

# QUALIFICATION IN LABORATORY SAFETY (QLS)

## EXAMINATION TOPIC OUTLINE

---

The Qualification in Laboratory Safety examination questions encompass different topics or content areas within the area of Laboratory Safety: Management, General Safety, Chemical Safety, Biohazard Control, and Physical Environment. Each of these content areas comprises a specific percentage of the overall 50-question qualification examination.

Exam questions may be both theoretical and/or procedural. Theoretical questions measure skills necessary to apply knowledge. Procedural questions measure skills necessary to perform laboratory safety techniques and follow quality assurance protocols. Additionally, regulatory questions are based on U.S. sources (e.g., AABB, FDA, CLIA, etc.). The content areas and percentages are described in detail below.

### I. MANAGEMENT (18 – 22%)

#### A. Administrative

1. Risk assessment/management
  - a. Planning
    - 1) Safety officer/committee
    - 2) Standard operating procedures (SOPs)
    - 3) Training, inspections, and outside contractors
  - b. OSHA terminology
    - 1) Hierarchy of controls
    - 2) Regulatory standards, performance standards, and official advisories
    - 3) General duty clause
2. Medical surveillance and employee evaluation
3. Emergencies, employee injuries, and exposures
  - a. Reporting requirements
  - b. Disaster planning
  - c. Staff training

#### B. Regulatory Agencies, Regulations, and Guidelines

1. Federal (e.g., OSHA, EPA/RCRA, NRC, DOT, USPS, DHS, ADA, NIOSH, NIH)
2. Other (e.g., NFPA, CLSI, CAP, TJC, COLA)

### II. GENERAL SAFETY (18 – 22%)

#### A. Ergonomics

1. Proper lifting technique
2. Repetitive motion injuries
3. Computer work stations
4. Noise

#### B. Fire Safety

1. Response protocols
2. Classes of fire
  - a. NFPA graphic symbols
  - b. Extinguishing methods
3. Fire safety equipment
  - a. Fire alarms
  - b. Fire extinguishers (operation and contraindications)
  - c. Fire blankets

#### C. Electrical Safety

1. Lockout/tagout, extension cords, and daisy chains
2. Accidents

#### D. Compressed Gases

1. Labeling
2. Transport and storage
3. Cryogenics (e.g., liquid nitrogen, dry ice)

#### E. Radiation

1. Licensing, documentation, and management requirements
2. Handling, decontamination, and disposal

#### F. Standard Work Practices

1. Safe work practices
2. Dress code
3. Personal protective equipment (PPE)
  - a. Face protection
  - b. Lab coats and aprons
  - c. Footwear and shoe covers
  - d. Gloves (e.g., latex, nitrile, vinyl, chemical-resistant, puncture-resistant)
  - e. Masks and respirators
  - f. Hand hygiene

#### G. Spills and Exposures

### III. CHEMICAL SAFETY (18 – 22%)

- A. Chemical Classifications (e.g., corrosives, health hazards, physical hazards)
- B. Incompatible Mixtures
- C. Signs and Labels
  - 1. Chemical labeling / Globally Harmonized System (GHS)
  - 2. Other categories (e.g., NFPA/HMIS)
- D. Management
  - 1. Chemical hygiene officer and chemical hygiene plan
  - 2. Safety data sheets (SDS)
  - 3. Storage/inventory
  - 4. Chemical fume hood
  - 5. Handling and disposal of chemicals

### IV. BIOHAZARD CONTROL (18 – 22%)

- A. Infection Control
  - 1. Risk assessment
  - 2. Specimen handling (e.g., aerosols, high-risk specimens)
  - 3. Biosafety cabinets (proper usage, maintenance, and selection of correct type)
- B. Protocols
  - 1. Signs and labels
  - 2. Biosafety levels
  - 3. Agents of bioterrorism and the Laboratory Response Network
  - 4. Infectious prions
  - 5. Biohazard decontamination methods
  - 6. CDC Universal Precautions, Standard Precautions, and Transmission-Based Precautions
  - 7. Packing/shipping Category A and B substances

### V. PHYSICAL ENVIRONMENT (18 – 22%)

- A. Equipment
  - 1. General
    - a. Glassware and sharps
    - b. Centrifuge
    - c. Steam sterilizer (autoclave)
  - 2. Ventilation
    - a. Biological safety cabinet
    - b. Air exchanges
    - c. Isolation

- 3. Safety equipment
  - a. Emergency communication
  - b. Showers and eyewashes
- 4. Storage cabinets
- B. Disinfection and Decontamination
- C. Disposal and Waste Management
  - 1. Proper waste disposal
    - a. Labeling
    - b. Transport
  - 2. Regulated medical waste
    - a. Biohazard waste
    - b. Sharps waste
  - 3. Hazardous/chemical waste
    - a. Waste manifests
    - b. Licensed waste handlers
    - c. Waste generator categories
    - d. Waste storage locations

Examples provided (as indicated by e.g.) are not limited to those listed.

All Board of Certification examinations use conventional and SI units for results and reference ranges.

**END OF TOPIC OUTLINE**