Question 1.1

Asphyxiants: Chemicals or gases that can suffocate and cause unconsciousness or death.

Corrosives: Chemicals that can burn and damage skin or tissue.

Irritants: Chemicals that cause temporary redness, rashes, or inflammation, with potential for long-lasting effects.

Sensitizers: Substances that trigger allergic reactions after prolonged or repeated exposure.

Reactive: Substances that can cause fires or explosions when exposed to specific conditions or other chemicals.

Flammable: Chemicals or materials that easily ignite when exposed to air and other elements.

Carcinogens: Substances that cause cancer, even in small amounts, and can severely harm human health.

Teratogens: Chemicals that lead to abnormal development or birth defects.

Q1.2

Appoint a team of internal auditors :- these should be people that are familiar with the facility and some potential hazards

Evaluate your processes and materials:- Check if any of your processes are covered in 29 CFR 1910 subpart

Answer and address all the OSHA questions:- This will ensure that you are prepared if OSHA requests your self audit information.

Question 1.3

Reasons for conducting a risk assessment include:

- Before introducing new processes or activities.
- Before making changes to existing processes or activities, such as new products or equipment.
- When hazards are identified.

- Risk estimation is the final step in risk assessment.
- Risk assessment identifies hazards that can impact an organization's business.
- The goal is to measure health, safety, and environmental risks.
- Assessments help identify inherent business risks.
- Measures, processes, and controls are implemented to reduce the impact of these risks on operations.

$R = f \times p \times c$

Where:

R = Risk Assessment
f = Human Error or Equipment Failure
p = Safety Barriers
c = Consequences

Ex #1.4

Flaws:

Lack of fire exits: The factory did not have proper fire exits, making it difficult for workers to escape during a fire. This was a serious safety oversight.

Locked main exit: The managers prioritized saving inventory over worker safety by locking the main exit. This prevented workers from quickly exiting the building during the fire.

Inadequate fire safety equipment: The factory had insufficient fire safety equipment, which could have helped contain and extinguish the fire more effectively.

Lack of fire safety training: Workers were not provided with proper fire safety training, leaving them unprepared to respond during emergencies.

Non-compliance with labor rights standards: The factory violated labor rights standards by paying low wages, enforcing long working hours, and failing to register all workers as employees. These violations further compromised worker safety.

Safety Precautions:

Install fire exits and practice drills: Set up designated exits and regularly practice emergency drills for quick and safe evacuations during fires.

Provide fire safety training: Train workers on fire safety measures, including using fire extinguishers and recognizing hazards, to respond effectively in emergencies.

Equip with fire safety equipment: Install and maintain fire extinguishers, smoke detectors, sprinkler systems, and alarms to detect and control fires promptly.

Comply with labor rights and safety standards: Follow regulations for fair wages, reasonable working hours, and a safe work environment to protect worker rights and well-being.

Conduct independent safety inspections: Bring in outside inspectors to check for compliance with safety regulations, identify hazards, and suggest improvements.

Involve workers in safety decisions: Encourage worker participation in safety committees or discussions to gather input and enhance safety practices.

Seek third-party verification: Obtain certification from external organizations to validate adherence to safety standards.

Ensure transparent reporting and accountability: Establish clear reporting systems for safety incidents, violations, and corrective actions to promote transparency and responsibility.
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Question 2.1:-

1. Identify hazards.
2. Determine who might be harmed and how.
3. Evaluate risks and decide on precautions.
4. Record findings and implement them.
5. Review the assessment and update as needed.

Question 2.2:-

identification of risk
analyzing the risk
evaluating the risk
treat the risk
review the risk \

Question 2.3:-

Substitution
Engineering Controls
Administrative
Controls
PPEs
(neeche s upr pyramid)

Question 2.4:-

Class A Fire: Involves wood, paper, cloth. Use water to extinguish.
Class B Fire: Involves gasoline, oil, alcohol. Use foam, dry chemical, or CO2 to extinguish.
Class C Fire: Involves electrical equipment. Requires De-energizers and use CO2 or dry chemical to extinguish.
Class D Fire: Involves combustible metals. Requires specialized dry powder agents.
Class E Fire : these are fires that involve live electrical equipment, like computers or phone chargers
Class F:- these are fires that involve cooking oils and fats, such as in deep fat fryers

Question 2.5:-

these six steps to successfully conduct emergency drills and exercises:
1. Develop emergency plans
2. Train employees
3. Conduct tabletop exercises
4. Conduct drills
5. Conduct functional exercises
6. Conduct full-scale exercises

Question 2.6:-

First aid officer responsibilities include:

- - Putting unconscious casualty in recovery position.
- - Performing CPR.

- - Applying pressure and elevation to stop bleeding.

First aid officer responsibilities include:

- Timely assessment of the situation.
- Staying calm, reassuring others, and taking charge.
- Ensuring personal and casualty safety from danger.

Question 2.7

Elimination/Substitution: Removing or replacing hazardous chemicals with safer alternatives.

Engineering Controls: Making physical changes in the workplace to reduce exposure to hazardous chemicals.

Administrative and Work Practice Controls: Changing work tasks and implementing efficient policies to minimize exposure to hazardous chemicals.

Personal Protective Equipment (PPE): Using protective gear like respirators, gloves, and suits to reduce direct contact with hazardous chemicals.

Question 2.8:-

Qualitative Risk Analysis:-

1. Subjective approach to assess risk severity.
2. Considers all risks.
3. Applicable to all projects.
4. Performed at project start.
5. Time-consuming process

Quantitative Risk Analysis:-

6. Objective approach using verified data and statistical tools.
7. Suitable for complex projects.
8. Considers important risks identified through qualitative analysis.
9. Performed when there is ample data on the risks.

Elimination:

- Completely remove the hazard from the environment or workplace.
- Take out the source of the hazard entirely.
- Example: Remove chemicals that cause severe skin irritation.

Substitution:

- Replace the hazard with safer alternatives.
- If elimination is not possible, use a less hazardous substitute.

- Example: Replace solvent-based paint with water-based paint