

## **Suit up and Decon**

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Time Requirement: 2-3 hours total (depending on task selected)

Number of Instructors: Minimum of 2, consistent with ratio in Minimum Criteria

### **Materials**

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- Participant Guide and worksheets
- Whiteboard or equivalent; markers
- Personal Protective Equipment (PPE) and supplies for Decon line
- Damaged/degraded PPE for the inspection activity prior to donning

### **Objectives**

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When completed, participants will be better able to:

- Demonstrate ability to inspect provided PPE
- Set up decontamination zones for a hazard
- Demonstrate ability to dressout in Level B or C
- Demonstrate ability to perform decon

## **Teaching Methods**

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- Presentation/discussion
- Demonstration
- Small-group activity
- Individual activity

## **Suggested Instructor Preparation**

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- Review Participant Guide and exercises
- Test all web links prior to the session and if any are inoperative please notify your Program Director
- Review the Chemical Protective Clothing (CPC), Respirator, Work Practices and Decon sections of the HAZWOPER program that these participants have completed
- Review 29CFR1910.120, with special attention to paragraph k for site workers, p(8)(i) for TSDF, and q for ER
- Obtain company-specific Standard Operating Procedures (SOPs) or use Standard Operating Guideline (SOGs) from the long programs already completed
- If possible, review company-specific SCBA and equipment
- Select an activity for the entry team. Through reconnaissance you may be able to identify a site-specific drill.
- Prepare copies of the worksheet
- Prepare an outline for notes to be included in the program file
- Ensure that you have assembled all the materials needed for each exercise

## **Minimum Content Requirements**

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- Review different types of chemical protective clothing (CPC) that are available
- Selection considerations
- Different levels of protection of PPE
- Characteristics and properties
- Precautions when wearing CPC
- Inspect provided PPE
- Don and doff Level B or C
- Set up decontamination zones for a hazard
- Perform decon

## **Questions You May Be Asked**

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1. Participants might remark, "We don't do the inspection this way at our site. So what are we supposed to do?" You should be prepared to facilitate a discussion about working through union or management representatives to facilitate review and possible changes in the facility Health and Safety Plan (HASP). Emphasize that HAZWOPER requires the development and implementation of written procedures. Alternative procedures may be effective. Stress that inspection should be performed.

2. Participants may ask, "Am I dragging contaminants around the plant and into my car and home if I don't follow decon properly?" The answer is yes. Use this opportunity to reinforce the need for proper decon to protect family members and the community.

3. Be prepared to discuss the company Respiratory Protection Program. Some participants may not know it exists, or question if it is complete. For open enrollment, general approaches of working through union or company health and safety officers to obtain a copy should be discussed. For contract programs, learn specific contacts as part of reconnaissance.

4. Participants may question whether various procedures are adequate ('I just keep the face piece in the bottom of my locker'). For contract programs, reconnaissance will provide you with information about the written procedures, but these may not be implemented.

5. "What do I do when my employer tells me there is no budget to get new suits, but I have lost weight and need a smaller size?" Be prepared to facilitate a discussion on strategies to improve the company program through discussions with employee or

management representatives. Emphasize that the law requires that employers provide protective gear. Perhaps the employer is waiting to order a smaller size when the current supply runs out?

6. "What about facial hair? My employer has a 'no beard' policy, and I don't like it."

Emphasize that facial hair prevents a good fit, resulting in exposure to toxic substances.

7. "What is the buddy system and how is it used in the decon process?" Explain that the buddy system is where you are paired with another worker and you help one another and watch for signs of exposure, lack of air, or other responses to hazards.

8. "What about medical clearance?" Facilitate a discussion of the stresses of wearing PPE. Medical clearance is needed for respirator use; employers may have additional requirements based on other PPE.

### **Presentation of the Session**

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This session can be presented as follows:

- Review objectives
- Review the figures in the Participant Guide

### **Chemical-Protective Clothing**

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Ask: Why is protective clothing necessary?

Ask: What are the types of protective clothing you have used at a work site?

Ask: What are situations in which protective clothing is required?

List responses where the entire class can see them.

Ask: What considerations should be made when selecting protective clothing?

List responses where the entire class can see them.

Refer to hazards that the group might be exposed to.

## **Types of Chemical-Protective Suits**

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- Emphasize that different types of CPC are needed to protect against different hazards.
- Stress that totally encapsulating chemical-protective (TEPC) suits are the only ones that can protect from vapor hazards.
- Also note that CPC can have an expiration date, because it can and does degrade even in storage.

## **Selection of PPE**

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Ask: What hazards are present at your current work site or at sites where you have worked in the past?

List responses where all participants can see them. Point out that different hazards will require different PPE.

## **Levels of PPE**

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Ask: What equipment, according to OSHA, makes up Level A protective clothing? and "What is required, and what is optional equipment?"

If available, have a second instructor demonstrate the equipment for Level A.

Ask: When is Level A equipment necessary?

Repeat these questions and demonstration for Levels B, C, and D protection.

Non-vapor-tight TECPs may be used for Level B protection.

List 5 precautions to consider when selecting CPC, as listed in Participant Guide.

Have participants make a list of five precautions to consider. This task should take about 3 minutes. Ask for volunteers to state what they considered.

List participant responses where everyone in the class can see them. Add additional responses to complete the list.

## **Characteristics and Properties of CPC**

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Discuss the terms Penetration, Degradation, and Permeation shown in the Participant Guide by reviewing the figures.

## **Precautions When Wearing CPC**

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Refer participants to the Participant materials for a list of precautions in the use of CPC.

Ask: How can you minimize each of the following potential hazards?

- Hearing impairment
- Vision impairment
- Heat stress
- Slips, trips, and falls

Emphasize:

- Care taken when donning and doffing gloves to avoid rips and tears
- Avoid placing hands and knees on the ground to prevent permeation of chemicals and abrasion of suit material
- Use of the buddy system

## **Inspection, Maintenance, and Storage of CPC**

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Ask: Why is it important to inspect, maintain, and properly store CPC?

Demonstrate how to inspect CPC including examining suits for cuts, holes, rips and tears, abrasions, weakness in zippers, signs of malfunctioning, and discolorations and visible chemical contaminants.

## **Donning and Doffing a Level of Protection**

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Stress the following:

- PPE should be inspected every time it is donned and doffed
- All tape should include tabs for ease of removal

- Positive and negative pressure checks of respirators should be performed every time a respirator is donned

### Decontamination - Introduction

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Ask: Why is decon important? What should be considered?

Make a list of the participant responses where everybody can see them. You can fill in items omitted and refer participants to the introductory material in the chapter.

Another useful introduction might include several pictures of a decon line.

A short (Running time: 1:18) video of a decon line in action can be found at:

<http://www.youtube.com/watch?v=-s1Aukknw8>. This video (which has no audio) could be watched critically, and criticized for deficiencies at the end of the chapter.

### Pre-Planning for Decontamination

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The Health and Safety Plan (HASP) needs to be kept up to date for the hazards currently present at the site.

### Preventing Contamination

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PPE is not foolproof. For best protection of your health, always avoid direct contact with contaminants as far as possible.

Emphasize that sound engineering controls can significantly reduce or eliminate vapor hazards.

### Work Zones

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Establishing work zones helps to control contamination and protect the health of workers, their families and the community.

### Primary Activities in Each Work Zone

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The decontamination process takes place in the Warm Zone.

### Decontamination Procedures

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Equipment must be properly decontaminated. Any liquids and disposables must also be disposed of properly.

### Decontamination Line

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Proper removal of PPE in the decontamination line will allow the employee to leave the site without bringing contamination along.

Ask: From your experience, what procedures have you used to accomplish each of these?

- Protecting Decon Line Workers
- Emergency Decon
- Deconning SCBA
- Preventing spread
- Disposal
- Precautions during decon



## **Exercise – Suit-up and Decontamination**

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During this exercise participants will have the opportunity to inspect and then don and doff PPE ensembles for a decon line work.

Checklists can be found at the end of this Facilitator Guide.

### **Materials**

Minimum PPE and devices:

- SCBAs or APRs assigned to participants
- 24 Chemical-protective suits-assorted sizes and brands (one with a tear)
- 24 Pairs of long outer gloves (include some that will need to be replaced)
- 24 Pairs of inner gloves (include some that will need to be replaced)
- 24 Pairs steel-toe, chemical-resistant boots
- Duct tape
- Hard hats (optional)
- Disposable outer boots (optional)
- Two-way communication system (optional)
- Disposable suits (optional)
- Ear protection devices-muffs and plugs (optional)
- Ice vest/cooling system (optional)
- Lab Performance Checklists (one set per participant)

Minimum Decon Line Equipment:

- (3) pools or tubs
- Plastic sheeting, 15' x 45' minimum, 4 mil thick or greater
- Assorted brushes, minimum of 3 long-handled
- (3) Garden hoses with water hook-up and backflow preventer or 3 garden sprayers
- (4) Stools or three-step ladders (If using Level A, provide enough for suiting up, doffing, and decon.)
- (3) Trash bins with liners

- Clipboard and pen (one per participant)
- Lab Performance Checklists (one set per participant)
- Clothing racks

NOTE: if you have GloGerm or Glitterbug and a UV light available, it can be used to determine the completeness of decon. See <http://www.glogerm.com/>. Use care to use the UV light only on the PPE to prevent any burns to participants or instructors.

### Presentation

Set up the area with PPE. Equipment should be displayed so participants have the opportunity to handle it. Be sure that each participant has a buddy.

Set up three stations as follows and rotate the teams through the three stations:

- Inspect and Don PPE (15-25 minutes)
- Decon and Doff PPE (15-25 minutes)
- Set up and Assist with Decon (30-50 minutes)

Two options, depending on class size:

- Option A: Divide the class into three teams
- Option B: If the class is very large, create four teams

### Option A: 3 Teams

Phase 1:

- Team 1 sets up and performs decon line
- Team 2 dons PPE, goes through decon line, and doffs PPE
- Team 3 assists Team 2 donning and observes decon line

Phase 2:

- Team 1 dons PPE, goes through decon line, and doffs PPE
- Team 2 assists Team 1 donning and observes decon line
- Team 3 sets up and performs decon line

Phase 3:

- Team 1 assists Team 3 donning and observes decon line
- Team 2 sets up and performs decon line
- Team 3 dons PPE, goes through decon line, and doffs PPE

### Option B: 4 Teams

#### Phase 1:

- Team 1 (up to 8 participants) begins donning
- Team 2 (up to 4-6 participants) assists with donning
- Teams 3 and 4 (up to 4-6 participants each) set up decon line

#### Phase 2:

- Team 1 passes through decon line
- Team 2 begins donning
- Team 3 assists with donning
- Team 4 performs decon line

#### Phase 3:

- Team 1 performs decon line
- Team 2 passes through decon line
- Team 3 begins donning
- Team 4 assists with donning

#### Phase 4:

- Team 1 assists with donning
- Team 2 performs decon line
- Team 3 passes through decon line
- Team 4 begins donning

#### Phase 5:

- Team 1 performs decon line
- Team 2 observes
- Team 3 assists with donning
- Team 4 passes through decon line

### **Donning PPE**

- Demonstrate each piece of PPE, as needed
- Review CPC inspection procedures, as needed. Emphasize degradation and permeation concepts
- With one person, demonstrate proper donning procedures

- Refer to manufacturer instructions for donning the SCBA
  - Example of method to check SCBA for proper operation:
    - Make sure both valves are closed
    - Open bottle valve fully. (Bell on gauge will ring.)
    - Turn the bottle valve back 1/4 or about one twist of the wrist
    - Open the main-line valve, and check to see if the regulator pressure gauge matches what was showing on the bottle pressure gauge
    - Close the cylinder valve. Make sure that the air pressure does not drop by 100 psig in 30 seconds
    - Very slowly, purge air from the regulator outlet. The needle of the gauge will drop slowly. The low-air alarm rings when the gauge is between 600 and 500 psig.
    - Close the main-line valve by pressing in on the release pin, and turn clockwise (to the closed position)
- Hand out copies of the Checklists. Have each participant complete the checklists, give to you to sign, and turn in.

### Level B

- Put on suit
- Tape sleeves and pant legs
- Put on SCBA
- Tape on hood/mask
- Proceed single-file through decon line
- Complete lab performance checklist

### Level C

- Put on suit
- Tape sleeves and pant legs
- Put on APR
- Tape on hood, if necessary
- Proceed single-file through decon line
- Complete lab performance checklist
- Review inspection and maintenance of PPE

### Set up Decon Line and Assist with Decon

#### Option A

Note: The decon line is set up and disassembled by each team

- Participants set up decon line
- Critique the line and correct problems as necessary
- Participants run decon line. (May have them wear splash suits to keep from getting wet.)
- Participants complete performance checklists, which you will review and initial
- Decon line is disassembled

#### Option B

Note: The decon line is set up initially and remains intact throughout the entire exercise

- First groups (Teams 3 and 4) set up decon line
- Critique the line and correct problems as necessary
- Participants run decon line. (May have them wear splash suits to keep from getting wet.)
- Participants complete performance checklists, which you will review and initial
- Final group (Team 1) disassembles the line

## Summary

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Review the learning objectives

Ask: Based on this exercise, what takeaways do you have as you go back to work?

Answer any remaining questions

## **Follow up**

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Make this exercise better:

- Forward suggestions to your Program Director.
- Are there other 'Questions you may be asked' that should be included?
- Organize the listing of 'takeaways' and forward to your Program Director. These are very important impacts to report to NIEHS.

## **Exercise - Suit-up and Decontamination Line**

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During this exercise, you will have an opportunity to:

1. Inspect PPE
2. Don and Doff Level B or Level C PPE
3. Participate in decon line activities

For this exercise you will be teamed up with a buddy. Be sure to go through all stations with your buddy.

The instructor at each station will describe the problem, provide additional materials, and answer questions. Complete the Lab Performance Checklists provided by your instructor for each station, then have the instructor review and sign them. They will be retained by the training center as part of your training records.

Name: \_\_\_\_\_

Buddy's Name: \_\_\_\_\_

### **PPE Performance Checklist - Inspecting PPE**

1. Were inspection procedures described for:

a. Boots?  Yes  No

b. Outer gloves?  Yes  No

c. Hard hats?  Yes  No

d. Suits?  Yes  No

2. Did you inspect the gloves?  Yes  No

3. Did you find defects in the gloves?  Yes  No

If yes, describe the defects:

\_\_\_\_\_

4. Did you inspect a suit prior to donning?  Yes  No

5. Did you find defects in the suit?  Yes  No

If yes, describe the defects:

\_\_\_\_\_

Date \_\_\_\_\_ Instructor's Signature: \_\_\_\_\_



Name \_\_\_\_\_

Buddy's Name \_\_\_\_\_

### Decon Performance Checklist - Donning and Doffing Level B

1. List the size that you chose for all of the following equipment. If you did not wear the listed equipment, put an "X" on the line.

- a. Chemical-protective clothing      Size \_\_\_\_\_
- b. Face piece                              Size \_\_\_\_\_ Brand \_\_\_\_\_
- c. Boots                                      Size \_\_\_\_\_
- d. Inner gloves                            Size \_\_\_\_\_
- e. Outer gloves                            Size \_\_\_\_\_
- f. Hard hat                                 Size = adjustable

List any equipment for which you could not find a proper size, and state whether you needed a larger or smaller size.

Type of Equipment      \_\_\_\_\_ Size \_\_\_\_\_  
Type of Equipment      \_\_\_\_\_ Size \_\_\_\_\_  
Type of Equipment      \_\_\_\_\_ Size \_\_\_\_\_

- 2. Did you inspect the equipment before donning it? .....  Yes  No
- 3. Did your buddy:
  - a. Make pull tabs when taping your boots/pants? .....  Yes  No
  - b. Make pull tabs when taping your gloves/sleeves? .....  Yes  No
  - c. Review the communications system with you? .....  Yes  No
- 4. Did you do an assigned task? .....  Yes  No

If yes, describe the task: \_\_\_\_\_

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- 5. After doffing the SCBA, did you:
    - a. Extend the harness straps? .....  Yes  No
    - b. Extend the facepiece straps? .....  Yes  No
    - c. Clean the facepiece? .....  Yes  No
    - d. Check the cylinder? .....  Yes  No

If yes, did the cylinder need to be changed? .....  Yes  No

If yes, did you change it or have it changed? .....  Yes  No
  - 6. How long did you stay in Level B? \_\_\_\_\_ minutes

Name: \_\_\_\_\_

Buddy's Name: \_\_\_\_\_

### **PPE Performance Checklist - Inspecting PPE**

1. Were inspection procedures described for:

a. Boots?  Yes  No

b. Outer gloves?  Yes  No

c. Hard hats?  Yes  No

d. Suits?  Yes  No

2. Did you inspect the gloves?  Yes  No

3. Did you find defects in the gloves?  Yes  No

If yes, describe the defects:

\_\_\_\_\_

4. Did you inspect a suit prior to donning?  Yes  No

5. Did you find defects in the suit?  Yes  No

If yes, describe the defects:

\_\_\_\_\_

Date \_\_\_\_\_ Instructor's Signature: \_\_\_\_\_

Name \_\_\_\_\_

Buddy's Name \_\_\_\_\_

### Decon Performance Checklist - Donning and Doffing Level C

1. List the size that you chose for all of the following equipment. If you did not wear the listed equipment, put an "X" on the line.

Chemical-protective clothing            Size \_\_\_\_\_  
Air-purifying respirator                Size \_\_\_\_\_ Brand \_\_\_\_\_  
Boots    Size \_\_\_\_\_  
Inner gloves                                Size \_\_\_\_\_  
Outer gloves                                Size \_\_\_\_\_  
Hard hat                                      Size = adjustable

List any equipment for which you could not find a proper size, and state whether you needed a larger or smaller size.

Type of Equipment \_\_\_\_\_ Size \_\_\_\_\_

Type of Equipment \_\_\_\_\_ Size \_\_\_\_\_

2. Did you inspect the equipment before donning it? .....  Yes  No

3. Did your buddy:

a. Make pull tabs when taping your boots/pants? .....  Yes  No

b. Make pull tabs when taping your gloves/sleeves? .....  Yes  No

c. Review the communications system with you? .....  Yes  No

4. Did you do an assigned task? .....  Yes  No

If yes, describe the task: \_\_\_\_\_

5. Did you take off the suit in a manner that would protect you and the other workers around you from contamination? .....  Yes  No

6. Did you remove your inner gloves properly? .....  Yes  No

7. When removing your respirator:

a. Were you wearing your inner gloves? .....  Yes  No

b. Did you extend your facepiece straps? .....  Yes  No

c. Did you clean the respirator? .....  Yes  No

8. How long did you stay in Level C? \_\_\_\_\_ minutes

Name \_\_\_\_\_

Buddy's Name \_\_\_\_\_

### Decon Performance Checklist - Decontamination Line

Think about when you were on the decon line, then answer the following questions by checking the appropriate line.

1. Was all of the needed decon equipment assembled?  Yes  No
2. Was the decon team ready when the work team arrived?  Yes  No
3. Did all of the equipment work properly?  Yes  No
4. Were decon workers wearing appropriate level(s) of protection?  Yes  No
5. Did the decon team stay in communication with the work team?  Yes  No
6. Did the work team follow the decon team's instructions?  Yes  No
7. Were all work team members fully decontaminated?  Yes  No
8. Were waste water and materials controlled?  Yes  No
9. Were the reusable supplies and equipment decontaminated?  Yes  No
10. Did decon team self-decontaminate before leaving the area?  Yes  No

Date \_\_\_\_\_ Instructor's Signature: \_\_\_\_\_