TRAINING OUTLINE

COURSE TITLE: _____ **DATE:** _____ **INSTRUCTOR:** _____

LOCATION: _____ **TIME:** _____ **COMPANY:** _____

Safety training was conducted on the above date by the instructor indicated. The following line items identify the topics covered during the training session.

SUMMARY OF TRAINING

1) Introduction
    a) History Behind HAZWOPER
    b) RCRA
    c) CERCLA
    d) HSWA
    e) SARA
    f) HAZWOPER
    g) Standards
    h) Why Training
    i) Additional Training
    j) Who is HAZWOPER for?
    k) Training Outline
    l) Regulations & Overview
    m) Site Characterization
    n) Drum Handling
    o) Confined Spaces
    p) Hazard Recognition
    q) Excavation
    r) Toxicology
    s) Personal Protective Equipment
    t) Air Sampling
    u) Decontamination
    v) Medical Surveillance
    w) Emergency Response
    x) Hazard Definitions
    y) Going Forward
2) Regulations & Overview
    a) OSHA & NIOSH
        i. History of OSHA
        ii. Mission of OSHA

iii. NIOSH
iv. NIOSH's Mission

b) **OSHA Standards: An Overview**
   i. What are OSHA Standards?
   ii. HAZWOPER Standard
   iii. When HAZWOPER Doesn't Apply
   iv. Conflicting or Overlapping Standards

c) **Employer Responsibilities**
   i. Hazard-Free Workplace
   ii. Training
   iii. Provide PPE
   iv. Record Keeping
   v. Reporting

d) **Worker Rights**
   i. Safe & Healthful Workplace
   ii. Know About Hazardous Chemicals
   iii. Know About Injuries & Illnesses
   iv. Complain or Request Corrections
   v. Training
   vi. Access to Exposure & Medical Records
   vii. File a Complaint with OSHA
   viii. Participate in an OSHA Inspection
   ix. Freedom from Retaliation

e) **Worker Responsibilities**
   i. Read the OSHA Poster
   ii. Compliance
   iii. Report Hazards
   iv. Report Injuries or Illnesses
   v. Cooperate with OSHA

3) Site Characterization
   a) Standards
   b) **Hierarchy of Controls**
      i. Elimination or Substitution
      ii. Administrative Controls
         1. Training
      iii. Engineering Controls
      iv. PPE
   c) Standard Operating Procedures

d) Standing Orders
e) **Site Safety & Health Plan**
    i. Safety & Health Risk
    ii. Training
    iii. Medical Surveillance
    iv. Air Monitoring
    v. Site Control
    vi. Decontamination
    vii. Emergency Response Plan
    viii. Confined Spaces
    ix. Spill Containment
    x. Site Safety & Health Supervisor
f) **Site Characterization**
    i. Hazard Identification
    ii. Project Team Leader
    iii. **Preliminary Evaluation**
        1. Offsite Characterization
        2. Interviews & Records
        3. Site Access
        4. Perimeter Reconnaissance
        5. Aerial Photos
        6. Preliminary Site Map
        7. PPE Selection
    iv. **Onsite Characterization**
        1. Onsite Survey
        2. Site Entry Team
        3. Sampling
        4. Environmental Factors
        5. Wind Barriers
        6. Pathways of Dispersion
g) **Risk Assessment**
    i. Hazard Identification
    ii. What is Risk?
    iii. Monitoring
    iv. Ongoing Monitoring
    v. Hazard Recognition
h) **Documentation & Communication Plan**
    i. Employee Notification

ii. Documentation
iii. Field Logbook
iv. Hazardous Substance Information Form
v. **Communication Plan**
1. Communication Systems
2. Internal
3. Alarms & Signals
4. External

i) **Site Control**
i. Site Work Zones
ii. Exclusion Zone (EZ)
iii. Hot Line
iv. Establishing the Hot Line
v. Personnel in the Exclusion Zone
vi. Contamination Reduction Zone (CRZ)
vii. CRZ Layout
viii. Support Zone (SZ)
ix. SZ Layout
x. Command Post
xi. Refuges
xii. Evacuation Routes
xiii. Medical Stations
xiv. Field Lab Testing
xv. Administrative Activities
xvi. Conclusion

4) Site Monitoring
a) Standards
b) **Monitoring Devices**
i. Types of Air Sampling Devices
ii. Direct Reading Instruments
iii. On-Person or Clip-On Devices
iv. Four-Gas Monitors
v. Single-Gas Monitors
vi. Handheld Air Monitors
vii. Flame Ionization Detector
viii. Portable Infrared Spectrophotometer
ix. Photoionization Detector
x. Oxygen Meter

xi. Combustible Gas Indicator
xii. Radiation Detectors
xiii. Colorimetric Indicator Tubes
xiv. Indirect Reading Instruments
xv. Active Sampling Devices
xvi. Passive Sampling Devices

c) Device Usage
   i. Direct Reading Instruments
   ii. On-Person Devices
   iii. Handheld Devices
   iv. Colorimetric Tubes
   v. Indirect Reading Instruments
   vi. Stationary Sampling Devices
   vii. Personal Sampling Devices
   viii. Passive Sampling Devices

d) Calibration
   i. On-Person & Handheld Monitors
   ii. Active Sampling Pumps
   iii. Sampling Handling
   iv. Laboratories
   v. Sample Collecting
   vi. Direct Reading Instruments
   vii. Active Sampling
   viii. Passive Sampling
   ix. Documenting
   x. Transport

e) Air Monitoring
   i. Initial Entry
   ii. General Onsite Monitoring
   iii. Perimeter Monitoring
   iv. Periodic Monitoring
   v. Personal Monitoring
   vi. Additional Monitoring Locations

f) Monitoring Variables
   i. Temperature
   ii. Windspeed
   iii. Rainfall
   iv. Moisture

v. Vapor Emissions
vi. Work Activities

g) General Site Monitoring
i. Types of Samples
ii. Spill Samples
iii. Soil Monitoring
iv. Water Sampling
v. Sampling Equipment
vi. Sampling Equipment for Soils
vii. Hand Shovel
viii. Core Samplers & Soil Probes
ix. Soil Auger
x. Sample Pans
xi. Sampling Equipment for Liquids
xii. COLIWASA
xiii. Pipettes & Droppers
xiv. Bailers
xv. Sample Dippers
xvi. Weighted Bottle Sampler
xvii. Sampling Containers
xviii. Conclusion

5) Hazard Recognition
a) Standards
b) Fire and Explosions
i. Flammability
ii. Fire Triangle
iii. Flammable Solids
iv. Water-Reactive
v. Pyrophoric
vi. Oxidizers
vii. Organic Peroxides
viii. Unstable Reactive
c) Electrocution
i. Standards
ii. Shocked vs. Electrocuted
iii. Electrocution Factors
iv. Sources of Electrocution
v. Touch & Step Voltage

vi. Contacting Powerlines
vii. Contacting Other Energized Objects
viii. Using Damaged Cords

d) Controls
i. The Hierarchy of Controls
ii. Elimination
iii. Substitution
iv. Hand & Power Tools
v. Ladders
vi. Extension Cords
vii. Engineering Controls
viii. Flagged Warning Lines
ix. Other Warning Devices
x. Grounding
xi. Isolating & Guarding
xii. Isolation
xiii. GFCI Receptacles
xiv. GFCI Breakers
xv. Lockout/Tagout Devices
xvi. Administrative Controls
xvii. Training
xviii. AEGCP
xix. Safe Distances
xx. Overhead Powerlines
xxi. Underground Lines
xxii. Electrical Equipment
xxiii. Safe Equipment Usage
xxiv. Qualified Persons
xxv. LOTO
xxvi. Personal Protective Equipment

e) Safety Hazards
i. Carcinogens
ii. Ionizing Radiation
iii. Air Quality
iv. Oxygen Deficiency

f) Walking & Working Surfaces
i. Standards
ii. Outdoor Surfaces

iii. Sand
iv. Dirt
v. Mud
vi. Gravel
vii. Grass
viii. Foliage
ix. Snow
x. Ice
xi. Roofs
xii. Scaffolding
xiii. Ladders
xiv. Indoor Surfaces
xv. Floor Surfaces
xvi. Grating
xvii. Stairs
xviii. Metal Surfaces
xix. Preventative Measures
xx. Slip-Resistant Footwear
xxi. Housekeeping
xxii. Lighting
xxiii. Floor Markings
xxiv. Heights

g) Heat & Cold
i. Standards
ii. Heat Illness
iii. Symptoms
iv. Sunburn
v. Heat Rash
vi. Dehydration
vii. Heat Exhaustion
viii. Heat Syncope
ix. Heat Cramps
x. Heat Stroke
xi. First Aid
xii. Call 9-1-1
xiii. Find a Cool Location
xiv. Loosen or Remove Clothing
xv. Cool Off

TRAINING OUTLINE

xvi. Increase Fluid Intake
xvii. Take Time to Rest
xviii. Take Temperature
xix. Prevention
xx. PPE
xxi. Cotton
xxii. Rayon
xxiii. Linen
xxiv. Blends
xxv. Headwear
xxvi. Shirts
xxvii. Pants
xxviii. Socks
xxix. Shoes
xxx. Cold Illness
xxxi. Clear vs. Cloudy Skies
xxxii. Snow
xxxiii. Windchill
xxxiv. Hypothermia
xxxv. Frostbite
xxxvi. Trench foot
xxxvii. Dehydration
xxxviii. Sunburn
xxxix. First Aid
xl. Call 9-1-1
xli. Find a Dry, Warm Location
xlii. Remove & Replace Wet Clothing
xliii. Warm Up
xliv. Take Time to Rest
xlv. Prevention
xlvi. PPE
xlvii. Fleece
xlviii. Wool
xlix. Cotton
l. Headwear
li. Shirts & Jackets
lii. Pants
liii. Socks

liv. Footwear
lv. Gloves

h) Struck By
   i. Flying Objects
   ii. Falling Objects
   iii. Swinging Objects
   iv. Rolling Objects

i) Safe Operations
   i. Training
   ii. Pre-Shift Inspections
   iii. For Pedestrians
   iv. Hand & Power Tools
   v. Misfire
   vi. Guards
   vii. Toe Boards
   viii. Dropping & Throwing

j) Heavy Equipment
   i. Cranes
   ii. Barriers
   iii. Lifting
   iv. Off-Centered Loads
   v. Tag Lines
   vi. Material Storage
   vii. Masonry
   viii. PPE
   ix. Hard Hat
   x. Type & Classification
   xi. Fit
   xii. Maintenance & Storage
   xiii. Eye Protection

k) Caught-In, -Between
   i. Caught-In
   ii. Clothing
   iii. Repairs
   iv. Machine Guarding
   v. Caught-Between
   vi. Materials Handling
   vii. Safe Operations

viii. Planning
ix. Barricades
x. Proper Materials Handling
xi. Proper Materials Handling by Hand
xii. Trenches & Excavation
xiii. Case Studies

l) Biological Hazards
i. Standards

m) Transmission
i. Blood-to-Blood Contact
ii. Blood-to-Mucous-Membrane Contact
iii. Ingestion of Contaminated Material
iv. Other Transmission Methods

n) Blood-Borne Diseases
i. Hepatitis
ii. HBV
iii. HCV
iv. HIV & AIDS
v. Other Diseases
vi. Malaria
vii. Syphilis
viii. Brucellosis

o) Exposure Control Plan: Precautions
i. ECP Revision & Updates
ii. Exposure Determinations
iii. Methods of Compliance
iv. Work Practice Controls
v. Handwashing
vi. Needle & Sharps Handling
vii. Contaminated Sharps Disposal
viii. Housekeeping
ix. Workplace Restrictions
x. Engineering Controls
xi. Personal Protective Equipment
xii. Donning & Doffing PPE
xiii. Protective Body Clothing
xiv. Masks & Face Shields
xv. Eye Protection

xvi. Gloves
xvii. First Aid PPE
xviii. Other PPE

p) **Hazard Communication**
   i. Warning Labels
   ii. Signs
   iii. Training
   iv. HBV Vaccinations

q) **Exposure Control Plan: Post-Exposure**
   i. Exposure Incident
   ii. Post-Exposure Procedures
   iii. Post-Incident Washing
   iv. First Aid
   v. Reporting to Your Employer

r) **Post-Exposure Evaluation & Follow Up**
   i. Incident Documentation
   ii. Blood Testing
   iii. Post-Exposure Treatment

s) **Recordkeeping**
   i. Medical Records
   ii. Sharps Injury Logs
   iii. ECP Evaluation: Post-Exposure
   iv. Reporting Records

t) **Chemical Identification**
   i. Safety Data Sheets (SDS's)
   ii. Labels
   iii. Six Elements
   iv. Manufacturer Information
   v. Product Identifier
   vi. Signal Words
   vii. Hazard Statement
   viii. Precautionary Statements
   ix. Pictograms
   x. National Fire Protection Agency
   xi. HMIS
   xii. DOT Classification
   xiii. Other Identification Methods
   xiv. Haste Waste Identification Process

xv. Hazardous Waste Site Characteristics
xvi. Ignitibility
xvii. Corrosivity
xviii. Reactivity
xix. Toxicity
xx. Training

u) Other Considerations
i. Hearing
ii. Ergonomics
iii. Environmental Hazards
iv. Other Hazards

6) Toxicology
a) Standards
b) Chemical Interactions with the Body
i. Chemical Interaction with the Body
ii. Individual Characteristics
iii. Age
iv. Gender
v. Pre-Existing Conditions
vi. Genetics
vii. Toxic Chemicals
viii. Highly Toxic Chemicals
ix. Gosselin, Smith, and Hodge Table
x. Dose & Duration
c) Methods of Exposure
i. Methods of Exposure
ii. Inhalation
iii. How Inhalation Works
iv. Cutaneous (Skin & Eye)
v. Chemical Absorption Through the Skin
vi. Direct Effects
vii. Systemic Effects
viii. Eyes
ix. Acids
x. Alkali (Bases)
xi. Ingestion
xii. Injection
d) States of Matter

i. Solids
    1. Dust
    2. Metal Fumes
    3. Flammable Solids
    4. Plastics
    5. Polyurethane
ii. Liquids
    1. Combustible Liquids
    2. Flammable Liquids
    3. Volatile Liquids
    4. Aerosolized Liquids
    5. Corrosive Liquids
iii. Gases
    1. Corrosive Gases
    2. Asphyxiant Gases

e) Types of Toxicants
    i. Conditions & Symptoms: Acute & Chronic
    ii. Acute Symptoms
    iii. Chronic Symptoms
    iv. Asphyxiants
        1. Hypoxia
        2. Carbon Monoxide
        3. Hydrogen Sulfide
        4. Hydrogen Cyanide
    v. Neurotoxins
    vi. Organic Solvents
    vii. Heavy Metals
    viii. Mercury
    ix. Carcinogens
    x. Ionizing Radiation
    xi. Carcinogenic Chemicals
    xii. Carcinogenic Metals
    xiii. Allergens
    xiv. Irritants & Sensitizers
    xv. Sensitizers
    xvi. Teratogens
    xvii. Mutagens
    xviii. Radiation

1. Non-Ionizing Radiation
2. Ionizing Radiation

f) Target Organ Toxicity
   i. Hepatotoxins (Liver)
   ii. Nephrotoxins (Kidney)
   iii. Neurotoxins (Nervous System)
   iv. Hematopoietic Toxins (Blood)
   v. Reprotoxic (Reproductive System)
   vi. Pulmonary Toxins (Lungs)
   vii. Asbestosis
   viii. Chronic Bronchitis
   ix. Radiation
      1. Alpha Radiation
      2. Beta Radiation
      3. Gamma Radiation
      4. X-Rays
      5. Radiation Sickness

g) Exposure Standards
   i. IDLH
   ii. Threshold Limit Values (TLVs)
   iii. Lethal Dose (LD50)
   iv. Limit Measurements
   v. Chemical Combinations
   vi. Additive
   vii. Synergistic
   viii. Potentiation
   ix. Antagonistic

7) Hazard Communication
   a) Standards
   b) Safety Data Sheets
      i. SDS Content
      ii. Section 1: Identification
      iii. Section 2: Hazard Information
      iv. Section 3: Composition
      v. Section 4: First Aid
      vi. Section 5: Firefighting

vii. Section 6: Accidental Release
viii. Section 7: Handling & Storage
ix. Section 8: Exposure Controls/PPE
x. Section 9: Physical & Chemical Properties
xi. Section 10: Stability & Reactivity
xii. Section 11: Toxicological Information
xiii. Section 12: Ecological Information
xiv. Section 13: Disposal Considerations
xv. Section 14: Transportation
xvi. Section 15: Regulatory Information
xvii. Section 16: Other Information

c) Labels
   i. Six Elements
   ii. Manufacturer Information
   iii. Product Identifier
   iv. Signal Words
   v. Hazard Statement
   vi. Precautionary Statements
   vii. Pictograms
   viii. Health Hazard
   ix. Flame
   x. Exclamation Mark
   xi. Gas Cylinder
   xii. Corrosion
   xiii. Exploding Bomb
   xiv. Flame Over a Circle
   xv. Skull & Crossbones
   xvi. Environment

d) Department of Transportation
   i. Class 1: Explosives
      1. Mass Explosive Hazard
      2. Projection Hazard
      3. Mass Fire Hazard
      4. Minor Explosive Hazard
      5. Blasting Agents
      6. Extremely Insensitive Explosives
   ii. Class 2: Gases
      1. Flammable Gas

2. Non-Flammable Gas
3. Division 2.2: Oxygen
4. Toxic Gas
5. Flammable Liquids
6. Combustible Liquids
7. Flammable Solids
8. Spontaneously Combustible Material
9. Dangerous When Wet
10. Oxidizers
11. Organic Peroxide
12. Poisonous Substances
13. Infectious Substances
14. Radioactive Materials
15. Corrosive Substances
16. Miscellaneous Dangerous Goods

iii. National Fire Protection Agency
1. Onsite Labeling

e) Operations
i. Communication Program
ii. HazCom Standard
iii. Roles & Responsibilities
iv. Written Plan
v. Chemicals Present
vi. Storage
vii. Labeling
viii. Safety Data Sheets
ix. Training
x. Evaluate & Reassess
xi. Emergency Response
xii. Signage
xiii. PPE
xiv. Gloves
xv. Eye Protection
xvi. Footwear
xvii. Respirators
xviii. Air Purifying Respirators
xix. Air-Supplying Respirators
xx. Cleaning & Storage

xxi. Training
xxii. Medical Evaluation
xxiii. Fit Test
xxiv. User Seal Check
xxv. Case Studies

8) Material Handling
   a) Standards
   b) General
   c) Inspection & Planning
      i. Symbols & Labels
      ii. Deterioration & Pressure
      iii. Monitor Area
      iv. Planning
         1. Hazard Awareness
   d) Equipment
      i. Drums & Other Containers
         1. Polyethylene or PVC-Lined Drums
         2. Single-Walled Drums
         3. Laboratory Packs
         4. Plastic Drums
         5. Steel Drums
         6. Salvage Drums
         7. Fiber Drums
         8. 7A Type A Drums
         9. TIH Overpack Drums
         10. Seamless Drums
         11. Lever Lock Closure Drums
         12. UN Rating
      ii. Other Equipment
         1. Hand Trucks & Push Carts
         2. Drum Dollies
         3. Drum Cradles
         4. Drum Jacks
         5. Drum Stacker
         6. Vertical Drum Lifters
         7. Hydraulic Drum Dumpers
         8. Forklifts
         9. Thumbs & Grapples

10. Front-End Loader
11. Roller Conveyor

e) Forklifts
   i. Types of Forklifts
   ii. Standards
   iii. Inspections
      1. Interior
      2. Exterior
   iv. Safe Operations
   v. Know Your Forklift
   vi. Operator's Manual
   vii. Mounting, Dismounting
   viii. Safe Driving
   ix. Load Handling
   x. Transporting Personnel
   xi. Know Your Worksite
   xii. Pedestrians
   xiii. Surroundings
   xiv. Ramps & Trailers
   xv. Common Hazards
      1. Struck by Forklift
      2. Struck by Falling Load
      3. Tip Over
      4. Elevating Personnel
      5. Run Off Dock
      6. Maintenance Related

f) Overhead Cranes
   i. Types of Overhead Cranes
   ii. Standards
   iii. Inspections
   iv. Rigging Considerations
      1. Typical Rigging Hardware
      2. Synthetic Slings
      3. Wire Rope Slings
      4. Chain Slings
      5. Lifting Hardware
      6. Basic Rigging Practices
      7. Load Weight

8. Load's Center of Gravity
9. Sling Angles
10. Basic Hitches

v. Safe Operations
1. Know Your Crane
2. Planning
3. Inspections & Manual
4. Personal Protective Equipment
5. Operations: Cab & Control Pendant
6. Load Handling
7. Hoist Brakes
8. Know Your Worksite
9. Pedestrians
10. Traffic & Barricades
11. Hoisting Loads
12. Communication
13. Critical Lifts
14. Critical Lift Plan
15. Pre-Lift Meeting
16. Conclusion

g) Safe Work Practices
i. Spill Containment
ii. Communication
iii. Vehicle Safety
iv. PPE
v. Overpacks
vi. Pallets
vii. Containment Berms
viii. Ergonomics
ix. Awkward Postures
x. Shoulder Rolls
xi. Back Stretches
xii. Quadricep Stretches
xiii. Hamstring Stretches
xiv. Lifting
xv. Feet
xvi. Legs
xvii. Hands

xviii. Elbows
xix. Back
xx. Pushing & Pulling

h) Handling Drums
   i. Unidentified Drums
   ii. Radioactive Waste
   iii. Explosive or Shock-Sensitive
   iv. Bulging Drums
   v. Laboratory Packs
   vi. Deteriorated or Leaking Drums
   vii. Buried Drums
   viii. Environmental Practices

i) Opening Drums
   i. Distance
   ii. Ongoing Monitoring
   iii. Correct Tools
   iv. Reseal the Drum
   v. Laboratory Packs

j) Sampling & Characterization
   i. Manual Sampling
   ii. Sampling Characterization
   iii. Contaminants of Concern

k) Staging & Bulking
   i. Drum Staging Areas
   ii. Initial Staging Area
   iii. Opening Area
   iv. Sampling Area
   v. Second Staging Area
   vi. Bulking Area
   vii. Bulking
   viii. Tank Trailers

l) Shipping
   i. Traffic Control
   ii. Driver Safety
   iii. Loading Drums
   iv. Decontamination
   v. Identification
   vi. Packaging

vii. Group I
viii. Group II
ix. Group III
x. Types of Packaging
xi. Single Packaging
xii. Composite Packaging
xiii. Inner & Outer Packaging
xiv. Combination Packaging
xv. Limited Quantities
xvi. Exemption Packaging
xvii. Packaging Responsibilities
xviii. Labeling & Placards
xix. Marking
xx. Shipping Papers
xxi. During Transport
xxii. Incident Reporting
xxiii. Telephone Incident Report

m) Special Case Problems
i. Tanks & Vaults
ii. Vacuum Trucks
iii. Compressed Gas Cylinders
iv. Valves
v. Opening Cylinders
vi. Cylinder Safety Devices
vii. Pressure Relief Valves
viii. Rupture Discs
ix. Fusible Plugs
x. Ponds & Lagoons
xi. Aerobic Ponds
xii. Anaerobic Ponds
xiii. Facultative Ponds
xiv. Conclusion

9) Illumination, Sanitation, & New Technology
a) Standards
b) Illumination
i. What is Light?
ii. How Does it Affect You?
iii. Worker Visibility

iv. Illumination Intensities
v. Light Meter
vi. LED Light Meter
vii. Glare
viii. Lighting Types
ix. Personal or Portable
x. Area Lighting
xi. Task
xii. Emergency Lighting
xiii. Daylight
xiv. Light Quality
xv. Direction
xvi. Electric Switches
xvii. Maintenance

c) Sanitation
i. Potable & Non-Potable Water
ii. Toilets
iii. Food Handling
iv. Temporary Sleeping Quarters
v. Washing Facilities
vi. Showers & Change Rooms
vii. Waste Disposal
viii. Housekeeping

d) New Technology Programs

10) Excavation

a) Standards
b) Competent Person
c) Soil Classification
i. Soil Identification
ii. Soil Composition
iii. Solids
iv. Liquids
v. Gases
vi. Soil Cohesiveness
vii. Unconfined Compressive Strength
viii. Cemented Soil
ix. Soil Classification
x. Stable Rock

xi. Type A Soils
xii. Type B Soils
xiii. Type C Soils
xiv. Testing the Soil
xv. Visual Tests
xvi. Manual Test
xvii. Plasticity
xviii. Dry Strength
xix. Thumb Penetration
xx. Drying Test
xxi. Other Strength Tests
xxii. Penetrometer

d) Protective Systems
i. Protective Systems
ii. Trench Shoring
iii. Timber Shoring
iv. Aluminum Hydraulic Shoring
v. Whaler Systems
vi. Advantages of Hydraulic Shoring
vii. Pre-Installation Inspection
viii. Shoring Installation
ix. Shielding
x. Shield Inspection
xi. Machinery Inspection
xii. Shield Installation
xiii. Additional Safety Practices
xiv. Sloping & Benching
xv. Surcharge Loads

e) Safe Operations
i. Soil Mechanics
ii. Soil Weight
iii. What Weakens a Trench?
iv. Vertical Pressure
v. Lateral Pressure
vi. Soft Zone
vii. Soft Pockets
viii. Sloughing
ix. Shearing

x. Rotational Failure
xi. Tension Cracks
xii. Sliding
xiii. Toppling
xiv. Subsidence & Bulging
xv. Heaving or Squeezing
xvi. Boiling
xvii. Corner Sloughing
xviii. Trench Failure
1. Stage One
2. Stage Two
3. Stage Three
4. Stage Four
xix. Other Considerations
xx. Inspections
xxi. Underground Utilities
xxii. Road Work
xxiii. Access & Egress
xxiv. Structural Ramps
xxv. Stability of Adjacent Structures
xxvi. Falling Loads
xxvii. Pedestrians
xxviii. Weight Considerations
xxix. Weather
xxx. Water Accumulation
xxxi. Water Removal
xxxii. Well Points
xxxiii. Direct Pumping
xxxiv. Hazardous Atmospheres
xxxv. Control Methods
xxxvi. Emergency Rescue Equipment

f) Common Hazards
i. Case Studies
ii. Other Accident Causes
iii. Conclusion

11) Confined Spaces
a) Characteristics of a Confined Space
b) Standards

c) Two Options for Entry
d) Non-Permit Required Confined Space
e) Permit-Required Confined Space
f) Hazardous Atmosphere
g) Equipment
    i. Personal Protective Equipment
    ii. Ventilators
    iii. Respirators
    iv. Inspection
    v. Cleaning & Storage
    vi. Training
    vii. Medical Evaluation
    viii. Fit Test
    ix. User Seal Check
    x. Safe Ingress & Egress
    xi. Body Harness
    xii. Inspection
    xiii. Lanyards
    xiv. Tripods
    xv. Frame
    xvi. Retrieval Systems
    xvii. Self-Retracting Lifeline
    xviii. Setup
    xix. Ladders
    xx. Lighting
    xxi. Fire Extinguisher
    xxii. Other
h) Testing
    i. Oxygen
    ii. When to Test
    iii. How to Test
    iv. Oxygen
    v. Gas, Vapors, Dust
    vi. Toxic Contaminants
    vii. Sampling
    viii. Sample Draw
    ix. Diffusion
    x. Monitors

xi. Testing Equipment
xii. Measuring Limits
xiii. Operational Limits
xiv. Technical Considerations
xv. RF Protection
xvi. Response Time
xvii. Sensitivity
xviii. Reading Drifts
xix. Accuracy & Precision
xx. Selectivity or Specificity

i) Safe Operations
   i. Know Your Duties
      1. Assigned Duties
      2. Entrant
      3. Attendant
      4. Entry Supervisor
      5. Others
      6. Employer
   ii. Know Your Worksite
      1. Signage
      2. Protecting the Entrance
      3. Permit Program
      4. Permits
      5. Other Permits
   iii. Hazards
      1. Oxygen Deficiency
      2. Consumption
      3. Displacement
      4. Reaction
      5. Oxygen Enrichment
      6. Toxic Atmosphere
      7. Asphyxiants
      8. Irritants
      9. Flammable or Explosive Atmospheres
      10. Distractions
      11. Fatigue
      12. Heat & Cold
      13. Emotional & Physical Health

iv. Rescue
    1. Evaluate
    2. Initial Evaluation
    3. Response Time
    4. Communication
    5. Assessment, Preparation, & Rescue
    6. Performance Evaluation
    7. Training
    8. Rescue by Non-Entry
    9. Rescue by Trained Employees
    10. Rescue by Others
    11. Rescue Roles

12) Fall Protection
    a) Standards
    b) General Knowledge
    c) Fall Protection Categories
        i. Fall Prevention
        ii. Fall Restraint
        iii. Fall Arrest
        iv. Positioning System
        v. Passive & Active Systems
        vi. Max. Arresting Forces & Safety Factors
        vii. Safety Factor
    d) Equipment
        i. Personal Fall Protection Systems
        ii. Body Wear
        iii. Full-Body Harness
        iv. Shoulder, Chest, & Leg Straps
        v. Sub-Pelvic Strap
        vi. Dorsal D-Ring
        vii. Other Components
        viii. Harness Inspection
        ix. Other Hardware
        x. Tags & Labels
        xi. Body Belts
        xii. Body Belt Inspection
        xiii. Other Body Wear
        xiv. Anchorages

xv. Inspecting Anchorages
xvi. Lifelines
xvii. Inspecting Lifelines
xviii. Prohibited Anchorages
xix. Connective Devices
xx. Snap Hooks
xxi. Snap Hook Safety Latch
xxii. Lanyards
xxiii. Shock-Absorbing Lanyards
xxiv. Internal Stretch Lanyards
xxv. Pack Type Lanyards
xxvi. Non-Shock-Absorbing Lanyards
xxvii. Inspecting Lanyards
xxviii. Self-Retracting Lifeline
xxix. Inspecting SRLs

e) Fall Prevention Systems
   i. Guardrails
   ii. Toe Boards
   iii. Rebar Caps
   iv. Warning Lines
   v. Safety Nets

f) Safe Operations
   i. Know Your Equipment
   ii. Training
   iii. Select the Correct PFPS
   iv. Inspections
   v. Donning Body Wear
   vi. Using Connective Devices
   vii. PFPS Storage
   viii. Familiarity With Worksite
   ix. Guardrails
   x. Toe Boards
   xi. Holes & Openings
   xii. Warning Lines
   xiii. Safety Monitoring Systems
   xiv. Controlled Access Zones
   xv. Free Fall
   xvi. Fall Clearance Distance

- xvii. Swing Fall
- g) Other Considerations
  - i. Scaffolds
  - ii. Aerial Lifts
  - iii. Ladders
  - iv. Confined Spaces
  - v. Excavations
  - vi. Steel Erection
  - vii. Rescue Plan
- h) Case Studies
- i) Conclusion

13) **Lockout/Tagout**

- a) Standards
- b) General
  - i. Energy-Isolating Devices
  - ii. LOTO Exceptions
  - iii. Unplugging Equipment
  - iv. Hot Tap Operations
  - v. Minor Tool Changes
- c) Equipment
  - i. Durability
  - ii. Substantial
  - iii. Identifiable
  - iv. Standardized
  - v. Types of LOTO Devices
  - vi. Circuit Breaker Lockout
  - vii. Valve Lockout
  - viii. Plug Lockout
  - ix. Pneumatic Hose Lockout
  - x. Wall Switch Lockout
  - xi. Group Lock Boxes
  - xii. Hasp Lockouts
- d) Safe Operations
  - i. Energy Types
  - ii. Electrical
  - iii. Mechanical
  - iv. Hydraulic
  - v. Pneumatic

vi. Chemical
vii. Thermal
viii. Energy Control Program
1. Employee Training
2. Authorized Employees
3. Affected Employees
4. Other Employees
5. Refresher Training
6. Periodic Inspections
7. Energy Control Procedures
8. Lockout/Tagout Process
9. Shutdown
10. Notification of Employees
11. Isolation
12. Device Application
13. Verification of Isolation
14. Two of More Workers
15. Shift Change
16. Machine Restart

e) Hazards
i. LOTO Devices
ii. Verification
iii. Conclusion

14) **Hazardous Locations**
a) Standards
b) Lower Flammable Limit
c) Upper Flammable Limit
d) Contributing Factors of Classification
e) Vapor Density
f) Flash Point
g) Combustible Dust
h) Combustible Liquids
i) Classifications
j) Divisions
k) Hazard Groups
i. Group A: Acetylene
ii. Group B
iii. Group C

iv. Group D
v. Group E
vi. Group F
vii. Group G

l) Zone System
m) Groups
n) Documentation
o) Conclusion

15) **Personal Protective Equipment**

a) Standards
b) Controls
c) PPE Program
i. PPE Training
ii. Hazard Assessment
iii. Electrical
iv. Impact & Compression
v. Fires & Burns
vi. Chemicals
vii. Harmful Dusts
viii. Light Radiation
ix. Falling Objects
x. Lacerations & Punctures
xi. Biological Hazards
xii. Periodic Hazard Inspections
xiii. Selecting PPE
xiv. PPE Maintenance
xv. Program Evaluation
xvi. Selecting PPE
xvii. Do You Have the Right PPE?
xviii. Permeation
xix. Degradation
xx. Penetration
xxi. Durability
xxii. Breakthrough Time
xxiii. PPE Maintenance

d) PPE Classifications
i. Respirators
1. Air-Purifying Respirator

2. Mechanical Filter Respirators
3. Chemical Cartridge Respirators
4. Powered Air-Purifying Respirators
5. Mechanical Filter Respirators
6. Air-Line Respirators
7. Self-Contained Breathing Apparatus (SCBA)
8. Inspection
9. Cleaning & Storage
10. Training
11. Medical Evaluation
12. Fit Testing
13. Emergency Respirator Pack
14. Escape Mouth-Bit or Half Mask
15. Full Face Mask with Filter in a Sealed Bag
16. Smoked Escape Hood
17. Oxygen Self-Rescuer
18. Sar/ESCBA with Escape Cylinder
19. SCBA
20. Training

ii. Head Protection
1. Hard Hats
2. Hard Hat Maintenance
3. Eye & Face Protection
4. Glasses, Goggles, & Face Shields
5. Eye Glasses & Contact Lenses
6. Hearing Protection
7. Single-Use Earplugs
8. Pre-Formed or Molded Earplugs
9. Earmuffs

iii. Body Protection
1. Overalls & Coveralls
2. Hooded Chemical-Resistant Suits
3. Fully-Encapsulated Suits

iv. Hand Protection
1. Cut Levels
2. Puncture Resistance
3. Abrasion & Tear Resistance
4. Impact Protection

5. Sizing Gloves
6. Other Properties
7. Grip
8. Dexterity
9. Comfort
10. Temperature
11. Glove types
12. Chemical-Resistant Gloves
13. Butyl & Viton
14. Neoprene
15. PVC
16. PVA
17. Nitrile
18. Proper Care of Protective gloves
19. Other Gloves

v. Foot Protection
1. PPE Cleaning & Storage

e) PPE Levels
i. Levels of PPE
ii. Level A
iii. Level B
iv. Level C
v. Level D
vi. Donning PPE

f) Donning PPE
i. Donning Level A
ii. Donning Level B
iii. Donning Level C

g) Safe Operations
i. Work Mission Duration
ii. Air Supply Consumption
iii. Work Rate
iv. Fitness
v. Body Size
vi. Breathing Patterns
vii. Reverse Skip Breathing
viii. Tactical Breathing
ix. Reilly Breathing Technique

x. Temperature
xi. Cooling Supplies
xii. Ice Vests
xiii. Hard Hat Inserts
xiv. Additional PPE
xv. Communication
xvi. Special Conditions
xvii. Upgrading/Downgrading PPE

h) Hazards
i. Routes of Exposure
ii. Inhalation
iii. Cutaneous
iv. Ingestion
v. Injection
vi. Permeation
vii. Degradation
viii. Breakthrough Time
ix. Heat & Cold Stress
x. Air Supply Consumption
xi. Additional PPE
xii. Communication
xiii. Psychological Hazards

i) **Decontamination**
i. Factors of Contamination
ii. Exposure Time
iii. Concentration
iv. Temperature
v. Reactivity
vi. Physical State of Waste
vii. Size of Molecule & Pore Size

j) Contamination Prevention
i. Work Practice Controls
ii. Remote Sampling
iii. Equipment Protection
iv. Encasement
v. Disposables

k) Decontamination Plan
i. Decontamination

ii. Decontamination Plan
iii. Decontamination Equipment
iv. Decontaminating Personnel & PPE
v. Heavy Equipment Decontamination
vi. Decontamination Stations
vii. Disposal of Clothing & Equipment
viii. Disposal
ix. Disposal Considerations
x. Unknown Substances
xi. Laundering
xii. Showers & Changing Rooms

l) Decontamination Methods
i. Physical Removal
ii. Loose Contaminants
iii. Adhering Contaminants
iv. Volatile Liquids
v. Chemical Removal
vi. Dissolving
vii. Using Water as a Solvent
viii. Dilute Acids and Bases as Solvents
ix. Solidification
x. Absorption and Adsorption
xi. Surfactants
xii. Inactivation
xiii. Sterilization

16) Decontamination Procedures
a) Aviation Industry
b) Airline SOPs
c) Checklists
d) Decontamination Procedures
e) Standard Operating Procedures
f) Considerations Before Donning
g) Stress Evaluation
h) Donning
i) PPE Check
j) Decontamination Lines
k) Decontamination Line Layout
l) Exclusion Zone Stations

TRAINING OUTLINE

i. Station 1: Segregated Equipment Drop
ii. Station 2: Boot Cover and Glove Wash
iii. Station 3: Boot Cover & Glove Rinse
iv. Station 4: Tape Removal
v. Station 5: Boot Cover Removal
vi. Station 6: Outer Glove Removal

m) Contamination Reduction Zone Stations
i. Station 7: Suit and Boot Wash
ii. Station 8: Suit and Boot Rinse
iii. Station 9: Tank Change and Redress
iv. Station 10: Safety Boot Removal
v. Station 11: Suit and Hart Hat Removal
vi. Station 12: SCBA Backpack Removal
vii. Station 13: Inner Glove Wash
viii. Station 14: Inner Glove Rinse
ix. Station 15: Facepiece Removal
x. Station 16: Inner Glove Removal
xi. Station 17: Inner Clothing Removal

n) Support Zone Stations
i. Station 18: Field Wash
ii. Station 19: Redress

o) Minimum Decontamination Layout
p) Levels of Decontamination Lines
q) Level A Decontamination
r) Level B Decontamination Lines
s) Level C Decontamination Lines
t) Decontaminating Equipment
u) Effectiveness Testing
v) Visual Observation
w) Natural Light
x) Ultraviolet Light
y) Wipe Sampling
z) Cleaning Solution Analysis
aa) Offsite Permeation Testing
bb) Training
cc) Communication Plan
dd) Emergency Decontamination
ee) Conclusion

17) Medical Surveillance
- a) Standards
- b) Developing a Program
  - i. Hazard Recognition
  - ii. Other Hazards
  - iii. Establishing Protocols
  - iv. Addressing Specific Needs
  - v. Maintaining Daily Details
  - vi. Planning Meetings
  - vii. Checklists
  - viii. Establishing Work Environment
  - ix. Participation
  - x. Management Participation
  - xi. Achievement
  - xii. Medical Leadership
  - xiii. Safety Advisor
  - xiv. Training
  - xv. Comprehension
  - xvi. Language Interpreters
  - xvii. Discussions & Questions
  - xviii. Visual Training Techniques
  - xix. Equipment Use
  - xx. Following Signs
  - xxi. First Aid Training
  - xxii. Follow-Up Training
  - xxiii. Role Identification
  - xxiv. Predetermined Responses
  - xxv. Non-job Illnesses
  - xxvi. Communication with Medical Professionals
  - xxvii. Cooperation with Local Hospital and Medical Specialists
  - xxviii. Maps & Directions
  - xxix. GPS Tracking
  - xxx. Recommendations
- c) Pre-Employment Medical Exam
  - i. Pre-Employment Screening
  - ii. Medical & Occupational History
  - iii. Past Medical Records
  - iv. Job-Related Records

v. Communication
vi. Communication Hacks
vii. Physical Exam
viii. Setting a Baseline
ix. Establish Physical Capacity
x. Ability to Work with PPE
xi. Psychological Complications
xii. Pulmonary Functions Tests
xiii. Audiometric Tests
xiv. Vision Tests
xv. Echocardiogram (EKG)
xvi. Chest X-Ray
xvii. Follow-Up Irregularities
xviii. Stress Tests
xix. Information for Your Physician
xx. Physician's Written Opinion

d) Periodic Medical Exams
   i. Frequency
   ii. Full vs. Partial Exams
   iii. Termination Exam
   iv. Temperature Exposure
   v. Hydration
   vi. Psychological Tests or Consultations
   vii. Psychological Complications
   viii. Therapy & Consultation
   ix. Psychological Trauma

e) Medical Records
   i. Work-Related Incidents
   ii. Accident Reports
   iii. Medical Complaints
   iv. Recordable Injuries
   v. Non-Recordable First Aid
   vi. Forms
   vii. Injury Discrimination
   viii. Providing Records to Government Officials
   ix. Organization
   x. Annual Summary
   xi. Keeping Records for Multiple Agencies

xii. Advance Directives
xiii. Living Will
xiv. Durable Power for Attorney Healthcare
xv. Mental Health Directive
xvi. Latency Period
xvii. Privacy & Safety Debate
xviii. Privacy Rule
xix. Security Rule
xx. PHI
xxi. What You Can Do
xxii. Insurance
xxiii. OSHA Regulations
xxiv. Standards
xxv. State Plans

f) Program Review
i. Evaluations
ii. Evaluate and Reassess
iii. Accident Investigations
iv. Investigation Process
v. Study Tendencies
vi. Implementing Updates
vii. Conclusion

18) Fire Prevention

a) Standards
b) General
i. Signage
ii. Hazard Communication
iii. Storage
iv. Chemicals
v. Compressed Gases
vi. Flammable Liquids
vii. Labeling Systems
viii. Fire Diamond
ix. GHS
x. DOT
xi. Other Hazards

c) Equipment
i. Personal Protective Equipment

ii. Fire Protective Systems
iii. Automatic Sprinkler Systems
iv. Standpipes
v. Fire Pumps
vi. Portable Fire Extinguishers
vii. Fire alarms & Detection Systems
viii. Smoke-Control Systems
ix. Fire Department Connections
x. Fire Hydrants
xi. Fire access Roads
xii. Interior Finishing & Other Materials

d) Emergency Planning & Preparedness
   i. Means of Egress
   ii. Fire Prevention Plan
   iii. Fire Watch

e) Hazards/Case Studies
   i. Case Studies
   ii. Conclusion

19) **Emergency Procedures**

a) Case Study
b) Standards
c) Pre-Emergency Planning
   i. Pre-Emergency Planning
   ii. Site Health Safety
   iii. Emergency Response Plan
   iv. ERP Content Requirements

d) Personnel
   i. Personal Roles
   ii. Training
   iii. Chain of Command
   iv. Senior Official
   v. Incident Commander
   vi. Hazardous Materials Specialist
   vii. Hazardous Materials Technician
   viii. First Responder: Operations Level
   ix. First Responder: Awareness Level
   x. Chain-of-Command Training
   xi. Offsite Responders

xii. Federal Response Organizations
xiii. Onsite Civilians
xiv. Communications

e) Worksite Safety
   i. Emergency Recognition & Prevention
   ii. Site Security & Control
   iii. Site Mapping
   iv. Work Zones
   v. Exclusion Zones
   vi. Contamination Reduction Zone
   vii. Support Zone
   viii. Safe Distances
   ix. Refuges
   x. Evacuation Routes
   xi. Personal Locator Systems
   xii. Passive Personal Locator System
   xiii. Active Personal Locator System
   xiv. Security Measures
   xv. Establish an Identification System
   xvi. Entry & Exit Guards
   xvii. Erect Fences or Physical Barriers
f) Emergency Procedures Part 1
   i. Initiating Emergency Response
   ii. Assessing the Emergency
   iii. Emergency Evacuation
   iv. Public Evacuation
   v. Emergency Transportation
   vi. Victim Recovery Procedures
   vii. Emergency Decontamination
   viii. Emergency First Aid
   ix. Drum & Container Handling
   x. Pressurized Drums or Containers
   xi. Opening Drums or Containers
g) Emergency Procedures Part 2
   i. Spill Response
   ii. Spill Control
   iii. Spill Elimination
   iv. Overpack Drum

TRAINING OUTLINE

v. Absorption Materials
vi. Bonding Agents
vii. Neutralizing Materials
viii. Vapor Control
ix. Diking & Damming
x. Fire Control
xi. Portable Fire Extinguishers
xii. Selecting a Fire Extinguisher
xiii. Class A
xiv. Class B
xv. Class C
xvi. Class D
xvii. Extinguisher Agents
xviii. UL Ratings
xix. Extinguisher Access
xx. Fire Extinguisher Maintenance
xxi. Monthly Inspection
xxii. Yearly Inspection
xxiii. Hydrostatic Test
xxiv. Six-Year Inspection
xxv. Replacing Extinguishers
xxvi. Operating an Extinguisher
xxvii. Assess the Situation
xxviii. Extinguisher Use
xxix. Pull
xxx. Aim
xxxi. Squeeze
xxxii. Sweep
xxxiii. Post Use
xxxiv. Fire Suppression Systems
xxxv. Automatic Sprinkler Systems
xxxvi. Fire Pumps
xxxvii. Dry-Chemical System
xxxviii. Wet-Chemical System
xxxix. Gaseous Agent System
xl. Fire Department Connections
xli. Fire Hydrants
xlii. Fire Access Roads

xliii. Cleanup
xliv. Response Follow-Up
xlv. Documentation
xlvi. Providing Records to Government Officials
xlvii. Conclusion

20) Conclusion
a) Regulation & Overview
b) Site Characterization
c) Control Zones
d) Hazard Recognition
e) MAD
f) Ergonomics
g) Blood-Borne Pathogens
h) SDSs
i) Pictograms
j) Heavy Machinery
k) Toxicology
l) Site Monitoring
m) Illumination, Sanitation, New Technology
n) Walking & Working Surfaces
o) Fire Prevention
p) Hazard Communication
q) Material Handling
r) Load Weight
s) Excavation
t) Lockout/Tagout
u) Hazardous Locations
v) Confined Spaces
w) Fall Protection
x) PPE
y) Heat & Cold Stress
z) Decontamination
aa) Medical Surveillance
bb) Emergency Response Plan
cc) Practical Review
dd) Congratulations!