IHMM CERTIFIED SAFETY AND HEALTH MANAGER [CSHM] EXAMINATION STUDY GUIDE

IHMM CSHM Study Guide

The questions on the CSHM examination are written by subject matter experts, and each question is supported by a published reference. The following is a list of references that were frequently used during the development of the CSHM examination. This is not intended as a comprehensive list of all materials available to CSHM candidates and should not be intended as a guaranteed means of passing the exam. Candidates are also strongly advised to become familiar with industry regulations, standards, and practices in preparing for the CSHM certification examination. This comprehensive study guide supports candidates preparing for the Certified Safety and Health Manager (CSHM) examination. It incorporates materials from the 2024 CSHM Blueprint References and aligns with the 2022 CSHM Exam Blueprint. Each source is paired with relevant multiple-choice questions, a case study, and citation links to enhance your preparation.

Certified Safety and Health Manager® [CSHM®]

Study Guide

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Some of this material was generated by artificial intelligence and then subsequently reviewed and validated by the subject matter experts from the IHMM CSHM Scheme Committee.

Table of Contents

Domain One: Planning, Leadership, and Employee Involvement – 22.13% of the exam

✓ CSHM Domain One Blueprint

- 1.1 Describe differences between policies and goals.
- 1.2 Identify safety and health resource needs, including budgeting, certifications, standards, equipment, policies, and procedures.
- 1.3 Identify differences between a union and non-union shop as they relate to safety and health.
- 1.4 Given a scenario, identify departments or divisions needed to cooperate in safety and health efforts.
- 1.5 Given a scenario, describe resources used to mitigate risk via policies and recommendations.
- 1.6 Identify ethical practices within safety and health.
- 1.7 Identify policies and procedures to increase safety awareness.
- 1.8 Identify quality principles that apply to safety and health.
- 1.9 Identify safety and health management systems.
- 1.10 Given a scenario, identify applicable federal environmental regulations.
- 1.11 Given a scenario, apply the applicable voluntary-consensus standard.
- 1.12 Given a scenario, describe the importance of health and safety in the context of an organization.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation

Reference Title	Web Link
29 CFR 1910 subparts H, I, J, L, S, Z	https://www.osha.gov/laws-regs/regulations/standardnumber/1910
29 CFR 1926 subparts P	https://www.osha.gov/laws-regs/regulations/standardnumber/1926
ANSI Z133 Arboricultural Operations	https://www.scribd.com/document/557682796/ANSI-Z133
ANSI/ASSP	https://webstore.ansi.org/search/find?in=1&st=ANSI%2FASSP+Z10.0-

Z10.0-2019 Occupational Health and Safety Management Systems	2019
ASSP GM-Z10.100-2019	https://webstore.ansi.org/search/find?in=1&st=gm+z10.100
Clean Water Act of 1972	https://www.epa.gov/laws-regulations/summary-clean-water-act
Developing an Effective Safety Culture	https://www.amazon.com/Developing-Effective-Safety-Culture-Leadership/dp/0750674113
ASQ Mistake-Proofing	https://asq.org/quality-resources/mistake-proofing
Donning and Doffing	https://www.jacksonlewis.com/insights/third-circuit-offers-guidance-when-donning-and-doffing-safety-gear-compensable
Industrial Safety and Health Management	https://www.amazon.com/Industrial-Safety-Health-Management-Engineering/dp/0134630564
ISO 14001:2015	https://www.iso.org/standard/60857.html
OSHA Act of 1970	https://www.osha.gov/laws-regs/oshact/completeoshact
NFPA Codes 3, 4	https://www.nfpa.org/en/for-professionals/codes-and-standards/list-of-codes-and-standards
OSHA Publication 3885 Recommended Practices for Safety and Health Programs - Page 11	https://www.osha.gov/sites/default/files/publications/OSHA3885.pdf
Safety and Health for Engineers 3rd Edition by Brauer, Roger L	https://www.amazon.com/Safety-Health-Engineers-Roger-Brauer/dp/1118959450
OSHA Consultation	https://www.osha.gov/Consultation

HazCom Guidance	https://www.osha.gov/hazcom/guidance
Global HazCom Guidance	https://www.osha.gov/hazcom/global
OSHA Incident Investigation	https://www.osha.gov/incident-investigation
OSHA Safety Management	https://www.osha.gov/safety-management

✓ Sample Exam Questions and Answers from the references above. These are only sample questions and are not from the CSHM exam. These questions and answers are to orient you to what the actual exam is like.

Reference: 29 CFR 1910 subparts H, I, J, L, S, Z

Q1: Which subpart of 29 CFR 1910 covers Personal Protective Equipment (PPE)?

- A. Subpart D
- B. **Subpart I ✓**
- C. Subpart J
- D. Subpart Z

Correct Answer: B. Subpart I
Rationale: Subpart I addresses Personal Protective Equipment requirements for general industry.
Why others are incorrect:

- A. Subpart D covers walking-working surfaces.
- C. Subpart J deals with general environmental controls.
- D. Subpart Z pertains to toxic and hazardous substances.

Q2: What is the focus of Subpart Z in 29 CFR 1910?

- A. Machine guarding
- B. **Toxic and hazardous substances ✓**
- C. Fire protection
- D. Exit routes

Correct Answer: B. Toxic and hazardous substances
Rationale: Subpart Z addresses the control of toxic and hazardous substances in the workplace.
Why others are incorrect:

- A. Machine guarding is covered under Subpart O.
- C. Fire protection is under Subpart L.
- D. Exit routes are in Subpart E.

Reference: 29 CFR 1926 subpart P

Q3: According to 29 CFR 1926 Subpart P, when employees are working in an excavation of 5 feet (1.52 m) or more in depth, which of the following is required unless the excavation is made entirely in stable rock?

A. Install a protective system such as sloping, shoring, or shielding ✓
B. Provide high-visibility vests to all employees in the excavation
C. Ensure a competent person inspects the excavation once per month
D. Place barricades at least 10 feet away from the excavation edge

Correct Answer:
A. Install a protective system such as sloping, shoring, or shielding

Rationale:

- Correct (A): §1926.652(a)(1) requires protective systems for excavations 5 ft or deeper unless in stable rock. Acceptable systems include sloping, benching, shoring, and shielding.
- Incorrect (B): High-visibility vests are a general safety measure but are not a Subpart P requirement specific to excavation depth.
- Incorrect (C): A competent person must inspect daily (§1926.651(k)), not monthly.
- Incorrect (D): Barricade placement is not a depth-triggered requirement under Subpart P; while barricades may be needed for traffic control, the regulation does not mandate a fixed 10-ft distance.

Q4: Under 29 CFR 1926 Subpart P, when an excavation is 4 feet (1.22 m) or more in depth, what must the employer provide for safe employee entry and exit?

A. A ramp, ladder, stairway, or other safe means of egress within 25 feet of lateral travel ✓
B. A guardrail system completely enclosing the excavation
C. A hoist or lift system for any materials or workers entering or exiting
D. A written rescue plan approved by OSHA before work begins

Correct Answer:
A. A ramp, ladder, stairway, or other safe means of egress within 25 feet of lateral travel

Rationale:

- Correct (A): §1926.651(c)(2) requires a safe means of egress such as a ladder, stairway, or ramp when excavations are 4 ft or deeper, and these must be located so that workers travel no more than 25 ft laterally to reach them.
- Incorrect (B): Guardrails may be required to prevent falls (§1926.651(j)(2)) but are not the specified means of egress requirement.
- Incorrect (C): Hoists/lifts are not required; simpler means (ladders, ramps) are sufficient unless conditions demand otherwise.
- Incorrect (D): OSHA does not require an agency-approved written rescue plan before excavation work under Subpart P; rescue planning is part of overall safety programs but not a prerequisite approval.

Reference: ANSI Z133 Arboricultural Operations

Q5: What is a key requirement of ANSI Z133 for tree workers operating aloft?

- A. Using ground-based audible alarms
- B. Wearing high-visibility vests
- C. Using a body belt for positioning
- D. **Being secured with an approved climbing system ✓**

Correct Answer: D
Rationale: Tree workers aloft must use approved climbing systems to prevent falls.
Incorrect Rationales:

- A. Audible alarms aren't a substitute for fall protection.
- B. Visibility vests improve visibility but don't prevent falls.
- C. Body belts are not considered fall protection.

Q6: According to ANSI Z133, who is responsible for ensuring safe tree care operations?

- A. Grounds crew
- B. Site manager
- C. Climber
- D. **Employer ✓**

Correct Answer: D
Rationale: Employers must establish and enforce safety programs.
Incorrect Rationales:

- A. Grounds crew follows, not creates, safety policies.
- B. Site managers implement policies set by the employer.
- C. Climbers ensure their safety but don't oversee operations.

Reference: ANSI/ASSP Z10.0-2019

Q7: Which concept is foundational in ANSI/ASSP Z10.0-2019 for continuous improvement?

- A. Hierarchy of Controls
- B. **PDCA (Plan-Do-Check-Act) ✓**
- C. Behavioral Safety Observation
- D. Six Sigma

Correct Answer: B
Rationale: PDCA is the backbone of Z10.0's improvement framework.
Incorrect Rationales:

- A. The Hierarchy of Controls is used for hazard reduction, not system improvement.
- C. Observations are tools, not a full framework.
- D. Six Sigma is quality-focused, not safety-system specific.

Q8: Which of the following is NOT a principle of ANSI/ASSP Z10.0-2019?

- A. Worker participation
- B. Systematic evaluation and improvement
- C. **Punitive enforcement for non-compliance ✓**
- D. Risk-based approach

Correct Answer: C
Rationale: The standard emphasizes proactive safety, not punishment.
Incorrect Rationales:

- A. Worker participation is encouraged.
- B. Evaluation and improvement are central.
- D. Risk-based strategies are core to hazard control.

Reference: ASSP GM-Z10.100-2019

Q9: What is the focus of ASSP GM-Z10.100-2019?

- A. Machine guarding guidelines
- B. **Guidance on occupational health metrics ✓**
- C. Global harmonization of chemical safety
- D. Fire prevention practices

Correct Answer: B
Rationale: It provides structure for evaluating OHS performance through metrics.
Incorrect Rationales:

- A. Machine guarding is not covered.
- C. Chemical safety is under GHS.
- D. Fire prevention is in NFPA codes.

Q10: Which of the following is a key benefit of using GM-Z10.100-2019 management systems?

- A. Reducing insurance premiums automatically
- B. **Improving workplace safety ✓**
- C. Guaranteeing zero incidents
- D. Eliminating all workplace risks

Correct Answer: B
Rationale: It promotes consistent, comparable safety performance data.
Incorrect Rationales:

- A. Insurance impacts depend on many factors.
- C. Metrics do not ensure zero incidents.
- D. Risk can be minimized, not fully eliminated.

Reference: Clean Water Act of 1972

Q11: What is the primary objective of the Clean Water Act?

- A. Prevent soil erosion
- B. Protect endangered species
- C. Regulate air emissions
- D. **Restore and maintain the integrity of U.S. waters ✓**

Correct Answer: D
Rationale: The Act aims to restore and maintain the chemical, physical, and biological integrity of the nation's waters.
Incorrect Rationales:

- A. Soil erosion is not its primary focus.
- B. Endangered species are covered by a different law.
- C. Air emissions are regulated under the Clean Air Act.

Q12: Which federal agency enforces the Clean Water Act?

- A. Department of Energy
- B. **Environmental Protection Agency ✓**
- C. Occupational Safety and Health Administration
- D. Department of Interior

Correct Answer: B
Rationale: The EPA is responsible for enforcing water quality standards.
Incorrect Rationales:

- A. DOE deals with energy issues.
- C. OSHA handles workplace safety.
- D. DOI manages natural resources but not water law enforcement.

Reference: Developing an Effective Safety Culture

Q13: What is a hallmark of an effective safety culture according to safety leadership literature?

- A. Reactive enforcement of policies
- B. Low employee involvement
- C. Punitive discipline strategies

- D. **Visible management commitment ✓**

Correct Answer: D
Rationale: Strong leadership is essential for a safety culture.
Incorrect Rationales:

- A. Reactive approaches are outdated.
- B. Engagement is vital.
- C. Punitive strategies may backfire.

Q14: Which of the following actions best supports safety culture transformation?

- A. Rewarding productivity over safety
- B. Top-down command and control
- C. **Empowering employees to stop unsafe work ✓**
- D. Focusing solely on lagging indicators

Correct Answer: C
Rationale: Empowerment fosters accountability and safety ownership.
Incorrect Rationales:

- A. Prioritizing productivity can create risk.
- B. Command models suppress collaboration.
- D. Lagging indicators are reactive, not preventive.

Reference: ASQ Mistake-Proofing

Q15: What is the goal of mistake-proofing (poka-yoke) in safety and quality?

- A. To train workers more efficiently
- B. To eliminate the need for inspections
- C. **To design errors out of processes ✓**
- D. To shift accountability from managers to workers

Correct Answer: C
Rationale: The goal is to prevent human error through smart design.
Incorrect Rationales:

- A. Training is separate from design controls.
- B. Inspections still matter.
- D. Accountability is shared, not reassigned.

Q16: Which of the following is an example of a mistake-proofing control?

- A. A job safety analysis checklist
- B. **A machine that stops if the guard is removed ✓**
- C. A behavioral safety observation card
- D. A root cause analysis report

Correct Answer: B
Rationale: This is a fail-safe design that prevents injury.
Incorrect Rationales:

- A. JSAs are planning tools.
- C. Observation cards monitor behavior.
- D. Root cause reports are retrospective.

Reference: Donning and Doffing

Q17: Order of Donning PPE

Question:
According to the CDC's *Sequence for Putting On Personal Protective Equipment (PPE)*, what is the correct order to don PPE?

A. Gloves → Gown → Mask/Respirator → Goggles/Face Shield
B. Mask/Respirator → Goggles/Face Shield → Gown → Gloves
C. Gown → Mask or Respirator → Goggles or Face Shield → Gloves ✓
D. Mask/Respirator → Gown → Gloves → Goggles/Face Shield

Correct Answer:
C. Gown → Mask or Respirator → Goggles or Face Shield → Gloves

Rationale:

- Correct (C): The CDC specifies that PPE should be put on in the following sequence: (1) Gown, (2) Mask or Respirator, (3) Goggles or Face Shield, and (4) Gloves CDC+12CDC+12CDC Stacks+12.
- Incorrect (A): This option places gloves first, which is incorrect—gloves are worn last.
- Incorrect (B): Goggles/face shield cannot be worn before the mask/respirator—CDC guidance requires mask or respirator to be donned before eye protection.
- Incorrect (D): This sequence misplaces gloves before goggles/face shield and places the gown after the mask, both of which are against the recommended order.

Q18: When removing PPE per CDC recommendations, when should hand hygiene be performed?

A. Only at the very end, after removing all PPE
B. Between steps if hands get contaminated and immediately after removing all PPE ✓
C. Before removing any PPE, but not after
D. Only after removing gloves and gown, not after eye protection or mask

Correct Answer:
B. Between steps if hands get contaminated and immediately after removing all PPE

Rationale:

- Correct (B): The CDC advises performing hand hygiene immediately after removing all PPE—and also between steps if hands become contaminated during the removal process CDC+6CDC+6CDC Stacks+6CDC Stacks+2Lippincott Williams & Wilkins+2PMC.
- Incorrect (A): Only doing hand hygiene at the end misses opportunities to decontaminate between steps when needed.
- Incorrect (C): Performing hand hygiene only before removal and not after fails to address contamination risk during and after doffing.
- Incorrect (D): This option omits hand hygiene for some PPE removal steps, which contradicts CDC's comprehensive guidance.

Reference: Industrial Safety and Health Management

Q19: Which management principle is emphasized in *Industrial Safety and Health Management by* Asfahl and David Rieske?

- A. Command-and-control leadership
- B. Reactive safety monitoring
- C. **Integration of safety into all business operations ✓**
- D. Delegation of all safety duties to HR

Correct Answer: C
Rationale: The text stresses embedding safety in all organizational activities.
Incorrect Rationales:

- A. Command-and-control is outdated.
- B. Reactive monitoring is discouraged.
- D. Safety is a shared responsibility.

Q20: According to *Industrial Safety and Health Management by* Asfahl and David Rieske, what is key to successful safety training?

- A. One-time orientation
- B. Top-down enforcement
- C. **Regularly reinforced and evaluated training ✓**
- D. Relying on the common sense of workers

Correct Answer: C
Rationale: Continuous and reinforced training ensures effectiveness.
Incorrect Rationales:

- A. One-time efforts are insufficient.
- B. Top-down enforcement is less effective without engagement.
- D. Safety needs structure, not assumptions.

Reference: ISO 14001:2015

Q21: What is the primary purpose of ISO 14001:2015?

- A. Ensuring compliance with U.S. labor law
- B. **Establishing environmental management systems ✓**
- C. Certifying food safety programs
- D. Setting national safety penalties

Correct Answer: B
Rationale: ISO 14001:2015 outlines a framework for managing environmental responsibilities.
Incorrect Rationales:

- A. Labor laws are enforced by national regulators.
- C. Food safety is ISO 22000's scope.
- D. ISO sets standards, not penalties.

Q22: Which of the following is a core concept of ISO 14001:2015?

- A. Corrective action only after violations
- B. **Leadership and commitment ✓**
- C. Third-party inspections only
- D. Minimal compliance with laws

Correct Answer: B
Rationale: Top leadership must be engaged and accountable in the EMS.
Incorrect Rationales:

- A. ISO emphasizes proactive controls.
- C. Internal audits are also key.
- D. Continuous improvement is expected.

Reference: OSHA Act of 1970

Q23: What was the primary purpose of the Occupational Safety and Health Act of 1970?

- A. To eliminate environmental pollution
- B. To mandate workers' compensation coverage
- C. **To assure safe and healthful working conditions ✓**
- D. To provide universal healthcare benefits

Correct Answer: C
Rationale: The OSH Act established a legal framework to assure safe working environments.
Incorrect Rationales:

- A. EPA governs pollution, not OSHA.
- B. Workers' comp is managed at the state level.
- D. OSHA does not deal with healthcare benefits.

Q24: Which agency was created by the OSH Act of 1970 to enforce workplace safety?

- A. **NIOSH ✓**
- B. EPA
- C. MSHA
- D. CDC

Correct Answer: A.
Rationale: The OSH Act established the National Institute for Occupational Safety and Health (NIOSH) for safety research.
Incorrect Rationales:

- A. NIOSH is the correct answer.
- B. EPA focuses on environmental safety.
- C. MSHA focuses on mine safety, and it was created by a different Act.
- D. CDC handles public health, not workplace enforcement.

Reference: NFPA Codes 3, 4

Q25: Which statement best describes the primary purpose of **NFPA 3**?

A. It establishes the protocol for integrated testing of multiple fire protection systems.
B. It defines the administrative and procedural requirements for commissioning fire protection and life safety systems. ✓
C. It mandates the frequency of routine maintenance for fire sprinkler systems.
D. It specifies installation criteria for fire alarm notification appliances.

Correct Answer:
B. It defines the administrative and procedural requirements for commissioning fire protection and life safety systems.

Rationale:

- **Correct (B):** NFPA 3 is a standard dedicated to the **commissioning process** of fire protection and life safety systems—outlining how to systematically plan, document, and confirm that systems are designed, installed, and functioning in accordance with the project's design criteria
- **Incorrect (A):** That describes **NFPA 4**, which specifically addresses **integrated testing** of interconnected systems—not NFPA 3
- **Incorrect (C):** Maintenance frequencies for sprinkler systems fall under standards like **NFPA 25**, not NFPA 3
- **Incorrect (D):** Installation criteria for notification devices (e.g., alarms) are governed by NFPA 72, not NFPA 3

Q26: What does **NFPA 4** primarily require?

A. Commissioning of individual fire protection systems like sprinklers and alarms.
B. Documentation of fire system maintenance intervals.
C. End-to-end testing of interconnected fire protection and life safety systems. ✓
D. Fire safety planning protocols for building evacuations.

Correct Answer:
C. End-to-end testing of interconnected fire protection and life safety systems.

Rationale:

- **Correct (C):** NFPA 4 defines requirements for **integrated testing**, meaning comprehensive, "end-to-end" assessments of how multiple fire protection and life safety systems interact as intended.
- **Incorrect (A):** That refers to commissioning individual systems—again the domain of NFPA 3—whereas NFPA 4 focuses on how systems interconnect and perform together.
- **Incorrect (B):** Routine maintenance schedules fall under NFPA 25 or NFPA 72, depending on system type—not NFPA 4.
- **Incorrect (D):** Evacuation planning is more typically addressed in NFPA 101 (Life Safety Code), not NFPA 4.

Reference: OSHA Publication 3885 Recommended Practices for Safety and Health Programs

Q27: According to OSHA Publication 3885, which element is foundational for a safety and health program?

- A. Outsourcing all safety tasks
- B. Focus on lagging indicators
- C. Minimal training programs
- D. **Employee participation ✓**

Correct Answer: D
Rationale: Worker involvement is essential to effective implementation and buy-in.
Incorrect Rationales:

- A. Outsourcing reduces ownership.
- B. Lagging indicators alone are insufficient.
- C. Minimal training undermines program goals.

Q28: What is one benefit of implementing OSHA Publication 3885 recommended safety and health program practices?

- A. Increased OSHA inspections
- B. Automatic exemption from citations
- C. **Improved hazard identification and control ✓**
- D. Reduced need for recordkeeping

Correct Answer: C
Rationale: The practices help proactively identify and correct hazards.
Incorrect Rationales:

- A. Good practice doesn't lead to more inspections.
- B. No automatic exemption is granted.
- D. Recordkeeping requirements still apply.

Reference: *Safety and Health for Engineers* by Roger Brauer

Q29: According to Brauer, what is a core responsibility of safety engineers?

- A. Supervising employee lunch breaks
- B. Managing corporate tax liability
- C. **Identifying and mitigating workplace hazards ✓**
- D. Reviewing marketing campaign performance

Correct Answer: C
Rationale: Safety engineers identify and address workplace hazards to ensure safe environments.
Incorrect Rationales:

- A, B, D: These are not within a safety engineer's scope of duties.

Q30: Brauer emphasizes which of the following as critical to effective safety performance?

- A. Strict punitive enforcement
- B. Reactive investigation of incidents
- C. **Integration of safety into design ✓**
- D. Reducing wages to cut safety costs

Correct Answer: C
Rationale: Designing safety into processes proactively reduces incidents.
Incorrect Rationales:

- A. Punishment discourages reporting.

- B. Reactive approaches are less effective.
- D. Unsafe and unethical.

Reference: OSHA Consultation

Q31: What is a primary benefit of participating in OSHA's consultation program?

- A. It replaces all regulatory inspections
- B. It is punitive and results in citations
- C. **It provides free, confidential safety advice ✓**
- D. It eliminates the need for recordkeeping

Correct Answer: C
Rationale: The consultation program offers confidential, non-punitive assistance.
Incorrect Rationales:

- A. Inspections may still occur.
- B. Consultations don't issue citations.
- D. Recordkeeping obligations remain.

Q32: Which employer type is OSHA's consultation program primarily designed to assist?

- A. Large multinational corporations
- B. Labor unions
- C. **Small- and medium-sized businesses ✓**
- D. Federal agencies

Correct Answer: C
Rationale: The program is tailored for smaller firms that may lack safety resources.
Incorrect Rationales:

- A. Larger firms typically have safety departments.
- B. Unions are not the focus.
- D. Federal agencies follow separate programs.

References: HazCom Guidance, Global HazCom, OSHA Incident Investigation, OSHA Safety Management

Q33: Under OSHA's HazCom standard, what must be available to workers?

- A. Product marketing materials
- B. **Safety Data Sheets or SDSs ✓**
- C. Annual income statements
- D. Union voting records

Correct Answer: B
Rationale: SDSs inform workers about chemical hazards.
Incorrect Rationales:

- A, C, D: These are not related to chemical hazard communication.

Q34: What is the first step in OSHA's incident investigation process?

- A. Assigning blame
- B. Disciplining employees
- C. **Preserving the scene ✓**
- D. Filing a lawsuit

Correct Answer: C
Rationale: Preserving the scene ensures evidence is not lost.
Incorrect Rationales:

- A, B, D: These are not initial steps in the investigation process.

✓Case Study: Implementing a Proactive Safety Culture at Apex Manufacturing

Background

Apex Manufacturing is a mid-sized company specializing in industrial metal components. After experiencing a series of near-misses and a minor injury, the company's leadership hires a newly credentialed Certified Safety and Health Manager (CSHM) named Jordan to lead a comprehensive overhaul of the organization's safety culture.

Scenario

Upon starting, Jordan conducts a safety culture assessment and reviews historical incident records, training logs, and OSHA consultation reports. He quickly identifies several issues:

- No centralized safety policies or defined goals
- Minimal employee involvement in safety initiatives

- Lack of coordination between departments on safety procedures
- Little awareness of regulatory and consensus standards
- Limited investment in safety equipment and training

Actions Taken by the CSHM

1. Policy and Goal Development

Jordan establishes a formal safety policy aligned with ANSI/ASSP Z10.0-2019 and the OSHA Recommended Practices. He works with leadership to set SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) goals, such as reducing recordable injuries by 25% within one year.

2. Budgeting and Resource Planning

He collaborates with the finance and operations departments to identify resource needs—upgrading PPE (per 29 CFR 1910 Subpart I), funding first aid training, and hiring a part-time safety coordinator.

3. Stakeholder Engagement and Coordination

Jordan initiates a Safety Steering Committee, including department heads from production, HR, maintenance, and logistics. He facilitates monthly meetings to review hazard reports and action plans.

4. Employee Involvement

He launches a "Safety Champion" program where employees are nominated for identifying risks and participating in safety audits. Workers also receive training on their right to know under the HazCom standard and are given SDSs in both English and Spanish.

5. Ethical Leadership and Communication

Jordan leads by example, documenting all corrective actions transparently and establishing a no-blame culture. Ethical concerns, like underreporting, are addressed through anonymous reporting mechanisms.

6. Regulatory and Consensus Standard Compliance

Jordan integrates ISO 45001 and OSHA environmental requirements into the facility's operating procedures. He also ensures compliance with NFPA 10 and 70 and uses OSHA Consultation Services to prepare for future audits.

7. Quality and Continuous Improvement

He applies ASQ mistake-proofing techniques to redesign a workstation that previously caused repetitive strain injuries. A PDCA cycle is initiated to monitor progress.

Results

After one year, Apex Manufacturing reports a 35% reduction in recordable incidents, full regulatory compliance in a surprise OSHA audit, and improved employee morale as measured in post-training surveys. The CSHM's holistic application of planning, leadership, and employee involvement transformed the safety culture into a proactive and engaged system.

Domain Two: Communication and Resources – 15.51% of the exam

✓ CSHM Domain Two Blueprint

- 2.1 Identify ways to communicate corporate safety education.
- 2.2 Identify different educational and training requirements at different levels of the organization.
- 2.3 Identify barriers to participation.
- 2.4 Identify key hazards and risks, their categories, and the differences between them.
- 2.5 Identify core OH&S objectives and key documents.
- 2.6 Given a scenario, analyze different ways that work gets done to communicate requirements across the enterprise.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation.

Reference Title	Web Link
1 CFR 18.12	https://www.ecfr.gov/current/title-1/chapter-I/subchapter-E/part-18/section-18.12
ANSI/ASSP Z359 fall protection and fall restraint	https://webstore.ansi.org/search/find?in=1&st=z359

ASSP GM-Z10.100-2019 Guidance and Implementation Manual for ANSI/ASSP Z10 2019 Occupational Health and Safety Management Systems	https://webstore.ansi.org/search/find?in=1&st=gm+z10.100
Handbook of Indoor Air Quality Springer Link 2021 Editors: Yinping Zhang, Philip K. Hopke, Corinne Mandin (Springer, 2021)	https://www.amazon.com/Handbook-Indoor-Quality-Yinping-Zhang/dp/9811676798
Fit2wrk Clinical Education Article	https://fit2wrk.com/wp-content/uploads/2015/08/ARTICLE_Fit2wrk_ClinicalEd_vol1-07.pdf
Communication Insights for Supervision and Safety	https://ohsonline.com/Articles/2021/08/02/Communication-Insights-for-Supervision-and-Safety.aspx
ASSP – 10 Proven Methods for Delivering Feedback	https://www.assp.org/news-and-articles/10-proven-methods-for-delivering-feedback-as-a-safety-manager
Hazardous Materials Table with Pictograms	https://www.google.com/search?q=Hazardous+materials+table+with+pictograms&tbm=isch
Ladder Safety for Electrical Work	https://www.hbsinostar.com/news/ladder-safety-for-electrical-work-47360525.html
ISO 45001 – Occupational Health and Safety Management Systems	https://www.iso.org/standard/63787.html
NFPA Codes 10, 70	https://www.nfpa.org/en/for-professionals/codes-and-standards/list-of-codes-and-standards
OSHA Act of 1970	https://www.osha.gov/laws-regs/oshact/completeoshact
Safety and Health for Engineers – Roger L. Brauer	https://www.amazon.com/Safety-Health-Engineers-Roger-Brauer/dp/1118959450
OSHA Training	https://www.osha.gov/sites/default/files/2a_Assess_Curr

Needs Assessment Tools – General	ent_Training_Needs.pdf
OSHA Training Needs Assessment Tools – Job-Specific	https://www.osha.gov/sites/default/files/2b_Assess_Job_Specific_Training_Needs_Job_Specific.pdf
OSHA: Better Safety Conversations	https://www.osha.gov/sites/default/files/SHP_Better-Safety-Conversations.pdf
OSHA Preambles	https://www.osha.gov/laws-regs/preambles
OSHA Training Quiz – Introduction Key	https://www.osha.gov/sites/default/files/2021-05/1%20Introduction%20Quiz%20Key.pdf

✓ Sample CSHM exam questions and answers. The following questions and answers are not from the CSHM exam but are presented to you to orient you to what taking the exam is like.

Reference: 1 CFR 18.12

Q1: According to 1 CFR 18.12, what must be included when referencing a standard in the Federal Register?

- A. Only the publication date
- B. A summary of the standard's historical context
- C. **The title, edition, and source of the standard ✓**
- D. The approval date by the Office of Management and Budget

Rationale (Correct): Federal regulations must cite the title, edition, and source to ensure traceability and clarity.
Rationale (Incorrect):

- A: Date alone is not sufficient.
- B: Historical context is not mandated.
- D: OMB approval is unrelated to citation format.

Q2: Why is 1 CFR 18.12 important for safety managers?

- A. It governs chemical safety data sheets
- B. **It outlines how safety standards must be cited in regulations ✓**
- C. It regulates permissible exposure limits
- D. It details requirements for PPE labeling

Rationale (Correct): Understanding how to properly cite standards is essential for regulatory compliance.
Rationale (Incorrect):

- A: HazCom governs SDSs.
- C: Exposure limits are in 29 CFR 1910.
- D: PPE labeling falls under ANSI and OSHA rules.

Reference: **ANSI/ASSP Z359 fall protection and fall restraint**

Q3: What is the primary scope of **ANSI/ASSE Z359.1**

A. It defines performance requirements for full-body harnesses and lanyards.
B. It serves as a high-level Fall Protection Code that outlines scope, definitions, and interdependence of other Z359 standards. ✓
C. It specifies qualification and verification testing procedures for fall protection products.
D. It establishes requirements for rescue systems and assisted rescue subsystems.

Correct Answer:
B. It serves as a high-level Fall Protection Code that outlines scope, definitions, and interdependence of other Z359 standards.

Rationale:

- **Correct (B):** According to section 1.1.1 of ANSI/ASSE Z359.1, this standard "covers program management; system design; training; qualification and testing; equipment, component and system specifications" for a managed fall protection program. It “identifies those standards and establishes their role in the Code and their interdependence”
- **Incorrect (A):** Detailed performance requirements for full-body harnesses are found in ANSI/ASSE Z359.11, not Z359.1
- **Incorrect (C):** Qualification and verification testing procedures are specified in ANSI/ASSE Z359.7, not in Z359.1
- **Incorrect (D):** Requirements for rescue systems and assisted rescue- subsystems are covered by ANSI/ASSE Z359.4, not Z359.1

Q4: Which of the following statements about **Z359.1** and product marking is correct?

A. Products may be labeled as compliant with Z359.1 as long as they meet its general principles.
B. Z359.1 is a product-specific standard and defines marking for harnesses and connectors.
C. No product may bear the Z359.1 marking after its effective date unless it meets individual product specific Z359 standards. ✓
D. Products compliant with earlier editions may continue to be labeled indefinitely.

Correct Answer:
C. No product may bear the Z359.1 marking after its effective date unless it meets individual product-specific Z359 standards.

Rationale:

- **Correct (C):** Section 1.2.2 of the standard states that ANSI/ASSE Z359.1 is *not* a product standard. It specifies that no product shall bear the ANSI/ASSE Z359.1 marking or be claimed as in compliance after the effective date. Compliance must refer to the applicable **individual product standard**, such as Z359.11, Z359.12, Z359.13, etc.
- **Incorrect (A):** You cannot label a product as compliant with Z359.1 by general principles—it must meet the specific, relevant product standard, and Z359.1 itself does not apply to product marking.
- **Incorrect (B):** Z359.1 is *not* a product standard; it is a code document that outlines high-level requirements and the relationship of the product standards but does not define marking for individual components.
- **Incorrect (D):** The standard explicitly states that no claim of conformance to previous editions may be made after the effective date.

Reference: ASSP GM-Z10.100-2019 Guidance and Implementation Manual

Q5: What is the primary purpose of the ASSP GM-Z10.100-2019 Guidance Manual?

- A. To provide a list of hazardous chemicals
- B. To regulate fire protection standards

- C. **To guide the implementation of occupational health and safety practices ✓**
- D. To enforce ISO 45001 compliance

Rationale (Correct): It supports consistent measurement and implementation of OH&S practices.
Rationale (Incorrect):

- A: GHS covers chemicals.
- B: NFPA regulates fire protection.
- D: GM-Z10.100 complements, not enforces ISO 45001.

Q6: Which of the following is a key benefit of applying GM-Z10.100 metrics?

- A. Reducing product defects
- B. Improving environmental compliance
- C. **Enhancing the consistency of safety performance reporting ✓**
- D. Minimizing company tax liabilities

Rationale (Correct): The manual provides a framework for consistent and meaningful safety metrics.
Rationale (Incorrect):

- A: Quality control, not safety reporting.
- B: That's ISO 14001's scope.
- D: Tax implications are unrelated.

Reference: Handbook of Indoor Air Quality (Springer, 2021)

Q7: Which indoor air pollutant is commonly discussed in the Handbook of Indoor Air Quality?

- A. Lead in soil
- B. **Radon gas ✓**
- C. Pesticide drift
- D. Carbon black in outdoor air

Rationale (Correct): Radon is a well-known indoor air hazard discussed in detail in the handbook.
Rationale (Incorrect):

- A: Soil is not indoor air.
- C: Drift is outdoor-focused.
- D: Carbon black relates to outdoor industrial emissions.

Q8: What is one key strategy from the handbook for improving indoor air quality?

- A. Increasing pesticide use indoors
- B. Sealing all ventilation points
- C. **Enhancing source control and ventilation ✓**
- D. Switching off air filters periodically

Rationale (Correct): Removing pollutants and ensuring airflow are central to IAQ.
Rationale (Incorrect):

- A: Introduces toxins.
- B: Restricts airflow.
- D: Disabling filters is counterproductive.

Reference: Fit2wrk Clinical Education Article

Q9: According to the Fit2wrk article, what is one major benefit of early intervention in workplace injuries?

- A. Increased reliance on opioids
- B. Higher absenteeism
- C. **Reduced recovery time and improved return-to-work outcomes ✓**
- D. More lawsuits filed by employees

Correct Rationale: Early intervention enables faster healing and better workforce reintegration.
Incorrect Rationales:

- A: Early care reduces medication dependency.
- B: Absenteeism typically decreases.
- D: Proactive care reduces legal disputes.

Q10: What is emphasized in Fit2wrk's approach to clinical care in occupational health?

- A. Delay treatment to assess injury trends
- B. Treat symptoms without diagnosis
- C. **Use of multidisciplinary strategies and functional outcomes ✓**
- D. Focus on long-term disability designation

Correct Rationale: The model supports integrated, outcomes-based care.
Incorrect Rationales:

- A, B, D: These approaches undermine recovery goals.

Reference: Communication Insights for Supervision and Safety

Q11: According to *Communication Insights for Supervision and Safety*, what communication technique builds trust with employees?

- A. Yelling instructions from a distance
- B. Blaming others for safety lapses
- C. **Engaged listening and respectful dialogue ✓**
- D. Issuing daily safety citations

Correct Rationale: Trust grows through mutual respect and listening.
Incorrect Rationales:

- A: Dismissive and authoritarian.
- B: Erodes morale.
- D: Focuses on punishment, not engagement.

Q12: What does the article suggest is a key outcome of effective safety communication?

- A. More write-ups
- B. Higher turnover
- C. **Increased understanding of expectations ✓**
- D. Reduced productivity

Correct Rationale: Clarity and shared expectations improve behavior and safety performance.
Incorrect Rationales:

- A & B: Poor communication leads to these.
- D: Productivity typically increases, not declines.

Reference: ASSP – 10 Proven Methods for Delivering Feedback

Q13: According to ASSP's article, what is the best practice for giving safety feedback?

- A. Focus only on what went wrong
- B. Use feedback as punishment
- C. **Deliver feedback in a timely and specific way ✓**
- D. Avoid face-to-face discussions

Correct Rationale: Immediate, targeted feedback improves safety outcomes.
Incorrect Rationales:

- A: Negative-only feedback is demotivating.
- B: Punishment is counterproductive.
- D: Personal interaction is important.

Q14: Which of the following does ASSP recommend when giving feedback?

- A. Assume the worker knows better
- B. Give feedback in front of peers to shame the employee
- C. **Focus on observable behavior, not personal traits ✓**
- D. Use sarcasm to get your point across

Correct Rationale: Behavior-based feedback avoids personal attacks and improves receptivity.
Incorrect Rationales:

- A: Assumptions reduce clarity.
- B & D: Humiliation and sarcasm damage relationships.

Reference: Hazardous Materials Table with Pictograms

Q15: What is the purpose of pictograms in hazardous materials labeling?

- A. To improve product marketing
- B. To confuse non-English-speaking workers
- C. **To provide visual hazard communication ✓**
- D. To indicate shipment tracking numbers

Correct Rationale: Pictograms visually convey the type of hazard, improving comprehension across languages.
Incorrect Rationales:

- A: Marketing is not their function.
- B: They clarify, not confuse.
- D: They are not related to shipping logistics.

Q16: Which of the following symbols is used to represent a carcinogenic hazard in the GHS pictogram system?

- A. Skull and crossbones
- B. Exclamation mark
- C. **Health hazard (silhouette with starburst on chest) ✓**

- D. Flame

Correct Rationale: The health hazard icon covers carcinogenicity, mutagenicity, and respiratory issues.
Incorrect Rationales:

- A: Indicates acute toxicity.
- B: Indicates irritants.
- D: Used for flammables.

Reference: Ladder Safety for Electrical Work

Q17: Which ladder material is recommended when working near electrical sources?

- A. Aluminum
- B. **Fiberglass ✓**
- C. Steel
- D. Wood with metal braces

Correct Rationale: Fiberglass is non-conductive and ideal for electrical safety.
Incorrect Rationales:

- A & C: Conductive materials.
- D: Metal braces can transmit current.

Q18: What is one common safety recommendation when using ladders for electrical work?

- A. Work alone for efficiency
- B. Use metal tools while standing on the ladder
- C. **Ensure the ladder is dry and on stable ground ✓**
- D. Stand on the top rung for better reach

Correct Rationale: Stable placement and dry surfaces reduce fall and shock risk.
Incorrect Rationales:

- A: Increases emergency response risk.
- B: Increases shock hazard.
- D: Unsafe and prohibited by ladder manufacturers.

Reference: ISO 45001 – Occupational Health and Safety Management Systems

Q19: What is the main goal of ISO 45001?

- A. To set environmental emission limits
- B. To define accounting procedures
- C. **To prevent work-related injuries and illnesses ✓**
- D. To standardize global taxation

Correct Rationale: ISO 45001 improves workplace OH&S by minimizing risks.
Incorrect Rationales:

- A: Handled by ISO 14001.
- B: Accounting is outside ISO 45001's scope.
- D: Not relevant to ISO.

Q20: Which of the following is a requirement of ISO 45001?

- A. Mandated union representation
- B. **Worker participation in OH&S decision-making ✓**
- C. Weekly safety awards
- D. Automatic regulatory exemptions

Correct Rationale: ISO 45001 promotes engagement of workers at all levels in safety planning.
Incorrect Rationales:

- A: Unionization is not required.
- C: Awards are not mandated.
- D: Certification does not override regulations.

Reference: NFPA Codes 10, 70

Q21: What is the primary purpose of NFPA 70 (National Electrical Code)?

- A. To outline emergency evacuation plans
- B. To regulate fire extinguisher inspections
- C. **To set standards for safe electrical installations ✓**
- D. To define hazardous waste disposal procedures

Correct Rationale: NFPA 70 sets the benchmark for safe electrical systems, reducing fire and shock hazards.
Incorrect Rationales:

- A: Covered in NFPA 101.
- B: Covered in NFPA 10.
- D: Governed by EPA regulations (RCRA).

Q22: Which NFPA code governs fire extinguisher placement and maintenance?

- A. NFPA 4
- B. **NFPA 10 ✓**
- C. NFPA 70
- D. NFPA 13

Correct Rationale: NFPA 10 establishes standards for extinguishers in workplaces and public spaces.
Incorrect Rationales:

- A: System testing.
- C: Electrical installations.
- D: Sprinkler systems.

Reference: OSHA Act of 1970

Q23: What is the core purpose of the OSHA Act of 1970?

- A. To fund emergency medical services
- B. To define fire code standards
- C. **To ensure safe and healthful working conditions ✓**
- D. To standardize environmental regulations

Correct Rationale: The Act mandates the provision of a workplace free from recognized hazards.
Incorrect Rationales:

- A: Not related to OSHA's mission.
- B: NFPA covers fire codes.
- D: EPA governs environmental rules.

Q24: Which agency was created as a result of the OSHA Act of 1970?

- A. EPA
- B. NIOSH
- C. **OSHA ✓**
- D. NFPA

Correct Rationale: OSHA was established to enforce workplace safety standards.
Incorrect Rationales:

- A: Created under NEPA.
- B: Also created by the Act, but it is a research body, not an enforcement body.
- D: NFPA is an independent nonprofit

Reference: Safety and Health for Engineers – Roger L. Brauer

Q25: According to Brauer's text, which of the following is foundational to an effective safety management system?

- A. Infrequent inspections
- B. Punitive disciplinary systems
- C. **Clear policies and active leadership commitment ✓**
- D. Reactive hazard reporting

Correct Rationale: Safety starts with visible leadership and defined expectations.
Incorrect Rationales:

- A & D: Proactive systems work better.
- B: Can discourage reporting and cooperation.

Q26: What concept does Brauer promote to integrate safety into engineering design?

- A. Safety as an afterthought
- B. Cost-cutting over compliance
- C. **Designing out hazards from the start ✓**
- D. Minimal stakeholder involvement

Correct Rationale: Prevention through design is more effective and economical.
Incorrect Rationales:

- A: Unsafe and outdated approach.
- B: Compromises safety.
- D: Collaboration leads to better results.

Reference: OSHA Training Needs Assessment Tools

Q27: According to OSHA's *Assessing Current Training Needs* guide, what is the primary purpose of conducting a training needs assessment?

A. To evaluate employee wages and benefits in relation to training budgets
B. To determine whether current training adequately addresses workplace hazards ✓
C. To replace the requirement for formal hazard assessments under OSHA standards
D. To certify that employees have met professional development requirements

Correct Answer: B. To determine whether current training adequately addresses workplace hazards

Rationale:

- **B (Correct):** OSHA emphasizes that the goal of a training needs assessment is to evaluate whether current training effectively addresses the hazards employees face, ensuring both compliance and safety.
- **A (Incorrect):** Wage and benefit evaluations are HR functions and not part of OSHA's training needs assessment process.
- **C (Incorrect):** Training assessments do not replace hazard assessments; they complement them by ensuring hazards identified are covered by training.
- **D (Incorrect):** Professional development certification may occur in some industries, but OSHA's focus is workplace hazard control and compliance, not credentialing.

Q28: Which of the following is one of the key steps outlined by OSHA for assessing current training needs?

A. **Reviewing injury and illness records to identify recurring safety issues ✓**
B. Comparing employee productivity against industry benchmarks
C. Assigning annual training quotas based on company size
D. Consulting only with senior management to identify training topics

Correct Answer: A. Reviewing injury and illness records to identify recurring safety issues

Rationale:

- **A (Correct):** OSHA recommends using injury/illness logs, near-miss reports, and inspection findings to identify areas where training may be lacking.
- **B (Incorrect):** Productivity comparisons are business metrics, not an OSHA-recognized method of identifying training needs.
- **C (Incorrect):** OSHA does not mandate quotas; training is based on identified hazards and regulatory requirements.
- **D (Incorrect):** Effective assessments involve employees, supervisors, and safety personnel—not just senior management—since frontline workers often best understand hazards.

Reference: OSHA Better Safety Conversations

Q29: According to OSHA's *Better Safety Conversations* guide, which of the following best describes an effective safety conversation?

A. A one-way discussion where supervisors remind employees of written safety rules
B. A collaborative dialogue where supervisors listen actively and encourage employee input ✓
C. A short announcement at the beginning of a shift, without time for questions
D. A disciplinary meeting that focuses only on correcting unsafe behavior

Correct Answer: B. A collaborative dialogue where supervisors listen actively and encourage employee input

Rationale:

- **B (Correct):** OSHA emphasizes that effective safety conversations are two-way, involving active listening and encouraging workers to share concerns, which builds trust and improves hazard awareness.
- **A (Incorrect):** One-way communication limits employee engagement and misses valuable feedback.
- **C (Incorrect):** Quick announcements may raise awareness but are not true conversations since they lack dialogue.

- **D (Incorrect):** Discipline alone does not create open communication and can discourage reporting of hazards.

Q30: What strategy does OSHA recommend supervisors use to build trust during safety conversations with employees?

A. Focusing only on compliance with rules to show authority
B. Sharing personal stories and experiences about safety to demonstrate commitment ✓
C. Avoiding employee concerns to keep the discussion efficient and on schedule
D. Limiting safety discussions to emergency situations only

Correct Answer: B. Sharing personal stories and experiences about safety to demonstrate commitment

Rationale:

- **B (Correct):** OSHA notes that when leaders share their own experiences, it demonstrates authenticity and a genuine commitment to safety, which strengthens trust.
- **A (Incorrect):** Rule enforcement alone does not foster trust; it can make conversations feel punitive.
- **C (Incorrect):** Ignoring employee concerns undermines trust and discourages reporting.
- **D (Incorrect):** Safety conversations should be ongoing, not limited to emergencies.

Reference: OSHA Preambles

Q31: What is the primary purpose of an OSHA preamble when a new standard is issued?

A. To summarize only the financial impact of the rule on employers
B. To provide background, rationale, and evidence supporting the rulemaking ✓
C. To serve as a substitute for the regulatory text itself
D. To explain how OSHA's enforcement penalties will be applied to violations

Correct Answer: B. To provide background, rationale, and evidence supporting the rulemaking

Rationale:

- **B (Correct):** OSHA preambles explain why the agency is issuing the rule, the data and studies considered, comments from stakeholders, and how the final provisions were selected.
- **A (Incorrect):** Economic analysis is part of the preamble but not its sole purpose.
- **C (Incorrect):** The preamble does not replace the regulatory text; it explains and supports it.
- **D (Incorrect):** Penalty structures are not the function of preambles; they are determined under separate OSHA guidance and statutory authority.

Q32: Why are OSHA preambles considered important in legal and compliance contexts?

A. They provide the official text of OSHA standards that employers must follow
B. They clarify the scientific, economic, and policy basis that courts may review in challenges ✓
C. They replace employer responsibility to conduct hazard assessments
D. They define the training requirements for all regulated industries

Correct Answer: B. They clarify the scientific, economic, and policy basis that courts may review in challenges

Rationale:

- **B (Correct):** When OSHA standards are challenged, courts often review the preamble to assess whether OSHA provided substantial evidence and a reasonable explanation for its rulemaking.
- **A (Incorrect):** The enforceable requirements are in the regulatory text, not the preamble.
- **C (Incorrect):** Employers still must conduct hazard assessments; preambles do not replace those duties.

- **D (Incorrect):** Training requirements are set in the rule text itself, not in the preamble.

Reference: OSHA Training Quiz Introduction Key

Q33: According to OSHA training materials, what is the primary mission of OSHA?

A. To ensure safe and healthful working conditions for workers by setting and enforcing standards ✓
B. To certify all safety professionals working in the United States
C. To fund workplace safety programs for every private employer
D. To eliminate all workplace hazards through federal inspection alone

Correct Answer: A. To ensure safe and healthful working conditions for workers by setting and enforcing standards

Rationale:

- **A (Correct):** OSHA's mission, under the OSH Act of 1970, is to ensure safe and healthful working conditions by setting and enforcing standards and providing training, outreach, education, and assistance.
- **B (Incorrect):** OSHA does not certify individuals; professional certification is handled by private credentialing organizations.
- **C (Incorrect):** OSHA does not directly fund employer programs; instead, it enforces compliance and provides training and resources.
- **D (Incorrect):** Inspections are important but cannot eliminate all hazards; OSHA relies on both enforcement and employer responsibility.

Q34: Which of the following is a right that workers are guaranteed under the Occupational Safety and Health Act?

A. The right to request an OSHA inspection of their workplace ✓
B. The right to refuse any assigned task without notifying a supervisor
C. The right to set their own exposure limits for hazardous substances
D. The right to eliminate OSHA recordkeeping requirements for their employer

Correct Answer: A. The right to request an OSHA inspection of their workplace

Rationale:

- **A (Correct):** Workers have the right to file complaints and request OSHA inspections if they believe unsafe or unhealthy conditions exist, without fear of retaliation.
- **B (Incorrect):** Workers cannot refuse tasks arbitrarily; refusal is protected only if the work poses imminent danger and certain conditions are met.
- **C (Incorrect):** Exposure limits are established by OSHA standards, not by individual workers.
- **D (Incorrect):** Employers are required to maintain OSHA records where applicable; workers cannot waive this obligation.

✓Case Study: Enhancing Safety Communication at Phoenix Manufacturing Corp.

Background:
Phoenix Manufacturing Corp., a mid-sized firm producing HVAC components, had experienced a spike in recordable injuries over the past year. Internal investigations revealed recurring issues related to poor communication of safety procedures, unclear signage, and minimal employee involvement in safety decisions.

The company hired a new Certified Safety and Health Manager (CSHM), Maria Lopez, to assess and overhaul its safety communication system.

🛠 Maria's Approach Using Domain Two Principles

1. **Audit of Existing Communication Tools**
   Maria began by conducting a gap analysis using OSHA's Safety and Health Program Recommended Practices and the ANSI/ASSP Z10.0 standard. She discovered:
   - Outdated chemical labels are missing GHS pictograms
   - Monthly toolbox talks with low participation
   - Safety training sessions that lacked feedback mechanisms

2. **Implementing a Multimodal Communication Strategy**
   Drawing from Brauer's *Safety and Health for Engineers* and Fit2wrk best practices, Maria introduced:
   - Safety message boards in high-risk areas with pictogram-supported visuals
   - QR-coded digital access to Safety Data Sheets (SDSs)
   - Bi-weekly small group huddles with supervisor-led conversations
3. **Improving Worker Participation**
   Using OSHA's worker participation guidelines, Maria:
   - Formed a Joint Safety Communication Committee with hourly and salaried reps
   - Trained committee members using *10 Proven Methods for Delivering Feedback*
   - Included a "Near Miss of the Month" feature in the safety newsletter, promoting transparency and learning
4. **Training Supervisors on Human Factors**
   Maria conducted supervisor training grounded in *The Human Side of Safety* and *Communication Insights for Supervision and Safety*. Focus was placed on:
   - Active listening
   - Non-punitive coaching
   - Providing feedback that was specific, timely, and positive
5. **Embedding Continuous Improvement**
   With reference to ISO 45001 and ANSI Z10, Maria introduced a feedback loop:
   - Incident investigations now include "5 Whys" root cause sessions involving affected workers
   - Employees completed short post-training surveys, helping revise future materials
   - Monthly pulse surveys monitored communication effectiveness and morale

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Results Over 6 Months

- 38% drop in recordable injuries
- 62% increase in safety training participation
- 100% compliance in chemical container labeling audits
- Supervisor trust ratings rose by 27% on employee surveys
- Near misses reported tripled, indicating improved transparency

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How This Reflects Domain Two Mastery

Maria's approach demonstrated mastery of Domain Two competencies:

- She communicated safety messages through verbal, visual, and behavioral methods.
- She engaged all levels of the workforce in safety planning and performance feedback.
- She aligned messaging with compliance requirements and modern safety communication science.
- Her systems focused on proactive engagement rather than reactive enforcement.

Her success reinforced that **effective communication is not just about transmission—it's about connection, participation, and trust**.

Domain Three: Risk Assessment and Control – 19.48% of the exam

✓ CSHM Domain Three Blueprint

- 3.1 Identify definitions of hazard, risk, and assessment.
- 3.2 Identify the components of an accident investigation.
- 3.3 Identify factors that influence risk acceptance.
- 3.4 Identify the hierarchy of controls.
- 3.5 Given a scenario, determine the risk mitigation strategy using the hierarchy of controls.
- 3.6 Given a scenario, conduct a root cause analysis.
- 3.7 Given a scenario, evaluate control measures.
- 3.8 Given a scenario, determine the acceptable level of risk.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation

Reference Title	Web Link
29 CFR 1910 subparts J, L, Z	https://www.osha.gov/laws-regs/regulations/standardnumber/1910
30 CFR 57	https://www.ecfr.gov/current/title-30/chapter-I/subchapter-

	K/part-57
Advanced Safety Management. Fred A. Manuele 2008 Wiley	https://www.amazon.com/Advanced-Safety-Management-Focusing-Prevention/dp/1119605415
ANSI/ASSP Z10.0-2019 Occupational Health and Safety Management Systems	https://webstore.ansi.org/search/find?in=1&st=ANSI%2FASSP+Z10.0-2019
ASSP GM-Z10.100 2019 Guidance and Implementation Manual for ANSI/ASSP Z10 2019 Occupational Health and Safety Management Systems	https://webstore.ansi.org/search/find?in=1&st=gm+z10.100
ISO 31000	https://www.iso.org/standard/65694.html
NFPA code 13	https://www.nfpa.org/en/for-professionals/codes-and-standards/list-of-codes-and-standards#aq=%40culture%3D%22en%22&cq=%40tagtype%3D%3D(%22Standards%20Development%20Process%22)%20&numberOfResults=12&sortCriteria=%40computedproductid%20ascending%2C%40productid%20ascending
NIOSH (42 CFR 84)	https://www.ecfr.gov/current/title-42/chapter-I/subchapter-G/part-84
Safety and Health for Engineers 3rd Edition by Brauer, Roger L	https://www.amazon.com/Safety-Health-Engineers-Roger-Brauer/dp/1118959450
OSHA Hazcom Guidance	https://www.osha.gov/hazcom/guidance
OSHA Hazcom Global	https://www.osha.gov/hazcom/global
Hierarchy of	https://www.osha.gov/sites/default/files/Hierarchy_of_Contro

controls	ls_02.01.23_form_508_2.pdf
Safety management	https://www.osha.gov/safety-management
Sampling and analysis	https://www.osha.gov/sampling-analysis/analysis
Standards and Certification	www.fmglobal.com/research-and-resources/standards-and-certification

✓ Sample Exam Questions and Answers. The following questions and answers are not from the CSHM examination. These questions and answers are drawn as samples from the references cited above only to orient you to how the actual CSHM examination is structured and delivered.

Reference: 29 CFR 1910 Subparts J, L, Z

Q1: According to 29 CFR 1910.147, before servicing or maintaining machinery, which of the following steps must be taken first?

A. Post warning signs around the entire worksite
B. Shut down the machine and isolate it from its energy source ✓
C. Remove all guards and barriers for easier access to the equipment
D. Conduct a complete retraining session for all employees in the area

Correct Answer: B. Shut down the machine and isolate it from its energy source

Rationale:

- B (Correct): OSHA's lockout/tagout standard (1910.147(d)) requires that machines be turned off and energy sources isolated before servicing to prevent accidental startup or release of hazardous energy.
- A (Incorrect): Posting warning signs may supplement safety but is not a substitute for energy isolation.
- C (Incorrect): Guards must not be removed unless necessary for servicing and only after energy isolation; removal before shutdown is unsafe.

- D (Incorrect): Retraining is required under certain conditions (1910.147(c)(7)), but it is not a required *first step* before every maintenance task.

Q2: Under 29 CFR 1910.157, how frequently must employers perform a visual inspection of each portable fire extinguisher?

A. Weekly
B. Monthly ✓
C. Quarterly
D. Annually

Correct Answer: B. Monthly

Rationale:

- **B (Correct): 1910.157(e)(2)** requires employers to visually inspect portable fire extinguishers **at least once per month** to ensure they are accessible, charged, and in working order.
- **A (Incorrect):** Weekly inspections exceed OSHA's requirement and are not mandated.
- **C (Incorrect):** Quarterly checks would not be frequent enough to comply with OSHA's monthly inspection requirement.
- **D (Incorrect):** Annual maintenance checks are required by a qualified person (1910.157(e)(3)), but monthly visual inspections are still mandatory.

Reference: 30 CFR 57

Q3: What industry does 30 CFR 57 specifically regulate?

- A. Construction
- B. Coal mining
- **C. Metal and nonmetal mining ✓**
- D. Oil and gas extraction

Correct Rationale: 30 CFR 57 sets safety and health rules for metal and nonmetal underground mining operations.
Incorrect Rationales:

- A: Governed by 29 CFR 1926.
- B: Covered under 30 CFR 75.
- D: Regulated by other federal and state standards.

Q4: Which agency enforces 30 CFR 57 regulations?

- A. EPA
- B. OSHA
- C. NIOSH
- **D. MSHA ✓**

Correct Rationale: MSHA (Mine Safety and Health Administration) enforces federal mine safety standards.
Incorrect Rationales:

- A: Environmental oversight.
- B: General industry, not mining.
- C: Research only.

Reference: *Advanced Safety Management* by Fred A. Manuele

Q5: What concept is central to Manuele's *Advanced Safety Management* approach?

- A. Reactive hazard response
- B. Compliance-based safety systems
- **C. Prevention through design ✓**
- D. Random inspection scheduling

Correct Rationale: Manuele emphasizes integrating hazard elimination during the design phase.
Incorrect Rationales:

- A: He promotes proactive systems.
- B: He encourages going beyond compliance.
- D: Not a highlighted strategy in his framework.

Q6: Fred Manuele emphasizes that effective safety management requires:

- A. Relying solely on safety audits
- B. Eliminating all risk
- **C. Managing risks using proven principles ✓**
- D. Avoiding collaboration with operations

Correct Rationale: He stresses systematic, evidence-based risk mitigation rooted in collaboration.
Incorrect Rationales:

- A: Audits are helpful but not comprehensive.
- B: Zero risk is rarely achievable.
- D: Operations involvement is crucial.

Reference: ANSI/ASSP Z10.0-2019

Q7: What is the primary focus of ANSI/ASSP Z10.0-2019?

- A. Punitive safety enforcement
- B. Prescriptive compliance checklists
- C. **Risk-based proactive safety management ✓**
- D. Hazard communication training

Correct Rationale: Z10.0 emphasizes risk anticipation, prevention, and integration into business systems.
Incorrect Rationales:

- A: It promotes prevention, not punishment.
- B: It is performance-based, not a checklist.
- D: HazCom is important, but not Z10's primary focus.

Q8: Which principle is emphasized in the ANSI/ASSP Z10.0 standard?

- A. Eliminating safety committees
- B. Encouraging top-down decision-making only
- **C. Worker participation in safety management ✓**
- D. Minimizing documentation

Correct Rationale: Worker involvement drives engagement and helps uncover hazards at the ground level.
Incorrect Rationales:

- A: Committees support Z10 goals.
- B: Z10 values collaborative input.
- D: Documentation is essential to tracking safety improvements.

Reference: ASSP GM-Z10.100 2019 Guidance Manual

Q9: What does the ASSP GM-Z10.100 2019 Guidance Manual provide?

- A. Legal interpretations of OSHA standards
- B. Line-by-line legal citations
- **C. Practical guidance for implementing Z10.0 systems ✓**
- D. Inspection reports for enforcement

Correct Rationale: It offers step-by-step implementation advice to align with Z10.0 principles.
Incorrect Rationales:

- A & B: It is not a legal or regulatory interpretation document.
- D: Not related to enforcement.

Q10: Which of the following is covered in the ASSP GM-Z10.100 manual?

- A. Hazardous waste transportation rules
- **B. Creating an effective safety culture ✓**
- C. Federal criminal liability for supervisors
- D. DOT placarding requirements

Correct Rationale: The manual emphasizes the role of organizational culture in supporting safe systems.
Incorrect Rationales:

- A, C, D: All fall outside the scope of the manual, which focuses on safety system implementation.

Reference: ISO 31000

Q11: What is ISO 31000 primarily used for?

- A. Setting fire safety codes
- **B. Risk management ✓**
- C. Developing first aid programs
- D. Employee disciplinary procedures

Correct Rationale: ISO 31000 establishes principles for enterprise-wide risk management.
Incorrect Rationales:

- A: Fire safety is under NFPA.
- C & D: Not within the scope of ISO 31000.

Q12: ISO 31000 promotes which of the following concepts?

- A. Compliance over context
- **B. Risk management integrated into organizational processes ✓**
- C. Focusing only on financial risks
- D. Avoiding documentation

Correct Rationale: The standard promotes embedding risk management into daily operations.
Incorrect Rationales:

- A: Emphasizes risk in context.
- C: Includes all types of risk.
- D: Documentation is vital.

Reference: NFPA Code 13

Q13: According to the 2025 edition of NFPA 13, when is it required to install supplemental (or additional) sprinklers?

A. When there is any obstruction wider than 12 inches over the sprinkler area
B. Only when the obstruction completely blocks the sprinkler's spray pattern
C. When a fixed obstruction wider than 4 feet exists, and the sprinkler system cannot effectively protect underneath it. ✓
D. Only if the obstruction is less than 4 feet wide but made of combustible materials

Correct Answer: C. When a fixed obstruction wider than 4 feet exists, and the sprinkler system cannot effectively protect underneath it

Rationale:

- C (Correct): NFPA 13 has long required sprinklers beneath fixed obstructions exceeding 4 feet in width, and the 2025 edition adds clarifying requirements for "supplemental sprinklers" under such obstructions.
- A (Incorrect): The requirement is for obstructions over 4 feet (not 12 inches).
- B (Incorrect): It's not limited to obstructions that completely block spray; NFPA 13 requires supplemental sprinklers under any fixed obstruction exceeding the width threshold.
- D (Incorrect): The requirement is based on obstruction width, not combustibility—supplemental sprinklers are required under any fixed obstruction over 4 feet wide, regardless of material.

Q14: Which of the following is a new restriction in the 2025 edition of NFPA 13 for sprinkler installations in non-storage occupancies with ceiling heights over 30 feet?

A. Extended-coverage sprinklers are now mandatory in all non-storage occupancies
B. Sidewall sprinklers are prohibited at ceiling heights classified as OH-1 or higher. ✓
C. Standard-response sprinklers are required for all ceiling heights above 30 feet
D. Any sprinkler with a K-factor of 11.2 or less is prohibited above 30 feet

Correct Answer: B. Sidewall sprinklers are prohibited at ceiling heights classified as OH-1 or higher

Rationale:

- B (Correct): The 2025 NFPA 13 restricts sprinkler types for ceilings over 30 feet: sidewall sprinklers rated OH-1 and higher are not permitted
- A (Incorrect): The code does not mandate extended-coverage sprinklers universally; it sets restrictions on allowed types, but does not require extended-coverage in all cases.
- C (Incorrect): It does not require standard-response sprinklers above 30 feet—in fact, for OH-2 and higher, extended-coverage sprinklers with K-factor ≤ 22.4 are prohibited, and standard-response sprinklers are also not allowed for OH-2 above 40 feet
- D (Incorrect): The restriction is that, for OH-2 and higher and ceilings over 30 feet, extended-coverage sprinklers with a K-factor of 22.4 or less are not permitted, rather than any sprinkler with a K-factor of 11.2 or less being outright banned

Reference: NIOSH (42 CFR 84)

Q15: What is the purpose of 42 CFR 84 under NIOSH?

- A. Certify PPE under OSHA jurisdiction
- B. Establish fire codes
- **C. Certify respiratory protective devices ✓**
- D. Outline MSHA enforcement procedures

Correct Rationale: 42 CFR 84 defines NIOSH testing and certification for respirators.
Incorrect Rationales:

- A: OSHA regulates use, not certification.
- B: Fire codes are from NFPA.
- D: MSHA enforcement is not addressed here.

Q16: Which agency is responsible for certifying respirators under 42 CFR 84?

- A. OSHA
- B. EPA
- **C. NIOSH ✓**
- D. MSHA

Correct Rationale: NIOSH is the certifying body for respirators in the U.S.
Incorrect Rationales:

- A: OSHA enforces PPE use, not certification.
- B: EPA focuses on environmental matters.
- D: MSHA oversees mining safety, not respirators.

Reference: *Safety and Health for Engineers*, Roger L. Brauer

Q17: Which of the following is a major theme in Brauer's *Safety and Health for Engineers*?

- A. Enforcement policy development
- B. Reactive safety auditing
- **C. Engineering controls to eliminate hazards ✓**
- D. Focus on legal liability minimization

Correct Rationale: Brauer promotes the elimination of hazards through engineering controls.
Incorrect Rationales:

- A: Policy creation is discussed, but not central.
- B: Proactive hazard control is preferred.
- D: Legal liability is not the primary focus.

Q18: According to Brauer, which is a critical factor in developing a safety culture?

- A. Relying solely on compliance inspections
- B. Limiting training to new hires
- **C. Management commitment and employee involvement ✓**
- D. Avoiding metrics and KPIs

Correct Rationale: Brauer emphasizes leadership and engagement for cultural change.
Incorrect Rationales:

- A: Compliance alone doesn’t build culture.
- B: All employees need regular training.
- D: Metrics are essential for improvement.

Reference: OSHA HazCom Guidance

Q19: What is the primary goal of OSHA's Hazard Communication Standard (HazCom)?

- A. Limiting employee access to chemical information
- B. Encouraging proprietary labeling systems
- **C. Ensuring employees understand chemical hazards ✓**
- D. Allowing exemptions for hazardous material handling

Correct Rationale: HazCom ensures employees are informed about the chemical hazards they may encounter.
Incorrect Rationales:

- A: HazCom promotes transparency.
- B: Standardized labeling is required.
- D: Most employers must comply without exemptions.

Q20: Which document is required under HazCom to provide chemical hazard details?

- A. Safety Incident Log
- **B. Safety Data Sheet (SDS) ✓**
- C. OSHA 300 Log
- D. Fire Code Manual

Correct Rationale: SDSs are essential tools under HazCom for conveying chemical hazard data.
Incorrect Rationales:

- A & C: Used for injuries, not chemical hazards.
- D: Not related to HazCom.

Reference: Hierarchy of Controls

Q21: What is the most effective control method in the Hierarchy of Controls?

- A. Administrative controls
- **B. Elimination ✓**
- C. Personal protective equipment (PPE)
- D. Engineering controls

Correct Rationale: Eliminating the hazard entirely is the safest option.
Incorrect Rationales:

- A & C: Less reliable due to human behavior.
- D: Effective, but not as definitive as elimination.

Q22: Which control method is considered the last resort in the Hierarchy of Controls?

- A. Elimination
- B. Substitution
- C. Engineering controls
- **D. Personal protective equipment (PPE) ✓**

Correct Rationale: PPE is used only when other controls can't eliminate the risk.
Incorrect Rationales:

- A–C: All are higher-order controls than PPE.

Reference: Safety Management

Q23: What is a key component of a successful safety management system (SMS)?

- A. Employee disengagement
- B. Reactive compliance with regulations
- **C. Management leadership and employee involvement ✓**
- D. Ignoring audit results

Correct Rationale: Both leadership and participation are foundational for effective SMS.
Incorrect Rationales:

- A & D: Undermine continuous improvement.
- B: SMS focuses on proactive measures.

Q24: Which of the following best describes the objective of a safety management system?

- A. Eliminate all safety rules
- **B. Reduce workplace risks through systematic management ✓**
- C. Ensure production quotas are always met
- D. Focus solely on incident response

Correct Rationale: SMS is designed to manage risks before incidents occur.
Incorrect Rationales:

- A: Rules are necessary.
- C: Safety takes precedence over quotas.
- D: Incident response is one part, not the focus.

Sampling and analysis

Q25: What is the primary purpose of OSHA's Sampling and Analytical Methods database?

A. To provide employers with model written safety programs for all industries
B. To supply validated procedures for sampling and analyzing workplace contaminants ✓
C. To issue enforcement penalty schedules for OSHA inspections
D. To certify laboratories as OSHA-approved testing facilities

Correct Answer: B. To supply validated procedures for sampling and analyzing workplace contaminants

Rationale:

- **B (Correct):** OSHA's database contains validated sampling and laboratory analytical methods to measure employee exposure to toxic substances and physical agents.
- **A (Incorrect):** OSHA offers guidance documents and programs, but written safety program templates are not the purpose of this database.
- **C (Incorrect):** Penalty schedules are published separately and are not part of the sampling/analysis methods.
- **D (Incorrect):** While labs may use these methods, the database does not "certify" them — it provides standardized methods.

Q26: How are OSHA's validated sampling and analytical methods typically used during workplace inspections?

A. Inspectors use them to collect samples and determine whether employee exposures exceed permissible exposure limits (PELs) ✓
B. They are used only to establish employee training requirements under hazard communication

C. Employers use them exclusively to set pay rates for hazardous duty work
D. They replace the requirement for employers to conduct their own hazard assessments

Correct Answer: A. Inspectors use them to collect samples and determine whether employee exposures exceed permissible exposure limits (PELs)

Rationale:

- **A (Correct):** OSHA compliance officers rely on validated sampling methods to gather accurate exposure data, which is compared against OSHA's PELs for enforcement.
- **B (Incorrect):** Training requirements are addressed under Hazard Communication (29 CFR 1910.1200), not sampling and analysis.
- **C (Incorrect):** Pay rates are determined by employers or collective bargaining, not OSHA sampling methods.
- **D (Incorrect):** Employers must still conduct hazard assessments (e.g., under PPE standards); OSHA sampling methods do not replace that obligation.

Standards and Certification

Q27: What is the primary purpose of FM Global's engineering standards and certification programs?

A. To establish uniform insurance premium rates across industries
B. To provide evidence-based guidelines and testing to reduce property loss risks ✓
C. To replace OSHA regulations for workplace health and safety
D. To standardize employee training requirements in hazardous industries

Correct Answer: B. To provide evidence-based guidelines and testing to reduce property loss risks

Rationale:

- **B (Correct):** FM Global standards are designed to help organizations prevent property loss through fire protection, hazard control, and equipment reliability testing.
- **A (Incorrect):** While insurance companies may use risk data in underwriting, FM Global's standards are not intended to set premium rates.

- **C (Incorrect):** FM Global does not replace OSHA regulations; its standards complement regulatory compliance by focusing on property risk and resilience.
- **D (Incorrect):** FM Global does not mandate training programs; it focuses on equipment, design, and hazard prevention.

Q28: Which of the following best describes FM Approvals' role in safety and risk management?

A. It certifies products and services that meet rigorous loss prevention and performance standards ✓
B. It provides OSHA with enforceable federal workplace safety regulations
C. It licenses contractors to perform hazardous waste remediation activities
D. It sets labor standards for worker wages and hours in industrial facilities

Correct Answer: A. It certifies products and services that meet rigorous loss prevention and performance standards

Rationale:

- **A (Correct):** FM Approvals is FM Global's certification arm, testing and approving products/services to ensure they meet performance standards for loss prevention and reliability.
- **B (Incorrect):** OSHA creates federal regulations; FM Approvals does not issue enforceable laws.
- **C (Incorrect):** Hazardous waste contractor licensing falls under EPA/state authority, not FM Approvals.
- **D (Incorrect):** Labor standards are set by the U.S. Department of Labor, not FM Global.

✓Case Study: Raising the Injury Prevention Bar at Summit Industrial Fabricators

Background:
Summit Industrial Fabricators is a metalworking and welding operation with 150 employees across three production shifts. While their injury rate remained below industry average, a recent OSHA inspection uncovered serious violations, including inadequate respiratory protection, outdated fire extinguisher maintenance, and improper labeling of hazardous chemicals.

The company's new Certified Safety and Health Manager (CSHM), Jordan Kim, was brought in to design and implement a comprehensive compliance management program aligned with best practices under **Domain Three** of the CSHM Blueprint.

📋 Jordan's Compliance Strategy

1. Gap Analysis and Standards Identification

Jordan conducted a full compliance audit referencing:

- **29 CFR 1910** (Subparts D, I, L, and Z)
- **NFPA 10 and 70**
- **OSHA HazCom Standard (1910.1200)**
- **NIOSH 42 CFR 84**
- **ANSI Z10 & ISO 31000 risk frameworks**

Findings:

- PPE use was inconsistent and lacked a hazard assessment.
- SDSs were stored in a locked office.
- Fire extinguishers had not been inspected in 18 months.

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2. Hierarchy of Controls Implementation

Using principles from Brauer's *Safety and Health for Engineers*, Jordan prioritized:

- **Elimination** of welding in confined spaces by redesigning processes
- **Engineering controls** like fume extraction arms
- **Administrative controls**, including revised SOPs
- **PPE** last, ensuring compliance with NIOSH-certified gear

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3. HazCom and Labeling Overhaul

Jordan launched a GHS-compliant labeling system. Every chemical container was tagged with:

- Standardized **pictograms**
- Signal words and precautionary statements

- QR codes linked to digital **SDSs**

Employees were trained on chemical hazards using materials aligned with OSHA and ANSI guidance.

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4. Fire Protection and Electrical Code Upgrades

Working with Facilities and EHS, Jordan:

- Replaced 40 unserviceable extinguishers to meet **NFPA 10**
- Re-trained shift leads on monthly inspection protocols
- Audited shop wiring to meet **NFPA 70 (NEC)** standards

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5. Respiratory Protection Compliance

Jordan evaluated the respirator program using **42 CFR 84**. Key steps:

- Verified NIOSH-approved respirators
- Instituted fit testing and medical evaluations
- Trained users on donning/doffing and maintenance

---

6. System Integration and Risk-Based Decision-Making

To ensure sustainability, Jordan aligned all efforts with:

- **ISO 31000 risk principles**
- **ANSI Z10.0 safety management systems**

Controls were tracked in a live dashboard, including hazard trends, training completion, and audit results.

Results (6 Months Later)

Metric	Before	After
OSHA Recordables	7	2

Metric	Before	After
Fire Extinguisher Compliance	45%	100%
HazCom Training Completion	10%	97%
Respirator Fit Test Compliance	38%	100%
SDS Access Score	2/5	5/5

Domain Three Impact Summary

Through a comprehensive, standards-based approach, Jordan demonstrated the full scope of Domain Three:

- Interpreting and applying **federal and consensus standards**
- Using **risk-based frameworks** for prioritization
- Ensuring compliance via **engineering, administrative, and training controls**
- Embedding safety as a **management system**, not just a regulatory function

Jordan's work not only resolved past deficiencies—it set the foundation for long-term compliance and a proactive safety culture.

Domain Four: Operations and Programs 15.02% of the exam

✓ CSHM Domain Four Blueprint

- 4.1 Identify the appropriate consensus standard (e.g., ISO, ANSI, ASTM, NFPA, etc.).
- 4.2 . Identify compliance management operations and programs (e.g., ISO 45001, ANSI Z10, OHSAS 18001, etc.).
- 4.3 Identify fire prevention and emergency safety preparedness principles and practices.
- 4.4 Identify crisis management and business continuity principles and practices in the event of an emergency.
- 4.5 Identify data storage security principles and practices.
- 4.6 Identify requirements to manage and keep confidential employee data and documentation.

- 4.7 Identify soil classifications and the application to work in an excavation.
- 4.8 Identify control measures for blood-borne pathogens.
- 4.9 Classify waste according to the hazard(s).
- 4.10 Determine appropriate air sampling methodologies.
- 4.11 Determine whether exposure is excessive.
- 4.12 Elements of a process safety management program.
- 4.13 Given a multi-employer worksite, identify elements of a control program.
- 4.14 Identify risk factors and controls.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation

Reference Title	Web Link
29 CFR 1910 subparts E, H, L, N, S, Z	https://www.osha.gov/laws-regs/regulations/standardnumber/1910
29 CFR 1926 subparts C, F, R	https://www.osha.gov/laws-regs/regulations/standardnumber/1926
49 CFR 172	https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-C/part-172
ACGIH 2022 TLVs and BEIs	https://escuelasq.com/wp-content/uploads/2023/03/TLVs-2022.pdf
ANSI B11.3-2022 Safety Requirements for Power Press Brakes	https://webstore.ansi.org/search/find?in=1&st=ANSI+B11.3-2012
ASSP Standards Development	https://www.assp.org/standards/standards-development
ISO 25001	https://www.iso.org/search.html?PROD_isoorg_en%5Bquery%5D=25001
ISO 25002	https://www.iso.org/search.html?PROD_isoorg_en%5Bquery%5D=25002
ISO 45001	https://www.iso.org/standard/63787.html
NFPA code 13	https://www.nfpa.org/en/for-professionals/codes-and-standards/list-of-codes-and-standards#aq=%40culture%3D%22en%22&cq=%40tagtype%3D%3D(%22Standards%20Development%20Process%22)%20%20&numberOfResults=12&sortCriteri

	a=%40computedproductid%20ascending%2C%40productid%20ascending
NIOSH Pocket Guide to Chemical Hazards 3rd Printing DHHS (NIOSH) Publication Number 2005-149	https://www.cdc.gov/niosh/docs/2005-149/pdfs/2005-149.pdf
Lead	https://www.osha.gov/lead/evaluating-controlling-exposure https://www.osha.gov/sites/default/files/methods/osha-id121.pdf
Machine guarding	https://www.osha.gov/enforcement/directives/cpl-02-01-025
Multi-employer worksite	https://www.osha.gov/enforcement/directives/cpl-02-00-124
Soil classification	https://www.osha.gov/vtools/construction/soil-testing-fnl-eng-web-transcript
Information Security	https://blog.box.com/principles-and-fundamentals-information-security

✓ Sample exam questions and answers. These questions and answers are not from the CSHM exam. These questions and answers are presented to help you understand how the CSHM exam is structured and administered.

Reference: 29 CFR 1910 Subparts E, H, L, N, S, Z

Q1: Under 29 CFR 1910.36, which of the following is a requirement for exit routes in the workplace?

A. Exit routes must be at least 12 inches wide for quick passage
B. Exit routes must be free and unobstructed at all times ✓
C. Exit routes may be locked if only supervisors have the keys
D. Exit routes are required only in facilities with more than 100 employees

Correct Answer: B. Exit routes must be free and unobstructed at all times

Rationale:

- **B (Correct):** OSHA requires that exit routes remain free and unobstructed to ensure employees can evacuate safely during an emergency (1910.36(b)(4)).
- **A (Incorrect):** The minimum width is 28 inches, not 12 inches.
- **C (Incorrect):** Locking exit doors violates 1910.36(d); employees must be able to open exits from the inside without keys.
- **D (Incorrect):** Exit routes are required regardless of facility size when more than one exit is necessary.

Q2: According to 29 CFR 1910.106, which of the following is a key requirement for storing flammable liquids inside buildings?

A. They must be stored in approved containers and cabinets designed for flammable storage ✓
B. They may be stored in any plastic container, provided it has a lid
C. They can be stored without restriction if the building has a sprinkler system
D. They must be stored only outdoors, regardless of quantity

Correct Answer: A. They must be stored in approved containers and cabinets designed for flammable storage

Rationale:

- **A (Correct):** OSHA requires flammable liquids be stored in approved safety containers and cabinets that meet fire protection standards (1910.106(d)(3)).
- **B (Incorrect):** Not all plastic containers meet OSHA approval; containers must be designed and tested for flammable storage.
- **C (Incorrect):** Sprinkler systems do not eliminate OSHA's container/cabinet requirements.
- **D (Incorrect):** Flammable liquids may be stored indoors in approved containers; outdoor storage is not mandatory in all cases.

Reference: 29 CFR 1926 Subparts C, F, R

Q3: According to 29 CFR 1926.20(b), what is a core requirement of an employer's accident prevention program?

A. The employer must certify all workers as competent persons in hazard recognition
B. The program must provide for frequent and regular inspections of the jobsite by a competent person ✓
C. The program must guarantee zero injuries within the first year of implementation
D. The employer must submit monthly inspection reports to OSHA for approval

Correct Answer: B. The program must provide for frequent and regular inspections of the jobsite by a competent person

Rationale:

- **B (Correct):** 1926.20(b)(2) requires employers to ensure that a **competent person conducts frequent and regular inspections** to identify and correct hazards.
- **A (Incorrect):** Not all workers must be competent persons; only designated individuals need that qualification.
- **C (Incorrect):** OSHA requires hazard control, not an unrealistic guarantee of zero injuries.
- **D (Incorrect):** Employers must keep records but are not required to submit monthly reports to OSHA.

Q4: Under 29 CFR 1926.760, what is the minimum fall protection height requirement for steel erection activities?

A. 4 feet
B. 6 feet
C. 10 feet
D. 15 feet ✓

Correct Answer: D. 15 feet

Rationale:

- **D (Correct):** Subpart R sets a unique trigger height — fall protection is required for employees engaged in steel erection at **15 feet or more** above a lower level.
- **A (Incorrect):** 4 feet applies in general industry (1910.28), not construction steel erection.
- **B (Incorrect):** 6 feet applies in general construction (1926.501), not steel erection.
- **C (Incorrect):** 10 feet is the requirement for scaffolds (1926.451), not steel erection.

Reference: 49 CFR 172

Q5: What does 49 CFR 172 primarily regulate?

- A. Hazardous waste disposal
- **B. Hazard communication requirements for hazardous materials transportation ✓**
- C. Construction site fall protection
- D. Chemical storage in laboratories

✅ **Correct Answer Rationale:** 49 CFR 172 governs shipping papers, labels, placards, and emergency info.
❌ **Incorrect Rationales:**

- A: Handled by EPA (RCRA).
- C: Addressed in 29 CFR 1926.
- D: Covered in OSHA lab safety rules.

Q6: Which item is required on shipping papers under 49 CFR 172?

- A. Material Safety Data Sheet (MSDS)
- **B. Hazard class and UN identification number ✓**
- C. Personal medical history of the driver
- D. Facility emergency lighting plan

✅ **Correct Answer Rationale:** Shipping papers must include hazard class, UN ID, and proper name.
❌ **Incorrect Rationales:**

- A: SDSs are for the workplace, not transport.
- C: Not required on shipping documents.
- D: Unrelated to transport compliance.

Reference: ACGIH 2022 TLVs and BEIs

Q7: What does a TLV refer to in the context of ACGIH guidelines?

- A. Time Legal Variance
- **B. Threshold Limit Value ✓**
- C. Toxicity Level Verification
- D. Training Level Variable

✅ **Correct Rationale:** TLVs are airborne concentrations considered safe for most workers day after day without adverse effects.
❌ **Incorrect Rationales:**

- A: Not an industrial hygiene term.
- C: TLV does not verify toxicity.
- D: Unrelated to exposure limits.

Q8: What is a BEI according to ACGIH?

- **A. Biological Exposure Index ✓**
- B. Basic Emission Index
- C. Behavioral Exposure Indicator
- D. Bioengineering Evaluation Instrument

✅ **Correct Rationale:** BEIs are benchmarks for assessing exposure to chemicals through biological sampling (e.g., blood, urine).
❌ **Incorrect Rationales:**

- B: Not related to biological monitoring.
- C: Behavior isn't part of the BEI scope.
- D: Unrelated to exposure assessment.

Reference: ANSI B11.3-2022

Q9: What is the focus of ANSI B11.3-2022?

- **A. Safety of power presses ✓**
- B. Design of HVAC systems
- C. Labeling of chemicals
- D. Fire extinguisher maintenance

✅ **Correct Rationale:** This standard defines safety requirements for mechanical power presses used in manufacturing.
❌ **Incorrect Rationales:**

- B: Covered by separate HVAC codes.
- C: Addressed under OSHA's HazCom rules.
- D: Governed by NFPA 10.

Q10: Which type of machine is specifically addressed in ANSI B11.3?

- A. Hydraulic lifts
- **B. Mechanical power presses ✓**
- C. Lathe machines
- D. Arc welders

✅ **Correct Rationale:** B11.3 focuses on safeguarding power presses used in forming operations.
❌ **Incorrect Rationales:**

- A: Addressed in other ANSI B11-series standards.
- C: Covered in ANSI B11.6.
- D: Falls under welding-specific standards.

Reference: ASSP Standards Development

Q11: What role does ASSP play in occupational safety and health?

- A. Enforcement of federal regulations
- **B. Development of consensus safety standards ✓**
- C. Inspection of workplace hazards

- D. Certifying safety professionals

✅ **Correct Rationale:** ASSP helps develop ANSI-accredited safety standards for industry use.
❌ **Incorrect Rationales:**

- A: OSHA enforces safety regulations.
- C: Employers or OSHA conduct inspections.
- D: Certification is done by organizations like BCSP or IHMM.

Q12: Which organization accredits ASSP to develop national safety standards?

- A. OSHA
- B. NIOSH
- C. EPA
- **D. ANSI ✓**

✅ **Correct Rationale:** ANSI accredits standards developed by groups like ASSP to ensure consistency and consensus.
❌ **Incorrect Rationales:**

- A: OSHA is a regulatory enforcement body.
- B: NIOSH does research and recommendations.
- C: EPA focuses on environmental rules, not standard accreditation.

Reference: ISO 25001 and ISO 25002

Q13: What is the primary focus of ISO 25001?

- A. Workplace hazard control
- **B. Software product quality requirements and evaluation ✓**
- C. Occupational noise exposure
- D. Fire code application

✅ **Correct Rationale:** ISO 25001 is part of the SQuaRE (Software product Quality Requirements and Evaluation) series.
❌ **Incorrect Rationales:**

- A: Not applicable to ISO 25001.

- C: Noise exposure is under ISO 1999.
- D: Fire codes fall under NFPA.

Q14: What does ISO 25002 help organizations evaluate?

- A. Workplace air quality
- B. Soil classification
- **C. Software product quality ✓**
- D. Noise exposure levels

✅ **Correct Rationale:** ISO 25002 defines measures for evaluating usability, performance, and other software qualities.
❌ **Incorrect Rationales:**

- A & D: These pertain to occupational or environmental health, not software.
- B: Covered under OSHA trench safety guidelines.

Reference: ISO 45001

Q15: What is the goal of ISO 45001?

- A. Environmental protection standards
- B. Fire suppression system design
- **C. Occupational health and safety management ✓**
- D. Software development lifecycle standards

✅ **Correct Rationale:** ISO 45001 provides a proactive framework for workplace safety management.
❌ **Incorrect Rationales:**

- A: Addressed in ISO 14001.
- B: Governed by NFPA 13.
- D: Covered under ISO/IEC 12207.

Q16: Which of the following is a key principle of ISO 45001?

- A. Reactive injury reporting

- B. Elimination of training programs
- **C. Worker participation in safety processes ✓**
- D. Focus solely on physical hazards

✅ **Correct Rationale:** ISO 45001 emphasizes worker involvement in safety planning and evaluation.
❌ **Incorrect Rationales:**

- A: ISO 45001 emphasizes prevention, not reaction.
- B: Training is essential under ISO 45001.
- D: It covers a range of risks, including organizational and psychological.

Reference: NFPA Codes 13

Q17: According to NFPA 13, when are sprinklers required beneath fixed obstructions?

A. When the obstruction is wider than 4 feet and prevents sprinkler discharge from reaching the area below ✓
B. Only when the obstruction is combustible, regardless of width
C. When the obstruction is wider than 12 inches in any location
D. Only if employees work beneath the obstruction more than 50% of the time

Correct Answer: A. When the obstruction is wider than 4 feet and prevents sprinkler discharge from reaching the area below

Rationale:

- **A (Correct):** NFPA 13 requires supplemental sprinklers beneath **fixed obstructions greater than 4 feet wide** to ensure sprinkler spray patterns are not blocked.
- **B (Incorrect):** The requirement is based on obstruction size, not combustibility.
- **C (Incorrect):** The threshold is 4 feet, not 12 inches.
- **D (Incorrect):** The requirement applies regardless of worker occupancy below; it is a design standard, not use-dependent.

Q18: What minimum clearance must be maintained below standard spray sprinkler deflectors to avoid obstruction of discharge?

A. 6 inches
B. 12 inches
C. 18 inches ✓
D. 24 inches

Correct Answer: C. 18 inches

Rationale:

- **C (Correct):** NFPA 13 specifies that at least **18 inches of clearance** must be maintained below sprinkler deflectors to ensure effective spray distribution.
- **A (Incorrect):** 6 inches is insufficient to prevent obstruction.
- **B (Incorrect):** 12 inches does not meet NFPA 13's minimum clearance requirement.
- **D (Incorrect):** 24 inches is more than required and would be unnecessarily restrictive.

Reference: NIOSH Pocket Guide to Chemical Hazards

Q19: What type of information does the NIOSH Pocket Guide provide?

- A. Guidance on workplace violence prevention
- **B. Chemical hazards, exposure limits, and PPE recommendations ✓**
- C. Blueprints for facility design
- D. Requirements for hazardous waste shipping

✅ **Correct Rationale:** The guide offers data on 600+ chemicals, including exposure limits and PPE suggestions.
❌ **Incorrect Rationales:**

- A: Not covered by this guide.
- C: Irrelevant to chemical hazard guidance.
- D: Covered under DOT, not NIOSH.

Q20: Who is the intended audience for the NIOSH Pocket Guide?

- A. Software developers
- B. Chemical plant maintenance technicians
- **C. Industrial hygienists and occupational safety professionals ✓**
- D. Electrical code inspectors

✅ **Correct Rationale:** It is designed for professionals assessing chemical exposures in workplaces.
❌ **Incorrect Rationales:**

- A: Not related to industrial safety.
- B: May use it, but not the main audience.
- D: Focuses on electrical codes (NFPA 70), not chemicals.

Reference: Lead

Q21: According to OSHA's lead standard, what is the permissible exposure limit (PEL) for lead in general industry?

- A. 25 µg/m^3
- B. 30 µg/m^3
- **C. 50 µg/m^3 ✓**
- D. 100 µg/m^3

✅ **Correct Rationale:** The PEL for lead is 50 micrograms per cubic meter of air, averaged over an 8-hour shift.
❌ **Incorrect Rationales:**

- A: This is the action level, not the PEL.
- B: Not a regulated benchmark.
- D: This exceeds allowable limits.

Q22: What type of monitoring is required if an employee's airborne exposure to lead exceeds the action level?

- A. Quarterly biological monitoring only

- **B. Initial and periodic air monitoring ✓**
- C. No monitoring is required
- D. Only exit medical exams

✅ **Correct Rationale:** OSHA mandates initial and ongoing air monitoring when exposures exceed the action level.
❌ **Incorrect Rationales:**

- A: Biological monitoring alone is not sufficient.
- C: Monitoring is required above action levels.
- D: Medical exams are part of surveillance, not a replacement for air monitoring.

Reference: Machine Guarding

Q23: What is the primary purpose of machine guarding according to OSHA?

- A. To improve productivity
- B. To reduce downtime
- **C. To prevent worker exposure to moving parts ✓**
- D. To control noise levels

✅ **Correct Rationale:** Guarding is designed to prevent injuries caused by contact with hazardous machine parts.
❌ **Incorrect Rationales:**

- A & B: These may be side benefits, but not the primary intent.
- D: Guarding does not address noise hazards.

Q24: Which of the following is considered a point of operation hazard?

- A. Emergency stop button
- B. Belt tensioner
- **C. Area where cutting or shaping is performed ✓**
- D. Machine base plate

✅ **Correct Rationale:** The point of operation is where work is performed and the worker is at most risk.
❌ **Incorrect Rationales:**

- A: A safety feature, not a hazard.
- B: A mechanical component, but not at the point of operation.
- D: Typically static and not hazardous.

Reference: Multi-employer Worksite

Q25: Which employer type is responsible for correcting hazards at a multi-employer worksite?

- A. Controlling employer
- B. Exposing employer
- **C. Correcting employer ✓**
- D. Creating employer

✅ **Correct Rationale:** OSHA defines the correcting employer as the party responsible for fixing the hazard.
❌ **Incorrect Rationales:**

- A: Ensures correction but may not perform it.
- B: Responsible for exposing workers, not correcting.
- D: Created the hazard but may not correct it.

Q26: Which employer is cited if they created a hazard at a multi-employer site?

- A. Exposing employer
- B. Correcting employer
- C. Controlling employer
- **D. Creating employer ✓**

✅ **Correct Rationale:** OSHA will cite the employer that created a hazard regardless of whether their own employees were exposed.
❌ **Incorrect Rationales:**

- A: Exposing employer is cited if they expose their workers.
- B: Responsible for correction, not creation.
- C: Oversees the site but may not be directly involved in creating the hazard.

Soil classification

Q27: According to OSHA's soil testing guidance, which soil type is the **least stable** and requires the greatest level of protective system in excavation work?

A. Type A soil
B. Type B soil
C. Type C soil ✓
D. Stable rock

Correct Answer: C. Type C soil

Rationale:

- **C (Correct):** Type C soil (such as gravel or sand) is the least stable and most prone to cave-ins, requiring the highest level of protection.
- **A (Incorrect):** Type A soil (clay, silty clay) is the most stable under OSHA classification.
- **B (Incorrect):** Type B soil is less stable than Type A but more stable than Type C.
- **D (Incorrect):** Stable rock is considered highly stable and typically does not require protective systems if intact.

Q28: Which of the following is a recognized **manual test** OSHA allows for determining soil type in the field?

A. Measuring trench depth with a tape measure
B. Using a pocket penetrometer or thumb penetration test ✓
C. Checking surface water runoff during rain
D. Estimating soil stability based on excavation cost

Correct Answer: B. Using a pocket penetrometer or thumb penetration test

Rationale:

- **B (Correct):** OSHA allows manual tests such as the pocket penetrometer, shear vane, or thumb penetration test to classify soil consistency.
- **A (Incorrect):** Measuring trench depth does not classify soil stability.
- **C (Incorrect):** Observing runoff may give environmental clues but is not an OSHA-recognized soil test.

- **D (Incorrect):** Cost estimates have no role in soil classification.

Information Security

Q29: According to the fundamentals of information security, what does the principle of confidentiality primarily protect?

A. Ensuring that data is accurate and has not been altered
B. Ensuring that only authorized individuals have access to information ✓
C. Ensuring that systems and information are available when needed
D. Ensuring that information is backed up in multiple locations

Correct Answer: B. Ensuring that only authorized individuals have access to information

Rationale:

- **B (Correct)**: Confidentiality ensures that sensitive information is accessible only to authorized users, protecting against unauthorized disclosure.
- **A (Incorrect)**: This describes integrity, not confidentiality.
- **C (Incorrect)**: This describes availability, not confidentiality.
- **D (Incorrect)**: Backups support availability and resilience, not confidentiality.

Q30: Which of the following best describes the role of **risk management** in information security?

A. Eliminating all cyber threats before they occur
B. Identifying, assessing, and prioritizing risks to reduce their impact on information systems ✓
C. Guaranteeing 100% system availability at all times
D. Allowing unrestricted access to information for operational efficiency

Correct Answer: B. Identifying, assessing, and prioritizing risks to reduce their impact on information systems

Rationale:

- **B (Correct):** Risk management involves evaluating potential threats and vulnerabilities, then applying controls to reduce likelihood or impact.
- **A (Incorrect):** No program can eliminate all threats; risk management reduces and controls them.
- **C (Incorrect):** While availability is a principle, 100% uptime cannot be guaranteed.
- **D (Incorrect):** Unrestricted access undermines security and violates the principle of least privilege.

✓Case Study: Applying Regulatory Compliance Knowledge in the Field

Title: ***Mitigating Regulatory Risk at a Multi-Employer Construction Site***

Background:
Maria, a Certified Safety and Health Manager (CSHM), was recently hired by a general contractor overseeing the construction of a multi-level medical facility. The project involves multiple subcontractors, including electrical, excavation, and HVAC teams. Maria's role is to ensure full compliance with OSHA regulations and industry safety standards to avoid citations, protect workers, and maintain the contractor's reputation.

Key Scenario:

During a routine site inspection, Maria observes:

- Improper machine guarding on a metal shear operated by a subcontractor.
- Lead paint is being scraped in a renovation zone without proper PPE or ventilation.
- Excavation activities are lacking trench protective systems.
- Inadequate labeling on chemical containers used by another subcontractor.
- Non-compliant use of ladders that do not meet 29 CFR 1926 Subpart X standards.

Maria knows that in a **multi-employer worksite**, various employers can be held liable depending on whether they created, exposed, corrected, or controlled the hazard.

Actions Taken:

1. **Machine Guarding Deficiency (29 CFR 1910 Subpart O):**
    - Maria immediately stops the use of the machine and coordinates with the subcontractor to install compliant guarding.
    - She documents the violation and reviews ANSI B11.3-2022 with the subcontractor to reinforce proper machine design safety.
2. **Lead Exposure Risk (29 CFR 1910.1025):**
    - She orders air monitoring for the area and ensures compliance with the 50 $\mu g/m^3$ PEL.
    - Maria implements a written lead compliance program, provides respiratory protection, and initiates biological monitoring.
3. **Excavation Hazards (29 CFR 1926 Subpart P):**
    - Maria classifies the soil using OSHA's Type C criteria and mandates the use of trench boxes.
    - She cites the NIOSH Pocket Guide and uses it to evaluate additional chemical hazards nearby.
4. **Chemical Labeling & NFPA Compliance (49 CFR 172 / NFPA Codes):**
    - Maria ensures all containers are properly labeled with UN IDs and hazard classes.
    - She trains subcontractors on the NIOSH Pocket Guide and NFPA 704 labeling standards.
5. **Unsafe Ladder Use (29 CFR 1926 Subpart X):**
    - She removes substandard ladders and replaces them with OSHA-compliant models.
    - Trains crews using ISO 45001 worker participation principles.

Results:

- Hazards were corrected within 48 hours.
- No citations were issued during an unannounced OSHA inspection the following week.
- Subcontractors requested additional safety briefings due to improved trust and respect for Maria's proactive compliance management.

CSHM Competency Demonstrated:

Maria exemplified the Domain Four competencies by:

- Interpreting and applying federal regulations (OSHA, DOT, EPA).
- Enforcing machine guarding, PPE, and hazard communication standards.
- Managing a multi-employer site using controlling, exposing, creating, and correcting employer doctrines.
- Using tools like the NIOSH Pocket Guide and ISO/ANSI standards to educate and influence site safety.

Domain Five: Monitoring and Measurement – 11.98% of the exam

✓ CSHM Domain Five Blueprint

- 5.1 Declarative: Identify techniques for prioritization of control.
- 5.2 Procedural: Given a specific standard, identify the regulatory agency responsible for the standard.
- 5.3 Procedural: Given a specific standard, identify whether the standard is mandatory or voluntary.
- 5.4 Procedural: Given an initial assessment of existing hazards, identify the most urgent hazard.
- 5.5 Procedural: Given safety statistical data, identify unsafe behaviors.
- 5.6 Procedural: Given a scenario, determine effective ways to communicate preventive action.
- 5.7 Procedural: Given a scenario that utilizes new regulatory information, determine an effective methodology to promote safety for a specific industry.
- 5.8 Procedural: Given an audit or different inspections, recommend changes.
- 5.9 Procedural: Given a scenario, determine whether a metric is a leading or lagging indicator.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation

Reference Title	Web Link
29 CFR 1910 subparts D, I, J	https://www.osha.gov/laws-regs/regulations/standardnumber/1910
29 CFR 1926 subparts	https://www.osha.gov/laws-

P, X, Z	regs/regulations/standardnumber/1926
49 CFR 172	https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-C/part-172
ANSI B11.3-2022 Safety Requirements for Power Press Brakes	https://webstore.ansi.org/search/find?in=1&st=ANSI+B11.3-2012
ANSI/ASSP Z10.0-2019 Occupational Health and Safety Management Systems	https://webstore.ansi.org/search/find?in=1&st=ANSI%2FASSP+Z10.0-2019
ANSI/ASSP Z16.1-2022 safety and health metrics and performance measures	https://webstore.ansi.org/search/find?in=1&st=ANSI%2FASSP+Z16.1-2022
BLS Census of Fatal Injuries	https://www.bls.gov/news.release/pdf/cfoi.pdf
NIOSH Pocket Guide to Chemical Hazards 3rd Printing DHHS (NIOSH) Publication Number 2005-149	https://www.cdc.gov/niosh/docs/2005-149/pdfs/2005-149.pdf
OSHA ACT of 1970	https://www.osha.gov/laws-regs/oshact/completeoshact
Below the hook-lifting devices	https://www.osha.gov/laws-regs/standardinterpretations/1998-10-01-0
Leading indicators	https://www.osha.gov/sites/default/files/publications/OSHA_Leading_Indicators.pdf
Machine guarding	https://www.osha.gov/enforcement/directives/cpl-02-01-025
PELs	https://www.osha.gov/annotated-pels/note
Safety management	https://www.osha.gov/safety-management
Variance program	https://www.osha.gov/variance-program

✓ Sample CSHM exam questions and answers. These questions and answers are not from the CSHM exam. These questions and answers are presented to orient you to how the CSHM exam is structured and delivered.

Reference: 29 CFR 1910 Subparts D, I, J

Q1: Which subpart of 29 CFR 1910 addresses Personal Protective Equipment (PPE)?

- A. Subpart D
- **B. Subpart I ✓**
- C. Subpart P
- D. Subpart Z

✅ **Correct Rationale:**
Subpart I outlines OSHA's requirements for the selection, maintenance, and use of PPE in the workplace.

❌ **Incorrect Rationales:**

- A: Subpart D pertains to walking-working surfaces.
- C: Subpart P covers hand and portable powered tools.
- D: Subpart Z addresses toxic and hazardous substances.

Q2: According to 29 CFR 1910.22, what is a fundamental requirement for all walking-working surfaces in the workplace?

A. They must be equipped with guardrails at all edges, regardless of height
B. They must be kept clean, orderly, and in a sanitary condition ✓
C. They must be painted with high-visibility striping
D. They must be inspected annually by an OSHA compliance officer

Correct Answer: B. They must be kept clean, orderly, and in a sanitary condition

Rationale:

- **B (Correct):** 1910.22(a)(1) requires that all walking-working surfaces be clean, orderly, and sanitary to prevent slips, trips, and falls.
- **A (Incorrect):** Guardrails are required only where there is a fall hazard (e.g., unprotected sides ≥4 feet), not at all edges.
- **C (Incorrect):** High-visibility paint is not a general OSHA requirement, though it may be used as a best practice.
- **D (Incorrect):** Employers must ensure inspections by a competent person, not rely on OSHA for annual inspections.

Q3: Before employees perform servicing or maintenance on equipment, what does 29 CFR 1910.147 (Lockout/Tagout) require employers to do?

A. Provide employees with annual refresher training in PPE use
B. Ensure energy control procedures are applied to isolate hazardous energy sources ✓
C. Install new machine guards on all equipment in the facility
D. Notify OSHA in writing before shutting down critical equipment

Correct Answer: B. Ensure energy control procedures are applied to isolate hazardous energy sources

Rationale:

- **B (Correct):** Under 1910.147(d), machines must be shut down and all energy sources isolated using lockout/tagout procedures before maintenance or servicing.
- **A (Incorrect):** PPE training is important (1910 Subpart I) but is not the specific requirement under the lockout/tagout rule.
- **C (Incorrect):** Installing machine guards is covered under machine guarding standards (1910.212), not lockout/tagout.
- **D (Incorrect):** Employers do not need to notify OSHA before shutting down equipment for maintenance.

Reference: 29 CFR 1926 Subparts P, X, Z

Q4: Which subpart of 29 CFR 1926 focuses on excavation standards?

- A. Subpart Z
- **B. Subpart P ✓**
- C. Subpart X
- D. Subpart D

✅ **Correct Rationale:**
Subpart P provides safety requirements for excavations, including protective systems and soil classifications.

❌ **Incorrect Rationales:**

- A: Subpart Z relates to toxic and hazardous substances.
- C: Subpart X deals with stairways and ladders.

- D: Subpart D does not exist in 29 CFR 1926.

Reference: 49 CFR 172

Q5: What is the primary focus of 49 CFR 172?

- A. Chemical safety in laboratories
- B. Motor vehicle safety regulations
- **C. Hazardous materials communication and labeling ✓**
- D. Air quality control in industrial facilities

✅ **Correct Rationale:**
49 CFR 172 establishes requirements for labeling, placarding, and documentation of hazardous materials during transport.

❌ **Incorrect Rationales:**

- A: Covered by OSHA 29 CFR 1910.1450.
- B: Covered by other DOT motor vehicle rules.
- D: Managed by EPA regulations, not DOT.

Q6: Which of the following is required under 49 CFR 172 for hazardous material shipping?

- **A. A security plan for certain shipments ✓**
- B. An environmental impact statement
- C. Worker compensation plans
- D. A stormwater pollution prevention plan

✅ **Correct Rationale:**
Security plans are required for high-risk hazardous materials to reduce threats during transport.

❌ **Incorrect Rationales:**

- B: Required by NEPA, not DOT's hazardous materials regulations.
- C: Managed at the state level, not under federal transportation law.
- D: This is an EPA water quality requirement, unrelated to 49 CFR 172.

Reference: ANSI B11.3-2022 – Power Press Brakes

Q7: What is the main safety concern addressed by ANSI B11.3-2022?

- A. Noise exposure in manufacturing settings
- B. Ergonomic design of workstations
- **C. Control and safeguarding of power press brakes ✓**
- D. Airborne contaminant control in welding operations

✅ **Correct Rationale:**
ANSI B11.3-2022 focuses on the safe use of power press brakes, including machine safeguarding and control reliability.

❌ **Incorrect Rationales:**

- A: OSHA noise standards govern this topic.
- B: Covered under ergonomic standards like ANSI/HFES 100.
- D: Related to ventilation and hygiene, not press brake control.

Q8: Which of the following safety measures is emphasized in ANSI B11.3-2022?

- A. Manual override of electrical interlocks
- **B. Emergency stop button placement ✓**
- C. Daily rotation of machine operators
- D. Personal protective equipment (PPE) selection

✅ **Correct Rationale:**
ANSI B11.3 emphasizes the strategic placement of emergency stop buttons to reduce incident response time.

❌ **Incorrect Rationales:**

- A: Manual overrides are discouraged due to safety risks.
- C: Useful for fatigue management but not specific to press brakes.
- D: PPE is important, but covered under OSHA standards (29 CFR 1910 Subpart I).

Reference: ANSI/ASSP Z10.0-2019 – OH&S Management Systems

Q9: What is the core principle of the ANSI/ASSP Z10.0-2019 standard?

- A. Top-down enforcement of safety rules
- B. Reactive incident response
- **C. Plan-Do-Check-Act (PDCA) continuous improvement model ✓**
- D. Emphasis on individual worker accountability only

✅ **Correct Rationale:**
The Z10.0 standard is built around the PDCA cycle to drive continual improvement in workplace safety and health systems.

❌ **Incorrect Rationales:**

- A: Z10 encourages shared accountability, not authoritarian leadership.
- B: The approach is proactive, not reactive.
- D: Z10 emphasizes system-wide accountability, not just individual behavior.

Q10: Which of the following is a key element in ANSI/ASSP Z10.0-2019?

- A. Random drug testing policies
- **B. Auditing and corrective action processes ✓**
- C. Safety slogan posting
- D. Exclusive use of third-party consultants

✅ **Correct Rationale:**
Auditing and corrective action processes help organizations identify deficiencies and implement lasting improvements.

❌ **Incorrect Rationales:**

- A: Drug testing is not a Z10 element.
- C: Slogans are informal tools, not core system components.
- D: Z10 promotes building internal capabilities rather than relying solely on consultants.

Reference: ANSI/ASSP Z16.1-2022 – Metrics & Performance Measures

Q11: What is a key distinction emphasized in ANSI/ASSP Z16.1-2022?

- A. Separating long-term and short-term workers
- **B. Using leading and lagging indicators for performance measurement ✓**
- C. Focusing exclusively on injury counts
- D. Eliminating all near-miss reporting

✅ **Correct Rationale:**
Z16.1 emphasizes a balanced approach using both leading (proactive) and lagging (reactive) indicators to measure and improve safety performance.

❌ **Incorrect Rationales:**

- A: This is not part of Z16.1.
- C: Injury counts are lagging indicators and not sufficient alone.
- D: Near-miss reporting is encouraged as a key leading indicator.

Q12: Which of the following is considered a leading indicator under ANSI/ASSP Z16.1-2022?

- A. Total Recordable Incident Rate (TRIR)
- B. Number of lost workdays
- **C. Frequency of safety audits conducted ✓**
- D. Days Away, Restricted, or Transferred (DART) rate

✅ **Correct Rationale:**
Leading indicators such as the frequency of safety audits provide forward-looking insights that help prevent incidents.

❌ **Incorrect Rationales:**

- A: TRIR is a lagging indicator.
- B: Lost workdays are an outcome of past events.
- D: DART rate is also a lagging indicator tied to incident consequences.

Reference: BLS Census of Fatal Injuries

Q13: What is the primary purpose of the BLS Census of Fatal Occupational Injuries (CFOI)?

- A. To report only nonfatal injury cases
- B. To monitor consumer product safety
- **C. To compile comprehensive data on work-related fatalities ✓**
- D. To track OSHA violations

✅ **Correct Rationale:**
The CFOI collects and validates detailed information on work-related fatalities to support safety research, benchmarking, and prevention efforts.

❌ **Incorrect Rationales:**

- A: CFOI is focused on fatalities, not nonfatal injuries.
- B: Product safety is under the Consumer Product Safety Commission (CPSC).
- D: OSHA tracks violations independently from CFOI data.

Q14: Which data source is NOT commonly used by the BLS to compile the CFOI?

- A. Death certificates
- B. Workers' compensation reports
- C. Employer surveys
- **D. Television news reports ✓**

✅ **Correct Rationale:**
The CFOI relies on validated official sources like death certificates, compensation reports, and employer confirmations—not media reports, which may be unreliable.

❌ **Incorrect Rationales:**

- A: Death certificates are essential for verification.
- B: Workers' comp records offer incident and demographic data.
- C: Employer surveys provide confirmation and context for fatalities.

Reference: NIOSH Pocket Guide to Chemical Hazards

Q15: What type of information is found in the NIOSH Pocket Guide to Chemical Hazards?

- A. Blueprints for laboratory equipment
- **B. Workplace chemical exposure limits and safety guidelines ✓**
- C. Instructions for chemical synthesis
- D. Legal advice on chemical liability

✅ **Correct Rationale:**
The Pocket Guide includes exposure limits, chemical hazards, symptoms of exposure, first aid, and recommended protective measures.

❌ **Incorrect Rationales:**

- A: Blueprints are not provided.
- C: The guide does not contain synthesis instructions.
- D: Legal advice is beyond the guide's scope; NIOSH is a research agency.

Q16: Which of the following data is NOT typically included in the NIOSH Pocket Guide?

- A. Physical description of the chemical
- B. NIOSH recommended exposure limit (REL)
- **C. Medical treatment protocol for long-term cancer recovery ✓**
- D. Personal protective equipment (PPE) recommendations

✅ **Correct Rationale:**
The guide covers first aid and immediate exposure responses, not long-term medical treatments like cancer recovery protocols.

❌ **Incorrect Rationales:**

- A: Included to identify chemical hazards.
- B: RELs are a central feature.
- D: PPE guidance is included for handling and emergency preparedness.

Reference: OSH Act of 1970

Q17: What is the primary purpose of the Occupational Safety and Health Act of 1970?

- A. To regulate environmental protection standards
- B. To provide tax incentives for safety equipment purchases
- **C. To assure safe and healthful working conditions for working men and women ✓**
- D. To monitor consumer product defects

✅ **Correct Rationale:**
The OSH Act was enacted to ensure safe and healthful working conditions through standards, training, outreach, and enforcement.

❌ **Incorrect Rationales:**

- A: Environmental regulation is under the EPA.
- B: The Act does not provide tax benefits.
- D: CPSC oversees consumer product safety, not workplaces.

Q18: Which agency was created as a result of the OSH Act of 1970?

- A. Environmental Protection Agency (EPA)
- B. Centers for Disease Control and Prevention (CDC)
- **C. National Institute for Occupational Safety and Health (NIOSH) ✓**
- D. Consumer Product Safety Commission (CPSC)

✅ **Correct Rationale:**
The OSH Act established NIOSH to conduct research and provide guidance on occupational safety and health.

❌ **Incorrect Rationales:**

- A: The EPA was formed separately and focuses on environmental issues.
- B: The CDC predates the OSH Act.
- D: CPSC handles consumer goods, not occupational hazards.

Below the hook-lifting devices

Q19: According to OSHA's October 1, 1998 interpretation, when are employers required to provide emergency lighting in the workplace?

A. Only in buildings constructed after 1998
B. Only during night shifts or when natural light is unavailable
C. When a workplace has exit routes that require illumination for safe evacuation ✓
D. Only if the local fire marshal requires additional lighting

Correct Answer: C. When a workplace has exit routes that require illumination for safe evacuation

Rationale:

- **C (Correct)**: OSHA clarified that emergency lighting must be provided where exit routes and areas of egress need illumination to allow employees to evacuate safely during power loss.
- **A (Incorrect)**: The requirement applies regardless of building construction date.
- **B (Incorrect)**: Emergency lighting is not limited to night shifts; it must function whenever normal lighting fails.
- **D (Incorrect)**: OSHA standards apply nationally; employer obligations do not depend solely on local fire marshal requirements.

Q20: What did OSHA's 1998 interpretation clarify regarding exit signs in the workplace?

A. Exit signs must be continuously illuminated by a reliable light source ✓
B. Exit signs only need to be posted in facilities with more than 50 employees
C. Exit signs can be painted on walls without illumination if clearly visible
D. Exit signs are required only in multistory buildings over three floors

Correct Answer: A. Exit signs must be continuously illuminated by a reliable light source

Rationale:

- **A (Correct):** OSHA reaffirmed that exit signs must remain illuminated at all times, either internally or externally, so employees can clearly identify exits during an emergency.
- **B (Incorrect):** The requirement applies regardless of employee count.
- **C (Incorrect):** Painted or non-illuminated signs do not meet OSHA standards; continuous illumination is required.
- **D (Incorrect):** Exit signs are required in many types of buildings, not just tall or multistory facilities.

Leading indicators

Q21: According to OSHA's guidance on leading indicators, what is the primary advantage of using leading indicators in workplace safety?

A. They identify problems after accidents occur
B. They measure proactive activities that can prevent incidents before they happen ✓
C. They are only used to calculate OSHA's recordable incident rates
D. They replace the need for lagging indicators such as injury data

Correct Answer: B. They measure proactive activities that can prevent incidents before they happen

Rationale:

- **B (Correct)**: Leading indicators track proactive actions (e.g., training completion, hazard reporting, preventive maintenance) that help prevent incidents.
- **A (Incorrect)**: That describes lagging indicators (after-the-fact measures like injury rates).
- **C (Incorrect)**: OSHA recordables are lagging indicators, not leading ones.
- **D (Incorrect)**: Leading indicators complement, not replace, lagging indicators.

Q22: Which of the following is an example of a **leading indicator** identified in OSHA's guidance?

A. Number of OSHA recordable injuries in the last quarter
B. Percentage of employees trained on new safety procedures ✓
C. Total workers' compensation costs for the past year
D. Number of lost workdays due to workplace injuries

Correct Answer: B. Percentage of employees trained on new safety procedures

Rationale:

- **B (Correct):** Training completion is a proactive measure that predicts improved safety performance and helps prevent incidents.
- **A (Incorrect):** Recordable injuries are a **lagging** indicator, measured after harm occurs.
- **C (Incorrect):** Workers' comp costs reflect lagging outcomes, not proactive measures.
- **D (Incorrect):** Lost workdays are also lagging indicators, reflecting consequences of past incidents.

Machine guarding

Q23: According to OSHA's CPL 02-01-025 directive, which of the following is a key characteristic that makes a confined space "permit-required"?

A. The space is large enough for entry and has only one entry point
B. The space contains or has the potential to contain a hazardous atmosphere ✓
C. The space is outdoors and subject to weather conditions
D. The space requires employees to use ladders for access

Correct Answer: B. The space contains or has the potential to contain a hazardous atmosphere

Rationale:

- **B (Correct):** A space becomes *permit-required* if it has hazards such as a hazardous atmosphere, engulfment risk, or dangerous internal configuration (1910.146(b)).

- **A (Incorrect):** Size and single entry point alone do not trigger permit-required status unless hazards exist.
- **C (Incorrect):** Weather exposure is not part of OSHA's confined space definition.
- **D (Incorrect):** Ladder access does not automatically make a confined space permit-required.

Q24: What does OSHA require employers to do before employees enter a permit-required confined space?

A. Submit a written notice to OSHA 24 hours in advance
B. Post a warning sign but allow entry without written procedures
C. Develop and implement a written permit space program, including testing the atmosphere before entry ✓
D. Provide employees with annual bonuses for working in confined spaces

Correct Answer: C. Develop and implement a written permit space program, including testing the atmosphere before entry

Rationale:

- **C (Correct):** Employers must establish a permit-required confined space program, test the atmosphere, provide ventilation or PPE as needed, and issue entry permits per 1910.146(d).
- **A (Incorrect):** Employers do not notify OSHA before each entry; responsibility lies with the employer to follow the standard.
- **B (Incorrect):** A posted sign alone is insufficient; written procedures and permits are required.
- **D (Incorrect):** Incentives like bonuses are not part of OSHA's compliance requirements.

Q25: According to OSHA's annotated PELs note, how do OSHA's permissible exposure limits (PELs) generally compare with ACGIH's Threshold Limit Values (TLVs) and NIOSH's Recommended Exposure Limits (RELs)?

A. OSHA PELs are often less protective and outdated compared to TLVs and RELs ✓
B. OSHA PELs are always more protective than TLVs and RELs

C. OSHA PELs are updated annually to match the most current TLVs
D. OSHA PELs are advisory only and not legally enforceable

Correct Answer: A. OSHA PELs are often less protective and outdated compared to TLVs and RELs

Rationale:

- **A (Correct):** OSHA acknowledges that many PELs are based on 1968 standards and are less protective than TLVs and RELs, which are updated more frequently.
- **B (Incorrect):** OSHA PELs are not always more protective; in fact, they are often less stringent.
- **C (Incorrect):** PELs are not updated annually — OSHA has struggled to revise them, unlike ACGIH and NIOSH.
- **D (Incorrect):** OSHA PELs are legally enforceable limits under the OSH Act, not advisory.

Q26: Why does OSHA provide annotated tables comparing PELs with TLVs and RELs?

A. To give employers access to more protective, up-to-date exposure limit information ✓
B. To eliminate the need for employers to follow OSHA's legally enforceable PELs
C. To require employers to adopt TLVs and RELs as mandatory limits
D. To replace OSHA's hazard communication standard with exposure tables

Correct Answer: A. To give employers access to more protective, up-to-date exposure limit information

Rationale:

- **A (Correct):** OSHA provides annotated tables so employers can voluntarily adopt more protective limits (TLVs/RELs) even though only PELs are legally enforceable.
- **B (Incorrect):** Employers must still comply with OSHA's PELs; annotated tables do not eliminate that requirement.
- **C (Incorrect):** OSHA does not mandate TLVs or RELs — they are provided as references.
- **D (Incorrect):** Hazard communication requirements remain in 29 CFR 1910.1200 and are not replaced by annotated PELs.

Safety management

Q27: Which of the following is one of OSHA's **seven core elements** of an effective safety and health program?

A. Establishing OSHA recordkeeping logs for five consecutive years
B. Management leadership that visibly demonstrates a commitment to safety ✓
C. Purchasing new equipment every year regardless of need
D. Limiting worker involvement to reporting accidents after they occur

Correct Answer: B. Management leadership that visibly demonstrates a commitment to safety

Rationale:

- **B (Correct):** OSHA identifies management leadership as a core element; leaders must visibly commit resources, set goals, and engage in safety activities.
- **A (Incorrect):** Recordkeeping is required, but it is not one of the seven program elements.
- **C (Incorrect):** Equipment purchases may help, but they are not mandated as a core element.
- **D (Incorrect):** Worker participation must be proactive (hazard reporting, decision-making), not limited to after accidents.

Q28: According to OSHA's safety and health program guidance, what is a best practice for ensuring meaningful **worker participation**?

A. Involving workers in identifying hazards and developing solutions ✓
B. Requiring workers to wait until annual audits to report hazards
C. Allowing only supervisors to propose corrective actions
D. Limiting worker input to mandatory training sessions only

Correct Answer: A. Involving workers in identifying hazards and developing solutions

Rationale:

- **A (Correct):** OSHA emphasizes worker participation as essential — employees are closest to the hazards and should help identify problems and recommend solutions.
- **B (Incorrect):** Hazard reporting should be continuous, not limited to annual audits.

- **C (Incorrect):** Restricting corrective actions to supervisors undermines the participatory element.
- **D (Incorrect):** Worker involvement goes beyond training — it includes planning, reporting, and evaluating.

Variance program

Q29: What is the primary purpose of OSHA's variance program?

A. To allow employers to avoid compliance with safety standards permanently
B. To permit alternative methods that provide equal or greater protection to workers ✓
C. To delay compliance until the next OSHA inspection occurs
D. To exempt small businesses from specific OSHA standards

Correct Answer: B. To permit alternative methods that provide equal or greater protection to workers

Rationale:

- **B (Correct):** OSHA variances are not exemptions; they allow employers to use alternative methods, provided they ensure worker protection equal to or greater than the standard.
- **A (Incorrect):** Variances do not allow employers to ignore standards.
- **C (Incorrect):** A variance is not a delay tactic; it requires a formal application and OSHA approval.
- **D (Incorrect):** Variances are not based on business size; they apply when compliance is infeasible but equal protection is possible.

✓Case Study: Implementing a Comprehensive Safety Program Using Monitoring and Measurement

Background:
Sandra is a Certified Safety and Health Manager (CSHM) working for a mid-sized manufacturing company that recently experienced a series of near-miss incidents involving unguarded machinery and improper handling of hazardous chemicals. The company's safety record has been stagnant, and the leadership team has tasked Sandra with revitalizing the occupational health and safety program to reduce risk and ensure regulatory compliance.

Application of Domain Five (Safety, Health, Environmental Program Development and Implementation):

1. **Hazard Identification and Risk Assessment:**
   Sandra begins by reviewing procedures outlined in the *WorkSafeBC How to Conduct a Risk Assessment* guide. She conducts site-wide risk assessments, identifying key hazards including unguarded press brakes and improperly stored chemicals. She uses the *NIOSH Pocket Guide to Chemical Hazards* to assess exposure risks and PPE requirements.
2. **Regulatory Compliance and Standards:**
   Sandra ensures compliance with OSHA standards by referencing *29 CFR 1910* and *1926*, aligning safety procedures for confined spaces, fall protection, and chemical handling. She uses the *OSH Act of 1970* and *BLS fatal injury data* to benchmark the company's safety performance with national trends.
3. **Program Development:**
   Using *ANSI/ASSP Z10.0*, Sandra structures the new OH&S program based on the Plan-Do-Check-Act model. She integrates performance metrics from *ANSI/ASSP Z16.1* to track both leading indicators (e.g., audit frequency, training) and lagging indicators (e.g., TRIR).
4. **Training and Implementation:**
   Sandra designs a training curriculum informed by *49 CFR 172* and *ANSI B11.3* for employees involved in hazardous materials and machine operations. She includes emergency procedures and ANSI-compliant signage.
5. **Program Review and Continuous Improvement:**
   After implementation, Sandra conducts quarterly audits, reviews injury trends, and adjusts strategy using *Z16.1* metrics. Reports to management show measurable improvements.

Outcome:
Within one year, the company experiences a 45% drop in recordable injuries and a 60% increase in near-miss reporting. The program is expanded company-wide, and Sandra presents her results at a regional safety conference.

Conclusion:
This case demonstrates how a CSHM can effectively apply the knowledge from Domain Five to develop, implement, and refine a robust occupational health and safety management system.

Domain Six: Incident Investigation and Analysis – 15.88% of the exam

✓ CSHM Domain Six Blueprint

6.1 Procedural: Given a scenario, identify causal factors.

- 6.2 Procedural: Given an incident investigation scenario, identify corrective action.
- 6.3 Procedural: Given a set of injury data, determine priorities
- 6.4 Procedural: Given a scenario, determine whether an incident is recordable or reportable.

✓ Reference Table – These are the reference materials behind each of the subdomains cited above. Studying these references is an important part of exam preparation

Reference Title	Web Link
29 CFR 1904 Recordkeeping	https://www.osha.gov/laws-regs/regulations/standardnumber/1904
29 CFR 1910 subparts D, I, J, P	https://www.osha.gov/laws-regs/regulations/standardnumber/1910
29 CFR 1926 subparts I, R	https://www.osha.gov/laws-regs/regulations/standardnumber/1926
Advanced Safety Management. Fred A. Manuele 2008 Wiley	https://www.amazon.com/Advanced-Safety-Management-Focusing-Prevention/dp/1119605415
ASSP GM-Z10.100 2019 Guidance and Implementation Manual for ANSI/ASSP Z10 2019 Occupational Health and Safety Management Systems	https://webstore.ansi.org/search/find?in=1&st=gm+z10.100
Lee C, Porter KM. Suspension Trauma. Emergency Medicine Journal, 2007 April. 24(4), pgs. 237-238	https://emj.bmj.com/content/24/4/237
Investigating Incidents and Accidents	https://www.hseblog.com/the-reasons-benefits-of-investigating-the-accidents-incidents/

Industrial Safety and Health Management, 7th edition, Asfahl/Rieske	https://www.amazon.com/Industrial-Safety-Health-Management-Engineering/dp/0134630564
Safety and Health for Engineers 3rd Edition by Brauer, Roger L.	https://www.amazon.com/Safety-Health-Engineers-Roger-Brauer/dp/1118959450
Safety Professional's Reference and Study Guide by Yates	https://www.amazon.com/Safety-Professionals-Reference-Study-Guide/dp/0367263637
Hierarchy of controls	https://www.osha.gov/sites/default/files/Hierarchy_of_Controls_02.01.23_form_508_2.pdf
Recording injuries and illnesses	https://www.osha.gov/sites/default/files/OSHA-RK-Forms-Package.pdf

✓ Sample CSHM examination questions and answers. These questions and answers are not from the CSHM exam. The questions and answers here are derived from the resources cited above and are to orient you on how the CSHM is structured and delivered.

Reference: 29 CFR 1904

Q1: According to 29 CFR 1904.7, which of the following work-related incidents must be recorded on the OSHA 300 Log?

A. An employee reports a minor cut that only required a bandage
B. An employee is prescribed antibiotics for a work-related infection ✓
C. An employee goes home early due to personal errands unrelated to work
D. An employee reports being tired after a long shift but continues working

Correct Answer: B. An employee is prescribed antibiotics for a work-related infection

Rationale:

- **B (Correct):** Prescription medication is considered medical treatment beyond first aid, making the case recordable.
- **A (Incorrect):** Bandages are listed as first aid, which is not recordable.

- **C (Incorrect):** Leaving for personal reasons is not work-related and not recordable.
- **D (Incorrect):** Fatigue without medical treatment or restricted work is not recordable.

Q2: Under 29 CFR 1904.39, how soon must an employer report to OSHA when a work-related incident results in an employee's **in-patient hospitalization, amputation, or loss of an eye**?

A. Within 4 hours
B. Within 8 hours
C. Within 24 hours ✓
D. By the end of the next business day

Correct Answer: C. Within 24 hours

Rationale:

- **C (Correct):** Employers must report work-related in-patient hospitalizations, amputations, or eye losses to OSHA **within 24 hours**.
- **A (Incorrect):** The 4-hour rule does not exist under OSHA; it applies to other agencies (e.g., some state plans).
- **B (Incorrect):** 8 hours applies only to **fatalities**, not hospitalizations, amputations, or eye losses.
- **D (Incorrect):** Waiting until the next business day would exceed OSHA's 24-hour reporting requirement.

Reference: 29 CFR 1910 subparts D, I, J, P

Q3. Which of the following subparts in 29 CFR 1910 addresses requirements for personal protective equipment (PPE)?
A. Subpart E

B. Subpart I ✓
C. Subpart L
D. Subpart D

✅ **Correct Answer Rationale:**
Subpart I of 29 CFR 1910 covers the standards for Personal Protective Equipment (PPE), including eye, face, head, and respiratory protection.

❌ **Incorrect Answer Rationales:**

- A. Subpart E: This covers means of egress, not PPE.
- C. Subpart L: This addresses fire protection, not PPE.
- D. Subpart D: This subpart focuses on walking-working surfaces.

Q4. Subpart Z of 29 CFR 1910 primarily focuses on which of the following hazards?
A. Noise exposure
B. Machine guarding
C. Toxic and hazardous substances ✓
D. Fall protection

✅ **Correct Answer Rationale:**
Subpart Z addresses exposure limits and regulations for toxic and hazardous substances in the workplace, such as permissible exposure limits (PELs) for chemicals.

❌ **Incorrect Answer Rationales:**

- A. Noise exposure: Addressed under Subpart G.
- B. Machine guarding: Covered under Subpart O.
- D. Fall protection: Primarily covered in 1926 Subpart M for construction.

Reference: 29 CFR 1926 subparts I, R

Q5: According to 29 CFR 1926.95, what is the employer's primary responsibility regarding personal protective equipment (PPE)?

A. Ensure that employees provide their own PPE at their own expense
B. Select, provide, and require the use of appropriate PPE when hazards cannot be eliminated ✓
C. Purchase the least expensive PPE available, regardless of hazard type
D. Require PPE only after an OSHA inspection identifies hazards

Correct Answer: B. Select, provide, and require the use of appropriate PPE when hazards cannot be eliminated

Rationale:

- **B (Correct)**: 1926.95 requires employers to assess hazards, select suitable PPE, provide it at no cost, and ensure its use when hazards cannot otherwise be controlled.
- **A (Incorrect)**: Employers must provide PPE at no cost; employees are not responsible for supplying it (with limited exceptions like non-specialty footwear).
- **C (Incorrect)**: PPE selection must be based on hazard protection, not cost alone.
- **D (Incorrect)**: PPE must be provided proactively, not only after an OSHA inspection.

Q6: Under 29 CFR 1926.760, at what minimum height must fall protection be provided for workers engaged in steel erection activities?

A. 4 feet
B. 6 feet
C. 10 feet
D. 15 feet ✓

Correct Answer: D. 15 feet

Rationale:

- **D (Correct):** Subpart R sets a unique fall protection threshold of **15 feet** for steel erection activities, higher than general construction.
- **A (Incorrect):** 4 feet applies in general industry (1910), not construction.
- **B (Incorrect):** 6 feet is the general construction standard (1926.501), but not for steel erection.
- **C (Incorrect):** 10 feet is the threshold for scaffolds (1926.451), not structural steel erection.

Reference: *Advanced Safety Management* by Fred A. Manuele

Q7. According to Fred Manuele's *Advanced Safety Management*, what is a critical flaw in traditional incident investigations?
A. They focus too much on individual fault
B. They lack interviews with senior management
C. They overemphasize environmental design
D. They require too many data points

✅ **Correct Answer: A. They focus too much on individual fault ✓**
Manuele criticizes traditional investigations for focusing on employee error rather than examining systemic organizational and design deficiencies that lead to unsafe conditions.

❌ **Incorrect Rationales:**

- B. Lack of senior management interviews may occur, but it is not the main systemic flaw highlighted.
- C. Overemphasizing environmental design is not a commonly cited problem—underemphasis is.
- D. Data volume is not the primary issue; analysis quality is more critical.

Q8. What concept introduced in *Advanced Safety Management* emphasizes integrating safety into business planning and decision-making?
A. Lagging Indicators
B. Prevention through Design (PtD) ✓
C. Leading Metrics
D. Safety Incentive Programs

✅ **Correct Answer: B. Prevention through Design (PtD) ✓**
Manuele promotes PtD as a proactive strategy to integrate safety into the earliest stages of design and planning to eliminate hazards before they occur.

❌ **Incorrect Rationales:**

- A. Lagging indicators are retrospective, not proactive planning tools.
- C. Leading metrics are important, but do not emphasize integration with business planning.
- D. Incentive programs can support safety, but are not the core of PtD.

Reference: ASSP GM-Z10.100-2019 Implementation Manual

Q9. What is the primary framework used in the ASSP Z10 standard for managing occupational health and safety programs?
A. ISO 14001
B. Plan-Do-Check-Act (PDCA) cycle ✓
C. Six Sigma
D. Risk Matrix Model

✅ **Correct Answer: B. Plan-Do-Check-Act (PDCA) cycle ✓**
ASSP Z10 is structured around the PDCA model, which provides a continuous improvement framework for OH&S management systems.

❌ **Incorrect Rationales:**

- A. ISO 14001 pertains to environmental management, not directly to OH&S.
- C. Six Sigma is a process improvement methodology, but not the foundation of Z10.
- D. A risk matrix is a tool, not a full management framework.

Q10. According to the Z10.100-2019 manual, which of the following is emphasized as essential to safety program success?
A. Outsourcing investigations
B. Top management leadership and worker involvement ✓
C. Hiring external consultants
D. Using only lagging indicators

✅ **Correct Answer: B. Top management leadership and worker involvement ✓**
The Z10 standard stresses the critical role of engaged leadership and active worker participation in creating and maintaining a successful safety and health management system.

❌ **Incorrect Rationales:**

- A. Outsourcing investigations may reduce internal learning and ownership.
- C. Consultants can assist but are not substitutes for leadership and engagement.
- D. Lagging indicators are useful but insufficient alone for managing safety performance.

Reference: Lee C, Porter KM. "Suspension Trauma." Emergency Medicine Journal (2007)

Q11. What is the most serious physiological consequence of prolonged suspension in a fall arrest harness?
A. Cardiac hypertrophy
B. Venous pooling and orthostatic intolerance ✓
C. Dehydration
D. Hyperventilation

✅ **Correct Answer: B. Venous pooling and orthostatic intolerance ✓**
Prolonged suspension can lead to blood pooling in the legs, resulting in reduced return of blood to the heart and potential loss of consciousness (suspension trauma).

❌ **Incorrect Rationales:**

- A. Cardiac hypertrophy is a long-term adaptation, not acute trauma.
- C. Dehydration can worsen symptoms, but it is not the core issue.
- D. Hyperventilation is not typically associated with suspension trauma.

Q12. According to Lee and Porter, what is a key immediate response when encountering a suspended worker who is still conscious?
A. Leave the person until emergency responders arrive
B. Place them in a prone position

C. Rescue them quickly and keep them seated upright ✓
D. Cut the harness immediately

✅ **Correct Answer: C. Rescue them quickly and keep them seated upright ✓**
Rapid rescue, followed by keeping the individual in a seated position, is important to allow blood to return gradually to central circulation and avoid reflow shock.

❌ **Incorrect Rationales:**

- A. Delaying rescue increases the risk of fatal outcomes.
- B. Prone positioning can obstruct breathing.
- D. Cutting the harness could cause a fall or worsen injuries.

Reference: Investigating Incidents and Accidents (HSE Blog)

Q13. According to the HSE Blog, what is the main benefit of conducting thorough incident investigations?
A. Assigning blame to the responsible individual
B. Complying with insurance requirements
C. Identifying root causes to prevent recurrence ✓
D. Reducing workers' compensation claims

✅ **Correct Answer: C. Identifying root causes to prevent recurrence ✓**
The primary objective is to uncover the systemic or underlying causes of incidents to implement corrective actions and prevent future occurrences.

❌ **Incorrect Rationales:**

- A. Modern investigations focus on system failures, not blame.
- B. While it may help with insurance, this is not the primary intent.
- D. Reduced claims may result from better safety, but it is a byproduct.

Q14. What common mistake does the HSE Blog warn against in incident investigations?
A. Using visual aids in interviews
B. Stopping the investigation at human error ✓
C. Conducting too many interviews
D. Documenting findings in a report

✅ **Correct Answer: B. Stopping the investigation at human error ✓**
Stopping at human error overlooks deeper systemic or organizational issues that led to the unsafe action.

❌ **Incorrect Rationales:**

- A. Visual aids can help clarify accounts.
- C. A broad base of input improves accuracy.
- D. Documentation is essential for accountability and follow-up.

Reference: *Industrial Safety and Health Management*, 7th ed., Asfahl & Rieske

Q15. According to Asfahl & Rieske, what is a key characteristic of an effective safety management system?
A. Prioritizing disciplinary actions after incidents
B. Outsourcing all safety functions to third parties
C. Integrating safety into all levels of management and operations ✓
D. Reducing the number of safety meetings

✅ **Correct Answer: C. Integrating safety into all levels of management and operations ✓**
The authors emphasize that safety must be embedded into the organization's core functions, with visible leadership commitment and operational integration.

❌ **Incorrect Rationales:**

- A. Disciplinary actions are reactive and not preventive.
- B. Outsourcing can support but not replace internal accountability.
- D. Fewer safety meetings can weaken communication and awareness.

Q16. What approach do Asfahl & Rieske recommend for hazard control?
A. Using personal protective equipment (PPE) as the primary control
B. Applying the hierarchy of controls, beginning with elimination ✓
C. Allowing employees to choose their own hazard controls
D. Focusing solely on engineering controls

✅ **Correct Answer: B. Applying the hierarchy of controls beginning with elimination ✓**

They advocate starting with the most effective control measures—elimination—then substitution, engineering, administrative, and finally PPE.

❌ **Incorrect Rationales:**

- A. PPE is the least effective and should be used when other options are exhausted.
- C. Hazard controls must be selected based on hazard assessments, not individual preference.
- D. Engineering controls are important, but should follow the elimination-substitution steps.

Reference: *Safety and Health for Engineers*, 3rd ed., Roger L. Brauer

Q17. In Brauer's view, what is a fundamental principle of safety engineering?
A. Reactive enforcement of regulatory standards
B. Designing out hazards before implementation ✓
C. Waiting until a hazard is observed to act
D. Relying solely on OSHA compliance

✅ **Correct Answer: B. Designing out hazards before implementation ✓**
Brauer strongly supports proactive hazard elimination during the design phase as a foundational principle of safety engineering.

❌ **Incorrect Rationales:**

- A. Reactive enforcement does not prevent hazards.
- C. Waiting to observe a hazard is inconsistent with proactive safety.
- D. OSHA compliance is important, but minimum compliance does not ensure optimal safety.

Q18. According to *Safety and Health for Engineers*, what is a major advantage of using leading indicators in safety management?
A. They measure past incident rates
B. They identify potential problems before incidents occur ✓
C. They help prepare OSHA logs
D. They track workers' compensation payments

✅ **Correct Answer: B. They identify potential problems before incidents occur ✓**
Leading indicators are predictive and help organizations take preventive actions before accidents happen.

❌ **Incorrect Rationales:**

- A. Measuring past incidents is a feature of lagging indicators.
- C. OSHA logs document historical data, not predictive trends.
- D. Compensation tracking is financial, not safety-focused.

Reference: *Safety Professional's Reference and Study Guide* by W. David Yates

Q19. According to Yates, what is the most essential element in a successful safety culture?
A. Detailed signage and labels
B. Zero incident goal setting
C. Management commitment and employee involvement ✓
D. Outsourcing safety audits

✅ **Correct Answer: C. Management commitment and employee involvement ✓**
Yates emphasizes that strong safety cultures are built on engaged leadership and meaningful employee participation.

❌ **Incorrect Rationales:**

- A. Signage is useful but not foundational.
- B. Zero incidents is a goal, not a cultural element.
- D. Outsourcing may help, but cannot replace internal culture.

Q20. What does Yates identify as a common flaw in many root cause analyses?
A. Overreliance on quantitative data
B. Use of too many team members
C. Failure to dig beyond surface-level symptoms ✓
D. Excessive use of flowcharts

✅ **Correct Answer: C. Failure to dig beyond surface-level symptoms ✓**
Many root cause analyses fall short by identifying immediate causes without uncovering deeper system failures or latent conditions.

❌ **Incorrect Rationales:**

- A. Quantitative data is often necessary and valuable.
- B. A diverse team is typically beneficial.
- D. Flowcharts are tools for visualization, not a flaw.

Reference: OSHA Hierarchy of Controls PDF

Q21. According to OSHA's hierarchy of controls, which of the following is considered the most effective method of controlling hazards?
A. Administrative controls
B. Personal protective equipment (PPE)
C. Elimination ✓
D. Engineering controls

✅ **Correct Answer: C. Elimination ✓**
The hierarchy ranks elimination as the most effective strategy because it completely removes the hazard from the workplace.

❌ **Incorrect Rationales:**

- A. Administrative controls only change behavior, not the hazard.
- B. PPE is the last line of defense.
- D. Engineering controls are strong but still less effective than elimination.

Q22. In OSHA's hierarchy of controls, what is the purpose of substitution?
A. To reduce the cost of hazard mitigation
B. To replace a hazard with a less dangerous one ✓
C. To delay the need for hazard control
D. To eliminate employee responsibility

✅ **Correct Answer: B. To replace a hazard with a less dangerous one ✓**
Substitution aims to reduce risk by using a safer alternative material, process, or equipment.

❌ **Incorrect Rationales:**

- A. Cost is not the main purpose.
- C. Substitution is proactive, not a delay tactic.

- D. It does not shift responsibility—it reduces inherent danger.

Reference: OSHA Recordkeeping Forms

Q23. Which OSHA form is used to log work-related injuries and illnesses?
A. OSHA Form 300A
B. OSHA Form 300 ✓
C. OSHA Form 301
D. OSHA 10 Log

✅ **Correct Answer: B. OSHA Form 300 ✓**
Form 300 is the official log used to record each recordable work-related injury and illness, including details such as type and location.

❌ **Incorrect Rationales:**

- A. Form 300A is a summary of the Form 300 log.
- C. Form 301 is the incident report used alongside the 300.
- D. There is no such form as OSHA 10 Log.

Q24. What is the purpose of OSHA Form 300A?
A. To log individual injury incidents in detail
B. To summarize a company's annual recordable injury and illness data ✓
C. To report near misses
D. To apply for a safety grant

✅ **Correct Answer: B. To summarize a company's annual recordable injury and illness data ✓**
Form 300A provides a yearly summary of workplace injuries and illnesses and must be posted annually.

❌ **Incorrect Rationales:**

- A. This is the role of Form 300.
- C. Near misses are not required to be reported on 300A.
- D. OSHA forms are not used for grants.

✓Case Study: Root Cause Analysis and Systemic Safety Improvements After a Critical Incident

Background:
Jordan is a Certified Safety and Health Manager (CSHM) at a mid-sized warehouse distribution company. One afternoon, a worker was hospitalized after being struck by a falling pallet from an overhead racking system. The incident prompted an immediate OSHA recordable injury and internal alarm. As part of his role, Jordan led the investigation, applied principles from Domain Six, and worked to redesign both procedures and safety systems.

Application of Domain Six:

1. **Incident Investigation Launch:**
   Jordan initiated the investigation by reviewing the company's OSHA 300 and 301 recordkeeping forms to ensure compliance and establish the documentation trail. He used guidelines from OSHA's recordkeeping package to confirm it was a recordable incident and posted the summary on Form 300A.
2. **Root Cause Analysis Approach:**
   Drawing from Fred Manuele's *Advanced Safety Management* and the HSE Blog, Jordan avoided simply blaming the forklift operator and instead used a systems-based approach. He assembled a cross-functional team, applied a fishbone diagram and "5 Whys" technique, and quickly realized that product overloading, poor training, and outdated racking system inspections were contributing factors.
3. **Use of the Hierarchy of Controls:**
   Jordan consulted the OSHA Hierarchy of Controls guide and identified that engineering and administrative changes were needed. He arranged for racking reinforcements (engineering control), introduced new training procedures (administrative), and retrained staff on PPE protocols.
4. **Standard Application and Compliance:**
   He cross-referenced relevant OSHA standards from 29 CFR 1910 and 1926, specifically subparts dealing with materials handling, PPE, and walking-working surfaces. Additionally, he reviewed ANSI Z10.100 for safety management process improvements and incorporated leading indicators to track safety trends going forward.
5. **Suspension Trauma Review:**
   Jordan also reviewed fall arrest and suspension trauma concerns from the *Emergency Medicine Journal* in case the elevated platform worker required harness rescue procedures. This informed new emergency protocols.

6. **Program Revision and Communication:**
   Using tools from *Industrial Safety and Health Management* and *Safety Professional's Reference Guide*, Jordan revised the company's incident investigation program, communicated lessons learned, and initiated regular hazard audits.

Outcome:
Within 6 months, the facility reduced near-miss incidents by 50%, and no additional recordables were reported. The warehouse was recognized by corporate headquarters for its systemic improvements, and Jordan trained regional safety leads on the same methodology.

Conclusion:
This case illustrates how a CSHM applies Domain Six competencies—incident analysis, OSHA compliance, risk controls, and continuous improvement—to transform a serious workplace event into an opportunity for systemic safety reform.