



HAZARDOUS AREA CLASSIFICATIONS

Course Introduction:

It is required that areas where accidental releases of dangerous substances could occur are identified and classified according to the likelihood of the formation of a flammable atmosphere. Within classified areas sources of ignition should be controlled. This course is designed to provide delegates with the knowledge to carry out straightforward hazardous area classification in accordance with commonly used standards or to act as an intelligent customer when contracting others to deliver this role.

Course Objectives:

- Provide the skills required to analyze an oil, gas or chemical processing facility and establish the degree and extent of the classified area.
- Provide an overview of the various codes and recommended practices developed for classifying facilities
- Provide guidelines on how to properly document your analysis and communicate to third parties who will rely on the information for design, construction and operating activities
- Introduce a number of alternative options for classifying facilities
- To predict the properties of flammable mixtures
- To perform fugitive emission and HVAC design calculations
- To properly document a hazardous area classification design

Who Should Attend?

Professional Engineers and Design Personnel who are responsible for defining and documenting the hazardous area classification design for industrial facilities incorporating explosive gas/vapor and/or combustible dust atmospheres.

Course Outline:

Pre-Test

Basic Concepts of hazardous area classification

- a. Responsibility of the Engineer
 - Standard of care
- b. Background history
- c. The Fire Triangle
- d. Risk of Ignition Verses Probability of Release

Codes Standards and Recommended Practices

- a. CEC Section 18; Code for Electrical Installations at Oil and

Gas Facilities

- b. API RP 500, RP 505
- c. NFPA 497
- d. IEC 60079-10, ISA 12.24.01
- e. IP15, IGE/SR/25
- f. NFPA 325, IEC 60079-20

Definitions

- a. Class, Zone, Group, AutoIgnition Temperature
- b. Normal verses Abnormal Operations

Hazardous Materials

- a. Flammable Gases
- b. Flammable Liquids Classification
- c. Combustible Liquids Classification
- d. Flammability relationships
- e. Properties of hazardous mixtures

Ventilation

- a. Adequate verses Inadequate ventilation
- b. Relationship of Grade of Release and degree of ventilation to zone classification

Methods of Area Classification

- a. Classification by example
- b. Point Source method
- c. Hybrid approach
- d. Risk based approach

Application of the Principles

- a. Classification by Example - Gas Station
- b. Classification by Example – Drilling Rig
- c. Hybrid Method – Upstream Oil and Gas Facility
 - Fugitive emission analysis
 - HVAC design concepts
 - Naturally ventilated enclosed areas
 - Use of gas detection
 - Use of vapor-tight barriers
 - Interface with vendors packages
- d. Hybrid Method – Refinery

Documentation Requirements

- a. Area Classification Study Contents
- b. Calculations
- c. Area Classification Drawing Requirements

Alternative Methods of Area Classification

- a. NFPA 497
- b. API Alternative Method
- c. RP 505 Alternative Ventilation Criteria

Post Test

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session

