



DRAFT - Hazardous Chemical
Response Personnel
Decontamination Line
Standard Operating
Procedure

December 8, 2021

2 CMAD Hazardous Chemical Response Personnel Decon Line SOP

3 Revision: 1

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Acronyms and Abbreviations

63		
64	APR	Air-purifying respirator
65	ASTM	ASTM International (formerly American Society for Testing and Materials)
66	BMA	Blower motor assembly
67	CBRN	Chemical, biological, radiological, and nuclear
68	CDC	Centers for Disease Control and Prevention
69	CFR	Code of Federal Regulations
70	CMAD	Consequence Management Advisory Division
71	CRC	Contamination reduction corridor
72	CRZ	Contamination Reduction Zone
73	Decon	Decontamination
74	DHHS	Department of Health and Human Services
75	DL	Decontamination (decon) line
76	DLA	Decon Line Attendant
77	DLS	Decon Line Supervisor
78	DOT	Department of Transportation
79	EEC	Emergency egress corridor
80	EMS	Emergency Medical Services
81	EMT	Emergency medical technician
82	EPA	Environmental Protection Agency
83	EZ	Exclusion Zone
84	EZW	Exclusion Zone Worker
85	GFI	Ground fault interrupter
86	H&S	Health & safety
87	HASP	Health and Safety Plan
88	HEPA	High-efficiency particulate air
89	mil	millimeter
90	mm	millimeter
91	NAM	Negative air machine
92	NFPA	National Fire Protection Association
93	NIOSH	National Institute for Occupational Safety and Health
94	OSC	On-Scene Coordinator
95	OSHA	Occupational Safety and Health Administration
96	PAPR	Powered air-purifying respirator
97	PPE	Personal protective equipment
98	SOP	Standard operating procedure
99	SZ	Support Zone
100	TIC	Toxic industrial chemical

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	DRAFT - Hazardous Chemical Response Personnel Decontamination Line Standard Operating Procedure (SOP)		CMAD Hazardous Chemical Response Personnel Decon Line SOP
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1. Purpose

The purpose of this standard operating procedure (SOP) is to provide EPA staff and contractors with recommended protocols for personnel decontamination (decon) while operating in an environment contaminated with toxic industrial chemicals (TICs), including chemical warfare agents. EPA developed this SOP specifically for lewisite, sulfur mustards (H/HD and HT), VX, and the G-type nerve agents (Soman, Tabun, and Sarin). It should be followed when and where Level A, B, and/or C personal protective equipment (PPE) is worn (See Appendix II, Personal Protective Equipment for Exclusion Zone (EZ) Workers (EZWs)).

Primarily, this SOP uses a wipe, spray, and rinse decon line process. It can be used for Level A, B, C, and supplied airline respirator (SAR) work. Adherence to the procedures presented in this SOP is expected. However, the user may make modifications based on site-specific and/or situation-specific conditions and/or difficulties relevant to a particular response action. Before making any modifications to the SOP, consult a Health & Safety Officer (H&S Officer) and document any deviations and/or modifications made.

Updates and revisions to this document will be made as information that could impact these procedures becomes available.

Note: Appendices I, II, III, IV, and V at the end of this document contain instructions for general set up and take down of the decon line (DL), lists of basic materials for decon set up, and basic sample decontamination and handling.

2. Introduction

Decontamination (“decon”) is the process of removing or neutralizing contaminants that have accumulated on personnel and equipment. Through a series of steps and stations, the DL moves the EZW from the EZ through the Contamination Reduction Zone (CRZ) to the Support Zone (SZ) (**Figure 1**). The decon process is critical to worker health and safety at hazardous waste sites. Decon procedures protect workers from hazardous substances that may contaminate and eventually permeate protective clothing, respiratory equipment, tools, vehicles, and other equipment used on site. The procedures accomplish the following objectives:

- Safely remove personnel from PPE without contaminating them
- Protect site personnel by reducing the spread of harmful materials into clean areas.
- Choose the appropriate decon solution for the contaminant of concern. See Appendix IV, Attachment B for Chemical Agent decon solutions.
- Protect the community by preventing the uncontrolled transport of contaminants from the site.

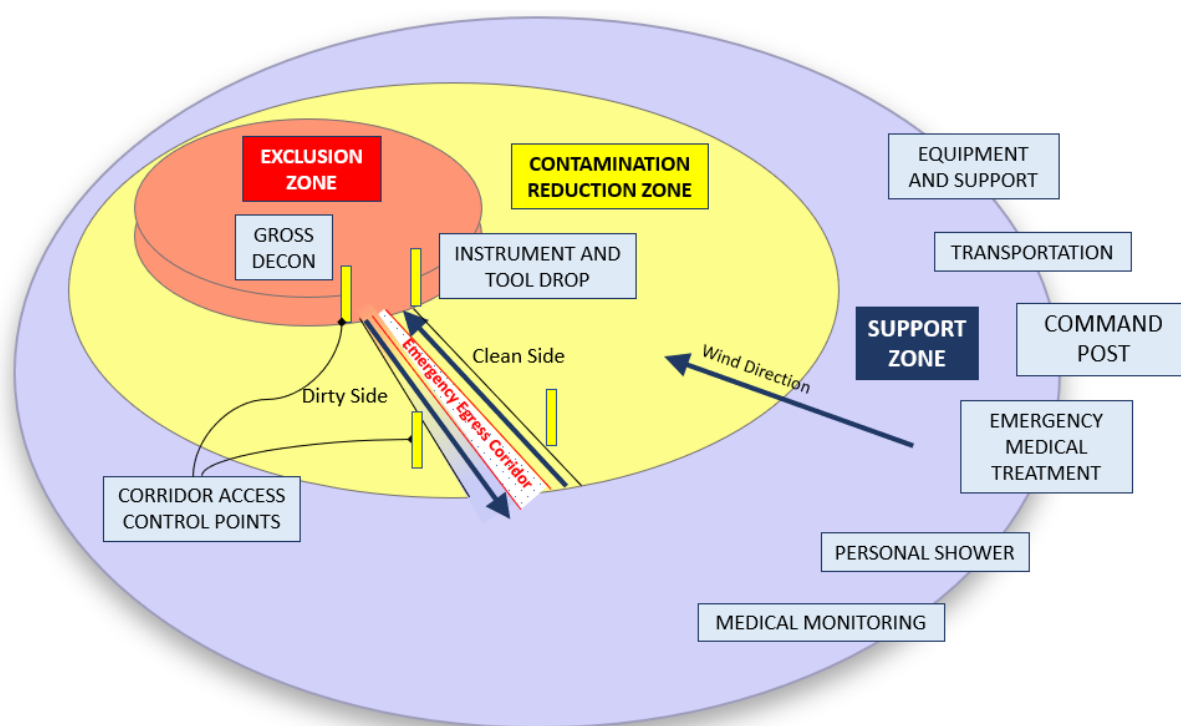


Figure 1. Site Zones and Key Locations

3. Personnel Decontamination Line Plan

A Personnel Decontamination Line Plan (Decon Plan) should be developed as an appendix to the Site Health and Safety Plan (HASP) and prepared before any personnel or equipment may enter areas where the potential for exposure to hazardous substances exists.

The Decon Plan for the site should:

- Support the number of EZW on entry teams decontaminated at one time.
- Specify if the DL will be set up for short-term or long-term use.
- Establish the number and layout of decon stations.
- Identify the minimum number of DL Attendants (DLA) needed.
- Specify the decon equipment needed.

- Specify the appropriate decon method and solution(s).
- Establish procedures to prevent contamination of clean areas.
- Establish methods and procedures to minimize worker contact with contaminants during the removal of PPE.
- Establish methods for disposing of clothing and equipment that is not completely decontaminated.
- Ensure that the DL is upgradient and upwind" (based on prevailing winds and topography)
- Ensure that the location is free of rocks and is on level ground.
- Specify methods to minimize the movement of the contaminants through the DL.
- Require periodic inspections of the DL area to determine that unexpected contamination is not migrating from the EZ through the DL or from the DL into the SZ.
- Perform contaminant screening and monitoring of decon entrants to ensure the efficacy of the decon process.

4. Decontamination Team

At a minimum, the DL team will be staffed with four DLAs and the DL Supervisor (DLS). It does not have a backup team but utilizes a "next man over approach" to assist the DLAs in the decon line (e.g., Step 2 personnel help Step 1 personnel). Entry operations must be coordinated with the DLS to ensure decontamination of personnel is adequately supported during the EZ egress process. **The decon team will be dressed in the same level of PPE or one level below the entry team.** The DLS will be responsible for team communications and operations, including the proper setup of the CRZ, the emergency egress corridor (EEC), and the contamination reduction corridor (CRC).

For more information, please see the [EPA Emergency Response H&S Manual](#).

5. Backup Field Team

At a minimum, the backup field team will be staffed with two personnel. A backup field team will be waiting in the SZ to go into the EZ if an emergency occurs. **Typically, the backup team is partially dressed in the same level of PPE as the entry team, and they are in a ready state.** They are not on air or using respirators until activated. The backup field team may be used as a support team for an emergency in EZ or EEC to help the casualty/victim/worker through the DL.

6. Decon Line Construction

The DL should be set up with enough space to perform each of the steps/processes and provide

flexibility to adapt. The DL should be constructed on flat ground free of rocks and other debris. The DL should be placed in a location that is upwind of the EZ and in an area with no overhead hazards, if practical. The DL should be constructed with durable materials to withstand continued use throughout the life of the response. If possible, decon tents or structures should be used. Tents, berms, and collection vessels should be used to contain aqueous waste and prevent its migration off site. It is important to note that this DL procedure may require augmentation based on the contaminants, the size and location of the DL, the site conditions, and the number of decon entrants (i.e., anyone who enters CRZ or EZ). The basic DL setup can be found in Appendix I; the description of PPE levels in Appendix II (NIOSH 2009); a list of materials and supplies in Appendix III, including PPE; and instructions for construction, disassembly, and sample decon in Appendix IV. Please refer to the health and safety plan for specific PPE requirements (<https://response.epa.gov/HealthSafetyManual/ppe-ensemble.htm>).

A detailed Decon Plan should be developed before commencing any site work. Procedures should be in place to treat and replace contaminated materials used during the decon process and to replace necessary decon solutions. This type of robust decon setup may be appropriate if a prolonged decon process is anticipated (i.e., multiple days). Due to large volumes of aqueous decon waste collected during prolonged operation, additional measures should be considered to remove and temporarily store bulk amounts of aqueous decon waste for disposal. A detailed Site Waste Management Plan should be prepared before the DL is set up. This plan's procedures should include collecting and storing waste from the DL and waste characterization sampling for disposal facility acceptance.

7. Safety and Construction Considerations

Decontamination protects all site personnel by preventing the spread of harmful materials from EZ. Before entering the EZ, all personnel must train, practice, and be proficient with the site-specific decon procedures. Considerations for safe operations may include:

- All personnel under the supervision of DLS (EZWs and DL support staff) must participate in an initial walk-through of the DL with the DLS before suiting up. The DLS should explain each step of the decontamination process and clarify any questions participants may have.
- Attempts should be made to prioritize personnel decon. Priority should be given to heavily contaminated personnel, those low on air, those with damaged or degraded PPE, and those experiencing heat stress, symptoms of chemical exposure, or other medical issues.

- 229 • DLAs should give clear, concise instructions to EZW entering the CRZ or DL, guiding them
230 through each stage of the decon process (EZW personnel may not remember what to do
231 or in what order). See Appendix VIII for instructional signs for each decon step.
- 232 • EZWs must follow DLA's instructions precisely.
- 233 • To minimize cross-contamination, DLAs should minimize physical contact with the EZWs
234 until the suit removal process has begun.
- 235 • Communication may be difficult, and instructions should be kept simple. All
236 communication should be verbal, hand signals, and/or taps on the shoulder.
- 237 • Efforts should be made to avoid over-spray of decon solutions and cross-contamination
238 of other personnel and the CRC.
- 239 • Any items brought out of the EZ must be either decontaminated or packaged for off-site
240 decon/disposal, including equipment, instruments, and samples.
- 241 • DLAs must also go through the decon process before exiting. DLA should begin their
242 decon, starting from their station and moving toward the SZ.
- 243 • Making modifications for weather conditions, including adding heaters that do not
244 generate carbon monoxide, or fans and/or portable air conditioners. In anticipation of
245 wind or heavy rain, adding tie-downs and heavy-duty stakes to secure tents/structures.
- 246 • Using ground fault interrupters (GFI) for all electrical cords and connections.
- 247 • Being aware of potential slip, trip, and fall hazards in the DL. Identifying issues as they
248 become apparent and working to eliminate them.
- 249 • Persons enter EZ and working on the DL must know and understand the site specific
250 chemical hazards involved with their tasks, and recognize an incompatibilities and water
251 reactive issues that may arise.
- 252 • Ensuring entry and exit points are conspicuously marked and that each step in the
253 decontamination line is clearly identified.
- 254 • Providing adequate lighting in all areas of the line.
- 255 • Using heavy-duty, drainage, anti-slip mats in the Wet Operations area to prevent slips,
256 trips, and falls. Adhesive anti-skid tape can also be added to areas that mats will not fit,
257 or as needed.
- 258 • The optional setup of monitors to ensure adequate air monitoring based on
259 contaminant and decon solution being used.
- 260 • Staging a fire extinguisher, first aid kit, and eye wash station near the DL.
- 261 • Keeping equipment (generators, running vehicles, heaters, etc.) that could generate
262 carbon monoxide away from the DL.
- 263 • Consider setting up a carbon monoxide monitor if carbon monoxide could be present.
- 264 • Test decon solutions in the boot tubs and glove wash basins (Step 4 and 5) periodically
265 to ensure that the decon solution remains effective throughout the decon process. For

example, chlorine concentrations can be checked with chlorine test strips at the direction of the Site H&S Officer or the DLS (see Appendix III, Table 1 for available product details).

- At a minimum of every four hours, change the decontamination solutions in the wash tubs and sprayers. It may be necessary to change it more frequently if the solution appears dirty, unfit for use, or the chlorine level, as seen on a test strip, drops to an insufficient level for use.
- Ensuring that the decon methods and operations adequately remove contaminants from PPE by conducting periodic wipe testing of decontaminated protective coveralls used by the EZWs and DLAs. The wipe samples can be sent to a laboratory to ensure decon procedures are effectively removing contaminants.
- Evaluating the safety of the DL during operations and routinely adding to this list of considerations for the DL. New considerations will be documented and addressed as determined by the Site H&S Officer and the DLS.

8. Hazardous Chemical Decontamination Solutions

For most circumstances and toxic industrial chemicals (TICs), the standard decon solution will be copious amounts of water or a detergent/water mix (i.e., Dawn Dish Detergent, Simple Green). Detergent and water will not destroy most TICs, but they will help to remove them from PPE and other surfaces. They will also dilute the material, reducing its toxicity. Using warm water will improve the effectiveness of water as a solvent.

For chemical agents, solutions that oxidize and/or hydrolyze can be used for decontamination. Most chemical agents (nerve, blister agents, etc.) contain either sulfur molecules that are reduced in oxidation reactions or phosphorus groups that can be hydrolyzed. Therefore, most chemical decontaminants are designed to either oxidize or hydrolyze. Oxidative chlorination is the general term for using active chlorine solutions, including hypochlorite solutions such as household bleach. A solution's pH is vital in determining the amount of active chlorine concentration, with an alkaline solution being the most effective. The standard decon solution for chemical agents is a 0.5% calcium hypochlorite solution or a 0.5% sodium hypochlorite solution (household bleach is usually 5% sodium hypochlorite). Alkaline chemical hydrolysis works by the (sodium) hydroxide ion reacting with phosphorus atoms; the hydrolysis rate is dependent on the chemical structure and reaction conditions such as pH and temperature. The rate of hydrolysis increases sharply at pH values higher than 8. Additional decontamination technologies can be reviewed in Appendix IV Table B.

Table 1. Decontamination Solutions			
Type of Contamination	Decon Solution Used	Cautions	Special Modifications to Decon line
Most circumstances and most toxic industrial chemicals	Water; Water/Dawn Dish Detergent or Simple Green mixture	N/A	N/A
Chemical Agents	0.5% sodium hypochlorite; 0.5% calcium hypochlorite (1:10 dilution of household bleach)	Caustic to suit and skin.	With recommended contact time of 5 minutes (McGuire et al. 2001).
Water-Reactive Chemicals	Dry methods such as wiping or HEPA vacuum, or large amounts of water to quickly dilute chemical	When using water, a reaction can produce a dangerous gas	If using water, decon should take place in a well-ventilated area. Air monitoring would be recommended during decon.

NOTE: See Appendix IV Attachment B for additional decontamination technology, contact times, and vendors.

N/A = Not applicable; HEPA = high-efficiency particulate air

9. Personal Protective Equipment

The Site H&S Officer, DLAs, and DLS will be required to don **Level A, modified Level B, Level B, or Level C PPE as specified in the site HASP or the Site H&S Officer**. DLS and DLAs will either don the same level of protection as the EZW or one level lower. Before donning PPE, workers should inspect their PPE for damage or flaws, including respiratory protection equipment. All DLAs, DLSs, and EZWs who enter the EZ or work on the DL should write their names on any durable PPE (e.g., respirators, rubber boots, etc.) that the site H&S Officer allows returned after decontamination. Workers should also deliver a change of clothing to the SZ to change into after decon. A description of the different levels of PPE can be found in Appendix II, and a table of PPE selected for possible use in this decon procedure can be found in Appendix III, Table 2, including the manufacturer, coverall material type, standard compliance, and model numbers. Chemical permeation information can be found for suit materials on the manufacturer's websites ([DuPont™ Tychem® and Tyvek® products](#) and [Kappler® Zytron® and Frontline®](#)

[products](#)). Specific PPE selections are made based on site conditions, contaminants, and decisions by the Site H&S Officer and are found in the Site HASP.

The outer coveralls considered for use in this DL must meet the requirements of OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) standard, 29 Code of Federal Regulations (CFR) 1910.120 Subpart H App B. The National Institute for Occupational Safety and Health (NIOSH) has approved respirators specifically for CBRN exposures; they are specified in Appendix II. PPE options that the DLA and DLS may use can be found in Appendix III, Table 2, which includes the manufacturer, coverall material type, standard compliance, and model numbers. For this SOP, PPE is defined as the following:

Level A PPE Ensemble

1. Suits

- a. Outer suit – Level A suit – SCBA and full-facepiece, totally-encapsulating chemical-protective suit (e.g., DuPont™ Tychem® 10000 or Responder® CSM or Kappler® Zytron® 300 or 500). The suit will include an expanded back, storm flap, attached dual-layer gloves, sock boots with cuffs, and a zipper in the front or back.
- b. Optional inner suit – Tyvek® or equivalent with integral booties (socks), one or two sizes larger than typically worn to allow easy removal without cross-contamination.

2. Gloves (three required pairs; one optional pair)

- a. Inner protective gloves – Thin (~4 millimeters [mil]) surgical nitrile, with long wrist gauntlets (mid-arm, or a few inches beyond the wrist), worn under the inner Tyvek® suit and not taped.
- b. Suit gloves – The gloves that are attached to the Level A suit.
- c. Outer protective gloves – Worn over the Level A suit's attached gloves and made from an appropriate material for the chemical contaminants as specified in the site HASP.
- d. Work gloves (optional) – Any gloves worn over the three protective layers are considered task-specific work gloves and are selected based on the EZW or DLA's tasks.
 - i. For EZWs, thicker or specialty gloves for equipment handling or rough work should be worn and then doffed and discarded in the EZ before entering the DL.
 - ii. For DLAs, additional layers of nitrile gloves will be donned and doffed, as required, to prevent cross-contamination during DL work.

3. Outer Boots – Chemical resistant and waterproof outer boots with steel toe and shank (e.g., Tingley® or Bata) boots, one or two sizes larger than usual, to accommodate suit socks. Do not use leather safety shoes or boots with mud covers.

4. Disposable rubber booties. Optional. Chemical-resistant and waterproof latex booties

that slip over the inner boot. Typically worn one or two sizes larger depending on the inner boot.

5. **Chemical Resistant Tape** – Use Kappler® ChemTape® or equivalent tape.
6. **Masks and Respirators** – Full-face, NIOSH CBRN-approved positive pressure SCBA or positive pressure supplied-air respirator with escape SCBA.
 - a. The entrant's eyeglass inserts, if required.
 - b. Facepieces should have voice amplifiers attached and turned on.
7. **Hard Hats** – If there are overhead hazards in the DL, a hard hat should be worn. If unable to secure the hard hat via ratchet strap, it should be secured with a chin strap. Otherwise, hard hats are optional.
8. **Clothing Worn Under Suit and a Change of Clothing** – EZWs, DLAs, and DLS will wear approved clothing (e.g., Tyvek® suit, coveralls, hospital scrubs, t-shirt, shorts, pants, etc.) under their PPE. The approved work clothing must be suitable for site conditions and comply with the Site HASP. If an optional shower is required (as a part of decon), EZWs, DLAs, and DLS will bag their clothing beforehand; therefore, they must bring additional clothing and shoes to change into after decon. Depending on the decontamination solution used on site, the used work clothing may be laundered on site, disposed of, or taken home according to the Site HASP. Contact lenses, rings, earrings, necklaces, piercings, or jewelry of any kind should not be worn into the EZ.

Workers should write their names on all durable PPE they want returned to them.

Level B PPE Ensemble

1. **Suits**
 - a. Outer suit – Chemical resistant, encapsulating Level B with hood and face shield, such as Tychem® 10000 or Responder® CSM. The suit must have an expanded back or flat back if using supplied air, front or back entry, standard visor, one layer of 40 mil polyvinyl chloride (PVC). The suit should also have elastic wrists, attached socks with outer boot flaps, a double storm flap with a hook and loop closure, two exhaust vents, and taped/Velcro seams. A slightly larger size than usual (one size larger than typically worn) will aid in doffing PPE in the DL.
 - b. Inner suit – Tyvek® or equivalent with integral hood and booties (socks), one or two sizes larger than typically worn to allow easy removal without cross-contamination.
2. **Gloves** (two required pairs; one optional pair)
 - a. Inner protective gloves – Thin (~4 mil) surgical nitrile, with long wrist gauntlets (mid-arm, or a few inches beyond the wrist), worn under the inner suit and not taped.

- b. Outer protective gloves – Of the appropriate material for chemical contaminants (see Site HASP), worn over the inner suit and taped.
- c. Work gloves (optional) – Any gloves worn outside these two protective gloves are considered task-specific work gloves and should be selected based on the worker's tasks.
- i. For EZWs, thicker or specialty gloves for equipment handling or rough work should be donned, and then doffed and discarded in the EZ before entering decon.
- ii. For DLAs, additional layers of nitrile gloves will be donned and doffed, as required, to prevent cross-contamination during DL work.
3. **Outer Boots** – Chemical resistant, waterproof outer boots with steel toe and shank, one or two sizes larger than usual to accommodate suit boots. Do not use leather safety shoes or boots with mud covers.
4. **Chemical Resistant Tape** – Use ChemTape® or an equivalent to tape the seams and cuffs (pant and arm) of Level B suits. No exposed skin should be present when raising the arms over their heads. Personnel should leave a tab at the end of the tape for easy removal. Check with the Site H&S Officer for procedures regarding taping suit/mask. Appendix III, Table 2 contains information on several brands of quality adhesive tape.
5. **Masks and Respirators**
- a. Full-face, NIOSH approved, CBRN-rated positive pressure mask for use with SCBA, or a NIOSH approved positive pressure supplied-air respirator with escape SCBA.
- b. The entrant's eyeglass inserts if required.
- c. Facepieces should have voice amplifiers attached and turned on.
6. **Hard Hats** – If there are overhead hazards in the DL, a hard hat should be worn. If unable to secure it via ratchet strap, it should be taped to the outer suit. Otherwise, hard hats are optional.
7. **Clothing Worn Under Suit and a Change of Clothing** – EZWs, DLAs, and DLS will wear approved clothing (Tyvek® suit, coveralls, hospital scrubs, t-shirts, shorts, pants, etc.) under their PPE. The approved work clothing must be suitable for site conditions and comply with the Site HASP. EZWs, DLAs, and DLS will bag their clothing before showering (as part of decon); therefore, all decon entrants must bring a change of clothing and shoes to don after decon. Depending on the decontamination solution used on site, the used work clothing may be laundered on site, or disposed of, or taken home according to the Site HASP. Contact lenses, rings, earrings, necklaces, piercings, or jewelry of any kind should not be worn into the EZ.

Workers should ensure that no skin is exposed after donning PPE.

Level C PPE Ensemble

1. **Suit**

- a. Outer suit – Chemical resistant coverall that meets ASTM International (formerly American Society for Testing and Materials) Standards, such as Tychem® 6000/6000FR. The suit should have elastic wrists and attached socks with outer boot flaps. A slightly larger size than usual (one or two sizes larger than typically worn) will aid in doffing PPE in the DL.
- b. Inner suit (optional) – Tyvek® or equivalent with integral hood and booties (socks), one or two sizes larger than typically worn to allow easy removal without cross-contamination.

2. **Gloves**

- a. Inner protective gloves – Thin (~4 mil) surgical nitrile, with long wrist gauntlets (mid-arm, or a few inches beyond the wrist), worn under the inner suit and not taped.
- b. Outer protective gloves – Of the appropriate material for chemical contaminants, worn over the inner suit and taped or just taped to the outer suit.
- c. Work gloves (optional) – Any gloves worn outside these two protective gloves are considered task-specific work gloves and should be selected based on the EZW or DLA's tasks.
 - i. For EZWs, thicker or specialty gloves for equipment handling or rough work should be worn and then doffed and discarded in the EZ before entering the DL.
 - ii. For DLAs, additional layers of nitrile gloves will be donned and doffed, as required, to prevent cross-contamination during DL work.

3. **Outer Boots** – Chemical resistant, waterproof outer boots with steel toe and shank, one or two sizes larger than usual, to accommodate suit boots. Do not use leather safety shoes or boots with mud covers or galoshes.

4. **Chemical Resistant Tape** – ChemTape® or equivalent tape.

5. **Mask, Respirator, and Task-specific PPE**

- a. A full-face, CBRN-rated positive pressure, APR or PAPR.
- b. The entrant's eyeglass inserts if required.
- c. A splash shield is an additional option if working with aqueous decon solutions.
- d. Optional voice amplifiers may be used for communications.

6. **Hard Hats** – If there are overhead hazards in the DL, a hard hat should be worn. If

unable to secure it via ratchet strap, it should be taped to the outer suit. Otherwise, hard hats are optional.

7. **Clothing Worn Under Suit and a Change of Clothing** – EZWs, DLAs, and DLS will wear approved clothing (Tyvek® suit, coveralls, hospital scrubs, t-shirt, pants, shorts, etc.) under their PPE. The approved work clothing must be suitable for site conditions and comply with the Site HASP. EZWs, DLAs, and DLS will bag their clothing before showering (as part of decon); therefore, all decon entrants must bring an additional change of clothing to don after decon. Depending on the decontamination solution used on site, the used work clothing may be laundered on site, or disposed of, or taken home according to the Site HASP. Contact lenses, rings, earrings, necklaces, piercings, or jewelry of any kind should not be worn into the EZ.

Donning PPE

1. Check-in at the medical monitoring station and record vitals before entering the CRZ or EZ. Refer to the Site HASP or Site H&S Officer for specific instructions.
2. Walk through the DL with the DLS before donning PPE.
3. Refer to Site HASP or Site H&S Officer for required PPE.
4. Before wearing a Level A suit, personnel should check the pressure records for that suit before wearing it. All National Fire Protection Association (NFPA) Level A suits should be tested according to ASTM F 1052, Standard Test Method for Pressure Testing Vapor Protective Ensembles, and 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER), Determination of Leak tightness of Gas-tight Suits.
5. All personnel should perform a safety check of their PPE as described in the HASP.
6. Don PPE in a dry area of the SZ so that tape will adequately adhere to surfaces. Have a partner assist in donning PPE.
7. Recommended procedure:
 - a. Put on inner gloves (no tape).
 - b. If using an inner suit (Tyvek®), pull the inner suit's sleeves over the inner gloves and leave the hood off. Tape the inner suit to the inner gloves.
 - c. Put on an outer suit (e.g., Tychem® 10000 or Responder® CSM Level A; Tychem® 10000 or Responder® CSM modified Level B suit; Tychem® 6000/6000FR Level B and C suit). For Level A and modified Level B, it is recommended that you leave the hood off and your arms out of the suit sleeves until you are ready to go on air.
 - d. Put on outer gloves for Levels B and C. Use ChemTape® to tape the gloves to the inner gloves/suit (if used).
 - e. Sit on a bench and put on outer boots, using care not to break the seams near the feet on the inner (if used) and outer suits. Ask for assistance if needed. Some Level A suits will have a pant cuff that should be rolled up then pulled back down over the

- top of the boot.
- f. Use ChemTape® to tape the outer boots to the outer suit, ideally with at least one layer around each calf, leaving a tab for removal. Ask for assistance if needed.
 - g. For Level A or modified Level B, don the facepiece and SCBA, leaving the regulator unattached to the mask. For Level C, don an APR or PAPR.
 - h. Keep the outer gloves under the outer suit's sleeves for the Level B ensemble. Use ChemTape® to tape outer suit sleeves to outer gloves, ideally with at least one layer of tape around each wrist, leaving no gaps, with a tab for tape removal.
 - i. If necessary, don extra gloves (nitrile, latex, butyl, Silver Shield®, etc.) over the outer gloves, ensuring they are suitable for the contaminants on site and the tasks in the DL.
 - j. Have an assistant check all the taped areas of boots and gloves.
 - k. Have an assistant write the worker's last name on the front and back of the outer suit in large, legible letters. Designate DL workers clearly by writing "DECON" on their outer suits or using colored tape to help distinguish decon workers from entry personnel.
 - l. Once ready to enter the CRZ, turn on the air to the SCBA (with assistance), and connect the regulator to the mask or connect the supplied airline.
 - m. With assistance, pull on the outer suit's hood, positioning the edges of the hood by the facepiece. Zip up the Level A suit or close up the Level B encapsulating suit, ensuring complete closure. Have someone inspect the suit to ensure that the suit zipper or closure is up and correctly closed. Use ChemTape® to tape over the suit zipper or closure, with a tab for tape removal.

Note: Work or task-specific gloves may be worn over the outer gloves. Splash shields may also be worn by those DLAs involved with washing or rinsing EZWs.

Note: If there is an overhead hazard, a hard hat should be worn by those DLAs involved with washing or rinsing EZWs.

Note: Site personnel, including EZWs, DLAs, and DLS (referred to as decon entrants once in the DL), who have exited the EZ or the CRZ will be decontaminated as discussed in the Site HASP.

10. Decon Line Setup

The DLAs should set up the DL in a flat area free of rocks and debris (see basic instructions in Appendix IV), upwind of the EZ (to the extent possible, based on prevailing winds), and in an area with no overhead hazards, if practical. The DL should be constructed with durable materials to withstand continued use throughout the life of the response (see basic materials list in Appendix III, Table 1). If possible, tents or structures designed for decon should be used.

Tents, berms, and collection vessels should maintain any aqueous waste in a contained and safe manner. Procedures should be in place to treat and replace contaminated materials used during the decon process and replace necessary decontamination solutions. This type of robust decon setup may be appropriate if a prolonged decon process is anticipated (i.e., multiple days). Due to the large volume of aqueous waste collected during prolonged operation, additional measures to remove bulk amounts of aqueous-based decon solutions and spent decon solutions from the DL should be considered.

The Site H&S Officer should put in place, or the Site HASP should include procedures to treat, replace, and dispose of contaminated materials used during the decon process. Measures should be established to containerize, replace, and dispose of the spent decontamination solution and any other items needing disposal. A detailed Site Waste Management Plan should be prepared before the DL is set up; the plan should include the procedures for collecting and storing spent waste from the decon process, including sample collection for waste characterization and disposal facility acceptance.

A single DL team should consist of, at a minimum, four DLAs and a dedicated DLS. The higher the level of PPE required, the greater the number of DLAs will be needed. The DLAs will direct, assist, and conduct decon for exiting EZWs through each step of the decon line, plus perform decon of reusable, durable PPE as collected. The dedicated DLS will ensure that enough workers are on the DL and that DLAs comply with the DL procedures listed below. Additionally, the Site H&S Officer or Assistant H&S Officer will supervise the DL to provide an additional perspective and ensure compliance with the decon process. A list of critical reminders is included in this SOP for use by the DLS, as are lists of DL equipment.

DL Supervisor Responsibilities

- Address relevant safety and construction considerations found in the DL Construction section of this SOP.
- Post signs and instructions at each decon station (Appendix VI).
- If the HASP or H&S Officer recommends an optional shower, DLS should ensure decon entrants have provided a change of clothing in the post-shower area before beginning work.
- Conduct a brief DL walk-through for all workers before they enter the EZ.
- Facilitate any emergency decon that may occur, ensuring that the DLAs prioritize the emergency and conduct a thorough decontamination before exiting the CRZ or EEC.
- Monitor radio communications of EZW to be alerted to the egress of EZWs from the EZ.
- Supervise all areas of the line.
- Ensure that all DL steps, procedures, and contact times are accurately followed.

- Control traffic within the DL area.
- Check that trash is routinely removed from the DL, and aqueous decon solutions are often replaced.
- Ensure availability of supplies.
- Ensure proper disposal of waste.
- Ensure the proper level of DLA staffing for each station.
- Be prepared to suspend temporarily the DL for emergency or other critical reasons (e.g., lightning, wind, etc.).

DLA responsibilities

- Follow instruct of DLS.
- Set up the decon line according to the Site H&SO instructions and the Decon Line SOP.
- Participate in decon line walk-thru; maintain the contact time for decon entrants.
- Follow all instructions precisely at each station.
- Assist as directed by the DLS, man the ECC as directed by the DLS.
- Notify the DLS regarding breached PPE in EZW.
- Replace the decon wash solutions as directed by DLA.
- Ensure each step of the decon process has been completed.

Disposal of Decon Waste

An appropriate disposal facility should be identified (as well as all applicable Department of Transportation (DOT) packaging criteria) for receiving the waste before producing any decon solid (i.e., PPE) and/or aqueous wastes. All efforts should be taken to minimize the production of aqueous waste. Any aqueous waste generated must be transferred into containers acceptable for transportation (e.g., that comply with DOT requirements according to the disposal facility's arrangements). Personnel should consider using a submersible or transfer pump(s) to transfer liquids to drums or totes from the decon pools. It may be appropriate to treat aqueous waste with bleach (i.e., "shock").

11. Chemical Decon Line Steps

The Chemical Decon Line SOP consists of 15 steps. Depending on the level of PPE, the Chemical Decon Line SOP may be adjusted slightly to fit the site activities. Steps 1 and 2 will be conducted at the beginning of the DL in the EZ. Steps 3 through 13 will occur at stations in the CRZ. Steps 14 and 15 will occur in the SZ.

The first and most effective decontamination method is the timely physical removal of the chemical agent. Responders should not wait until they reach the entry of the decon line to

remove gross contamination physically. Gross contamination should be removed as soon as possible using wipes or by removing the heavily contaminated PPE (e.g., changing gloves or contaminated rubber booties). Suppose heavy grime/gross contamination is observed on an EZW in the EZ before entering the DL. In that case, the EZW should use wipes wetted with decon solution (e.g., Dispatch wipes, bleach wipes, DF200, etc.) (See Table 2) to conduct gross decon to remove as much grime as possible before Step 1. The used wipes are placed into a bag-lined trash can for disposal. EZWs can also use a boot brush to remove as much contamination from boots before entering the DL. An alternate approach is to incorporate disposable PPE/booties if heavy gross contamination is expected in the EZ. By removing the gross contamination before entering the DL, workers keep the gross contamination out of the DL area and reduce the chance of the contaminants reaching the suit's breakthrough time.

Note: An EPA study has shown that brushes tend to retain and spread contamination (U.S. EPA. [Decontamination Line Protocol Evaluation for Biological Contamination Incidents Assessment and Evaluation Report](#). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/476, 2015). Brushes should only be used in the exclusion zone, except for a submerged boot scraper limiting contamination spread. It's crucial EZWs remove as much gross contamination before entering the decon line by removing task-specific PPE (e.g., disposable latex booties, work gloves, nitrile gloves, etc.) or using wipes wetted with decon solution to remove any visual contamination (e.g., contaminated spot on the pant leg).

Step 1: Tool and Instrument Drops - EZ

EZW will drop off any tools or instruments that will be reused in the EZ or decontaminated. Any tool not intended for reuse will be disposed of in a bag-lined trash can in the EZ. A separate drop area (a covered table or lined storage bin) is established for non-disposable tools and instruments. The tool and instrument drop areas will be in the EZ near the entrance to the CRZ.

Worker exiting EZ:

- Before entering the DL, place all tools and/or instruments in the designated drop area (e.g., covered table or lined container).

DL Attendant:

- Establish communication with each exiting EZW, now referred to as a decon entrant. Ask how they are feeling, and if they have any issues or concerns, etc. Also, confirm the air level in their SCBA tank.
- Look for holes or tears in the decon entrant's outer PPE.
- Decontaminate with the appropriate decon solution or wipe if a breach is found. Dry with a paper towel, seal the breach with tape and report the issue to the DLS and Site

H&S Officer.

- Check the decon entrant for any signs or symptoms of exposure. Report any symptoms to the DLS and Site H&S Officer.

Step 2: Sample Drop - EZ

Samples coming from the EZ can be dropped off by the sample custodian at the sample drop-off table for decon and processing by a DLA. Details of sample decon are provided in Appendix IV of this document.

Step 3: Doff Booties, Task/Work PPE and PPE Inspection - CRZ

At Step 3, the DLA will inspect their PPE for any breaches and identify any remaining gross contamination. The decon entrant will remove work- or task-specific PPE. Rubber booties, if worn, should be cut off using medical scissors before moving to the next step (Step 4).

Worker exiting EZ:

- Follow DLA's instructions precisely.
- Doff task-specific PPE such as work gloves, heavy-duty nitrile outer gloves, splash shields, aprons, etc. Place disposable items in a bag-lined trash can and reusable items (e.g., hard hat, unsoiled leather work gloves, splash shield) in designated bins.
- When instructed by DLA, make quarter turns in front of them while they inspect PPE for any breaches and any remaining gross contamination. DLA will inform the DLS and H&S Officer if a breach is found. The DLA will use tape to repair the breach by making a watertight seal/repair before sending the decon entrant through the DL.
- If disposable rubber booties are used, sit on a stool/bench, and doff booties. Carefully use medical scissors to cut off the booties.
- Place any used bleach wipes and rubber booties into a bag-lined trash can.

DL Attendant:

- Establish communication with the decon entrant. Ask them how they are feeling, and if they have any issues or concerns, etc. Look for signs of illness or distress and attend to them as needed.
- Instruct the decon entrant to make quarter turns to inspect PPE for any breaches and any remaining gross contamination, as well as any holes or tears in their outer PPE.
- If a breach is found, decontaminate with an appropriate decon solution (0.5% sodium hypochlorite) or bleach wipe, dry the area with a paper towel, seal the breach with tape, and report the issue to the DLS and Site H&S Officer.
- If necessary, assist the decon entrant in removing any observable gross contamination with wipes wetted with decon solution or bleach wipes.

- Assist decon entrant, as necessary, with removing the rubber booties, tape, etc.
- Place any used bleach wipes and rubber booties into a bag-lined trash can.

Step 4: Initial Boot and Glove Wash 1 - CRZ

The purpose of this step is to remove contamination, such as dirt or grime, from boots and gloves, and begin contact time for the suit wash. EZW will need to use a localized airline or switch to their escape bottle if supplied-air respirators are utilized. **Note:** Task-specific work gloves and PPE and rubber booties should already have been discarded into the proper storage or waste container in the previous step (Step 3). Step 4 includes removing any remaining gross contamination and washing the boots and gloves in the first wash step.

Worker exiting EZ:

- Follow DLA's instructions precisely.
- When directed by the DLA, step into the 1st Wash tub filled with the designated decontamination solution¹ (see Table 2 for additional options) and wash the boots. Use the boot scraper/brush pad submerged in the tub to wash the bottom and sides of the boots. Do not use handled brushes to wash boots to prevent unnecessary spray and dispersion of contamination in the decon area.
- While still standing in the 1st Wash tub, wash your hands in the basin of decontamination solution on the table. Clean gross contamination off outer gloves by using a hand-washing movement.
- When directed by the DLA, step from Step 4 into the 2nd Wash tub in Step 5.

DL Attendant:

- Instruct the decon entrant to step into the 1st Wash tub. Instruct them to use the boot scraper/brush pad submerged in the tub to scrub the bottoms and sides of their boots vigorously. Inspect the bottom and sides of their boots as well as the sides of their suit to ensure they are clean. If not, request the entrant to continue to scrub their boots and/or to use the proper decon solution to wipe any visible contamination off their suit.
- While the decon entrant is still in the 1st Wash tub, direct them to wash their hands in the basin of decontamination solution on the table. Inspect their gloves to ensure no contamination remains.
- Instruct the decon entrant to step from Step 4 into the 2nd Wash tub in Step 5.

¹ Designated decontamination solution may be diluted household bleach (1:10 dilution of bleach containing 5.25 to 6.15% sodium hypochlorite; thus, a 1:10 dilution of household bleach provides about 5,250 to 6,150 ppm available chlorine (McGuire et. al. 2001; CDC 2008). The compatibility of the decontaminant with the PPE material should also be considered when selecting PPE and the designated solution. See additional information in Appendix IV, Attachment A.

- Change the decontamination solution in the 1st Wash tub at a minimum of every four hours. It may be necessary to change it more frequently if the solution appears unfit for use, fails testing, and/or at the direction of the DLS. Personnel should consider using a submersible or transfer pump(s) to transfer liquids to drums or totes from the decon pools.
- Replace any sorbent pads on the floor of this area if they become soiled.

DL Supervisor:

- Keep track of when the decon solutions were prepared and added to the gross decon tubs on the Bleach Batch Tracking Form found in Appendix VII. Watch the appearance of the decon solution; if the decon solution appears unfit for use or fails testing, designate a DLA to change the solution.
- If personnel are backing up in the DL, direct the DLA to add additional Outer Glove and Boot Wash stations. The DLA should place the additional stations at the front of the DL.

Step 5: Wet Operations - 2nd Gross Decon and Initial Suit Spray - CRZ

Step 5 includes washing the boots and gloves in the 2nd Gross Decon and spraying the outside of the suit to begin the contact time for the decontamination solution in the 2nd Gross Decon.

Worker Exiting EZ:

- Step into the 2nd Wash tub and rewash the boots using the designated decontamination solution. Use the boot scraper/brush pad submerged in the tub to wash the bottom and sides of the boots. If necessary, use stability items (e.g., large traffic cone, foldable walker, foldable chair, foldable sawhorse, etc.) to aid people in standing up.
- Remain in the 2nd Wash tub while the DLA sprays decontamination solution over your gloves. The DLA should use care not to create overspray. Use a hand-washing movement to clean any remaining contamination off the outer gloves.
- If wearing Level C PPE, carefully follow the DLA's instructions regarding how to handle your powered air-purifying respirator (PAPR) belt and blower motor assembly (BMA) during suit decon.
- Follow the DLA's instructions precisely to ensure that the spray reaches all suit surfaces to begin the contact time during the suit spray.
- The DLA will record the decon entrant's name on the Decon Contact Time Tracking Form (see Appendix VI) and the start of the contact time as taken from a clock or timer. As an option, the decon entrant can simultaneously track their own time by noting the time on a clock on the wall at this station.
- When directed by the DLA, move to Step 6 to continue the decontamination.

DL Attendant:

- Direct the decon entrant to use the boot scraper/brush pad submerged in the 2nd Wash tub to scrub the bottoms and sides of their boots vigorously.
- While the decon entrant remains in the 2nd Wash tub, spray decontamination solution over their outer gloves, and direct them to use a hand-washing movement to clean any remaining contamination off the gloves.
- Spray all surfaces of the decon entrant with the decontamination solution. Direct the entrant to make quarter turns, raise each arm one at a time, lift each foot, and stand with legs spread. Be sure that the decon spray reaches all surfaces of the decon entrant.
- **Note:** Use fine mist tips on the sprayers; this gives better misting coverage and prevents cross-contamination.
- **Note:** If the decon entrant is in Level C PPE, instruct them to unfasten the PAPR belt, hold the PAPR belt/BMA in one hand, turn off the blower, and keep the mask on their face. Have them cover the PAPR cartridges with a gloved hand or piece of tape to keep them dry during spraying. Once done spraying the BMA, instruct the decon entrant to turn the blower back on and hold the PAPR belt/BMA in one hand or hang it on the coat rack. Proceed with decon of the suit.
- Thoroughly inspect the decon entrant to ensure all steps are completed before they exit Step 5 and enter the Step 6 - Full Decon area. Inspect their hands, the bottoms of the boots, and the suit to ensure that all contamination has been removed.
- Instruct the decon entrant to pick up the BMA (if using one) and move to Step 6.
- Record the name of the decon entrant, the time the decontamination solution was fully applied to their PPE, and the time the contact time was reached on the Contact Time Tracking Form (see Appendix VI).
- As an option, let the decon entrant know that they can note the time on the clock at this station once the decon solution is fully applied to monitor their own contact time.
- Change the decontamination solution in the 2nd Wash tub at a minimum of every four hours. It may be necessary to change it more frequently if the solution appears unfit for use, fails testing, and/or at the direction of the DLS. Personnel should consider using a submersible or transfer pump(s) to transfer liquids to drums or totes from the decon pools.
- Replace any sorbent pads on the floor of this area if they become soiled.

Step 6: Wet Operations - Full Decon of All Surfaces (Gloves, Boots, and Outer Suit) - CRZ

The purpose of Step 6 is to provide full decon of all surfaces. In this step, personnel reapplies the decon solution to ensure everything is wetted and the proper contact time is maintained for the decontamination solution.

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798 Worker exiting EZ:

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- Follow the DLA's instructions precisely.

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- When directed by the DLA, step into the large tub for full decon of the suit, boots, and gloves. Complete all actions as directed by the DLA.

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- **Note:** If in Level C PPE, follow the DLA's instructions to cover the cartridges of the PAPR or the APR with your gloved hands to keep the cartridges dry during spraying.

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- The decon entrant can continue to monitor the clock or timer to ensure that the contact time is reached on all surfaces to which the decon solution was applied.

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- Move to Step 7a when instructed to by the DLA.

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808 DL Attendant:

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- While decon entrants are standing in the large tub, begin by decontaminating their boots. Spray the decon solution on the bottom and sides of the boots. Make sure to prevent over-spray from wetting areas outside the tub. Instruct the decon entrant to use the submerged boot scraper/brush pad to scrub the sides and bottom of their boots.

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- Next, spray the decon solution over the entrant's gloved hands while they use a hand-washing movement to clean their hands.

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- **Note:** If the decon entrant is using a PAPR, instruct them to keep holding the PAPR belt/BMA in one hand or hang it on a coat rack. Turn the blower off, then turn it around so the DLA can decon the back of the BMA. Keep the cartridges covered with a gloved or a piece of tape (provided by DLA).

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- Once done spraying the BMA, instruct the decon entrant to turn the blower back on and proceed with the decon of the suit.

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- For APRs, instruct the decon entrant to cover the filters with their gloved hand while the front is misted. Instruct the worker to turn the PAPR back on and hang it on a hook.

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- **Note:** Use fine mist tips on the sprayers; this gives better misting coverage and prevents cross-contamination.

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- **Note:** Exercise caution not to generate excess sprayer pressure that could cause the liquid to enter the worker's suit(s).

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- For all levels of PPE, starting at the hood and working down to the boots, mist the outer surfaces of the decon entrant, including the mask. Achieve a uniform spray to ensure complete coverage, rather than a wet washdown. Have the decon entrant make quarter turns to ensure comprehensive coverage.

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- Have the decon entrant stand with their arms out and their legs spread so that all surfaces can be sprayed. Pay careful attention to the area around the zipper, arms, and

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front torso.

- Maintain a wetted surface for the required contact time. If the entrant is using a PAPR, instruct them to pick up the BMA from the rack and proceed to Step 7a after the contact time has been reached.
- Record when the contact time has been reached on the Contact Time Tracking Form.
- Aqueous waste will be collected periodically and bulk containerized on site for later disposal. Personnel should consider using a submersible or transfer pump(s) to transfer liquids to drums or totes from the decon pools.
- Note: Studies have shown that brushes tend to retain and spread contamination, especially if they aren't switched out regularly. We're trying to eliminate any gross contamination before entering the decon line. We do recognize that you may not get all of the contamination, so we're suggesting a submerged boot scraper/brush pad in this step. A submerged boot scraper helps a) prevent contaminant overspray and b) increases the contact time with the decon solution.

Exercise caution not to generate excess pressure in the spray that could potentially cause liquid to enter the suit(s).

Step 7a and 7b: Wet Operations – PPE Rinse and Dry - CRZ

Worker exiting EZ:

- Follow DLA's instructions precisely.
- Proceed from Step 6 into a large tub in Step 7a, where a DLA will rinse your suit, boots, and gloves. Complete actions as directed by DLA.
- Once directed by DLA, move to Step 7b (Dry PPE) by stepping out of the rinse tub into Step 7b.
- In Step 7b, the DLA will dry your suit by wiping it down with disposable towels.

DL Attendant:

- In Step 7a, make sure to prevent over-spray from wetting areas outside the tub.
- Next, spray the rinse water over each of the worker's gloved hands, from top to bottom.
- If the decon entrant is in Level C PPE, instruct them to cover the filters of the APR while the front is misted using a pressurized spray mist with rinse water.
- If the decon entrant is using a PAPR, instruct them to turn the BMA off then turn it around so the DLA can rinse the back of the BMA.
- Instruct the decon entrant to turn the PAPR back on and hang it on the hook.
- For all levels of protection, start at the top of the hood and work down to the boots,

misting all outer surfaces of the worker, including the mask. Achieve a uniform spray mist to ensure a proper rinse. Have the worker make quarter turns and move arms and legs to ensure that all areas and surfaces are rinsed with the spray.

- If the decon entrant is using a PAPR, instruct them to pick up the PAPR, step out of the rinse tub, and proceed to Step 7b. Dry the decon entrant with paper towels. Place spent paper towels in a lined trash can.
- Contain the water used for rinsing in Step 7a. Aqueous waste will be collected at a minimum every 4 hours and bulk containerized on site for later disposal. Personnel should consider using a submersible or transfer pump(s) to transfer liquids to drums or totes from the decon pools.
- Instruct the decon entrant to move to Step 8 for chemical screening.

Step 8: Contaminant Screening and Monitoring - CRZ

Contaminant screening should be conducted in the CRZ but away from Wet Operations. Workers should use a separate tent or designated area well away from any spraying or water. The area will be closed off to minimize interference from vapors, wind, and moisture/humidity from operations. The critical point is to ensure that screening is not affected by other activities in the DL. The selected screening method must detect the chemical(s) of concern, and the DLA should understand and consider that some instruments have a delay in detection.

Worker exiting EZ:

- Step into the contained screening area for evaluation.
- Complete actions precisely as directed by the DLA.

DL Attendant:

- Use a screening instrument/device appropriate to the site contaminants. Begin by screening the front of the decon entrant's head and mask, working down the suit to the gloves and then the boots. Use a slow, systematic approach such as clockwise or in quadrants.
- Repeat the screening for the back of the worker's suit, from the head to the boots.
- If screening indicates that the worker is contaminated, notify the DL Supervisor and the Site H&S Officer. Spot clean the EZW with a wipe and the proper decon solution if it's a small area. If it's a large area, have the EZW return to Step 6 for additional decontamination. Afterward, rescreen them until the results are negative.
- If screening or rescreening results are negative, instruct the decon entrant to Step 9.

DL Supervisor:

- Evaluate the pace through the DL for decon entrants and adjust the number of DLAs to

keep pace with personnel.

- Reassess the decontamination process to identify any steps in the DL that need to be adjusted to prevent any contamination from reaching this step.

Step 9: Wet Operations - Remove Outer Boots - CRZ

Worker exiting EZ:

- Follow the instructions of the DLA precisely.
- At DLA's direction, sit on the stool or bench. This bench may straddle or be near the berm between the wet and dry operations.

Note: The decon entrant must ensure they keep their feet in the Wet Operations side of the berm until their boots are removed or until instructed by the DLA to swing their legs over to Dry Operations.

DL Attendant:

- Place a disposable absorbent pad (hospital chux) on the bench or stool.
- Place an open drum liner or large trash bag on the wet side of the bench or stool. Have the worker step into the bag/liner.
- Instruct the worker to sit on the bench or stool.
- Remove the outer boots from the worker's feet, following the procedure below. Leave the boots in the bag. A boot jack may be used to assist if needed.
- Remove the decon entrant's first boot, then instruct them to swing that leg over the bench into Step 10 in the Dry Operations side. The decon entrant will now have one foot in Dry Operations and one foot in Wet Operations; they will be straddling the bench. After removing the second boot, instruct the decon entrant to swing that leg over the bench. Both legs will now be in Step 10 in the Dry Operations area.
- Have the worker stand up in Step 10.

Note: The decon entrant will still be wearing their suit booties.

- Remove the boots from the bag and place them into a boot bin if they will be reused. If the boots will be disposed of, place them into a bag-lined trash can. Dispose of the bag in the trash can.
- Remove the dirty hospital chux from the bench and place it in a bag-lined trash can.
- Spray the bench with the decontamination solution, change gloves, and lay out a new hospital chux for the next decon entrant.

Note: The DLA working in Wet Operations will not enter Dry Operations.

DL Supervisor:

- Ensure that DLAs working in Wet Operations do not enter Dry Operations.

Step 10: Dry Operations - Doff Outer Gloves & Suit and SCBA - CRZ

Worker exiting EZ:

- Follow the instructions of the DLA precisely.
- The DLA will assist you in removing outer gloves and unzipping and removing your outer suit.
- Optional: Don disposable Tyvek® slippers.

Note: The DL Attendant should change gloves between each worker.

DL Attendant:

- In Level A or modified Level B, remove the outer gloves and dispose of them in a lined trash can.
- Unzip or open the decon entrant's Level A/Level B encapsulated suit or outer suit if in Level B or C.
- Standing behind the worker, carefully peel the top of the outer suit downward past the waist, removing arms from the suit and rolling the suit inside out. Ensure that the outside of the Level A or B encapsulated suit does not contact the decon entrant. Also, it's essential that the inside of the suit, especially the hood, does not touch any part of the outside of the suit during this process.
- Instruct the decon entrant to sit on the bench.
- For Level B and C, remove outer gloves and dispose of them in a lined trash can.
- If in Level A or B, the SCBA air bottle will be uncovered. Once the suit has been unzipped, instruct the decon entrant to detach the SCBA regulator from their mask and turn off the airflow, allowing fresh air into the mask. Decon entrants in Level C will keep their filter cartridges, mask on, and PAPR BMA running. All decon entrants will still be wearing their masks, inner suits, and clean inner gloves.
- Continue to remove the outer suit by rolling it down and away from the lower body. Direct the decon entrant to remove their feet from the suit's attached boots and offer them Tyvek slippers (optional).

Note: The DLA should change their outer gloves at this point to prevent contamination.

- If in Level A or B, direct the decon entrant to turn off the air at the SCBA cylinder, detach the air hose from the cylinder, and keep wearing their mask. If in Level C, keep the mask

on. Lastly, if in a PAPR, carry the belt/BMA.

- Loosen the tank harness and remove the SCBA cylinder.
- Cap the spent cylinder to protect it from damage and contamination. Place the used cylinder in a storage bin for refilling.
- Remove the SCBA harness assembly from the decon entrant, leaving the mask in place. Place in a storage bin for later reuse.
- Instruct the decon entrant to move to Step 11.
- For Level A suits that will be reused, place them in a bin for cleaning, inspection, and pressure testing. Place suits that will be disposed of into a bag/drum liner and use a broom handle or stick to compact the trash.
- Spray any surfaces touched, occupied, or vacated by the worker (e.g., stool, bench, tabletop, etc.) and the drum liner with the designated decon solution as each worker moves through the DL and before the next worker.

Step 11: Dry Operations - Inner Suit Removal - CRZ

Step 11 is for workers wearing an inner protective suit (e.g., Tyvek® coverall). If the decon entrant is not wearing an inner suit, they will proceed to Step 12.

Worker exiting EZ:

- Follow the DLA's instructions precisely.
- The DLA will assist you in unzipping and removing the suit.
- Optional: Don disposable Tyvek® slippers.

DL Attendant:

- Unzip the decon entrant's inner suit.
- From behind the standing decon entrant, peel the top of the outer suit downward past the waist, rolling the suit inside out. Continue down to the feet. Direct the decon entrant to step out of the suit. Offer the decon entrant disposable Tyvek® slippers as an option.
- Instruct the decon entrant to move to Step 12.

Note: The decon entrant will still be wearing their mask.

Note: The DL Attendant should change gloves between each worker.

- Place the inner suit in the bag-lined trash can and use a broom handle or stick to compact the trash.

Step 12: Dry Operations - Inner Glove Wash and Rinse and Mask Removal - CRZ

Inner gloves will be washed, rinsed, and dried before the decon entrant removes their respirator mask.

Worker exiting EZ:

- Wash gloved hands at the hand wash station using running potable water and liquid soap. Rinse gloves thoroughly and dry with a paper towel. Dispose of the paper towel in the bag-lined trash can.
- Do not remove the inner gloves at this step; gloves will be removed at Step 13.
- Upon completing the glove wash, decon entrants should rinse and dry their gloves before removing the mask.
- While still wearing inner gloves, doff your mask by looking downward and pulling the mask down from the top of your head and away from the chin.
- If in Level C, have the DLA place tape over the filter cartridges after removing the mask. Remove the filter cartridges and place them in a trash can.
- Put the mask into the designated container for cleaning.

Note: The hand wash station should provide clean running potable water and individual-use liquid soap. Do not use shared-use basins filled with water. Hand wash stations can be rented or purchased.

DL Attendant:

- Instruct the decon entrant to move to Step 13.
- Clean each mask before it returns to service, following the manufacturer's guidelines or as specified by the Site H&S Officer or HASP.
- After decontamination, labeled masks will be returned to the decon entrant.

Note: A dedicated DL Attendant for this DL station is recommended due to the possible high volume of mask facepieces to be cleaned.

Step 13: Dry Operations - Inner Glove Removal, Hand and Face Wash - CRZ

Worker exiting EZ:

- Remove inner gloves by touching only the outside of the first glove and then only the inside of the second glove.
- Place gloves into the designated trash receptacle.
- Remove slippers and place them in a trash can.

- Wash hands and face with soap and potable water. Dry face and hands with a disposable towel or paper towel. Place used paper towel in a lined trash can.

Note: The hand and face wash station should provide clean running potable water and individual-use liquid or bar soap. Do not use shared-used containers or basins. Hand and face wash stations can be rented or purchased.

Worker exiting EZ:

- Wash hands and then face thoroughly with soap and warm potable water after all PPE has been doffed.
- Dry face and hands with a disposable towel or paper towel.
- Put soap and paper towels in a designated trash receptacle.
- Move out of the CRZ into the SZ and Step 14.

Step 14: Support Zone - Recommended: Personal Shower - SZ

It's recommended, but not required, that decon entrants take a shower as soon as possible. Preferably, it should be done on site. **Note:** This step may be modified depending upon the site-specific operational period.

All decon entrants, including DLAs:

- Disrobe, bag clothing worn under PPE, tie the bag closed, and bring it with you through the shower tent.
- Shower using copious amounts of potable water for a minimum of five minutes, washing the entire body with soap, including hair.
- Remain inside the shower and use a disposable towel to dry off.
- Dispose of the towel in a trash receptacle.
- Change into the clean clothing you previously placed in the shower/changing area.²
- Move to Step 15 for medical monitoring.

Note: Individual-use soaps and shampoos will be available in the showers. Dispose of the soap, shampoo, and used towel in a lined trash can.

Step 15: Support Zone - Medical Monitoring - SZ

All decon entrants, including DLAs:

² The pre-deployment equipment list should include a clean change of clothing for all workers.

- Report to the medical monitoring station for post-entry monitoring and meet with appropriate personnel for debriefing.
- Comply with the monitoring and reporting requirements in the Site HASP (e.g., monitoring for temperature, blood pressure, pulse, etc.).
- Take a rest break and drink fluids.

12. Emergency Egress Corridor

An EEC must be established. This line will be used to quickly decontaminate personnel who experience medical emergencies while in the EZ or CRZ. The EEC should remain clear when not in use for an emergency. In an emergency, anyone not assisting with the emergency should exit immediately. Preplan transport of contaminated patients to the hospital in advance of site work. If possible, involve hospital and Emergency Medical Services (EMS) agencies early in the incident, so they are prepared for the possibility of contaminated patients. Personnel will need to be decontaminated before receiving treatment from EMS or the emergency medical technicians (EMT) before being transported to a hospital.

The clothing of the person being transported will comply with the ambulance/EMT requirements. Backup entry teams should plan to respond to calls for assistance in bringing injured or incapacitated EZWs through the EEC. They should practice beforehand as a team performing decon or assisting the DLA with the decon of the incapacitated worker.

Note: In the event of an emergency requiring use of the EEC, all work in the EZ must come to a stop until the EEC is clear.

In the event of an emergency requiring the use of the EEC, all work on the DL stops. The DLS will direct the DLAs to decon the incapacitated worker. The backup entry teams should plan to respond to calls for assistance from the DLS. The assistance may include bringing injured or incapacitated EZWs through the EEC or from the ECC to the ambulance. The backup team should be trained in performing decon or assisting the DLAs with the decon of the incapacitated worker. Following an emergency incident, the EEC must be decontaminated and reassembled. The DLS will assign DLAs to carry out this operation. All DLAs, other personnel, and equipment used to decon the incapacitated worker must be decontaminated before returning to service in the DL. Any workers who may have crossed into different zones (i.e., CRZ to EZ) will need to go through the DL.

Note: Work will resume in the EZ and the DL when the DLS declares that the EEC is all clear.

1129 Items needed for EEC:

- 1130 • Surgical scissors or other safety cutters for removing PPE from an affected worker.
- 1131 • ChemTape®, decon solution with disposable towels, bleach wipes, paper towels, and a
- 1132 bag-lined trash can.
- 1133 • Extra Tyvek® coveralls and a body bag with side handles or a piece of visqueen
- 1134 (polyethylene sheeting) large enough to wrap a worker.
- 1135 • A stretcher or another suitable litter for transporting incapacitated workers.
- 1136 • Blanket or tarp for covering the litter.

1137

1138 Recommended decon procedure for incapacitated workers:

- 1139 • The EEC should remain clear of personnel unless it is being used. When the EEC is being
- 1140 used to expedite the decon and egress of a patient, it must be cleared of any other
- 1141 personnel. Anyone in the corridor not assigned to be there by the DLS should exit
- 1142 immediately.

1143

1144 **Note:** Decon entrants in the DL who may be contaminated must exit back through the DL

1145 towards the EZ before an injured worker enters the EEC.

1146

- 1147 • The DLS ensures that 9-1-1, the local hospital, and EMS have been called, confirms that
- 1148 each entity understands the nature of the emergency, and implements the plan
- 1149 (previously developed with EMS) to transport a patient. **Note:** The plan is prepared
- 1150 before starting work on the site. In speaking with emergency services, the DLS reiterates
- 1151 the contaminants on site and describes the steps that have been taken on site to
- 1152 decontaminate the patient before transport. They will confirm that EMS is on the way.
- 1153 The DLS ensures that EMS and the hospital medical team understand that the patient is
- 1154 being deconned and will arrive at the on-site support zone in a few minutes. When EMS
- 1155 arrives on site, the DLS confirms with ambulance staff that they understand the nature
- 1156 of the emergency, the contaminants on site, and the decon measures that have already
- 1157 been taken.
- 1158 • The DLA should inform EMS and the hospital medical team how the patient will be
- 1159 wrapped and ascertain whether EMS prefers to perform the wrapping themselves. Once
- 1160 9-1-1 is notified, the DLS will ensure other Incident Command staff have been notified of
- 1161 the situation.
- 1162 • Assuming that the incapacitated worker is in the DL, the DLS notifies at least two backup
- 1163 team members to bring a litter/stretchers to the front of the DL. The backup team enters
- 1164 through the EEC and brings a litter/stretchers covered by one tarp or a body bag (with
- 1165 handles). With the incapacitated worker's mask in place, the backup team places the
- 1166 incapacitated worker face up on the bag or the plastic-lined litter. Any EZWs who

1167 escorted the incapacitated worker can return to the EZ or go to the beginning of the DL.

1168 • The backup team members carry the worker on the litter through the EEC.

1169 • The incapacitated worker will need to be decontaminated before handover to EMS to

1170 allow them to be safely transported to the hospital. DLAs or the backup team will

1171 remove any visible gross contamination on the outer surfaces of the worker's PPE using

1172 a clean towel wetted with fresh decontamination solution (e.g., a Clorox® Dispatch®

1173 wipe). Alternatively, they can mist the worker, then use a car washing mitt dipped in

1174 clean, unused decon solution to wipe the incapacitated worker's PPE, including the

1175 backside of their body, boots, outer gloves, and respiratory gear. The decon contact

1176 time does not need to be achieved.

1177 • As necessary, conduct monitoring using the instruments or other (etc., M8-M9 paper)

1178 • Following decontamination, if possible, the DLAs remove the worker's boots and outer

1179 gloves and dispose of them in the appropriate container. They carefully wipe the inner

1180 gloves with a towel wetted with clean decon solution or a Clorox® Dispatch® wipe.

1181 • Using safety scissors, a DLA cuts only the outer suit away from the worker's body by

1182 making a long cut from the neck to below the waist. They continue to cut the suit from

1183 below the waist down each leg to the foot. The DLA must use caution when removing

1184 the outer suit, particularly the hood, and take care not to disturb the facepiece's seal.

1185 The DLA rolls the suit away from the worker, ensuring that the suit's outer surface does

1186 not touch any body part. The DLA conducts spot decon, if necessary, on the worker, the

1187 litter, or both. If possible, the DLA safely removes the worker's outer suit, sliding it away

1188 from the worker and out from under the worker's body, and disposes of the suit in a

1189 trash can. If the suit cannot be removed safely, the DLA leaves it on the worker until

1190 further directed by EMS or the DLS. The DLA either re-dresses the worker in a clean

1191 Tyvek® suit or slides an opened-up emergency transport body bag or a large piece of

1192 visqueen under the worker to minimize any potential remaining contamination. The DLA

1193 zips up the bottom portion of the bag or wraps the worker with visqueen, leaving the

1194 worker's head and shoulders out of the bag or sheeting. DLA will conduct air monitoring

1195 of the deconned worker to ensure contamination has been removed. The DLA will hand

1196 the incapacitated worker to a second backup team standing ready in the SZ.

1197 **Note:** The SCBA, APR, or PAPR respirator is still operating and providing clean air to the

1198 worker. EMS will determine if the SCBA, PAPR, and mask should be removed.

1199 • The backup team will transfer the incapacitated worker to EMS for transport to the

1200 hospital.

1201 • Once the emergency decon is complete, the DLS ensures all contamination has been

1202 removed from the DL, and all wastes have been appropriately containerized, including

1203 any aqueous wastes. The DL should be returned to ready status. The DLS will inspect the

1204 EEC for readiness to accept any other incapacitated workers. All DLAs who require any

decon should go through the EEC to Wet Operations to be deconned and then return to the location assigned by the DLS.

- The DL can resume deconning workers after the EEC has been reset, DLAs are back in their positions on the DL, and the DLS has approved the reset of the EEC and has authorized restart of the DL.

13. Decon Line Breakdown

The DLS is responsible for observing the DLAs breaking down the DL. Breakdown starts at the EZ, moves through the CRZ, and works towards the SZ. All solid waste (e.g., used PPE, poly sheeting, etc.) is collected, consolidated, and appropriately sealed per DOT packaging requirements. Items that require decontamination during this process include stools, washbasins, and any other items that will be reused. Aqueous waste is collected and bulked into the appropriate containers (e.g., drums, totes, etc.). The waste will be disposed of under applicable local, state, and federal requirements. **Note:** Directions for the breakdown of the DL are in Appendix IV.

After the DL is broken down and removed, the DLA and DLS will doff their PPE following Steps 3-13 of this SOP. The most contaminated DLA (typically the individual closest to the EZ) becomes the decon entrant, and the other DLAs move forward one place toward the EZ until all DLAs have become decon entrants (conduct decontamination according to this Decon Line SOP). The DLS will be the last through the line and will conduct self-decontamination from start to finish. Lastly, they will follow up with Steps 14 and 15, an optional shower, and medical monitoring in the SZ.

Note: The DLS should be the last person through the DL. It is recommended that the DLS be an EPA OSC because OSCs are responsible for monitoring all personnel's successful decontamination. If that is not feasible, then another EPA OSC in the SZ should monitor the DLS's final decon phases.

Disassembly of Decon Line

A final doffing station with a hand washing station is established outside the CRZ in the support zone (see below). The doffing station is constructed on the ground by using heavy-duty plastic sheeting (e.g., 2-mil) with strips of anti-skid tape to prevent slips. The DLAs will break down the DL in Level C PPE (i.e., Tyvek® coverall, nitrile gloves, and boot covers). Caution must be exercised to minimize cross-contamination of any residual chemical material on the DL structures. All disposable items are double-bagged and packaged and must comply with all state and local transportation and disposal requirements. Aqueous and solid waste should be

1242 kept separate. After completing DL disassembly, the DLAs will move to the final doffing station,
1243 doff their PPE, and containerize it as appropriate. They must wash their hands and faces and
1244 comply with Site HASP requirements. The DLS conducts a final inspection to determine if the
1245 decon pad area needs additional cleaning after disassembly.

1246
1247 The last three tasks can be summarized as:

- 1248 1. Once all EZWs have exited through the DL, DLAs place all solid and aqueous wastes
1249 (except for what they need to clean themselves) in drums. They dry the floor on the
1250 Wet Operations side of the DL.
- 1251 2. DLAs decon (wipe or spray) and push out all unneeded containers, seats, tools, and
1252 instruments through the Support Zone. They leave large tubs and berms in place.
- 1253 3. DLAs pair up and proceed through all DL stations (from second gross decon through
1254 hand/face wash and exit). The last pair sets up the sump or contains any liquids as they
1255 leave Wet Operations, using extra gloves as needed, before proceeding to the Dry
1256 Operations side of the DL.

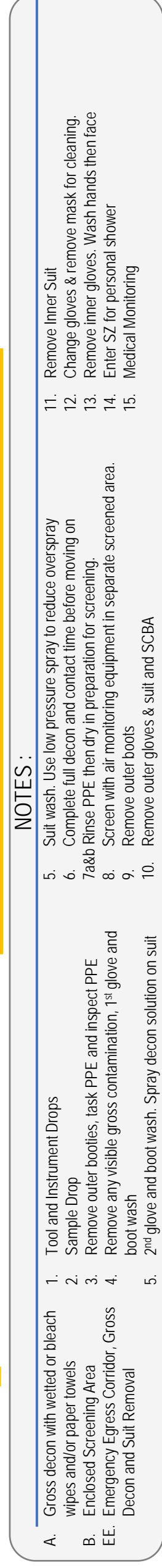
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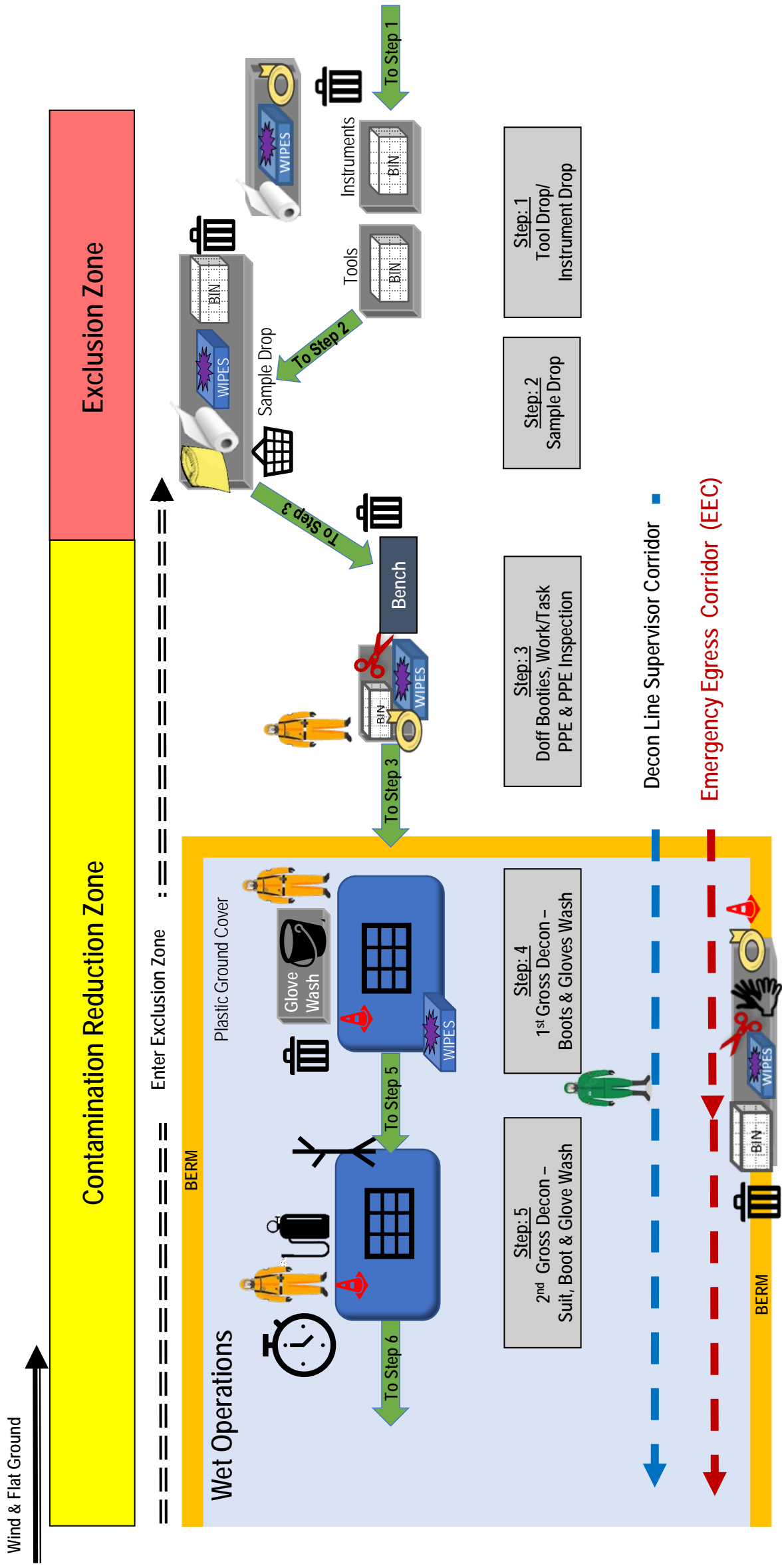
Appendix I: Decon Line for Hazardous Chemicals and Chemical Agents

Overview Graphic of General Decon Processes - Steps through 15



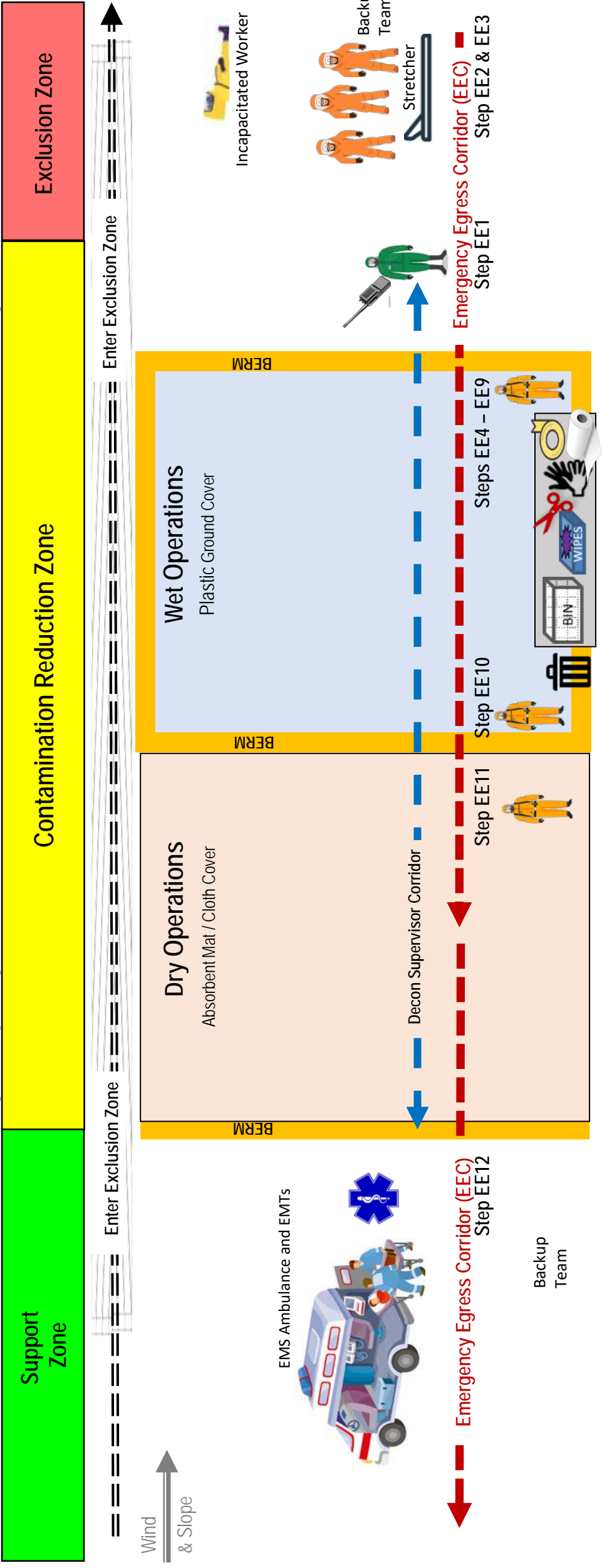
Chem Decon Line: Steps 1 through 5

Contamination Reduction Zone and Hot Zone



Level A/Level B Encapsulated – Chem Decon Line

Graphic of Emergency Egress Decon Processes – Steps EE1 through EE12



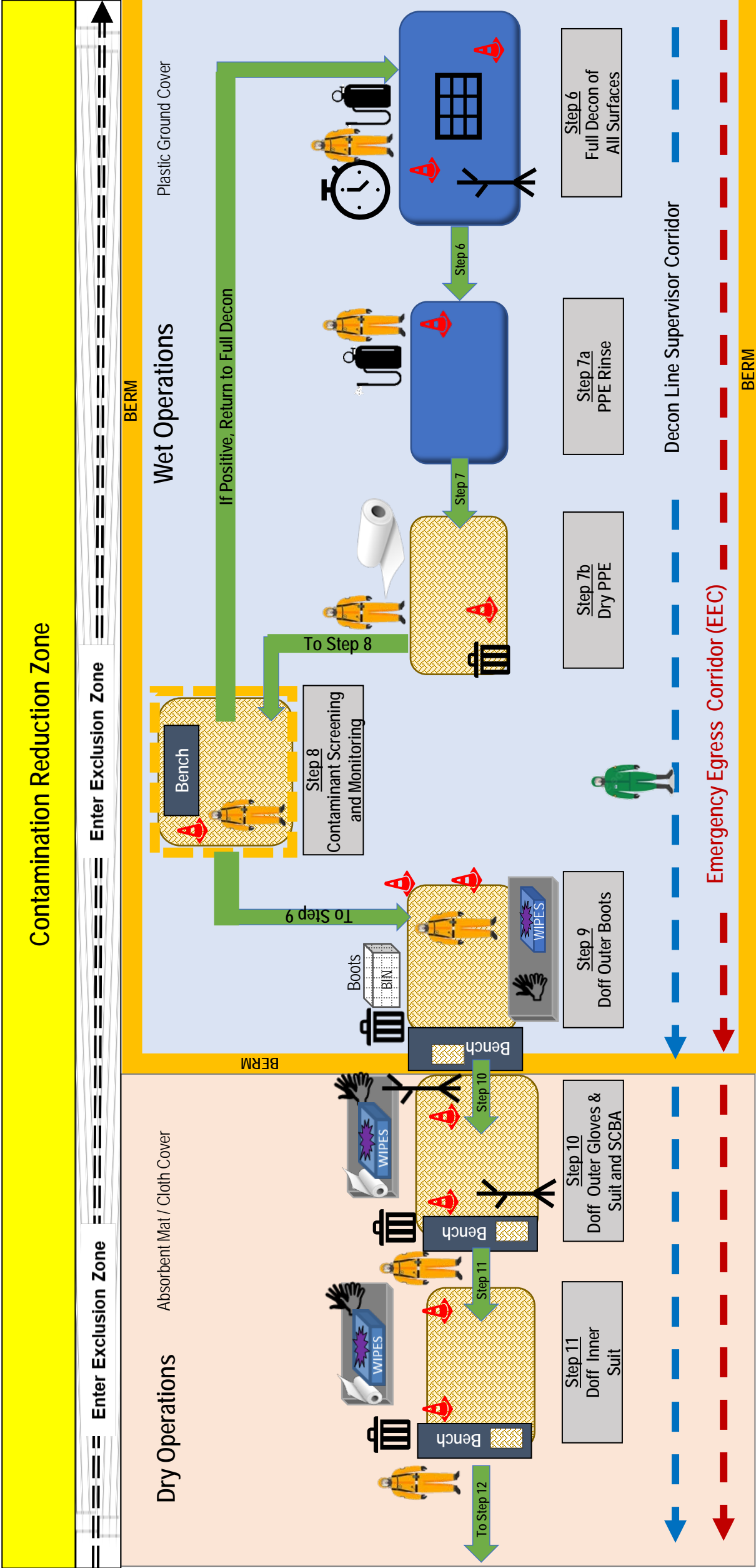
EMERGENCY EGRESS CORRIDOR (EEC) DECON PROCESSES:

- | | | | | | |
|------|---------------------------------------------------|------|--------------------------------------------|-------|-------------------------------------------------------|
| EE1. | Dial 911 and Hospital | EE5. | DLA Removes Outer Boots and Gloves | EE9. | DLA Wraps Incapacitated Worker with Visqueen Wrapping |
| EE2. | Send in Backup Team | EE6. | DLA Wipes Inner Gloves with Decon Solution | EE10. | DLA Screens Victim with Air Monitoring Equipment. |
| EE3. | Backup Retrieves Incapacitated Worker | EE7. | DLA Cuts Outer Suit from Body and Remove | EE11. | Dry Operations Personnel Carry Victim to Edge of CRZ |
| EE4. | DLA Worker in Wet Operations Performs Gross Decon | EE8. | DLA Spot Decon Incapacitated Worker's Body | EE12. | Second Backup Team in SZ Carries Victim to EMS |

Chem Decon Line: Steps 6 through 11

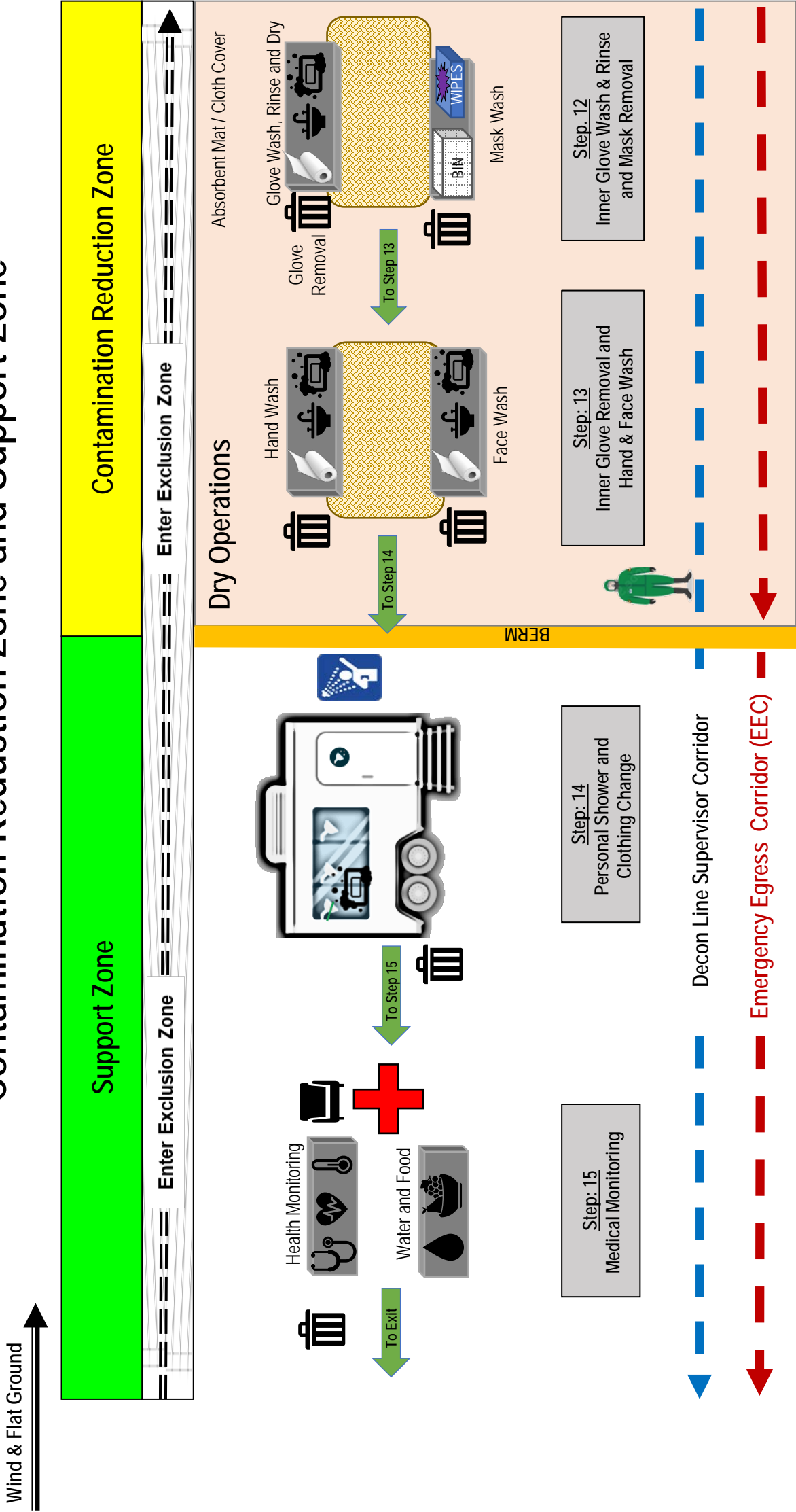
Contamination Reduction Zone – Wet and Dry Operations

Wind & Flat Ground

















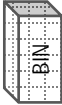

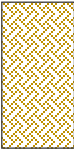


























Chem Decon Line: Steps 12 through 15

Contamination Reduction Zone and Support Zone



Legend

	Decon Line Attendant		Wipes for Decontamination		Non-Slip Floor Cover / Cloth Cover		Decontamination Tub
	Decon Line Supervisor		Boot Scrubber Plate		Plastic Ground Cover		Table
	Chemical Resistant Tape		Clock/Stopwatch		Containment Berm		Hand & Face Wash
	Trash Can		Bucket/Basin		Ingress / Egress Corridor		Soap
	Plastic Storage Bin		1-gal Zippered Bags		Floor Mat/Absorbent Pad		Personal Shower
	Safety Cone		85 Gallon Trash Bags		Vapor Control Screen / Tent		Medical Monitoring /First Aid
	Safety Scissors		Paper Towels		Emergency Egress Corridor (EEC)		Sample Container
	Bench		Low Flow Pressure Sprayer		Vapor Control Demarcation Line		Gloves
	Coat Rack		Blood Pressure		Heart Rate		Temperature
	Chair		Walkie Talkie / Radio		Water and Food		Back Up Team
	Incapacitated Worker				Stretcher / Litter		Emergency Services(EMS)

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Appendix II: Basic Levels of Personal Protective Equipment

Levels of Personal Protective Equipment

Personal protective equipment (PPE) levels for an emergency response to a suspected hazardous chemical or chemical agent incident are based on scenario risks from highest to lowest level of protection:

- **LEVEL A:** NIOSH-approved chemical, biological, radiological, and nuclear (CBRN) full-facepiece self-contained breathing apparatus (SCBA) operated in pressure-demand mode, a totally encapsulating chemical protective (TECP) suit that provides protection against CBRN agents, chemical-resistant gloves (inner and outer), and chemical-resistant boots. This level is appropriate when: a) the event is uncharacterized and/or uncontrolled, b) the type(s) of agent is unknown, c) the dissemination method is unknown, d) dissemination via an aerosol-generating device is still occurring, or e) decontaminating workers in TECP suits (because of potential for re-aerosolization). Per National Institute of Occupational Safety and Health (NIOSH) guidance, Level A provides the greatest level of skin (TECP), respiratory (SCBA), and eye protection when the agent identity or concentration is unknown.
- **LEVEL B:** NIOSH-approved CBRN or non-CBRN full-facepiece SCBA operated in pressure-demand mode, a hooded chemical-resistant suit that provides protection against CBRN agents, chemical-resistant gloves (inner and outer), and chemical-resistant boots. This level is appropriate when: a) aerosol is no longer being generated or b) other conditions may present additional hazards, such as a splash hazard. Per NIOSH guidance, Level B provides the highest level of respiratory protection (SCBA) when a lesser level of skin protection is required. Level B differs from Level A in that it typically incorporates a non-encapsulating, splash-protective, chemical-resistant outer suit that provides protection against most liquids but is not vapor tight.
- **MODIFIED LEVEL B:** NIOSH-approved CBRN or non-CBRN full-facepiece SCBA operated in pressure-demand mode, an encapsulated (not total) Level B suit that provides protection against CBRN agents, chemical-resistant gloves (inner and outer), and chemical-resistant boots. This level is appropriate when: a) aerosol is no longer being generated or b) other conditions may present additional hazards, such as a high possibility of a splash hazard. Per NIOSH guidance, Level B provides the highest level of respiratory protection (SCBA) when a lesser level of skin protection is required. Level B differs from Level A in that it typically incorporates a non-encapsulating, splash-protective, chemical-resistant outer suit that provides protection against most liquids but is not vapor tight.
- **LEVEL C:** NIOSH-approved CBRN or non-CBRN, tight-fitting air-purifying respirator (APR), a hooded chemical-resistant suit that protects against CBRN agents, chemical-resistant gloves (inner and outer), and chemical-resistant boots. This level is appropriate when: a)

the aerosol is no longer being generated, b) the agent and hazard level has been defined, or c) small item that can be easily bagged. Per NIOSH guidance, Level C can be selected when the agent identity and concentration are known and the respiratory protection criteria factors for the use of APR or PAPR (i.e., warning properties) are met.

- **MODIFIED LEVEL C:** NIOSH-approved CBRN or non-CBRN tight-fitting powered APR (PAPR), a hooded chemical-resistant suit that protects against CBRN agents, chemical-resistant gloves (inner and outer), and chemical-resistant boots. This modified level may also include adhesive tape used to seal the neck area using a tape gaiter and seal the hood to the mask. This level is a modification of Level C and is appropriate when: a) the aerosol is no longer being generated, b) the agent and hazard level has been defined, or c) small item that can be easily bagged. Per NIOSH guidance, Level C can be selected when the agent identity and concentration are known and the respiratory protection criteria factors for the use of APR or PAPR (i.e., warning properties) are met.

LEVEL D: Level D protection can be selected when the minimum protection is required. Level D protection may be sufficient when no contaminants are present, or work operations preclude splashes, immersion, or the potential for unexpected inhalation or contact with hazardous levels of chemicals. Level D should include work clothes, safety glasses, and chemical-resistant, steel-toe boots or shoes. Optional equipment may include disposable hooded coveralls (Tyvek®), gloves, hardhat, and protective foot coverings.

Note: Downgrading PPE levels may be considered only when the identity and concentration of the chemical or agent is known, and the risks of re-aerosolization or dermal exposure are known to be extremely low. Decisions regarding downgrading of PPE levels are only made at the discretion of the Site Health & Safety Officer after conducting a risk assessment and must be accompanied by on-site monitoring. PPE Levels for the Site can be found in the Site H&S Plan. Lastly, personnel must ensure that proper decon operations are established before site entry.

For additional information, see:

National Institute for Occupational Safety and Health (NIOSH). 2008. Guidance on Emergency Responder Personal Protective Equipment (PPE) for Response to CBRN Terrorism Incidents. DHHS (NIOSH) Publication No. 2008-132. 13 pp. Accessed 04/21/2021 at: <https://www.cdc.gov/niosh/docs/2008-132/pdfs/2008-132.pdf?id=10.26616/NIOSHPUB2009132>.

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2009-132. Accessed 04/21/2021 at: <https://www.cdc.gov/niosh/docs/2009-132/default.html>.

Level A Response

Select when the greatest level of skin, respiratory, and eye protection is required. Level A offers the maximum respiratory and skin protection for responders from absorption hazards, respiratory hazards, unknown chemicals, or exposure to levels above the IDLH or greater than the AEGL-2.

Basic Ensemble for Level A Exclusion Zone Workers

NOTE: Specifics of the incident may alter the suit ensemble or dress out procedures. If chemicals are known, ensure ensemble chemical compatibility.

- DuPont™ Tychem® 10000 or a DuPont™ Tychem® Responder® CSM Level A suit
- Integral Silver Shield® inner gloves
- Butyl rubber outer gloves
- Cut-resistant gloves over the integral butyl rubber gloves
- ChemTape® to seal all potential penetrations
- Nitrile exam inner gloves
- 3M™ Scott™ SCBA ensemble
- Tingley™ HazProof® boots
- Communication equipment

Based on site conditions, responders may consider other optional equipment: supplied-air cart, hard hat, hearing protection, towel and/or anti-fog liquid to clear condensation, trauma shears or knife inside the suit for emergencies, cut-resistant work gloves, ice vest, and additional ChemTape® or comparable tape, among others.

Procedural Steps for Level A Exclusion Zone Entrants

- 1) Remove jewelry, belts, and all items from pockets and place them in a labeled bag. Consider removing work clothes and wearing coveralls.
- 2) Inspect the mask and apply an anti-fog liquid inside and outside the mask lens (insert eyeglass kit if needed).
- 3) Inspect SCBA (see SCBA and Chemical Protective Clothing Inspections below).
- 4) Inspect both the inner suit and the Level A suit (apply an anti-fog liquid to the inside face shield of the Level A suit if needed).
- 5) Remove personal boots or shoes.
- 6) Don a pair of nitrile exam gloves.
- 7) Put on and zip up inner suit (optional).

- 1445 8) Put on the Level A suit up to the waist.
- 1446 9) Put on outer steel toe/steel shank, chemical protective boots. Pull the boot flaps down
- 1447 over boots. Consider rubber booties over the HazProof® boots.
- 1448 10) Put on one pair of nitrile exam gloves—secure outer gloves to the inner suit with
- 1449 ChemTape®.
- 1450 11) Pull up the inner hood and put on the SCBA unit (if applicable). Open the valve on the
- 1451 bottle all the way. Connect SCBA to suit supplied-air respirator connection.
- 1452 12) Attach Radio and Communications Unit. Turn on, select the proper channel, and
- 1453 perform a test.
- 1454 13) Tuck a towel into the SCBA strap to be used during entry to periodically wipe
- 1455 condensation from the Level A suit's face shield.
- 1456 14) Tape trauma shears or other self-cutout tools to your leg or other secure location.
- 1457 15) Pull back the inner hood and put on the SCBA mask. Perform positive and negative
- 1458 pressure fit checks.
- 1459 16) Pull up inner hood over mask harness. Tape to SCBA mask, as necessary
- 1460 17) Put on a hard hat and add any additional equipment and supplies as necessary.
- 1461 18) Connect the regulator to the SCBA mask. **The SCBA is now fully operational.**
- 1462 19) Pull up and zip Level A suit. Consider cut-resistant work gloves if work may compromise
- 1463 glove integrity.
- 1464 20) Perform final inspection.
- 1465

Level B Responses

Select when the highest level of respiratory protection is necessary, but a lesser level of skin protection is required. Level B is the minimum protection for responders in danger of exposure to unknown chemical hazards or levels above the IDLH or greater than AEGL-2. Ensure that appropriate decon operations are established before entry.

Basic Ensemble for Level B Exclusion Zone Entrants

NOTE: Specifics of the incident may alter the suit ensemble or dress out procedures. If chemicals are known, ensure ensemble chemical compatibility.

- DuPont™ Tychem® 6000 outer suit with a hood or DuPont™ Tychem® 10000 encapsulating Level B. An inner suit is not always warranted. The need for an inner suit and the specific material is based on the specifics of the incident.
 - Integral booties
 - Elastic wrists
 - Use ChemTape® to seal all potential penetration areas
- Nitrile exam inner gloves
- Silver Shield® gloves
- Appropriate outer gloves
- Steel toe/steel shank boots with chemical protective booties or steel toe/steel shank chemical protective boots (e.g., Tingley™ HazProof®)
- 3M™ Scott™ SCBA ensemble
- Communication equipment

Based on site conditions, optional equipment to consider includes supplied-air cart, hard hat, hearing protection, towel and/or anti-fog liquid to clear condensation, trauma shears or knife for emergencies to escape encapsulating suit, cut-resistant over-gloves, ice vest, and additional chemical or duct tape.

Procedural Steps for Level B Exclusion Zone Entrants

- 1) Remove jewelry, belts, and all items from pockets and place them in a labeled bag. Consider removing work clothes and wearing coveralls.
- 2) Inspect the mask and apply an anti-fog liquid inside and outside the mask lens (insert eyeglass kit if needed).
- 3) Inspect SCBA (see SCBA and Chemical Protective Clothing Inspections below).
- 4) Inspect both the inner suit and the Level B suit (apply an anti-fog liquid to the inside face shield of the Level B encapsulating suit if used).
- 5) Remove personal boots or shoes.
- 6) Inspect both inner and outer suits.

- 1503 7) Don a pair of nitrile exam gloves.
- 1504 8) Put on and zip up inner suit.
- 1505 9) Put on one pair of nitrile exam gloves. Secure the gloves to the inner suit with
- 1506 ChemTape®.
- 1507 10) Put on and zip up the outer suit.
- 1508 11) Put on outer steel toe/steel shank, chemical protective boots. Consider chemical
- 1509 protective booties over the HazProof® boots. Secure the boots over the suit with
- 1510 ChemTape®.
- 1511 12) Put on the SCBA unit and open the valve on the bottle all the way.
- 1512 13) Pull back both inner and outer hoods.
- 1513 14) Put on a mask and perform positive- and negative-pressure fit tests.
- 1514 15) Attach the radio and communications unit. Turn it on, select the proper channel, and
- 1515 perform a test.
- 1516 16) Pull up both inner and outer hoods over the mask harness. Seal the SCBA mask to the
- 1517 hood with ChemTape®.
- 1518 17) Put on a hard hat and add any additional equipment and supplies as necessary.
- 1519 18) If required, put on 4-H/Silver Shield® gloves or other gloves, as specified in the Site HASP
- 1520 or required by Site H&S Officer. Secure the gloves to the sleeves with ChemTape® to the
- 1521 outer suit.
- 1522 19) Put on outer gloves and secure sleeves over gloves with ChemTape®. Consider cut-
- 1523 resistant work gloves if work may compromise glove integrity.
- 1524 20) Connect the regulator to the mask. The SCBA is now fully operational.
- 1525 21) Perform final inspection.

Level C Response

Select when the contaminant and concentration are known, along with acceptable oxygen concentrations. Ensure that the respiratory protection criteria for using air-purifying respirators (APR) or powered air-purifying respirators (PAPR) are met. Lastly, responders must confirm that proper decon operations are established before entry.

Basic Ensemble for Level C

NOTE: Specifics of the incident may alter the suit ensemble or dress out procedures. Verify ensemble compatibility with site contaminants.

- DuPont™ Tychem® 4000/6000 outer suit with hood based on the specifics of the incident and the Site HASP
 - Integral booties
 - Integral hood
 - Elastic wrists
- DuPont™ Tyvek® inner suit with integral booties, elastic wrists, and hood
- Nitrile exam inner gloves
- Silver Shield® gloves, as needed based on the specifics of the incident
- Appropriate outer gloves
- Steel toe/steel shank boots with chemical protective booties or steel toe/steel shank chemical protective boots (e.g., Tingley™ HazProof®)
- Chemical protective booties
- 3M™ Scott™ APR mask, Bayonet adapter, or 3M™ Scott™ PAPR unit.

Note: Check the Site HASP for filter cartridges specified for the response. If using a PAPR, also check that the batteries are fully charged.

- Optional equipment to consider based on site conditions includes Class 2 or better high-visibility safety vest, hard hat, hearing protection, trauma shears or knife for emergencies, cut-resistant over-gloves, ice vest, and additional chemical or duct tape.

Procedural Steps for Level C

1. Remove jewelry, belts, and all items from pockets and place them in a labeled bag. Consider removing street clothes and wearing coveralls.
2. Install Bayonet adapter onto the mask and attach the filter cartridges. Inspect mask and apply an anti-fog liquid to inside and outside of face lens (insert eyeglass kit if needed). If using a PAPR, attach the filter cartridges to BMA.
3. Inspect outer and inner suit.
4. Remove personal boots or shoes if using chemical protective boots.

- 1563 5. Don inner gloves.
- 1564 6. Put on an inner suit (e.g., Tyvek®) and zip up. Don another pair of nitrile exam gloves
- 1565 and tape to the inner suit.
- 1566 7. Put on an outer suit up to the waist. Consider using a piece of ChemTape® to extend
- 1567 the zipper pull.
- 1568 8. Don chemical protective booties over steel toe/steel shank boots or don steel
- 1569 toe/steel shank chemical protective booties. Consider chemical protective booties
- 1570 over the HazProof® boots. Secure boots with ChemTape®, as needed.
- 1571 9. Pull up and zip outer suit.
- 1572 10. Put on PAPR unit if using.
- 1573 11. Pull back inner and outer hoods as necessary.
- 1574 12. Put on a mask and conduct a negative pressure fit test.
- 1575 13. Attach Radio and Communications unit.
- 1576 14. Pull up inner and outer hoods over the mask harness. Tape them to mask.
- 1577 15. Put on a hard hat. Put on a high-visibility vest (as appropriate)
- 1578 16. If required, put on 4-H/Silver Shield® gloves or other gloves specified in Site HASP or
- 1579 required by Site H&S Officer. Secure gloves to sleeves with ChemTape® to outer suit.
- 1580 17. Put on outer gloves. Secure to sleeves with ChemTape®. Consider cut-resistant work
- 1581 gloves if work may compromise glove integrity.
- 1582 18. Using ChemTape®, tape any seams around the facepiece and suit to ensure no visible
- 1583 skin.
- 1584 19. If using PAPR, turn on the PAPR BMA and attach the mask.
- 1585 20. Perform final inspection.
- 1586

SCBA and Chemical Protective Clothing Inspections

SCBA Inspection

1. Remove SCBA from the case and place it on a table or bench.
2. Examine the overall condition of the SCBA and note any damage.
3. Remove the cylinder from the harness and check the hydrostatic test date label. The cylinder must be hydrostatically tested every five years to maintain safety compliance.
4. Check cylinder for damage and wear.
5. Make sure the cylinder has >3500 psi. Replace with a full cylinder if necessary.
6. Inspect shoulder straps and waist belts for damage or wear.
7. Check all buckles and fasteners and assure proper operation.
8. Examine the backpack for damage, cracks, or rust.
9. Ensure all connection points between the cylinder and the SCBA harness operate correctly and are free of damage or corrosion.
10. Check O-ring for damage.
11. Re-install cylinder and reattach to the harness.
12. Check all hoses and connection points for wear, cuts, or damage.
13. Activate cylinder valve and compare cylinder pressure gauge and pack pressure gauge. Confirm that values are the same.
14. Inspect facepiece for wear, damage, and cracks. Inspect facepiece harness for wear.
15. Attach facepiece and check regulator for proper operation.
16. Close the cylinder valve and open the bypass valve to bleed pressure slowly. Check to assure heads-up display indicators track appropriately with the decreasing pressure. Replace the battery if the low battery light is illuminated.
 - Full Cylinder – Two Green Lights
 - $\frac{3}{4}$ Cylinder – Single Green Light
 - $\frac{1}{2}$ Cylinder – One Flashing Yellow Light
 - $\frac{1}{4}$ Cylinder – One Flashing Red Light
17. Assure that “Vibra-alert” activates at 1000 psi.
18. Tag and remove from service if SCBA fails inspection.

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Table 1. Chemical Protective Clothing Inspection

Visual Suit Check:					
1. Level A Suit inspected within last year	Yes	No	6. Emergency cutout device (Level A)	Yes	No
2. No apparent damage to the suit	Yes	No	7. SCBA/SAR line connected (Levels A and B)	Yes	No
3. Zipper functions/not damaged	Yes	No	8. SCBA mask sealed/SCBA operating	Yes	No
4. Suit Pirelli/exhaust valve intact (Level A)	Yes	No	9. Final communications checked	Yes	No
5. Towel (Level A)	Yes	No	10. Zipper fully zipped	Yes	No
Pre-Entry Checklist					
1. Pre-hydration	Yes	No	4. IAP / HASP reviewed	Yes	No
2. Aware of signs and symptoms of specific chemical exposure	Yes	No	5. Suit ensemble compatibility researched and checked	Yes	No
3. Personal effects removed and secured	Yes	No	6. Radio communications checked	Yes	No

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**Appendix III: Chemical Decon Line Construction, Equipment and
Supplies List**

1635 **Table 1. Suggested Decon Line Equipment and Supply Checklist**

Suggested Decon Line Equipment and Supply Checklist		
Check	Number	Item and Volume
Exclusion Zone (Steps 1 and 2)		
	2	Folding table (2' by 4')
	2	Portable emergency eyewash and shower
	3	Fire extinguisher (ABC type)
	2	Large trash can
	6	Clorox® Dispatch® bleach wipes or similar
	2	Multi-seat bench or stool
	4	Surgical scissors
	2	Rolls of ChemTape®
	6	Rolls of Paper Towels
	2	Portable light
	6	Zippered gallon-sized plastic bags (boxes or 100)
	3	Bins
	1	Box of trash bags
	1	Eyewash station
Contamination Reduction Zone (Steps 3 through 13)		
	1	Large tent (for Wet Operations), approx. 24' by 60'
	1	Medium tent (Dry Operations), approx. 24' by 30'
	1	24' by 60' tarp/visqueen sheet
	1	24' by 30' tarp
	2 to 4	Portable light
	8	30' berm (for containing Wet and Dry Operations areas)
	2	Enclosed tent for Screening Area
	12	3' by 3' tub
	4	Boot plate to remove boots
	8	Boot scraper/brush board
	16	Stability items to aid standing (e.g., large traffic cone; foldable walker, chair, sawhorse, etc.)
	12	18" by 24" bin for collecting masks, PAPR BMAs, boots, etc.
	8	Folding table (approx. 2' by 6')
	4	Portable hand and face washing station with potable water
	8	Car washing mitt
	6	Garden sprayer or Hudson sprayer (labeled with contents)

Suggested Decon Line Equipment and Supply Checklist		
Check	Number	Item and Volume
	6	55-gal drum (for trash)
	1	Drum dolly for moving aqueous waste drums
	6	Multi-seat bench or stool
	1	Large inner containment basin (for first suit wash)
	1	Hat or coat stand/PAPR hanger/clothesline
	8	5-gal bucket
	16	8-ft anti-slip mat (perforated rubber)
	6	Roll of anti-skid tape
	8	Kitchen timer, for stay time/wet time
	2	Large clock displaying hours, minutes, and seconds
	6	Paramedic information sheets and clipboard
	1	Litter/stretchers (netted is preferred but not required)
	2	Emergency plastic zippered body bag with handles
	4	Roll of Visqueen
	8	Surgical scissors or safety suit cutter (bootie removal and EE corridor)
	1	8' by 10' tarps for patient wrap
	1	Eyewash station
	2	Chlorine monitor
	1	Carbon monoxide monitor
	2	Box of chlorine hydroxide test strips (Cole-Parmer AO-18105-01 High-Level Chlorine Test Strips, 0-10,000 ppm; 50/Pk)
Support Zone (Steps 13 and 14)		
	1	20' by 20' tent (for Medical Monitoring station)
	2	Folding table (2' by 10')
	12	Padded folding chairs
	2	Thermometer, blood pressure monitor, stethoscope
	1	First aid kit
	1	Shower trailer/system for eight personnel
	6	Porta potties or one bathroom trailer
	1	Small refrigerator for drinking water
	2	Fan
	20	Freezer vest and ice inserts
	40	Extra set of ice inserts for freezer vest
	1	Small freezer for ice inserts

Suggested Decon Line Equipment and Supply Checklist		
Check	Number	Item and Volume
	1	Electric washing machine
	1	Electric dryer
	2	Portable light
Expendables and Supplies for Decon Line		
	1	Large gasoline generator, gas can, and gas
	15	Electric extension cord with GFI
	1	100-gallon plastic tank (for mixing the decontamination liquid)
	1	Sump pump for the tank
	2	5' by 5' basin or large container (roll-off) for bagged trash (from decon line ops)
	200	65-gallon drum liner bag
	8	Bundle of hospital chux or absorbent pads
	2 cases	Disposable foot covers/slippers for exiting the CRZ to the shower
	48	1-gallon bottle of household bleach
	24	1-liter bottle of hand/body soap
	8 cases	Clorox® Dispatch® bleach wipes or similar
	1	200-gallon water tank and water
	2 cases	Paper towels (48 rolls/case)
	2 cases	Disposable towels, 48 boxes/case
	2 cases	Gallon-sized zippered bags
	48 pairs	Work gloves (canvas)
	8	Bottles of Anti-fog liquid
	4 cases	Disposable rubber booties – sizes XL to XXL, 100 pair/case
	12 boxes	Nitrile liner gloves with extra or extended cuff (12"), 50 pcs/box
	24 boxes	Nitrile glove liners/sample gloves, 100 pcs/box
	12 boxes	Nitrile outer gloves (green) – XL, 12 pair/box
	12 rolls	Duct tape
	144 pair	3M™ Scott™ OV/AG/P100 cartridges for AV-3000
	48	Splash shields for hard hats
	250	20" by 20" patient belongings bag
	50	Tychem® apron
	4	Boot scraper mat
	4	Boot jack
	10 cases	Hype-Wipe® towels, 24 rolls/packages per case
	2	Potable water truck
	10 cases	Respirator cleaning wipes (12 canisters/case)

Suggested Decon Line Equipment and Supply Checklist		
Check	Number	Item and Volume
	4 bottles	Respirator cleaner
	2 boxes	pH paper
	4	Large bucket for mask cleaning
	100	Drinking water, 48 per case
	50	Gatorade®, 24 per case
	5	Energy snacks
	12	Extra-wide black marker, e.g., Sharpie® Magnum

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Table 2. Suggested Decon Line PPE Supplies Check List Options*

Suggested Decon Line PPE Supplies Checklist Options					
Inner and Outer Suits					
Check	Manufacturer	Material	Fabric	Item Number	Features
	DuPont™	Tychem®	10000	TK554T LY	Level A, Exp Back, Frt Entry, Att. Dual-Layer Gloves, Socks w/ Outer Boot Flaps, Dble Strm Flap; Hook & Loop, Double Taped Seams
	DuPont™	Tychem®	Responder® CSM	RC550T TN	Level A, Exp Back, Frt Entry, Att. Gloves, Socks w/ Outer Boot Flaps, Dble Strm Flap; Hook & Loop, Double Taped Seams
	DuPont™	Tychem®	10000	TK527T LY	Modified Level B, Exp Back, Frt Entry, Elastic Wrists, Socks w/ Outer Boot Flaps, Dble Strm Flap; Hook & Loop, Taped Seams
	DuPont™	Tychem®	6000	TF199T GY	Level B or C, Coverall w/ Resp. Fit Hood, Attached Gloves, Attached Socks, Outer Boot Flaps, Storm Flap, Taped Seams
	DuPont™	Tyvek®	400	TY120S WH	Inner, Coverall w/ Collar, Open Wrists, Open Ankles, Serged Seams, Storm Flap
	DuPont™	Tyvek®	800	TJ198T WH	Inner, overall w/ Resp. Fit Hood, Elastic Wrists, Elastic Ankles, Tyvek® Self-adhesive storm flap, Serged and over-taped seams
	Kappler™	Zytron®	500	Z5H352	Level A, Vapor Total Encapsulating Suit. Must Specify Pass-Thru Option. Pricing includes Standard Pass-Thru 7H. Front Entry AquaSeal® Gas-Tight Zipper, Double Storm Flaps with Hook & Loop Closure, Expanded View AntiFog Visor System, Flat Back, Attached Field Replaceable Butyl Gloves, Attached Sock Booties with Splash Guards and 2 Exhaust Valves.
	Kappler™	Zytron®	500	Z5H426	Level B or C Coverall. Attached Hood with Elastic Face Opening, Front Entry Zipper with LongNeck™ Respirator-Fit Closure, Double Storm Flaps with Hook & Loop Closure, Elastic Wrists and Attached Sock Booties with Splash Guards
	Kappler™	ProVent®	10000	MSE36	Inner Suit, Zipper Closure with Storm Flaps, Attached Hood, Elastic Back Waist, Wrists and Face Opening, Attached Skid-Resistant Shoe/Boot Covers

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Suggested Decon Line PPE Supplies Checklist Options					
Inner and Outer Gloves					
Check	Manufacturer	Item	Material	Model & Item No.	Features
	Ansell	Inner Gloves	Nitrile	MICROFLEX® 93-243	Extra-long cuff
	Ansell	Outer Gloves	Nitrile	Ansell Solvex	Outer gloves
	Tronex	Inner Gloves	Nitrile	Tronex® 9010-20	Exam gloves
	Hourglass International	Inner Gloves	Nitrile	RoyalTouch300™	Exam gloves
	Halyard Health	Inner Gloves	Nitrile	LAVENDER®	Exam gloves
	Kimberly-Clark	Sample Gloves	Nitrile	Kimberly-Clark Purple	Exam gloves
	Honeywell North®	Outer Glove	Silver Shield®	16750	2.7 mil
	Ansell	Outer Glove	Viton Butyl	166377	12-mil, 12 inches

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Suggested Decon Line PPE Supplies Checklist Options					
Inner and Outer Boots and Foot Coverings					
Check	Manufacturer	Item	Material	Model	Website
	Tingley™	Outer Hazmat Boots	PVC	82330.12	https://www.globalindustrial.com/p/safety/foot-protection/boots-shoes/82330-hazproof-steel-toe-boots-orangecream-sure-grip-outsole-size-12?infoParam.campaignId=T9F&gclid=Cj0KCQiAy579BRCPARIsAB6QoIZSHMWn0avL79Lzm1g0KpxD6ReYK9u-ialhOx_bSZTMLujGsvl4h9QaAl-5EALw_wcB
	Bata	Outer Hazmat Boots	PVC	Onguard Hazmax	https://www.amazon.com/Industries-Bata-Shoe-87012-Superpoly/dp/B01NC2TEO8
	OnGuard	Boot Covers or Booties	Latex	806808133472	https://www.safetycompany.com/foot-protection/shoes-and-boot-covers/onguard-97591-12-inch-yellow-latex-hazmat-boot-cover/

Suggested Decon Line PPE Supplies Checklist Options

Inner and Outer Boots and Foot Coverings

Check	Manufacturer	Item	Material	Model	Website
	Dunlop	Boot Covers or Booties	Latex	97591 12	https://www.magidglove.com/Dunlop-Yellow-Latex-Hazmat-Boot-Cover-1-97591XXXL.aspx?utm_source=Google&utm_medium=Merchant%20Center&utm_campaign=Product%20Feed&gclid=Cj0KCQiA2af-BRDzARIsAIVQUOeX0NhN1_dskDqC91HqRS5nRIbg7ZX6uY1mETCO_9e7yUDtAWeXLlIaAiaUEALw_wcB
	Disposable Slippers	Tyvek® foot covers	Tyvek®	PE440SBULG0200	https://www.discountsafetygear.com/duPont-tyvek-shoe-covers-100-pack.html

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Suggested Decon Line PPE Supplies Checklist Options

Respiratory Protection

Check	Manufacturer	Item	Material	Model & Item No.	Notes
	3M™ Scott™	APR	rubber & rubber head harness	AV-3000 with SureSeal; B5005047143	
	3M™ Scott™	APR Bayonet Adapter		B5005285023	For use with cartridges
	3M™ Scott™	PAPR Plus	With AV-3000 mask with SureSeal	C420	APR with rubber head harness
	3M™ Scott™	SCBA	With AV-3000 mask with SureSeal	AirPak 3X Pro SCBA	APR with rubber head harness
	3M™ Scott™	SCBA air tank		60' carbon bottle	5500 psi gauge
	3M™ Scott™ -PAPR	40-mm Cartridges	Enforcement	045123	Pkg of 1
	3M™ Scott™ - APR	742 Cartridges	OV/AG/P100	7422-YD1	Pkg of 2
	3M™ Scott™ - APR	40-mm Cartridges	OV/AG/P100	804990	Pkg 1
	3M™ Scott™ - APR	742 Cartridges	AG/P100	7422-WB1	Pkg of 2
	3M™ Scott™ PAPR	40-mm Cartridges	MPC Plus	80555701	Pkg of 1
	3M™ Scott™ PAPR	40-mm Cartridges	CBRN Cap-1 Canister	045135	Pkg of 1
	3M™ Scott™ Communication	Comms system	EPIC 3 RDI		

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Suggested Decon Line PPE Supplies Checklist Options

Miscellaneous					
Check	Manufacturer	Item	Material	Model & Item No.	Notes
	TECHNICHE™	Ice vest		6529-BLUEL	Sizes: L; XL; 2XL; 3XL
	TECHNICHE™	Extra ice packs			
	DuPont™	Disposable apron	Tyvek®		
	Kappler®	ChemTape®		99402 YW	Chemical resistant
	3M™ Scott™	Duct tape		Tape 3903	Chemical resistant
	DuPont™	Tychem 2000® Tape		QC0990YL000012NL	Chemical resistant

1642 * Please check the HASP and your safety officer for the suggested PPE. Confirm capability with the site-specific chemical agent and decon
 1643 reagents.

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**Appendix IV: Decon Line Procedures for Construction and Disassembly,
and Sample Decon**

Decon Line Set-up and Construction

The most critical element of the decontamination (decon) line (DL) is that it must be flexible to meet the situation's requirements. The procedures for setting up the decontamination line must be tailored to site-specific hazards and will vary in complexity, depending on the chemical agent(s) or hazardous chemicals, the items being decontaminated, the number of workers, equipment and/or samples to be decontaminated, and site and prevailing environmental conditions (e.g., wind, temperature, precipitation). The equipment used to set up the decon line may vary by availability, inventory, cost, and preference of the entity charged with the decon line setup.

The decon line should be described in a Decontamination Plan prepared before working on the site. This Decon Plan will provide details on the contaminants to be deconned, the DL location, the number of personnel to be deconned, the decontamination solutions to be used, and a description and drawing (optional) of the setup and steps in the line. The decon line is set up in the Contamination Reduction Zone (CRZ), in an area free of contamination, flat, stable base, ample drainage, and is free of rocks and large debris. It should be placed in a location that is upwind of the EZ and in an area with no overhead hazards, if practical. The decon line should be constructed with durable materials to withstand high moisture and continued use for the time necessary to complete the work on site. If possible, tents or structures designed for decon should be used. The DL may require a source of water and electricity for the proper operation, which may be available on the site or need to be provided from an available source.

The recommended layout of the Chemical DL extends from the EZ to the Support Zone (SZ) and comprises a Wet Operations area and a Dry Operations area. Appendix I of the SOP presents a detailed drawing of the DL. A checklist of materials needed to construct the DL is found in Appendix III.

Before initiating decontamination of personnel, an appropriate DL staging area for the spent decon solutions and trash should be set up according to the Waste Management Plan. The staging area should be an adjacent area to the DL. The aqueous waste should be properly contained in drums or tanks in a bermed area until disposal can be arranged. Check with the waste disposal company to determine the planned disposition of the waste, the required container types, and any other disposal requirements.

Sample Decon Procedures

Before the sample team enters the site's EZ, sample decontamination guidelines and procedures will be established. The guidelines and procedures will be established based on site conditions or following protocols from the lead forensic team (such as the Federal Bureau of

Investigation (FBI) or EPA's National Criminal Enforcement Response Team (NCERT). After consultation with the analytical laboratory and transportation consideration, sample decontamination and packaging requirements will be site-specific and outlined in the Sampling and Analysis Plan (SAP). The laboratory will provide information on appropriate decontamination solutions and packaging requirements for sample receipt. The chain of custody (COC) must be maintained during sample decontamination. In the field upon collection, samples will be placed into labeled sample containers and then placed and tightly sealed into a labeled plastic bag along with the COC. The steps summarized below may be used to decontaminate these outer plastic sample bags before transport to the laboratory for analysis:

- Wipe the outside of the plastic bag containing the samples with disposable bleach cloths (such as Clorox® Dispatch®) or another type of disposable cloth with a laboratory-approved decontamination solution. Under some circumstances, these cloths may be the same wipe cloths used for personnel decontamination.
- Place each plastic sample bag into another labeled plastic bag. Keep the air in the outer plastic bags to a minimum.
- Place all samples into a clean over-pack, such as a sealable cooler, with appropriate paperwork and custody seals for transport to the laboratory.
- In general, samples should be transported to the laboratory on ice at 2 to 8° C in a cooler or special box and analyzed within the method's hold time. Check with the Site Quality Assurance Project Plan (QAPP) or SAP for any specific instructions for shipping samples.
- The preferred method of delivering the samples to the laboratory would be for a courier to pick up the samples from the site or site personnel hand-delivering the samples to the laboratory. If either of these options is not available, ship the sample via overnight shipment to the laboratory. Department of Transportation and International Association of Air Transportation (IATA) regulations for shipments of samples with known chemical agents as well as hazardous chemicals should be investigated. Refer to the site QAPP or SAP for additional information regarding the proper transport of samples to the laboratory via a carrier (air, rail, or road).

CRZ Breakdown

The DLAs will be responsible for breaking down the CRZ, including the decon line starting at the EZ and finishing at the SZ. All solid waste (e.g., used PPE, poly sheeting, etc.) will be collected, consolidated, and appropriately sealed following disposal packaging requirements. Items that will be reused will need to be decontaminated during this process. Any stools, tables, tubs or basins, and other items that will be reused shall be deconned by the DLAs and the aqueous wastes collected. Aqueous and solid wastes will be collected and transferred into the minimum number of appropriate containers (e.g., drums, totes, roll-offs, etc.) and disposed of per the

1733 local, state, and federal regulations.

1735 Decon Line Disassembly

1736 A final doffing station must first be established by placing heavy-duty plastic sheeting (e.g., 2
1737 mils) on the ground in the SZ but just outside the CRZ. A hand washing station must be included
1738 (see below). To break down the DL, personnel must start at the end near the EZ and
1739 disassemble the line towards the SZ. The breakdown should be conducted in Modified Level C
1740 (i.e., nitrile gloves and latex booties). Caution must be exercised to minimize cross-
1741 contamination of any residual virus that may be on the decon line structures.

- 1742 • Once all EZW have exited through the DL, DLAs must containerize all solid and aqueous
1743 waste (except for what they need to clean themselves). They should also dry the floor
1744 on the Wet Operations side.
- 1745 • Clean (wipe or spray) and push out (through support zone) all unneeded containers,
1746 seats, tools, and instruments from the drop area. Leave large tubs and berms in place.
- 1747 • All disposable items will be double-bagged and packaged to comply with the
1748 transportation and disposal requirements. Aqueous and solid waste should be kept
1749 separate.
- 1750 • After completing the decon line's disassembly, personnel will move onto the final
1751 doffing station, doff their PPE, and containerize as appropriate. They must wash their
1752 hands and faces and comply with HASP requirements. A final inspection should also be
1753 conducted to determine if the decon pad area needs to be sprayed down after
1754 disassembly.
- 1755 • DL workers pair up and proceed thru all DL stations (2nd gross decon thru hand/face
1756 wash and exit). The last pair sets up a sump or contains any liquids as they leave wet
1757 ops, using extra gloves as needed, before proceeding to the dry side of decon.
- 1758 • A follow-up team (Level D; no EZ protection needed; no liquids) can complete removal
1759 of berms and large tubs, perform final tent collapse when dry.

Attachment A – Bleach Decon Solution Preparation

The standard decontamination solution for chemicals is a 0.5% sodium hypochlorite (NaClO_2) solution or 0.5% calcium hypochlorite (CaClO_2) solution for a minimum contact time of 5 minutes (McGuire et al. 2001). Regular liquid household bleach contains from 5.25% to 6.15% NaClO_2 . Thus, a 1:10 dilution or 10% (**1 part household bleach to 9 parts water**) provides about 5,250 to 6,150 ppm available chlorine (CDC 2008).

Only household bleach (5% NaClO_2) should be used for this procedure. More concentrated products such as Clorox® Disinfecting Bleach, Splash-Less Bleach, or Germicidal Bleach must not be used.

HEALTH & SAFETY

When mixing bleach solutions, proper safety precautions need to be taken. Refer to the Site Health & Safety Plan (HASP) and consult the Site H&S Officer. Mixing should be done in an open area or only with adequate ventilation if in an enclosed area. Hand and skin (chemical protective gloves and coverall) and eye and face protection (safety glasses or face shield) must be worn. Monitoring chlorine levels with handheld monitors or a colorimetric tube (e.g., Draeger tube) is an option.

The following PPE is required:

- If the solution is mixed indoors, Level B: SCBA or supplied-air respirator, eye/face protection, hand and skin protection, and the buddy system.
- If the solution is mixed outdoors, Level C with chlorine cartridges.

Note: To ensure safe exposure levels, use either a real-time chlorine gas handheld monitor or a colorimetric tube (e.g., Draeger tube) could be used to check for the level of chlorine in the air.

REMINDERS

- Track/record the date, time, and the number of bleach batches made each day, the volume of each batch, and the number of bottles of bleach used. A Bleach Batch Tracking Form is found in Appendix VII.
- Bleach decontamination solutions that get dirty quickly may need to be replaced more frequently.
- Mix new batches of solution as needed throughout the process.

PREPARATION OF LARGE QUANTITY (200 GALLONS) OF BLEACH SOLUTION

The initial bleach solution is prepared and blended in a 200-gallon tank using the following procedure (water is added in two doses to ensure proper mixing). Note: Only mix as needed.

- Add 20 gallons (2,560 ounces) of regular Clorox® liquid household bleach to the tank.

Note: Use only household bleach (5% NaClO₂). Do not use concentrated products such as Clorox® Disinfecting Bleach, Splash-Less Bleach, or Germicidal Bleach.

- Add approximately 50 gallons of water.
- Add water to nearly (but not completely) fill the 200-gallon tank.

PREPARATION OF SMALLER QUANTITY (50 GALLONS) OF BLEACH SOLUTION

If desired, 50-gallon batches of bleach solution can be made and stored in polyethylene 55-gallon drums using the following procedure. **Note:** Only mix as needed.

- Add 5 gallons (640 ounces) of regular Clorox® liquid household bleach to the drum.
- **Note:** Use only household bleach (5% NaClO₂). Do not use concentrated products such as Clorox® Disinfecting Bleach, Splash-Less Bleach, or Germicidal Bleach. Add approximately 10 gallons of water.
- Add water to nearly (but not completely) fill the 55-gallon drum.
- Use chlorine hydroxide test strips to determine if chlorine levels are acceptable (Cole-Parmer AO-18105-01 High-Level Chlorine Test Strips, 0-10,000 ppm; 50/Pk)

USE OF GARDEN OR HUDSON SPRAYER

Choose the appropriate decon solution for the contaminant of concern. (See Appendix IV, Attachment B for Chemical Agent decon solutions). Clearly mark in large letters on the garden or Hudson sprayer the contents of the sprayer and applicable concentration (e.g., 10% Bleach Solution). If the contents change at any time, correctly relabel the sprayer.

DISPOSAL

Check the Waste Management Plan for steps for decon solution disposal instructions.

1827 **Attachment B – Table of Decontamination Technologies for Surfaces**

DECON TECHNOLOGY	HD		VX		G AGENTS		CORROSIVENESS	TOXICITY	DEPLOYMENT	COST	RESIDUE	SOURCE
	Contact Time	Efficacy	Contact Time	Efficacy	Contact Time	Efficacy						
DF-200 ¹	30 min	>99.8%	30 min	>99.8%	30 min	>99.9%	L	L	M	M	Yes	Proprietary; Modec, Inc., EnviroFoam Technologies Inc.
L-Gel ²	24 hr.	100%	24 hr.	69% on asphalt 99% on concrete	24 hr.	98% on asphalt 99% on concrete	M	L	M	M	Yes	Proprietary; LLNL
HTH ³	5 min	✓	5 min	✓	5 min	✓	H	H	H	L	No	Non-proprietary; easily formulated
STB ³	30 min	✓	30 min	✓	30 min	✓	H	H	M	L	No	Non-proprietary; easily formulated
Bleach ^{3,4}	5 min	✓	5 min	✓	5 min	✓	H	H	M	L	No	Non-proprietary; widely available
CASCAD ⁵	5 min	>99.95%	5 min	✓	5 min	>99%	L	L	M	M	Yes	Proprietary; Allen-Vanguard
GDS 2000 ⁶	1 min 3 hrs.	>99.8% 99.87%	1 min 3 hrs.	>99.8% 99.97%	1 min 3 hr.	>99.8% 99.95%	—	—	M	—	Yes	Proprietary; Kärcher Futuretech
Decon Green ⁷	20 min 15 min	99.9% 99%	20 min 15 min	>99.9% 96%	20 min 15 min	>99.9% 90%	H	H	M	M	Yes	Proprietary; Strategic Technologies Enterprises
Liquid ClO ₂ ⁸	Minutes	Good	Hours	Poor	—	None	M-H	M-H	M	L	No	Non-proprietary; widely available
All-Clear ⁹	—	—	—	—	30 min	95%	L	L	M	—	—	Proprietary; Kidde
BIT ¹⁰	sec-min	98%	sec-min	99% >99.999%	sec-min	99%	L	L	M	M	No	Proprietary. L3 Titan

1828 **Notes:**

- 1829 ☐ Technology stated to be effective, but numerical value not given
- 1830 — Data not available
- 1831 For corrosiveness, toxicity, and cost, L indicates low, M indicates medium, and H indicates high.
- 1832 For deployment, L indicates easy, M indicates moderately difficult, and H indicates highly difficult.
- 1833 For residue, YES indicates the presence of visually noticeable residue that must be cleaned off before reuse.
- 1834 1. DF-200 efficacy measured in surface testing on chemical agent-resistant coating (CARC) coupons in DOD
- 1835 testing
- 1836 2. Surface testing on concrete and asphalt surfaces, respectively (Raber et al. 2002), alkyd paint,
- 1837 polyurethane paint, and indoor-outdoor carpet
- 1838 3. Hoenig 2002; CDC 2004
- 1839 4. Household bleach (5% sodium hypochlorite in water) diluted by adding 1 part bleach to 9 parts water
- 1840 (McGuire et al. 2001)
- 1841 5. Laboratory stirred-reactor data from Allen-Vanguard 2005
- 1842 6. First numbers: laboratory stirred-reactor data (Franke and Toepfer 2002). Second numbers: field tests on
- 1843 painted metal at 12.5°C, includes cold water wash after treatment (Toepfer 2002).
- 1844 7. Agent removal on CARC coupons (Wagner 2004)
- 1845 8. Extrapolation from performance of vaporous chlorine dioxide; performance of liquid may differ
- 1846 9. USGN 2005
- 1847 10. Binary Ionization Technology (BIT) from L-3 Communications/Applied Technologies/Titan Corporation;
- 1848 numbers primarily for painted surfaces (CARC); additional numbers for VX for bare metal surface
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Appendix V: Decon Line Supervisor Lists

Decon Line Supervisor Critical List Handout

Decon Line Supervisors (DLS) are the primary authority on decontamination for all personnel who come through the decon line. The DLS will manage DL operations, including safety, emergencies, staffing, and general operations. The DLS will ensure that all activities at Stations 1 through 15 of this SOP are completed, aqueous waste and decon solutions are exchanged frequently, decon is executed safely, staffing is appropriate, waste is managed, contact times are met, the pace of the decon line matches the flow of Exclusion Zone workers (EZWs) entering the DL, and emergencies are handled. The DL Supervisor will ensure that the specific tasks outlined in the procedures in this SOP will be executed to ensure all workers who exit the decon line are indeed clean at each station. Below are some items that may deserve special attention.

General

- Refer to the Safety and Construction Considerations section on page 4 of this document and ensure that relevant recommendations are implemented.
- Have signage and instructions at each decon step/station (see Appendix VI), so roles and responsibilities are clear. Consider printing the instructions in large font and placing them in clear covers at each station.
- Use the emergency egress corridor (EEC) to supervise all areas. This corridor is primarily unused and provides a relatively clean and clear position to oversee all stations.
- All EZWs and Decon Line Attendants (DLAs) should have staged a change of clothing in a personal belongings bag in the post-shower area before beginning work.
- All EZWs and DLAs should have no skin showing. Check especially around the mask and throat area, giving guidance or assistance as needed.
- All EZWs and DLAs should receive a decon line walk-through brief, with training and explanations at each station, before entering the EZ. Also, EZWs should practice and become proficient with each step of the site-specific decontamination procedures.
- The DLS may need to control traffic if the EEC is used concurrently with regular decon ops. Escorting an incapacitated worker takes priority, and all activities should pause to devote attention to the emergency. Escorts may break into the decon line, and backup entry teams may assist. Remind workers to respect the process.
- Monitor the volumes and/or amounts of supplies available and ensure supplies are adequate in advance of need.
- Monitor waste volumes as they accumulate. Bulk amounts of dry waste (all trash except liquids) can be handed to the waste storage area across the EEC. Full aqueous waste drums can be topped off and dollied to the same location.

- 1896
- Consider pre-mixing bleach for supply to the decon line.
- 1897
- DLAs should not cross the berm or benches/stools where Wet and Dry Operations are separated. Wet Operations DLAs stay in the Wet Operations area.
- 1898
- 1899
- The floor of Dry Operations (Steps 10-13) in DL should stay dry; have an attendant on the dry side keep the floor dry with mats, hospital chux, or pads. Provide Tyvek® slippers to decon entrants to protect feet if needed.
- 1900
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At Each Station

Tool, instrument, sample drops, and downrange PPE

- 1904
- Have EZWs drop tools, instruments, and samples at their specific locations.
 - Tools and instruments will be dropped in the EZ at Step 1 of the DL.
 - In the CRZ, Step 2 is the Sample Drop area. Step 3 is the location where EZWs should discard any disposable sample supplies or remove task-specific PPE (task-specific work gloves, over-booties, splash shields, hard hats, or aprons) and place it in a trash container at this step.
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- 1912

Outer boot wash 1 and 2 and glove wash in Steps 4 and 5

- 1913
- Keep decon solution in 1st Wash in Step 4 and 2nd Wash tub in Step 5 relatively clean; have DLA replace as necessary, at least once per four hours.
 - DLA should greet each exiting EZW, checking for responsiveness and welfare.
 - Place a boot brush plate in each of the two boot wash pools to facilitate cleaning.
- 1914
- 1915
- 1916
- 1917
- 1918

Outer suit, boot, and glove wash (disinfection)

- 1919
- Ensure the area is large enough to process multiple workers (up to four) simultaneously.
 - Use curtains or tarps to limit overspray.
 - Use timers to ensure accurate contact time.
 - Manage the contact time for each worker on the form found in Attachment A of this Appendix.
 - Ensure workers get thoroughly sprayed/wiped and remain wet for the entire contact time.
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Outer PPE (gloves and suit) removal

- 1928
- Be sure that workers and attendants are clear about the steps at this station.
 - The DLA performs all PPE removal, instructing the worker where and when to sit, stand, and place their feet as PPE is removed.
 - Exiting workers move from Wet Ops to Dry Ops at this station. DLAs should not cross
- 1929
- 1930
- 1931
- 1932

- 1933 this line (keep Wet Ops and Dry Ops DLAs separate).
- 1934 • DLAs must avoid cross-contamination by removing and replacing their outer gloves to
- 1935 handle clean and dirty parts of EZW's PPE.

1936

1937 Inner suit wipe and removal

- 1938 • Ensure the DLA carefully wipes the arm cuffs, zipper, hood near the mask, and inner
- 1939 gloves before any PPE is removed.
- 1940 • The DLA should not break the EZW's mask seal as the inner suit is doffed.

1941

1942 Mask removal

- 1943 • The decon line must be able to handle both PAPR and APR-wearing workers. Step 12 will
- 1944 need an extra container for PAPR blowers.
- 1945 • DLAs can perform decon of facepieces and move these to the Support Zone (SZ) for air
- 1946 drying and recovery by workers.

1947

1948 Inner glove removal and face wash

- 1949 • Exiting workers perform this themselves, but the face and hand wash station must be
- 1950 kept clean and supplied with potable water and soap.

1951

1952 Overall comments

- 1953 • Remove trash as it gets full

1954

1955 The diagram in Appendix I shows how Steps 1-15 (described earlier in this SOP document) can

1956 be implemented. Red arrows represent the workers' path from exiting the EZ through the

1957 decon line. The updated layout resulted from a 2-day exercise specifically implementing this

1958 decon line SOP, with an after-action review by all players and observers. The steps are:

1959

- 1960 1. Initial gross decon – Should be conducted in the EZ if any contamination is observed on
- 1961 the worker's PPE. Gross decon should consist of spraying the affected area with the
- 1962 bleach solution and wiping off the visible contamination. Work gloves should also be
- 1963 doffed in the EZ.
- 1964 2. Tool and instrument drop – Have two separate drops, as tools are sturdy and likely to be
- 1965 contaminated, whereas instruments are delicate and less likely to be contaminated.
- 1966 3. Outer boot and glove wash – Use more than one station to minimize the chances of
- 1967 bringing bulk amounts of contamination out of the EZ.
- 1968 4. Wet Operations (glove, suit, and boot wash) – Use a large area where up to four
- 1969 workers can be simultaneously disinfected via spray/mist/wash and remain for the
- 1970 required contact time. Space and time are the primary bottlenecks to the

- 1971 decontamination line process.
- 1972 5. Wet Operations (outer PPE doff) – A significant concern is having two locations with
- 1973 enough room to remove the outer suit properly and prevent cross-contamination.
- 1974 6. Dry Operations (inner suit doff) – Moving to the dry side provides more safety and
- 1975 comfort as workers do not wear shoes and have less foot protection when they remove
- 1976 PPE.
- 1977 7. Dry Operations (mask removal) – A mask removal station uses a dedicated attendant to
- 1978 wash and rinse masks (and hoses if PAPRs are used) and store/clean PAPR blowers.
- 1979 8. Inner glove removal and hand/face wash – Separating these areas to allow eyewash or
- 1980 field hand wash stations rather than a single basin is more sanitary and appealing.
- 1981 9. Shower facilities and medical monitoring are conducted in the Support Zone.
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Appendix VI – Decon Line Contact Time Tracking Form

Contact Time Tracking Form

#	Start Time	Stop Time	Name	Agency/Company	Date
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Appendix VII – Bleach Batch Tracking Form

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Bleach Batch Tracking Form

Batch	Date	Time	Total Volume of Batch	Volume of Bleach in Batch	Chlorine Test Strip Reading (ppm = mg/L)	Name of Mixer
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Appendix VIII – Decon Line Signage

2030 **Signs for Decon Line**

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2032 Provided are generic signs for the decon line. Decon line supervisors are encouraged to meet with
2033 their personnel to customize these signs for specific decon line setups.

2034

2035 Steps should ***not*** be eliminated, only clarified. Adding pictures is encouraged.

2036

Step 1 - Tool Drop

**Place all tools in this designated
drop area before entering the
decon line.**

Step 1 - Instrument Drop

**Place all instruments in this
designated drop area before
entering the decon line.**

Step 2 -Sample Drop

**Place all samples in this
designated drop area before
entering the decon line.**

**Ensure all samples are relinquished
to the Sample DLA.**

Step 3 -

Doff Booties and Task PPE and PPE Inspection

Sit on a bench and remove booties and remove task PPE. Place in a bin for re-use or in the trash can. Inspect PPE for tears or contamination.

Step 4 - 1st Gross Decon:

Boot & Glove Wash

Follow DLA's instructions.

Check for gross contamination.

DO NOT SPLASH

Step 5 - 2nd Gross Decon: Boots, Glove & Suit Wash

Follow DLA's instructions.

**Monitor the timer to ensure that
the contact time is reached.**

Step 6 -

Full Decon of All Surfaces

Follow DLA's instructions.

DLA will rinse your suit, boots, and gloves. Make sure the decon contact time is met.

Step 7a - PPE Rinse

Follow DLA's instructions.
The DLA will rinse you off from
head to toe.

Step 7b - PPE Dry

Follow DLA's instructions.
The DLA will dry you off with
disposable towels.

Step 8 - Contaminant Screening & Monitoring

Follow DLA's instructions.

The DLA will screen and monitor
you for contamination.

Step 9 - Doff Outer Boots

Sit on the bench near the berm
between Wet Operations & Dry
Operations.

Follow DLA's instructions precisely.

Step 10 - Doff Outer Gloves & Suit and SCBA

Follow DLA's instructions precisely.
DLA will remove outer gloves & suit,
& SCBA.

Keep the mask on & PAPR running.

Step 11 -

Inner Suit Removal

Follow DLA's instructions
precisely.

DLA will remove your inner suit.

Step 12 - Glove Wash/Rinse & Mask Removal

Wash hands with soap and water and
then rinse. Keep inner gloves on.
Remove mask as directed by DLA.

Step 13

Inner Glove Removal and Hand & Face Wash

Remove your inner gloves & place them in the trash can. Wash your hands & face at the wash station.

Step 14

Personal Shower & Clothes Change

Disrobe, bag worn clothing, & bring it through shower tent. Take a shower using soap & potable water for 5 minutes. Dry off with a disposable towel. Change into clean clothing. Proceed to Medical Monitoring.

Step 17

Medical Monitoring

Report to the medical monitoring station for post-entry monitoring and meet with appropriate personnel for debriefing.

Take a rest break and drink fluids.

Emergency Egress Decon Procedure

Recommended Procedures for Incapacitated Workers:

- The DL Supervisor should ensure 9-1-1 has been called. Ask if responders want the patient wrapped and any other instructions.
- At least two backup team members should go to the front of the decon line (through the emergency egress corridor (EEC), carrying the litter/stretchers. A tarp should cover it.
- Remove the SCBA or PAPR belt and BMA, but do not unhook regulators and maintain air. Place the incapacitated worker onto the tarp on the litter, face up with SCBA or PAPR BMA, and belt next to them on the litter.
- The backup team members will carry the worker on the litter through the EEC.
- The outer suit and gloves will be misted or wiped thoroughly with Hype-Wipe®. Alternatively, responders can use a car-wash mitt dipped in a decon solution to wipe the outer suit and gloves.
- Cut the outer suit away from the worker's body, making an extended cut with medical scissors from the neck to below the waist. Then, cut the suit from below the waist down each leg to the heel.
- Use caution when removing the outer suit, particularly the hood, being careful not to disturb the mask seal on the face.