred which will require the decontamination of persons prior to the provision of healthcare or release.

*DECON RESPOND:*

An order to move a decontamination trailer to the scene, a staging area or a hospital.

Contact information for the decontamination trailer providers can be found in Appendix A, Attachment 3. **IT IS IMPERATIVE THAT DECONTAMINATION TRAILER PROVIDERS KEEP THE SDTDC INFORMED AS TO THE AVAILABILITY OF THE TRAILERS AT ALL TIMES.** If for any reason a trailer becomes unavailable (trailer maintenance, tow vehicle problem, personnel shortage, etc), the decontamination trailer provider must inform the SDTDC. The SDTDC will mark the trailer as “OUT OF SERVICE” until notified of its availability once the problem is corrected.

The SDTDC will use the Mass Decontamination Trailer Deployment Request Form to gather all pertinent information from the requesting Incident/Unified Commander. Decontamination Trailer Deployment Request Forms can be found in Appendix A, Attachment 1. Local dispatch centers should have the information needed to complete the request form readily available to provide to the SDTDC when the call is made. The local dispatch center is also responsible to notify the SDTDC when decontamination trailers complete the assigned mission and return to home base.

### **Organization and Assignments of Responsibility**

The “owners” of the mass decontamination trailers are responsible for keeping the trailers, the tow vehicles and all associated gear in good repair and ready to deploy. Deployment crews shall be assigned and properly trained on the operations of the trailers and the decontamination process. Owners shall keep the SDTDC informed of the status and the capability of delivering their respective trailer.

Incident/Unified Commanders are responsible for organizing the proper level of response to an event within his/her jurisdiction. Incident/Unified Commanders can call upon adjacent local, regional, State or even federal assets as the situation dictates. The protocol for requesting additional resources is established through mutual aid agreements, regional response plans, statewide mobilization plans and beyond. It is the responsibility of the Incident/ Unified Commander to know of and understand how to request needed resources. Incident/Unified Commanders are responsible to initiate requests for the use of decontamination trailers both through mutual aid and under this Plan.

Local dispatch centers are responsible for knowing and understanding how to activate the State of Connecticut Mass Decontamination Mobilization Plan. Familiarization with the procedures, contact information and request forms is a bare minimum. Local dispatch centers are responsible to contact the SDTDC to request trailers. Local dispatch centers are also responsible to inform law enforcement (State and local), the Department of Environment Protection and the Regional CMED that the Plan has been activated.

Regional CMEDs are responsible for knowing and understanding the elements of the Mass Decontamination Mobilization Plan. Upon notification of an event involving chemical, biological or radiological substances, the regional CMED will notify all hospitals within the area of the event and the activation of the decontamination plan.

Hospitals are responsible for having mass decontamination plans in place. Hospitals are to insure that their staffs are assigned, trained to assemble and operate their portable decontamination systems, as well as making available said plans to the region's Regional Emergency Planning Team (REPT). Hospitals are also responsible for knowing and understanding how to activate the Mass Decontamination Mobilization Plan through the local fire or police departments. Additionally, hospitals are responsible for coordinating the delivery, site location, water and electrical services for an arriving decontamination trailer. (See Appendix D)

The Connecticut Department of Emergency Management and Homeland Security (DEMHS) is responsible for maintaining the Connecticut Mass Decontamination Mobilization Plan. The Plan will be reviewed by staff and subject matter experts and updated biennially. If changes occur within the timeframe of a biennial review, e.g. contact numbers, dispatch protocols, etc; those changes can be addressed as need be by citation of revised information distributed to all planning partners for incorporation at their level. This type of information will be distributed through CT-DEMHS and the respective Regional Emergency Planning Teams.

The Statewide Decontamination Trailer Dispatch Center (SDTDC) is the focal point for the request, deployment and return of the decontamination trailers located in Connecticut (See Appendix A). The SDTDC will act as the control point for the movement of the decontamination trailers during activation of the Plan. The SDTDC will also track the status of each trailer to include but not be limited to maintenance, training and delivery issues. As the primary SDTDC, TN is responsible to keep the secondary and tertiary control centers updated on the status of the trailers.

### **Administration and Logistics**

In order to reach and maintain a timely and sustained decontamination operation, the closest available Decontamination Trailers shall be dispatched to the incident scene for use in the decontamination process. Additional Decontamination Trailers shall be dispatched to the hospitals most likely impacted by the arrival of contaminated persons, as needed.

The overall number of trailers deployed is dependent on the number of persons contaminated and the type of contaminant. Factors to be considered when calculating how many Decontamination Trailers may be needed are:

1. Persistent contaminant requiring a longer "wash & rinse" time.
2. Degree of on-scene medical intervention needed.
3. Providing quick access to individuals in need of decontamination.
4. Choke points at the entry and exit ways of the trailers.
5. Weather conditions.

With more trailers requested persons can have an extended wash and rinse time, or can be processed through trailers in tandem for multiple wash / rinse stages. Additionally, two to four trailers in tandem can be used for the expressed purpose of disrobement and drying/dressing after decontamination thereby greatly decreasing the congestion expected at the entry & exit ways of the trailers used for wet decontamination, particularly during inclement weather.

Each decontamination trailer is equipped with a tent which has decontamination capability either as part of the trailer operation, or a stand alone decontamination solution. The tent is available with a mixing valve that connects to either side of the trailer for water and soap solution supply. The tent can be attached to the rear entry doors or either of the side exit doors with a privacy curtain between the tent and the trailer. As a stand alone solution, the tent can be used for non-ambulatory victims on stretcher or in wheel chair, or as an additional decontamination line. The tent has two stations on each side, 1 rinse and 1 soap solution. The tent can be configured based on the incident.

Decontamination Trailers will be delivered by the “owner” of the trailer upon request. A request can be from an Incident/Unified Commander using a local mutual aid agreement. A request can be from the SDTDC in accordance with this Plan. Trailer providers are to insure that the trailers and tow vehicles are maintained in operating condition. Trailer providers are also to insure that crews are designated and trained to deliver and operate the decontamination trailers.

### **Plan Development and Maintenance**

The Connecticut Mass Decontamination Guidance & Mobilization Plan was developed by the Department of Emergency Management and Homeland Security (DEMHS). The Plan is an adaptation of a regional decontamination mobilization plan developed by the Capitol Region Metropolitan Medical Response System. The Connecticut Fire Chiefs and Career Fire Chiefs Associations were major contributors to the Plan. The CT-DEMHS is responsible for maintaining the Connecticut Mass Decontamination Guidance & Mobilization Plan.

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Federal Environmental Protection Agency (EPA) Guidelines

National Institute of Standards & Technology, Special Publication 981

Center for Domestic Preparedness – Noble Hospital, Anniston Alabama

State of Connecticut General Statues Title 28

Connecticut Statewide Fire - Rescue Disaster Response Plan

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OSHA 29 CFR 1910.120

Connecticut Model Radiation Emergency Manual for Hospitals

Planning Guidance for a Response to a Nuclear Detonation – US Homeland Security Council  
Interagency Policy Coordination Subcommittee

## **Glossary of Terms**

### Biological agent

- Microorganisms or toxins from living organisms that have infectious or noninfectious properties that produce lethal or serious effects in plants and animals.

### Chemical agent

- Solids, liquids, or gasses that have chemical properties that produce lethal or serious effects in plants and animals. Common chemical agents fall into four categories:
  - Nerve agents: Substances that interfere with the central nervous system.
  - Blister agents: Substances that cause blistering of the skin.
  - Blood agents: Substances that injure a person by interfering with cell respiration.
  - Choking agents: Substances that cause physical injury to the lungs.

### Decontamination (DECON)

- The reduction or removal of a chemical, biological, or radiological material from the surface of a structure, area, object, or person.

### Hazardous Material (HazMat)

- Any substance or material that when involved in an accident and released in sufficient quantities, poses a risk to people's health, safety, and/or property. These substances and materials include explosives, radioactive materials, flammable liquids or solids, combustible liquids or solids, poisons, oxidizers, toxins, and corrosive materials.

### Multi / Mass Casualty Incident (MCI)

- Any single incident that causes emergency medical service providers to alter their normal pre-hospital patient care protocols in order to provide the most effective possible pre-hospital care.
- Any single incident with at least 6 casualties or some other threshold number of casualties established in the local mass casualty plan.

### National Incident Management System (NIMS)

- A standardized management system designed for control and coordination of field emergency response operations under the direction of an Incident/Unified Commander through the allocation and utilization of resources within pre-defined functional and/or geographic areas.

### Radiological Agent

- Any accidental or intentional release of radiation energy.
  - Alpha- radiation cannot penetrate the outer layer of skin.
  - Beta- radiation can penetrate the skin to a depth of a few centimeters.
  - Gamma- radiation can penetrate the entire thickness of a human body and represents a great hazard whether the material is either internal or external to the body.

### Terrorist Attack

- A violent act or an act dangerous to human life, property or the environment, in violation of the criminal laws of the United States or the State of Connecticut, to intimidate or

coerce a government, the civilian population or any segment thereof, in furtherance of political or social objectives

Weapon of Mass Destruction (WMD)

- Any explosive, incendiary, bomb, grenade or rocket having a propellant charge of more than four ounces; a missile having an explosive or incendiary charge of more than one-quarter ounce; a mine; or a device similar to the above.
- Poison gas.
- Any weapon involving a disease organism.
- Any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.

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## List of Acronyms

### A.C.I.D.

- Assess/Activate
- Call
- Isolate
- Decontaminate

CMED-Central Medical Emergency Dispatch

CERCLA- Comprehensive Environmental Response, Compensation, and Liability Act (Super Fund)

CSP- Connecticut State Police

CTY- County

DECON- Decontamination

DEMHS – Department of Emergency Management and Homeland Security

DEP- Department of Environmental Protection

DPS- Department of Public Safety

EM- Emergency Manager

EMS- Emergency Medical Services

EPA- Environmental Protection Agency

FC- Fire Chief

FFPE- Full Firefighter Protective Equipment

GPM- Gallons per Minute

HQ- Headquarters

HazMat- Hazardous Materials

HEPA- High Efficiency Particulate Air Filter

HERT – Hospital Emergency Response Team

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IC/UC- Incident/Unified Commander

ICALL/ITAC-International Calling/ International Tactical

JCAHO-Joint Commission on Accreditation of Healthcare Organizations

KX-Colchester Regional Dispatch Center

LE- Law Enforcement

LOC- Loss of Consciousness

MCI- Mass / Multi Casualty Incident

MDU- Mass Decontamination Unit

NIMS- Incident Management System

NST- National Standard Thread

PC- Police Chief

PH- Public Health

PPE- Personal Protective Equipment

PPV- Positive Pressure Ventilation

PSAP- Public Safety Answering Point

PSI- Pounds per Square Inch

SCBA- Self Contained Breathing Apparatus

SDTDC - Statewide Decontamination Trailer Dispatch Center

TBSA-Total Burn Surface Area

TN- Tolland County Dispatch, aka Tolland County Regional Coordination Center, aka  
Tolland County Mutual Aid Fire Service, Inc.

WMD- Weapons of Mass Destruction

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Connecticut Statewide Homeland Security Preparedness Strategy

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Interagency Policy Coordination Subcommittee

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**Appendices  
For The  
State of Connecticut  
Mass Decontamination Guide  
&  
Mobilization Plan**

# Appendix A

## Mass Decontamination Trailer Deployment Process

### I. DECONTAMINATION TRAILER NOTIFICATION PROTOCOL

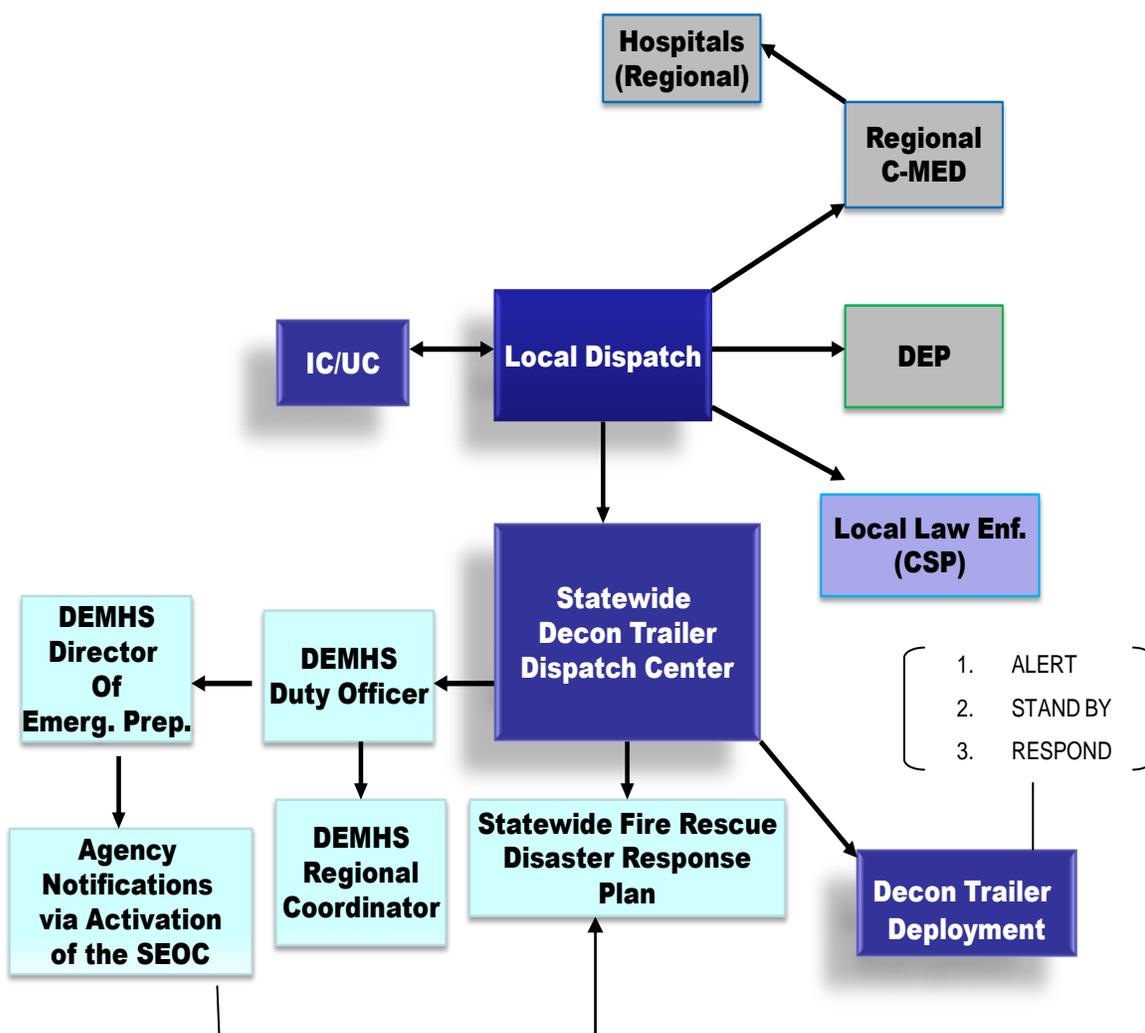


Figure A.1

## Appendix A

### II. MASS DECONTAMINATION DEPLOYMENT REQUEST PROCEDURE

1. All requests for the mobilization of the Mass Decontamination Trailer system shall be made through the Statewide Decontamination Trailer Dispatch Center (SDTDC).

**Primary: Tolland County Dispatch (TN).**

**Emergency Contact number: 860-872-7333**

**Routine Contact number: 860-875-2543**

**Secondary: Colchester Regional Dispatch Center (KX)**

**Emergency Contact number: 860-537-3411**

**Routine Contact number: 860-537-3414**

2. Additionally local dispatch centers are to notify the Department of Environmental Protection (DEP) as well as their local Law Enforcement authority.

**DEP Dispatch number: 860-424-3333**

3. The SDTDC will use the Mass Decontamination Trailer Deployment Request Form to gather all pertinent information from the requesting agency. (Appendix A, Attachment 1)
4. The Decontamination Trailer locator map and contact list shall be used to determine the closest trailers to the incident to be deployed. The appropriate agencies will then be contacted for the purpose of dispatching the Decontamination Trailer(s) to the incident.
5. All pertinent information shall be transferred to the local dispatch centers by best possible media (phone, fax, radio, e-mail, etc).
6. All trailers are assumed to be ready for deployment. The SDTDC shall be kept informed as to the availability status of all Decontamination Trailers at all times. If for any reason a trailer becomes unavailable for deployment due local use or maintenance, the SDTDC will be contacted and the trailer shall be noted as "OUT OF SERVICE" for response. Upon return to service, the SDTDC will be advised of the status change.

**Appendix A**

**Attachment 1.**

**MASS DECONTAMINATION TRAILER DEPLOYMENT  
REQUEST FORM**

**DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_

**1. REQUESTING AGENCY:** \_\_\_\_\_

**2. OFFICER IN CHARGE:** \_\_\_\_\_

**3. INCIDENT TYPE:** \_\_\_\_\_

**4. ESTIMATED NUMBER OF VICTIMS:** \_\_\_\_\_

**5. INCIDENT LOCATION:** \_\_\_\_\_

**6. INCIDENT TOWN/CITY:** \_\_\_\_\_

**7. REQUESTING DISPATCH CALL BACK NUMBER:** \_\_\_\_\_

**8. SCENE CALL BACK NUMBER:** \_\_\_\_\_

**9. NUMBER OF TRAILERS REQUESTED:** \_\_\_\_\_

**10. NUMBER OF TRAILERS TO SCENE:** \_\_\_\_\_

**11. NUMBER OF TRAILERS TO STAGING LOCATION:** \_\_\_\_\_

**12. STAGING LOCATIONS:** \_\_\_\_\_

**13. BEST ACCESS ROUTES:** \_\_\_\_\_

**14. ON SCENE RADIO FREQUENCIES:** \_\_\_\_\_

**15. ON SCENE CONTACT PERSON:** \_\_\_\_\_

**16. CELL PHONE:** \_\_\_\_\_

**Appendix A**

**Attachment 2.**

**DECON TRAILERS TRACKING FORM**

**TO SCENE:**

**TRAILER NUMBER:      AGENCY:      CONTACT NUMBER:**

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**TO STAGING:**

**TRAILER NUMBER:      AGENCY:      CONTACT NUMBER:**

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# Appendix A

## Attachment 3.

### MASS DECONTAMINATION TRAILER CONTACT INFORMATION

| DEMHS<br>Region 1 |   |  |  |
|-------------------|---|--|--|
| TRAILER<br>NUMBER | DEPARTMENT NAME   | EMERGENCY<br>CONTACT PHONE<br>NUMBER                         | ROUTINE<br>CONTACT PHONE<br>NUMBER                 |
| MDU-102           | GREENWICH FIRE DEPARTMENT                                   | 203-622-7801<br>203-622-7802                                 | 203-622-3950 A<br>203-622-3951 T<br>203-869-1388 M |
| MDU-104           | STAMFORD FIRE RESCUE  | 203-977-5555   | 203-977-4673 A<br>203-977-4673 T<br>203-977-4668 M |
| MDU-106           | BRIDGEPORT FIRE DEPARTMENT                                  | 203-367-5351   | 203-576-7683 A<br>203-576-8059 T<br>203-576-7682 M |
| MDU-112           | FAIRFIELD COUNTY HAZMAT<br>(EASTON FD)                      | 203-459-0159   | 203-341-5044 A<br>203-341-5044 T<br>203-341-5044 M |
| MDU-118           | NORWALK FIRE DEPARTMENT                                     | 203-866-3311<br>203-866-3312                                 | 203-866-3313 A<br>203-866-3313 T<br>203-866-3313 M |
| DEMHS<br>Region 2 |   |  |  |
| MDU-205           | DEPARTMENT OF ENVIRONMENTAL<br>PROTECTION<br>(OLD SAYBROOK) | MONDAY-FRIDAY<br>860-424-3338<br>AFTER HOURS<br>860-424-3333 | 860-424-3024 A<br>860-424-3377 T<br>860-424-3377 M |
| MDU-208           | NEW HAVEN FIRE DEPARTMENT                                   | 203-624-2123   | 203-946-6237 A<br>203-946-6215 T<br>203-946-6243 M |
| MDU-219           | NEW HAVEN AREA SPECIAL<br>HAZARDS GUILFORD FD               | 203-453-8000   | 203-453-8056 A<br>914-674-5576 T<br>203-453-8056 M |
| MDU-226           | Meriden Fire Department                                     | 203-630-5868   | 203-630-5868 A<br>203-630-5878 T<br>203-630-5827 M |
| MDU-230           | Milford Fire Department                                     | 203-878-5991   | 203-783-3750 A<br>203-783-3773 T<br>203-877-2220 M |

Table A.1

A= administrative  
T= training  
M= maintenance

| DEMHS<br>Region 3 |  |   |  |
|-------------------|--|---|--|
| TRAILER<br>NUMBER | DEPARTMENT NAME  | EMERGENCY<br>CONTACT PHONE<br>NUMBER              | ROUTINE<br>CONTACT PHONE<br>NUMBER                 |
| MDU-307           | EAST HARTFORD FIRE DEPARTMENT                          | 860-528-4171 ext.<br>515 860-528-4401<br>ext. 515 | 860-528-4171 A<br>860-528-4171 T<br>860-528-4171 M |
| MDU-309           | BRADLEY AIRPORT FIRE<br>DEPARTMENT                     | TROOP W<br>860-292-7400                           | 860-627-3367 A<br>860-627-3361 T<br>860-627-3361 M |
| MDU-310           | UCONN HEALTH CENTER<br>FIRE DEPARTMENT<br>(FARMINGTON) | 860-679-2525                                      | 860-679-3317 A<br>860-679-2393 T<br>860-679-3317 M |
| MDU-317           | WEST HARTFORD/ CREPC REGIONAL<br>HAZMAT                | 860-523-5263                                      | 860-570-3807 A<br>860-570-3807 T<br>860-883-1432 M |
| MDU-321           | NEW BRITAIN FIRE DEPARTMENT                            | 860-826-3000<br>860-826-2660                      | 860-826-2614 A<br>860-826-2645 T<br>860-826-2652 M |
| MDU-327           | Middletown Fire Department                             | 860-347-2541                                      | 860-343-8026 A<br>860-343-8004 T<br>860-343-8004 M |
| MDU-329           | Vernon Fire Department                                 | 860-875-2573                                      | 860-871-8684 A<br>860-872-2411 T<br>860-875-8267 M |
| MDU-331           | Bristol Fire Department                                | 860-583-4141                                      | 860-584-7964 A<br>860-584-7957 T<br>860-584-7964 M |
| MDU-332           | Hartford Fire Department                               | 860-757-4500                                      | 860-722-8200 A<br>860-522-4888 T<br>860-543-8795 M |
| MDU-333           | Southington Fire Department                            | 860-620-1518                                      | 860-621-3202 A<br>860-621-0495 T<br>860-628-4458 M |
| MDU-334           | Stafford Fire Department                               | 860-872-7333                                      | 860-684-5492 A<br>860-684-0675 T<br>860-684-3341 M |

Table A.1

A= administrative  
T= training  
M= maintenance

| <b>DEMHS Region 4</b> |  |                                       |  |
|-----------------------|--|---------------------------------------|--|
| <b>TRAILER NUMBER</b> | <b>DEPARTMENT NAME</b>                                       | <b>EMERGENCY CONTACT PHONE NUMBER</b> | <b>ROUTINE CONTACT PHONE NUMBER</b>                |
| MDU-403               | NEW LONDON FIRE DEPARTMENT                                   | 860-442-4444<br>860-442-2345          | 860-447-5291 A<br>860-447-5292 T<br>860-447-5292 M |
| MDU-411               | MASHANTUCKET PEQUOT TRIBAL NATION FIRE DEPARTMENT (LEDYARD)  | 860-396-6662                          | 860-396-6726 A<br>860-296-6724 T<br>860-396-6726 M |
| MDU-414               | MOHEGAN TRIBAL NATIONS FIRE DEPARTMENT (MONTVILLE)           | 860-862-7460                          | 860-862-6190 A<br>860-862-7327 T<br>860-862-7327 M |
| MDU-415               | UNIVERSITY OF CONNECTICUT (STORRS)                           | 860-486-3131                          | 860-486-4925 A<br>860-496-4925 T<br>860-496-4925 M |
| MDU-420               | CT EASTERN REGIONAL RESPONSE INTEGRATED TEAM (NORWICH FD)    | 860-886-5561                          | 860-892-6080 A<br>860-572-7567 T<br>860-823-3794 M |
| MDU-428               | Willimantic Fire Department                                  | 860-423-2525                          | 860-465-3120 A<br>860-465-3124 T<br>860-465-3124 M |
| <b>DEMHS Region 5</b> |  |                                       |  |
| MDU-501               | WATERBURY FIRE DEPARTMENT                                    | 203-597-3400                          | 203-597-3450 A<br>203-597-3453 T<br>203-597-3453 M |
| MDU-513               | DANBURY FIRE DEPARTMENT                                      | 203-797-4616                          | 203-796-1555 A<br>203-796-1550 T<br>203-796-1556 M |
| MDU-516               | TORRINGTON FIRE DEPARTMENT                                   | 860-489-2255                          | 860-489-2255 A<br>860-489-2255 T<br>860-489-2349 M |
| MDU-522               | NORTHWEST REGIONAL HAZMAT (Water Witch Hose Co. NEW MILFORD) | 860-355-3133                          | 860-354-4023 A<br>860-354-4023 T<br>860-354-4023 M |
| MDU-523               | Storm Ambulance Haz-Mat (Derby)                              | 203-789-0123                          | 203-410-6001 A<br>203-401-2735 T<br>203-710-9964 M |
| MDU-524               | Northeast Connecticut Haz-Mat                                | TBD                                   | 860-234-7469 A<br>860-234-7471 T<br>860-234-7475 M |
| MDU-525               | Sharon Fire Department                                       | 860-567-3877                          | 860-364-5584 A<br>860-364-5124 T<br>860-364-5487 M |

Table A.1

A= administrative  
T= training  
M= maintenance

# Connecticut Decontamination Trailer Locations

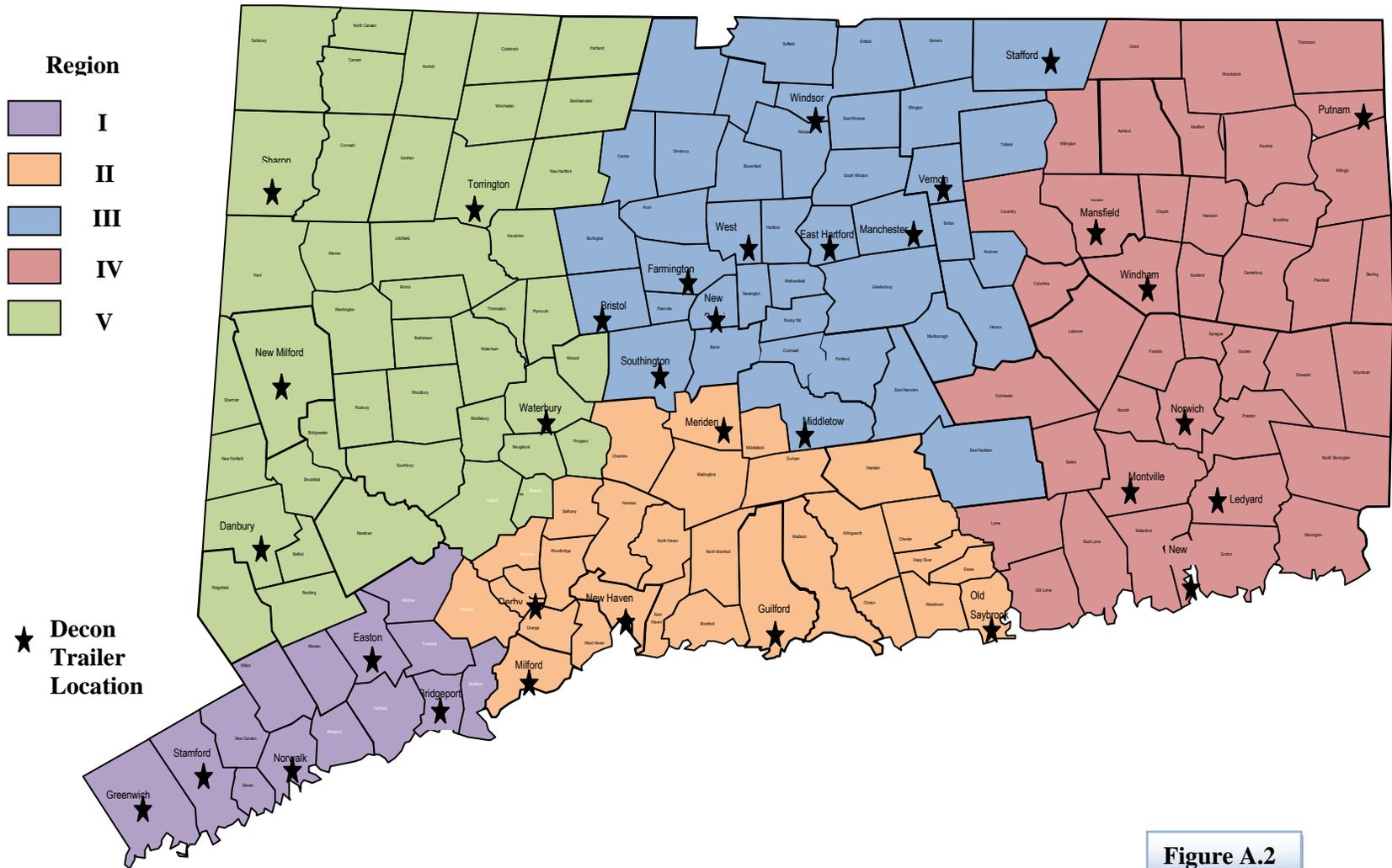


Figure A.2

# APPENDIX B

## Chemical, Biological and Radiological Agent Background

### I. Chemical Agents

Common chemical agents fall into four categories: nerve agents, blister agents, blood agents, and choking agents. The dispersal of these agents can be by air, ingestion, or simple contact. The three most common routes of exposure are inhalation, skin/surface contact, and ocular. Although not always the case, it is common that release of chemical agents can be characterized by rapid symptom onset (minutes to hours) and may produce other environmental clues such as dead animals/insects, dead foliage, pungent odors and residues.

#### Nerve Agents

|                          |   |            |            |            |
|--------------------------|---|------------|------------|------------|
| Common Name (Military)   | Tabun (GA)  | Sarin (GB) | Soman (GD) | VX         |
| Volatility / Persistency | Semi – persistent   |            |            | Persistent |
| Rate of Action           | Rapid   |            |            |            |
| Route of Entry           | Respiratory and skin  |            |            |            |
| Odor                     | Fruity  | Camphor    | Sulfur     |            |
| Signs/Symptoms           | Headache, runny nose, salivation, pin-point pupils, difficulty in breathing<br>Tightness in chest, seizures/convulsions |            |            |            |
| Self-protection          | Respiratory and skin  |            |            |            |
| First Aid                | Remove from contaminated area, treat symptoms – Atropine / 2 Pam Chloride   |            |            |            |
| Human Decontamination    | Remove agent from skin<br>If time and resources permit flush with warm water soap, if not copious amounts of water      |            |            |            |

Table B.1

#### Blister Agents / Vesicants

|                          |   |              |                     |
|--------------------------|---|--------------|---------------------|
| Common Name (Military)   | Mustard (H)   | Lewisite (L) | Phosgene Oxime (CX) |
| Volatility / Persistency | Persistent  |              |                     |
| Rate of Action           | Delayed   | Rapid        |                     |
| Route of Entry           | Skin, inhalation, eyes  |              |                     |
| Odor                     | Garlic  | Geraniums    | Irritating          |
| Signs / Symptoms         | Red, burning skin, blisters, sore throat, dry cough. Pulmonary edema, memory loss, seizures, coma. Some symptoms may be delayed up to 24 hours. |              |                     |
| Self-Protection          | Respiratory and skin  |              |                     |
| First Aid                | Copious amounts of water, removal of clothing, airway maintenance, treat symptoms   |              |                     |
| Decontamination          | Removal of agent from skin, flushing with warm water and soap, or copious amounts of water.   |              |                     |

Table B.2

**Blood Agents**

|                          |  |                        |             |
|--------------------------|--|------------------------|-------------|
| Common Name (Military)   | Hydrogen Cyanide (AC)  | Cyanogen Chloride (CK) | Arsine (SA) |
| Volatility / Persistency | Non – persistent   |                        |             |
| Rate of Action           | Rapid  |                        |             |
| Route of Entry           | Inhalation, skin and eyes  |                        |             |
| Odor                     | Burnt almonds or peach kernels   | Garlic                 |             |
| Signs / Symptoms         | Cherry red skin/lips, rapid breathing, dizziness, nausea/vomiting, seizures, pulmonary edema, respiratory arrest, dilated pupils, salivation |                        |             |
| Self – Protection        | Respiratory and skin   |                        |             |
| First Aid                | Remove from contaminated area, administer cyanide kit, support ventilations, treat symptoms  |                        |             |
| Decontamination          | Remove clothing, remove contaminate from skin, flush with copious water, aerate.   |                        |             |

Table B.3

**Choking Agents**

|                          |   |                 |                         |
|--------------------------|---|-----------------|-------------------------|
| Common Name (Military)   | Chlorine (CL)   | Phosgene (CG)   | Diphosgene (DP)         |
| Volatility / Persistency | Non – persistent<br>Vapors may be sustained in low areas  |                 |                         |
| Rate of Action           | Rapid in higher concentrations<br>Up to 3 hours in lower concentrations                                 |                 |                         |
| Rate of Entry            | Respiratory and skin  |                 |                         |
| Odor                     | Bleach  | Newly mown lawn | Cut grass or green corn |
| Signs / Symptoms         | Eye and throat irritation, dizziness, chest tightness, headache, nausea, pulmonary edema, painful cough |                 |                         |
| First Aid                | Remove from contaminated area, remove clothing, assist ventilations                                     |                 |                         |
| Decontamination          | Flush with copious amounts of water, aerate   |                 |                         |

Table B.4

**Riot Control Agents / Irritants**

| Common Names                | Symptoms   |
|-----------------------------|--|
| Mace                        | These irritants cause similar symptoms: pain and burning to exposed mucus membranes, and skin; tearing and involuntary closing of eyes; coughing and respiratory discomfort. Agents are usually non-persistent with a tendency to having a slightly higher specific gravity under normal atmospheric conditions. |
| Pepper Spray                |  |
| Tear Gas                    |  |
| Decontamination & Treatment | Move to fresh air / do not rub eyes<br>Decontaminate with cool water and soap<br>Seek immediate medical attention for those with allergic reactions  |

Table B.5

**Non-persistent agent, dissipates in minutes to hours**  
**Semi-persistent agent, dissipates in less than 12 hours**  
**Persistent agent, dissipates over time greater than 12 hours**

## APPENDIX B

### II. Biological Agents

Biological agents, like chemical agents, can be dispersed in air, ingested, or spread through surface contact. Detection of a biological agent may not come about until days after the exposure when the first medical symptoms might be manifested. The first indications to a release of a biological agent may be from a rise in the sick & dying within a community, animals as well as humans. With out some type of forewarning first responders most likely will have already been exposed also. Given the incubation periods and associated lack of timely exposure detection patient decontamination in most cases is not necessary. Exceptions may be announced releases, or early detection, with residual gross contamination.

| Agent                            | Dissemination                   | Transmission<br>(person to person) | Incubation           | Lethality                |
|----------------------------------|---------------------------------|------------------------------------|----------------------|--------------------------|
| Anthrax                          | Aerosolized spores              | No<br>Exception –<br>Cutaneous     | 1 – 5 days           | High                     |
| Botulinum<br>Toxin               | Ingestion & aerosol             | No                                 | Hours to days        | High                     |
| Ricin                            | Ingestion & aerosol             | No                                 | Hours to days        | High                     |
| Plague                           | Aerosol                         | High                               | 1 – 3 days           | High if untreated        |
| Ebola                            | Aerosol & contact               | Moderate                           | 4 – 16 days          | Moderate to high         |
| T-2<br>Mycotoxins                | Ingestion & aerosol             | No                                 | 2 – 4 days           | Moderate                 |
| Tularemia                        | Aerosol                         | No                                 | 1 -10 days           | Moderate if<br>untreated |
| Cholera                          | Ingestion & aerosol             | Rare                               | 12 hours – 6<br>days | Low if treated           |
| Smallpox                         | Aerosol                         | High                               | 10-12 days           | Low if treated           |
| VEE                              | Aerosol & infected<br>organisms | Low                                | 1 – 6 days           | Low                      |
| Q Fever                          | Ingestion & aerosol             | Rare                               | 2 – 3 weeks          | Very Low                 |
| Staphylococ<br>al<br>Enterotoxin | Ingestion & aerosol             | No                                 | Hours                | Very Low                 |

Table B.6

# APPENDIX B

## III. Radiation Concerns

Nuclear accidents, terrorist attacks using nuclear devices, or a radiation dispersal device (dirty bomb) pose a threat with the release of ionized radiation. The threats are exposure in nature and are resultant from alpha & beta particles, gamma rays and neutrons. The ability to detect a radiological release is a must for all first responders. Time, distance, and shielding have always been the best methods to guard oneself against the exposure to the radiological threat. (For further information refer to [Connecticut Model Radiation Emergency Manual for Hospitals.](#))

Alpha particles can be stopped easily by a sheet of paper, but they can cause damage if exposed for too long, too close, with no shielding. The greatest danger from Alpha particles is usually a result of ingestion, inhalation, or penetration through openings in the skin.

Beta particles penetrate deeper and move faster than Alpha particles. If able to penetrate a few layers of clothing, Beta particles can cause injury to the skin and some radiation damage. As with Alpha particles, the greater threat is through ingestion, inhalation, or penetrations through openings in the skin. The external threat from Beta radiation is to the skin & eyes.

The layers of shielding, provided by a fire fighter's standard structural Personal Protective Equipment (PPE), or turn out gear, is considered adequate protection from both Alpha & Beta nuclear radiological hazards.

Gamma rays can easily penetrate and pass through the human body, being absorbed by tissues as it passes through the body. Without proper shielding (lead or several feet of concrete), Gamma rays pose a serious health hazard due to the effects of the radiation to internal organs and radiation sickness.

| Exposure Pathway                                 | Exposure Source  |
|--|--|
| External exposure                                | Ionizing radiation from WMD detonation<br>Exposure to detonation plume<br>Exposure to plume fallout<br>Surface contamination & activated by products<br>Personal contamination to skin, hair, clothing, etc. |
| Internal exposure<br>penetration / contamination | Inhalation of plume<br>Inhalation or ingestion of personal contamination<br>Inhalation of air suspended contamination<br>Absorption of contamination through skin<br>Ingestion of contaminated food          |

Table B.7

### Radiation Sickness

| Mild  | Moderate  | Severe  |
|---|---|---|
| Nausea, fatigue, headache, no appetite. Usually within a few hours after exposure | Nausea, no appetite, reddening of skin, fatigue, depression, weakness. Usually within 2-3 hours of exposure, symptoms may improve and then return, possible delays in healing of wounds | Nausea, fatigue, no appetite, depression, weakness, recurrence of symptoms. 1 – 2 weeks; fever, diarrhea, ulceration of mouth & gums, bleeding, hair loss, vascular collapse hypotension, death |

Table B.8

#### IV. Mass Decontamination Considerations for Radiological Exposures

Specific guidance for responses to a nuclear detonation, or an event with a suspected radiological dispersment should be consulted to assist each community in developing the proper response and treatment procedures. This guidance is intended to provide initial mass decontamination actions for suspected radiological exposures.

Included in this process or response is the need to assess the following as soon as practical:

- Necessary medical treatment
- Presence of radioactive contaminants on the body or clothing
- Possible intake of radioactive materials into the body
- Removal of contaminants - decontamination
- Possible radiation dose received

<sup>1</sup>Using the same processes detailed for early triage determination e.g. ability of individuals to move on their own or with limited assistance, the assumption for the purposes of this section will be that most people will be able to self decontaminate, or will be able to assist elders or children with them. For individuals who do not have wounds, direct them to perform the following actions:

- Remove contaminated clothing and place them in a bag
- Wash with warm water
- Use mechanical action of flushing or friction of hands, cloth, sponge, or soft brush
- Begin with the least aggressive techniques and mildest agents (e.g. soap, and water)
- When showering begin with the head and proceed to the feet
- Keep materials out of the eyes, nose, mouth, and any wounds; if practical use waterproof draping to limit the spread of contamination
- Avoid causing mechanical, chemical, or thermal damage to skin

Persons with wounds must be directed to a medical treatment area. Supporting response organizations should be prepared to provide treatment and transportation in accordance with any applicable policies or procedures for the care and handling of persons who may have been exposed to radiological contaminants.

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<sup>1</sup> Planning Guidance for Response to a Nuclear Detonation - 2009

## Appendix C

### Decontamination Trailers

#### I. Decontamination Basics

Within a mass decontamination process, there are distinct scenarios that could come into play:

1. Initial Emergency Decon at the site – *Crowd Decontamination*.
2. A more formalized Decon process at the site – *Multi Corridor Decontamination*.
3. Decontamination at the Acute Care Hospitals – *Can be a combination of both crowd and corridor decontamination*.

#### *Dry vs. Wet Decontamination*

The simple act of disrobing with a good washing of the hands and face can resolve a majority of the concern as it relates to ambulatory persons with no symptoms. This process vs. a gross wet decontamination should not be discounted as a viable option given “agent” specificity and dealing with large numbers of the “worried well”.

Unless science dictates otherwise, a 2 to 4 stage process of repeated wash/rinse is the preferred process for wet decontamination of persons under this plan.

Defining the levels of decontamination that would be needed should take into account:

1. The physical state of the contaminant. Solids & liquids require a more aggressive decontamination approach. Gases or vapors will usually have a minimal residual contaminant effect.
2. Is the agent water soluble? If the agent is water soluble, then simple flushing or wash/rinse is very effective. If the material is non-water soluble, or not as easily removed by water, then some form of emulsification is required.
3. Vapor Pressure. If the vapor pressure is high enough and quickly evaporates then its persistency is minimal vs. a lower vapor pressure of an agent which can remain as a contaminant for days.

#### Scene / Event Site Decontamination

Decontamination at, or near the initial incident site, is the preferred method of operation; **the quicker the decontamination process starts, the better**. This would not preclude establishing decontamination stations set up around the community given the contaminant and dispersal method of such contaminants. On site initial decontamination of large crowds is easiest established by Fire Department first responders.

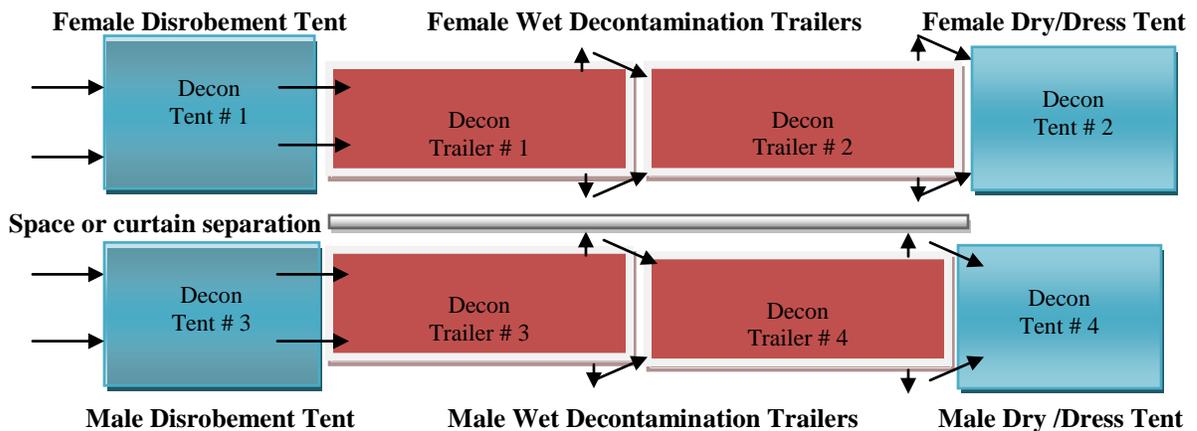
1. Establish decontamination zones uphill and upwind from event site
2. Deployment of multiple hand lines or staging of apparatus curbside to curbside, with nozzles attached directly to outlets to form side to side showers.

3. In lieu of using decontamination trailers, position ladder or truck to form top down shower.
4. Establish containment area for waste water. (resource dependent)

The first stage would be a generalized hosing/wetting of a corralled crowd as they pass through in a line toward either the second stage or a multi corridor process, e.g. decontamination trailer, or makeshift fire department corridor. Disrobement is vitally important to the overall success of the operation when dealing with persons who have been contaminated with a persistent liquid. However complete disrobement may not be essential. Weather conditions and modesty concerns are secondary when the need to decontaminate persons exists but decontamination should not be delayed if individuals refuse to disrobe. Outer clothing layers obviously carry the most contaminate especially if the contaminate is a dry substance or gas.

Rapid deployment of the standardized multi-corridor decontamination trailers is instrumental to obtaining goals of decontamination under somewhat of a controlled environment for weather & modesty concerns. The decontamination trailers will supply a definitive decontamination process for females, males, and some non-ambulatory individuals simultaneously. The trailers can be established at or near the incident site, or at strategically located decontamination stations in a community or region.

*Possible Decontamination Trailer configuration for above scenario.*



*With the Male/Female divider in place one trailer can be used in each case for disrobement & dressing. Additionally the Decontamination Trailers are equipped with tents which can be used as detailed above or as a standalone wet decontamination process. Other tents or MASS Transit Buses can be employed for personal disrobement, and dressing areas. Buses can be configured perpendicular to decontamination trailers and tents can be set up at entry and exit ways.*

Figure C.1

## Appendix C

### II. Decontamination Trailer and Tent Operation

#### Trailer Towing Preparation:

1. Retract antenna tower, secure trolley lock pin and hold down cable.
2. Remove antenna and store in front compartment.
3. Assure all doors are secure
4. Fold & secure all stairs.
5. Secure stair grab rails.
6. Stabilizing jacks should be retracted, and secured.
7. Disconnect shore power cable.

#### Trailer Towing:

1. Tow vehicle must have 3" pintle hook with 15,000 lb rating.
2. Tow vehicle should have electric break controller.
3. Tow vehicle must have bargeman type 7-way trailer lighting & brake control connection.
4. Connect safety chains, and emergency runaway brake cable to tow vehicle.
5. Lower trailer onto pintle hook and fully retract trailer tongue jack; 1 1/8" wrench in on-board tool box to adjust pintle eye plate if necessary.
6. Towing speed should not exceed 55-60 miles per hours.

#### Trailer Emergency Lighting

1. Run generator (see Generator Operations) while trailer is in tow. Activate emergency lighting via master control panel.
2. Generator will maintain trailer batteries during transit.

#### Trailer Leveling for Operation

1. Locate the trailer on as level ground as possible, leveling left to right, using the front tongue jack for front to back leveling.
2. DO NOT USE THE 4 CORNER STABILIZERS / JACKS FOR LEVELING. These stabilizers are used to minimize rocking motion in the trailer during operations.
3. Deploy the corner stabilizers until contact is made with the ground and then snug each down.

#### Trailer Rear and Side Stair Set-up

1. Remove safety locking pins from side grab rails, swing out 90°, reinsert locking pin.
2. Remove side stair safety locking arms; slide out side stairs until slide stops, fold down bottom step, fold up top step; pull top extension step out dropping into step channel, slide stairs to adjust.
3. Remove rear stair safety locking pins; fold down stairs.

#### Trailer Generator Operations

1. Manual power transfer switch panel located on front of trailer should be in the OFF (center) position.

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2. Inside trailer - Master Control Panel – depress and hold generator preheat switch for 30 seconds (down position), release switch. (switch is a combined preheat and generator start toggle)
3. Press generator start switch upward until generator starts and runs smoothly, release toggle switch.
4. To engage power to trailer move power transfer switch to GENERATOR (down) position.
5. Lights may now be activated via the Master Control Panel inside the trailer.
6. If generator does not start check Main controller on front of generator (should be in up position). Check the breakers on Main controller on front of the generator (up position). Check 100a main fuse on controller box.
7. Red covered 120v receptacle marked “Battery Charger” provides power for charging when plugged into a 120v power source. This also powers radio equipment w/o the generator or shore power.

#### **Water Supply to Trailer:**

1. Close all drains and shower control valves before connecting water supply.
2. Verify the two main boiler feed valves are in the OPEN position (located near floor in front of each boiler; labeled Water Heater Isolation valve).
3. Connect water supply to 1 ½” National Standard Thread (NST) inlet on right front corner – 100 pounds per square inch (psi).
4. A minimum of 20 Gallons per Minute (GPM) at 80-120 psi is needed for optimal shower performance. A 1 ½” to garden hose adapter is available.
5. OPEN main 1 ½” water supply valve slowly to fill plumbing.
6. When piping and boiler are filled, bleed air from lines by opening each interior corridor shower control valve until a steady flow of water is observed. If anti-freeze is present in system, flush for 2 minutes from each discharge point prior to decon operations.
7. If operating from a hydrant, flush hydrant before connecting to trailer’s water inlet valve.
8. If flow appears low, check water inlet strainer for debris, strainer is located in boiler compartment area.

#### **Trailer Boiler Operation:**

1. OPEN the two interior corridor fresh water shower valves to establish flow.
2. Never attempt to run boilers without water supply in place and flowing.
3. Turn power switches located on front of the boilers to the ON position; each will start and cycles through a self-test. When complete boiler should fire and start to heat water; flow water for at least 2 minutes to permit temperature to stabilize to 87°. The reading appears on the boiler control box display
4. Do not attempt to re-adjust boiler temperatures.
5. Boilers will cycle as required by temperature.
6. Boilers should operate in well ventilated location.

#### **Trailer Soap Solution Eductor Pump Operation:**

1. OPEN the two interior corridor valves marked “Solution” to start flow of water to the eductor pump and shower control valves; eductor range is 1/2 % to 3%.

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2. Place eductor pickup tube hose in 5 gallon pail of mild PH balanced soap solution (PH should match ocular PH of 7.2). For most operations a 3% soap solution will yield more effective decontamination.
3. Ready to commence Decontamination Operations.

### **Trailer Waste Water Containment / Discharge Pump**

1. Trailer has a 200 gallon Gray water containment tank & discharge pump; gray water drains from trailer into tank during operations.
2. Attach 1 ½” hose to 1 ½” pump discharge outlet on right rear of trailer; discharge pump switch shall be in the AUTO position during operations and in the OFF position when not in use, (discharge pump may have to be primed using primer valve).
3. Hose can be run 100-150’ to larger Gray water containment vessel, commercial pump truck, or sanitary sewer. DO NOT DELAY Decontamination of persons to assure waste water containment, (when sufficient resources are present this should be addressed).
4. Upon termination of decon operations, empty gray water tank and OPEN low point tank drain & discharge pump primer drain. During cold weather be sure to drain all water from system.

### **Trailer Awning and Side Curtain Setup**

1. Remove awning pull down tool from generator compartment and release canopy lock (right end of awning drum).
2. Release lever lock on the awning legs (midpoint) and loosen thumbnut on back side of legs.
3. Lift awning legs straight up to remove legs from hanger bracket at top (3”-4”).
4. With bottom feet of awning legs connected to trailer mounts, pull awning completely out using nylon strap in the middle of awning. Center groove of awning drum should end up facing the ground. Slip nylon awning strap out of groove and store.
5. With the awning legs still connected to trailer, slide the support arms to the end of slide track; arms will lock into end of brackets, tighten thumbnut on side of support arms.
6. Slide beaded edge of side curtain into groove of awning drum, color coded patches should face outside of the curtain area with patches on the top.
7. Remove awning legs from their mounts and place under awning drum, raise legs and lock into 4<sup>th</sup> hole from the top.
8. Match front & rear curtains to color coded markings of the side curtain. Front and rear curtains go over awning support arms. Connect top curtains Velcro connection to the Velcro connection on top of the awning first. Connect side Velcro connection of the end curtains to the side Velcro connections (awning support legs should be on the inside of the curtain).
9. Connect curtain holder straps from the end of the curtains to the strap loops attached to the side of the trailer body.

### **Trailer Cold Weather Operations & Winterizing:**

1. OPEN all drain, supply & control valves to allow air to enter the system and gravity drain. Also, lift the lever on both boiler Pressure Relief Valves to allow air to enter system.
2. Open the four 3-way valves on the front of each boiler half way. This allows water to drain in both directions.

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3. Manually run the gray water discharge pump until all water is removed from the holding tank. Open the low point drain valve on the bottom of the tank and low point discharge pump drain.
4. Once all visible water has drained, connect airline blow down adapter to the 1 ½” inlet connection, close intake valve and attach airline to air supply. Open air supply and supply no more than 100 psi into the inlet.
5. Close all drain distribution and control valves. Now open the 1 ½” water inlet valve and fill with air. Starting in the boiler compartment re-open each valve, one at a time, allowing air to evacuate all remaining water.
6. Repeat procedure for each valve location until all water is drained.
7. Remove eductor pickup tube hose from bottom of pump to allow drainage. Loosen the ribbon-coupling ring on the body of the eductor pump and remove the lower portion of the body draining all trapped water.
8. Carefully reassemble the two halves making sure the piston is carefully inserted into each half of the pump, verifying the O-ring is seated.
9. Connect trailer maintenance shore power to maintain battery conditioning.
10. **Special Note:** Antifreeze systems shall be activated to reduce freezing in pipes during cold weather following system instructions.

#### **Decon Trailer ICALL/ITAC Operations:**

1. Secure antenna (stored in front compartment) to tower.
2. Remove trolley lock pin and hold down cable; slide tower towards front of trailer until pivot point is reached, lift tower to vertical position, secure tower to front of trailer with tower brackets.
3. Attach both antenna cables to connections in antenna junction box located on front of trailer.
4. Attach 12v winch power cable from front of trailer to winch; attach winch controller to winch raise tower.
5. Install grounding rod as needed.
6. Turn on radios & repeater. Antenna cable must be connected before radios are activated.
7. UNDER NO CONDITIONS SHALL THE ON BOARD RADIOS BE USED WITHOUT THE ANTENNA MOUNTED ON THE MAST IN THE VERTICAL POSITION AND BOTH CONNECTIONS ATTACHED IN THE COAX BOX.
8. Follow Department of Public Safety (DPS) procedures for activating ICALL/ITAC system.
9. Upon termination of operations and retraction of tower RELEASE tower safety lock by pulling on rope and holding down until tower is retracted.
10. Position tower back onto top of trailer, securing with trolley lock pin and hold cable, remove and store antenna.

#### **Trailer Special Information:**

1. 50 gallon diesel fuel supply tank will permit 8 – 12 hours of continuous operations of generator and boilers, (4.2 gal/hr).
2. Shower discharge – 28 gallons per minute.
3. Gray water tank capacity – 200 gallons.

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4. On board radio / repeater system with 35' antenna tower: ICALL -866.0125, ITAC1-866.5125, ITAC2- 867.0125, ITAC3-867.5125, ITAC4-868.0125; PL 156.7 Direct frequencies are simplex as above.
5. 34 fixed repeater sites in CT, 2 channels at each site; all 5 channels are optional at each site. All repeaters controlled by DPS HQ Message Center 1-800-842-0200.
6. On board tool box with wrenches, and winch power/controller cables.

### **Tent Preparation and Set-up:**

1. The site for set-up should be on as level ground as possible and without obstructions. The tent can be attached directly to the back of the trailer or used as a free standing tent.
2. Lay the tent on the ground with the side frames facing up (hoses are attached to the side frames). The side frames are then pulled out to one side to form a triangle. The blue side walls are then stretched from the side wall frames to create a rectangle (Figure C.II.1).
3. Grab the tent where the two side frames meet the bottom frame. Fold one bottom frame over the tent as if opening the page of a book (Figure C.II.2). The tent will look like an "A" frame when this step is complete. One of the white sides with the doors should be visible and be diagonal to the ground (Figure C.II.3).
4. On each end of the "A" frame (blue sides) locate the pull strap (Figure C.II.4) pull the straps away from each other until the side wall frames pop outward (Figure C.II.5). Neither person should release their pull strap until both sides are out. CAUTION: the side walls spring out with some force. The tent can now be placed in position. Remember that if the tent is to be attached to the trailer, then one of the door (white) sides must face the trailer.
5. On each side of the tent with doors there are two poles on the inside that are attached with Velcro straps to the base rail (Figure C.II.6). Release the Velcro straps and remove the poles. Place poles between the base rail and the top rail. The poles have a color code on the top which matches up with a color code near the hole on the top rail (Figure C.II.7). The poles should go into the base rail holes without crossing.
6. At this point, square up the tent.
7. If the trailer is to be connected to the tent, then it should now be zipped to the step enclosure.
8. On each of the blue side walls are two supply hoses hooked to the shower assembly. The hoses should be run down the inside of the tent and then under the side wall (Figure C.II.8). The hoses should be secured to the side of the tent with the black strap that is already attached to the tent side wall. There is a 90 degree elbow on each the hose which directs the hose under the tent wall. The hoses have a color coded band at the outside connection, red for solution and blue for fresh water. Supply hoses can be connected to the outside discharges on the trailer and then to the tent hoses.
9. The containment pool should be set up inside the tent. The Styrofoam squares go on the outside of the pool. There are straps attached to the floor of the pool which should be facing up. The sump pump should be set up in lowest of the pool corners. The connections for the pump (hose and electrical) run out under one of the blue side walls.
10. Grab each end of the main partition (white) wall at the top (Figure C.II.9). There are two sub partitions on each side of the main partition. The main partition has clips on

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both the top and bottom. The sub partitions only have a clip on the top. The main partition also has a clip on the top at the center point.

11. Clip the top and bottom of the main partition to the loops inside of the tent (Figure C.II.10) on sides with the doors. The bottom rail of the tent may have to be lifted to locate the bottom loop. Someone may have to push on the bottom rail from the outside in order to make the connection. A loop that hangs down from center of the tent is used to clip the center of the main partition (Figure C.II.11). One or two of the grates may have to be used to stand on in order to reach the loops. Two sub partitions are now clipped to loops on the blue side walls. The tent should now be divided into two lanes with three areas each (disrobe, decon/shower, dress).
12. There are three grates for each of the two lanes. There is a carrying strap on each set of grates which should be removed and set aside. The grates when assembled will be held together with straps. Each of the center grates has a buckle in each corner (Figure C.II.12). The end grates have straps on two corners and a buckle on the opposite end (Figure C.II.13). Connect the straps from the end grates to the buckles on the center grate to connect the three grates together. There should be two straps per lane on the pool floor. These straps are connected to the end buckles. The grates should now provide a walkway for the persons being decontaminated to walk on and keep them out of the water in the pool.
13. There is a flap running along the bottom of each blue wall. This flap should be pulled to the outside of the tent.
14. Each side wall has a round opening with a sleeve (Figure C.II.14). The sleeve can be pulled out and attached around a heater hose if needed.
15. There are tie down straps on each outside corner that can be used to tie down the tent. Either stakes or weights may be used to tie the tent down.

#### **Tent-Trailer Interface:**

1. Once the tent is assembled position the tent with the zippered side toward the rear of the trailer.
2. Assemble the boot frames and insert them in to the notched channels around both of the rear entry doors of the trailer.
3. Attach the boot over each of the boot frames and attach them to the trailer with the straps on the boot and the loops on the notched channels.
4. Attach the boots to the tent by utilizing the zippers on the boot and the tent.
5. To use the tent as a clothing removal station, water supply to the tent will not be necessary.
6. To use the tent for decontamination, water supply will be necessary. The tent has shower nozzles on both sides of the tent to create two lines.
7. Place the discharge pump in a remote corner of the tent and run the discharge hose to the designated gray water collection location.
8. Attach water lines to the rear discharges of the trailer, located at the rear corners of the trailer. There is a water and soap solution valve on each side.
9. Attach the water lines into the provided electric cycling valve, one for each side.
10. Place the black foot switch of each valve into the tent at the shower location.
11. Advise the person to be decontaminated to step on the foot switch to activate water flow. The valve will cycle 20 seconds for water, 20 seconds for soap solution and a 20 second rinse. The foot switch must stay activated for the cycle to complete.

# Appendix C

## Decontamination Tent Illustrations



Figure C.II.1



Figure C.II.2



Figure C.II.3



Figure C.II.4



Figure C.II.5



Figure C.II.6



Figure C.II.7



Figure C.II.8



Figure C.II.9



Figure C.II.10



Figure C.II.11



Figure C.II.12



Figure C.II.13

Figure C.II.14

## Appendix C

### III. Rapid Access Mass Decontamination – Chemical Exposures

#### *RECOMMENDED PROCEDURES USING FIRE FIGHTING RESOURCES*

##### 1. OBJECTIVES

The following program was developed to enable local fire departments to gain control of mass casualty contamination incidents by initiating immediate definitive measures. **Upon completion of this program, fire departments will be able to reduce or prevent the effects of chemical agents to victims of chemical incidents by rapid gross decontamination.**<sup>2</sup> By properly applying these procedures, fire departments will be able to prevent, or drastically reduce the chance of possible, cross contamination of emergency personnel.

##### 2. BENCHMARKS

Prior to, or concurrent with, the establishment of Rapid Mass Decontamination measures, **actions not specifically covered in this program need to be carried out.** Such measures should be conducted based upon established local procedures and or accepted practices. These actions should include the following:

- Determine if the event is a chemical incident – Where a relatively high suspicion exists that a chemical agent or product has been released in such a manner as to contaminate persons.
- Establish control zones – Standard hazardous materials control zones; hot, warm and cold must be established and entry denied to unprotected personnel.
- Initiate appropriate responses (State HazMat - Police - EMS - etc.) – resources, commensurate with incident requirements should be summoned based upon local procedures
- Establish potential number persons contaminated – attempt to ascertain the maximum number of persons requiring decontamination and follow-up medical attention to the degree that it will affect needed resources.

##### 3. INDICATIONS FOR USE

The Rapid Mass Decontamination system is intended for specific circumstances involving large numbers of contaminated persons. As a general guideline, the following conditions are considered as appropriate for the Rapid Mass Decontamination procedures:

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<sup>2</sup> Rapid Access Mass Decontamination processes described herein have limited use outside of chemical or visible particulate contamination, and in fact may be contraindicated for certain instances or persons suffering from radiological exposure

1. 8 - 10 persons - or more who are ambulatory and self extricated
2. Suspected contamination
3. Exceeds existing local decontamination resources

It is important to point out, however, that in the absence of any other decontamination capability; **rapid mass decontamination systems can be employed for as few as one person.**

#### 4. CONSIDERATIONS

As the determination to employ Rapid Mass Decontamination is made, the following consideration of **on going needs** should be incorporated:

- Adequate personnel – Consider the need for relief upon use of air in Self Contained Breathing Apparatus (SCBA)
- Adequate air supply - Consider the need to re-supply SCBA air tanks
- Adequate water supply- Estimated water flow for this operation is 700 – 1000 GPM. This is per mass Decon set-up.
- Terrain – Rapid Mass Decon needs to be in the warm zone of the incident. Hence it is necessary to consider its location relative to the hot zone to prevent the encroachment of contamination into the Decon area. Generally, the following rule should be applied:
  - Wind Direction – Up wind, the wind blows from decon toward the hot zone
  - Uphill – This is a consideration for both the placement of the decon as it relates to the hot zone and as it relates to the placement of post decon collection points and treatment areas
  - Runoff – The EPA has stated that, in accordance with the limits of liability in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the run-off is not a primary concern. However, run-off is again a consideration in the placement of post decon collection and treatment areas
  - Heat & shelter for victims – almost regardless of the time of year, decontaminated victims will need to be sheltered and heated after decon. Consideration of this will reduce the severity of illness or injury from cold and maintain control over the incident.

While substantial numbers of persons can be passed through the system quickly, the rate at which those persons arrive at the Rapid Mass Decontamination location may require an extended operation. Also, as part of a larger operation, attention must be paid to the effect upon other aspects of the operation, such as medical care, staging and incident facilities by the decontamination location and run-off.

#### 5. LEGAL ISSUES OF FORCING DECON

- Based upon related issues such as medical care and evacuation, it is believed that emergency personnel cannot force a victim to undergo decon procedures.

- The legal authority to require decon is unclear at best.
  - Handling persons refusing decon:
    - a. If a potentially contaminated victim refuses decon, assess the risk posed to others by cross contamination.
    - b. Record the names and addresses, if possible of anyone refusing decon. This tracking information may be needed later if the severity of contamination is found to be severe or to warn and protect responders if they later need medical assistance.
    - c. Contact the local health director and seek advice/authority to quarantine/isolate the individual.

## 6. CONTAMINATION VS. EXPOSURE

There is a significant difference between contamination and exposure. Consider this analogy:

### **From contamination:**

- Product is transferred to, or deposited on, person(s) and/or clothing,
- Dose and effect increase as long as contaminant remains,
- Cross contamination may be possible, and
- Off-gassing may occur.

### **With exposure only:**

- No product is transferred
- Dose is discontinued after exposure ends, but effects may continue
- No cross contamination/off-gassing hazard exists except with biologics

## 7. DECONTAMINATION NEEDS

The rapid mass decontamination system is **best suited** for incidents involving many victims. It should be considered for use and incorporated into local procedures for large scale chemical exposure from:

- Industrial or transportation accident involving chemicals.
- Terrorist/Criminal Acts of intentional release of chemical or biological agents.

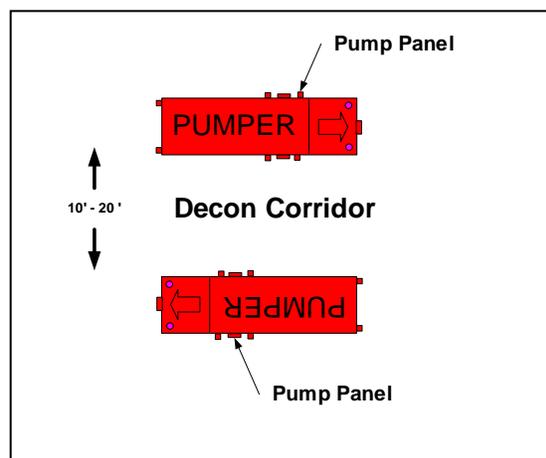
## 8. RAPID ACCESS MASS DECONTAMINATION FEATURES

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While **technical decontamination** can be accomplished by many local fire departments and is considered as a **hazardous materials first responder operational level skill**, most departments lack the specialized equipment to manage technical decontamination for many persons. The features and advantages of the Rapid Mass Decon method are listed below:

- Can be accomplished by any fire department without special equipment. Functions by low pressure (30 - 50 PSI) deluge maze.
- Clothing is not necessarily removed.
- Run-off water is a minimal concern.

The combination of simplicity, lack of specialized equipment and training needed, and speed of delivery make this method a truly **viable “first response”** action to mass casualty contamination incidents



## 9. DECISION / ACTION SEQUENCE

### **RAPID ACCESS MASS DECON - 2 ENGINE – RESPONSE ACTION SEQUENCE**

**NOTE:** Full-sheet diagrams of Rapid Mass DECON Apparatus Set-Up, Figures C-2 through C-6, are included at end of this Appendix.

Figure C.III.1

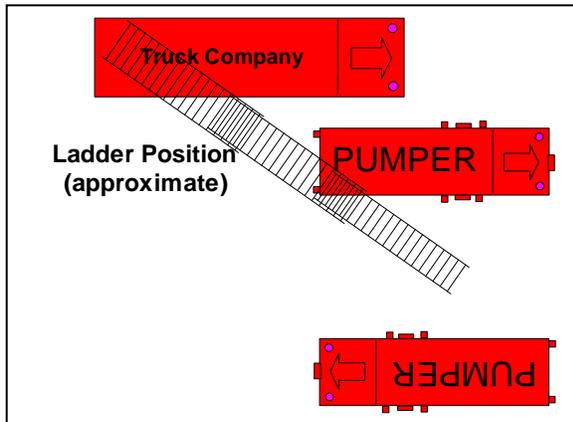
The following procedures detail the activation of the Rapid Mass Decon system assuming a first response of two (2) engine companies. While this response is minimal, Rapid Mass Decon can be applied to **nearly any combination of this response**. It is also possible to utilize deck guns and additional hand lines to achieve the desired water flow and pattern.

**More important than the precise combination of responding apparatus, the steps taken to initiate the system will assure that the objectives of control and decontamination are achieved.** The following steps and Decision/Action flow chart will best lead to a coordinated and controlled response to mass casualty contamination incidents.

- Identify Need
- Communicate Intent
- Advise victims and responders of your intent to establish decontamination at the site
- Establish a Plan
- Identify locations to assemble victims prior to decon and the locations for decon
- Communicate Plan
- Define and identify hot/warm/cool zones and the decon process. Inform victims and emergency personnel
- Assemble Victims
- Contain and control victims to prevent dispersion or re-entry

- Set-up Decontamination
- Initiate Decontamination

### RAPID MASS DECON - 2 ENGINES & 1 LADDER SET-UP POSITION APPARATUS



Using the response of two engines and one ladder, the apparatus should be positioned to establish the decontamination corridor and provide the least possible exposure of fire fighters to victims.

Figure C.III.2

- Position apparatus to create a corridor, operator panels to the outside. - Engine companies should be positioned facing in opposite directions, 20' to 30' apart to create a corridor between them with the pump operator panel to the outside of the corridor.
- Limit exposure of personnel and equipment - The ladder company should be positioned, if possible on the exit side of the corridor or, if space allows on the outside of one of the engine companies.
- All personnel operating within or forward of corridor must be in Full Firefighter Protective Equipment (FFPE). - Pump operators, fire fighters on hand lines and those serving as entry or exit guides should be in full fire fighter protective ensemble including SCBA.

### CREATE THE WASH PATTERN

- Affix nozzles to discharge and/or use deck gun. - Use 2 1/2" fog nozzle attached directly to the side mounted discharge on each engine. If preferable, a deck gun may be used, but may require greater distance between the engines to achieve proper coverage.

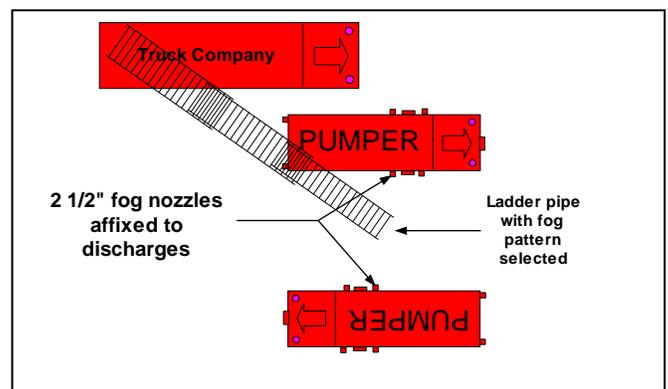


Figure C.III.3

- Use wide fog patterns that intersect between apparatus. - The pattern should cover as much of the decon corridor as possible. Be certain, however that the patterns of both fixed nozzles

will overlap in the middle of the corridor.

- Position ladder pipe, with fog nozzle, to over-spray the corridor. - Position the ladder pipe over the center of the corridor and adjust the pattern so as to cover as much of the corridor as possible. Remember, pump pressure will be below 50 psi, so normal patterns will be reduced.

### ESTABLISH THE DECON PATH

- Use a section of hose to create an “S” pattern in the corridor. - A single section of 2 ½” hose should be laid out as a path for victims to follow. This path should make a full and wide “S” shape.

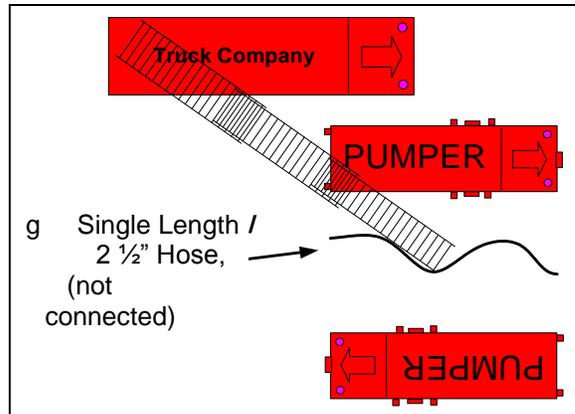


Figure C.III.4

- Pattern should cause victims to have maximum 360° exposure to water spray.

- The 360° coverage is necessary to achieve the best possible decontamination. This will also slow the passage of victims to insure that they are in the pattern long enough to be decontaminated.

### POSITION PERSONNEL

- Position a hand-line, with fog nozzle, at each end of the corridor diagonally across from each other. - The hand lines fill gaps in the pattern and can also be used to concentrate a wash on persons that are not following the hose line.

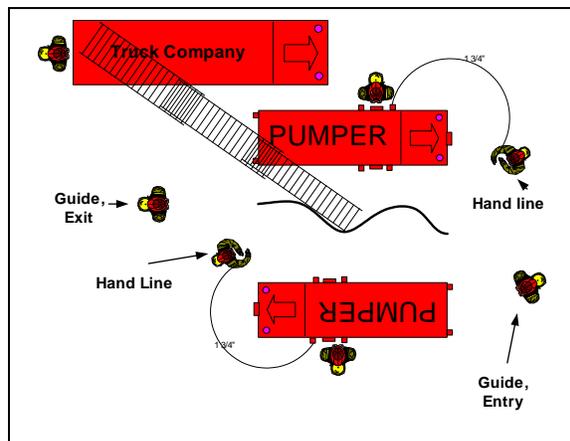


Figure C.III.5

- Position a “guide” at each end of the corridor to direct victims in and out of decon – A guide should be placed at the entrance to direct victims into decon. This direction will be achieved largely using hand signals, as the guide will be in FFPE with SCBA. A second guide must be placed at the exit to direct victims to triage or holding areas.

## 10. RAPID MASS DECON PROCEDURES

Once all lines and appliances have been charged, observe and adjust pattern and flow to insure full coverage of the corridor. Hand-lines can be moved or added to cover any “holes” in the pattern and eventually replaced with monitors as needed. Direct “victims” into the corridor and instruct them to follow the hose to the other end. Hand-lines can also be used to decontaminate non-ambulatory victims. A thorough soaking is desired which could take 30-60 seconds depending on volume of water flow.

Decontamination for Chemical Agents can be further facilitated by the application of Positive Pressure ventilation (PPV) Fans blowing air across ambulatory persons waiting for water based decontamination. **This does not apply to Biological, or Radiological contamination.**

## 11. GUIDE & TRIAGE

Maintain control of victims exiting the corridor and direct them to triage. Establish a triage point and segregate exposed, versus contaminated, versus effected for further treatment and decontamination as needed. If and when possible, control run-off to prevent possible environmental consequences and secondary contamination. (See Appendix E Rapid Triage for Exposed Patients)

## 12. RELIEF PROCEDURES

As previously stated, though the Rapid Mass Decon system will allow for a rapid processing of victims, it cannot be concluded that all victims will arrive there simultaneously.

This may require a prolonged operation of the decon corridor. Provisions must be made to relieve personnel “on air” with sufficient relief personnel for them to undergo decontamination, retreat to the cold zone and doff their SCBA.

- Monitor on air time – Personnel should be relieved with at least five (5) minutes of air remaining.
- Provide adequate personnel for relief – Have sufficient personnel ready and in FFPE and SCBA to replace personnel on the line before they are due to rotate out.
- Assign personnel to positions – Relief personnel should know where they are going in the decon corridor before entering.
- Deploy relief personnel – Relief personnel should be directed, where possible, to access their assigned positions by walking around the outside of the corridor.
- Relieve personnel – A “hand-off” should take place between personnel on the line and relief personnel to insure continuity.

- Decon relieved personnel – Relieved personnel should fall into line and pass through the Rapid Mass Decon line. Because they have not entered the hot zone, and have not had direct contact with victims, there should be no contamination. This step of decon serves only as an absolute precaution.
- Relieved personnel to rehab as indicated – Personnel who have been relieved and have undergone decontamination should be rehabbed, have their air bottle replaced and stand-by to relieve their relief unless other duties are assigned. Their FFPE can continue to be worn.

### 13. GOOD SAMARITAN PROVISIONS

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section § 107 (d) Rendering Care and Advice, address this issue. Section 107 (d) (1), often known as the “good Samaritan” provision, states: “No person shall be liable under this subchapter for costs or damages as a result of actions taken, or omitted, in the course of rendering care, assistance, or advice in accordance with the National Contingency Plan (NCP) or at the discretion of an on-scene coordinator appointed under such plan, with respect to an incident creating a danger to public health or welfare or the environment as a result of any releases of a hazardous substance or threat thereof.” This provision does not preclude liability for costs or damages as a result of negligence. Releases of chemical and/or biological warfare agents due to a terrorist incident are considered hazardous materials incidents and therefore CERCLA § 107 (d) (1) could apply, to the extent that there is a release or threatened release of a hazardous substance.

In addition, CERCLA § 107 (d) (2) provides that state and local governments are not liable under CERCLA “as a result of actions taken in response to an emergency created by the release, or threatened release, of a hazardous substance generated by, or from, a facility owned by another person.” Section § 107 (d) (2) would insulate state and local governments from potential CERCLA liability arising from first responder actions. **However, the provision does not apply to costs or damages caused by “gross negligence or intentional misconduct by the state or local government.”**

During a hazardous materials incident (including a chemical/biological agent terrorist event), first responders should undertake any necessary emergency actions to save lives and protect the public and themselves. **Once any imminent threats to human health and life are addressed, first responders should immediately take all reasonable efforts to contain the contamination and avoid, or mitigate, environmental consequences.** First responders would **not** be protected under CERCLA from intentional contamination such as washing hazardous materials down a storm-sewer during a response action as an alternative to costly and problematic disposal, or in order to avoid extra-effort.

### 14. SUMMARY

While concern of mass casualty decontamination has moved to the forefront out of concern for weapons of mass destruction, the principals and procedures developed serve to increase our capacity for other emergencies. This system similarly increases our capacity. But should

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be utilized appropriately and viewed as a continuum of a larger response system. Remember the design, intent and limitations of this system as listed below:

- Designed for emergency decon of large numbers of victims.
- Is not a substitute for HazMat team response.
- Establish and maintain control of victims and responders.

Additionally, fire resource configurations for Rapid Mass Decontamination can take other forms and configurations than those illustrated above. The same concepts can be employed with single apparatus companies using multiple hand lines, or monitors.

## Appendix C

### IV. Standard Decontamination Methods for Emergency Responders

To understand decontamination and the methods of decontaminating a victim or responder, one must first understand contamination. Contamination is exposure to a hazardous substance that may result in adverse effects on the health or safety of an individual. The substance may be liquid, solid, or vapor and may be in the area around the person or on the equipment, the person's body, or clothes. Contamination can be caused by a chemical or a material. OSHA 29 C.F.R. 1910.120(a) (3) considers the following another form of contamination:

Any biological agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring (OSHA, 2006).

#### Decontamination

Decontamination remains a focus of any response concerning hazardous substances. It is the first process established and one of the last activities in operation during an incident response. As an insurance policy against mishap, the decontamination station is the first area to be established prior to entry into the incident site. Decontamination remains in operation until all personnel and equipment, including the decontamination equipment itself, have been cleaned.

Victims may be decontaminated at the incident site or they may arrive contaminated at the hospital with the need to be decontaminated on arrival. Normally, only gross decontamination would take place at the incident site. This procedure removes the major quantity of contamination on the victim so that the responders can provide immediate care and transport the victim to the hospital. Once arriving at the hospital, the victim would require further decontamination before being introduced into the hospital for follow-up care. Gross decontamination at the incident site would normally consist of a low-pressure wash down with a fire hose or other available water system.

The Emergency Treatment Area (ETA) provides the capability to decontaminate victims before entry into the hospital setting. Once the victim is received at the beginning of the ETA, the victim enters into the system beginning with triage and labeling. If the victim is determined to be contaminated, they will enter into the decontamination line.

#### Monitoring and Survey

Determination of the victim is done visually and with specialized equipment. The first method is looking at the victim to determine visible contamination on the victim's body and

clothes. The victim is also observed to detect actions and symptoms of contamination. The final method is the use of survey equipment to detect contamination along with the ability to identify the contamination present. For some agents or materials, symptoms might not be specific enough. Responders use survey and monitoring equipment to confirm the location and concentrations of contamination and type(s) of agents. This confirmation, in turn, helps to determine the necessary level of protection, first aid, and decontamination measures. Survey equipment will also provide information to the decontamination team, ensuring that there is little to no residual contamination on the victims prior to leaving the warm zone and entering the cold zone.

No single system will detect all hazardous materials or chemical agents. Responders must use a number of items, each serving a specific role during a response. There are many different types of systems, from very simple chemical-reactive papers (that work in seconds) to very sophisticated laboratory instruments (that can take from minutes to hours to give results); simple systems provide broad information, while complex systems provide detailed information.

Some devices only respond specifically to liquids (e.g., M8/C8/M9 paper) or vapors (e.g., M256A1 sampler). Response teams need to use the information provided by several different systems in order to determine the presence of contamination prior to entry into the ETA and prior to exit to ensure no contamination escapes the area.

Specialized monitoring equipment includes the Chemical Agent Monitor (CAM) for Chemical Warfare Agents (CWA) and the APD2000 detector designed to identify specific CWA, radiological materials, and irritants. The Ludlum Model 2241 is used to identify the presence of radiological material. It is a recently developed portable general-purpose survey meter equipped with a Geiger-Mueller probe capable of measuring alpha, beta, and gamma radiation.

## Decontamination Methods

There are two major processes of decontamination, physical and chemical. Within these two major processes, each is further broken down into wet and dry decontamination.

### **Physical Decontamination**

Physical decontamination is removal of the contaminating substance either by removing the clothes or by wiping and briefly washing the skin. When contaminated with a gas or vapor just removing the clothes will effectively decontaminate the individual. For liquids or solids, it is estimated that 60–80% of the contaminating substance can be removed by removing the outer clothing.

Removal of the contaminating substance using soap and water is the method of choice for all substances not specifically known to react with water. Most sources agree that contamination should be washed from the skin using soap and a shower with free-flowing water for five-to-eight minutes.

A mild liquid soap with good surfactant qualities, (e.g., liquid soap, hard soap, or dishwashing soap) is the best choice. This soap removes oily chemical agents but will not irritate the skin. Do not delay the decontamination process if soap is not available. Soap helps the process but rapid removal of the hazardous substance is more important. Water along with mild rubbing will remove most contamination. Lightly scrub the skin to remove contamination. Scrubbing too hard will possibly damage the skin providing the contamination a place of entry.

A second method of physical decontamination is dry decontamination. During dry decontamination the hazardous substance is removed by brushing, vacuuming, or adsorbing the substance with powders such as talcum powder, flour, or baking soda.

### **Chemical Decontamination**

Chemical decontamination is the use of agents to remove or deactivate harmful contamination. Chemical decontamination can be a wet, technical, or dry process. The type of process refers to the decontaminating material. Wet decontamination usually refers to soap and water while technical decontamination uses alkaline solutions or solvents to remove the hazardous substance. Dry decontamination uses dry substances to adsorb or neutralize the contaminating substance. Within the ETA, physical decontamination is normally used. Soap and water are the decontaminating items of choice.

### **Types of Decontamination**

The types of decontamination are divided into groups according to where the decontamination takes place and how much contamination is removed during the process. The type used will depend on the contaminating substance and amount of contamination in addition to the ability of the victim to perform decontamination procedures.

### **Gross/Hasty Decontamination**

Normally at the incident site, gross or hasty decontamination is used. Gross or hasty decontamination removes the loose contamination from skin and clothes. Gross decontamination is the initial phase of the decontamination process during which the amount of surface contaminant is significantly reduced (*NFPA 472*, 2008). According to local decontamination plans, this phase can include the mechanical removal of agent or the initial rinsing to remove agent. Gross decontamination must be performed as quickly as possible. OSHA recommends a low-pressure, high-volume water system as the default standard for gross decontamination. High-pressure water systems are discouraged because they may force contaminant through the victim's skin, increasing contamination of the victim and spreading contamination throughout the environment.

Other field-expedient methods of gross decontamination may make use of facilities such as fog streams, school shower facilities, car washes, YMCA/YWCA, or other facilities available for rapid decontamination and accommodating the largest number of victims.

## **Secondary Decontamination**

Secondary decontamination is performed following gross decontamination, and after a victim has been removed from the hot zone. The ETA may perform secondary decontamination of victims who have undergone gross decontamination at the incident site. Though secondary decontamination is performed on an as-needed basis and may be limited to specific areas of the body, the method of choice for the ETA is a complete decontamination. Secondary decontamination is more thorough than gross decontamination.

## **Technical Decontamination**

Technical decontamination refers to the removal of contamination from responders and equipment in a very deliberate and time-consuming fashion. This process is used especially for the decontamination of responders in PPE and other equipment—it is not used on victims. Technical decontamination uses solvents or alkaline solutions to neutralize or inactivate the contaminating substance. Responders should conduct technical decontamination in a location separated visually from victim decontamination for psychological reasons. PPE should be carefully and thoroughly cleaned. Speed is not the goal of technical decontamination. Technical decontamination concentrates more on completely neutralizing the agent from the PPE.

## **Spot Decontamination**

When the contaminating substance is known, can be seen, and does not cover the entire person or piece of equipment, a spot decontamination method is used. This method targets the contamination by removing, deactivating, or neutralizing it. Removal of blister agent from the skin is an example of spot decontamination. Victims may be spot decontaminated if the amount of contamination is insufficient to warrant going through the normal decontamination corridor.

## **Emergency Treatment Area (ETA)**

At the ETA, decontamination lines are either temporary facilities (e.g., tents), or facilities designed specifically for the purpose (e.g., trailers or structures that are already established) of decontamination sites. Within these structures, either self-decontamination or assisted decontamination takes place. If the victim is ambulatory he or she would be assisted by staff members to remove clothing, enter a shower, and wash completely.

The first step in any decontamination process is the removal of clothing. Removing the clothing will remove from 75-90% of all contamination. The percentage of decontamination removed varies in reference books. No matter the reference, removal of clothing removes most of the contaminating substance.

## **Decontamination Corridor**

During any MCI, an ETA should be established outside the hospital. The ETA should be established downwind from the hospital with the receiving area farthest from the Emergency Department (ED). The ETA must contain a decontamination corridor to process and decontaminate victims quickly before they move into the hospital for further medical treatment. Ingenuity and current technologies can be used to handle large numbers of contaminated casualties. Examples of improvised decontamination tools include mobile trailers designed for mass overhead (in corridors) to provide a fine spray for victims to walk through.

Five separate decontamination lines are established within the decontamination corridor. The separate lines include clothing inspection, wet non-ambulatory, dry decontamination, wet ambulatory, and staff members' technical decontamination. The first discussion will concentrate on victim decontamination.

The decontamination corridor begins at the victim receiving area. All individuals are triaged using the SMART Triage System. Victims are initially divided into contaminated and non-contaminated, ambulatory and non-ambulatory victims. Contaminated victims are sent through the decontamination corridor while non-contaminated victims are sent to another area where a second triage and treatment has been established. This second area processes the victims into the hospital or to other facilities for further evaluation.

Three general categories or lines are established for contaminated victims—wet ambulatory, dry decontamination, and wet non-ambulatory decontamination. The dry decontamination line is used if the contaminating substance is known to be a powder or other material that can be removed by vacuuming or brushing. Dry decontamination is used as an initial method of removing particles from the clothes and skin, but it must be followed up with wet decontamination of the body unless the identified hazardous substance will react with water.

Positioning of each line is determined by Standard Operating Procedure (SOP), size of the ETA, and the capability of the hospital. Privacy considerations must be taken into account for the ambulatory and non-ambulatory lines. The ambulatory line is further divided into a male and female line. All three decontamination lines use the same steps toward decontaminating the victim. The diagram below on the slide shows the initial decisions and how to divide up the victims into separate decontamination corridors. The enclosure at the end of the module shows the layout of the five decontamination corridors.

The decontamination corridor consists of six stations moving from the hot zone toward the cold zone. The six stations along the corridor are as follows:

The first station along the decontamination line is victim registration. Every victim is logged into the system and given numbered tags. Each tag has the same number. It identifies the victim and his or her clothing and valuables. Tag number also relates the victim to all further records of treatment. One tag is placed around the neck and the other is attached to the clothing bag.

The second station is for clothing removal. This area must be enclosed around the outside for modesty and privacy. It does not require individual stalls; however if equipment is available, the stalls could provide further privacy. Staff members of the same gender as those processing through the line should be available to assist individuals in each of the stations along the corridor. At the clothing removal station, victims remove all clothing and personal property. Clothing is placed in a plastic bag and sealed. Personal property that includes jewelry, wallets, etc. is placed in a separate plastic bag and sealed. Both bags are placed in a third plastic bag, which is also sealed. The person's second number tag is attached to the sealed bag. The bag is then turned into a staff member. The staff member logs the bag and stores it in the designated area. All clothing and personal possessions will be processed through a separate line.

The third station is a rinse. This station includes a quick overhead shower rinse to remove gross contamination. It is followed by a complete wash. All water must come from above the victims to wash all contamination away from the head toward the deck.

The fourth station is a wash. In the wash station, the victim will use soap and water, continuing to wash and scrub for the designated length of time. This station must ensure free-flowing overhead water to remove all soap and residual contamination.

Station five is a survey or an inspection. After washing and rinsing, the victim must be checked for residual contamination. This station is manned by staff members with contamination detection equipment. In this section, the victim is checked to ensure that any residual contamination is eliminated. Clean victims move to the dressing area while those found to be contaminated return to the wash station.

The final station in the corridor is the dressing station. Hospital gowns or other hospital-provided clothing is given to each victim. The clothing should protect the modesty of the individual as the victim moves from the exterior of the hospital into the ED for follow up treatment.

## **Decontamination**

The ambulatory decontamination corridor is established for use by victims that are injured but are able to move through the ETA on their own. A separate decontamination corridor is established away from the ETA for victims who have been identified as contaminated but do not need medical attention.

Victims identified as ambulatory during the START protocol triage are sent to the victim registration area. Once registered and given tags, the victims are prioritized according to their injuries. Victims are processed in order by triage status. Some victims may be routed to a holding area to await decontamination; this is especially true in incidents with large numbers of ambulatory victims. Symptomatic victims are processed before victims who are asymptomatic. Victims that cannot be processed immediately through the decontamination line are sent to a designated holding area. Responders must explain to the victims that they understand their need for help however; they must be isolated and organized.

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Provide clear and simple instructions on decontamination. A decontamination kit is recommended by OSHA for issue to each contaminated individual. The kit is issued at the registration area and stays with the patient as they proceed through the process. It consists of the following: numbered tags, three plastic bags, soap, and a washcloth. When moving to the decontamination line, men and women are separated into separate lines. Provide special consideration for families, small children, the elderly, and people with special needs (e.g., visually, speech- or hearing-impaired, mentally or cognitively challenged individuals, or persons requiring crutches or wheelchairs for mobility). Children should not be separated from a parent, if at all possible.

As detailed previously, the victim removes all clothes, double-bagging all items. The clothing bag should be set aside in a secure location. Staff members should be available to assist victims that need help while undressing. Victims should be told to remove all clothing. The triage tag remains on the victim through the decontamination and treatment process. If staff is available, victims' name and triage tag number should be recorded on the decontamination record. Victims should attempt to not touch the outer layers of the clothing while removing it. Victims should not allow the clothing to come in contact with their face; this will reduce the spread of contamination. If biological or radiological contamination is suspected, continue wetting the victim's clothing during removal to prevent re-aerosolizing the agent.

The next step in the process is wash down. The process can use a cold water rinse followed by a warm water wash and rinse; however, one can combine the process into a single warm water wash, if facilities are not available for separate stations. The cold water rinse removes gross contamination before the victim begins scrubbing the skin. This reduces the possibility of scrubbing contamination into the skin's pores. A member of the decontamination team should closely observe each victim to ensure they are thorough in washing themselves. The size of the facility and the number of casualties will determine the areas needed. Performing a cold water rinse followed by a wash and rinse also allows for faster processing of victims. At the warm water washing station, victims must wash for five minutes if the chemical is non-persistent or eight minutes if the chemical is unknown or persistent. Decontamination soap, washcloths, brushes, and sponges should be put into a nearby trashcan and not carried into the non-contaminated zone.

The wash is followed by movement to the survey and monitoring area where the victim is checked by a staff member. Clean victims are sent on to the dressing area while those with contamination residue are sent back to the shower. In the dressing area, victims will dress in hospital-provided-clothes and proceed into the ED for further care. Provided clothing would normally be a hospital gown but other modest covering will also suffice.

The decontamination team members should be alert to the possibility that an ambulatory patient may clinically deteriorate and require immediate removal to the non-ambulatory sector *via* backboard, stretcher, or wheelchair.

## **Non-ambulatory Decontamination**

Non-ambulatory victim decontamination requires more time and more staff due to the fact that a non-ambulatory victim cannot assist in the process. Special considerations must be given when decontaminating a non-ambulatory victim. Responders should perform decontamination as follows:

- Wear appropriate PPE.
- Limit the number of responders in contact with the victim.
- Remove clothing, keeping clothing away from the victim's face during removal to prevent victim from inhaling or ingesting contaminants.

Non-ambulatory victims should be moved to the decontamination area by a minimum of four staff members. The victim is then attended by a minimum of three staff members as he or she is moved through the decontamination corridor. The procedure for non-ambulatory decontamination is as follows:

Place the victim on a backboard or Emergency Medical Services (EMS) gurney with the pad removed. Removing the pad ensures that contamination will not get into the padding where it is very difficult or impossible to remove. Staff members remove the victim's clothing and valuables; bag those items with an identification tag. Particular attention should be paid to minimizing the aerosolization of contamination by folding the victims clothing inside out as it is removed. Clothing should be cut away as necessary. The procedure for cutting away the clothing is as follows:

1. Place the victim between the buckets containing diluted bleach.
2. One or, ideally, two responders will cut the clothing, while one responder maintains the victim's airway, and controls the operation. Another responder will communicate any change in the condition of the victim and provide support as needed.
3. Responders should not straddle victims or kneel on the floor to avoid cross-contamination.
4. Decontaminate scissors and gloves after each cut and before touching skin.
5. Since most serious injuries and death from HAZMAT result from airway and breathing problems, remove clothing nearest the airway first.
6. Remove the shirt by cutting up the front to the neck area, and then cut the sleeves to the neck area. Peel the shirt back from the victim and use the inside of the shirt as a barrier for the victim. If present, remove the bra at this time.
7. Remove pants starting at the cuff. A cut is made upward from the bottom of both legs to the waist. Peel the pants away from the victim and use the inside of the pants as a barrier for the victim; remove underwear.

8. Cut shoestrings and remove the shoes. Use the inside of the shoe as a barrier for the victim's foot.
9. Remove the socks by gently pulling up on the sock. (If a sock does not pull off, use the shears to cut a small hole in the toe of the sock and cut up to remove the sock.)

After the clothing has been removed, pass the victim off to the wash station. The first step is a quick rinse from head-to-toe with free-flowing water. Be careful not to allow water into the victim's mouth. After a quick rinse wash the victim with soap and water for five to-eight minutes. Use soap and warm water (or appropriate decontaminant based on local protocols) to decontaminate non-ambulatory victims. The victim's airway is cleaned first, followed by all open wounds and, finally, the remainder of the body. Responders should concentrate on cleaning all of the victim's body. Pay strict attention to all body orifices. Dressings and bandages must be removed.

Decontamination team member should be alert to the probability that the non-ambulatory patient may require Active Breathing Control (ABC) support and administration of life saving antidote administration by intramuscular (IM) injection. If IV therapy is needed, the extremity site for the IV should be contaminated before the IV is started. If IV therapy is needed, the patient should be pulled out of line in the decontamination corridor but remain in the decontamination sector. This will require dedicated medical personnel, in addition to decontamination life staff.

Once decontamination is complete, the victim is transferred to a clean backboard, dressed in hospital garb, and triaged for further treatment. Make note that all medical treatment items including bandages, backboard, collar, and ventilation equipment must be decontaminated or replaced with clean materials before the victim can be transported.

### **Special Needs**

Victims with special needs may slow down the decontamination process, such as those who are handicapped, sensory impaired, cognitively impaired; children or infants; elderly; those with service animals or pets; or non-English speaking. Instructions should be multilingual and easy to understand. Signs should be in large print. Handrails, shower chairs, and walkers assist victims with mobility issues.

The ETA may want to consider a designated area with temperature-controlled water and nonirritating soap for decontaminating animals. While this area should be separate from the general population being decontaminated, animals may need to be decontaminated with their owners.

Contact lenses should be removed and placed in the personal property bag. Contact lenses cannot be worn during decontamination. Eyeglasses should be placed in the personal property bag, if the victim can see sufficiently to continue through the decontamination line; if not, they must be decontaminated thoroughly.

Victims who use walking assist devices may retain them, but the device must be washed with soap and water during the decontamination process before being allowed into the transport or treatment sector.

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Patients who are unsteady standing or walking should be given a walker upon entry into the decontamination corridor. The walker should be used to assist with ambulation until they get to the end of the line when it should be retrieved, decontaminated, and returned to the front of the decontamination corridor for the next patient who needs it.

Hearing aids cannot be immersed or otherwise be soaked with water. Thus, they should either; be removed and placed in the valuables portion of the patient's clothing bag, or if they must be used by the patient because there is no hearing without them, they should be carefully wiped off with a slightly saline moistened 4x4 gauze, dried off, put into a clear plastic bag, and handed to the patient. The cleaned hearing aid is not to be worn until the patient has completed the decontamination process (including washing the ears) and is in the transport or treatment sector.

Unless the oral cavity is contaminated, dentures should remain in place and no decontamination is necessary. If the oral cavity is contaminated, then the dentures should be removed, placed in a clear plastic bag with the patient's name or triage tag number placed on it. The dentures should later be decontaminated in accordance with instructions received from the poison center and/or a dentist. The patient's mouth should be decontaminated with mouthwash or saline that is gargled and safely spit out into a biohazard bag. Note that, depending on the contaminant, it may not be possible to decontaminate plastic items, such as dentures.

### **Law Enforcement Officers with Weapons**

In most cases, law enforcement personnel who have been injured on the scene will have had their gun(s) removed before arrival and given to a fellow officer. However, if that is not the case, the weapon should be left in the holster and the gun belt removed by a decontamination team member and placed in a clear plastic bag labeled with the patient's name and/or triage tag number. The bag should then be passed to the treatment sector where it should be given to a fellow officer or hospital security officer for safekeeping until it can be given to a representative of the injured officer's department. The gun should be left in the holster, if at all possible. If the gun must be removed, it should be handled by a decontamination team member familiar with firearms, rendered safe, placed in a clear plastic bag marked with the patient's name and/or triage tag number, and given to a fellow officer or hospital security officer in the treatment sector.

Decontamination team personnel should be aware that an officer may have a backup weapon usually found in a holster near the ankle, in his/her pocket, in a ballistic vest, or near an armpit. The holster with the weapon in place should be removed and secured as described above. An officer's gun belt may also contain items that could prove dangerous if allowed to get in the wrong hands. Thus, the belt should be collected and separately bagged and passed to a fellow officer or hospital security officer in the treatment sector. Decontamination of an officer's weapon and/or gun belt will be the responsibility of the police department. If the officer is wearing a ballistic vest, it must be removed prior to undergoing decontamination.

The vest is usually easily removed by loosening the Velcro® straps, pulling the vest apart, and taking off the patient. It should then be placed in a large plastic.

Special considerations for the decontamination of children could include issues such as the following:

- The decontamination should include handheld carriers for decontamination of infants.
- Bathtub toys to comfort small children.
- Child-friendly stickers on PPE to reduce fear.
- Special areas for decontamination of families to avoid separation

Children may also require immediate decontamination or a more thorough decontamination. Children may react differently to chemicals than adults and may be more vulnerable because of relatively higher minute ventilation per kilogram. Children also have a relatively larger surface area to body weight ratio, making them more vulnerable to skin hazards.

### **Technical Decontamination Corridor**

Responders must also undergo thorough decontamination when their shift has been completed or when the ETA is being dismantled. The responder decontamination station is established off to the side of the victim decontamination corridor. This corridor allows for removal and decontamination of PPE and equipment.

The responder enters the corridor and immediately rinses with all equipment in place. Care must be taken not to allow water into the filters of the face mask. Once rinsed, the individual can sit down and remove their outer boots and gloves. Responders are assigned to each station to assist in the decontamination and removal process. Once outer boots and gloves are removed, the responder moves to the next station and removes the protective suit. The suit is pushed down to the top of the inner boots and, then, the suit and boots/booties are removed together. Finally, the facemask is removed followed by the inner gloves and the responder exits the corridor. All equipment, cleaning supplies, used equipment, and other items must be either decontaminated or double-bagged and prepared for disposal when the site is no longer needed. Nothing used within the corridor can be allowed out of the area before treatment.

### **Conclusion**

Decontamination remains a focus of any response concerning hazardous substances. It is the first process established and one of the last and the last operation in an emergency response. As an insurance policy against mishap, the decontamination area is the first area established prior to arrival or treatment of victims. The decontamination corridor is a major portion of the ETA. It is divided into separate lines for ambulatory and non-ambulatory victims. The ambulatory decontamination corridor is again divided to provide for modesty and privacy into male and female lines. Everyone who is contaminated must go through the decontamination process. The ambulatory and non-ambulatory decontamination lines contain the same stations and victims go through the same processes. The only difference in the lines is the number of decontamination personnel who must assist the victim during the decontamination process.

## Appendix C

### V. Rapid Triage for Chemically Exposed Patients (No apparent Traumatic Injuries)

| <b>Agent Class</b>         | <b>RED</b><br>Immediate  | <b>YELLOW</b><br>Delayed  | <b>GREEN</b><br>Minor | <b>BLACK</b><br>Deceased /<br>Expectant      |
|----------------------------|--|---|-----------------------|--|
| <b>Nerve Agent</b>         | Seizure/LOC<br>Altered Sensorium<br>Respiratory Difficulties<br>Bradycardia    | Alert<br>Increased secretions<br>Vomiting<br>Diarrhea   | Asymptomatic          | Pulseless<br>Asystole<br>Apnea               |
| <b>Cellular Asphyxiant</b> | Altered Sensorium<br>Hypotension<br>Bradycardia<br>Respiratory Distress        | Alert<br>Headache<br>Tachycardia<br>Strong Pulses<br>No respiratory compromise                      | Asymptomatic          | Apnea<br>Asystole<br>Pulseless               |
| <b>Pulmonary Irritant</b>  | Altered Sensorium<br>Hypotension<br>Respiratory Distress<br>Stridor / Wheezing | Alert<br>No respiratory compromise<br>Irritation of Mucous<br>Membranes                             | Asymptomatic          | Apnea<br>Asystole<br>Pulseless               |
| <b>Vesicant</b>            | Altered Sensorium<br>Hypotension<br>Respiratory Distress<br>Visual Deficits    | Alert<br>No Cardiac Symptoms<br>No respiratory compromise<br>< 5% Total Burn Surface<br>Area (TBSA) | Asymptomatic          | Apnea<br>Asystole<br>Pulseless<br>> 50% TBSA |

## Appendix C

### VI. Decontamination Personal Protective Equipment & Training Considerations

#### Emergency Scene – First Responders

Operating at any Chemical, Biological, and Radiation release event requires the use of appropriate PPE when operating within a Hot, or Exclusionary Zone. Decontamination procedures for traditional HAZMAT operations take place in the warm zone. Emergency Mass Decontamination takes place at a different level and must be established quickly. As with any operation, the first step in personnel protection is to establish decontamination operations upwind and uphill from the incident itself.

| Level of Protection   | Training  |
|---|---|
| <p><b>Minimum PPE Levels</b></p> <p>No direct contact with agent<br/>Chemical known and low risk contaminant<br/>No contact with persons being decontaminated</p> <p>Persons being decontaminated are ambulatory and can understand self decontamination instructions.</p> <p><b>PPE Level:</b> D Structural turn out gear<br/><b>Respiratory Protection:</b> SCBA / Air Purifying Respirator</p> | <p>First Responders Operations Level</p>  |
| <p><b>Intermediate Protection</b></p> <p>Some contact or exposure to contaminated individuals is anticipated – persons ambulatory but may need assistance</p> <p>Chemical is known AND is a low risk contaminant</p> <p><b>PPE Level:</b> D or C agent dependent<br/><b>Respiratory Protection:</b> SCBA / Air Purifying Respirator</p>   | <p>First Responders Operations Level</p>  |
| <p><b>Advanced Protection</b></p> <p>Actual contact or exposure is expected<br/>Unknown agent, AND/OR high risk contaminant<br/>Non-ambulatory persons needing decontamination</p> <p><b>PPE Level:</b> Level B Chemical protection<br/><b>Respiratory Protection:</b> SCBA, or Supplied Air</p>  | <p>First Responder Operational Level –<br/>Minimum<br/>Recommended EPA HAZ MAT Technician<br/>Level or higher</p> |

## Appendix C

### VII. Special Decontamination Considerations

#### Directions to Individuals for Decontamination at Scene of Event

**You have been or possibly been exposed to a hazardous substance. In order for us to help you as well as your own health and safety and the safety of others please follow our direction. You must be thoroughly cleaned before you can be treated. Please follow the directions by the entry and exit guides as you enter the wash areas cleaned.**

1. Follow the hose line on the ground
2. When you first enter the wash area remove your outer garments (weather, agent & modesty dependent.)
3. If you have been contaminated with a liquid remove all garments
4. Place the garments in the plastic bag
5. As you pass through the wash area gently rub any exposed areas of your body with your hands
6. Do not rush or run through the decontamination shower corridor.

**\*Note: Decontamination Trailer providers and Fire Departments should consider having this placard translated into languages common to the area.**

### “Trash Bag Decon Kit”

#### **CONTENTS:**

- Armband for patient (pre-numbered) – tape to the outside of the bags or near the inside top.
  - Zip-lock bag (gallon sized, pre-numbered) for valuables (i.e. watch, keys, jewelry, wallet) - Have the patient keep glasses on, may need to keep hearing aid in also.
  - Large zip-lock bag (at least 24” X 24”, pre-numbered) for clothing
  - Another zip-lock bag (24” X 30”, pre-numbered) to place all these items in – This will be used to double-bag the clothes and valuables.
  - Black lawn type trash bag (at least 59 gallon, larger better, 2.0 mil thickness) – Cut a hole in the top, big enough for a head and arm holes in the side. – This will be used for patients to use as a covering if no other shelter is available. They can disrobe under the bag and rinse under it.
- Each kit should be pre-numbered with the same number, for tracking purposes.
- Optional: Can include a Tyvek type covering to change into, or a patient gown.

### **Cold Weather Decontamination**

The mean temperature most likely to be tolerated for standard outdoor decontamination processes is approximately 65° F. At temperatures below this persons may be reluctant to follow the standard process.

If the outdoor temperature is between 35° F to 65° F, moving persons directly to a warmer environment ASAP after outdoor decontamination is more critical. These areas can be Decontamination Trailers, strategically deployed heated tents, office buildings, hospitals, shelters, etc. Supervisors need to be alert for signs of hypothermia.

If the temperature is below 35°F, then attempts should be made at indoor decontamination, with either Decontamination Trailers, indoor shower facilities, car washes, swimming pools.

<sup>3</sup>

### **PPV Fans**

For gaseous substances with vapor pressures such as Anhydrous Ammonia and Chlorine, persons can be thoroughly decontaminated using Positive Pressure Ventilation Fans set up approximately 10 - 15 feet away from the individuals being decontaminated.

### **Automatic Sprinkler Systems**

Actuating one or more sprinkler heads can be employed to decontaminate persons moving into a building, or out of a contaminated building. However, wetting a person in Cold Weather Decontamination should be done incrementally vs. having the person immediately drenched. Special attention needs to be paid to cardiac patients and the elderly if there is absolutely no alternative to outdoor wet decontamination.

If no indoor facilities can be quickly accessed the following Dry Decontamination procedures can be employed.

1. Remove outer clothing and blot with paper towels
2. Persons can assist each other
3. Transport to warm area for wet decontamination

### **Soap**

Baby shampoo is the most effective soap agent for decontamination purposes at this time. Mixing of approximately 8 ounces of baby shampoo in a standard 2.5 gallon home & garden sprayer should yield an effective soaping agent.

### **Sea / Salt Water**

The National Institute of Standards & Technology reports that due to its pH level sea water has been proven to be a more effective wetting / decontamination agent than “normal” water.

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<sup>3</sup> An Olympic sized pool can decontaminate approximately 800,000 persons contaminated with VX gas before the pool will show any effects of the contaminant. Due to the other associated risks this option requires very close supervision

### **Waste Water Runoff / Disposal**

Decontamination should not be delayed while setting up appropriate procedures for waste water containment, the saving of lives is primary. Once the requisite resources are available the following Department of Environmental Protection policy should be followed:

In the event of an emergency response to a possible anthrax or other biological agent contamination incident, emergency personnel often utilize water and disinfection agents to wash down protective equipment including but not limited to containment suits. For the purpose of protecting waters of the state from pollution, the following procedures should be followed at each site where such activities occur. These procedures apply only to instances of cleanup activities where it has been verified through appropriate testing that no anthrax or other biological agent is present. Where testing confirms that anthrax is present, wash waters must be transported by licensed waste hauler.

Due to the toxic nature of chlorine and other disinfecting agents which may be used, and the need to minimize the release of any potential pathogens, every possible precaution must be taken to effectively contain all wash waters generated from these procedures in order to prevent any releases to surface waters or groundwater used for drinking.

Procedures for Disposal of Cleanup Wash waters verified not to be contaminated with biological agents:

#### **Minimize Use:**

Use only those quantities of bleach and water that are needed for full cleanup.

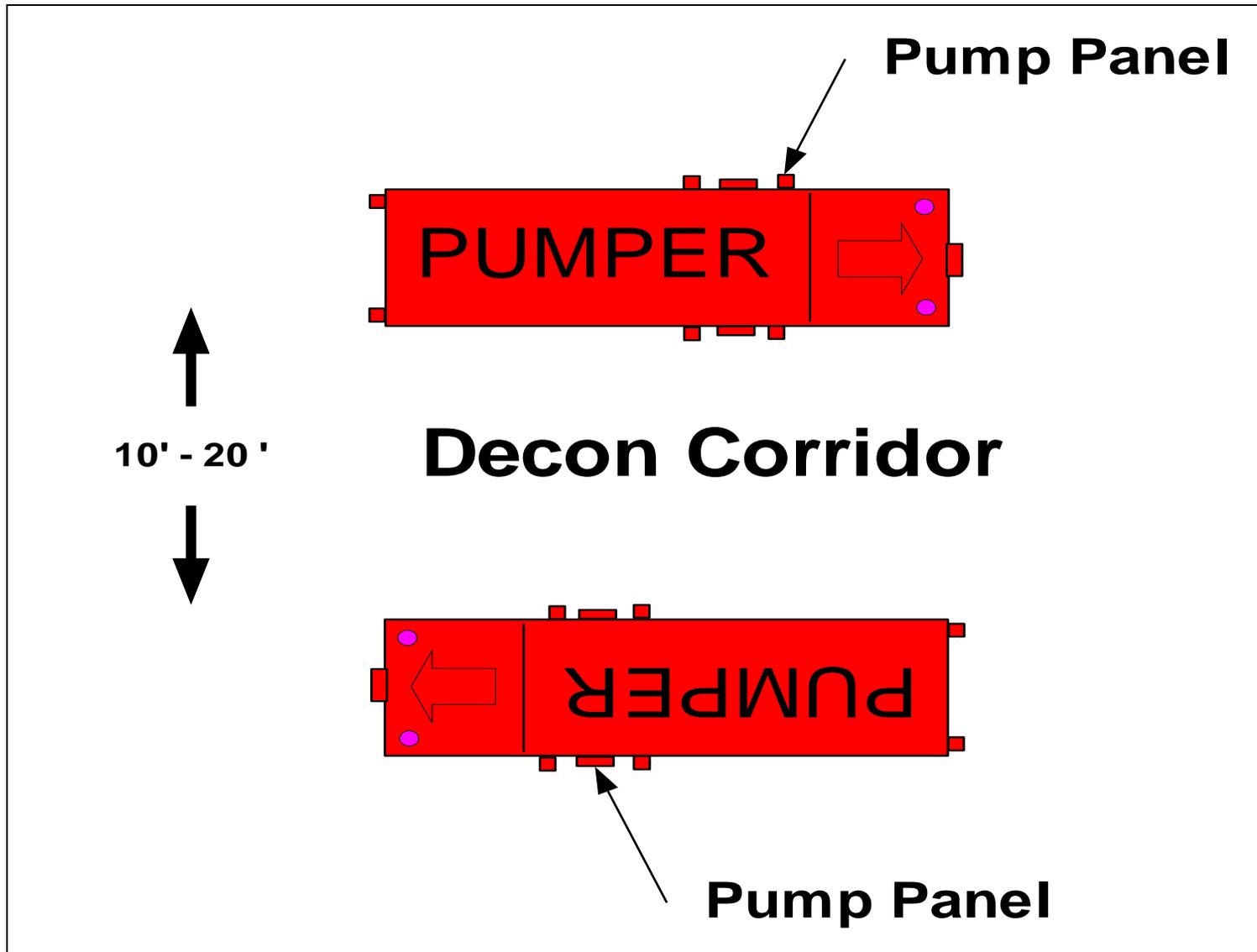
#### **Containment:**

During decontamination activities, contain all wash water within a watertight container away from any storm drain, catch basin, stream, swale or other direct access to surface water.

#### **Disposal:**

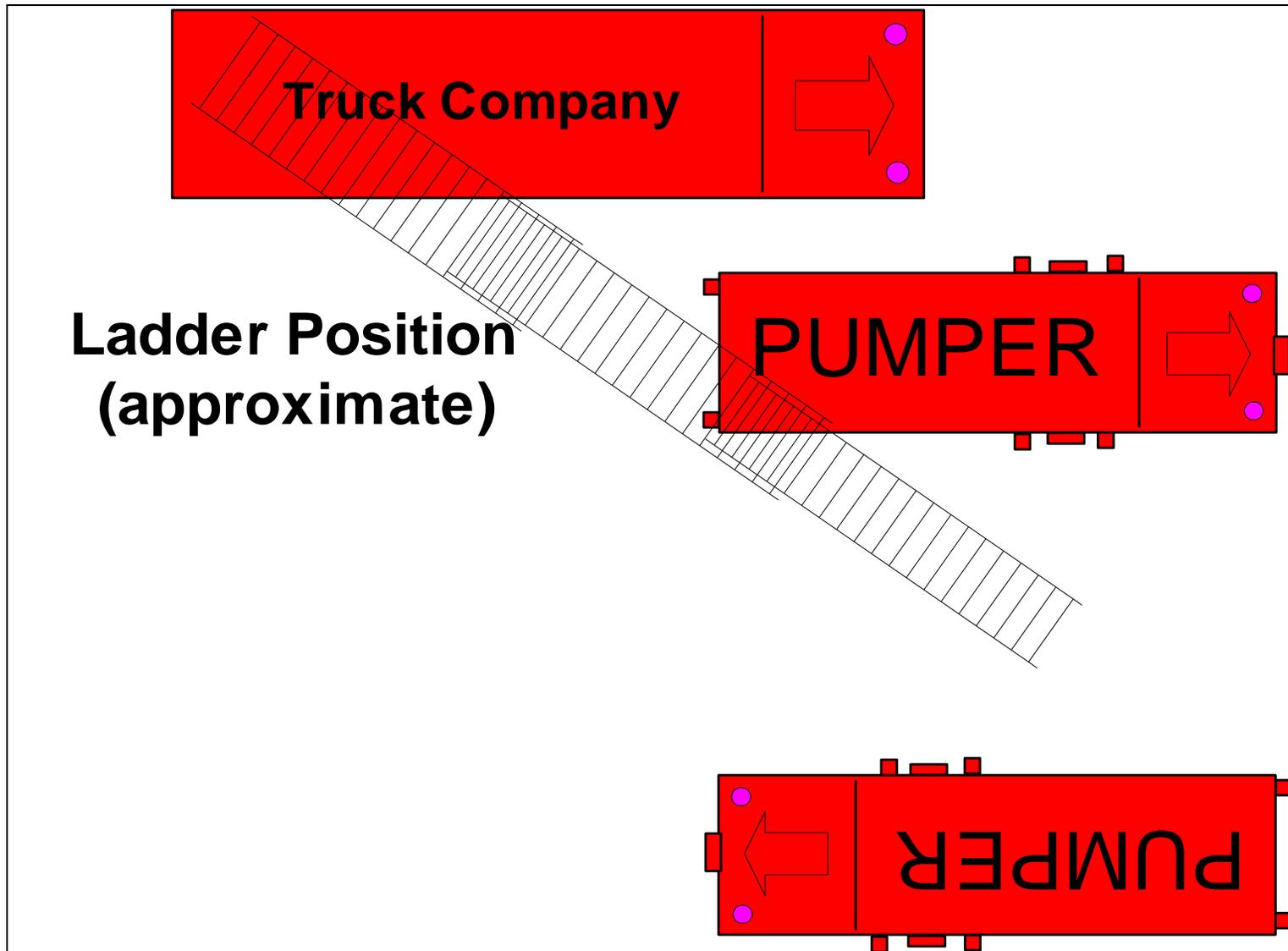
Carefully dispose of the wastewater only to a municipal sanitary sewer or via a waste hauler licensed to transport the waste. (A list of certified haulers can be obtained from the Department of Environmental Protection, Waste Management Bureau, Engineering and Enforcement Division at (860) 424-3023.)

# Rapid Access Mass Decontamination Placards



**2 Engine Apparatus Set-up:** Position 2 Engines approximately 10 to 20 feet apart, facing opposite directions, with pump operator panels to the outside of the corridor.

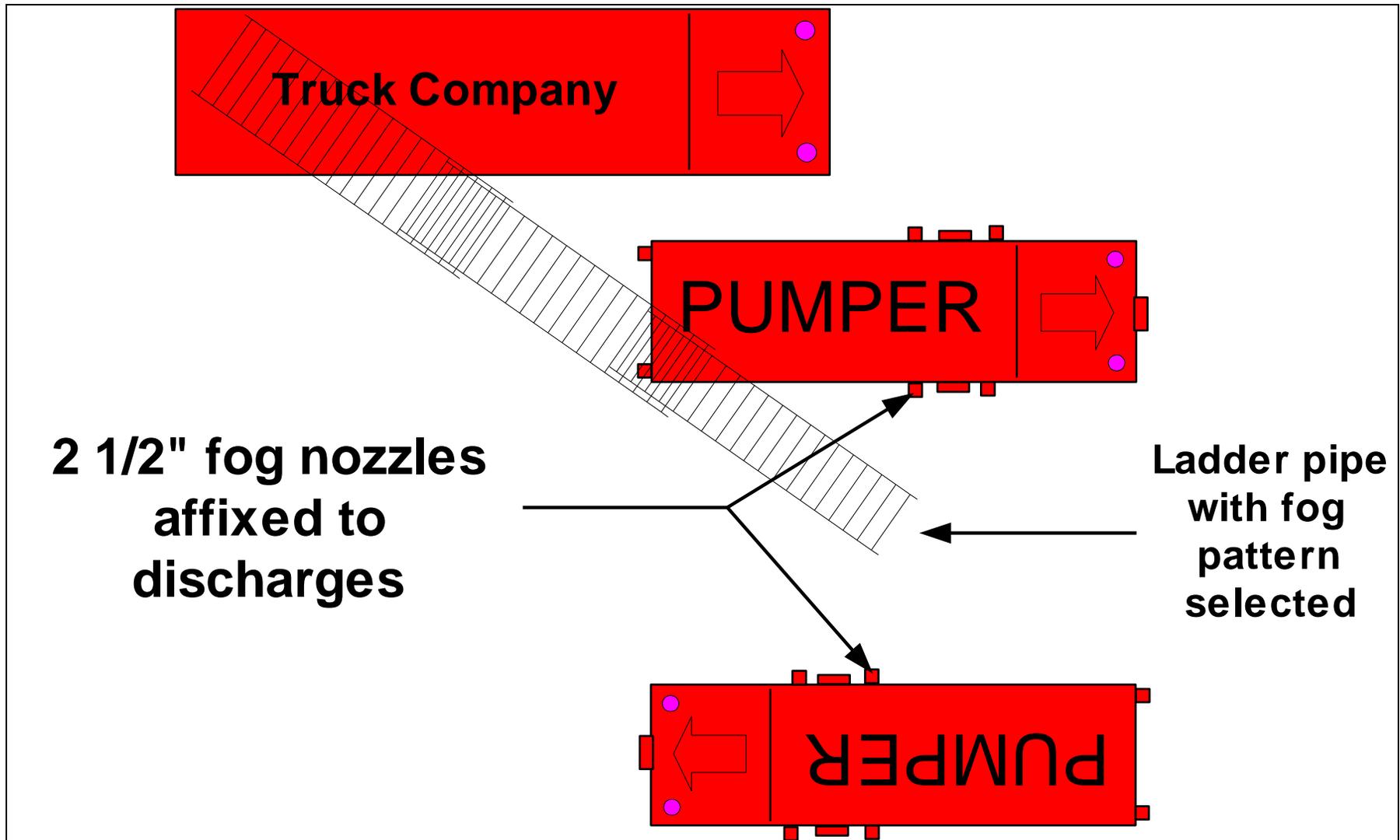
## Rapid Access Mass Decontamination Placards



### **2 Engines & 1 Ladder Company Apparatus Set-Up:**

The Ladder Company should be positioned, if possible, on the EXIT side of the corridor.

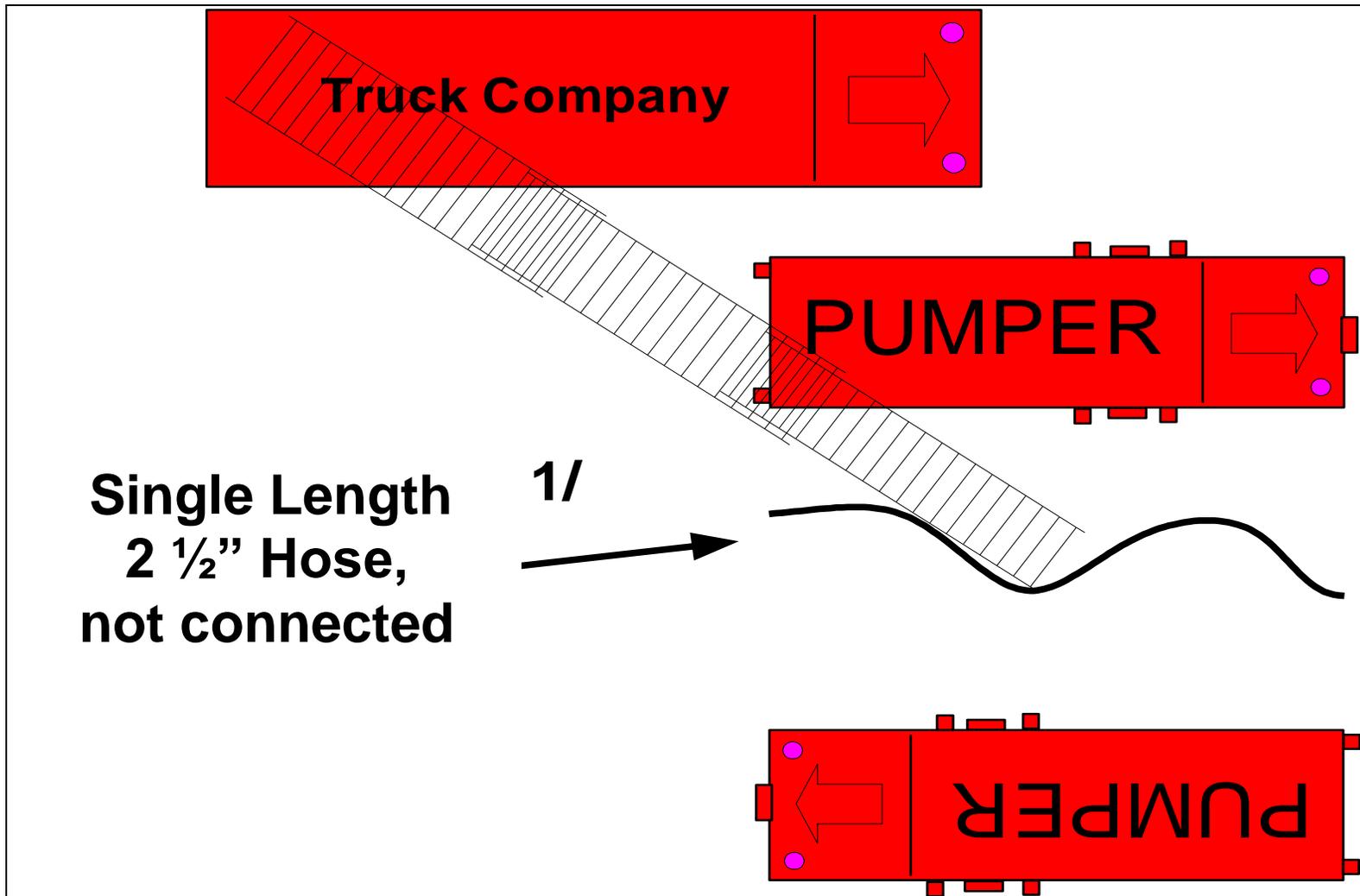
## Rapid Access Mass Decontamination Placards



### **2 Engines & 1 Ladder Company Apparatus Set-Up:**

Position the ladder pipe, with fog nozzle, over the center of the corridor and adjust the pattern so as to cover as much of the corridor as possible.

## Rapid Access Mass Decontamination Placards



### 2 Engines & 1 Ladder Company Apparatus Set-Up:

Use a section of hose to create an "S" pattern in the corridor. Pattern should cause victims to have a minimum 360° exposure to water spray.



## Appendix D

### Hospital Based Decontamination

#### Facility Pre-Incident Decontamination Baseline Ability Goals

Prior to activation of the Statewide Mass Decontamination Guide & Mobilization Plan, each Acute Care Hospital should have a plan and capability to decontaminate up to 100 individuals per hour. Portable showers have been established at for each of the 32 acute care hospitals to meet this need. However, if an acute care hospital determines that mass decontamination is needed beyond its inherent capability, the Statewide Mass Decontamination Plan should be activated via the local fire/police chief. Upon the first indications that a potentially region wide event may be occurring, an alert notification to other acute care hospitals via the CMED MEDNET system should be made.

Upon notification, all hospitals within the region shall activate their respective plans for facility site control and decontamination. Contaminate affected facilities shall follow regional protocols for hospital diversion as needed.

Hospital-based Mass Decontamination should take place as far away from its doors as logistically possible. In addition to the securing of the actual facility, as large an area as possible needs to be cordoned off. These cordoned off areas lend themselves to the establishment of a multi-corridor decontamination process, alternative treatment sites, and possible treat & release protocols being employed. This later process saves the hospitals for the acute admissions.

#### Hospital Based Decontamination

Statistics indicate 80% of persons arriving at a hospital after a large scale event do so via private vehicles. This translates to persons arriving at hospitals without having been decontaminated. Hospitals must be prepared to meet this need, in accordance with Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Environment of Care EC 1.4. Plans are required to be in place for hazard analysis, mitigation, community and hospital wide coordination, establishment of alternate care sites, and facility evacuations.

The key element to protecting a hospital in this type of a situation is some form of a lock down, and denial of entry, or single access point. Upon first indication of contaminated persons entering the facility the following acronym applies: **A.C.I.D.**

|                     |   |
|---------------------|---|
| A – Assess/Activate | Assess threat to facility / Activate Emergency Action Plan  |
| C – Call            | Call appropriate emergency number                           |
| I – Isolate         | Isolate persons / Redirect to decontamination / secure area |
| D – Decontaminate   | Decontaminate persons per facility Emergency Action Plan    |

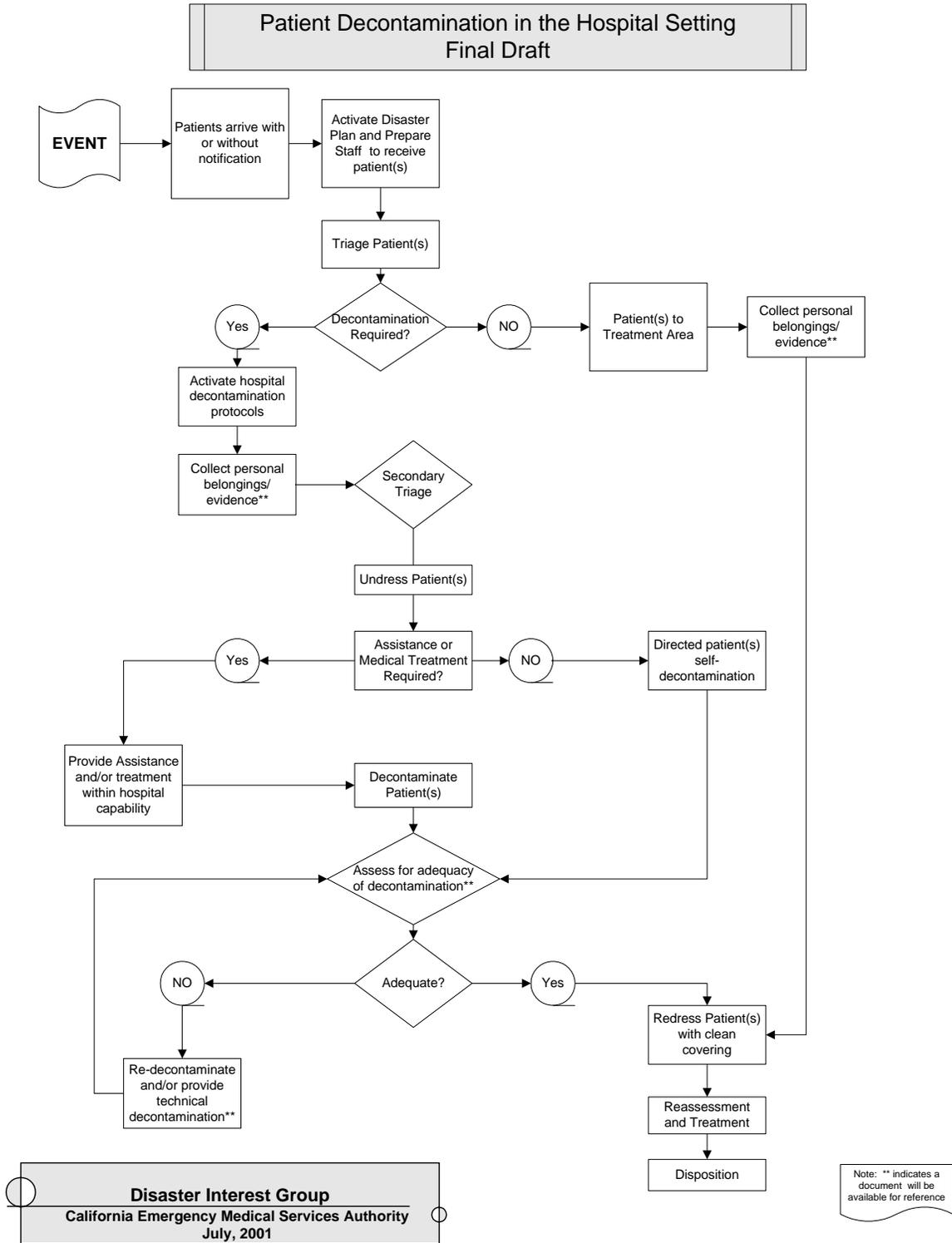
The Assessment process is a continuum advancing from initial assessment, through threat and product identification, resource needs and deployment, decontamination efficacy, patient triage and finally termination of decontamination efforts.

## **Hospital Emergency Response Teams**

Each facility shall develop a Hospital Emergency Response Team (HERT) for decontamination purposes comprised of a cross section of facility maintenance & safety personnel as well as medical staff with at least one individual available on site 24 hours a day. Upon activation, the HERT would activate the facilities decontamination equipment and begin the decontamination process. For facilities with only one person available, that person would be the liaison with the first responders summoned to perform the actual decontamination. Personnel training and drills must be conducted at each hospital to maintain strike force proficiency.

## **Hospital Based Decontamination Planning Factors**

1. Hospitals should not anticipate having direct access to the State of Connecticut's mobile decontamination trailers, to support their decontamination needs, for a minimum of 60-120 minutes.
2. The Hospital Incident Command System & NIMS will be implemented.
3. Exercises should be conducted with other hospitals and regional partners (i.e. public safety, EMS, emergency management, law enforcement, etc.)
4. Hospitals shall incorporate their local fire service into their decontamination plan as appropriate.
5. Access to the mobile decontamination trailers that have been positioned across the state should be made through the local fire/police chief.
6. Hospitals need to insure that adequate space is available for securing the mobile decontamination trailer and insuring immediate access to the emergency department.
7. Hospitals need to identify water and power sources needed by the decontamination trailer.
8. Mobile decontamination trailers have inherent power (generator) and water heating (boiler) capability but little to no inherent water source.



**Patient Triage Diagram D.1**

## Appendix D

### II. Personal Protective Equipment & Training Considerations Hospital Setting

| Level of Protection  | Personal Protective Equipment  | Training                            |
|--|--|-------------------------------------|
| <p><b>Minimum Protection</b></p> <p>These PPE considerations offer minimal protection acting mainly as a liquid/splash barrier for the following:</p> <p>No staff contact or exposure is anticipated<br/>Chemical is known and is low risk contaminant</p> <p>Used with exterior decontamination of ambulatory patients who can understand self decontamination instructions</p> | <p><b>PPE Level: D</b></p> <p>Splash protection:<br/>Full face shield<br/>Gloves<br/>Water repelling gown<br/>Rubber boots<br/>Hood or hair cover</p> <p><b>Respiratory Protection:</b> Not needed<br/>Or High Efficiency Particulate Air Filter (HEPA) mask</p> | <p><b>See Training Addendum</b></p> |
| <p><b>Intermediate Protection</b></p> <p>These PPE considerations can provide protection for hazardous materials for the following:</p> <p>Staff contact or exposure is anticipated, ambulatory patients who may require assistance</p> <p>Chemical is known AND is a low risk contaminant</p>   | <p><b>PPE Level: C</b></p> <p>Splash protection<br/>Full face shield<br/>Chemical resistant suit with hood<br/>Chemical resistant gloves<br/>Chemical resistant boots</p> <p><b>Respiratory protection:</b> Air Purifying Respiratory</p>                        | <p><b>See Training Addendum</b></p> |
| <p><b>Preferred Protection</b></p> <p>These PPE considerations can provide hazardous materials protection for the following:</p> <p>Actual staff contact with patients or contaminant is anticipated.<br/>The agent is unknown AND/OR is a high risk contaminant</p>   | <p><b>PPE Level: B</b></p> <p>Splash protection<br/>Chemical resistant suit with hood<br/>Chemical resistant boot &amp; gloves<br/>Full face shielding</p> <p><b>Respiratory protection:</b><br/>Supplied Air / SCBA</p>   | <p><b>See Training Addendum</b></p> |

Table D.1

## Appendix D

### III. Directions to Individuals for Decontamination / Hospital Setting

#### PATIENT:

**You have been or possibly been exposed to a hazardous substance. For your own health and safety as well as others, you must be thoroughly cleaned before we can safely treat you. This is what you must do. Please read all the steps. Then proceed to follow them. We will be waiting for you at the end with towels to dry you off.**

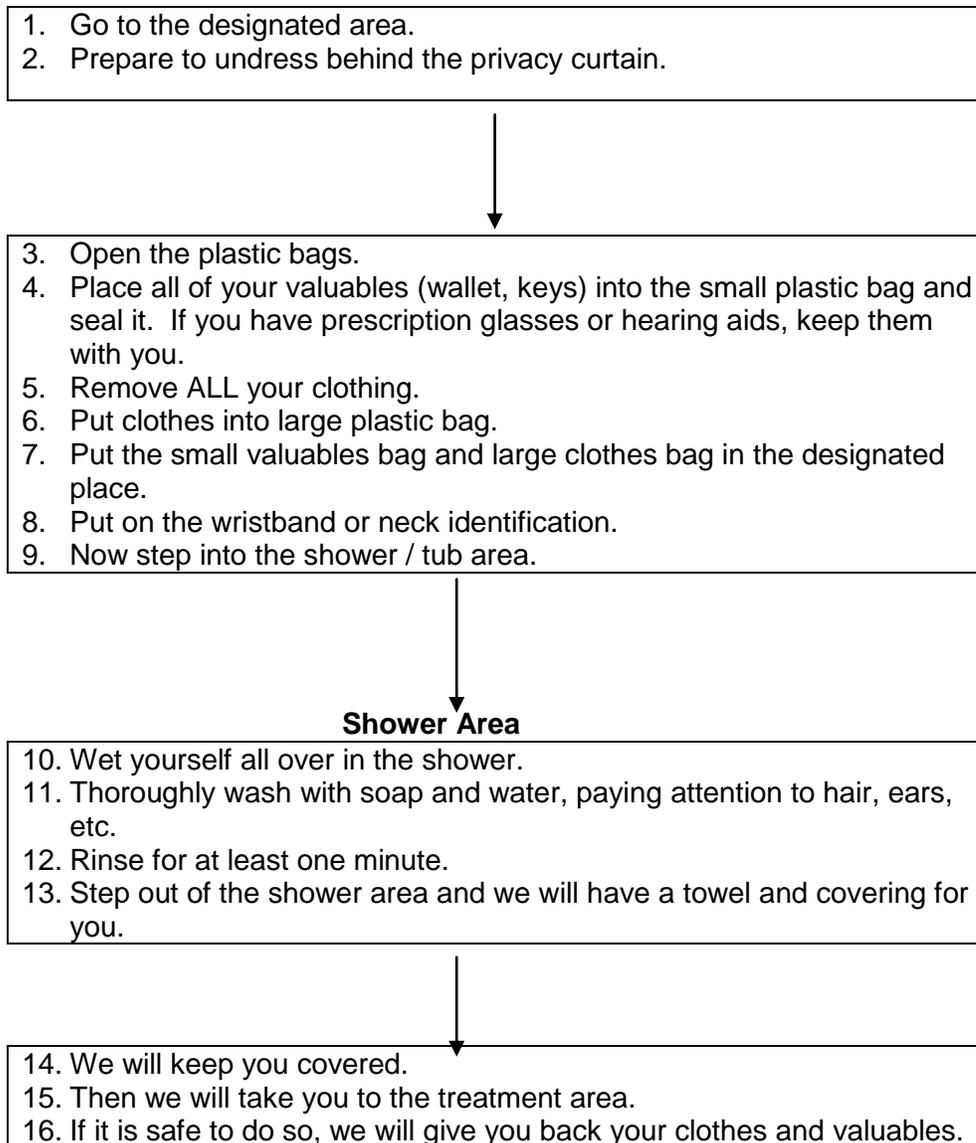


Diagram D.2

**\*Note: Hospitals should consider having this placard translated into languages common to the area.**

## **“Trash Bag Decon Kit”**

### **CONTENTS:**

- Armband for patient (pre-numbered) – tape to the outside of the bags or near the inside top.
  - Zip-lock bag (gallon sized, pre-numbered) for valuables (i.e. watch, keys, jewelry, wallet) - Have the patient keep glasses on, may need to keep hearing aid in also.
  - Large zip-lock bag (at least 24” X 24”, pre-numbered) for clothing
  - Another zip-lock bag (24” X 30”, pre-numbered) to place all these items in – This will be used to double-bag the clothes and valuables.
  - Black lawn type trash bag (at least 59 gallon, larger is better, 2.0 mil thickness) – Cut a hole in the top, big enough for a head and arm holes in the side. – This will be used for patients to use as a covering if no other shelter is available. They can disrobe under the bag and rinse under it.
- 
- Each kit should be pre-numbered with the same number, for tracking purposes.
  - Optional: Can include a tyvek type covering to change into, or a patient gown.

## Hospital Based Decontamination Outline and Process

- I. Identification of Event
  - a. Recognition of Contaminated Patient
  - b. Identify Contaminated areas
  - c. Establish Control Zones
  
- II. Activation of Response Plan
  - a. Facility Notification
  - b. Job Assignments
  - c. External notifications/ Local Fire, Police and Health Departments
  
- III. Determine need for Decontamination
  - a. Who
  - b. Priority
  
- IV. Action Plan development
  - a. Within Facilities Capabilities?
  - b. Decon site
  - c. Flow
  - d. Procedure
  - e. Selection of PPE
  - f. Pre-entry monitoring of Decon Resource Team
  - g. Equipment set up
  - h. Safety considerations
  
- V. General Decontamination process
  - a. Patient remove valuables
  - b. Remove clothing
  - c. Rinse
    1. Start at head and move down
  - d. Soap wash
    1. Gentle washing
    2. Best to use sponges or soft brushes
    3. Start at head and move down, remember nooks and crannies
    4. Move to next step if possible (next kiddie pool)
    5. Wash bottom of foot, step into next area without putting foot in “dirty water”.  
Repeat with other foot.
  - e. Rinse
    1. Lots of water
    2. Start at head and move down
    3. Rinse bottom of foot, step into next area without putting foot in “dirty water”.  
Repeat with other foot.
  - f. Dry Clean Covering
  
- VI. Decontamination Re-evaluation
  - a. Need for further triage?
  
- VII. Medical Triage

VIII. Termination Process

- a. Decon the Decon Resource Team
  1. Start with most potentially contaminated.
  2. Same decon process as patients, except doing with suit on.
- b. Post monitoring of Decon Resource Team
- c. Containment of PPE
- d. Containment of expendable equipment
- e. Containment of collected runoff
- f. Containment of durable equipment that will need decontaminated
- g. Maintain security on all items until properly disposed of.
- h. Debrief/evaluation of process
- i. Complete documentation

**Non-ambulatory Decontamination**

Non-ambulatory victim decontamination requires more time and more staff due to the fact that a non-ambulatory victim cannot assist in the process. Special considerations must be given when decontaminating a non-ambulatory victim. Responders should perform decontamination as follows:

- Wear appropriate PPE.
- Limit the number of responders in contact with the victim.
- Remove clothing, keeping clothing away from the victim's face during removal to prevent victim from inhaling or ingesting contaminants.

Non-ambulatory victims should be moved to the decontamination area by a minimum of four staff members. The victim is then attended by a minimum of three staff members as he or she is moved through the decontamination corridor. The procedure for non-ambulatory decontamination is as follows:

Place the victim on a backboard or Emergency Medical Services (EMS) gurney with the pad removed. Removing the pad ensures that contamination will not get into the padding where it is very difficult or impossible to remove. Staff members remove the victim's clothing and valuables; bag those items with an identification tag. Particular attention should be paid to minimizing the aerosolization of contamination by folding the victims clothing inside out as it is removed. Clothing should be cut away as necessary. The procedure for cutting away the clothing is as follows:

10. Place the victim between the buckets containing diluted bleach.
11. One or, ideally, two responders will cut the clothing, while one responder maintains the victim's airway, and controls the operation. Another responder will communicate any change in the condition of the victim and provide support as needed.
12. Responders should not straddle victims or kneel on the floor to avoid cross-contamination.
13. Decontaminate scissors and gloves after each cut and before touching skin.

14. Since most serious injuries and death from HAZMAT result from airway and breathing problems, remove clothing nearest the airway first.
15. Remove the shirt by cutting up the front to the neck area, and then cut the sleeves to the neck area. Peel the shirt back from the victim and use the inside of the shirt as a barrier for the victim. If present, remove the bra at this time.
16. Remove pants starting at the cuff. A cut is made upward from the bottom of both legs to the waist. Peel the pants away from the victim and use the inside of the pants as a barrier for the victim; remove underwear.
17. Cut shoestrings and remove the shoes. Use the inside of the shoe as a barrier for the victim's foot.
18. Remove the socks by gently pulling up on the sock. (If a sock does not pull off, use the shears to cut a small hole in the toe of the sock and cut up to remove the sock.)

After the clothing has been removed, pass the victim off to the wash station. The first step is a quick rinse from head-to-toe with free-flowing water. Be careful not to allow water into the victim's mouth. After a quick rinse wash the victim with soap and water for five to-eight minutes. Use soap and warm water (or appropriate decontaminate based on local protocols) to decontaminate non-ambulatory victims. The victim's airway is cleaned first, followed by all open wounds and, finally, the remainder of the body. Responders should concentrate on cleaning all of the victim's body. Pay strict attention to all body orifices. Dressings and bandages must be removed.

Decontamination team member should be alert to the probability that the non-ambulatory patient may require Active Breathing Control (ABC) support and administration of life saving antidote administration by intramuscular (IM) injection. If IV therapy is needed, the extremity site for the IV should be contaminated before the IV is started. If IV therapy is needed, the patient should be pulled out of line in the decontamination corridor but remain in the decontamination sector. This will require dedicated medical personnel, in addition to decontamination life staff.

Once decontamination is complete, the victim is transferred to a clean backboard, dressed in hospital garb, and triaged for further treatment. Make note that all medical treatment items including bandages, backboard, collar, and ventilation equipment must be decontaminated or replaced with clean materials before the victim can be transported.

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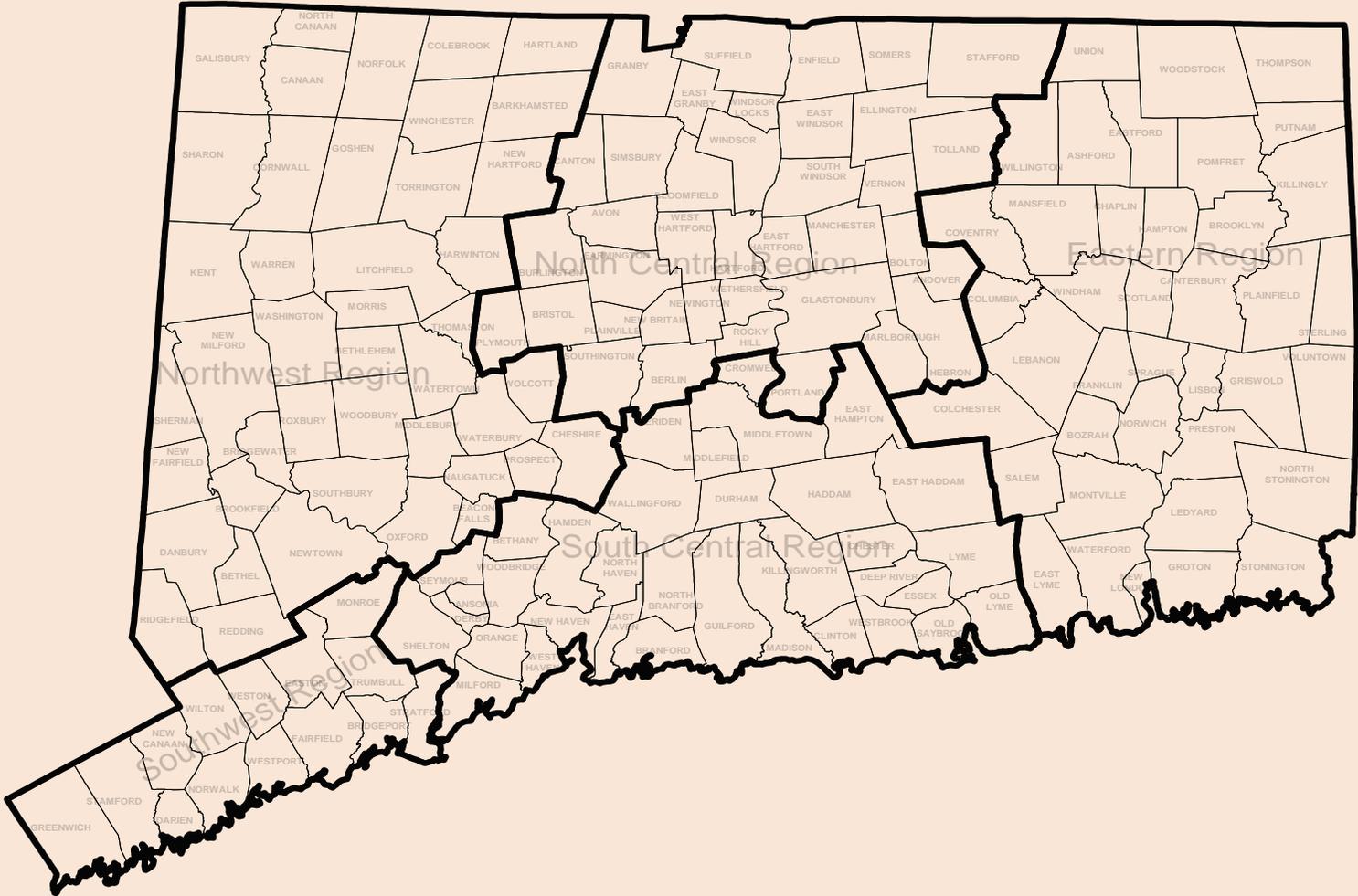
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**CT - EMERGENCY MEDICAL SERVICES (EMS) REGIONS**



## Appendix E

### **Small Animal / Canine Decontamination**

#### Introduction

Over 60% of Connecticut households have pets, or service animals. After Action Reviews give substance to the presumption that large citizenry of populations will be more compliant with Evacuation & Shelter orders knowing that their pets are included in Disaster Planning and will be cared for. Along with this one would also suppose for individuals the following “If I have my pet with me and become contaminated by a chemical or some other hazardous material, my pet is also contaminated”. Following the reasoning of caring for one’s pet, those individuals will want to be assured that their pets or service animals are also being decontaminated.

Human health and safety is usually paramount in all disaster planning especially in the event of insufficient resources, but care and protection of pets cannot be ignored, especially in the case of service animals. There may even be “some” legal responsibility to also provide for pets and service animals.

Working animals, such as police / arson dogs, or police horses, and service animals have certain rights under the law. This would be especially so if those working animals are considered “commissioned” officers. For those individuals with disabilities who rely on service animals their service animals may be protected under Federal Disability Laws – Title III, of the Americans with Disabilities Act ( 42 U.S.C. § 12182[a]) as an extension of that individual.

#### **Scope of Guidance**

This guidance is aimed at smaller animal or canine decontamination given the dearth of best practice examples for decontamination beyond canines as well as data suggesting canines being the more common work / service animals. However, the process as described herein provides foundational principals whereby specific procedures may be developed for those wishing to develop a more comprehensive decontamination process for animals other than canines. Additionally larger animals may be covered by simply increasing the size of equipment and augmenting decontamination personnel.

When contemplating possible scenarios which may require animal decontamination one of the first applications that comes to mind is a terrorist event. However, the more common application for an animal decontamination process will most likely be a result of a natural disaster such as a flood, or exposure to animals as a result of a large fire. Whether it be a chemical or particulate exposure, or animals rescued from floodwaters the principals and practices basically remain the same. This document serves as background and suggested operations guidance. If there is a potential for exposures not fitting within this guidance then it behooves those involved to develop appropriate animal decontamination processes in accordance with those specifics.

The process describe here can be referenced through the MA Urban & Search & Rescue Task Force applications, the *Protection, Decontamination, and Medical Aid for K-9 Teams* publication from the EAI Corporation, and from *Disaster Medicine- A Method for Decontamination of Animals Involved in Floodwater Disasters* published in JAVMA vol. 232 #3, February-2008.

## **Contamination Basics**

As with humans, the principal of avoiding being exposed to possible contamination for animals is obvious. Individuals should not knowingly put themselves or their animals in harm's way. Having said that if an individual with an animal is walking through a contaminated area so is their animal. If caught in dust, smoke, particulate storm, or "chemical cloud" the first step would be to exit the area. Animals could be afforded some protection with any available non-porous protective covering, such as raingear, plastic sheeting, cargo containers, etc. This process can translate to the wider spectrum of household pets by applying the same principal to large / small animals, and birds.

In the rescue of animals from floodwaters in an urban setting it should be presumed that the rescued animals have been contaminated with everything from petroleum products, to antifreeze, to pathogens found in fecal coliforms.

Indicators for animal contamination may be from situational awareness of where the animal has been, (trapped in floodwaters, etc) and what the animal "might" have been exposed to such as dust, smoke, or a chemical cloud. But as a practical matter common every day substances may present the larger issue especially if it is anticipated a service animal will be accompanying an individual to a Universal Access Shelter or some type of alternative support / care site.

These common every day substances may be materials such as;

- Oils, or petroleum products
- Antifreeze
- Household chemicals, e.g. chlorine, cleaning fluids, etc.
- Biological pathogens found in floodwaters

Though surface contamination with these substances may not produce clinical illnesses in an animal, these must be removed from an animal prior to bring the animal into any sheltering facility. For exposures to petroleum products, or phenols one would associate strong odors with the contamination.

Individuals suspicious of chemical contamination might expect to see:

- Uncontrolled sneezing, shivering, eye tearing, salivation, runny nose, or any signs of mucus membrane irritation
- Unexplained aggression, confusion, or malaise
- Sudden onset shivering, shaking, collapse, or seizure

## **Animal Decontamination Basics**

When dealing with a known substance it is best to consult the appropriate Material Safety Data Sheet (MSDS) and / or the latest DOT Emergency Response Guidebook (ERG) for guidance.

- Medical assessment to check the animal for health issues that warrant true emergency decontamination.

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- If stable, “emergency decon” can be repeated until the contaminant is judged to be removed (look for oily coat or fur, chemical odors still present, etc)
- For work animals the handler should accompany the animal through decon if possible
  - If not, another experienced handler may do so
  - If a animal cannot be safely decontaminated without the handler, confine animal to contain contamination
  - If medical attention is needed, sedation may be required for both human and animal safety. Assessment by qualified personnel for appropriate drug and dosing is best. For canine applications Valium (diazepam) at 3 mg. per 10 pounds, or Versed (midazolam) at 2 mg per 10 pounds in small increments is one of the safest methods. A Veterinarian should be consulted in this case
- Floodwater decontamination may not be emergently needed as would a chemical exposure, but animals rescued from floodwaters will still need to be “deconned” prior to admission to a congregate shelter setting, and to protect against contamination of others from biological pathogens.
- High volume, low pressure water augmented by soap is the recommendation for physical removal of the substance:
  - Rinse-wash-rinse cycle 3 times for maximum benefit
  - When dealing with Mass Decontamination of animals a suggested cycle of 3 minutes will yield emergency gross decontamination
  - Lukewarm water and standard household dish soap (Dawn®, Palmolive®)
  - CAUTION: some HAZMATs become reactive when exposed to water. Check pages 344-348 of the ERG for a partial listing
  - The soap’s high pH begins to neutralize many chemical agents and dissolve petroleum agents.
  - Thick caked on contamination may be broken down with mechanics’ hand wash products, mineral oil, or scraped off with a putty knife. It may be necessary to clip matted hair or fur. Use scissors with caution so as not to lacerate the animal. (Clippers may not work for long).
  - After the animal has been washed and rinsed apply an antimicrobial to protect against biological pathogens.
- Protect eyes and ears from further contamination first, then from the decon solutions (high ph soap, diluted bleach, military decon kits)
  - Petroleum based eye ointment may absorb some agents and worsen corneal damage; they should not be without prior decontamination of the eyes with copious amounts of ophthalmic saline solution.
  - Using neutral ph shampoo is an option; however these are not as effective as higher ph soaps in neutralizing many chemical agents.
- Moist towelettes may be used to wipe the facial area (eyes, nose, mouth, and inside ears) where washing is difficult and problematic with many animals.
  - Non-alcohol based baby wipes suggested around mucus membrane sites

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- Alternate decontamination agents for chemicals that worsen if exposed to water
  - Baking soda, or flour applied, then brushed or combed out
  - Physical removal alone by brushing or combing off
- Special care should be given to making sure that paws / animal's feet have been adequately decontaminated. The deep crevasses associated with paw pads and some feet can trap particles.
- Ideally, the animals are placed on a grate, with spaces that will not catch a toe or nail, for decontamination which will keep them above and away from any pool of contaminated water.
- Once finished, confine the animal to a collection area, away from any contaminated run-off, and use a dryer if cold and/or wind chill factor would pose a hypothermia hazard.

### **Animal Decontamination Steps – Three Station Decontamination**

#### **1. *Preparation – Three stations***

- Set up the animal decontamination process in the Haz Mat warm zone (decontamination corridor) leading to the cold zone (clean / veterinary evaluation area)
- Pre-position two Haz Mat collection bins at the beginning of the animal decontamination line; one to store contaminated equipment; the second to contain clean leashes and leads from. Adequate washable or disposable leashes. Muzzle assortment
- Set up large tarpaulins between animal wash stations and basins to minimize splash contamination potential
- Position 2 sets of Wash / Rinse basins (large enough for 1 canine and 2 washers)
- Plenty of towels, or dryers
- Minimum of eight (8) personnel
  - One at Station 1, Two at Station 2 & 3, One for drying, Two for medical evaluation

#### **2. *Station -1 – Animal Preparation Area***

- Remove any equipment/harnesses/collars from animal and place in a Haz Mat bin until those items can be cleansed, or disposed of. Completion of animal identification form for, and photography of animals owned by, evacuees should be done whenever possible prior to separation of owner and animal. (Pictures of animals presented for decontamination without owners can be held in a database to aid animal/owner reunification efforts).
- Place a clean all metal collar and lead on the animal (from second bin) Alternatively, inexpensive nylon may be used then disposed of when done.
- Consider muzzle use when appropriate to prevent licking, the drinking of wash water, and bite prevention; (cats may need harnesses).
- Personnel assisting should wear proper PPE to protect themselves from being contaminated, and for protection from animal bites and/or scratches to themselves and their Haz Mat PPE. (tight fitting eye goggles, Nitrile gloves, Tyvek® or similar coverings).

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- For animals rescued from floodwaters chemical PPE may not be necessary but bit and scratch protection is necessary and splash protection strongly suggested.

**3. Station -2 – Soap & Water Wash / Rinse**

- Thoroughly rinse the animal from behind the ears, down the back of the neck, from the top of the back downward to the paws / feet
- Cleanse the head and face with moist towelettes, gauze pads, clean warm water
- Rinse eyes with Ophthalmic saline
- Follow with a soap wash and soft scrub in the same manner as the rinse, paying attention to the paws and bottom of feet with a soft scrub brush
- Rinse thoroughly and repeat wash-rinse cycle 2 times
- Move to second basin for “clean rinse”
- If available use enclosures to limit the shaking off of water, otherwise all participants in close proximity should be protected.
- Repeat decontamination if necessary

**4. Station – 3 Antimicrobial Wash / Rinse**

- Set up to match Station 2
- Wash with antimicrobial soap/ solution (Chlorhexidine) rinse
- Dry off animal especially is there is a risk of hypothermia
- Once the animal is decontaminated and dry replace all leashes, leads and collars and hand off for evaluation in the cold zone

**Monitor and return to Service / Congregate Setting**

- Once eyes have been thoroughly flushed, ophthalmic solution may be applied to animal’s eyes if appropriate. A solution is preferred vs. ointment as ointment may interfere with a fluorescein dye check by medical personnel for corneal damage
- Monitor for contamination; radioactive checks need to be done when the animal is dry.
- Veterinary examination is recommended and treatments as appropriate.

## HAZARDOUS MATERIAL SPECIFICS

### Chemical Exposure

#### *Remove*

- Relocate to a well ventilated upwind area
- Remove, replace all gear with metal or disposable nylon items
- Remove liquid contaminant by pinching or blotting (do not rub, this spreads contamination)
- Brush coat if contaminant is dry / powder to remove most of it.

#### *Wash*

- High volume, low pressure lukewarm water, soap if available
- DO NOT DELAY if warm water or soap is not available
- Special attention to paw pads and feet that can trap materials

#### *Monitor*

- Immediate medical evaluation, veterinary if available
- Continued monitoring for changes in health status
- Recheck and monitor for contamination

### Biological Exposure

One of the concerns with biological exposure is that it will likely go unnoticed until victims develop symptoms and seek medical attention. The good news for dogs is that they are resistant to many of the agents most likely to be used in a deliberately caused event. The bad news is that dogs are a potential vector for spreading agents to others.

Decontamination is essential if exposure to particulate, liquid, or aerosol biological agent has occurred within the past several hours. It may not help but certainly will not hurt if the exposure is not discovered for several days.

#### *Remove*

- Relocate to a well ventilated upwind, upgrade area
- Remove, replace all animal gear with metal or disposable nylon items
- If agent is in powder form, wet down the animal to prevent it from aerosolizing and being breathed in by animal or anyone else
- Remove visible dust or solid with a brush, pinch or blot liquid contamination (do not wipe coat which will spread contaminant)

#### *Wash*

- High volume, low pressure lukewarm water, soap if available
- DO NOT DELAY if warm water or soap is not available
- Special attention to paw pads and feet that can trap materials

#### *Monitor*

- Dry the animal and monitor both the animal and owner for health changes
- Monitor by Haz Mat personnel if available
- Veterinary examination and rechecks, possibly long-term

## **Radiological Exposure**

Radioactive materials do not give immediate signs of exposure. Detectors are the most effective indicators of exposure. Due to the threat of terrorists using a radiological dispersment device (dirty bomb), any explosion should be assumed a radiological hazard until determined otherwise.

Contamination can be picked up on the animal's coat, or fur and feet. Decontamination is critical to prevent further spread, limit absorption (beta and gamma) and remove the source if possible to prevent further inhalation or ingestion of hazard. Decontamination is similar to other hazard removal.

### ***Remove***

- Relocate to a well ventilated upwind, upgrade area
- Remove, replace all animal gear with metal or disposable nylon items
- If agent is in powder form, wet down the animal to prevent it from aerosolizing and being breathed in by animal or anyone else

### ***Wash***

- High volume, low pressure lukewarm water, soap if available
- DO NOT DELAY if warm water or soap is not available
- Special attention to paw pads and feet that can trap materials

### ***Monitor***

- Alpha radiation is masked by water, so thoroughly cleanse, and rinse the animal, before checking for radiation after drying the animal.
- Monitor by Haz Mat personnel if available
- Veterinary examination and rechecks, possibly long-term

## ANIMAL DECONTAMINATION KIT

### Equipment – General

- ✓ Large duffel bag or portable box container
- ✓ Two large waterproof tarps
- ✓ Bio-Hazard bins / bags
- ✓ Sealable industrial strength plastic bags
- ✓ Hose
- ✓ Adjustable spray nozzle

### Equipment – PPE

- ✓ Eye protection - goggles
- ✓ Gloves – latex / non-latex
- ✓ Mask – situation appropriate
- ✓ Tyvek® suits or situation appropriate PPE
- ✓ Bite protection, e.g. heavy work gloves

### Decontamination Supplies

- ✓ Ophthalmic saline
- ✓ Oral rinse
- ✓ Liquid soap – Dawn®, Palmolive ®
- ✓ Dog shampoo
- ✓ Mechanic’s hand wash
- ✓ Sponges and soft scrub brushes
- ✓ Absorbent material – baking soda, cornstarch
- ✓ Moist towelettes
- ✓ Large towels

### Animal Supplies

- ✓ Dog dryer
- ✓ Brushes and combs
- ✓ Emergency blankets
- ✓ Heavy duty hair clippers
- ✓ Scissors
- ✓ Muzzles
- ✓ Collars, leashes, and leads – metal or disposable

### First Aid

- ✓ *Eyes* – Fluorescein dye, ophthalmic saline  
Artificial tears, ophthalmic antibiotics +/- steroid (corneal stain dependent)
- ✓ *Mouth* - Novaldent® oral rinse, normal saline
- ✓ *Pads / Skin* - Glue/staples/suture for lacerations  
Wounds: chlorhexidine/betadine solutions, saline, topical antibiotics  
Bandage Material: gauze, Telfa®, cotton/gauze roll, outer wraps
- ✓ *Ingestion* - Veterinary examination and prescribed treatment based on toxin  
Hydrogen peroxide/apomorphine/ipecac, Toxiban®  
Fluids, antibiotics, pain meds, etc

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# Appendix F

## Connecticut Hospital Mass Decontamination Plans for Use of External Resources

Placeholder pending Hospital Decontamination Plan Submittal to CT-DEMHS

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## Section II

# Regional Demographics & Decontamination Guidance

Place Holder for Regional Specific  
Guidance & Information