



Colston Safety and Training, Inc.  
**Hazard Identification/Consequences Mgmt**

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**Prerequisites:** This course has no prerequisite.

**Course Length:** 8 Hours – Course length will vary dependent on student count Total course length does not include breaks.

**Class Size:** The maximum number of students per instructor is twenty five (25).

**Course Objective:**

- Describe the concept of hazard assessment and risk evaluation
- Identify and interpret the types of hazards and response information available from various resources, explain the advantages and disadvantages of each resource.
- Identify the steps in an analysis process for identifying unknown solid and liquid material.
- Identify the steps for identifying an unknown atmosphere.
- Identify the types monitoring equipment, test strips, and reagents used to determine the following hazards:
  - Corrosivity
  - Flammability
  - Oxidation potential
  - Oxidation deficiency
  - Radioactivity
  - Toxic levels
- Identify the capabilities and limiting factors related to the selection, and use of:
  - CO Meter
  - Colorimetric tubes
  - Combustion gas meter
  - Passive dosimeter
  - Photo ionization detector
  - Ph indicators and/or ph meters
  - Radiation detection and measurement instruments
  - Reagents
  - Test strips
- Identify two methods for determining the pressure in bulk packaging or facility containers
- Identify one method for determining the amount of lading remaining in damaged bulk packaging of facility containers.
- Identify and describe the components of the General Hazardous Materials Behavior Model.
- Identify the types of damage that a pressure container could incur.

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- Identify at least three resources available that indicate the effects of mixing various hazardous materials
- Identify the steps for determining the extent of the physical, safety and health hazards within the endangered areas of the incident.
- Describe the steps for estimating the outcomes within an endangered area of an incident.
- Describe the steps for determining the response objectives: Defensive, Offensive and Noninterventionation.
- Identify potential action to accomplish a given response objective.

**Course Design:**

- Power Point / Lecture / Video / Visual aids
- Practical Exercises

**Successful Course Completion:**

- Requires a minimum passing score of 80% or better
- Grades shall be calculated by dividing the number of questions answered correctly by the total number of exam questions.
- Successful completion of the practical sessions is mandatory.

**Course Summary:**

- Classroom
- Demonstrations
- Practicals
- Breaks: 5-15 minutes (at instructor's discretion)

**Course Outline:**

- Regulation Review
  - NFPA 472.6.2.2
  - OSHA 29 CFR 1910.120, 1910.1200, 1910.1000
- Basic Principals
  - Chemical properties
  - Hazards
  - Risks
- General Terms and Definitions
  - Element
  - Compound
  - Mixture
  - Solution
  - Slurry
  - Cryogenic liquid
  - Ionic Bonding
  - Covalent Bonding
  - Organic Materials

- Inorganic Materials
- Hydrocarbons
  - Saturated Hydrocarbons
  - Unsaturated Hydrocarbons
  - Aromatic Hydrocarbons
  - Halogenated Hydrocarbons
- Physical Properties
  - Normal Physical State
  - Temperature of product
  - Specific Gravity
  - Vapor Density
  - Boiling Point
  - Melting Point
  - Sublimation
  - Critical Temperature
  - Critical Pressure
  - Volatility
  - Evaporation Rate
  - Expansion Ratio
  - Vapor Pressure
  - Solubility
  - Miscibility
  - Degree of solubility
  - Viscosity
- Chemical Properties
- Flammability Hazards
  - Flash Point
  - Fire Point
  - Ignition Temperature
  - Auto ignition Temperature
  - Flammable range
  - Explosive Range
  - Toxic products of Combustion
- Reactivity Hazards
- Corrosivity Hazards
- Radioactivity Hazards
- Sources of Hazard Data
  - Reference Books

- Guide Books
- Technical Information Centers
- Web Sites
- Computer Databases
- Technical Information Specialists
- Material Safety Data Sheets
- Labels
- Laws (Regulations)
- Monitoring Instruments
  - Direct Reading
  - Corrosive Reading
  - Radiation Survey
  - Oxygen
  - Combustible Gas (LEL)
  - Colorimetric Indicators
  - Toxic Gas sensors
  - Ionization Detectors
  - Photo-ionization Detectors (PID)
  - Flame Ionization Detectors (FID)
  - Multi Gas Monitors
  - Test Strips
  - Test Paper
- Sampling Methods, Procedures & Strategies
- Managing Information
- General Hazardous Material Behavior Model
- Container Stress Events
- Container Breach Events
- Release Event
- Engulfing Event
- Incident action Plan
- Risk Evaluation

**EXAMINATION:**

- Practical Session - Practical session shall be documented by the student using the handouts provided by the instructor. Students will be placed into teams and shall function as such during practical exercises. Instructors will provide all material and guidance during practical exercises.
- Each Student is requires to pass a written examination scoring at minimum of 80%. The practical skills are taught in the classroom sessions and demonstrated during the Practical Training sessions.

**Student Requirements:**

- Dress Casual - Lab Coats or Coveralls are permitted

**Reference Material:**

- 29 CFR 1910.120, 1910.1000, 1910.1200
- NFPA 472.6.2.2
- IFSTA