Module 3 - Unit 2
Mission Specific Competencies:
Mass Decontamination

Scope of Unit
The purpose of this lesson is to train the operations level responder with a mission specific competency in Mass Decontamination.

Learning Objectives
At the end of this unit of training each student will demonstrate the ability to plan and implement a mass casualty decontamination process.

Student Performance Objectives
- List the 5 levels of decontamination
- Understand the importance of emergency decontamination
- Perform emergency decontamination on a simulated contaminated victim
- Understand the importance and need for mass decontamination
- Set up and staff a mass decontamination operation
- Understands the AHJs specific procedures for mass decontamination

Resource List
- Manual
- Decon checklists
- Pen / Pencil

References
- The Ohio HazMat/WMD technician Manual
- NFPA 472

Unit Agenda 3-hour segment
- 15 minutes - Course introduction and mission specific overview
- 45 minutes – Lecture and unit test
- 120 minutes - Hands on with AHJ Decon equipment and SOPs

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<td>Meets Awareness, Ops core responsibilities and all PPE</td>
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<td>Select mass decon procedures to minimize the hazard and spread of contamination, determine equipment. Meet:</td>
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<td>1) Identify advantages and disadvantages of mass decon operations</td>
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<td>2) Describe the advantages and limitations of the following methods</td>
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<td>a) Dilution</td>
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<td>b) Isolation</td>
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<td>3) Identify sources of information and how to access them</td>
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<td>4) Identify the supplies and equipment provided by the AHJ</td>
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<td>1) Identify which reports are required by the AHJ</td>
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<td>2) Know importance of personnel exposure records</td>
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<td>3) Keep an activity log and exposure records</td>
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<td>4) File documents and maintain records</td>
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Introduction

“Dilution is the solution to pollution.” This old saying still holds true when it comes to decontamination. Dilution is simply using water to dilute or lesson the harmful effects of a chemical. Washing a victim with soap and water will prove beneficial in nearly all cases of contamination. Isolating these victims from other non-affected persons will prevent the cross contamination and spread of the product.

When a person or group of people becomes contaminated with a known or unknown product the number one goal is to remove the product from them as quickly as possible. For the first responder this will require the washing of the victim with water. This is known as emergency decontamination. When a large number of victims are contaminated (or potentially contaminated) a larger second decon operation must be established while emergency decon is being performed. This second decon area, is essentially the same as the emergency decon area, but will also focus on controlling the crowd and verifying that the victims are fully decontaminated. It should be setup away from the emergency decon area and any immediate threatened area. The creation of mass casualty decontamination corridors would be an excellent way to “herd” the crowd into an area where they could be triaged, treated and transported to a medical facility.

Operational level responders should remember that there are 5 types of decontamination: Emergency decon, mass casualty decon, hospital decon, technical decon and equipment decon. In this section we will focus on the first two forms of decon.

Emergency Decontamination

Anything that can be used to rapidly decontaminate a victim can, and should be utilized. Fire hoses, garden hoses, fire sprinklers, garden sprinklers, safety showers, home showers, swimming pools, just to name a few of the possibilities. Remember to wear your protective clothing.
Mass Decontamination

There are multiple processes that have been developed for the decontamination of large crowds. Each jurisdiction should perform a hazard and risk analysis to determine the most likely event or circumstances that they may face involving the contamination of a large crowd. Those events can range from the possibility of over 100,000 people in a stadium or large venue such as Columbus’s “Red, White and Boom” July fourth celebration to a chemical attack at a high school basketball game that contaminates 25 students. The jurisdiction should then prepare for the scenario by pre-planning and obtaining supplies and equipment.

Mass Decontamination Methods – Diluting the product with water is still the easiest and fastest method for decontamination. Washing will include the addition of some type of soap and a scrubbing of the victim to ensure more complete removal of the chemical. Isolating the victim from contaminated items or clothing will also provide additional protection. Emergency decon’s purpose is to quickly dilute the chemical and remove as much as possible from the victim while also removing clothing to isolate the victim from the hazard. Mass casualty decontamination allows us to slow down and get better control of the crowd, add washing techniques and further isolate the victims.

Hoseline Decontamination - One technique is to use multiple hoselines. These could be setup at each exit from a building and people could be decontaminated as they exit. Alternatively triage areas can be setup inside large buildings and the decon area setup outside entrances so as to only allow properly decontaminated victims to enter the building.

Engine Corridor Decontamination - In this technique, engine companies are positioned to establish more efficient decon “corridors” by placing engines side by side (facing opposite directions so the pump panels are on the outside) about 25’ apart. Each engine has a fog nozzle attached to a discharge on the inside of the corridor. The fog nozzles are opened to wide fog patterns to completely cover the corridor with fog streams. Ambulatory victims are directed to walk through the corridor to be washed.

Ladder Corridor Decontamination - Aerial ladders or platforms can be extended horizontally and covered with tarps or plastic that drapes down over the
sides to create a tunnel for victims to go through. Hose lines and/or ladder pipes can then be placed on the ladder spraying downward into the tunnel. This set-up will require practice to lesson the amount of time required for setup.

**Decontamination Tents and Trailers** - Many jurisdictions have purchased decon tents and/or trailers to provide mobile facilities for mass casualty decon. These units may include water heating devices, equipment for non-ambulatory victims and enclosed changing areas. These may not be as rapidly deployable as the first three listed but do provide a more comfortable decon experience. These units may also be pre-deployable for venues or events.

Mass casualty decon tents can also be set up as an entrance to a triage area.

**Decontamination equipment and supplies** – Mass casualty decontamination corridor pre-plans should also address the redressing of victims. Supplying victims with coveralls or plastic bags, and/or blankets to protect them from the weather should be part of the overall plan.

Other concerns are for the protection of personnel effects and the collection of evidence. Victims will not want to give up items such as rings, purses or wallets unless they are assured that a plan exists to return them back to the victim. Law enforcement officials may decide that the contaminated clothing is evidence of the crime and that it must be secured and maintained properly. Any pre-plan should include law enforcement input on collecting and securing this evidence, however life safety of the victim and responder can not be compromised for evidence collection.

Many companies offer victim “kits” that include; evidence bags for contaminated clothing, personal effects bag for rings, jewelry etc., a tyvek or paper coverall, and an identification system for proper return to the victim.

Emulsifiers (soaps) can be also be preplanned for use in the mass casualty decon areas. Simple household dish detergents like “Joy” or “Dawn” are excellent in that they can reduce the surface tension of “persistent” chemicals allowing them to more easily flow off of the skin. Harsher chemicals such as bleach could be used if there is a full understanding of the injuries that these decontaminants can cause (the cure should not be worse then the disease). A physician should be consulted about the pros and cons of bleach before adding it to the preplan.

Technicians or operations responders with a control and confinement mission specific competency who arrive on the scene can begin to address how to protect the environment. Blocking sewers and drains and controlling, containing and collecting the runoff can now become a priority since the victims are being treated.
The AHJ is responsible for the development of preplans and SOPs for the set-up and operation of Mass Decontamination Corridors.

**Staffing Mass Decontamination Corridors** – Responders staffing mass decontamination corridors must be properly protected. Therefore NFPA requires the operations level responder with a Mass casualty decontamination mission specific competency to also have the Personal Protective Equipment mission specific competency.

Proper PPE for emergency decontamination will usually be full firefighter protective clothing and an SCBA, but staffing a mass casualty decon corridor in this same level of PPE will probably prove to be exhausting to the responder. The AHJ should pre-plan for a more appropriate PPE level. Level B (splash protection and an SCBA or in-line air system) would prove to be an easier level to work in. Under certain circumstances Level C (splash protection and an APR) would provide the right protection for workers needing to work for extended periods of time. Remember the victims provide some of the clues to what level of protection is best. (if the victims are alive with no PPE then we should remain alive with our PPE on). The signs and symptoms, degree of injury, and whether the victims are responding positively to being removed from the area and decontaminated are all indications of the degree of danger any given chemical possesses. A Hazardous Materials Technician can assist with the decision of the proper PPE to be worn for mass decontamination at a given incident.
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Mission Specific Competencies:
Mass Decontamination
Review Quiz

1) This unit identifies five levels of decontamination. Which of the below is not one of those levels:
   a. Mass Decontamination
   b. Emergency Decontamination
   c. Vehicle Decontamination
   d. Equipment Decontamination

2) Dilution of a chemical most nearly means:
   a. Eliminating its chemical abilities
   b. Cutting its strength and lessening its ability to do harm
   c. Reducing its pH
   d. Changing its specific gravity

3) The best product to use for emergency decontamination is:
   a. Check the MSDS
   b. Polar solvents
   c. Non-polar solvents
   d. Water

4) AHJ stands for:
   a. Agent Having Justification
   b. Authority Having Jurisdiction
   c. Authority Having Justification

5) What type of reaction is usually created when a water reactive material comes in contact with moisture?
   a. Exothermic (heat producing)
   b. Cryogenic (extremely cold)
   c. Corrosive (destroys tissue)
   d. Radioactive (ionizing radiation)
6) If the previous mentioned reaction starts to happen in the decon area then:
   a. Continue using water (it is our only choice)
   b. Stop using water immediately and find an MSDS
   c. Go to plan B
   d. Use a Non-Polar solution

7) The proper decontamination for corrosive liquids is?
   a. Remove contaminated clothing
   b. Flush area with water for 20 minutes
   c. Use copious amounts of water
   d. All of the above

8) Level B PPE consists of?
   a. Full structural fire gear
   b. Splash suit and an APR
   c. Gas tight suit
   d. Splash suit and an SCBA

9) Soap is a…?
   a. Surfactant
   b. Neutralizer
   c. Emulator
   d. Disinfectant

10) Law enforcement must properly collect and maintain a chain of control for all evidence that is to be used in a criminal trial.
    a. True
    b. False