THE COMMONWEALTH OF MASSACHUSETTS
Executive Office of Public Safety
Department of Fire Services

Hazardous Materials Response

STANDARD
OPERATING
GUIDELINE

SOG #210.00 - Decon Branch Officer

EFFECTIVE DATE:

May 1, 1998

BY ORDER OF

The Hazardous Materials Policy Board,

Stephen P. Clendenin Acting Director

OBJECTIVE: The objective of this S.O.G. is to outline the roles and responsibilities of the Decon Branch Officer.

APPLICABILITY: • Department of Fire Services Divisions
• Regional Steering Committee
• Fire Chiefs
• Response Team Members
• MEMA

1.0 RESPONSIBILITIES

1.1 Decontamination Branch Officer (Decon officer) will be assigned by the Team Leader on all incidents involving entry operations or when personnel may be exposed to hazardous materials. The Decon officer shall assume the responsibility for safe and acceptable methods of decontamination for the incident.

1.2 The Decon officer shall be a qualified Hazardous Materials Technician.

1.3 After receiving his/her assignment, the Decon officer will obtain an identification vest, portable radio, and a Decon Team Checklist packet.

1.4 The Decon officer will receive from the Science Branch Officer information concerning the materials involved and appropriate decontamination methods.
2.0 DECONTAMINATION LINE SETUP

2.1 The Decon officer will identify potential locations for the Decon corridor based on the terrain and close proximity to the Hot Zone work area. Attention should be focused on locations that are uphill, flat or slightly sloping towards the Hot Zone. The location must be as close as practical to the work area to limit travel distances by Entry personnel. Other considerations include accessibility, surface material, lighting, drains, waterways, water availability and location, and weather.

2.2 The Decon corridor will be clearly marked with traffic cones or barrier tape and be secured against entry by unauthorized personnel.

2.3 The Decon officer will receive from the Science officer the proper PPE selection for the Decon Team. The Decon Officer will then request sufficient quantities and types of the appropriate PPE from the Logistics officer.

2.4 To safely reduce the contamination of personnel and equipment, the Decon Officer will receive from the Science branch the appropriate solution(s) and methods.

2.5 The Decon corridor must be completed and all personnel in place prior to any work commencing in the hot zone. Emergency hand signals must be reviewed prior to entry in the hot zone.

3.0 DECONTAMINATION PROCEDURES

3.1 The Decon corridor must consist of a minimum of a tool drop, an emergency corridor, one gross shower, one rinse station and a PPE drop. The corridor may be expanded with as many additional stations as may be required by the nature of the incident.

3.2 The Decon officer must ensure proper procedures. The Decon procedure is outlined as follows:

3.2.1 If tools are to be reused by another entry team, they should be placed in a container or area designated as the tool drop prior to personnel entering the gross decontamination station.

3.2.2 If tools are not to be reused, they may be taken to the gross Decon station for cleaning prior to being left at the tool drop.

3.2.3 Gross Decon is accomplished by either brushing away or vacuuming dry materials, or by absorbing / adsorbing the material with some appropriate method or product. When the material is not a water reactive, water or another solution may be used to dilute the materials. The objective of gross Decon is to remove the bulk of the hazardous material from the surface of PPE and tools. Measures must be taken to retain decontamination water runoff.

3.2.4 The next step is the wash / rinse station, where residual contaminants are scrubbed away with brushes and a detergent solution. Contaminants are then rinsed away with a water spray.

3.2.5 After rinsing, PPE is carefully removed and set aside for disposal or testing. Once PPE is removed, the SCBA can be removed and set cleaning. Personnel will then be sent to Medical personnel.

3.2.6 The final step in the Decon process is personal showers, either on site or as soon as practical otherwise.
4.0 EMERGENCY DECONTAMINATION PROCEDURES:

4.1 Emergency Decon may be needed for the following situations:

a) When PPE fails due to an accidental breach or degradation or when personnel become accidentally contaminated.

b) When personnel have been injured or are in immediate need of medical attention and have not been exposed to hazardous materials.

4.2 Emergency Decon where someone has been or is believed to have been contaminated:

4.2.1 Remove PPE from the victim and begin flushing affected body areas.

4.2.2 Remove as much contaminant as possible to prevent secondary contamination to Medical personnel.

4.2.3 Advance the injured/exposed member through the Decon line.

4.2.4 Dress the injured/exposed member in a Tyvek suit or other suitable clothing.

4.2.5 Move the injured/exposed person to a safe area for further evaluation and treatment.

4.3 Emergency Decon measures for an injury/medical emergency where person has not been exposed or contaminated.

4.3.1 Assess the condition of the member in the suit. Does the emergency in the suit exceed the severity of the threat from exposure to the material?

4.3.2 Choose Decon line or emergency Decon corridor.

4.3.3 Follow standard decon procedures with care for injury.

4.3.4 Contact Medical Branch Officer to develop plan of care.

5.0 TERMINATION PROCEDURES

5.1 All tools must be cleaned prior to returning them to service.

5.2 All tools, equipment, and PPE contaminated beyond the Decon capabilities on site, will be inventoried and placed in containers, marked, and set aside for cleaning or disposal.

5.3 All Decon pool water must be tested to determine the presence of contaminants. If contaminated, it must be secured for disposal.

5.4 All Decon Team members must decontaminate each other or themselves.

5.5 All materials used by the Decon branch during decontamination operations must be documented by the Decon officer.
5.6 Notify all branch personnel to report to the debriefing as scheduled by the Team Leader.

### DECON SOLUTIONS

**Decon Solution A**: Solution containing 5% sodium carbonate (Na\(_2\)CO\(_3\)) and 5% trisodium phosphate (Na\(_3\)PO\(_4\)).

**Decon Solution B**: Solution containing 10% calcium hypochlorite (Ca(CI0\(_3\)).

**Decon Solution C**: Solution containing 5% trisodium phosphate (Na\(_3\)PO\(_4\)). This solution can also be used as a general purpose rinse.

**Decon Solution D**: Dilute solution of hydrochloric acid (HG 1). Mix one pint of concentrated HG1 into 10 gallons of water.

**Decon Solution E**: Concentrated solution of Tide or other detergent and water. Mix into a paste and scrub with a brush. Rinse with water.

*The following is a guideline for selecting degradation chemicals for the type of hazard*

1. Inorganic acids, metal processing waste  
   - A
2. Heavy metal; mercury, lead, cadmium, etc.  
   - B
3. Pesticides, chlorinated phenols, dioxins and PCB’s  
   - B
4. Cyanides, ammonia and other non-acidic inorganic waste  
   - B
5. Solvents and organic compounds such as Trichlorethylene,  
   - C or A
6. PBB’s and PCB’s  
   - C or A
7. Oily, greasy unspecified wastes not suspected to be contaminated  
   - C
   with pesticides
8. Inorganic bases, alkali and caustics wastes  
   - D
9. Radioactive materials  
   - E
10. Etiologic agents  
    - A&B

### DECON CHECKLIST

<table>
<thead>
<tr>
<th>Date:</th>
<th>Location</th>
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<tbody>
<tr>
<td></td>
<td>Initial briefing from the team leader</td>
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<td>Incident profile</td>
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<td>Decon solution and method</td>
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<td>PPE</td>
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### PERSONNEL ASSIGNMENTS

- Decon Officer
- All personnel monitored by Medical Branch

### DECON SITE SELECTION CRITERIA

- Decon is located in Warm Zone at exit from Hot Zone
- Decon area located uphill / upwind from Hot Zone
Decon area level or slopped toward Hot Zone
Water supply available

**DECON SITE SETUP**

- Area clearly marked with traffic cones and barrier tape to be secure against unauthorized entry
- Entry and exit points marked
- Emergency corridor established and clearly marked
- Runoff containment (tarp, plastic sheeting, dikes)

**DECON SITE SETUP (continued)**

- Gross Decon shower(s) setup
- Water supply established
- Arrange containment basins and pools in proper order
- Disposal containers in place for PPE and equipment drop
- Decon solutions mixed
- Brushes, hand sprayers, hoses and equipment in place
- Tool drop set up
- Spare SCBA cylinders available
- Relief personnel available

**BRANCH OFFICERS BRIEFING**

- Prepare report on branch status
- Evaluate branch readiness for mitigation plan.

**ENTRY/ DECON OPERATIONS**

- Decon and entry personnel briefed on hazards
- Emergency procedures and hand signals reviewed and understood
- Decon and entry personnel briefed on Decon procedures
- Decon corridor complete
- Decon personnel on air
- Monitor for adequate relief personnel

**TERMINATION**

- Disposable/contaminated materials isolated, bagged and containerized
- All containers sealed, marked and isolated
- All team equipment cleaned and accounted for

*Practical Decon Procedures*

**STEP 1:** Entry point is established and marked to guide contaminated personnel into the Decon Area. Any tools which may be needed by other personnel in the Hot Zone should be left at this point. This isolates “dirty” tools and makes them available to replacement workers or personnel who are only decontaminating enough to safely change SCBA units (see Step 4).

**STEP 2:** Remove as much solid, liquid or gas from contaminated personnel. If hose lines are used, overspray and splashing should be minimized by lowering water pressure. Runoff water should be contained to prevent
environmental contamination. Divert water to a safe area for collection, treatment and disposal. As much distance as possible should be placed between contaminated personnel and Decon workers. When high risk hazardous materials such as Class B poisons are involved, everyone working at Step 2 should be in SCBA and have a level of protection equal to the person being decontaminated, however never more than one(1) level below the entry worker. Workers conducting Decon will have to undergo Decon when their shift has been completed.

**STEP 3:** Protective clothing is removed and isolated. This is especially important if personnel are using standard protective clothing which is porous and will absorb most materials. Remember that many contaminants cannot be seen or smelled by workers.

Contaminated coats, helmets, etc. shall be placed in containers to isolate contaminants. Plastic bags may provide sufficient temporary protection for most contaminated clothing. Bagged clothing should be taped closed for transportation to a facility for laundering. If disposal is required, bagged materials should be placed inside a recovery drum and properly marked.

There are no practical detoxification techniques for many pesticides. Incineration or burial may be required in a specially designated landfill.

**STEP 4:** Removal of SCBA. Highly contaminated SCBA should be removed and isolated for complete decontamination at a later time. All contaminated facepieces, bottles, etc. shall be placed in individual plastic bags or wrapped in a tarp. This is especially important if units are contaminated with poisons.

Replacement of SCBA. If workers are reentering the hot zone, primary Decon must have been completed at Step 2. When low risk hazardous materials are involved, this may simply mean changing air bottles. If personnel have been contaminated with hazardous materials which present serious respiratory hazards, they should reenter the hazard area in a clean unit.

This can be safely accomplished by passing a clean SCBA unit across the isolation line from the clean side to the contaminated side. The procedure of exchanging the entire SCBA unit rather than just the bottles, ensures a higher level of safety for personnel reentering the area.

**STEP 5:** Complete removal of clothing. This may include all outer clothing and undergarments. Provisions should be made to bag personal property separately from clothing to aid in recovery after decontamination.

Personal property such as rings, watches, wallets and jewelry shall be removed before entering contaminated areas (per Safety SOG).

**STEP 6:** Body washing. An overhead shower produces better results than a hose line. Liquid surgical soaps dispensed from plastic squeeze bottles are best. Small brushes and sponges should be available for cleaning. Special attention should be given to areas with hair (head and groin), and the ears.

Contact lenses should be removed and the eyes flushed to remove any contaminants that may have collected under the lenses. This may be done immediately at Step 2 during an emergency Decon situation.

When materials do not present acute hazards, showers can be taken at a location more suitable for washing. Before permanent structures are approved for routine Decon, drainage systems should be checked by the jurisdiction having responsibility for waste water treatment. A memorandum of understanding between the sewage treatment facility and the fire service should be in place to avoid problems.

**STEP 7:** Drying off. Disposable stretcher sheets make good towels. Towels shall be placed in bags for disposal with other contaminated equipment.
Clean clothes should be put on next. Disposable coveralls or hospital gowns and slippers are inexpensive and easy to use.

**STEP 8:** Medical evaluation. Any open wounds or breaks in the skin of any type should be reported to medical personnel. Any wounds shall be cleaned.

The Medical Officer will brief medical units assigned to the Decon, and will advise of the health hazards, signs and symptoms of exposure and emergency treatment. Notice should be given to hospital emergency staff to prepare for additional treatment.

**STEP 9:** Forwarding point to another location for medical treatment, or special decontamination procedures.

### NINE STEP DECON PROCEDURE

<table>
<thead>
<tr>
<th>DESCRIPTIONS OF ACTIONS</th>
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<tbody>
<tr>
<td>Personnel enter decon area and drop tools on contaminated side. Move to Step 2.</td>
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<tr>
<td>Remove as much contamination as possible. Dilution is conducted inside diked area. Personnel are in SCBA. Move to Step 3.</td>
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<tr>
<td>Remove SCBA to contaminated side and move to Step 4, or don new SCBA from clean side and re-enter work area. Move to Step 4.</td>
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<tr>
<td>Remove protective clothing and place on contaminated side. Move to Step 5, or transport personnel to a fixed decon facility.</td>
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<tr>
<td>Remove all personal clothing and isolate items on contaminated side. Bag personal items. Move to Step 6.</td>
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<tr>
<td>Personal showering using soap and sponges. Bag cleaning items for disposal. Move to Step 7.</td>
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<tr>
<td>Personnel receive medical evaluation and treatment as necessary. Move to Step 9.</td>
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<tr>
<td>Identify Personnel. Complete field records. Transport personnel to hospital or to a fixed decon facility for Steps 5-8.</td>
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**Note:** Steps 5-9 may be done off-site.
LEVEL A - DECONTAMINATION PROCEDURE.

Entry Team leave tools at drop point in the Hot Zone prior to entering Decon.
Entry Team enter in single file.
The Decon Team assists the Entry Team into the Decon tubs.
Examine the protective clothing for any breaches
Decon Team scrubs down the Entry Team.
Decon Team rinses off the Entry Team.
Decon Team assists Entry Team into the smaller Decon tub for boot decontamination.
Assist with removal of the SCBA and bag it for further Decon.
Instruct Entry Team to wash hands & face at the small basins.

At this point, there are two options

OPTION 1

Instruct personnel to shower immediately on return to the station.

And

OPTION 2

Provide a privacy screen..
Instruct personnel to remove all their clothing.
Turn clothes inside out and bag for further Decon or disposal.
Instruct personnel to shower using soap and copious amounts of water.
Instruct personnel to dry off thoroughly and bag towels for further Decon or disposal.
Instruct personnel to dress into clean clothing.
Have personnel move to medical area for evaluation.

LEVEL B and C - DECONTAMINATION PROCEDURE

Entry Team leave tools at drop point in the Hot Zone prior to entering Decon.
Entry Team enter in single file.
The Decon Team assists the Entry Team into the Decon tubs.
Examine the protective clothing for any breaches.
Decon Team scrubs down the Entry Team with assigned Decon solution.
Decon Team rinses off the Entry Team.
Decon Team assists Entry Team into the smaller Decon tub so a thorough outer boot Decon can be done.
Decon Team assists the Entry Team out of smaller tub.
Disconnect the regulator from the SCBA face piece, leaving the face piece in lace.
Replace the SCBA bottle if re-entry is to be made, if not, assist the Entry Team with the removal of the SCBA and Decon.
Remove all the duct tape and bag it for disposal.
Remove outer loves and boots. Bag them for Decon or disposal.
Remove the outer protective suit, turning it inside out. Bag the suit for Decon or disposal.
Remove the inner protective suit, turning it inside out. Bag the suit for Decon or disposal.
Remove the SCBA face piece. Bag it for Decon.
Remove the surgical loves one at a time. Bag for disposal.
Instruct personnel to wash hands and face.

At this point, there are two options

OPTION 1

Instruct personnel to shower immediately on return to the station

and

OPTION 2

Provide a privacy screen.
Instruct personnel to remove all their clothing
Turn clothes inside out and bag for further Decon or disposal.
Instruct personnel to shower using soap and copious amounts of water.
Instruct personnel to dry off thoroughly and bag towels for further Decon or disposal.
Instruct personnel to dry off thoroughly and bag towels for further Decon or disposal.
Instruct personnel to dress into clean clothing
Have personnel move to medical area for evaluation

DECON OF THE SICK AND INJURED

Prior to moving the victim into the Decon area, the victim will be totally striped by the Rescue Team.
Bag the victim’s clothing for disposal.
Place the victim into or over the Decon tub.
Scrub down with soap and water.
Rinse off.
Dry off with clean towels. Bag the towels.
Move the victim out of Decon and into EMS staging.

Once Decon is complete, whether it is Level A, B, C, or Decon of the sick and injured, it is the responsibility of Decon to decontaminate themselves and bag all respective clothing, duct tape, and equipment.