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A New Standard for Multidisciplinary Health and Safety Technicians

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INTRODUCTION

The purpose of this standard (ANSI 13.62)—*Training and Qualification of Health and Safety Technicians*—is to provide a means for the development of technicians with necessary skills in industrial hygiene, industrial safety, radiological safety, fire protection, and other health and safety areas specific to a given work site and its hazards. These individuals should be qualified to handle their roles and responsibilities competently in a variety of safety areas. The standard presented here is intended for individuals who develop, revise, implement, manage, or provide oversight of training for health and safety technicians. The standard is not intended to address the training or qualification of safety professionals (i.e., industrial hygienists and health physicists).

HEALTH AND SAFETY TRAINING AND QUALIFICATION PROGRAM

Systematic Approach to Training

This standard addresses a comprehensive Health and Safety Technician (H&ST) Training Program that stresses a structured, documented approach to the training and qualification of health and safety technicians. With that in mind, the training process relies on first identifying all tasks and hazards associated with a work activity and then determining the knowledge, skills, and abilities (KSAs) required to perform that activity safely.

Qualification Process

Limited Tasks

In certain circumstances, it may be prudent to assign limited tasks to individuals who are not full-time health and safety personnel. Because such limited tasks are variable and site-specific, this standard does not specify a qualification standard for these individuals, only that they should be formally qualified to perform the tasks to which they have been assigned.

H&ST Initial Qualification Program

Entry-Level Prerequisites—The H&ST Training Program includes entry-level prerequisites to ensure that participants meet basic levels of education and physical condition.

H&ST In-Training—Generally, trainee qualification precedes an assignment. However, if under the direct supervision of a trained and qualified individual, trainee qualification may proceed in concert with an assignment. Once a trainee has demonstrated proficiency in a task, and that proficiency has been documented, the trainee may perform that task without further direct supervision, even though the person's total training may not yet be complete.

Initial Qualification—This requires successful completion of:

- Phase I: Core Academics
- Phase II: Demonstrated Task Proficiency (DTP)
- Phase III: Specialty Training (as applicable)

And, written approval of the Health and Safety Program Manager.

Phase I: Core Academics—This phase of the training addresses the knowledge requirements for a health and safety technician to be competent in overseeing work-site health and safety. Phase I training, at a minimum, addresses a core set of objectives (such as those listed later in this paper).

Phase II: DTP—This is the practical-training portion of the H&ST Training Program. Phase II training is designed to ensure that the trainee is qualified to perform both core and site-specific tasks.

Phase III: Specialty Training—In some situations, a health and safety technician’s oversight responsibilities for a work site may require KSAs not addressed in Phases I or II. Phase III training addresses these special needs.

Maintenance of Qualification

Following Initial Qualification, health and safety technicians are required to maintain proficiency through continuing training and a formal re-qualification program.

Higher-Level Qualification

In most organizations, there is a logical progression from health and safety technician to higher positions of responsibility and knowledge, often leading to professional status. Two such positions—health and safety technologist and supervisor—are addressed in this standard.

Deferments/Exemptions/Reciprocity

Deferments, exemptions, and reciprocity for other training are covered in this standard. Exemptions and reciprocity is encouraged whenever and wherever they may be applicable.

Instructor Qualifications

Instructor qualifications are included in this standard to ensure that instructors are knowledgeable of the topics and tasks to be performed. In addition, instructors must demonstrate the teaching and presentation skills needed to successfully perform instructional tasks.

Training Records

The standard also specifies training records to ensure retention of training materials for historical purposes. Records are to be retained for practical training as well as formal classroom, computer-based training, etc.

PHASE I: CORE ACADEMICS

To ensure a common base of knowledge, specific training objectives are identified in core academic areas. The range of topics listed below provides a snapshot of the breadth of knowledge required for a qualified health and safety technician.

Fundamentals

- *Mathematics*
 - General
 - Unit analysis and conversion
 - Counting errors and statistics
- *Chemistry*
 - Theory and the periodic table
 - Chemical bonding and reactions
- *Physics*
 - General
 - Electricity and magnetism
 - Radioactivity and radioactive decay
- *Biology*

- General
- Biological effects

Hazardous Substances/Physical Agents

- *Pathways of Exposure*
- *Biological Systems, Effects and Agents*
 - Hematopoietic system
 - Respiratory system
 - Skin, mucous membranes, and eyes
 - Liver, kidney, and central nervous system
 - Reproductive system
- *Chemical Hazards*
 - Air (pyrophoric) and water-reactive materials
 - Toxic and highly toxic materials
 - Carcinogens
 - Corrosives, irritants, and sensitizers
 - Organic peroxides and oxidizers
 - Flammables, combustible, and explosives
 - Cryogenic liquids
 - Chemicals that displace oxygen
- *Physical Hazards*
 - Noise
 - Temperature extremes
 - Non-ionizing radiation
 - Optical hazards
 - Ionizing radiation
 - Fire
 - Electricity
 - Pressurized systems
- *Sprains, Strains and Repetitive Trauma*
- *Industrial Hazards*
- *Construction Safety*
- *Biological Hazards*
 - Infectious disease
 - Snakes, spiders, etc.
- *Site-Specific Hazards*
 - Cryogenics
 - Hydrofluoric acid (HF)
 - Beryllium
 - Explosives
 - Anhydrous ammonia
 - Chlorine

Workplace Exposure Assessments

- *General*
- *Containment Assessments*
 - General
 - Ventilation monitoring equipment
- *Airborne Contaminants Assessments*
 - Standards
 - Air monitoring
- *Waterborne Contaminants Assessments*
 - Standards
 - Waterborne monitoring
- *Surface Contaminants Assessments*
 - Standards
 - Surface monitoring
- *Bulk Contaminants Assessments*
 - Standards

- Bulk monitoring
- *Physical Agents*
 - Noise assessments
 - Temperature extremes assessments
 - Non-ionizing radiation assessments
 - Optical hazards assessments
 - Ionizing radiation assessments
 - Radiological surveys
 - Dosimetry
 - Fire hazard assessments
 - Electrical hazard assessments
 - Ergonomic assessments
 - Biological hazards assessments

Hazards Controls and Minimization — General

- *Laws, Regulations, Standards, and Advisory Groups*
 - General
 - Laws and regulations
- *Communications*
 - Interpersonal
 - Communication systems
 - Documentation
- *Hierarchy of Controls*
 - Engineering controls
 - Administrative controls
 - Procedures and work permits
 - Postings
 - Training
 - Personal protective equipment (PPE)
 - General
 - Respiratory protection
- *Work Site Controls*
 - Access control and work site setup
 - Hazardous/radioactive material control
 - Radioactive source control
 - Shipment and receipt of hazardous material
 - Work coverage
 - Contamination control
 - Decontamination
 - Waste management
 - Environmental controls
- *Response to Abnormal Conditions*
 - Incidents and emergencies
 - Natural phenomena hazards
 - Violence in the workplace
 - First aid

Hazards Control and Minimization — Hazard Specific

- *Chemical Safety*
 - General
 - Respiratory hazards
 - Air (pyrophoric) and water-reactive materials
 - Corrosives, irritants, and sensitizing chemicals
 - Hepatotoxins, nephrotoxins, and neurotoxins
 - Organic peroxides and oxidizers
 - Chemical work practices
 - Chemical storage and labeling
 - Emergency eyewash/showers
- *Confined Space Safety*
- *Radiological Safety*
- *Biological Safety*

- Carcinogens
- Toxic and highly toxic materials
- Infectious disease
- Sanitation
- Indoor air quality
- *Electrical Safety Controls*
 - General
 - Grounding
 - Safety
- *Industrial Safety Controls*
 - Energized equipment
 - Welding and grinding
 - Cranes
 - Compressed gases
 - Fall protection
 - Ergonomics
 - Manual lifting
 - Trips, slips, and falls
- *Fire Safety*
- *Construction Safety*

PHASE II: DEMONSTRATED TASK PROFICIENCY (DTP)

In Phase II, the trainee must demonstrate proficiency in the following core tasks:

- *Ventilation Surveys*
- *Air Monitoring*
- *Chemical Safety*
- *Confined Space Entry*
- *Physical Hazards*
- *Ionizing Radiation*
- *Biological Hazards and Sanitation*
- *Sanitation*
- *Indoor Air Quality*
- *Electrical Safety*
- *Industrial Safety*
- *Fire Safety*
- *Access Control and Work Area Setup*
- *Use of Personal Protective Equipment (PPE)*
- *Contamination Control*
- *Work Coverage*
- *Shipment and Receipt of Hazardous Material*
- *Hazardous, Radiological and Mixed-Waste Handling*
- *Response to Abnormal Conditions*

PHASE III: SPECIALTY TRAINING

Recognizing that some areas require specialized health and safety training, the standard includes additional knowledge and task-performance objectives in the following areas:

- *Academic/Research Facility*
- *Manufacturing/Industrial Facility*
- *Accelerator Facility*
- *Nuclear Facility*
- *Hazardous Waste Management*
- *Decontamination and Decommissioning/Environmental Restoration.*

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