# EMS Subspecialty Certification Review Course

Decontamination

2025

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## ABEM EMS Core Content

1.3.7.4 Decontamination

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## General Principles of Decon

- Avoid becoming another victim (“Don’t get DEAD”)
- Reduce exposure
  - Remove from source
  - Remove clothing
- Reduce absorption
  - If dry DON’T wet it
  - If wet make it more wet (soap and water)
- If unknown agent look for toxidrome

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## Emergency Planning and Community Right-to-Know Act of 1986

- SARA Title III
- Promotes state and local emergency response and preparedness planning
- Provides info to the public on chem hazards present in their community
- Establishes the Local Emergency Planning Committee as the local conduit for the info flow between industry, government, and private parties
- Requires reporting of emergency chemical releases, data safety sheets, and their chemical inventories

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## "Not Getting Dead"

- Starts with situational awareness
- Distance is your friend; stop and observe from afar
  - Position vehicle uphill and upwind
  - Look for containers, solids, liquids, visible vapors
  - Look for dead things with no injuries (buzzard, not possum)
  - Look for placards
- CHEMTREC System: On-line and Round the clock 800#
- IF unknown assume the worst

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## PPE as defined by OSHA

**Level A**

The highest level of protection against vapors, gases, mists, and particles is Level A, which consists of a fully encapsulating chemical entry suit with a full-facepiece self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR) with an escape cylinder. A crew member must also wear boots with steel toes and shanks on the outside of the suit and specially selected chemical-resistant gloves for this level of protection. The breathing apparatus is worn inside (encapsulated within) the suit. To qualify as Level A protection, an intrinsically safe two-way radio is also worn inside the suit, often incorporating voice-operated microphones and an earpiece speaker for monitoring the operations channel.

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## PPE as defined by OSHA

**Level B**

Level B protection requires a garment (including SCBA) that provides protection against splashes from a hazardous chemical. Since the breathing apparatus is sometimes worn on the outside of the garment, Level B protection is not vapor-protective. Level B suits can also be fully encapsulating, which helps prevent the SCBA from becoming contaminated. It is worn when vapor-protective clothing (Level A) is not required. Wrists, ankles, facepiece and hood, and waist are secured to prevent any entry of splashed liquid. Depending on the chemical being handled, specific types of gloves and boots are donned. These may or may not be attached to the garment. The garment itself may be one piece or a two-piece hooded suit. Level B protection also requires the wearing of chemical-resistant boots with steel toes and shanks on the outside of the garment. As with Level A, chemical-resistant gloves and two-way radio communications are also required.

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## PPE as defined by OSHA

**Level C**

Level C protection differs from Level B in the area of equipment needed for respiratory protection. The same type of garment used for Level B protection is worn for Level C. Level C protection allows for the use of respiratory protection equipment other than SCBA. This protection includes any of the various types of air-purifying respirators. Crew members should not use this level of protection unless the specific hazardous material is known and its concentration can be measured. Level C equipment does not offer the protection needed in an oxygen deficient atmosphere

*Is Level B except you aren't wearing an SCBA- ie likely wearing an N95. This is NOT an acceptable level of PPE if you're in an oxygen-deficient environment*

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## PPE as defined by OSHA

**Level D**

Level D protection does not protect the crew member from chemical exposure. Therefore, this level of protection can only be used in situations where a crew member has no possibility of contact with chemicals. A pair of coveralls or other work-type garment along with chemical-resistant footwear with steel toes and shanks are all that is required to qualify as Level D protection. Most firefighter turnout gear is considered to be Level D

*No protection from chemical exposure.*

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## Implications of PPE Use

- Physical limitations
  - Dexterity/tactile feedback
  - Ingress/Egress
- Communications
- Health risks
  - Heat emergency
  - Hydration, electrolytes
  - Increased fall risk

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## Hot Zone

- Life threatening levels of toxin
  - Level A PPE if unknown
  - Agent appropriate PPE
- Rapid evacuation from area
- Care limited to BLS measures
  - Airway, hemorrhage control, antidote (PRN)
  - Analogous to some principles of TCCC (LE)

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## Warm Zone (Transition Area)

- Contamination reduction zone, upwind from hot
  - Min Level B if unknown
- Where clothing is removed (reduce exposure up to 90%)
- Where decon takes place
  - Dry: brush off with non-abrasive brush or towel
  - Wet: large volume, LOW pressure, warm water
- "Solution to pollution is dilution!"

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## Cold Zone

- Support zone
- Should be free of contamination
- Full assessment and triage
- Staging
- Additional treatment as needed
- Transport

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## Contamination

- **Primary contamination**: the result of direct transfer of contamination from the source to a person or object
- **Secondary contamination**: the transfer of contamination from a person or object to another

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## Decontamination

- **Decontamination**: process of removing/deactivating contaminants from surfaces by dilution & physical measures
- **Technical decontamination**: done by the hazmat team to safely remove contamination from the PPE worn
- **Emergency decontamination**: process to rapidly decontaminate a responder dressed in PPE who has a suit breach or becomes ill/injured

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## HAZWOPER

- OSHA Standard 29 CFR 1910.120 HAZWOPER mandates medical monitoring or surveillance for all hazmat response team members
- Baseline physical exam
- Annual physical exams while part of the team
- Exit physical exam when the member leaves the team
- Any exposure-specific physicals or follow-up exams deemed necessary

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## Take-Home Points

- The critical action on approaching the patient is to avoid injury through contamination and exposure to hazards
- Understanding the types of “zones” is essential to managing the situation appropriately
- Deploying the appropriate PPE is a must… when in doubt, assume the worst

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