24-/40-Hour HAZWOPER

Student Workbook

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24-/40-Hour HAZWOPER

Presentation Questions

DAY 1

Federal Regulations

1. What is the federal HAZWOPER regulation?

   _____

2. What is the federal EPA regulation?

   _____

3. What are the goals of the Resource Conservation and Recovery Act (RCRA)?

   _____

   _____

   _____

4. What are some key elements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)?

   _____

   _____

   _____

5. What amended CERCLA? What is the purpose of the amendment?

   _____

   _____

   _____

6. What does the Toxic Substances Control Act (TSCA) address?

_____

_____

_____

7. What is the federal DOT regulation? What is its purpose?

_____

_____

_____

8. Define the following.

Hazmat employer: _____

_____

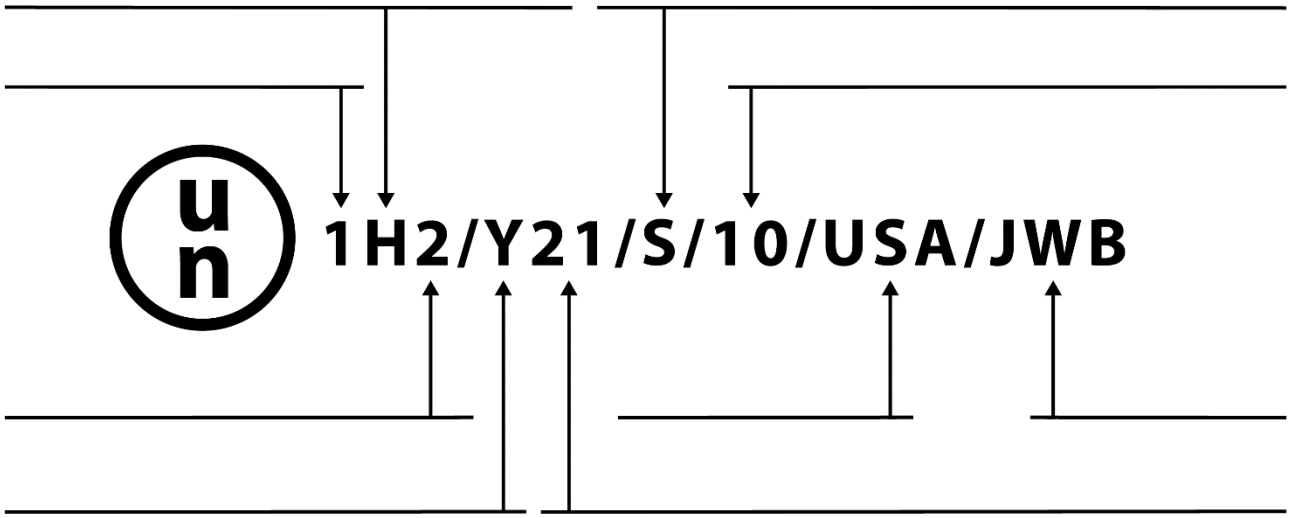
Hazmat employee: _____

_____

9. What act covers packaging requirements within DOT regulations?

_____

10. Describe this container by filling in the blanks. Refer to the info sheet on the next page for guidance.



How to Read UN Markings

Info Sheet

Character	Description		
Type of Package	1 – Drums	3 – Jerrycans	5 – Bags
	2 – Barrels	4 – Boxes	6 – Composite Packagings
Material	A – Steel	F – Reconstituted Wood	M – Paper, Multiwall
	B – Aluminum	G – Fiberboard	N – Metal other than Steel/Aluminum
	C – Natural Wood	H – Plastic	P – Glass, Porcelain, or Stoneware
	D – Plywood	L – Textile	
Category	1 – Closed Head		2 – Open Head
Packing Group	X – Packing Groups I, II, and III		Z – Packing Group III only
	Y – Packing Groups II and III		
Density or Specific Gravity	Solids or packagings that have inner packagings must be marked with the maximum gross mass (weight) in kilograms.		
	Stand-alone packagings intended to contain liquids must be marked with the specific gravity rounded down to the first decimal.		
Solids or Inner Packaging	An "S" in upper-case should follow the density.		
	Liquids should reflect the hydrostatic test pressure in kPa (kilopascals), rounded down to the nearest 10 kPa.		
Year of Manufacture	The last two digits of data indicate the year the packaging was manufactured.		
Location of Manufacture	Country where the item was manufactured.		
Manufacturer Code	Code for UN certifying agency or manufacturer.		

California HAZWOPER Regulations

11. What is the California HAZWOPER regulation?

_____

12. What is the California environmental regulation?

_____

13. The HAZWOPER standard applies to what types of workers/operations?

_____

_____

_____

_____

_____

14. List the seven elements of a Safety & Health Plan.

_____ _____

_____ _____

_____ _____

_____

15. Identify the three hazard control methods in correct order.

First: _____

Second: _____

Third: _____

Chemical Hazards

16. Define the following.

Flammable limit: _____

_____

Flash point: _____

_____

Specific gravity: _____

_____

Vapor density: _____

_____

Vapor pressure: _____

_____

Toxicology

17. What are the four routes of entry?

_____ _____

_____ _____

18. What is a difference between acute and chronic exposure?

_____

_____

19. Define the following.

Permissible exposure limit: _____

_____

Immediately dangerous to life and health: _____

_____

_____

20. List factors that could affect the degree of exposure.

_____

21. What is OSHA's acceptable oxygen range?

_____

DAY 2

Biological Hazards

1. Farmers, construction workers, and others who engage in activities that disturb the soil in the North American Southwest are at highest risk for what infection?

   _____

2. List some common types of bloodborne pathogens.

   _____

   _____

Physical Hazards

3. What are the storage requirements of oxygen cylinders and flammable gas cylinders with regard to combustible materials?

   _____

   _____

4. Starting at the temperature of _____, shade must be made available to employees.

5. The action level for noise is _____, and the permissible exposure limit for noise is _____.

6. What are the trigger heights for requiring fall protection?

   Federal: _____ CSO: _____

   Dangerous equipment: _____

Special Hazards

7. What are the two types of confined spaces?

   _____ _____

8. Alternate confined space procedures may only apply if the employer can demonstrate that:

_____

_____

_____

9. Regarding confined space rescue, what does Cal/OSHA identify as the window of rescue time frame?

_____

10. The spoils pile is required to be a distance of _____ from the excavation.

11. A safe means of access/egress is required to be in place for an excavation starting at a depth of _____.

12. Employees must be protected from cave-ins by a protective system when the trench reaches the depth of _____.

Hazard Assessment

13. A _____ is something that has the potential to do harm.

    A _____ is the likelihood of a defined harm to occur from a specific hazard.

DAY 3

Hazard Warning Systems

1. Identify the following pictograms and the hazards to which they apply.

Name: _____

Hazard type(s): _____

_____

Name: _____

Hazard type(s): _____

_____

Name: _____

Hazard type(s): _____

_____

Name: _____

Hazard type(s): _____

_____

2. List four types of shipping papers.

_____ _____

_____ _____

Personal Protective Equipment

3. A chemical attack on the protective material: _____

4. Chemical movement directly through the protective material: _____

5. Chemical movement through the physical opening in the suit: _____

6. What are the four levels of PPE protection and their key components?

_____

_____

_____

_____

7. Which PPE levels may be used in an oxygen-deficient atmosphere?

_____

Site Control

8. List some factors that affect site control.

_____

_____

9. Identify and describe the three zones established during site control.

_____

_____

_____

Decontamination

10. Decontamination (decon) is the process of _____ the levels of contamination on a surface or in a medium to a _____ level.

11. Identify and describe two common decon methods.

_____

_____

Fire Safety

12. What four elements are needed for fire to occur?

_____ _____

_____ _____

DAY 4

Respiratory Protection

1. What are the two types of fit testing?

   _____ _____

2. List some limitations that will prevent the use of an APR.

   _____

   _____

3. After putting on the APR, what should be done to verify a seal?

   _____

4. How much facial hair are you allowed to have between the face-to-facepiece seal?

   _____

5. List some advantages and disadvantages of an SCBA.

   Advantages: _____

   _____

   Disadvantages:_____

   _____

6. An SCBA must be in _____ mode to have the highest protection factor.

Protection from Wildfire Smoke

7. What are the particulate matter size and the Air Quality Index (AQI) number thresholds to trigger the need for wildfire smoke protection?

   _____

Air Monitoring

8. Air monitoring provides critical information necessary to establish what types of safety measures?

_____

_____

_____

9. An air monitor will alarm at ____% of the LEL.

Sample Methods & Procedures

10. List three sample types.

_____ _____

_____

11. What type of document is essential to the sampling process?

_____

Field Operations

12. What equipment can be used to stop a leaking drum?

_____

_____

_____

Use the NIOSH Pocket Guide to answer the following questions.

1. In the NIOSH Pocket Guide, what does the notation "Ca" mean?
   a. Calcium
   b. Potential occupational carcinogen
   c. Cadmium
   d. Potential carbon emission

2. Respirators have different series of filters (N-, P-, R-); if there are oil particles in the work environment, which series of particulate respirators is best?
   a. N-
   b. P-
   c. R-
   d. All of the above

3. Based on the exposure route (ER), what PPE would be recommended for a potential cyclohexane exposure?

   Exposure route: _____

   _____

   PPE recommendation: _____

   _____

4. Define the following respirator codes:

   Ccr: _____

   Ccr,Ov,Ag,F: _____

   Papr,OV,Ag,F: _____

   Scba,Pd,Pp: _____

5. What are the symptoms (SY) of exposure listed for dioxane?

_____

_____

6. List the first aid procedures for methylamine:

Eye: _____

Skin: _____

Breath: _____

Swallow: _____

7. What chemical has the CAS number of 7664-38-2?
   a. Phosphine
   b. Phorate
   c. Phosgene
   d. Phosphoric acid

8. What are the exposure limits for acrolein?

PEL: _____

STEL: _____

REL: _____

IDLH: _____

9. What is the flammable range (LEL – UEL) of ethyl ether?

LEL: _____ % UEL: _____ %

Convert from % to ppm (hint: 1% = 10,000 ppm):

LEL: _____ ppm UEL: _____ ppm

10. What substance(s) are incompatible with methyl ethyl ketone (MEK)?

_____

_____

11. What are the OSHA and NIOSH exposure limits for sulfuric acid?

OSHA: _____

NIOSH: _____

12. Based on its chemical and physical properties, under normal handling, would sulfuric acid present a significant airborne exposure hazard?

State of the material (liquid/solid/gas): _____

Boiling point: _____

Vapor pressure: _____

Is this an airborne hazard? (yes/no): _____

13. At what temperature would you expect isobutane to freeze?

_____

Based on the freezing point and boiling point, what state of matter would this material be at 80°F?

_____

14. What are the DOT ID number and ERG number for chlorine?

DOT ID number: _____ ERG number: _____

15. What is the IDLH for phenol?
    a. 150 ppm
    b. 200 ppm
    c. 250 ppm
    d. 2,500 ppm

Notes

Waste Characterization Exercise Sheet

Station	Liquid	Solid	Watesmo Paper		pH Paper				Potassium Iodide Paper		Cardboard Test			EPA Waste Code(s)	DOT Haz Class
			Aqueous	Non-Aqueous	pH 0-14	Acid <7	Base 7>	N/A	Oxidizer	Non-Oxidizer	Soaks In	Beads Up	?	D001/D002/D003	
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															

NOTES:

Notes

Job Hazard Analysis #1

Exercise

Use the picture provided to complete this job hazard analysis.

Task Description:
Hazard Description:
Hazard Controls:
Comments:

Job Hazard Analysis #2

Exercise

Use the picture provided to complete this job hazard analysis.

Task Description:
Hazard Description:
Hazard Controls:
Comments:

Use the Safety Data Sheet (SDS) to complete the following.

1. Chemical name: _____

2. Trade name/synonym(s): _____

3. Which Globally Harmonized System (GHS) pictogram(s) is (are) used?

4. Which section of the SDS contains first aid information? _____

5. Which form of matter does the chemical present at ambient temperature?

   Solid/liquid/gas: _____

6. What kind of risk does an accidental release present?

   _____

   _____

7. Is the chemical flammable? _____

8. What is the flash point of the chemical? _____

9. What is the flammable range of the material?

LEL: _____% UEL: _____%

10. Based on the flash point, how flammable is this material? _____

11. Fill in the following exposure limits:

OSHA PEL: _____

NIOSH REL: _____

NIOSH IDLH: _____

Other: _____

12. What is the vapor density of the material? _____

13. Based on the vapor density, where would the vapors be present in the atmosphere?

_____

14. What is the specific gravity of the material? _____

15. Based on the specific gravity of the material, if the material were spilled in water, where would it settle?

_____

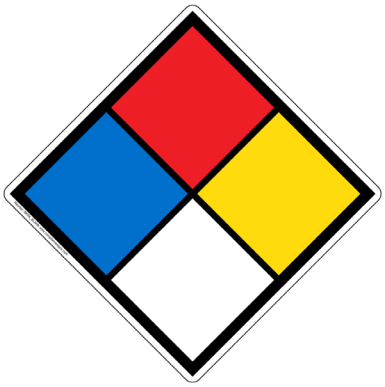
16. By which route(s) of exposure can we be exposed to this material? (Yes/No)

Inhalation _____ Skin absorption _____

Ingestion _____ Injection _____

17. What is the DOT UN ID number? _____

18. What is the NFPA 704 rating for the chemical? Fill in each section.



19. List signs and symptoms of being exposed to the chemical:

_____

_____

20. What PPE would you wear if cleaning up a spill of 25 gallons of the material?

_____

_____

Notes

Use provided ERG to answer the following questions.

1. Which section of the ERG would you reference to find the corresponding guide number for a hazardous material with an ID number of 1017?
    a. Yellow
    b. Blue
    c. Orange
    d. Green

2. Which section of the ERG would you reference to find the corresponding guide number for a hazardous material with the proper shipping name Argon?
    a. Yellow
    b. Blue
    c. Orange
    d. Green

3. How many tables are included in the green section of the ERG?
    a. One
    b. Two
    c. Three
    d. Four

4. Which table in the green section of the ERG identifies materials that produce a toxic inhalation hazard when spilled in water?
    a. Table 1
    b. Table 2
    c. Table 3
    d. Table 4

5. What do the green highlighted materials in the yellow and blue sections indicate?
    a. Safe to approach
    b. Materials not hazardous
    c. Toxic inhalation hazards
    d. Corrosives

6. Which of the following materials is considered a toxic inhalation hazard?
    a. Acetone
    b. Acid sludge
    c. Methyl iodide
    d. Nicotine

7. Which of the following materials is an inhalation hazard when spilled in water?
    a. ID number 1428
    b. ID number 1493
    c. ID number 1561
    d. ID number 1689

8. If a material that presents a toxic inhalation hazard is involved in a fire, what should the responder do?
    a. Refer to orange section
    b. Refer to Table 1
    c. Refer to Table 2
    d. Evacuate downwind of fire

9. What is the guide number for phenyl isocyanate?
    a. 126
    b. 155
    c. 158
    d. 160

10. Assuming it is not currently on fire, what is the primary hazard associated with phenyl isocyanate?
    a. Corrosive
    b. Explosion
    c. Fire
    d. Health

11. Which of the following chemicals is not one of the 6 common TIH materials listed in Table 3?
    a. Ammonia, anhydrous (UN1005)
    b. Hydrogen fluoride, anhydrous (UN1052)
    c. Perchloryl fluoride (UN3083)
    d. Chlorine (UN1017)

12. What is the guide number for a DOT Class 9 miscellaneous hazardous material?
    a. 111
    b. 125
    c. 153
    d. 171

13. What <u>physical hazard</u> is presented by a hazardous material with the following GHS pictogram?

    a. Eye damage
    b. Corrosive to metals
    c. Skin corrosion
    d. Skin sensitizer

14. In which of the following DOT divisions would oxidizing substances be found?
    a. 2.2
    b. 4.1
    c. 5.1
    d. 6.1

15. What is the guide number used for spills involving an oxidizing substance?
    a. 143
    b. 148
    c. 153
    d. 158

16. For intermodal containers, if the top orange panel reads 55, what is the hazard?
    a. Extremely Flammable Liquid
    b. Strongly Oxidizing Substance
    c. Highly Corrosive Substance
    d. Highly Toxic Substance

17. When would a spill of a liquid hazardous material be considered a large spill?
    a. 5 gallons
    b. 10 gallons
    c. 25 gallons
    d. > 55 gallons

18. For a spill of liquid sulfuric acid, what is the recommended isolation distance to ensure public safety?
    a. 75 feet
    b. 150 feet
    c. 250 feet
    d. 500 feet

19. Which of the following topics is not included in the guide section?
    a. Potential hazards
    b. Public safety
    c. Decon
    d. First aid

20. What is indicated by the guide number followed by P in the yellow and blue sections?
    a. Poison hazard
    b. Polymerization hazard
    c. Pyrophoric hazard
    d. Poison inhalation hazard

Notes

Procedures

Decon technicians must wear chemical suits and gloves. If level B decon is performed, technicians should wear APRs (level C).

1. Equipment drop – not SCBA/APR but includes air monitoring, tools, etc.
2. Remove contaminants (type of decon).

Dry	Partial	Wet
Skip to Step 3.	Wipe down: • Visibly contaminated areas • Direct contact areas (gloves, bottom of boots, etc.)	Use recommended decon solution to neutralize suspected contaminants from suit, boots, and gloves. Collect decon solution for hazardous waste disposal.

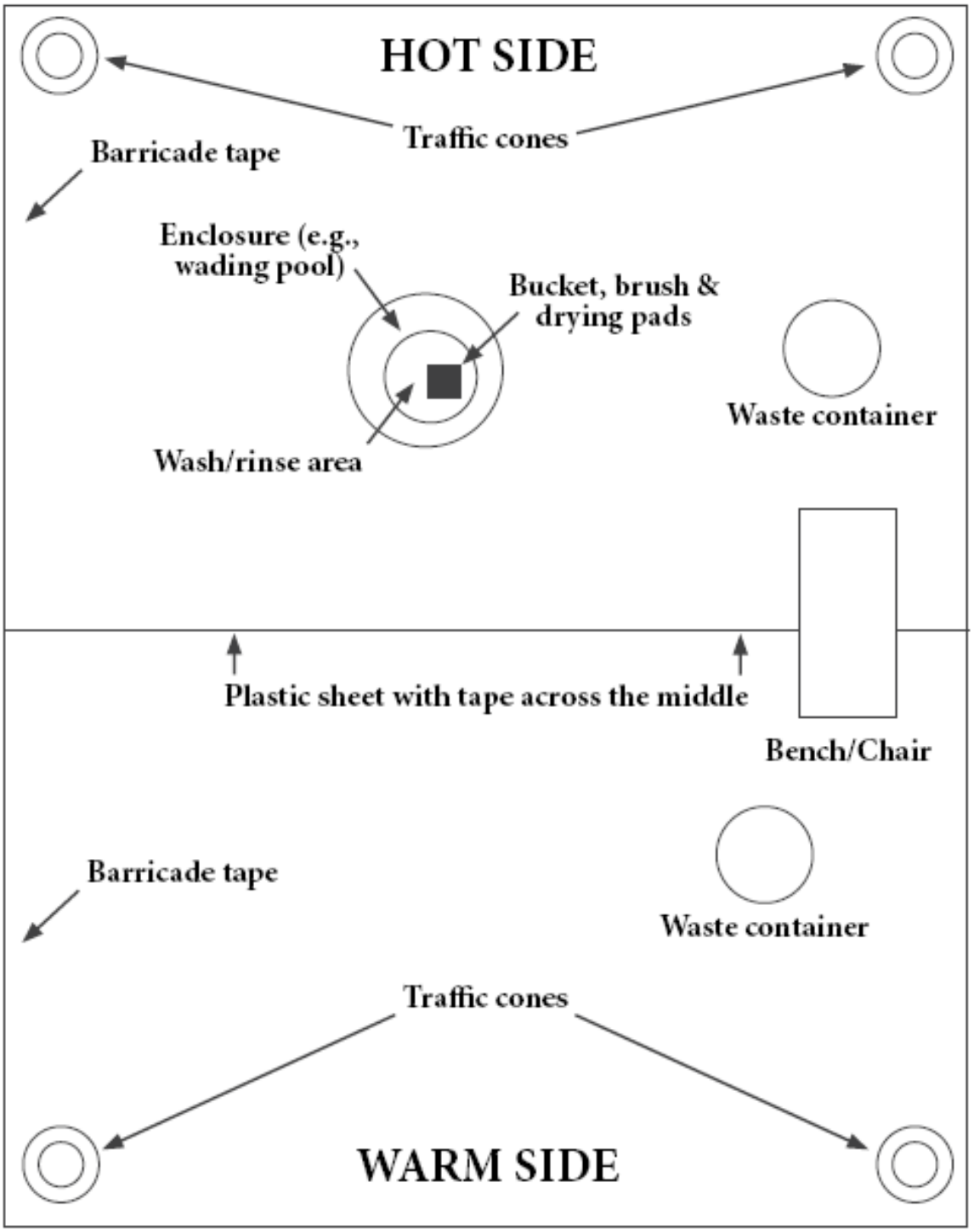
3. Remove all tape.
4. If chemical boot covers (booties) are worn over chemical boots, remove the booties. Cut the boot covers off with surgical scissors while seated. Remove booties and step onto the warm side.
5. [If in level B (SCBA), turn off air.]
6. [If in level B (SCBA), remove SCBA backpack.]
7. Open/unzip suit.
8. Remove outer gloves. If self-deconning, do not contact outsides of chemical suit from this point forward.
9. Remove suit (touch only inside of suit if self-deconning).
10. Remove facepiece.
11. Remove inner gloves.
12. Field-wash hands and face.

NOTE: If the facepiece is heavily contaminated, it may need to be removed prior to removing the suit.

[ ] = Denotes additional level B steps.

EXCLUSION ZONE

Hot Line



Step-Off Line

SUPPORT ZONE

Procedures

1. Inspect instrument
   - Housing, hose, probe, air/liquid filter
   - Hose and probe coupling
2. Assemble instrument
   - Connect probe to hose and hose to instrument
3. Set operation
   - Perform in a clean, uncontaminated area
   - Turn unit on (press "mode" button) and allow instrument to warm up
   - "Fresh Air Zero" instrument (press "Y/+" button) per manufacturer's instructions
   - Verify normal atmosphere (i.e., LEL = 0, O_2 = 20.9%, ppm = 0)

4. Sample
   - Instrument stationary for five to ten seconds per sample
   - Check LEL (less than 10%)
   - Check oxygen
   - Check VOC sensor (ppm)

Training Exercise: Combustible Gas Indicator (MultiRAE Lite)

Inspect the instruments: housing, hoses, probe, liquid trap, gaskets, pre-filter, etc. to ensure all items in clean, good condition.	
Connect the probe and hose to the instrument.	
Turn on the instrument and allow it to warm up.	
Check the battery.	
Check for system leaks. Cover probe and wait for pump to stop. Re-start pump.	
"Fresh Air Zero" instrument to set LEL, O_2, and ppm sensors to normal atmosphere.	

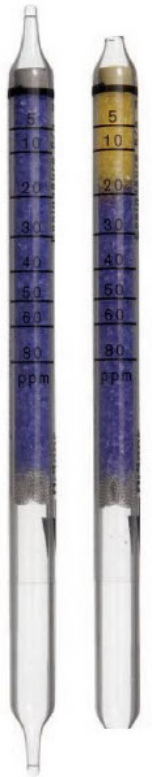
Training Exercise: Sample & Record Readings

	LEL	PPM	Oxygen	Recommended Action
A				
B				
C				
D				
E				

Procedures

1. Inspect instrument
    - External inspection for defects or damage
2. Rapid opening time test
    - Pump instrument 2 – 3 times (without tube)
3. Leak test pump
    - Insert unbroken tube
    - Perform test according to manufacturer's recommendations
4. Review tube instructions
    - Application and range
    - Pump strokes (n = ?)
    - Color change
    - Atmospheric influences
    - Specificity/interferences
    - Cautions
5. Prepare tube
    - Scope and break ends with ceramic blade
    - Insert with arrow towards pump
6. Sample
    - All strokes at same location
    - Compress pump completely between strokes
    - Compare sample to unbroken tube
    - Correct for atmospheric influences
    - Adjust for chemical specificity
    - Document
7. Clean pump
    - Pump in clean air (without tube) 10 – 15 times

Acetic Acid 5/a



Application range

- Standard measuring range: 5 – 80 ppm
- Number of strokes (n): 3
- Time for measurement: approx. 30 sec
- Standard deviation: +/- 10 – 15%
- Color change: blue-violet → yellow

Ambient operating conditions

- 10 – 40°C
- < 30 mg H_2O/L

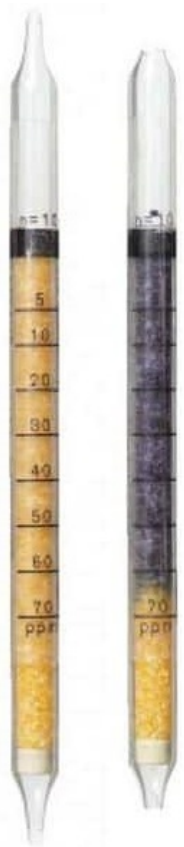
Reaction principle

- CH_3COOH + pH indicator → yellow reaction product

Cross-sensitivity

- It is impossible to measure acetic acid in the presence of other acids
- Organic acids are indicated by the same color change, but with different sensitivities
- Mineral acids (e.g., hydrochloric acid) are indicated by red discolorations and different sensitivities

Ammonia 5/a



Application range

- Standard measuring range: 5 – 70 ppm
- Number of strokes (n): 10
- Time for measurement: approx. 1 min
- Standard deviation: +/- 10 – 15%
- Color change: yellow-orange → blue

Ambient operating conditions

- 10 – 50°C
- < 20 mg H_2O/L

Reaction principle

- NH_2 + pH indicator → blue reaction product

Cross-sensitivity

- This tube indicates other basic gases (e.g., organic amines)
- No interference by 300 ppm nitrous fumes, 2,000 ppm sulphur dioxide, or 2,000 ppm hydrogen sulphide

Extension of the measuring range

- Using n = 1, multiply the reading by 10; the range of the measurement is 50 – 70 ppm

	Hint	Acetic Acid	Ammonia
Expiration Date	Date on box		
Tube Range	ppm measuring range		
Number of Strokes	Number of pumps of bellow		
Color Change(s)	Tube change for positive results		
Tube Temperature Range	From what to what temperature is the tube calibrated for use?		
Cross-Sensitivities	Other chemical(s) to which tube will respond		
ppm Value	After you tested the Dräger tube, what were your results?		

Estimated Tube Correction Factors for Ambient Pressure

Altitude	Tube Conversion Factor
Sea level – 2,999 feet	1.0
3,000 – 3,999	1.1
4,000 – 5,999	1.2
6,000 – 7,999	1.4
8,000 – above	1.5

Notes

HAZWOPER Scenario #1

Exercise

Scenario: Upon arriving at work, an elementary school custodian notices that a semi-tractor trailer is leaking a liquid in a vacant lot next door. On the trailer is the below placard. The conditions at time of notification are:

Time: 6:30 a.m.
Date: Wednesday, October 3rd
Winds: From the north at 5 mph
Conditions: Sunny
Temperature: 67°F

Your job is to determine how you will brief responders on the possible hazards they may encounter and the actions they should initially take.

To assist you in this decision, answer the following questions.

1. What is the DOT ID number? _____
2. What is the DOT hazard classification and number? _____
3. What is the possible chemical that you are dealing with? _____
4. Based on wind direction, where would you most likely set up your command?
   a. North of the incident
   b. South of the incident
   c. East of the incident
   d. West of the incident
5. What odor might be noticed if exposed to the chemical? _____
6. What is the flash point of the material? _____
7. What is the LEL – UEL? _____

8. What is this material incompatible with?

_____

9. What actions should first responders take?

_____

_____

_____

_____

10. What actions should be taken if exposure occurs?

_____

_____

_____

_____

11. If fire were to occur, how far should you evacuate?

_____

_____

12. What are the PEL, REL, and IDLH?

PEL: _____

REL: _____

IDLH: _____

HAZWOPER Scenario #2

Exercise

Scenario: A strong odor is coming from the area of a parked semi-tractor trailer near an apartment complex. On the trailer is the below placard. The conditions at time of notification are:

Time: 3:00 p.m.
Date: Sunday, June 22nd
Winds: Calm
Conditions: Light rain
Temperature: 80°F

Your job is to determine how you will brief responders on the possible hazards they may encounter and the actions they should initially take.

To assist you in this decision, answer the following questions.

1. What is the DOT ID number? _____

2. What is the DOT hazard classification and number? _____

3. What is the possible chemical that you are dealing with? _____

4. Based on wind direction, where would you most likely set up your command?
   a. North of the incident
   b. South of the incident
   c. East of the incident
   d. West of the incident
   e. Any location as long as the wind is being monitored

5. What odor might be noticed if exposed to the chemical? _____

6. What is the flash point of the material? _____

7. What is the LEL – UEL? _____

8. What is this material incompatible with?

_____

9. What actions should first responders take for a leak?

_____

_____

_____

_____

10. What actions should be taken if exposure occurs?

_____

_____

_____

_____

11. If fire were to occur, at what distance should you isolate and evacuate?

Isolation: _____

Evacuation: _____

12. What are the PEL, REL, and IDLH?

PEL: _____

REL: _____

IDLH: _____

Leachwell's Chemical Plant

Final Exercise

This abandoned chemical facility is on the EPA's National Priorities List. Below is an overview of the site. Use all resources provided in the *40-Hour HAZWOPER* class to answer the following questions in order to create a Health and Safety Plan.

- Tank 98 is a 10,000-gallon, 12-foot-tall process tank. The power lines behind the tank are NOT in contact with tank 98. **Chemical in tank: UN 1114**.
- Tank 98 A is a 5,000-gallon, 8-foot-tall waste tank. The manway cover has been removed and is sitting in front of the tank. The substance in the tank is **Non-Toxic Miscellaneous Sludge**.
- Tank 98 A is equipped with a mixer; the power source is supplied by an electrical box to the southeast of the tank
- The tanks are joined by 20 feet of 8-inch-diameter steel piping; they are coupled together by a bolted steel flange.
- There are four 55-gallon drums. The two drums on the outside are leaking; the two drums in the middle are in good condition.

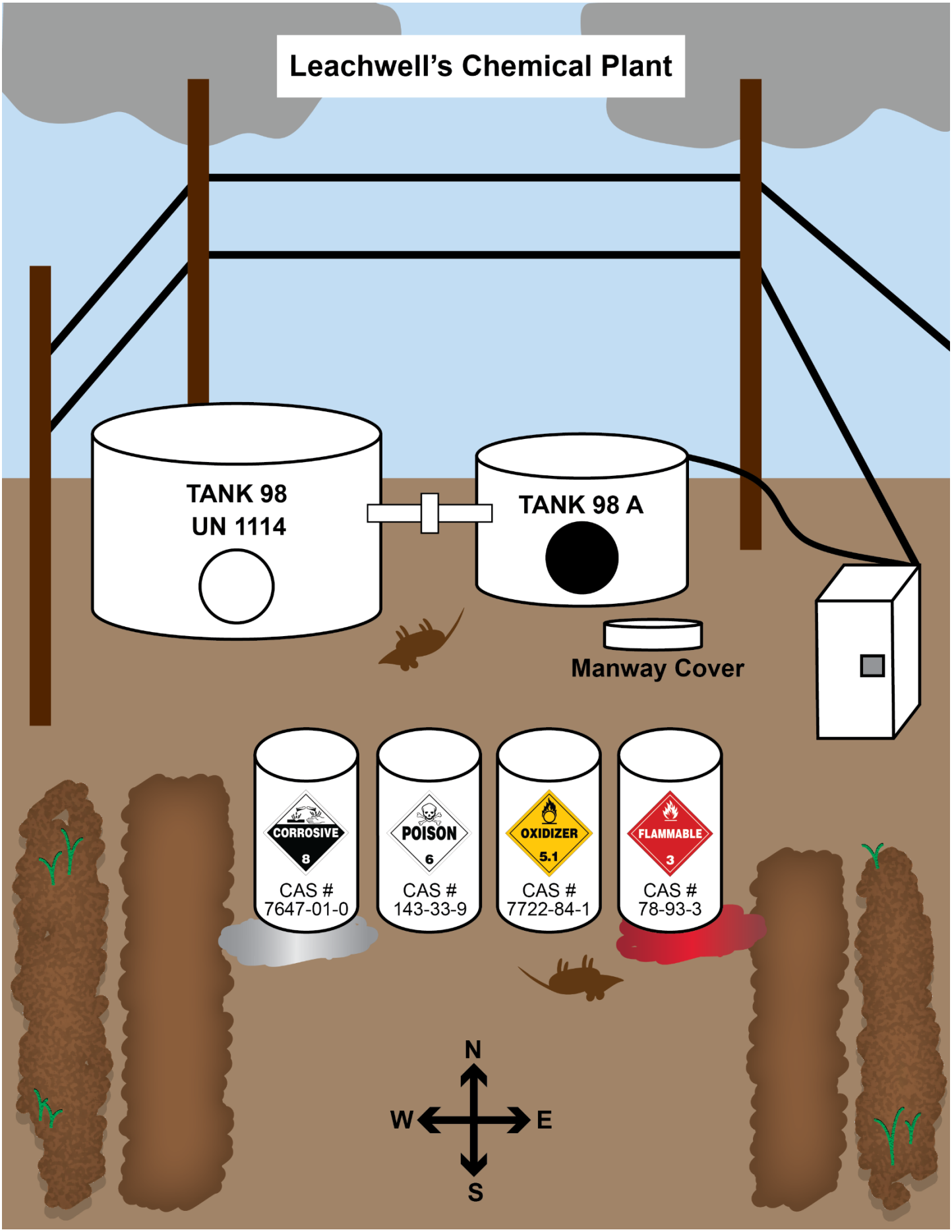
CAS # 7647-01-0

CAS # 143-33-9

CAS # 7722-84-1

CAS # 78-93-3

- There is one open trench to the west that is 4 feet wide, 5 feet deep, and 55 feet long; the spoils are staged hard against the trench opening.
- There is one open trench to the east that is 3 feet wide, 4 feet deep, and 30 feet long with the spoils staged hard against the trench opening.
- There are two dead rats.
- Winds are out of the southwest.


Leachwell's Chemical Plant
TANK 98
UN 1114
TANK 98 A
Manway Cover
CORROSIVE
8
CAS #
7647-01-0
POISON
6
CAS #
143-33-9
OXIDIZER
5.1
CAS #
7722-84-1
FLAMMABLE
3
CAS #
78-93-3
N
W
E
S

Your organization has been tasked with characterizing the site. Identify the order in which you will perform the tasks.

Task # ___: Extract a soil sample from 4-foot-deep excavation.

Task # ___: Extract a soil sample from 5-foot-deep excavation.

Task # ___: Assess the leaking 55-gallon drums.

Task # ___: Separate/segregate the 55-gallon drums.

Task # ___: Inspect the interior of Tank 98 A (confined space entry is required).

Task # ___: Remove the dead rats.

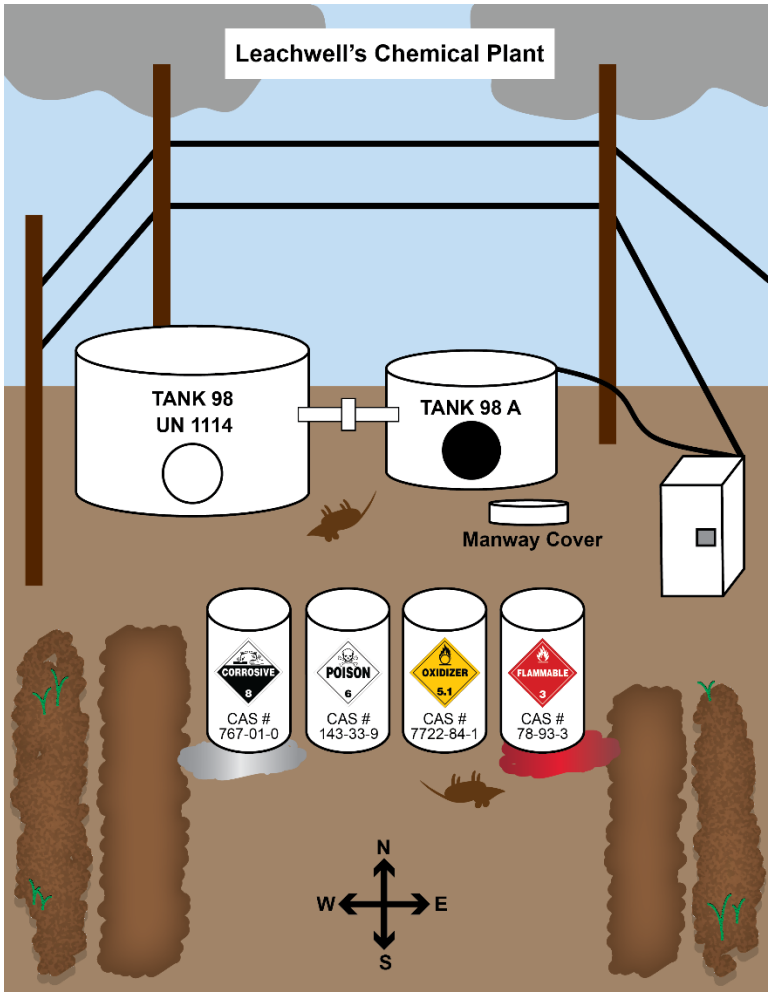
Chemical Characteristics	**Drum #1 Chemical**	**Drum #2 Chemical**
Chemical Name		
CAS #		
OSHA PEL-TWA (ppm, mg/m^3)		
NIOSH IDLH		
Ionizing Potential		
Warning Properties		
Boiling Point		
Flash Point (°F)		
Flammable Range (LEL-UEL)		
Water Solubility		
Specific Gravity (water)		
Vapor Density (air)		
Reactive/Incompatible With		
DOT UN ID Number		
ERG Isolation Distance		
ERG Evacuation Distance		

Chemical Characteristics	**Drum #3 Chemical**	**Drum #4 Chemical**
Chemical Name		
CAS #		
OSHA PEL-TWA (ppm, mg/m^3)		
NIOSH IDLH		
Ionizing Potential		
Warning Properties		
Boiling Point		
Flash Point (°F)		
Flammable Range (LEL-UEL)		
Water Solubility		
Specific Gravity (water)		
Vapor Density (air)		
Reactive/Incompatible With		
DOT UN ID Number		
ERG Isolation Distance		
ERG Evacuation Distance		

Chemical Characteristics	Material Tank 98	Material Tank 98 A
Chemical Name		
CAS #		
OSHA PEL-TWA (ppm, mg/m^3)		
NIOSH IDLH		
Ionizing Potential		
Warning Properties		
Boiling Point		
Flash Point (°F)		
Flammable Range (LEL-UEL)		
Water Solubility		
Specific Gravity (water)		
Vapor Density (air)		
Reactive/Incompatible With		
DOT UN ID Number		
ERG Isolation Distance		
ERG Evacuation Distance		

Site Drawing

Include wind, work zones, decontamination and support areas, and Emergency Evacuation Area.



Equipment Lists

The following equipment will be used on-site:

- ☐ Pressure Washer
- ☐ Chemical Pump
- ☐ Air Compressor
- ☐ Generator
- ☐ Cutting/Demo Tools
- ☐ Drum Dolly
- ☐ Dump Truck
- ☐ Tamper
- ☐ Response Truck /Trailer
- ☐ Boat
- ☐ Bobcat Loader
- ☐ Roll-off Container
- ☐ Excavation Equipment
- ☐ Guzzler
- ☐ Vacuum Tanker
- ☐ Crane
- ☐ Pump
- ☐ Hydraulic Ram
- ☐ Service Truck for Drums
- ☐ Other: _____
- ☐ HEPA Vacuum
- ☐ Mercury Vacuum
- ☐ Micro Trap Filtration
- ☐ Drum Vacuum
- ☐ Personnel Lift
- ☐ Fork Truck
- ☐ Backhoe
- ☐ Roller
- ☐ Roll-Off Box

Safety Equipment (General)

- ☐ Photoionizer Air Monitor
- ☐ LEL/O_2 Air Meter
- ☐ Mercury Meter
- ☐ Temporary Lighting
- ☐ Lockout/Tagout
- ☐ Mechanical Venting
- ☐ Lifeline
- ☐ Lanyard
- ☐ Fire Extinguisher
- ☐ Spill Pads
- ☐ Haz-Tank Lighting
- ☐ Confined Space System
- ☐ Harness Class
- ☐ Standby SCBA
- ☐ Extraction Device
- ☐ Barriers / Barrier Tape
- ☐ Portable Alarm / Air Horn
- ☐ Tripod
- ☐ Eyewash
- ☐ Ladder
- ☐ Traffic Warning Sign
- ☐ Road Cones
- ☐ Fiberglass Ladder
- ☐ First Aid Kit(s)
- ☐ GFCI
- ☐ Decontamination Tubs
- ☐ Water
- ☐ Safety Vest
- ☐ Safety Shower
- ☐ Other: _____

Safety Equipment (Corrosives)

- ☐ HF Gel (Hydrofluoric Acid)
- ☐ Barrier Cream (Acid Buffering)
- ☐ Other: _____

Safety Equipment (Flammables)

- ☐ Static Control Equipment
- ☐ Bonding/Grounding Cables
- ☐ Grounding Rods
- ☐ Other: _____
- ☐ Continuity Checker

Special Procedures Required

- ☐ Confined Space Entry Permit
- ☐ Dig-Safe / Local State Utility Markdown Authority Notification from Excavator (for excavations deeper than ½ foot)

Job Task #1:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

Job Task #2:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

Job Task #3:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

Job Task #4:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

Job Task #5:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

Job Task #6:	**Task Description:**	**Date:**
Hazards of Task:		
Hazard Control Methods:		
Equipment Needed:		
Outline of Steps to Complete Task:		

Personal Protective Equipment Selection
The following personal protective equipment has been selected based on hazards identified.

Protection Level: ☐ Level A PPE ☐ Level B PPE ☐ Level C PPE ☐ Level D PPE

Inner Gloves: ☐

Outer Gloves: ☐

Boots: ☐

Booties: ☐ Disposable Boot Covers

Head Protection: ☐ Hard Hat ☐ None

Eye/Face Protection: ☐ Face Shield ☐ Chemical Goggles ☐ Safety Glasses

Ear Protection: ☐ Ear Muffs ☐ Ear Plugs

Respiratory Protection: ☐ SCBA (FF) ☐ Airline (FF) ☐ Air-Purifying (FF)
Cartridges/Filters: _____

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