



Hazardous Area Classifications per CEC (NEC/IEC) and Hazardous Location Equipment, Wiring Study

After participating in this course, you will be able to:

- Obtain a fair understanding of hazardous area classifications, standards, equipment and wiring
- Familiarize yourself with industry standards and code requirements across Canada with comparisons to USA and Europe
- Apply prevalent technologies to mitigate hazards in classified areas, with emphasis on electrical and instrumentation equipment

Description:

The requirements for electrical hazardous area classifications and associated wiring methods for safety interlocks for the storage, use and handling of flammable and combustible materials are defined in the Canadian Building Code (CBC), Canadian Electrical Code (CEC), National Electric Code (NEC) and National Fire Protection Association (NFPA). Industry datasheet and product workshops for electrical, instrumentation apparatus, barrier selection and wiring calculations for power limitations.

Course Outline:

- Introduction
- Hazard causes and types, area definitions, material classification, area classification
- Standards CEC, NEC, CENELEC, IEC
- Protection
- Electrical equipment
- Process control, Automation equipment
- Other equipment: Storage, Eyewash systems etc

Who Should Attend

Plant Managers & Engineers • Project Engineers • Engineers in Training • Technologists • Electricians • **Electrical Designers • Chemical Process Operators • Equipment personnel**

Syllabus

Day 1

Introduction

- Hazard causes and types, area definitions, material classification, area classification
- Standards CEC, NEC, CENELEC, IEC, the Ex rating
- CEC Standards Zone classification with materials, gases
- Temperature Classification



Protection

- Selection of electrical apparatus
- Area information - Zone, ignition temperature, current, safe gap data
- Intrinsic Safety, IP ratings
- Hazard proofing - Flameproof, pressurized, Sand Filled, Oil Immersed, Hermetically Sealed
- Barriers
- Entity concepts
- Simple and Non-Simple Apparatus
- Cable Energy storage parameters for Intrinsic Safety
- Grounding requirements per CEC

Day 2

- Classified Area design criteria and examples

Electrical Equipment

- Lighting
- Enclosures and junction boxes
- Process and space heaters
- Heat tracing cable
- Control stations
- Signalling
- Plugs, sockets and isolators
- Joints, terminations, glands and cleats

Process Control, Automation Equipment

- Heat, gas & flame detection
- Access control devices, CCTV monitoring
- Non-sparking tools, Intrinsically safe multimeters
- Process Instrumentation
- Solenoid Valves
- Smartphones, Tablets and Computers
- Electronic Barriers

Other Equipment: Storage, Eyewash systems, etc

1.4 CEUs/14 PDHs