Basic Orientation

Version 7.0

STUDENT WORKBOOK

Version 11012024

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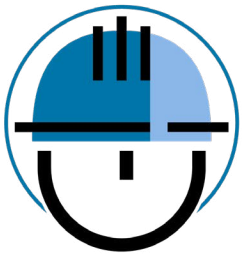

Module 1

Safety and Health

HUMAN PERFORMANCE TOOLS		
Icon	**Tool**	**Description**
	**A Questioning Attitude**	This type of attitude helps you and your coworkers make sure you really know the right information for the job and that there are no unknowns. A questioning attitude helps you differentiate between facts and improper assumptions. Improper assumptions can create dangerous situations at work.
	**Stopping When Uncertain**	Every worker has the obligation to stop work when they are uncertain, when they witness an unsafe act, or when they have identified an unsafe condition.
	**Self-Checking**	Self-checks allow workers to take a few minutes to pause and focus their attention on the task at hand. Taking this extra time allows workers to understand what is being done, identify the potential outcomes, and put a plan in place if expected results change.
	**Peer-Checking**	Peer-checking is when a coworker verifies an activity or task to reduce the chance for error.
	**Three-Way Communication**	Three-way communication is used to eliminate barriers to communication by confirming messages are correctly sent and received.
	**Procedure and Adherence**	Procedures are used to make sure workers follow the right steps in the right order. They are also used to help workers avoid repeating the same mistakes.
	**Job Safety Analyses (JSAs)**	JSAs are formal reviews of a particular job or task that identify the potential hazards of a job so that control measures can be put in place before work begins.

International Association of Oil & Gas Producers

LIFE-SAVING RULES

Bypassing Safety Controls

Obtain authorisation before overriding or disabling safety controls

- I understand and use safety-critical equipment and procedures which apply to my task
- I obtain authorisation before:
  - disabling or overriding safety equipment
  - deviating from procedures
  - crossing a barrier

Confined Space

Obtain authorisation before entering a confined space

- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm a rescue plan is in place
- I obtain authorisation to enter

Driving

Follow safe driving rules

- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements

Energy Isolation

Verify isolation and zero energy before work begins

- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked, and tagged
- I have checked there is zero energy and tested for residual or stored energy

Hot Work

Control flammables and ignition sources

- I identify and control ignition sources
- Before starting any hot work:
  - I confirm flammable material has been removed or isolated
  - I obtain authorisation
- Before starting hot work in a hazardous area I confirm:
  - a gas test has been completed
  - gas will be monitored continually

Line of Fire

Keep yourself and others out of the line of fire

- I position myself to avoid:
  - moving objects
  - vehicles
  - pressure releases
  - dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potential dropped objects

Safe Mechanical Lifting

Plan lifting operations and control the area

- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load

Work Authorisation

Work with a valid permit when required

- I have confirmed if a permit is required
- I am authorised to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change

Working at Height

Protect yourself against a fall when working at height

- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

THE LIFE-SAVING RULES (LSRS) IN PRACTICE

TOOLBOX TALKS & SAFETY MEETINGS

- Can we learn from incidents that involved a Life-Saving Rule not being followed?

PRE-JOB PLANNING

- Are we doing any work today involving a Life-Saving Rule?
- How can we follow the Rule from start to finish?
- What needs to be in place?
- Is everything in place and in good working condition?

LAST MINUTE RISK ASSESSMENT

- Have I done all the actions associated with the Life-Saving Rules?
- Is everything as we discussed in the pre-job planning?
- Are there any line of fire hazards or ignition sources we didn't identify?

POST-JOB REVIEWS

- Did we take all the actions associated with the Life-Saving Rules?
- What went well? What didn't go well?
- Anything to note for the next time we have to perform this task or work in this area?

OBSERVATIONS & WALKABOUTS

- Do you see anyone performing work where a Life-Saving Rule is relevant?
- Are they following the Rule?
- Yes? Great, recognize it!
- No? Intervene!

INTERVENTION

- Intervene or stop the work if a Life-Saving Rule is not being followed.

Each topic in this course includes a fill-in-the-blank exercise to help you identify important information. Follow along as your instructor covers each topic and fill in your answers as you go.

FILL-IN-THE-BLANK: SECTION 1

1. **The following are responsiblities of _____.**
   - ***Provide training to workers.***
   - ***Implement hazard controls.***
   - ***Implement a reporting system.***
2. **The following are responsibilities of _____.**
   - ***Follow the safety and health rules that apply to their job.***
   - ***Wear the required PPE.***
   - ***Report on unsafe working conditions and health hazards.***
3. **The approach that supports worker behavior is an outcome of an improperly designed system, and not the root cause of the problem is known as _____.**
4. **The approach that relies on a peer observing worker behavior to influence their actions toward safer outcomes is known as _____.**
5. **The purpose of the IOGP life-saving rules is to provide workers with the actions they can take to prevent _____.**

Notes

Hazard Recognition

FILL-IN-THE-BLANK: SECTION 2

1. **Any source of potential damage, harm, or adverse health effects on something or someone under certain conditions at work: _____.**
2. **The probability that someone will be harmed or experience adverse health effects if exposed to a hazard: _____.**
3. **The organized and scientific approach to control workplace hazards and protect workers: _____.**
4. **One way to identify hazards in the workplace is to _____ accidents, incidents, and near misses to determine the underlying hazards and their causes.**
5. **Once a hazard has been identified, it must be _____ to determine the risk involved and select the most appropriate control measures.**

Notes

Hazard Control

Overview of the Types of PPE	
Type	**Notes**
Head Protection	• Hard hats protect your head from falling or flying objects. • An effective hard hat is American National Standards Institute (ANSI) Z89-approved and water-resistant.
Eye Protection	• Safety glasses must be ANSI Z87-approved with approved side shields. • Other types of eye protection include goggles and face shields. • Always wear safety glasses or goggles with face shields. Face shields alone do not provide enough protection.
Hearing Protection	• Ear protection can reduce worker exposure to noise below 90 decibels (dBA). • Ear plugs are put in the ear canal while earmuffs cover the entire outside of the ear.
Hand Protection	• The hazards and the type of work will determine the type of gloves to wear. • Knowing when not to wear gloves is just as important as knowing what type to wear. • Glove types include rubber, leather, cloth, high visbility, and specialty.
Body Protection	• Flame-resistant clothing (FRC) protects you from flash fires, flames, and electrical arcs and is self-extinguishing. • Make sure your FRC is approved for use in the environment you will be working.
Foot Protection	• Protective footwear must meet ANSI Z41 and American Society for Testing and Materials (ASTM) F-2412 and F-2413 standards.
Gas Monitor	• Gas monitors are devices that are worn if you are working in a potentially hazardous environment. • Gas monitors DO NOT protect you from a hazard. • You must receive hands-on training with the specific gas monitor that you will be using in the field.
Respiratory Protection	• A respirator is designed to improve the air you breathe in. • Choosing the correct type of respirator is essential for it to be effective. • You must be trained, fit tested, and medically evaluated before wearing a respirator.

JOB SAFETY ANALYSIS *Sample*

JSA MUST BE COMPLETED FOR EVERY JOB TASK BEFORE WORK BEGINS.
JSA MUST BE AMENDED OR UPDATED IF CONDITIONS OR JOB SCOPE CHANGES.

JSA Number:	*JSA010203*
PERMIT TO WORK REQUIRED:	☐ YES ☒ NO

LOCATION (WORKSITE NAME)	DATE	TIME	SHIFT (Day or Night)	WEATHER
Plant-wide	*XX/XX/20XX*	*7:30 pm*	*Night – 2nd shift/ swing shift*	*Wind – northwest to southeast; cold, 66°F*

DESCRIPTION OF JOB TASK

Operate forklift to move load to and from unit

EQUIPMENT IN USE

Forklift

PPE CHECKLIST

- ☒ Hard Hat
- ☒ Safety Glasses
- ☒ FRC
- ☐ Faceshield
- ☐ Goggles
- ☐ Reflective Vest
- ☒ Protective Footwear
- ☒ Hearing Protection
- ☐ Gas Monitor
- ☐ Fixed Monitor(s)
- ☒ Gloves, type: *impact-resistant*
- ☐ Fall Protection
- ☐ Respirator (circle type): Air-purifying Supplied-air
- ☐ Other : _____

_____

SUPERVISOR NAME:	

All workers on the jobsite must verify, review, and sign this JSA before work begins.

PRINT NAME	SIGNATURE	PRINT NAME	SIGNATURE

WORKERS AND SUPERVISORS WILL REVIEW AND SIGN OFF ON THE JSA AFTER COMPLETING THE JOB STEPS PAGE. WORKERS WILL FOLLOW THE JOB STEPS ON THE JOB.

JOB SAFETY ANALYSIS *Sample*

JSA Number:	*JSA010203*

JSA MUST BE COMPLETED FOR EVERY JOB TASK BEFORE WORK BEGINS
JSA MUST BE AMENDED OR UPDATED IF CONDITIONS OR JOB SCOPE CHANGES

PLANNED JOB STEPS (in order)	POTENTIAL HAZARDS (specific to each step)	HAZARD CONTROLS (eliminate or minimize risks)
1. *Inspect forklift*	• *Sharp edges/pinch points between moving parts and covers* • *Damaged or defective forklift*	• *Wear PPE* • *Use forklift inspection form* • *Have trained worker complete inspection*
2. *Pick up load*	• *Unbalanced/falling load* • *Crush/tip-over hazards*	• *Keep workers away from lifted load* • *Check that load is secure/balanced before lift* • *Do not overload* • *Wear seat belt*
3. *Move load from unit*	• *Traffic* • *Contact with people or vehicles* • *Rollover or tipover hazards*	• *Stop traffic in the area* • *Take route with least vehicular/ worker traffic* • *Use flagger* • *Travel at slow speed*
4. *Unload load*	• *Blocking access routes* • *Improper storage* • *Equipment damage*	• *Do not block access routes/safety equipment* • *Place on even surface that can withstand load's weight* • *Use a spotter*
5. *Park forklift*	• *People (crush or struck-by injury)* • *Uneven surfaces* • *Tripping hazards (forks)* • *Unauthorized use*	• *Use a flagger* • *Avoid uneven surfaces* • *Lower forks/chock wheels* • *Remove key; LOTO*

ACTIVITY: HIERARCHY OF CONTROLS IN ACTION

DIRECTIONS Provide an example for each type of control that can be used to eliminate or reduce the risk of exposure to fall hazards. Identity the challenges or disadvantages of each example.	
Elimination	
Example	
Disadvantage	
Substitution	
Example	
Disadvantage	
Engineering Controls	
Example	
Disadvantage	
Administrative Controls	
Example	
Disadvantage	
PPE	
Example	
Disadvantage	

FILL-IN-THE-BLANK: SECTION 3

1. The controls that are the most effective at controlling hazards but are often difficult to put in place are _____ and _____.
2. The action to change, slow down, or stop an unsafe act or condition is known as _____ authority.
3. A formal review of a task or job that is completed before work begins is known as a _____.
4. One of the reasons workers do not wear the required PPE is because it is uncomfortable or does not _____ properly.
5. Annual training, fit testing, and a medical evaluation are required to wear a _____.
6. PPE must be _____ before each use.
7. The following are some responsiblities of _____.
   - *Wear, use, and inspect the required PPE.*
   - *Know what PPE is required for the job.*
   - *Be familiar with the type of PPE and its limitations.*
8. The following are some responsibilities of _____.
   - *Identify and provide the necessary PPE.*
   - *Conduct and document PPE training.*
   - *Ensure all PPE is appropriate and acceptable.*
9. You must obtain _____ before disabling or overriding safety equipment, deviating from procedures, or crossing a barrier.

Notes

Hazard Communication

IDENTIFYING AND CLASSIFYING HAZARDOUS SUBSTANCES

SAMPLE LABEL

CODE _____
Product Name _____

Product Identifier

Company Name _____
Street Address _____
City _____ State ___
Postal Code _____ Country ___
Emergency Phone Number _____

Supplier Identification

Hazard Pictograms

Hazard Statements

- **Highly flammable liquid and vapor.**
- **May cause liver and kidney damage.**

DANGER

Signal Word

Supplemental Information

Direction for Use
_____
_____
_____

Fill weight: _____ Lot Number: _____
Gross weight: _____ Fill Date: _____
Expiration Date: _____

Precautionary Statements

Keep container tightly closed	Dispose of in accordance with local, regional, national, and international regulations as specified	Store in cool, well ventilated, locked place
Keep away from heat/sparks/open flame	**First Aid:** If exposed call Poison Control Center. If on skin (or hair): Immediately take off any contaminated clothing. Rinse skin with water.	No smoking
Only use non-sparking tools	Wash hands thoroughly after handling	Use explosion-proof electrical equipment
Take precautionary measure against static discharge	In Case of Fire: use dry chemical (BC) or Carbon Dioxide (CO_2) fire extinguisher to extinguish	Ground and bond container and receiving equipment
Do not breathe vapors		Wear protective gloves
Do not eat, drink, or smoke when using this product		

Health Hazard

Carcinogenic, mutagenic, target organ toxicity, reproductive toxicity, respiratory sensitizer

Flame

Flammable, pyrophoric, self-heating, self-reactive, emits flammabe gas, organic peroxide, desensitized explosives

Exclamation Mark

Irritant, narcotic effects, dermal sensitizer, respiratory tract irritant
(less severe toxicity)

Gas Cylinder

Gas under pressure

Corrosion

Corrosive (chemical reaction with metals), chemical burns

Exploding Bomb

Explosive, self-reactive, organic peroxide

Flame Over Circle

Oxidizer

Environment

Aquatic toxicity
(not required by OSHA, but required by EPA)

Skull and Crossbones

Severely toxic

SAFETY DATA SHEET BREAKDOWN	
Section	**Required Information**
1. Identification	Gives the product identifier, manufacturer, importer or responsible party, U.S. address, U.S. phone number, emergency phone number, and the chemical's recommended use, including any restrictions
2. Hazard(s) Identification	Identifies the chemical hazards and required label parts
3. Composition/Information on Ingredients	Details chemical ingredients, including any trade secrets
4. First Aid Measures	Identifies chemical exposure symptoms and effects, including required first aid treatment
5. Firefighting Measures	Identifies what hazards are created when the chemical is burning and lists suitable extinguishing equipment and techniques
6. Accidental Release Measures	Lists emergency procedures, including PPE requirements and proper containment and cleanup methods
7. Handling and Storage	Lists the precautions to follow for the safe handling and storage of the chemical and identifies any chemical incompatibilities; states if a chemical can be safely stored near another chemical
8. Exposure Controls/Personal Protection	Lists OSHA's PELs and the ACGIH's TLVs and identifies appropriate engineering controls and PPE
9. Physical and Chemical Properties	Details the chemical's properties
10. Stability and Reactivity	Identifies the chemical's stability and the possibility of hazardous reactions
11. Toxicological Information	Identifies the chemical's toxicity level and the different exposure routes to the body; details any signs and symptoms of exposure, including any acute or chronic effects
12. Ecological Information	Provides information to assess the environmental impact of the chemical if it were released into the environment
13. Disposal Considerations	Provides guidance for proper disposal, recycling, and reclamation practices
14. Transport Information	Provides guidance on classification information for shipping and transporting the chemical
15. Regulatory Information	Identifies safety, health, and environmental regulations specific for the product that are not indicated elsewhere on the SDS
16. Other Information	Identifies the preparation or last revision date of the SDS

ACTIVITY: SAFETY DATA SHEET EXERCISE

Read the scenarios below. Using the sample Safety Data Sheet on pages 21-27, answer the exercise questions for each scenario.

Part A

This is Carl. He's getting ready to work with Chemical Z. He knows how dangerous this chemical can be, so he made sure to put on his impermeable gloves and his dust mask to protect against vapors. He wants to focus on the task at hand and doesn't want any distractions. Therefore, he left his reading glasses at home and opted for his contact lenses instead.

He's also wearing his safety glasses, but he often takes them off as they tend to fog up or trap sweat which makes it hard to see, especially since today's temperature is at a scorching 104°F.

PART A

What did Carl do right? Identify the section of the SDS that supports your answer.

What did he do wrong? Identify the section of the SDS that supports your answer.

Part B

Carl starts working and is making great progress, until he accidentally spills some of Chemical Z. It splashes on his hands and arms, and he even gets some of it in one of his eyes.

Carl squints his eye and immediately runs to the eye wash station. After rinsing for about 5 minutes, he washes his hands with soap and plenty of water.

He takes a moment to compose himself and proceeds to clean up the spill. He uses regular dirt to help pick it up and then disposes of the dirt in the nearby ditch outside the shop.

PART B

What did Carl do right? Identify the section of the SDS that supports your answer.

What did he do wrong? Identify the section of the SDS that supports your answer.

Part C

After an eventful day, Carl has had enough and is getting ready to put everything away before going home.

He puts the half-full container of Chemical Z in the storage bin, which is cool and dry, and throws the empty container in the trash can outside the shop.

As he's heading out, he notices he still has irritation on his hands, so he applies some lotion to ease the discomfort. Carl leaves the site and heads home.

PART C

What did Carl do right? Identify the section of the SDS that supports your answer.

What did he do wrong? Identify the section of the SDS that supports your answer.

SAFETY DATA SHEET
Solvent

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1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Chemical Z

Company Name: Veriforce
1234 Street
Houston, TX 77362

Phone Number: (555)555-5555

Web site address: www.website.com

Emergency Contact: 24 Hour Emergency Contact (555)555-5555
Information: Customer Service (555)555-5555

Intended Use: Thinning

Product Code: JHJGD3746764

Additional Information

This product is regulated by the United States Consumer Product Safety Commission and is subject to certain labeling requirements under the Federal Hazardous Substances Act. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS). The product label also includes other important information, including directions for use, and should always be read in its entirety prior to using the product.

2. HAZARDS IDENTIFICATION

Flammable Liquids, Category 3
Acute Toxicity: Inhalation, Category 4
Skin Corrosion/Irritation, Category 2
Serious Eye Damage/Eye Irritation, Category 2B
Germ Cell Mutagenicity, Category 1B
Toxic To Reproduction, Category 2
Specific Target Organ Toxicity (single exposure), Category 3
Specific Target Organ Toxicity (repeated exposure), Category 2
Aspiration Toxicity, Category 1

GHS Signal Word: **Danger**

GHS Hazard Phrases:
H226: Flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H320: Causes eye irritation.
H332: Harmful if inhaled.
H336: May cause drowsiness or dizziness.
H340: May cause genetic defects.
H361: Suspected of damaging fertility or the unborn child.
H373: May cause damage to Central Nervous System (CNS) through prolonged or repeated exposure.

GHS Precaution Phrases:
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.

SAFETY DATA SHEET
Solvent

P243: Take precautionary measures against static discharge.
P260: Do not breathe gas/mist/vapors/spray.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required.
P235: Keep cool.

GHS Response Phrases:

P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+313: IF exposed or concerned: Get medical attention/advice.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P314: Get medical attention/advice if you feel unwell.
P321: Specific treatment see label.
P331: Do NOT induce vomiting.
P332+313: If skin irritation occurs, get medical advice/attention.
P337+313: If eye irritation persists, get medical advice/attention.
P362: Take off contaminated clothing and wash before re-use.
P370+378: In case of fire, use dry chemical powder to extinguish.

GHS Storage and Disposal Phrases:

P403+233: Store container tightly closed in well-ventilated place.
P405: Store locked up.
P501: Dispose of contents/container according to local, state, and federal regulations.

Hazard Rating System:

HMIS:

NFPA:

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

Potential Health Effects (Acute and Chronic):

Inhalation Acute Exposure Effects:
May cause dizziness, headache, watering of eyes, eye irritation, weakness, nausea, muscle twitches, and depression of central nervous system. Severe overexposure may cause convulsions, unconsciousness, and death. Intentional misuse of this product by deliberately concentrating and inhaling can be harmful or fatal.

Skin Contact Acute Exposure Effects:
May cause irritation, numbness in the fingers and arms, drying of skin, and dermatitis. May cause increased severity of symptoms listed under inhalation.

Eye Contact Acute Exposure Effects:
This material is an eye irritant. May cause irritation, burns, conjunctivitis of eyes, and corneal ulcerations of the eye. Vapors may irritate eyes.

Ingestion Acute Exposure Effects:
Harmful or fatal if swallowed. May cause nausea, weakness, muscle twitches, gastrointestinal irritation, and diarrhea. Severe overexposure may cause convulsions, unconsciousness, and death.

Chronic Exposure Effects:
Reports have associated repeated and prolonged overexposure to solvents with neurological and other physiological damage. Prolonged or repeated contact may cause dermatitis. May cause jaundice, bone marrow damage, liver damage, anemia, and skin irritation.

Medical Conditions Generally Aggravated By Exposure: Diseases of the skin, eyes, liver, kidneys, central nervous system, and respiratory system.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Hazardous Components (Chemical Name)	Concentration
8052-41-3	Stoddard solvent {Mineral spirits; Aliphatic Petroleum Distillates; White spirits}	<=95.0 %
25551-13-7	Benzene, Trimethyl-	<=5.0 %

Additional Chemical Information Ingredients vary due to multiple blends and/or raw material suppliers

4. FIRST AID MEASURES

Emergency and First Aid Procedures:

Inhalation:
If user experiences breathing difficulty, move to air free of vapors. Administer oxygen or render artificial medical assistance.

Skin Contact:
Wash with soap and large quantities of water and seek medical attention if irritation from contact persists.

Eye Contact:
Flush with large quantities of water for at least 15 minutes and seek immediate medical attention.

Ingestion:
Do not induce vomiting. Call your local poison control center, hospital emergency room, or physician immediately for instructions to induce vomiting.

If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.

Signs and Symptoms Of Exposure: Inhalation, ingestion, and dermal are possible routes of exposure.

Note to Physician: Call your local poison control center for further information.

Inhalation: Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Administer supplemental oxygen with assisted ventilation as required.

Ingestion: If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.

SAFETY DATA SHEET
Solvent

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5. FIRE FIGHTING MEASURES

NFPA Class II

Flash Pt: > 100.00 F

Explosive Limits: LEL: 0.5 UEL: 6

Autoignition Pt: No data.

Suitable Extinguishing Media: Use carbon dioxide, dry chemical powder, or foam.

Fire Fighting Instructions: Self-contained respiratory protection should be provided for fire fighters fighting fires in buildings or confined areas. Storage containers exposed to fire should be kept cool with water spray to prevent pressure build-up. Stay away from heads of containers that have been exposed to intense heat or flame.

Flammable Properties and Hazards: Combustible Liquid.

6. ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Clean up:

Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind, out of low areas, and ventilate closed spaces before entering. Shut off ignition sources; keep flares, smoking, or flames out of hazard area.

Small spills:

Take up with sand, earth, or other noncombustible absorbent material and place in a plastic container where applicable.

Large spills:

Dike far ahead of spill for later disposal.

Waste Disposal:

Dispose in accordance with applicable local, state, and federal regulations.

7. HANDLING AND STORAGE

Precautions To Be Taken in Handling: Read carefully all cautions and directions on product label before use. Since empty container retains residue, follow all label warnings even after container is empty. Dispose of empty container according to all regulations. Do not reuse this container.

A static electrical charge can accumulate when this material is flowing through pipes, nozzles or filters, and when it is agitated. A static spark discharge can ignite accumulated vapors particularly during dry weather conditions. Always use proper bonding and grounding procedures.

Precautions To Be Taken in Storing: Keep container tightly closed when not in use. Store in a cool, dry place. Do not store near flames or at elevated temperatures.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

SAFETY DATA SHEET
Solvent

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
8052-41-3	Stoddard solvent {Mineral spirits; Aliphatic Petroleum Distillates; White spirits}	PEL: 500 ppm	TLV: 100 ppm	No data.
25551-13-7	Benzene, Trimethyl-	No data.	TLV: 25 ppm	No data.

Respiratory Equipment (Specify Type): For OSHA controlled work place and other regular users, use only with adequate ventilation under engineered air control systems designed to prevent exceeding appropriate TLV. For occasional use, where engineered air control is not feasible, use properly maintained and properly fitted NIOSH approved respirator for organic solvent vapors. A dust mask does not provide protection against vapors.

Eye Protection: Safety glasses, goggles, or face shields are recommended to safeguard against potential eye contact, irritation, or injury. Contact lenses should not be worn while working with chemicals.

Protective Gloves: Wear impermeable gloves. Gloves contaminated with product should be discarded. Promptly remove clothing that becomes soiled with product.

Other Protective Clothing: Various application methods can dictate use of additional protective safety equipment, such as impermeable aprons, etc., to minimize exposure. Before reuse, thoroughly clean any clothing or protective equipment that has been contaminated by prior use. Discard any clothing or other protective equipment that cannot be decontaminated, such as gloves or shoes.

Engineering Controls (Ventilation, etc.): Use only with adequate ventilation to prevent build-up of vapors. Open all windows and doors. Use only with a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea, or eye-watering - Stop - ventilation is inadequate. Leave area immediately.

Work/Hygienic/Maintenance Practices: A source of clean water should be available in the work area for flushing eyes and skin.
Do not eat, drink, or smoke in the work area.
Wash hands thoroughly after use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical States: [ ] Gas [X] Liquid [ ] Solid
Appearance / Odor: Water / Rotten Eggs
Melting Point: No data.
Boiling Point: 318.00 F - 385.00 F
Autoignition Pt: No data.
Flash Pt: > 100.00 F
Explosive Limits: LEL: 0.5 UEL: 6
Specific Gravity (Water = 1): 0.78
Vapor Pressure (vs. Air or mm Hg): 0.3 MM HG at 68.0 F
Vapor Density (vs. Air = 1): 5 Air = 1
Evaporation Rate: No data.
Solubility in Water: No data.
Solubility Notes: Very slightly soluble in cold water.
Percent Volatile: 100.0 % by weight.
VOC / Volume: 778.0000 G/L

SAFETY DATA SHEET
Solvent

10. STABILITY AND REACTIVITY

Stability: Unstable [ ] Stable [X]

Conditions To Avoid - Instability: No data available.

Incompatibility - Materials To Avoid: Incompatible with strong acids, alkalies, and oxidizers such as liquid chlorine and oxygen.

Hazardous Decomposition or Byproducts: Decomposition may produce carbon monoxide and carbon dioxide.

Possibility of Hazardous Reactions: Will occur [ ] Will not occur [X]

Conditions To Avoid - Hazardous Reactions: No data available.

11. TOXICOLOGICAL INFORMATION

Toxicological Information: Refer to section 2 for acute and chronic effects.

CAS# 25551-13-7:
Standard Draize Test, Skin, Species: Rabbit, 500.0 MG, 24 H, Moderate.
Result:
Kidney, Ureter, Bladder: Changes in liver weight.
Endocrine: Changes in thymus weight.
Immunological Including Allergic: Decreased immune response.
- "Sbornik Vysledku Toxixologickeho Vysetreni Latek A Pripravku," , Institut Pro Vychovu Vedoucicn P, Marhold, J.V., Institut Pro Vychovu Vedoucicn, Pracovniku Chemickeho, Prumyclu Praha Czechoslovakia, Vol/p/yr: -,24, 1972

Standard Draize Test, Eyes, Species: Rabbit, 500.0 MG, 24 H, Mild.
Result:
Kidney, Ureter, Bladder: Changes in liver weight.
Kidney, Ureter, Bladder: Changes in bladder weight.
Nutritional and Gross Metabolic: Weight loss or decreased weight gain.
- "Sbornik Vysledku Toxixologickeho Vysetreni Latek A Pripravku," , Institut Pro Vychovu Vedoucicn P, Marhold, J.V., Institut Pro Vychovu Vedoucicn, Pracovniku Chemickeho, Prumyclu Praha Czechoslovakia, Vol/p/yr: -,24, 1972

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
8052-41-3	Stoddard solvent {Mineral spirits; Aliphatic Petroleum Distillates; White spirits}	n.a.	n.a.	n.a.	n.a.
25551-13-7	Benzene, Trimethyl-	n.a.	n.a.	n.a.	n.a.

12. ECOLOGICAL INFORMATION

No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: Dispose in accordance with federal, state, and local regulations.

14. TRANSPORT INFORMATION

LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Paint-Related Material, Exempt Combustible Liquid per 49 CFR 173.150(f)
DOT Hazard Class:
UN/NA Number:

Additional Transport Information: The supplier may apply one of the following exceptions: Combustible Liquid, Consumer Commodity, Limited Quantity, Viscous Liquid, Does Not Sustain Combustion, or others, as allowed under 49CFR Hazmat Regulations. Please consult 49CFR Subchapter C to ensure that subsequent shipments comply with these exceptions.

15. REGULATORY INFORMATION

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
8052-41-3	Stoddard solvent {Mineral spirits; Aliphatic Petroleum Distillates; White spirits}	No	No	No
25551-13-7	Benzene, Trimethyl-	No	No	No

This material meets the EPA 'Hazard Categories' defined for SARA Title III Sections 311/312 as indicated:	[X] Yes [ ] No	Acute (immediate) Health Hazard
	[X] Yes [ ] No	Chronic (delayed) Health Hazard
	[X] Yes [ ] No	Fire Hazard
	[ ] Yes [X] No	Sudden Release of Pressure Hazard
	[ ] Yes [X] No	Reactive Hazard

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
8052-41-3	Stoddard solvent {Mineral spirits; Aliphatic Petroleum Distillates; White spirits}	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No
25551-13-7	Benzene, Trimethyl-	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No

Regulatory Information Statement: All components of this material are listed on the TSCA Inventory or are exempt.

16. OTHER INFORMATION

Revision Date: 11/16/1901
Preparer Name: Veriforce
Additional Information About This Product: No data available.
Disclaimer: The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to ensure proper use of these materials and the safety and health of employees.

FILL-IN-THE-BLANK: SECTION 4

1. **The hazard communication standard gives workers the right to know information about the _____ they work with or may be exposed to on the job.**
2. **SDSs must be in the area where the hazardous substances will be used and be easily _____ for all workers.**

Notes

Notes

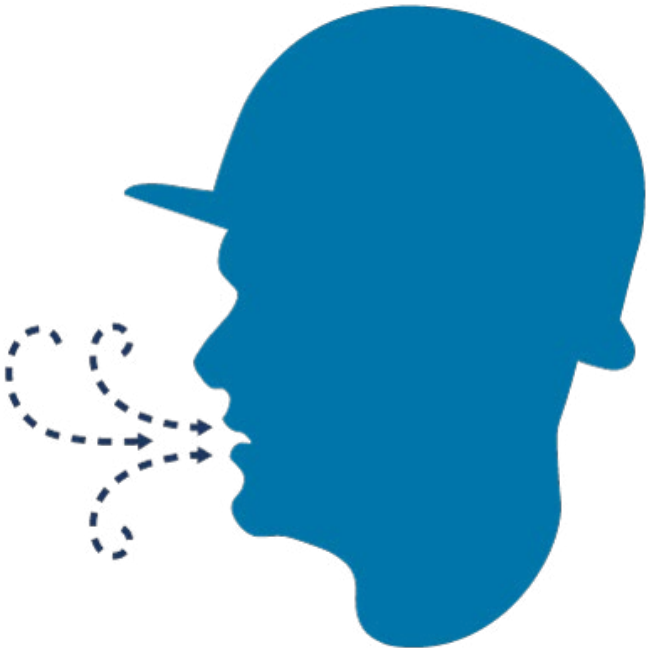
Notes

Module 2

veriforce®

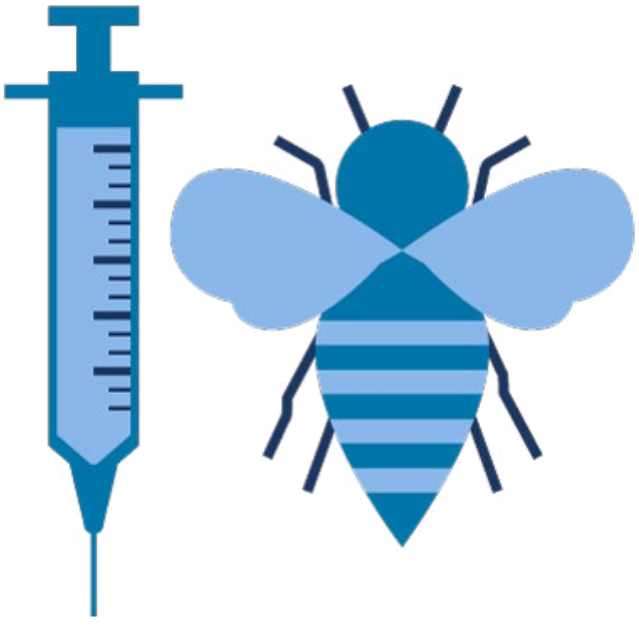
Chemical Hazards

ROUTES OF EXPOSURE



INHALATION

INGESTION



INJECTION

SKIN ABSORPTION

ACTIVITY: HYDROGEN SULFIDE CASE STUDY

DIRECTIONS

Watch the case study video and answer the following questions. Participate in the class review.

HYDROGEN SULFIDE CASE STUDY

What did the workers do wrong? What could have been done differently?

Notes

CHEMICAL HAZARDS				
CHEMICAL	**SOURCES OF EXPOSURE**	**COMMON ROUTES OF EXPOSURE**	**SYMPTOMS OF EXPOSURE**	**CONTROLS**
Silica	• Quartz, sandstone, and other types of rock • Hydraulic fracturing operations • Silica dust from transporting, moving, and refilling silica	• Inhalation	• Silicosis (respiratory disease) • Lung cancer • Tuberculosis and other pulmonary diseases • Kidney and autoimmune diseases	• Safe work practices • Respiratory protection
Mists and vapors	• Paint solvents • Spray mists	• Inhalation	• Headache and chest tightness • Dizziness • Fatigue • Depression • Tremors	• Eye and respiratory protection • Proper ventilation in the area where you are working • Monitoring and measuring blood levels of exposed workers
Lead	• Paints and coatings • Swallowing dust or fumes	• Inhalation • Ingestion	• Fatigue • Headaches • Metallic taste in the mouth • Stomach aches and pains • Muscle and joint pains	• Monitoring worker exposure to lead • Medical surveillance programs • Full body clothing, gloves, hats, shoes, face shields, vented goggles, and respirators
Diesel particulates	• Burning diesel fuel • Soot • Ash • Metal shavings	• Inhalation • Ingestion • Absorption	• Eye, nose, and throat irritation • Chest tightness • Wheezing • Headaches and lightheadedness • Vomiting • Lung disease and cancer	• Performing regular preventative maintenance • Installing engine exhaust filters, cleaner-burning engines, and diesel oxidation catalysts • Using special fuels or fuel additives like biodiesel • Limiting vehicle speed • Reducing or eliminating unnecessary engine idling or lugging • Making sure the number of vehicles operating in an area does not go over the ventilation system's capacity • SCBA with full facepiece
Benzene	• Oil-based liquids and solvents	• Inhalation • Ingestion • Absorption	• Blood disorders • Headaches and dizziness • Nausea • Eye, nose, and throat irritation • Euphoria or giddiness • Convulsions and loss of consciousness	• Monitoring affected workers • Training • Posting warning signs

CHEMICAL HAZARDS				
CHEMICAL	**SOURCES OF EXPOSURE**	**COMMON ROUTES OF EXPOSURE**	**SYMPTOMS OF EXPOSURE**	**CONTROLS**
Hydrogen sulfide	• May be found in low-oxygen environments • Industrial operations • Oil and gas well-drilling operations	• Inhalation • Absorption	• Dizziness • Eye and respiratory tract irritation • Headaches and nausea • Brain damage • Death	• Warning signs and alarms • Burning and flaring • Containment and dispersion • Ventilation and monitoring • Respiratory protection
Organic solvents	• Paint • Adhesives and glue • Degreasing agents • Cleaning agents • Refining oil and natural gas production operations	• Inhalation • Ingestion • Absorption	• Dizziness • Drowsiness • Eye and skin irritation • Damage to liver, kidneys, and central nervous system (CNS)	• Using close-system operations • Using exhaust ventilation systems • Isolating workers from direct contact • Solvent-resistant gloves, aprons, boots, face shields, and respirators
Carbon dioxide and nitrogen	• Flaring, incinerating, venting, and injecting acid gas • Purging tanks and equipment	• Inhalation	• Lung irritation • Respiratory infections	• Posting warning signs • Training • Monitoring oxygen concentration in areas
Asbestos, fiberglass, and manmade mineral fibers	• Building materials • Vehicle products	• Inhalation	• Asbestosis (scar tissue in the lungs)	• Periodic monitoring • Posting signs • Training • Respirators
Mercury	• Thermometers and fluorescent lightbulbs • Electrical switches	• Inhalation • Absorption	• Lung damage • Brain and kidney abnormalities • Skin rashes • Digestive system and CNS damage	• Coveralls, booties, gloves, face shields, safety glasses • Practicing good hygiene
Diethanolamine	• Used to separate H_2S and CO_2 from oil and natural gas	• Inhalation • Ingestion • Absorption	• Eye, nose, and throat irritation • Skin irritation • Damage to liver, kidneys, and CNS	• Ventilation • Safety goggles, face shields, gloves, aprons
Hexavalent chromium	• Fumes during welding operations • Dyes, paints, inks, plastics • Surface coatings and chrome plating	• Ingestion • Absorption	• Eye, nose, throat, and lung irritation • Mucous membrane irritation • Skin rashes	• Limiting worker exposure • Wearing appropriate PPE
Methanol	• Paint removers • Aerosols • Gasoline	• Inhalation • Ingestion • Absorption	• Headaches • Poor coordination • CNS effects • Sleep disorders • Blindness	• Gloves and safety goggles or glasses • Practicing good hygiene

FILL-IN-THE-BLANK: SECTION 5

1. The most common way to be exposed to a chemical in the workplace is through _____.
2. You can lose your ability to _____ if you are exposed to continuous low-level concentrations or high concentrations of hydrogen sulfide.
3. The industry-accepted exposure level for hydrogen sulfide is _____ parts per million.
4. Workers can be exposed to _____ during abrasive blasting and hydraulic fracturing operations.
5. There is no cure for _____.
6. An atmosphere is considered _____ if the amount of concentration is unknown or cannot be determined.

Notes

Biological Hazards

ACTIVITY: BLOODBORNE PATHOGENS

DIRECTIONS

Read the scenario and answer the associated questions. Participate in the class review.

SCENARIO

You are working with your team at the job site. You forgot your gloves today and have gotten several open scrapes and cuts on your hands as a result. Suddenly, there is an accident. Your coworker, Carl, gets a large, bloody gash on his arm. You see this, and instinctively, you put your hands on his arm to apply pressure.

BLOODBORNE PATHOGENS
Is this an exposure incident? Why or why not?
What is the first thing you should do after being exposed?
What should you do next?

FILL-IN-THE-BLANK: SECTION 6

1. You can prevent exposure to bloodborne pathogens by taking _____ precautions, which means treating all blood and bodily fluids as if they are infected.
2. Getting vaccinated, avoiding contact with sick individuals, and washing your hands with soap and water are precautions you can take to prevent the spread of _____.
3. Keeping your work clothes clean and in good condition is an example of how you can promote workplace and personal _____.

Physical Hazards

ACTIVITY: OCCUPATIONAL NOISE

DIRECTIONS

The following are arranged according to noise level from least to greatest. Use the graphic below to answer the question.

OCCUPATIONAL NOISE

Which of the above produces noise levels above OSHA's PEL for occupational noise?

Notes

FILL-IN-THE-BLANK: SECTION 7

1. High-pressure hazards can be controlled through regular _____ and maintenance.
2. Constant exposure to high levels of noise at the workplace can lead to permanent _____.
3. OSHA's permissible exposure limit for occupational noise is _____ dBA for an 8-hour day.
4. Radiation exposure can be reduced by creating a _____ between a person and the radioactive material.
5. The following are ways you can prevent _____ illnesses.
   - *Dress in layers of loose-fitting and insulated clothing.*
   - *Take frequent short breaks in warm dry areas.*
   - *Monitor your physical condition and that of your coworkers.*
6. The following are ways you can prevent _____ illnesses.
   - *Do not rely on your thirst to know when to drink water.*
   - *Stay hydrated and drink water every 15 to 20 minutes.*
   - *Take frequent breaks and stay in the shade as much as possible.*

Ergonomic Hazards

FILL-IN-THE-BLANK: SECTION 8

1. Lifting using the large muscles of your _____ is an example of a proper lifting technique.
2. Using the right _____ for the job can help prevent hand injuries when using hand and power tools.

Organizational Hazards

ACTIVITY: ORGANIZATIONAL HAZARDS

DIRECTIONS

Answer the questions for your assigned topic(s). Share your answers and participate in the class discussion.

PROHIBITED ITEMS

List examples of prohibited items:

What are the consequences for using, possessing, selling, distributing, concealing, or transporting any prohibited items on company or customer property?

Determine if the following statements are True or False.

_____ ***A. Companies have the right to search any area of company property.***

_____ ***B. Workers must be given prior notice before a company begins a search.***

_____ ***C. Searches can be done in parking lots, company-owned, -leased, or rented vehicles.***

_____ ***D. Searches cannot be done on personal belongings like lockers, desks, and lunch boxes.***

_____ ***E. Refusing to cooperate in a search will result in not being allowed on company property.***

DRUG TESTING

Are workers allowed to be on medication? Explain your answer.

Can you list the instances where workers may be required to be drug tested?

Determine if the following statements are True or False.

_____ *A. Workers must be drug- and alcohol-free on the job.*

_____ *B. You can take prescription opiods even if they affect your ability to perform the job.*

_____ *C. You can take another person's medication if the medication is in its original container.*

_____ *D. Refusing a drug test will get you sent home and possibly banned from company property.*

_____ *E. Drug tests and results are confidential.*

A RESPECTFUL AND WELCOMING WORK CULTURE

How can you promote a respectful and welcoming work culture?

What are the signs of workplace discrimination and harassment?

What should you do if you experience or witness discrimination or harassment?

WORKPLACE VIOLENCE PREVENTION

What are warning signs of workplace violence?

How can you and your company stop or prevent workplace violence?

What should you do in an active shooter situation?

What should you do when law enforcement arrives at the scene?

STRESS AND MENTAL HEALTH

What are some of the causes (stressors) of work-related stress?

What are some ways to effectively manage stress?

FILL-IN-THE-BLANK: SECTION 9

1. Companies have the _____ to search any area of the company property.
2. You should notify your supervisor if you are on a _____ that can affect your ability to perform your task safely.
3. Being _____ to workers with different backgrounds or perspectives is a way to promote a welcoming work culture.
4. Your company's _____ policy means they will not tolerate any form of violence or harassment.
5. The three main actions to take in an active shooter situation are to _____, _____, and _____.
6. Eating healthy, exercising regularly, and getting enough sleep are ways to manage work-related _____.

Emergencies and Non-Routine Operations (Hazards)

FILL-IN-THE-BLANK: SECTION 10

1. A plan that identifies response actions for potential emergencies that could happen at your worksite is known as an _____.
2. Do not provide first aid if you have not been _____ to do so.
3. Areas where workers go if there is an emergency are known as assembly points or _____ areas.

Notes

Module 3

Safety Hazards

ACTIVITY: DRIVING AND ATTITUDE

DIRECTIONS

Identify the proper attitude for each of the assigned topic(s). Share your answers and participate in the class discussion.

WEAR YOUR SEAT BELT.

Attitude: I don't wear my seat belt because I don't want to get trapped inside the car. What if the car ignites or if I'm under water?

Attitude: I don't like the government telling me what to do. It's my life so it should be my choice to wear a seat belt or not.

DO NOT EXCEED THE SPEED LIMIT.

Attitude: Everywhere you look, everyone is speeding. If the speed limit is 50 mph, I tend to go 60 or 65. I don't see a big difference, other than I'll get to where I'm going faster.

DO NOT BE DISTRACTED WHILE DRIVING.

Attitude: I only text while driving if my response is going to be brief. If it requires more than that, I will wait to get to my destination, or I will pull over on the side of the road.

Attitude: I know texting while driving is dangerous, so that's why I use a hands-free device.

MAKE SURE YOU ARE FIT, RESTED, AND FULLY ALERT.

Attitude: We are always tired due to the physical demand of the job and the long commute times to get to the jobsite. At the end of the day, the job needs to get done. That's just the way it is.

Attitude: I'm a better driver after I've had a few beers. I know it's illegal, but I think that's what makes me more alert and vigilant on the road.

FOLLOW JOURNEY MANAGEMENT REQUIREMENTS.

Attitude: Telematics and journey management are just another way for the company to watch my every move.

OPTIONAL ACTIVITY: HAZARD RECOGNITION 1

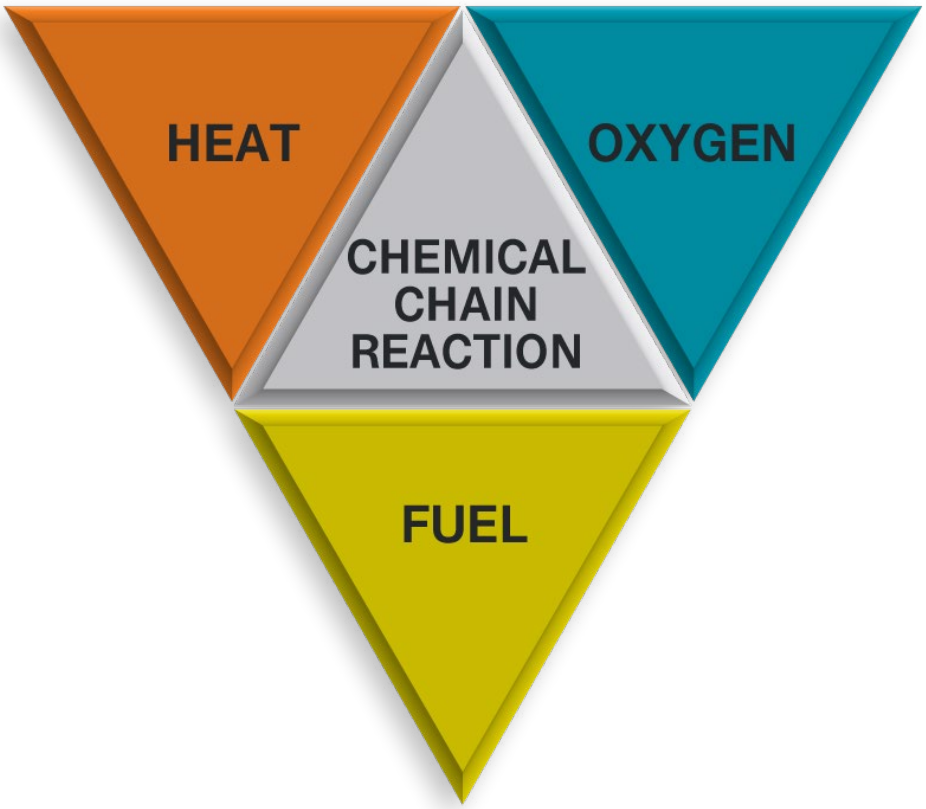
DIRECTIONS

Watch the video and answer the following question. Participate in the class review.

HAZARD RECOGNITION PART I

What hazards did you identify?

Notes



FIRE TETRAHEDRON: THE FOUR ELEMENTS OF FIRE		
Element	**Examples**	**Explanation**
Fuel	• Paper • Crude oil • Flammable metals • Cooking oils or fats (grease)	Fuel can be any combustible material–solid, liquid, or gas. However, only a gas will burn. The heat converts the solid or liquid fuel into a vapor or gas that burns.
Oxygen	• Air • Ventilation • Stored oxygen	Oxygen keeps a fire going. The oxygen and fuel react together to create an ignition. The air we breathe is about 21% oxygen. Fire only needs an atmosphere with 16% oxygen to burn.
Heat	• Ignition sources • Hot surfaces • Sparks • Open flames • Electrical arcs	Heat is the energy necessary to cause the fuel to change into a vapor or gas. Anything with enough energy to cause an ignition is considered a heat source.
Chemical chain reaction	• Interaction between fuel, oxygen, and heat • Interaction between grease and air	Fuel, heat, and oxygen interact to set off a chemical chain reaction that keeps the fire going.

OPTIONAL ACTIVITY: HAZARD RECOGNITION 2

DIRECTIONS

Watch the video and answer the following question. Participate in the class review.

HAZARD RECOGNITION PART II

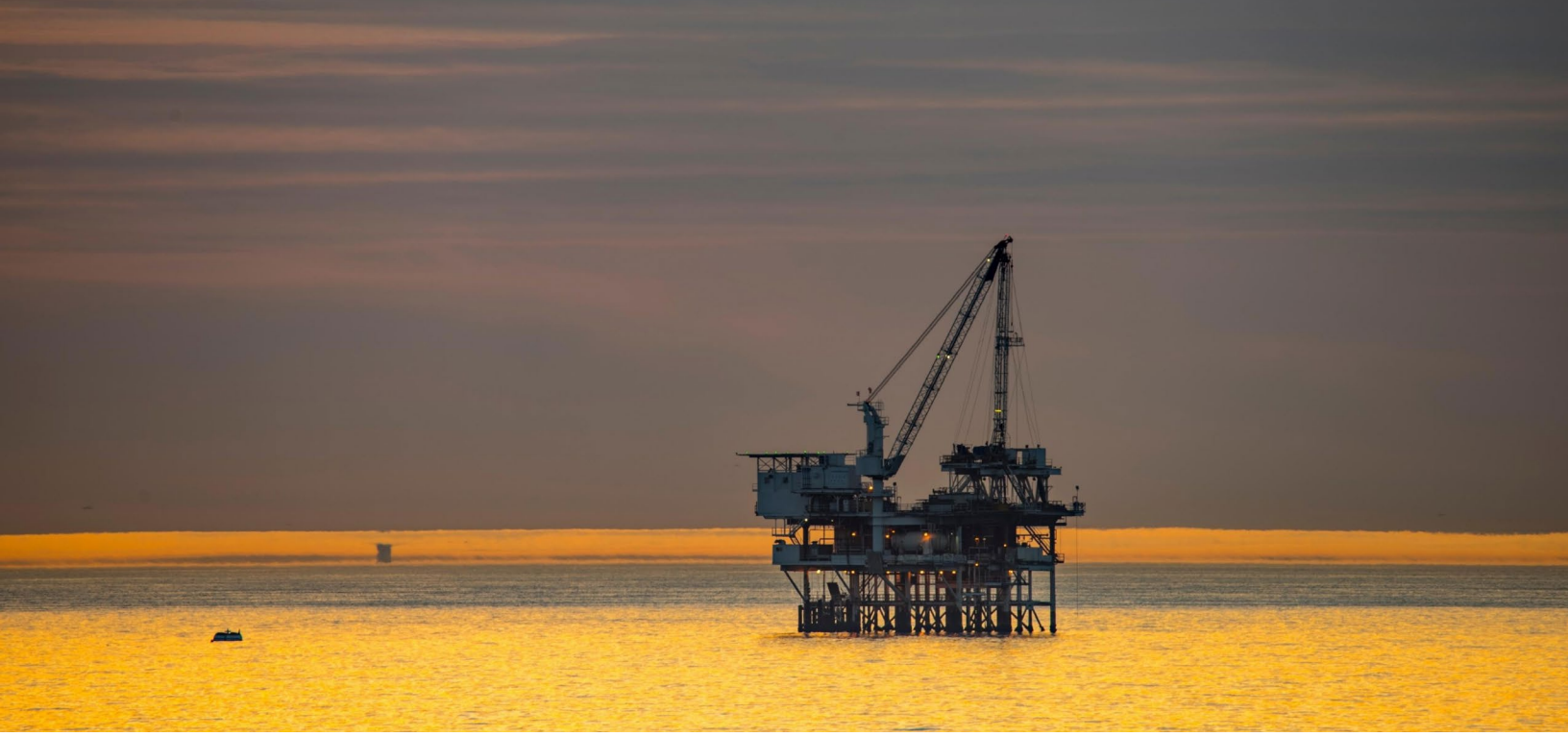
What hazards did you identify?

Notes

FILL-IN-THE-BLANK: SECTION 11

1. Good _____ practices are essential to prevent the accumulation of materials that can cause slips, trips, and falls.
2. Separating waste can reduce the impact on the _____ by preventing recyclable materials from making it to landfills.
3. When using a ladder, you should maintain _____ points of contact with the ladder.
4. An open extension ladder must maintain a _____ ratio from the base to the top support.
5. You must be _____ and _____ before performing lockout/tagout, hot work, and permit-required confined space operations.
6. Having the right _____ and taking the following actons can help you drive safely.
   - Wear your _____. It can save your life.
   - Do not exceed the _____ limit.
   - Do not be _____, such as being on your phone, while driving.
   - Make sure you are fit, _____, and fully alert.
   - Follow your company's _____ requirements (if applicable).
7. You can stay out of the _____ by positioning yourself in a way that avoids moving objects, vehicles, pressure releases, and dropped objects.

Notes



Offshore

Maritime Security

1. Which act requires offshore facilities to have their security plans approved by the US Coast Guard?

   _____

2. What is the US's primary maritime law enforcement agency that enforces federal laws and treaties on waters under US jurisdiction? _____

3. The use of violence to scare a group of people as a way to achieve a political goal is known as _____.

4. Review the chart below.

MARSEC 1 level SECURITY MEASURES IN EFFECT	• Minimum appropriate security measures maintained at all times
MARSEC 2 level ELEVATED SECURITY MEASURES IN EFFECT	• Additional security measures maintained for a period of time • Heightened risk of a transportation security incident
MARSEC 3 level HIGHEST SECURITY MEASURES IN EFFECT	• More specific security measures maintained for a limited amount of time • Incident is probable, about to happen, or has already happened • It may not be possible to pinpoint the specific target of the attack

5. A _____ card identifies workers who need unescorted access to secure areas of MTSA-regulated facilities and vessels.

6. Fill in the blanks using the word bank below.

Word bank

A. security	B. authorized	C. restricted

Some areas may have _____ access. These areas have a higher level of _____ and only _____ workers are allowed to enter them.

Safety and Environmental Management Systems

1. The goal of SEMS is to _____ the potential for operation failures, procedures, or equipment that could result in material spills or releases.

2. What federal agency regulates safety in the offshore oil and gas industry?

_____

3. Review the infographic on the next two pages.

Going Offshore

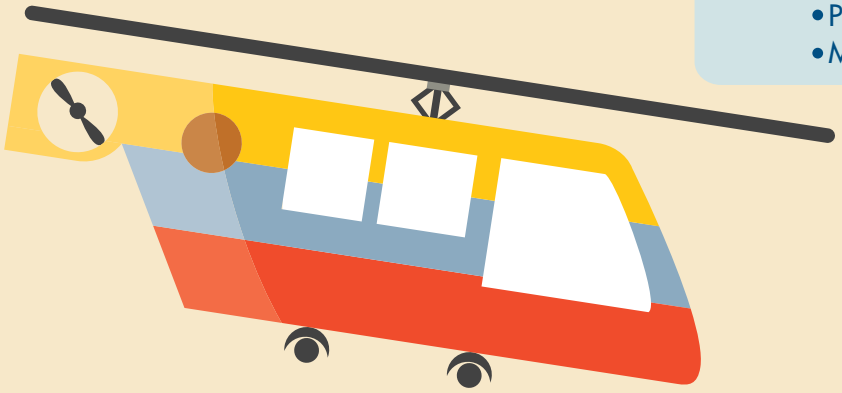
1. Select the minimum PPE you need when going offshore.

Approved hard hat	Safety boots	PFD	A face shield
Safety glasses	Finger guards	FRC	Goggles

SEMS

GENERAL PROVISIONS
Focus on how the operator's SEMS program is managed. General provisions guarantee effective compliance by:

- Designating worker responsibilities
- Setting goals
- Measuring the program's effectiveness
- Developing policy descriptions
- Setting up organizational structures



SAFETY & ENVIRONMENTAL INFORMATION
Operators must have safety and environmental information so workers can identify and understand the hazards of the operations. SEMS program safety and environmental information must include:

- Information that provides the basis for using all SEMS program elements
- Process design information
- Mechanical design information

MANAGEMENT OF CHANGE
Operators must have a written plan in place any time temporary or permanent changes are made that affect performance capabilities. This includes changes made to:

- Equipment
- Operating procedures
- Operating conditions
- Materials
- Technology
- Workers

Changes need to be reviewed before workers start the job and all workers affected by the change must be told about the change and trained on it.

HAZARD ANALYSIS
Hazards must be assessed by operators before you can begin a task. Methods for assessing hazards must cover:

- Process hazards
- Previous incidents
- The effectiveness of engineering and administrative controls
- Human factors
- The effects on workers if controls fail

OPERATING PROCEDURES
Operators have to develop and use operating procedures that give workers clear instructions for doing their jobs. These operating procedures must be reviewed yearly and updated if changes are made.

SAFE WORK PRACTICES
Operators, contractors, companies, and workers have certain responsibilities to make sure workers can do their jobs safely. As a worker for a contract company, it is your responsibility to participate in safety trainings, do your work safely, comply with any related policies and procedures, and have a general understanding of the SEMS program and the parts that affect you.

TRAINING
Operators must train workers before they take part in an operation. Training must focus on specific safety and health hazards, emergency operations, and safe work practices. Documentation must be maintained to confirm that workers can do their jobs safely.

MECHANICAL INTEGRITY
SEMS requires operators to develop written procedures to make sure equipment is working properly and is fit for service. Mechanical integrity procedures must include all equipment at a facility that is used to prevent chemical releases.

PRE-STARTUP REVIEW

Operators must conduct safety and environmental pre-startup reviews when a process is started, whether it is for new or modified systems, in order to reduce the potential for any incidents or injuries during startup.

STOP WORK AUTHORITY

Every worker who works on the OCS must be trained on SWA procedures. All new workers must receive SWA training during orientation. All training must be documented and these documents must be kept onsite for no less than 30 days. SWA procedures must be reviewed during all safety meetings and must be on all JSAs.

EMERGENCY RESPONSE & CONTROL

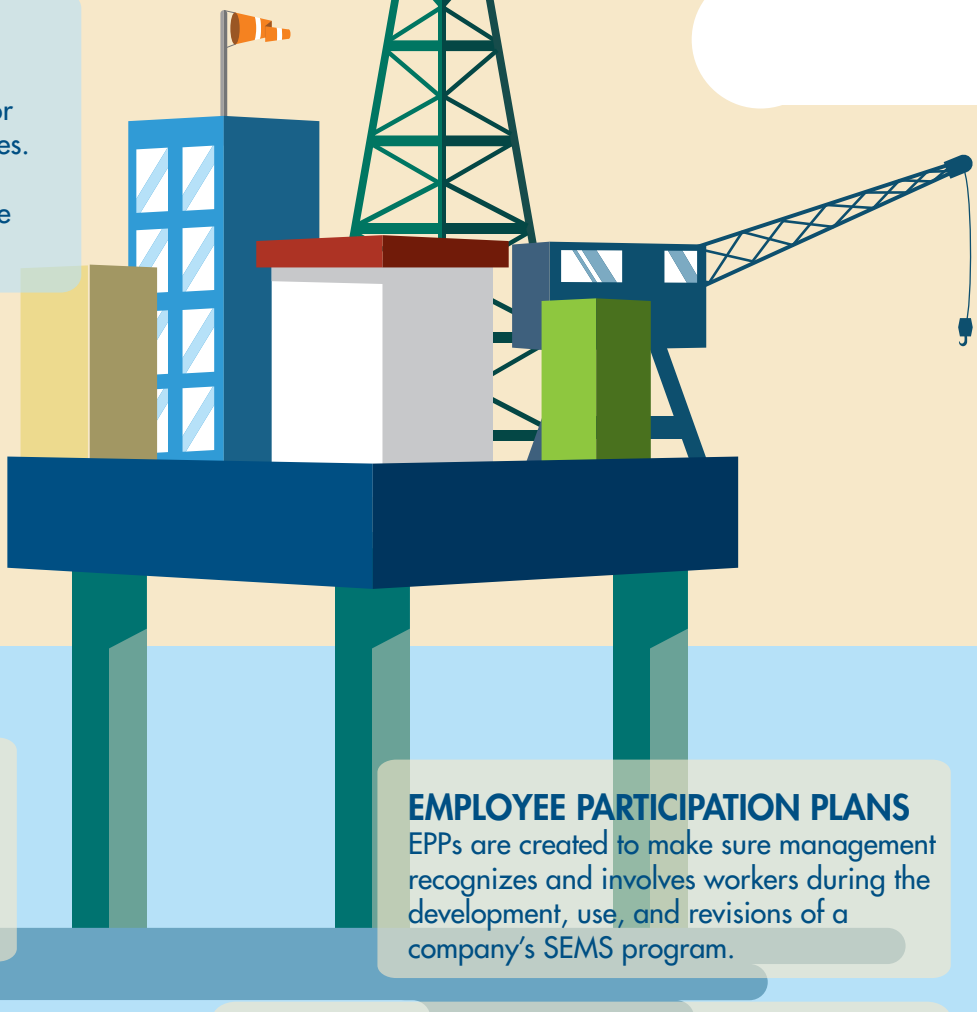
Operators are required to have emergency response and emergency action plans in place and ready for use to make sure workers are safe at a facility. Drills should be practiced regularly to prepare workers. Drills should be reviewed to find out if the plans have any weaknesses.

ULTIMATE WORK AUTHORITY

Workers with UWA make the final decision about a facility's activities and operations. These workers must be identified in each facility's SEMS program. When multiple facilities are working together or near one another, the SEMS program must identify the worker who has UWA over the entire operation. It is important that operators make sure all workers know who has UWA at all times.

INCIDENT INVESTIGATIONS

Operators must thoroughly and promptly investigate any incident with the potential for serious safety or environmental consequences. The main focus must be on recommended changes and corrections to prevent the same incident from happening again.



AUDITS

Audits are done to guarantee the effective performance of each facility on the OCS and to make sure that each SEMS program is maintained and kept up to date. All SEMS audits must be kept for 6 years and be made available to BSEE at their request.

RECORDS & DOCUMENTATION

It is important that your company keep records and documentation on all information that is required by SEMS regulations.

EMPLOYEE PARTICIPATION PLANS

EPPs are created to make sure management recognizes and involves workers during the development, use, and revisions of a company's SEMS program.

REPORTING UNSAFE WORKING CONDITIONS

Reporting information must be posted at the jobsite in a regularly visited, visible location. This information must be in a company's SEMS program and it must include all USCG reporting requirements and procedures on how workers can report unsafe working conditions.

JOB SAFETY ANALYSIS

SEMS requires workers do a JSA to identify, assess, and reduce hazards with any particular job that must be performed for the process. JSAs must be kept at the jobsite for at least 30 days. After that, they can be moved to another location. A company must keep JSAs for at least 2 years.

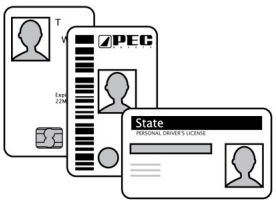
2. Select the items that you are allowed to bring when you go offshore.


Proper PPE


Illegal drugs


Matches

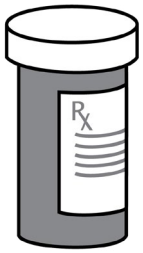

Alcohol



Identification cards

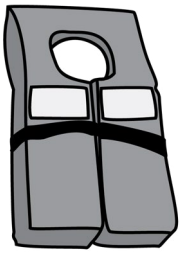

Weapons


Fire-resistant clothing



Prescriptions


Lighters


Personal floatation devices

3. Fill in the blanks using the word bank below.

Word bank			
A. job	B. overboard	C. BSEE	D. regulations

Special _____ apply to marine debris. No materials are allowed to be thrown _____. Permit-required procedures are enforced by _____. Violating these rules can result in your company, vessel, and host company being fined, or you being punished and possibly losing your _____.

4. How should you approach a helicopter to board? _____

5. You must be familiar with your personal emergency plan or _____ _____.

6. _____ _____ and cranes are the most commonly used devices to transfer workers between boats and platforms.

7. During your check-in, you will sign a _____ list to confirm you are at the facility.

8. Fill in the blanks using the word bank below.

Word bank		
A. Report	B. Participate	C. gear

_____ in drills and develop and mentally rehearse your own personal emergency response plan. Know where emergency _____ is kept and be familiar with the layout of the facility. _____ all incidents immediately, including near misses.

9. Should you get in the water during an offshore emergency if you have other options? _____

10. Label each type of PFD.

_____ _____ _____

Acronyms

ANSI	American National Standards Institute
API	American Petroleum Institute
APR	air-purifying respirator
ASR	atmosphere-supplying respirator
ASTM	American Society for Testing and Materials
BAC	blood alcohol concentration
BBS	behavior-based safety
BLS	Bureau of Labor Statistics
CDC	Centers for Disease Control and Prevention
CNS	central nervous system
CO_2	carbon dioxide
CFR	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
dB	decibel
dBA	A-weighted decibel
DNA	deoxyribonucleic acid
DOT	Department of Transportation
EAP	Employee Assistance Program; emergency action plan
EID	energy-isolating device
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FOG	fatalities in oil and gas extraction
FRC	flame-resistant clothing
GHS	Globally Harmonized System
H_2S	hydrogen sulfide
HCS	Hazard Communication Standard
HIV	human immunodeficiency virus
HMIS®	Hazardous Materials Identification System
IDLH	immediately dangerous to life or health
IOGP	International Association of Oil and Gas Producers
JSA	job safety analysis
kV	kilovolts
LEL	lower explosive limit
LOTO	lockout/tagout
LSR	life-saving rule
MEWP	mobile elevating work platform
MSD	musculoskeletal disorder
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NIHL	noise-induced hearing loss
NIOSH	National Institute of Occupational Safety and Health
NORM	naturally ocurring radioactive material
NSC	National Safety Council
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit

PPE	personal protective equipment
PPM	parts per million
SAR	supplied-air respirator
SCBA	self-contained breathing apparatus
SDS	safety data sheet
SSE	short service employee
SIF	serious injury and fatality
SWA	stop work authority
TB	tuberculosis
TENORM	technologically enhanced naturally occuring radioactive material
TLV-TWA	threshold limit values-time-weighted average
UEL	upper explosive limit
V	volts
WVP	workplace violence prevention

Definitions

ADMINISTRATIVE CONTROLS controls that alter the way the work is done, including timing of work, policies, and other rules and work practices, such as standards and operating procedures (including training, housekeeping, equipment maintenance, and personal hygiene practices)

AIR-PURIFYING RESPIRATOR (APR) a respirator that has an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing air through an air purifier

ANCHOR POINT a secure attachment point for lifelines, lanyards, or deceleration devices; part of a personal fall arrest system

ASSEMBLY POINT an area for workers to go to if there is an emergency; also known as muster area

ATMOSPHERIC HAZARDS hazards that can affect your body's ability to transport and use oxygen or have toxicological effects on your body

BEHAVIOR-BASED SAFETY (BBS) a safety approach that focuses on worker behavior

BENCHING when the walls of an excavation are angled in a series of steps, like a set of stairs

BLOODBORNE PATHOGENS pathogenic organisms and microorganisms in human blood that can cause diseases in humans

CONFINED SPACE a space that is large enough for a worker to enter, has limited or restricted entry or exit, and is not meant to be occupied for a long amount of time

CRYSTALLINE SILICA a hard, colorless, and unreactive mineral; also called silica and respirable silica

DECIBEL (dBA) unit of measurement for sound that has been adjusted or corrected to consider how the human ear preceives sound

DE-ENERGIZED (EQUIPMENT) equipment with an open circuit that does not allow electricity to follow a continuous path

EMERGENCY ACTION PLAN a plan that identifies different emergencies that could happen at your workplace and the correct response actions for each of the potential emergencies

EMPLOYEE ASSISTANCE PROGRAM (EAP) confidential health program designed to help workers overcome drug and alcohol addiction

ENERGIZED (EQUIPMENT) equipment that has a closed circuit that allows electricity to flow in a continuous current

ENERGY-ISOLATING DEVICE a mechanical device that physically stops the movement or release of energy

ENGINEERING CONTROLS controls that protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard

FLAME-RESISTANT CLOTHING (FRC) clothing that is less likely to catch fire than regular clothing; protects you from flash fires, flames, and electrical arcs; self-extinguishing

FIRE THEORY the theory that fire needs four main elements in order to start (heat, oxygen, fuel, and a chemical chain reaction); also known as the fire tetrahedron

FIT-FOR-DUTY EXAMS a medical exam used to make sure you are physically fit enough to safely do your assigned job duties without harming yourself or your coworkers

FIT TEST a test that determines if a respirator fits you properly

FULL BODY HARNESS a protective device designed to secure a worker so that the force of a fall is distributed over their thighs, pelvis, waist, chest, and shoulders; part of a personal fall arrest system

HAZARD COMMUNICATION STANDARD (HCS) a standard designed to make sure you know what chemicals are on your jobsite, how they can affect you, and how you can avoid exposure to them

HAZARDOUS ATMOSPHERE atmospheres that are immediately dangerous to life or health (IDLH) or contain contaminants that exceed the permissible exposure limit (PEL) or threshold limit value-time-weighted average (TLV-TWA)

HAZARDOUS WASTE a form of solid waste that is harmful to people or the environment; meets the strict EPA definition of corrosive, ignitable, flammable, reactive, and toxic

HEALTH HAZARD chemicals that can harm your body or make you sick

HEAT CRAMPS painful muscle cramps caused by hard physical labor in high temperatures; can happen after work

HEAT EXHAUSTION illness that happens when your body overheats; symptoms include heavy sweating and a rapid pulse

HEAT STRESS a condition that happens when you get too hot or your body cannot get rid of heat fast enough; can be caused by work that involves high temperatures and humidity, radiant heat sources, direct physical contact with hot objects, or a lot of physical labor

HEAT STROKE illness that happens when your body cannot control your body temperature; this is the most serious heat-related illness and requires immediate medical attention

HOSELINE (OR AIRLINE) RESPIRATOR a respirator that has a hose attached to it that draws air from an independent source, which is not carried by the user

HOT WORK work involving electric or gas welding, cutting, brazing, or similar operations that can produce sparks or flames

HYDROGEN SULFIDE (H_2S) a toxic gas that is colorless and collects in low-lying areas

HYPOTHERMIA illness that happens when the temperature of the body drops below 95°F

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH) an environment that causes negative health effects that cannot be reversed and reduces your ability to escape from a dangerous atmosphere

INCIDENT an unplanned event that could have caused or did cause workplace illness, injury, or property damage because of unexpected reactions from workers, equipment, materials, or the environment

INCIPIENT FIRE a fire in the beginning stage; a fire is not considered incipient when it is bigger than a trash fire or if it spreads beyond its original source

INDUSTRIAL HYGIENE the science of anticipating, recognizing, assessing, and controlling workplace conditions that could cause worker injuries or illnesses

JOB SAFETY ANALYSIS (JSA) the formal review of a particular task or job that is completed before work begins

JOURNEY MANAGEMENT a planned and systematic process of reducing transportation-related risks within a company's operations

LOCK OUT the action of putting a lockout device on an energy-isolating device to hold the energy-isolating device in a safe position

LOCKOUT DEVICE a device that holds an energy-isolating device in a safe position that prevents the machine or equipment from being energized; includes key or combination locks, blank flanges, and bolted slip blinds

MOBILE ELEVATING WORK PLATFORM any vehicle-mounted device used to position workers (formerly known as an aerial lift)

NEAR MISS an incident or accident where no property was damaged and no personal injuries happened

OXYGEN DEFICIENCY when there is less than 19.5% oxygen in the air

OXYGEN ENRICHMENT when there is more than 23.5% oxygen in the air

PERMISSIBLE EXPOSURE LIMIT the maximum amount of a substance that a worker can be exposed to as outlined by OSHA. They are based on an 8-hour time weighted average (TWA)

PERMIT-REQUIRED CONFINED SPACE a confined space that contains or has the potential to contain a hazardous atmosphere; materials that have the potential to engulf, trap, or asphyxiate an entrant; an internal configuration where an entrant can become trapped or asphyxiated by inwardly converging walls or floors that slope downward and taper into a smaller cross section; or any other recognized serious safety or health hazards

PERMITS TO WORK written authorizations used to control potentially hazardous work and the environment where the work will be done

PERSONAL FALL ARREST SYSTEM used to stop a worker during a fall; includes a body harness, lanyard, deceleration device, and anchor point

QUALIFIED WORKER (ELECTRICAL) a worker who has had training on how to avoid the hazards of working on or near energized parts and is authorized by their company

SAFETY DATA SHEET (SDS) a document that gives detailed information about the hazards of a specific material and how to control those hazards

SELF-CONTAINED BREATHING APPARATUS (SCBA) an atmosphere-supplying respirator where the breathing air source is designed to be carried by the user

SHIELDING using ready-made, protective structures like trench boxes to support the sides of an excavation

SHORING a complex system used to support the sides of an excavation that must be designed by an experienced engineer

SILICOSIS a respiratory disease caused by exposure to silica that makes it hard for your lungs to take in oxygen

SLOPING angling the walls of an excavation in one continuous slope

STOP WORK AUTHORITY (SWA) your right to stop work when you or your coworkers are at risk because of the way a job is being done

SUPPLIED-AIR RESPIRATOR (SAR) an air-supplying respirator where the worker does not carry the source of breathing air; air is supplied from remote cylinders or a compressor

TAG OUT the action of putting a tagout device on an energy-isolating device to make sure the energy-isolating device and the machine or equipment is not operated until the tagout device is removed

TAGOUT DEVICE a warning device, like a tag, that is put on an energy-isolating device to make sure the energy-isolating device and the machine or equipment is not operated until it is removed

UNQUALIFIED WORKER (ELECTRICAL) a worker with little or no training on working on or near premises wiring, wiring for connections to supply electricity, outside conductor installations, and optical fiber cables

WORK PERMITS written authorizations used to control potentially hazardous work and the environment where the work will be done