

## Unit 9: Decontamination



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**Save Lives  
Prevent Harm  
Reduce Spread**



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**The responder shall be able to;**

- Define the following terms
  - Exposure
  - Contamination
  - Secondary contamination
  - Decontamination
- Identify the major types of decontamination methods and shall describe the advantages and limitations of each.

## Unit 9 Objectives



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**The responder shall be able to (cont.);**

- Describe the following decontamination procedures:
  - Emergency Decontamination
  - Mass Decontamination
  - Gross Decontamination
  - Firefighter Decontamination
  - Technical Decontamination
- Establish and perform basic decontamination procedures.

## Unit 9 Objectives



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## Introduction to Decontamination

- The first priority for emergency responders is to save lives of people who are or may be contaminated.
- The next priority is to prevent the spread of contaminants.
- Responders must be able to take the appropriate steps necessary to reduce the level of harm and prevent the spread of the hazard.



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## Hazard and Exposure

- **Hazard** – The physical and chemical properties that contribute to the unacceptable risk to health, safety, or the environment. Any material capable of causing harm or injury.
- **Exposure** – The process by which people, animals, the environment, property and equipment that are subjected to or come in contact with a hazardous material. The exposure may be external or internal.
  - An example of an external exposure would be a corrosive liquid.
  - An internal exposure may be exposure to a toxic gas such as Chlorine.
  - Radio active material may present both an internal and external exposure.



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## Contamination

- **Contamination** – The process of transferring a hazardous material from its source to people, equipment, or the environment. This material remains in contact with the object and continues the risk of injury or harm.
- **Secondary Contamination** – The process by which the hazardous material is carried outside of the control zone and is transferred from one object or person to another.



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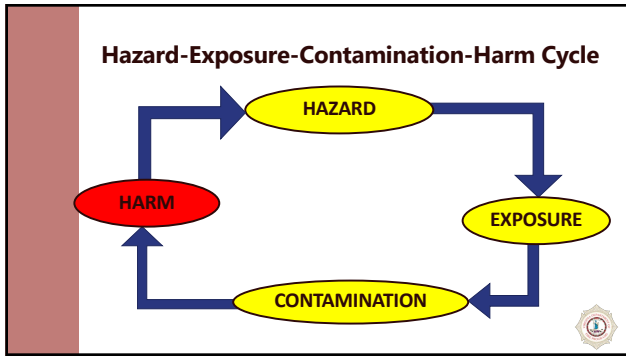
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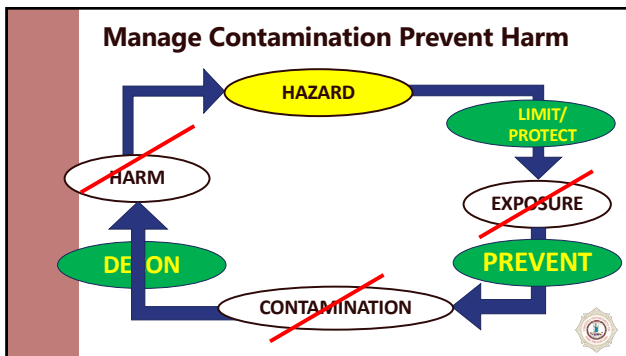
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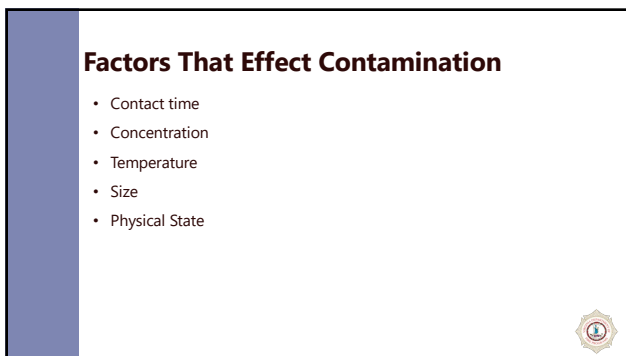
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## Preventing Contamination

- Proper planning,
- Using safe work practices
- Avoid unnecessary contact with hazards,
- Proper selection and use of personal protective equipment,
- Use of detection and monitoring equipment to determine the hazard area and the level of hazard.



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## Decontamination

- The process of removing or neutralizing contaminants accumulated on personnel and equipment.
- Reduces the chance of secondary contamination.
- Performed any time an exposure to hazardous materials is known or suspected.



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## Decontamination Considerations

- Move people out of the hazard area.
- Removal of contaminated clothing reduces the level of contamination by 80-90 percent.
- Decontamination practices should be balanced with reasonable patient care.
- Remove only the clothing needed to isolate the hazard from the person.
- One of the most important parts of decontamination is personal hygiene.
- Decontamination does not require any special equipment.



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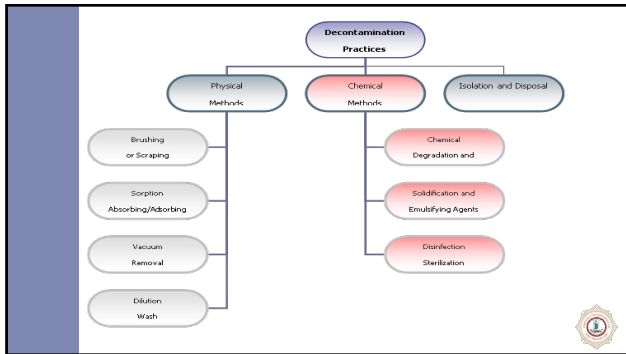
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### Emergency Decontamination – Responder

Emergency decontamination for responders wearing PPE who come in contact or have been exposed to hazardous materials. The goal is to remove the contaminant as quickly as possible to reduce the time of exposure experienced by the responder.

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### Emergency Decon-Responder

**Responder Contaminated**

**Responder Contaminated**

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## Emergency Decon-Responder

Direct responder to a safe location and position assisting FF upwind and uphill.



**Flush** with copious amounts of water having the responder extend their arms. Rinse front and back of responder.



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## Emergency Decon-Responder

Move to a dry area and direct the responder to remove **(strip)** their PPE and place garments together.



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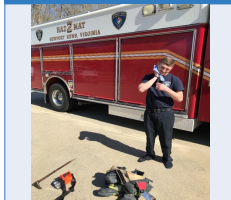
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## Emergency Decon-Responder

After doffing PPE, have the responder conduct proper Hygiene. Provide medical care as needed.



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## Emergency Decontamination Unprotected Responders and Citizens

Emergency decontamination is needed for civilians and responders who come in contact or have been exposed to hazardous materials. The goal is to remove the contaminant as quickly as possible to reduce the time of exposure experienced by the civilian or responder. Removal of clothing removes approximately 80% of the contaminant.



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## Emergency Decontamination

Patient Contaminated - Release



Patient Contaminated - Harm



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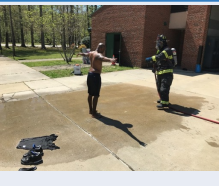
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## Emergency Decontamination

Direct patient to a safe location and  
Strip/Flush/Cover



Direct the patient to remove (strip)  
their clothing and place  
garments together.



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### Emergency Decontamination

"Flush" with copious amounts of water having them extend arms and turn.



Provide "Cover" for the patient (towel to dry, decon kit with cover...) & medical care as needed.



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### Emergency Decontamination

Provide towel for the patient (towel to dry).



Provide cover for the patient (sheet, blanket, decon kit...) & medical care as needed.



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### Mass Decontamination

Necessary when large numbers of people have been contaminated.

- Remove contaminated clothing as quickly as possible
- Flush person with water shower
- Dry off with towel or cloth
- Provide medical care as necessary
- Provide body cover, Consider personal modesty in public



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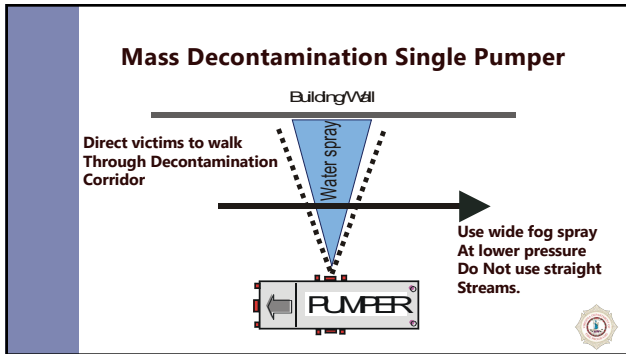
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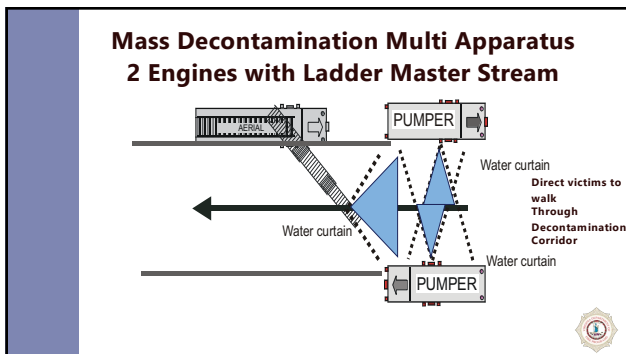
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### Gross Decontamination

Gross decontamination is used when a possibility of exposure to low-level hazards exists yet there are no signs of obvious contamination or harm.

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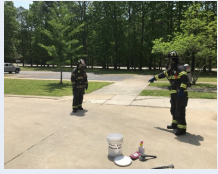
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## Gross Decontamination

Direct responder to a safe location and position FF upwind and uphill.



1. **Gross Wash** – Flush the exterior of Personal Protective Equipment (PPE) with water.



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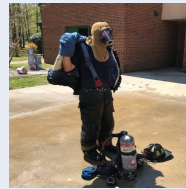
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## Gross Decontamination

2. **Doff Personal Protective Equipment** – follow PPE doffing procedures to minimize secondary contamination.



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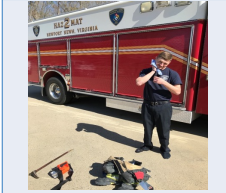
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## Gross Decontamination

3. **Personal Hygiene** – Wash hands, arms, face, neck with mild soap and water, rinse, and dry.



- After Gross Decon tools and equipment may still be contaminated.
- Prevent secondary contamination.
- Properly decon PPE, tools and equipment.



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**Fire Fighter Decontamination**

Fire fighter decontamination is used when there is contamination on the Personnel Protective Equipment. This process may be used to decontaminate firefighting personnel after firefighting operations to remove solid debris and some particulate materials. Based on the hazard analysis, it may also be used by hazmat technicians after operating in low level hazard areas with minimum contamination.



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**Fire Fighter Decontamination**

Direct responder to a safe location and position FF upwind and uphill.



1. **Tool Drop** - place tools and equipment in a separate and isolated area or container for further decontamination.



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**Fire Fighter Decontamination**

2. **Gross Wash** - Flush the exterior of Personnel Protective Equipment (PPE) with water.



3. **Soap Solution Wash** - use a soap and water solution and a brush to wash the exterior surfaces of PPE.



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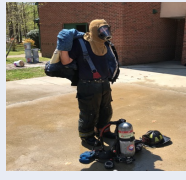
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## Fire Fighter Decontamination

4. **Water Rinse** – Rinse exterior PPE with plain water.



5. **Doff Personal Protective Equipment** – follow PPE doffing procedures to minimize secondary contamination.



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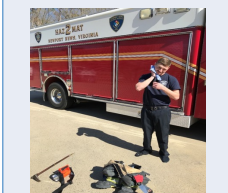
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## Fire Fighter Decontamination

6. **Personal Hygiene** – Wash hands, arms, face, neck with mild soap and water, rinse, and dry.



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## Technical Decontamination

- Used when hazardous material technicians make entry level for offensive tactical operations.
- Operational responders may help set up and assist with performing technical decon for entry technicians.

- Tool Drop
- Gross Wash
- Wash and Rinse
- Remove outer PPE
- Remove inner PPE
- \*Remove inner clothing
- \*Shower/dry/redress
- Medical monitoring
- Record keeping
- \* May be performed off site



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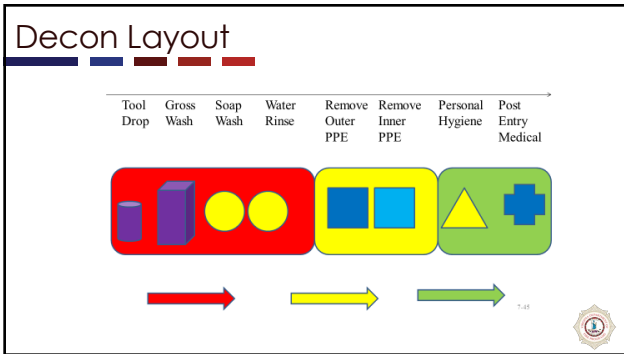
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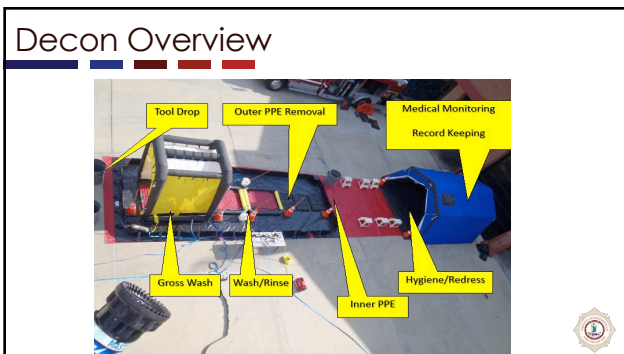
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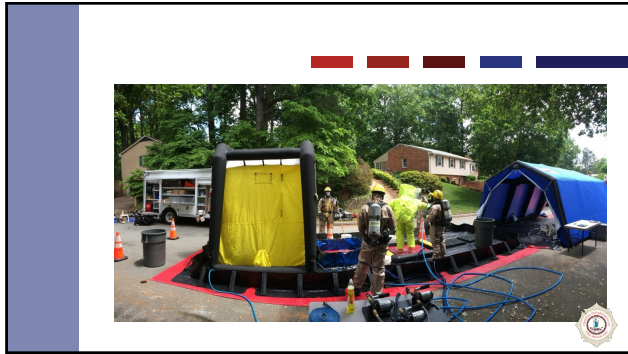
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