



Personal Protective Equipment

Participant Exercise Manual

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Midwest Consortium for Hazardous Waste Worker Training

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Respiratory Protection Exercises

Exercise - Respirator Protection Factor Exercise

Working in groups, perform the following calculations:

You are working when a leak occurs which has an ammonia concentration of 3,500 ppm. What is the minimum type of respiratory protection that can be *safely* used?

Airborne concentration _____

Permissible Exposure Limit (PEL) for chemical _____

Immediately Dangerous to Life or Health (IDLH) for chemical _____

Type of respirator _____

Exercise – Respiratory Protection Lab

The purpose of this laboratory is to give you the opportunity to wear and become familiar with SCBAs, air-purifying respirators (APRs), egress units, and equipment cleaning and inspection procedures. This lab is broken down into four rotating stations:

1. Donning and doffing SCBA
2. Fit-testing an APR
3. Inspecting and cleaning respirators
4. Wearing an airline with escape unit

Copies of Lab Performance Checklists for this exercise are provided on the following pages. However, the instructor may hand out duplicates of these checklists which you will complete, have signed by the instructor, and turn in at the end of the lab. The training center retains this information with your other training records. Therefore, you may want to record your lab results separately for your personal records.

Name: _____

Respiratory Protection Lab Performance Checklist
Station 1: Donning and Doffing an SCBA

1. What brand of SCBA and size of facepiece did you wear?

Brand _____ Size _____

2. Please list the brands and sizes of facepieces you tried that could not pass the negative-pressure fit test.

Brand _____ Size _____

Brand _____ Size _____

Brand _____ Size _____

3. Before donning the SCBA, did you check your:

a. Cylinders?----- Yes No

b. Alarm? ----- Yes No

c. Regulator gauge? ----- Yes No

d. Straps? ----- Yes No

4. Did you don the SCBA as you were instructed?----- Yes No

5. While wearing the SCBA, did you:

a. Check the bypass valve?----- Yes No

b. Wear the SCBA for at least 7 minutes?----- Yes No

c. Try to communicate with your buddy?----- Yes No

6. While wearing the SCBA, did you do an assigned task? ----- Yes No

If yes, describe the task: _____

7. 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

e. Did the cylinder need to be changed? ----- Yes No

f. If yes, did you have it changed? ----- Yes No

8. How long did you wear the SCBA? _____ minutes

Date _____ Instructor's Signature _____

Name: _____

Respiratory Protection Lab Performance Checklist

Station 2: Fit-Testing an APR

1. Please check any of the following items that you wear.

Prescription glasses

Dentures

A beard

Contact lenses

Hairstyle that prohibits a good face seal

2. Did you do a negative-pressure fit check? Yes No

3. Did you do a positive-pressure fit check? Yes No

4. Did you go into a test chamber? Yes No

If yes, which type of chamber?

"Banana oil"

Smoke

Both

Other

5. What brand and size of air-purifying respirator did you wear?

Brand _____ Size _____

Full-face _____ Half-face _____

Name: _____

Respiratory Protection Lab Performance Checklist Station 2 (cont.):

Fit-Testing an APR

6. Please list the brands and sizes of respirators you tried that could not pass the fit test.

Brand _____ Size _____

Brand _____ Size _____

Brand _____ Size _____

Brand _____ Size _____

7. Did you wash your respirator during this lab?----- Yes No

If yes, check the supplies that you used.

Towelette

Wash basin

Other

8. How long did you wear the respirator? _____ minutes

Date _____ Instructor's Signature: _____

Name: _____

Respiratory Protection Lab Performance Checklist

Inspecting and Cleaning Respirators

Daily Maintenance of Your Respirator:

1. Did the instructor tell you how to wash your respirator?----- Yes No
2. Did you clean your respirator? ----- Yes No
3. Did you see a disassembled respirator and all its parts? ----- Yes No
If yes, did someone in the lab reassemble the respirator? ----- Yes No
4. Did someone in your lab inspect a respirator? ----- Yes No
5. Were defects found during the inspection?----- Yes No

If yes, describe the defects: _____

OSHA-Required Inspections of SCBA:

6. Was the inspection procedure that must be done at least once per month described? ----- Yes No
7. Were you shown the hydrostatic test date? ----- Yes No
8. Did you see someone demonstrate inspection of an SCBA according to the manufacturer's guidelines? ----- Yes No

Date _____ Instructor's Signature: _____

Name: _____

Respiratory Protection Lab Performance Checklist

Wearing an Air Line with Escape Unit

1. Did the station leader demonstrate how to hook up and use the unit? --- Yes No
2. Did the station leader demonstrate how to switch to the 5-minute escape bottle?
----- Yes No
3. Did one of the trainees in the lab wear an egress unit? ----- Yes No
4. Did you wear the unit? ----- Yes No
5. Did a trainee who wore the egress unit switch to the 5-minute escape bottle?
----- Yes No
6. Please indicate which level of protection is provided by an air-line egress unit.
 A B C

Date _____ Instructor's Signature: _____

PPE Exercises

Exercise - Levels of PPE

This exercise will allow you to apply knowledge gained from this section to a “real-life” situation. The exercise involves determining what level of PPE would be required for different situations. Although you will usually be provided specific PPE selected by the safety and health officer, this exercise gives you an opportunity to determine the basic level of protection that is needed.

For each situation, state the appropriate level of PPE and the reason for your decision. If you believe additional information is needed, list it.

1. At XYZ Dumpgrounds, 15 barrels are unearthed and identified as dioxane. What level of protection should be used to remove the barrels?
2. Spent chlorine cylinders are being off-loaded from a semi into a staging area. What level of protection should be worn?
3. You are to do initial decontamination of a pump and piping area “crusted over” with corrosion before the millwrights begin dismantling the unit. What level of protection is needed?
4. You are scheduled to clean an empty culvert, where oxygen concentrations have been measured at 18% in the past. What level of protection should be worn?
5. You are assisting the safety coordinator with monitoring air concentrations around a waste lagoon, and you are told to draw the necessary equipment from the tool crib area. What PPE and safety equipment are needed?
6. You are moving 55-gallon drums of hydrochloric acid. During the past two days, workers have reported that the drum integrity is poor. What level of protection should be worn?

Exercise – Don, Doff, Inspect Lab

The following laboratory provides an opportunity to:

1. Don and doff Level A protection
2. Don and doff Level B protection
3. Don and doff Level C protection
4. Inspect and maintain PPE

Copies of Lab Performance Checklists for this exercise are provided here; however, the instructor will hand out duplicates of these checklists which you will complete, have signed by the instructor, and turn in at the end of the lab. The training center retains this information with your other training records. Therefore, you may want to record your lab results in your manual for your personal records.

Name: _____

Buddy's Name: _____

PPE Performance Checklist

Station 1: Donning and Doffing Level A

Preparing to Don the Equipment

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. Disposable suit Size _____
- b. SCBA Facepiece Size _____ Brand _____
- c. Level A training suit Size _____
- d. Boots Size _____
- e. Inner gloves Size _____
- f. Outer gloves Size _____
- g. 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 you and your buddy help each other get dressed? Yes No

Donning the Equipment

4. Did you do a negative-pressure check of your facepiece? Yes No

5. Did you check the SCBA by-pass valve before you put on Level A?.. Yes No

6. Did your buddy ask if you could breathe OK before your suit was closed??
..... Yes No

Name: _____

Buddy's Name: _____

PPE Performance Checklist
Station 1: Donning and Doffing Level A (Continued)

Hooked to Air in Level A

7. Did your buddy check your suit's sealing points (zipper, cuff, ted.) after your suit was closed? Yes No
8. Did you and your buddy review the communications system after your suit was closed? Yes No
9. Did you withdraw your hand from the sleeve of the suit and turn on the SCBA emergency by-pass valve? Yes No
10. Did you have to withdraw your hand and defog your face shield?? Yes No
11. Did you do an assigned task? Yes No
- If yes, describe the task: _____
-

Doffing the Equipment

12. Did you touch the outside of your suit as it was being removed? Yes No
13. Did you remove your inner gloves properly? Yes No
14. Did you dry your suit as instructed? Yes No
15. 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
16. How long did you stay in Level A? _____ minutes

Date _____ Instructor's Signature: _____

Name: _____

Buddy's Name: _____

PPE Performance Checklist

Station 2: 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. Air-purifying respirator 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: _____

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

Date _____ Instructor's Signature: _____

Name: _____

Buddy's Name: _____

PPE Performance Checklist Station 3: 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 wash the respirator? Yes No
8. How long did you stay in Level C? _____ minutes

Date _____ Instructor's Signature: _____

Name: _____

Buddy's Name: _____

PPE Performance Checklist
Station 4: Inspection of PPE

1. Did the instructor tell you how to wash your respirator? Yes No
2. Did you clean your respirator? Yes No
3. Were inspection procedures described for:
 - a. Boots? Yes No
 - b. Outer gloves? Yes No
 - c. Hard hats? Yes No
 - d. Reusable suits? Yes No
4. Did you inspect the gloves? Yes No
5. Did you find defects in the gloves? Yes No
If yes, describe the defects: _____
6. Did you inspect the suit? Yes No
7. Did he/she find defects in the reusable suit? Yes No
If yes, describe the defects: _____
8. Did you observe the leak-test procedure for a Level A suit? Yes No

Date _____ Instructor's Signature: _____

Exercise – Other PPE Requirements

In this exercise, you will work in groups to complete a work sheet on other PPE requirements. One member of the group should prepare the report back from the worksheet.

Standard title: _____

What are the criteria to determine need for the PPE?

What steps must be taken to fit the PPE to the worker?

What training is required? How often?

Are there medical restrictions to use?

What are the limitations?

Where is the PPE stored?