How to Apply Hazardous Area Australian Standards

(Groups II and III)
3-Day On-Site Workshop* 2012

This workshop provides a sound understanding of electrical compliance and your responsibilities in Group II (flammable gases, liquids and vapours) and Group III (combustible dusts) hazardous areas. This workshop is suitable as first time or refresher training for personnel requiring a comprehensive understanding of electrical installations in hazardous areas.

Potential sources of ignition are often taken into hazardous locations where flammable liquids, gases, vapours and dusts are generated, processed, handled and stored. These flammable substances can easily ignite from an arc, spark or heat. It is essential you avoid accidental ignition of these flammable substances.

Based on the current Australian Standards, trainees will receive an introduction to hazardous area legislation and a detailed understanding of how hazardous areas are classified, and sources of ignition. This workshop also provides a sound understanding of how to use the relevant Australian Standards to select, install, inspect, test and maintain hazardous area electrical installations.

Ensure you remain compliant* and maintain your hazardous area skills and knowledge by booking this essential workshop today.

Workshop topics:

- How to prevent hazardous area fires and explosions
- Legislation, compliance and competency
- How Group II and Group III hazardous areas are classified
- How to read hazardous area classification drawings
- How to read equipment markings
- How to recognise sources of ignition
- How explosion protection techniques prevent explosions
- How to select, install, inspect and maintain:

  Ex d, EX e, Ex i, Ex iD, Ex m, Ex mD, Ex n, Ex o, Ex p, Ex pD, Ex q, Ex s, Ex v, Ex tD and DIP equipment

Continuing education or training is required - **before Sep 2012: see Clause 1.7 of AS/NZS2381.1:2005 and Clause 4.7 of AS/NZS61241:14:2005; **after Sep 2012**: see clause 4.4 of AS/NZS600079.14:2009 and clause 4.2 of AS/NZS600079.17:2009*

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Explosion **P**rotection **Tech**nology
Hazardous Area Consultants and Trainers
ABN: 42 981 603 121

Upon completion of this workshop trainees should:

- Understand how to prevent hazardous area fires and explosions
- Be up-to-date with changes in the relevant hazardous area Australian Standards
- Understand legislation, compliance and competency
- Have existing hazardous area knowledge reinforced
- Have a sound understanding of how Group II and Group III hazardous areas are classified
- Understand hazardous area classification drawings
- Understand equipment markings
- Have a sound understanding of sources of ignition
- Have a sound understanding of how:
    - Explosion protection techniques are used to make electrical equipment safe for use in hazardous areas.
    - To use the relevant Australian Standards to select, install, inspect, test and maintain hazardous area electrical equipment and wiring.
    - Hazardous area electrical equipment certified to other Standards is selected and assessed to ensure it offers the equivalent level of safety to the relevant Australian Standard.

Date of the Workshop: Date to be agreed

Time: 7.00 to 7.30 am registration

7.30 am to 4.30 pm workshop (to be agreed)

Breaks:

8.30 to 8.35 am	Brain recovery
9.30 to 9.45 am	Tea/coffee
11.00 to 11.05 am	Brain recovery
12.00 noon to 12.40 pm	Lunch
1.40 to 1.45 pm	Brain recovery
2.45 to 3.00 pm	Tea/coffee

Venue: At your factory

Catering: You provide all tea, coffee, soft drinks and light lunches

CPD: This workshop provides 27 hours of Continuous Professional Development (CPD) to assist practicing professional engineers and technicians to develop and maintain their hazardous area technical skills and knowledge.

Recognition: *'Esso Training and Procedures Group has endorsed us as an approved provider of "Hazardous Area Wiring" refresher training for Esso maintenance and designated contractor technicians* - Marlene Hutty, EAPL training Coordinator

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Full Workshop Fee: Workshops presented from 1st January to 31st December 2012
$960.00+ $96.00 (GST) = $1056.00 per person
Minimum of number of trainees is 10 and maximum is 25.

Workshop fee includes:
- Comprehensive workshop notes
- Workshop certificate

Early Bird Discount: **Save an amazing $165.00** per person by paying **within 14 days** after the start of the workshop
Early bird fee: $810.00 + $81.00 (GST) = $891.00 per person

Payment: **Full workshop fee:** Payment must be received **within 28 days** after commencement of workshop.

Early bird discount: Payment must be received **within 14 days** after commencement of workshop to receive discounted fee.

MasterCard, Visa, cheque or EFT are accepted.

Substitutes: If an enrolled person is unable to attend a substitute is allowed at no extra charge. Details must be faxed or emailed in advance.

Transfers: Enrolment transfers to another workshop are not permitted.

Cancellations: A $82.50 fee applies to each cancelled workshop place received in writing more than two weeks prior to the agreed commencement date of the training workshop. Regrettably, no refunds are available after this date or if a trainee fails to attend and no substitute fills the place. The workshop folder will be posted to the trainee. A letter will be mailed following payment in full advising a 40% discount applies on one future 1-day workshop place for each cancelled or no-show booking. This offer is valid for 12 months and no further discounts will apply.

Set-up: Venue needs to be set-up the afternoon prior to commencement of workshop. Seating should be at tables arranged in a U shape with six additional large tables for demonstration equipment and documentation. See Appendix A for suggested room layout. Note boardroom tables are unsuitable.

Names: A list of enrolled names is required two weeks prior to commencement of the workshop. Please provide the following for each trainee:

- Name for the name badge and workshop folder
- Name (if different to name badge) for the certificate
- Job title
- Contact phone number, fax number and or email address.

Workshop Outline

1) Introduction
- Hazardous areas
- Who is responsible
- Statute laws and standards
- AS/NZS3000 non compliance issues
- Qualifications and competency

2) Hazardous Area Classification
- Ignition curves
- Zone classification - Group II
- Gas classification - equipment group
- Temperature classification - T Class
- Ambient temperature range of explosion protected equipment
- Area classification - Group II
- Combustible dusts - Group III

3) Ignition
- Sources of ignition
- Ignition triangle

4) Types of Protection
- Ex d - Flameproof
- Ex e - Increased Safety
- Ex n - Non-Incendive
- Ex p and Ex pD - Pressurization
- Ex m and Ex mD - Encapsulation
- Ex o - Oil Immersion
- Ex q - Powder/Sand Filling
- Ex s - Special Protection
- Ex v - Ventilation
- Ex tD and DIP - Dust Tight
- Ex i and Ex iD - Intrinsic Safety

5) Electrical Protection of Hazardous Area Equipment
- Isolation
- Locked in off position
- Overcurrent, internal short circuit and earth fault protection
- Protection of Intrinsically Safe equipment

6) Equipotential Bonding

7) Selection of Equipment
- List of Australian Standards
- AUS Ex, ANZEx and IECEx certified equipment
- Permitted electrical equipment
- Other standards certified equipment

8) Theory of Intrinsic Safety
- Zener diodes
- Zener barrier
- “Ex ia”, “Ex ib” and “Ex ic” Zener barriers
- Earthing
- Isolation barrier theory

9) Certification
- Certification of electrical equipment
- Simple apparatus
- Energy storing Ex i equipment
- Cable parameters of Ex i equipment
- Matched power of Ex i equipment
- Matching Ex i equipment and Ex i barrier certificates

10) Installation of
- Ex d - Flameproof
- Ex e - Increased Safety
- Ex n - Non-Incendive
- Ex p and Ex pD - Pressurization
- Ex m and Ex mD - Encapsulation
- Ex o - Oil Immersion
- Ex q - Powder/Sand Filling
- Ex s - Special Protection
- Ex v - Ventilation
- Ex tD and DIP - Dust Tight
- Ex i and Ex iD - Intrinsic Safety
- Ex i - Insulation test

11) Inspection and Testing
- Inspection schedules
- Testing

12) Maintenance and Repair

13) Summary

14) Self Appraisal
- Appraisal questionnaire
- Appraisal questionnaire answers

15) Discussion

Delivery of Workshop

Workshops are presented using PowerPoint slides, a video clips, video tapes and real hazardous area electrical equipment.

The Workshop Author and Presenter

Colin Baker is a practising professional engineer, qualified workplace assessor (Certificate IV) and workplace trainer who has been involved with surge protection, intrinsic safety and hazardous area installations since 1970. He has worked for some of the major manufacturers of hazardous area instrumentation and has gained significant surge protection and hazardous area experience through designing, installing, commissioning and inspecting equipment and installations.

Colin has provided training and technical support to many chemical, petrochemical and public utility companies around the world and has written and presented numerous papers locally and internationally.

An H Class Licensed Electrical Inspector (Vic) and an Accredited Auditor (Qld), Colin is qualified to inspect hazardous area electrical installations under the 2009 Victoria Electricity Safety (Installation) Regulations and the 2002 Queensland Electrical Safety Regulation.

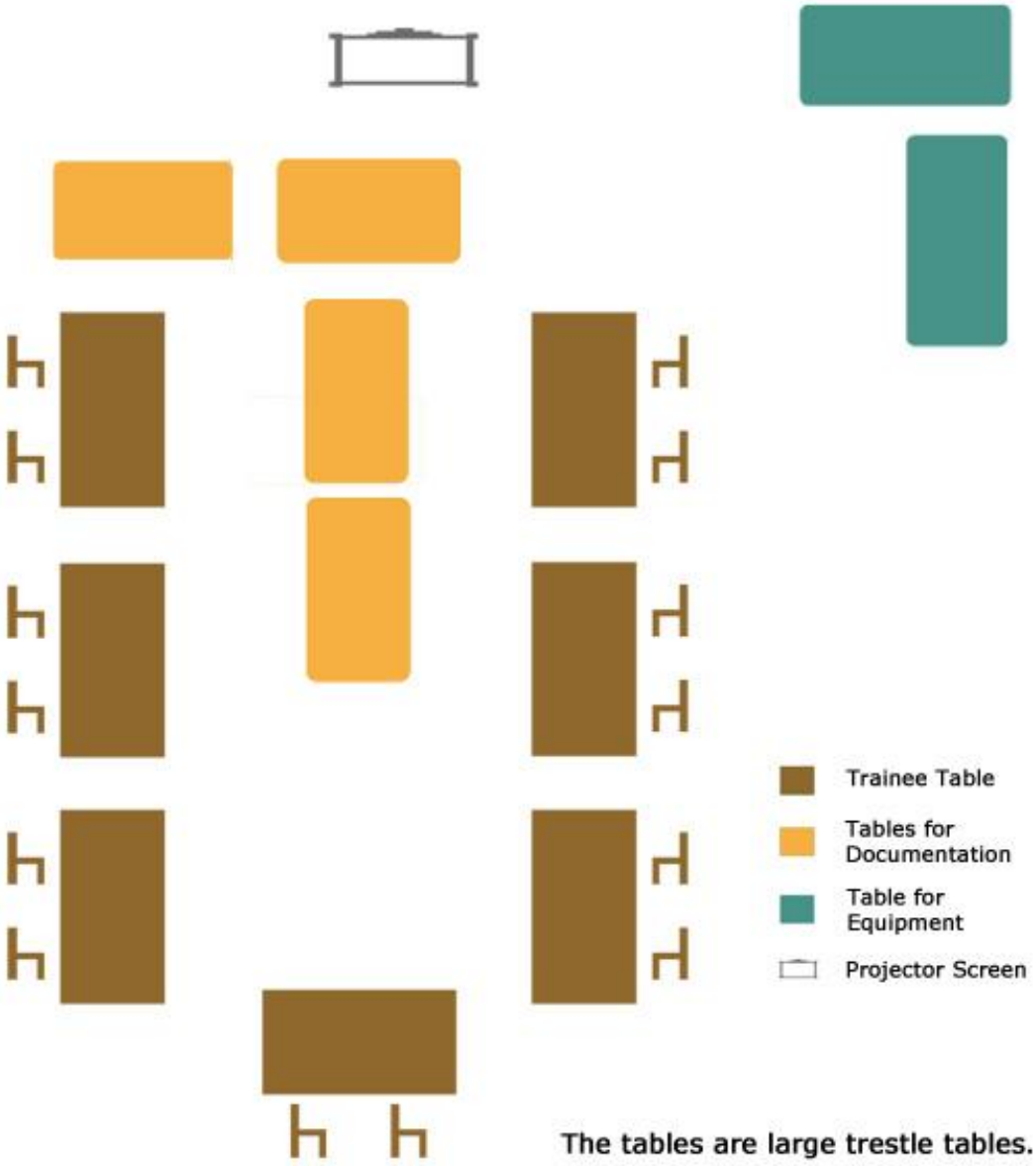
He sits on the joint Australian/New Zealand Standards sub-committees for the preparation of the standards on Intrinsic Safety and industrial hazardous area trucks. He also sits on the Petroleum Industry Contractors Association electrical sub-committee.

Explosion Protection Technology is a leading independent and Australian owned consulting and training organisations founded by Colin. The company specialising in the safety of hazardous area electrical installations based on the current Australian Standards including:

- Classifying hazardous areas
- Checking electrical installations located in hazardous areas
- Assisting clients to obtain certification of hazardous area electrical equipment
- Running hazardous area workshops

Appendix A

Recommended Room Layout (example for 14 trainees)



The tables are large trestle tables.