WORKSAFE

Compliance certifier workshops

October 2018

Simon Buckland, Kate Studd

1 Welcome

Agenda

Welcome

Welcome

Emergency information

House keeping

Agenda

Personal protective equipment

Fire and Emergency New Zealand

Energy Safety

Hazardous substances / WorkSafe update and information

WORKSAFE

Working Together on Health and Safety

Getting you home healthy and safe.
That's what we're working for.

Philippa Gibson – PPE and Compliance Certification
October 2018

1. Healthy work
2. PPE and compliance certification
3. Respiratory protection
4. Skin protection

1 WORK RELATED HEALTH

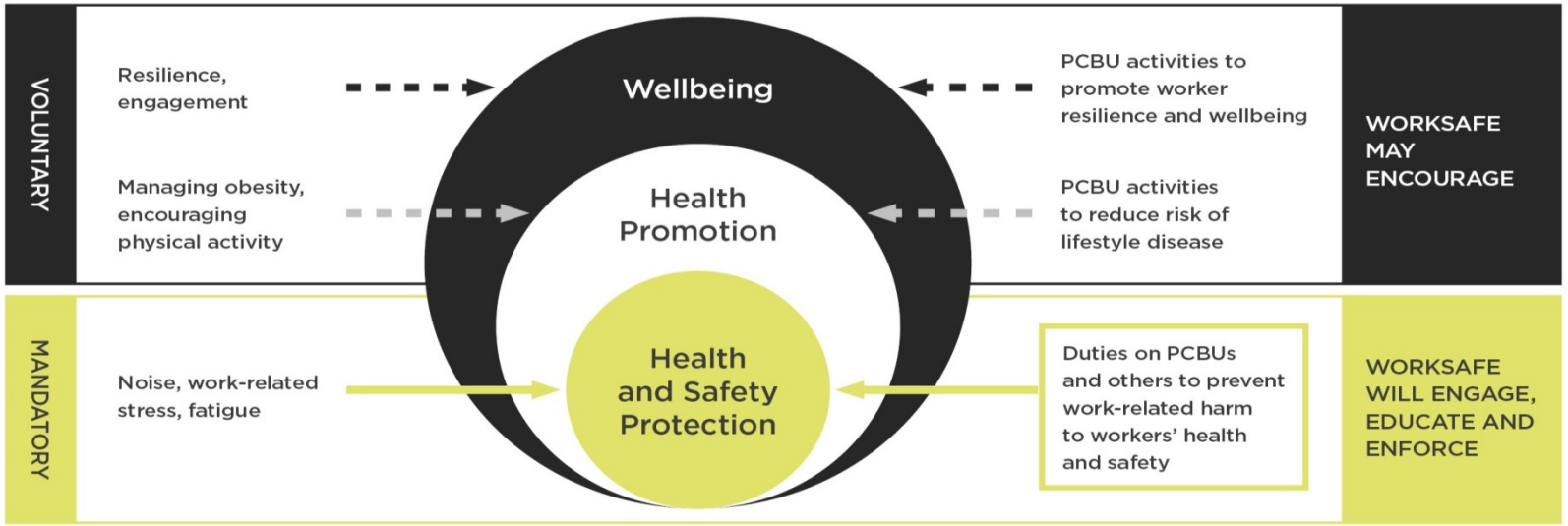
A typical worker is

10 TIMES

more likely to die from work-related ill-health than a workplace safety incident


WORKSAFE
NEW ZEALAND
HEALTHY WORK
WorkSafe's Strategic Plan for
Work-Related Health 2016 to 2026

Supporting worker health and wellbeing



2 PPE AND COMPLIANCE CERTIFICATION

HS regs and PPE

1. Compliance certifiers performance standards

2. Compliance certificates for locations with class 2, 3 and 5 substances

3. Compliance certificates for locations with class 6.1A, 6.1B, 6.1C, 8.2A and 8.2B substances

4. Emergency response plans

HS regs and PPE

Compliance certifiers performance standards - Compliance certifier must: conduct a location visit to inspect the matters relevant for the issue of the certificate; and **examine and review appropriate information and records** relevant to the matters to be certified.

- **PPE is equipment**
- **PPE is plant**
- **PPE includes clothing**

Class 2-5, 6 or 8 substance location compliance certificate

- Compliance certificate certifying that all workers handling these substances have **received information, instruction, and training** in accordance with regulation 4.5

Workers have received information, instruction and training on

- the procedures for the safe use, handling, manufacture, storage, and disposal of the hazardous substances
- safe use of **plant** necessary to manage the hazardous substances
- the worker's obligations under these regulations
- the actions that the worker should take in an emergency involving the hazardous substances
- PCBU must keep a record of training and instruction provided ensure the record is available for inspection by an inspector or compliance certifier.

Class 6.1A, 6.1B, 6.1C, 8.2A, 8.2B location compliance certificate

Must certify that PPE used in carrying out work with the substance complies with the requirements of regulations 15 to 20 of **General Risk and Workplace Management Regs (2016) GRWM**:

- PPE of suitable size and fit is provided
- is reasonably comfortable
- is maintained, repaired and replaced, clean, hygienic, in good working order
- workers wear or use PPE as per reasonable instruction
- compatible with other PPE
- workers must be provided with information, training and instruction in the proper wearing, use of, storage and maintenance of the PPE.

PPE and emergency response plans

Emergency response plan

- it describes the actions, and give information on any special training needed to deal with an emergency and any actions the person is expected to take

PPE selection and training

Class 5.1.1, 5.1.2 or 5.2 location compliance certificate

Certificate must certify that PPE **directly used to handle the substance** is designed and operated in such a way that:

- does not accumulate in or on
- substance does not make direct contact with the user or wearer
- documentation is readily accessible and understandable - gives sufficient instruction on the use, maintenance and operation
- designed and constructed of materials that cannot be degraded, attacked, or combusted, or are resistant to such degradation, attack, or combustion for the time specified by the supplier of the equipment

SUMMARY – EXAMINATION AND REVIEW OF PPE

Received information, instruction, training on PPE

- use
- handling
- manufacture
- storage
- disposal
- emergencies

PPE complies with GRWM

- selection
- maintenance
- repair
- compatibility
- training
- use of

PPE is the right type

- no accumulation in or on
- no direct contact
- degradation
- attack
- combustion
- resistance

Documentation

3 RESPIRATORY PROTECTIVE EQUIPMENT (RPE)

LIMITATIONS OF RPE

- Filtering face pieces – do just that - ONLY filter (don’t remove 100%)
- Facial fit
- Filter life
- Selection
- Defects e.g. cracks, breaks
- Facial hair – tight fitting (half face/full face) they don’t work

RPE

1. **Medical assessment** of users of RPE – chronic respiratory, circulatory disease, epilepsy precluded from wearing RPE
2. **Selection** of RPE
3. **Fitting** of equipment – fit testing, fit checking
4. **Maintenance** of RPE
5. **Training**

AS/NZS 1715 – selection, use and maintenance of RPE

If using RPE – have a RPE programme

- **Medical assessment**
- **Selection** – degradation, accumulation
- **Fitting** – GRWM
- **What to use and when**
- **Maintenance and repair** – filter replacement
- **Compatibility with other PPE**
- **Training** – fitting, checking, replacing parts

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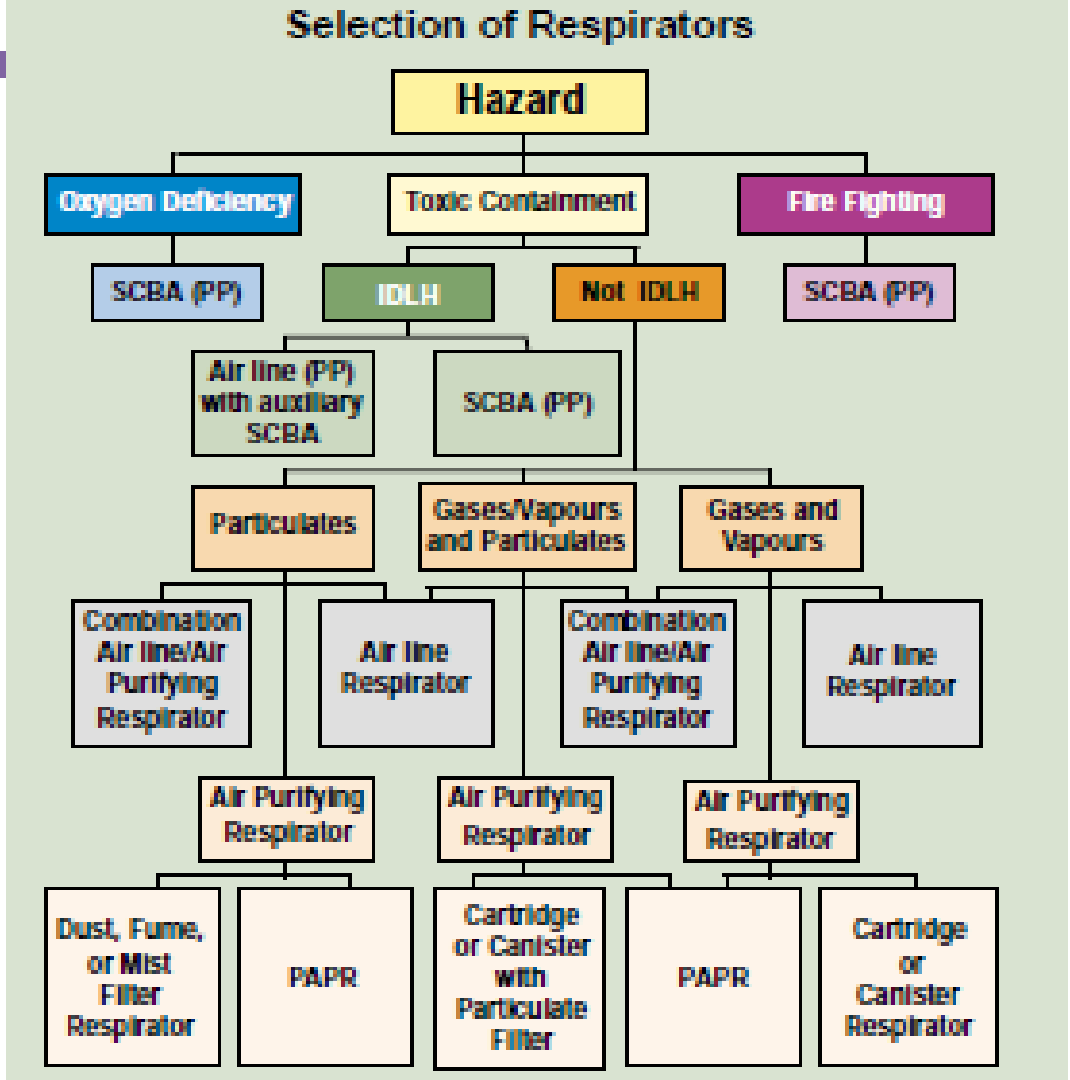
SELECTION OF RPE

AS/NZS 1715 respirator types

1. Mechanically generated particulates
2. Thermally generated particulates
3. Gases and vapours
4. Immediately Dangerous to Life and Health (IDLH)
5. Oxygen deficient atmosphere
6. Micro-organisms



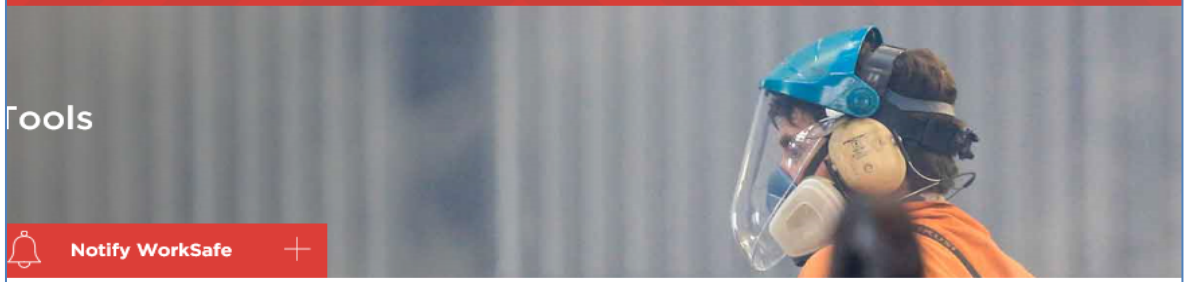
WorkSafe Guide to Respiratory Protection

Selection based on:

- **Contaminant**
- **Air concentration**
- **Task**
- **Operator**
- **Limitations of RPE**

MENU WORKSAFE SEARCH

ALERT: Technical difficulties with calls to our response centre



Tools

Notify WorkSafe

ome | The Toolshed | Tools | Respirator selection tool

- Case studies
- Definitions and acronyms
- Registers
- Tools
- Around the Block
- Bullying prevention toolbox
- Ports Tool
- Pathways Awarua
- **Respirator selection tool**
- Writing health and safety documents for your workplace
- Health and Safety at Work Act presentation
- Duty Holder Review
- Guidance and education requests

Respirator selection tool

Developed by the Health and Safety Executive, NHS Health Scotland and Healthy Working Lives (HWL), the Respirator selection tool has been developed to help workplaces find the right respirator for their employees and help manage their respiratory protection programme.

The tool was developed by the Health and Safety Executive, NHS Health Scotland and Healthy Working Lives (HWL). This tool can be used by New Zealand workplaces to assist in choosing and managing the correct respiratory protection, however there are some important points listed below that you need to read and consider before using this tool for your workplace.

Before using this tool in a New Zealand workplace, you must be aware of the following:

- Qualifiers. Please be aware of the 'qualifiers' given on the Step 1 of the tool.
- New Zealand Standard AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment. The UK respirator selector tool is based on the Health and Safety Executive's RPE guidance HSG53. In the UK, the RPE standards differ from the New Zealand Standard (AS/NZS 1715:2009) in terms of the protection level allocated to different types of respirators. As such

https://worksafe.govt.nz/the-toolshed/tools/respirator-selection-tool/

FIT TESTING

- A test to match between a respirator and the person
- **Absolutely essential - GRWM – “PPE must be suitable size and fit”**
- Do it at the start of using RPE for work
- Repeat once a year, or if any change to face

FIT TESTING

Qualitative fit test

Quantitative fit test

FIT CHECK

- A simple check done each time you put on a respirator to check it fits and is working

FILTER CHANGE PROGRAMME

AS/NZS 1715 "*There is no overall rule about when filters should be changed. Each situation needs to be treated individually*".

- Advice should be sought from the manufacturer/health and safety professional with appropriate skills

Subjective checks – problems

Breathing resistance for particulate filters

- The filters performance may be degraded without noticeable increase in breathing resistance therefore clogging will not give guidance for filter replacement
- Build up highly variable
- More resistance in damp air

FILTER CHANGE PROGRAMME

Gas, vapour filters

- Filter life depends on temperature, humidity, concentration, class and rate of breathing,
- Should take supplier advice – they test how long it take for the gas or vapour break through under different concentrations and conditions

Subjective checks – problems with odour detection

- Highly variable for people, and some can't detect certain smells
- Sense of smell may diminish temporarily e.g. a cold
- Olfactory fatigue
- Odour threshold may exceed acceptable exposure level
- Some substance have no odour e.g. carbon monoxide
- not advised for irritants

FILTER CHANGE PROGRAMME

THIS PAGE IS SAFE | ACCESS VAULT | SHARE VIA FACEBOOK

2 Welc... | Nelson - Tasman real esta... | ANZ Internet Banking ANZ | Vodafone Webmail Welc... | BBC Radio 4 - Programme... | Cheap Flights, Airfares & ... | Auckland Central Weather...

UNITED STATES DEPARTMENT OF LABOR

UNITED STATES DEPARTMENT OF LABOR

Find it in OSHA

A TO Z INDEX

Occupational Safety and Health Administration

English | Spanish

ABOUT OSHA | WORKERS | EMPLOYERS | REGULATIONS | ENFORCEMENT | TOPICS | NEWS & PUBLICATIONS | DATA | TRAINING

eTools

Respirator Change Schedules | Respirator Selection | Expert Systems | Respirator Basics

Respirator Change Schedules

Did you know that employers are required to provide a respirator cartridge change schedule? See the requirements for change schedules.

Respirator cartridges don't last forever!

A change schedule is the part of the written respirator program which says how often cartridges should be replaced and what information was relied upon to make this judgment. A cartridge's useful service life is how long it provides adequate protection from harmful chemicals in the air. The service life of a cartridge depends upon many factors, including environmental conditions, breathing rate, cartridge filtering capacity, and the amount of contaminants in the air. It is suggested that employers apply a safety factor to the service life estimate to assure that the change schedule is a conservative estimate.

If you know what the chemical is and how much of it you are exposed to, then you are ready to estimate out how long your respirator cartridges will work and apply the safety factor.

Three valid ways for you to estimate a cartridge's service life

3M TechUpdate

Cleaning Reusable Respirators

The proper cleaning and maintenance of respirators is an important area that is commonly overlooked. All respiratory protection equipment needs to be in good condition to work effectively and to be able to supply the level of protection expected by the user.

Inspection of 3M™ Reusable Respirators is recommended before each use to ensure good operating condition. The facepiece must be repaired or replaced if there are damaged or defective parts. The following inspection procedure is suggested:

1. Check facepiece for cracks, tears and dirt. Be certain the facepiece,

Cleaning is recommended after each use. 3M™ Respirator Cleaning Wipes 504 may be used as an interim method in the cleaning schedule for individually assigned respirators, but this should not be the only method in place. During fit testing, these wipes may also be used to clean masks between employees being tested. However, respi-

4. Rinse in fresh, warm water and air dry in a clean non-contaminated area.

5. Inspect the respirator components prior to reassembly. A respirator with any damaged or deteriorated components must be repaired or discarded.

6. Store the clean respirator away

FUTURE CHANGES TO RPE CLASSIFICATION

- Much more rigorous and scientific
- Human factors (the wearers tolerance and ability)
- Based on performance and not design
- Work Rate
- Respiratory Interface
- Protection Class
- Filter efficiency
- Special Circumstances (Mining, CBRN, Fire Fighting)

For example, a P2 respirator will in some (but not all) circumstances become a $PC_3W_1bTF_2$ (PC = protection class, W = work rate class, bT = respiratory interface class, F3 = filter performance class).

Do not use “half face” or “full face” – instead use “Protection Class”

4 SKIN PROTECTION

If using gloves – have a glove programme

- **Selection** – degradation, accumulation
- **What to use and when**
- **Limitations**
- **Fitting** – GRWM
- **Daily inspection**
- **Maintenance and repair** – leaks, holes
- **Compatibility with other PPE**
- **Training** – fitting, checking

Received information, instruction, training on PPE

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- use of

PPE is the right type

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- resistance

SELECTION

AS/NZS 2161 series – selection, use etc

Go to websites of glove suppliers

SDS

- **The type of gloves are dependent on protection (e.g. solvents) and use (e.g. tactile)**
- **Compatibility with other PPE**
- **Mechanical characteristics**
  - **Abrasion resistance**
  - **Blade cut resistance**
  - **Tearing resistance**
  - **Puncture resistance**

3M Nitrile Gloves

DAILY INSPECTION

Typical inspection before and after use includes;

- Wear between fingers
- Seam failure
- Cracking, “bubbling” or obvious pinholes
- Swelling or shrinking after use
- Perishing

MSA Welding Gloves

CONSIDERATIONS

- Hand care – washing drying moisturising
- Cuts and stabs
- Interference with dexterity and tactile sensation
- Some barrier creams may result in rate of increased absorption
- Possible allergic reactions (e.g. latex, and exacerbated by powder)
- Different sizes need to be available

PROTECTIVE CLOTHING LIMITATIONS

1. Tears, breaks and rips
2. Permeation – through fabric
3. Penetration – through gaps, buttons or seams
4. Comfort and fit
5. Heat or cold stress
6. Tactile

SUITS

- SDS for manufactures guidelines - specify the suitable type of material
- Coveralls should be resistant to penetration of liquid
- Should be worn over boots
- If coveralls are reusable ensure they are cleaned before reuse according to manufactures instruction
- Store clean PPE separately from personal clothing

Received information, instruction, training on PPE

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QUESTIONS

1. If a site has respirators or gloves and they are used, but there is no RPE programme in place, should a location compliance certificate be issued?

2. Should a compliance certifier ask about fit testing?

3. Would a lack of daily fit checks, or glove checks be a failure?


We need a new
way of thinking
'I'll be right' … but will she?
Getting you home healthy and safe.
That's what we're working for.

COMPLIANCE CERTIFIERS WORKSHOPS

October 2018

Overview

Fire and Emergency NZ

Flammable liquids and bulk fuel advisor

Operational planning and response

Emergency response plans

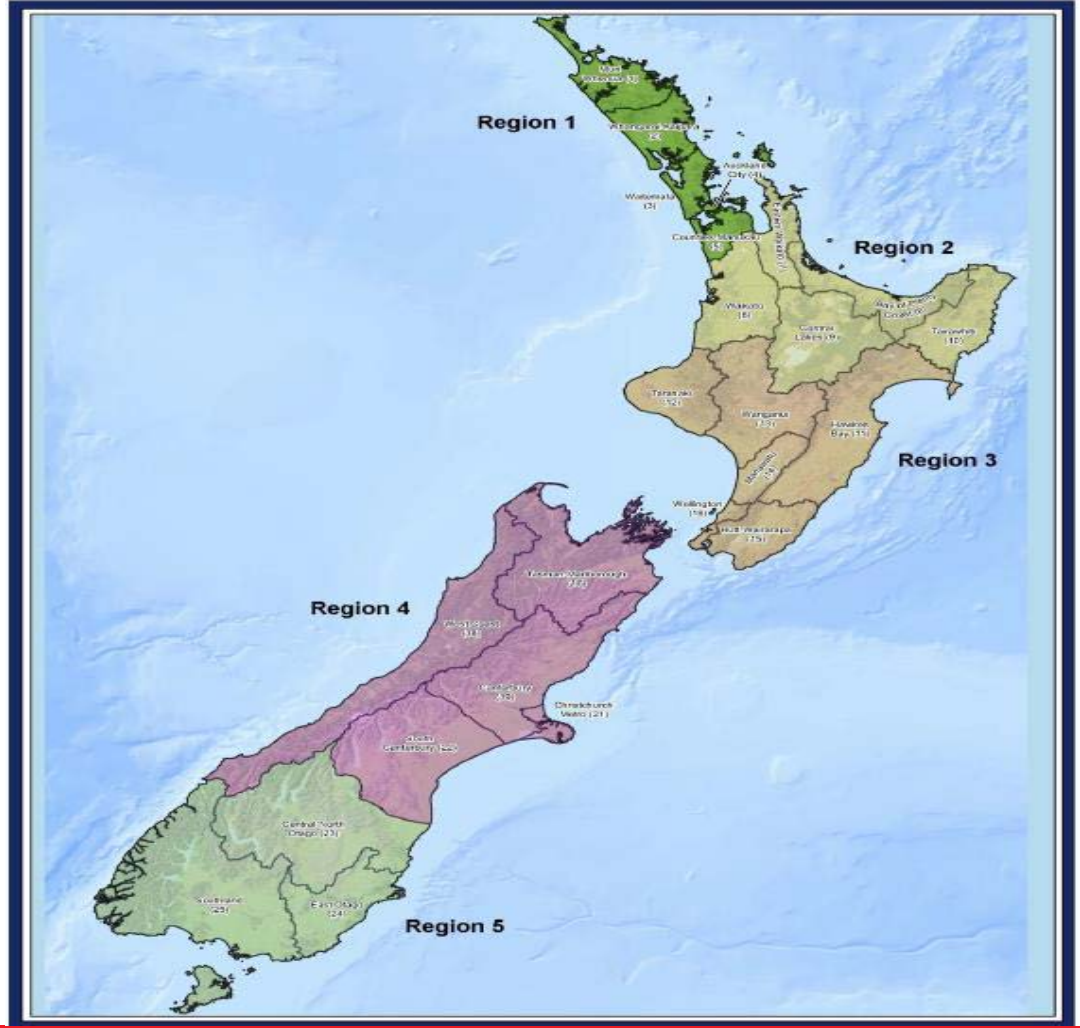
Exemptions

Other activity

Looking forward

Fire and Emergency New Zealand 1 July 2017

5 regions
24 urban fire areas
18 rural fire districts



Flammable liquids and bulk fuel advisor National Operations

Strengthening capability in Fire and Emergency NZ for large flammable liquids fires

Working with other agencies and stakeholders

Major hazard facilities (MHF) & hazardous substances locations, emergency plans, firefighting foam

Context - operational planning and response

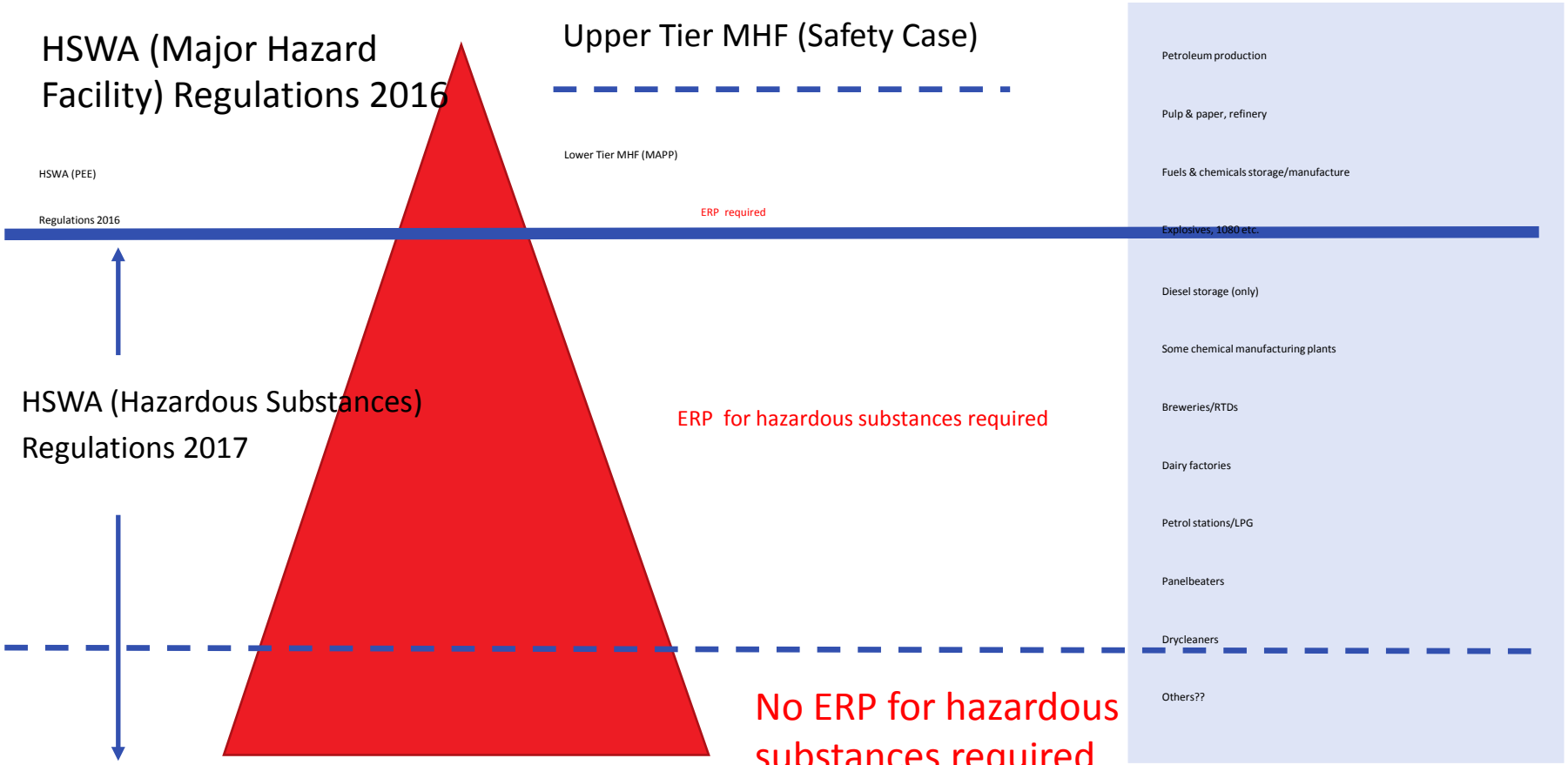
What happens when you call 111?

Our planning and how we prepare - site reports and tactical plans

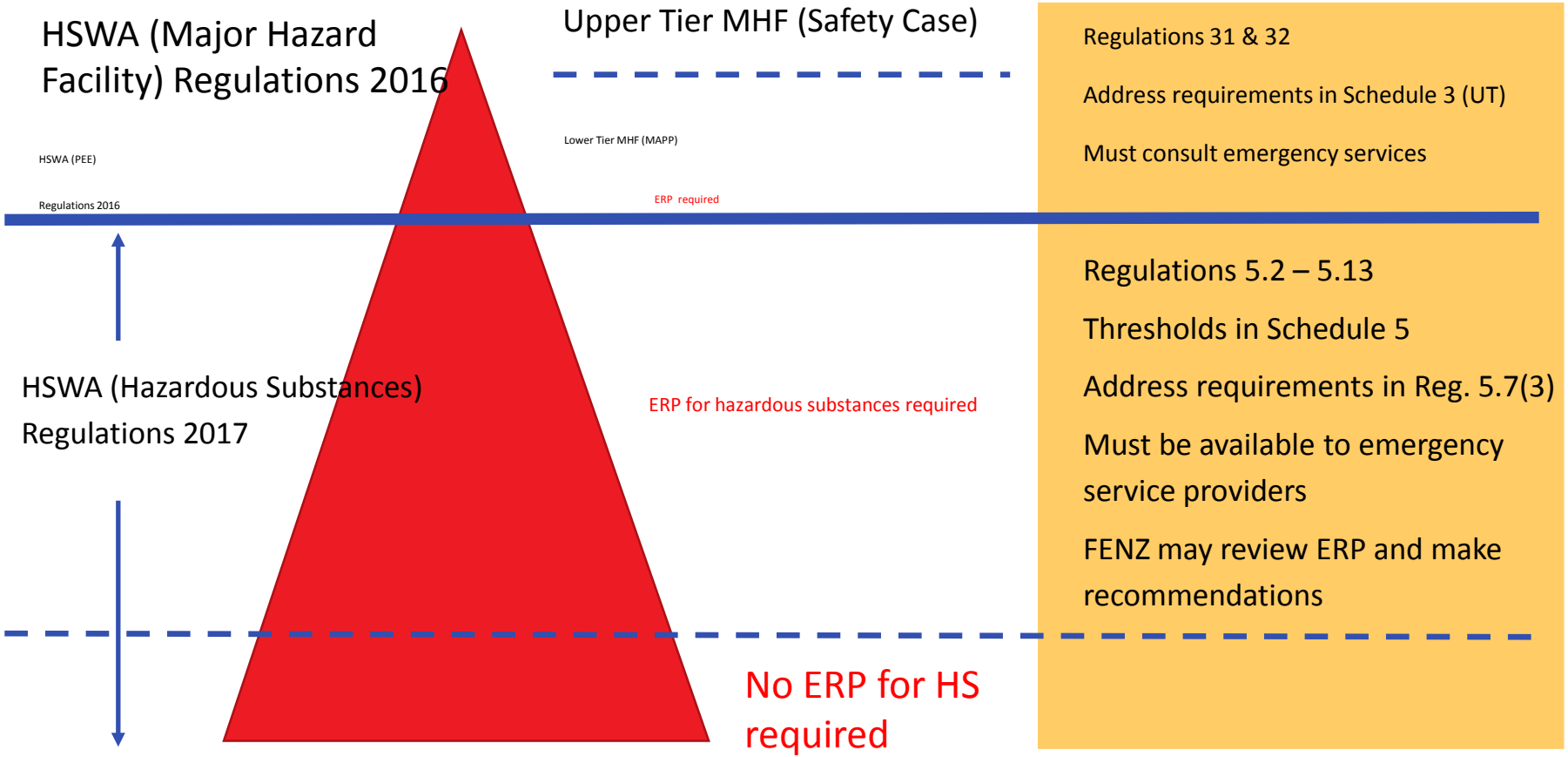
What we want to know when we arrive

Task prioritisation

Context - ERP requirements



Context - ERP requirements



Review of Emergency Response Plans – our process/tools

Submit via Fire Information Unit – not to local fire station please!

FireInfoUnit@fireandemergency.nz

Goes to Area Manager – assigned to senior officer

Guidance on Fire and Emergency NZ website

Emergency response plan preparation guide

Engagement with operator, review of document(s), site visit

Letter with comments and recommendations

Feeds into our operational planning – site plans and tactical plans

Review of Emergency Response Plans – our experience (1)

A lot of plans received so far – not just for MHFs

Site operators very co-operative, welcome the opportunity to engage and build local relationships

Everyone has been going up the learning curve

Good collaboration with WorkSafe

Why engage?

- Partnered planning
- Aligning expectations of what will happen in an emergency

Review of Emergency Response Plans – our experience (2)

Some plans are very large – information we don't need…

and some are very small…

What we do want to know:

- What happens at the site?
- Hazardous substances information and inventory
- Drainage/containment/isolation
- Notifications and area evacuation
- Decontamination facilities

Emergency Response Plan for xxx site

Call 111

Page 1 of 1

Review of Emergency Response Plans – important points

We do not approve plans, we are not the regulator

Comments & recommendations not for other purposes

We will make our best efforts to engage in a timely fashion

Partnered planning!

Our priorities

- Safety of our people and of the public
- Protection of the environment and lifelines
- Protection of assets where practicable

Exemptions from hazardous substances regulations

Reviewing our process with WorkSafe

Should not compromise Building Code requirements for safe buildings including protection from fire

Other activity

National flammable liquids response strategy

Firefighting foam

All of government PFAS programme

Fire and Emergency New Zealand – looking forward

Planning for a unified organisation - internal consultation

A new operating model - what work we need to do and how we plan to go about doing it:

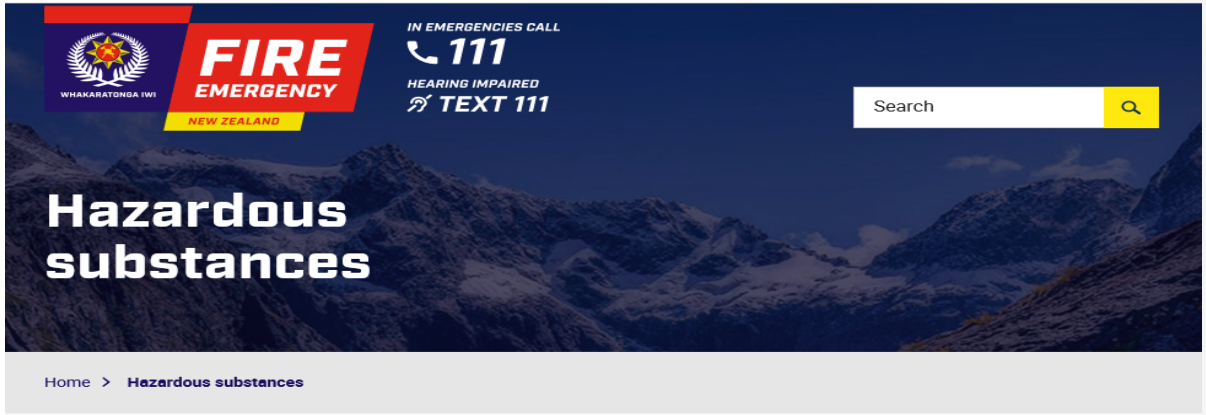
- Foundations – Vision, Values and Operating Principles
- Functions
- Strategic Leadership
- Key areas of change

Structure

- proposals for strategic leadership team
- 5 regions, 15 areas

Risk reduction, Readiness, Response, Recovery

Contacting us



This section contains information about safely managing hazardous substances, including obligations and responsibilities, tips for handling hazardous substances in the workplace, and guidance on what to do if someone has been affected by hazardous substances.

- **Emergency response plans**
- **Managing hazardous substances**
- **What to do if you're affected by hazardous substances**
- **Notifying fumigation activity**

www.fireandemergency.nz FireInfoUnit@fireandemergency.nz

Questions?

2 Exemptions

Exemptions

Under section 220 of HSW Act

New process – significantly more stringent than separation distance waivers, SP cylinder numbers and other HSNO waivers

Anything can be applied for – any regulation in any HSW Regulations, including Hazardous Substances

5 year maximum validity period, then either apply for a renewal or have the site, equipment, person meet the regulatory requirements

Applications

Under section 220 of HSW Act

WorkSafe policy to guide decision making

- https://worksafe.govt.nz/laws-and-regulations/operational-policy-framework/regulatory-function-policies/exemptions/

Key for all of them is the s220 ‘test’’

One general application form:

https://worksafe.govt.nz/laws-and-regulations/acts/hswa/exemptions-under-hswa/

Applications

Four specific hazardous substances ones

Separation distance

https://worksafe.govt.nz/topic-and-industry/hazardous-substances/certification-authorisation-approvals-and-licensing/certification-of-equipment-plant-buildings/buildings-for-flammable-and-oxidising-substances/

SP cylinders

https://worksafe.govt.nz/topic-and-industry/hazardous-substances/certification-authorisation-approvals-and-licensing/certification-of-equipment-plant-buildings/gas-cylinders-and-fire-extinguishers/

Applications

Four specific hazardous substances ones

Stationary tank fire-fighting facilities

https://worksafe.govt.nz/topic-and-industry/hazardous-substances/certification-authorisation-approvals-and-licensing/certification-of-equipment-plant-buildings/stationary-tanks-and-process-containers/

LPG tank wagons

https://worksafe.govt.nz/topic-and-industry/hazardous-substances/certification-authorisation-approvals-and-licensing/certification-of-equipment-plant-buildings/tank-wagons/

Section 220 test

Under section 220 of HSW Act

There are two points that must be satisfied for WorkSafe to grant an approval

- Is it no broader than is reasonably necessary?
- Does it meet the intent of the Health and Safety at Work Act?
    - Section 3, Section 30, Section 36

What is reasonably practicable?

- Cost one factor, but not most important
- What do other similar businesses or industry do?

Exemptions granted to 12 October

Look at WorkSafe website

- https://worksafe.govt.nz/laws-and-regulations/acts/hswa/exemptions-under-hswa/

Hazardous substances team have completed 39

- 21 granted
- 15 withdrawn
- 3 declined

WORKSAFE | Energy Safety

Compliance Certifiers Workshop

October 2018

Peter Morfee
Principal Technical Advisor

Introduction Peter Morfee

My detailed CV is included at the end of the presentation, but of relevance:

- Leading 3 major legislative reforms of electrical and gas safety legislation.
- A smattering of international trade agreement design and negotiation including NZ's FTA with China.
- Involvement as Regulator of most of the "Think Big" projects.
- Four Years as Chief Electrical Inspector of Mines.
- Membership of a number of Standards committees, including the chairmanship of AS/NZS 3800 committee.
- Currently a member of the UNECE Group of Experts on Risk Management in Regulatory Systems.

I have a reputation for being different and my presentations have a reputation for having pictures of aircraft and Chinese Pop music singers

So keep an eye for both!

So here’s the aircraft.

That’s got that out of the way.

The Chinese Pop diva will have to wait!

Plugs and sockets

Oh yes, the relevance of the aircraft:

This is an example of a hazardous area certified plug and socket located in the floor of the aircraft workshop

When checking a hazardous area keep an eye out for unexpected pieces of equipment

Presentation

1. **Assessment principles**
2. **Electricity (Safety) Regulations and HSWA**
3. **Preparation (Background Checks)**
4. **Principles of ignition protection**
5. **On arrival (Don’t be dragged into the area!)**
6. **In the area**
7. **Outside the area**

My rule: “*Before leaving a hazardous area you spend a few minutes reflecting on what you have seen and what you may have not seen.”*

Certifier Assessment Principles

Establish the scope of the assessment (what do you know about the site?)

Obtain the documentation applying to the site

- Zonal Drawings (prepared by a competent person – NZS 4761.1 competencies)
- List of materials and processes on site
- Electrical Dossier
    - Schedule of electrical equipment within the areas
    - Installation and inspection certification
    - Equipment certification
    - Periodic assessments

Compare between documentation and what is there, and the alignment of the documentation

Record what you see (Photos - remembering to use a Hazardous Area Safe Camera)

Electricity Safety Law

The Electricity Safety law is very detailed, including an extensive use of Standards

This enables WorkSafe to deal with the very technical issues that govern the safety of the use of Electricity

The law is based on the same principles as the HSWA (through similar Australian alignment) and identifies the same issues relating to those that create risk and those who are exposed to those risks, often by clarifying the responsibilities of the different parties

The involvement of the public (c.f. Workers) is achieved through the Standards process

Recognised certificates are used, and recognised, at interfaces between the various parties, such as suppliers and installers and owners / operators (PCBUs)

Competency

The requirements for the competencies to carry out work in a hazardous area are set out in AS/NZS 4761.1

AS/NZS 4761.1, which is called by the AS/NZS 60079 series of Standards, sets the criteria for: entering, planning, inspecting, classifying, installing, maintaining, auditing, and, other activities associated with a hazardous area – including hazardous area drawings

As part of the assessment the PCBU should be asked if the competency of all persons working in the hazardous area has been checked

Editions of Standards

It is important to remember that the Standards that apply are the ones that are cited by the Regulations or those that applied at the time the Regulated promulgated

The Standards applicable under the regulations are not updated despite what the text of any more recent Standard might say

This applies to both the Electricity (Safety) Regulations and the HSW Hazardous Substances Regulations

Responsible Parties

In the Electricity Safety “world” the concept of a **PCBU** is mirrored into **owners** and **operators**.

Suppliers (importers and manufacturers) are accountable for the safety of equipment they supply

Installers are responsible for the safety of completed and certified work

Designers are responsible for their designs

Owners / Operators are responsible for maintaining the safety of the installations they own or operate

Note: NZ has a number of Mutual Recognition agreements that recognise foreign equipment, but none of these apply to Hazardous area equipment

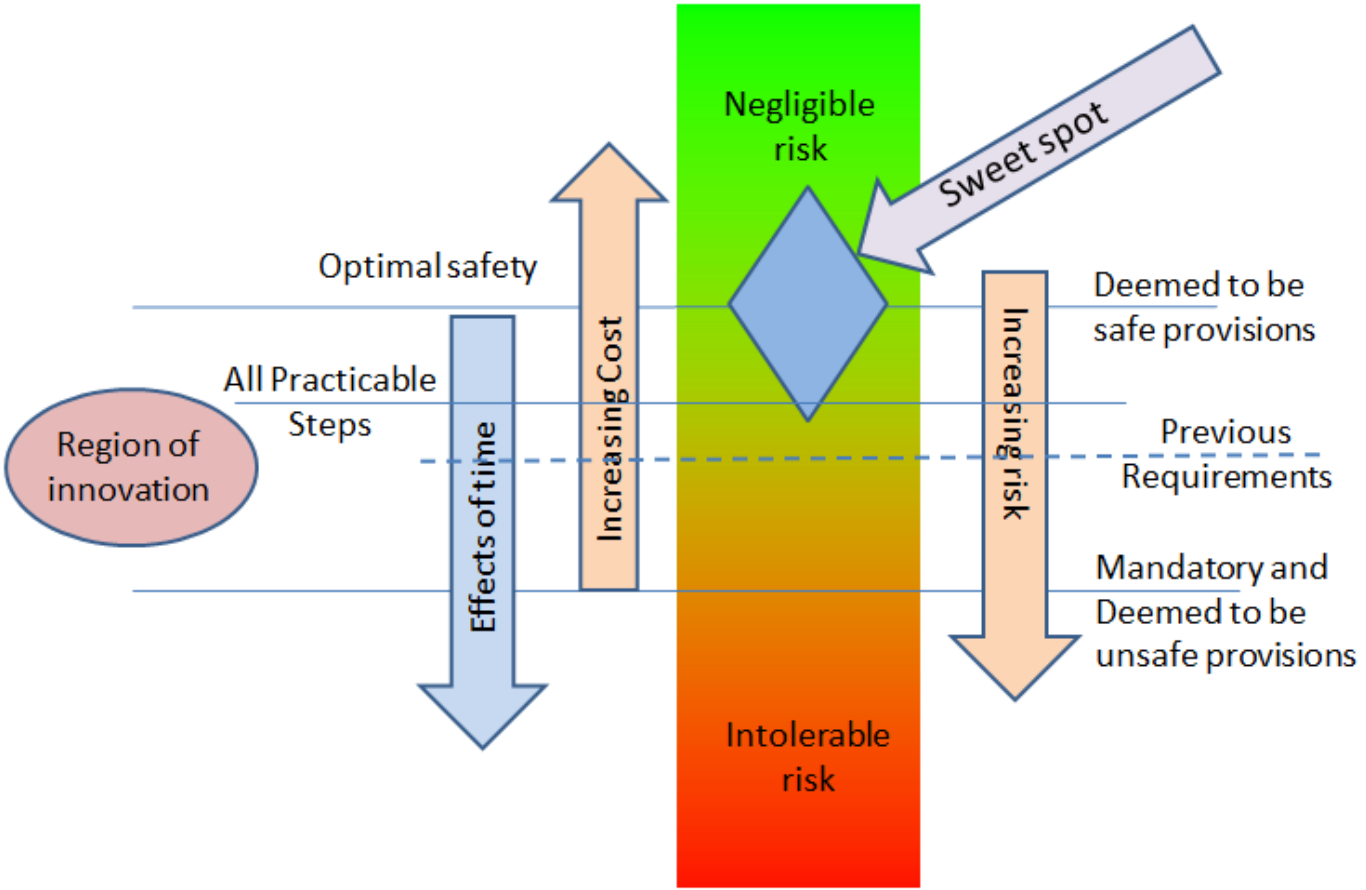
Electrical Safety Regulatory Regime

The Electricity Safety Regulations 2010 (ESR) are performance based Regulations that are risk based and apply more intensive requirements for higher risk situations

The Regulations establish requirements that are deemed to be safe and conditions which are deemed to be unsafe, between which is regulatory zone for innovation. Non-compliance with the recognised requirements does not immediately imply that the installation or equipment is unsafe

The Regulations also explicitly recognise the previous regulatory provisions for installations and equipment compliant at the time of their installation

As a result, it is most effective to establish compliance using the fundamental safety criteria and look for aspects where the situation is clearly unsafe


Negligible risk
Sweet spot
Optimal safety
Deemed to be safe provisions
All Practicable Steps
Region of innovation
Effects of time
Increasing Cost
Increasing risk
Previous Requirements
Mandatory and Deemed to be unsafe provisions
Intolerable risk

Relationship between HS and ES Regulations

Hazardous areas are delineated under the HS Regulations

HS Regulations cover:

- Static / bonding requirements (Part 10)
- Hazardous areas
- Compliance certification

The equipment in the hazardous area is prescribed by the ES Regulations

ES Regulations cover:

- All wiring of all voltages
- Equipment
- Construction and periodic certification

Preparation (Background Checks)

The installation of electrical wiring (conductors) and equipment (Fittings attached to conductors) in a hazardous area is High Risk Prescribed Electrical Work (PEW) irrespective of voltage

This means that this work, since 2013, must be covered by a certificate of compliance (CoC) and also an Electrical Safety Certificate (ESC)

In addition, the completed hazardous area work must have been inspected by a licensed inspector who will have issued a Record of Inspection (RoI) and entered the details into the High Risk Database maintained by Worksafe (EGHRDB)

Note that maintenance and repairs of wiring and equipment in a hazardous area is low risk work and only requires an ESC but could also have a CoC

High Risk Database

The high risk database can be searched by anybody by using the physical address of the installation and will show up the inspection details for any high risk work, including hazardous area installation work carried out recently

Where Periodic Assessments required by the Regulations are carried out by a licenced inspector, an entry in the database may also be present, although this is a voluntary feature at present

Searching the database is recommended to establish if additional electrical equipment and cables have been installed (lawfully)

If new equipment is encountered and no matching database entry is found it might indicate that an inspection has not taken place *(Replacements do not require inspection)*

https://www.energysafety.govt.nz/energysafety/app/highrisk-db/home

Recognised Equipment Certification

All electrical equipment installed in a hazardous area is required to be certified

The recognised equipment certification schemes are set out in AS/NZS 60079.14

For the majority of installed equipment either the **IEC Ex scheme** or the **ATEX** (European scheme) are the accepted systems

ATEX certified equipment will often also be marked with the European CE mark

A fully documented installation should include the certificates for all equipment installed in the hazardous area

CoCs, ESCs and RoIs

The ES Regulations permit the electrician or electrical inspector to create their own certificates (CoCs, ESCs, RoIs) however the particular information to be provided is set by the Regulations as well as a marking on the certificate

The certificates must contain; a description of the work, date, and location of the work, and reference relevant Standards

In the case of hazardous areas, AS/NZS 60079.10.1 should be listed

The marking required on the certificate is the Regulatory Compliance Mark (RCM)

Electrical Certificate of Compliance & Electrical Safety Certificate

Reference/Certificate ID No.:

This form has been designed to be used by licensed electrical workers to certify that installations or Part installations under Part 1 or Part 2 of AS/NZS 3000 are safe to be connected to the specified system of electrical supply.

Location Details:

Contact Details: (Name and address)

Name of Electrical worker:

Registration/Practising licence number:

Phone & email:

Name and registration number of person(s) supervised:

Certificate of Compliance

Type of work: ☐ Addition ☐ Alteration ☐ New work

The prescribed electrical work is: ☐ Low risk ☐ General ☐ High-risk (specify):

Means of compliance: ☐ Part 1 of AS/NZS 3000 ☐ Part 2 of AS/NZS 3000

Additional Standards or electrical code of practice were required: ☐ No ☐ Yes (specify):

Date or range of dates that prescribed electrical work undertaken:

Contains fittings that are safe to connect to a power supply? ☐ Yes ☐ No

Specify type of supply system:

The installation has an earthing system that is correctly rated (where applicable) ☐ Yes ☐ No

Parts of the installation to which this certificate relates that are safe to connect to a power supply?

☐ All ☐ Parts (specify)

The work relies on manufacturers instructions: ☐ Yes ☐ No

If yes – identify the instruction manual including name, date and version. Also attach a copy of manufacturer's instructions to this certificate. (Or provide reference to readily accessible electronic format, eg internet link.)

Identify: Link:

The work has been done in accordance with a certified design: ☐ Yes ☐ No

If yes – identify the certified design including name, date and version. Also attach a copy of the certified design to this certificate. (Or provide reference to readily accessible electronic format, eg internet link.)

Identify: Link:

The work relies on a Supplier Declaration of Conformity (SDoC): ☐ Yes ☐ No

If yes - identify the SDoC including name, date and version OR EESS registration. Also attach a copy of the SDoC to this certificate. (Or provide reference to readily accessible electronic format, eg internet link.)

Identify: Link:

The installation has been satisfactorily tested in accordance with the Electricity (Safety) Regulations 2010 ☐ No ☐ Yes

Description of Work:	Test Results (provide values)	
	Polarity (independent earth):	
	Insulation resistance:	Ohms
	Earth Continuity:	Ohms
	Bonding:	Ohms
	Fault Loop impedance	Ohms
	Other (specify):	

By signing this document I certify that the completed prescribed electrical work to which this Certificate of Compliance applies has been done lawfully and safely, and the information in the certificate is correct.

Certifier's signature: Date:

Electrical Safety Certificate

By signing this document I certify that the installation, or part of the installation, to which this Electrical Safety Certificate applies is connected to a power supply and is safe to use.

Certifier's name: Registration/Practising licence number:

Certifier's signature: Certificate Issue Date: Connection Date:

CUSTOMER COPY – THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED FOR A MINIMUM OF 7 YEARS

This Electrical Safety Certificate also confirms that the electrical work complies with the building code for the purposes of Section 19(1)(e) of the Building Act 2004.

Record of Inspection (RoI) of High-Risk Prescribed Electrical Work

pursuant to the Electricity (Safety) Regulations 2010

Reference/Record ID Number:

Issuer (Inspector) details:

Name of Inspector: Registration #:

Email address: Telephone:

Location of installation:

Location details:

Location type: ☐ Domestic ☐ Non-Domestic Accommodation ☐ Industrial ☐ Commercial ☐ Educational ☐ Healthcare ☐ Miscellaneous (other)

Certifying Electrical Work and Certificate of Compliance (CoC) details:

Name of Electrical worker(s): Registration #:

CoC details: ☐ CoC(s) attached

Certifying Electrical Work and RoI details:

What was inspected:

Specify the regulation(s) and companion standard(s), or identify the certified design, followed when carrying out the inspection:

What are the results of the inspection:

High Risk Category:

☐ Not to AS/NZS 3000 Part 2 – 6A(2)(a)(i) ☐ Photovoltaic system – 6A(2)(a)(iv) ☐ Electrical medical area – 6A(2)(a)(vi)

☐ High voltage installation – 6A(2)(a)(ii) ☐ Hazardous area – 6A(2)(a)(v) ☐ Mains work – 6A(2)(b)

☐ Mains parallel generation – 6A(2)(a)(iii) ☐ Animal stunning or meat conditioning – 6A(2)(c)

☐ Other – please describe:

Declaration

I hereby confirm that the work described above has been done in accordance with the regulations; and the installation on which the work has been done is, and will be, when enlivened, electrically safe.

Signature: Date:

Record of Inspection (RoI) – Version: May 2014

Principles of ignition protection

The fundamental principles of the use of electrical equipment safely are:

1. Avoid creating hazardous areas
2. Avoid installing or using electrical equipment in a hazardous area
3. Use ventilation systems that remove any flammable gases well before a flammable mixture is created
4. Use equipment that reduces the probability of igniting the flammable material (Ex equipment)
5. Protect cables from mechanical damage and use cables specifically designed for a hazardous area and documented accordingly
6. Interlock the electricity supply using gas detectors
7. Interlock the supply of flammable materials or gases

Note that all systems require periodic verification both of the equipment and the nature of the liquids, gases present

On arrival (Don’t be dragged into the area!)

Take time to look at the documentation - Is it being kept up to date?

Clarify the process

Get familiar with the Zonal drawing *(it is recommended that this is obtained before the site visit)*

Assess the age of the installation

And the attitude of management

Periodic Assessments

The Electricity Safety Regulations require that all electrical installations in Hazardous areas are periodically assessed (Regulation 75) in accordance with AS/NZS 60079.17

An assessment can be carried out by a competent person (AS/NZS 4761.1) it does not have to be carried out by a licenced inspector

The assessment must include both the low voltage (230/400 v) and the extra-low voltage parts of the installation

A periodic assessment does not have to be “passed” it is a report that gives the owner / operator a picture of the status of the installation

Enquire about a plan to deal with any identified deficiencies

RoA / CoV

At the completion of a periodic assessment a Record of Assessment (RoA), often referred to as a Certificate of Verification (CoV), must be issued

The Record of Assessment is proof of compliance with Regulation 75 and needs to be available for inspection

It important that the Report identifies all the equipment that is located in the hazardous area

The record is a critical document for compliance purposes

A certificate that simply states that an installation is compliant is not adequate

- Compare the scope and details against the documentation for the hazardous area and the equipment listing
- Compare it against what you find in your audit

New Installations

For installations that do not yet require a periodic assessment, the CoCs and the related RoIs should be used to verify that the installation has been certified and inspected

Like the periodic assessment report, it important that the certificates identify all the equipment that is located in the hazardous area. **The certificates are a critical document for compliance purposes and should be included in the certifier's assessment**

In the case of a new installation, a detailed dossier that contains all the technical and certification information on all the equipment should be available

In the area - assessment

Equipment

Is it suitable for the area?

It is in the dossier?

Is it labelled to indicate its suitability, including Ingress Protection (IP) rating?

Is in in good condition

- Corroded?
- Painted?
- Ventilated?

Cables

Suitable for the area?

Protected from damage?

Paperwork	Name, timing
CoC	Certificate of compliance, installation
ESC	Electrical safety certificate, installation
RoI	Record of assessment, installation
EGHRDB	High risk database (WorkSafe), installation
RoA / CoV	Record of assessment / certificate of verification, periodic assessment

Compatibility of safety precautions

It is critical that equipment used is compatible with New Zealand's electricity system

New Zealand's system is 230 volts (nominal), no matter what anybody tells you!

Or 400 volts if there are three phases

Is the equipment correctly rated?

The electricity safety regime used in North America reflects the different primary supply voltage of 110 volts therefore electrical equipment from the US, even though it might be rated at 220 volts is not necessarily safe because their 220 volt system is basically two 110 volt systems

Contraband

The management of a hazardous area requires precautions to be taken to ensure that portable electrical equipment used in the area is rated for safe use in the area or that a “hot work” or “live work” permitting system is employed

When entering a hazardous area it is important to check your own equipment and to take notice of how your entry has been managed (eg phones, watches, fitbits etc.) Remember to avoid clothing that can create static risks

Where gas detectors are used there should be restrictions on the use of materials that can compromise the detectors. A particular example is the use of silicon lubricants and sealing compounds which can poison gas detectors

The way contraband is controlled is an indicator of the quality of the site management

Recognising Suitable Equipment

So how can we recognise that an electrical “thing” is suitable for use in a hazardous area?

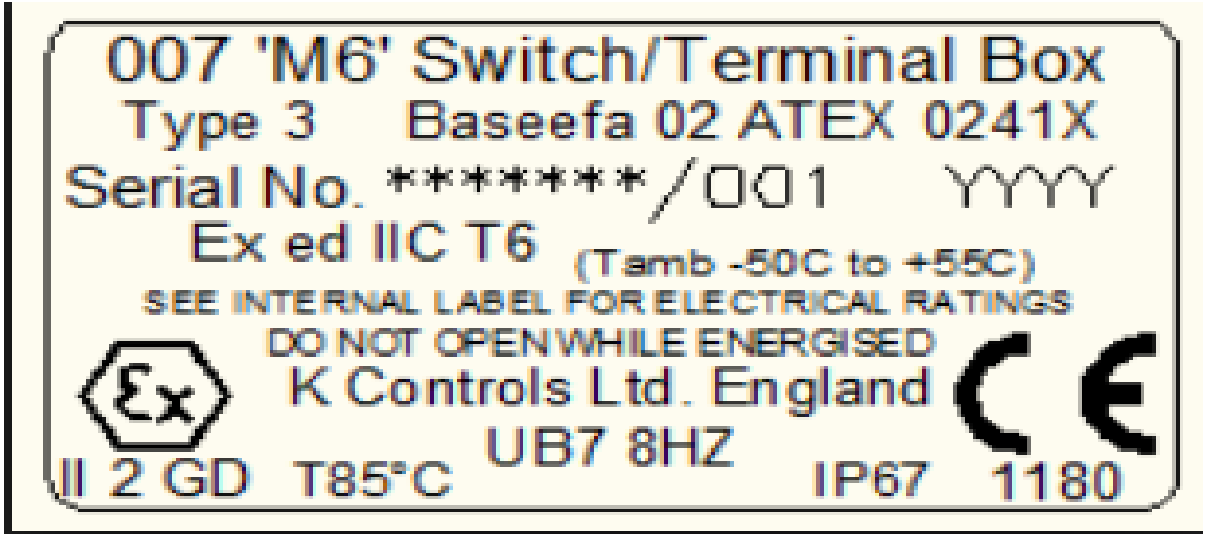
There are all different types!

Exd, Exe, Exia, DIP, Exn to name but a few

The labels are the answer

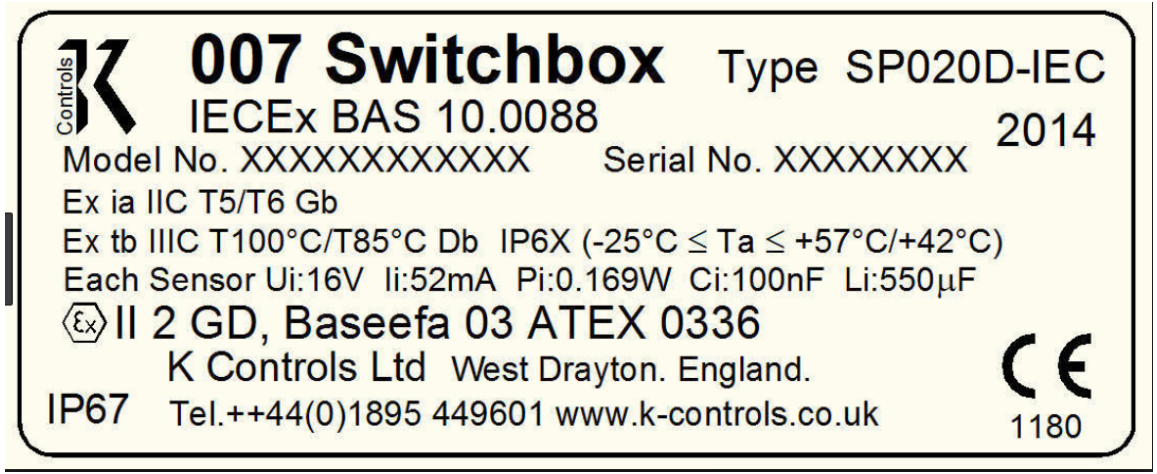
All hazardous area equipment is required to be labelled, often with more than one label!

Labels



Note: Description of item, Certification body, Temperature, Type of protection, IP rating, and Warnings.

Markings



Check the markings against the area criteria and documentation in the dossier.

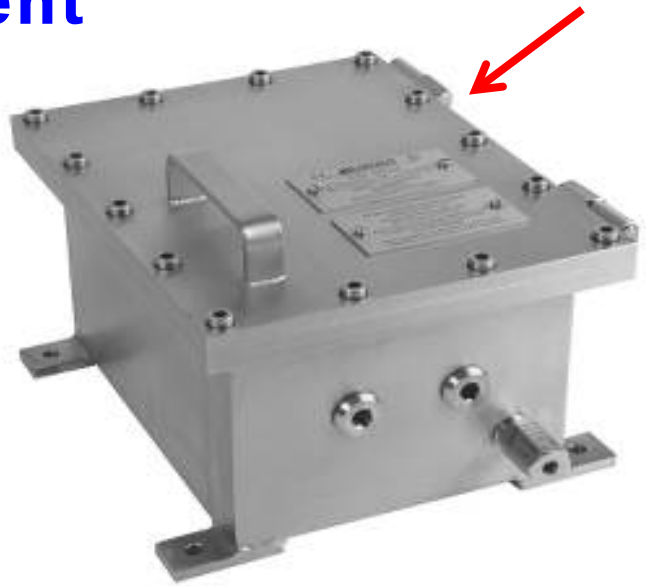
Is it listed in the items covered by the periodic verification?

Is it compatible with the flammable materials present?

Hazardous Area Equipment

All hazardous area equipment looks different and has specific labels and markings.

The owners and operators should be able to present you with a plethora of fancy paperwork and signed certificates relating to this equipment. (Dossier)



While these enclosures look like they have too many bolts, the omission of only one bolt, or a loose bolt, will make the enclosure unsafe

Installation Rules

Each type of protection has specific installation requirements, some of which cannot be verified without compromising the protection system

However there are still a set of fundamental requirements that apply:

- The cables have to be secured at the entry to equipment terminal enclosures
- All cover securing fittings need to be present
- IP ratings have to be correct
- The equipment and cables have to be protected from damage
- Cable sheaths have to be maintained into the enclosure or gland
- All unused cable entries have to be blanked with “approved” fittings
- No modifications are permitted. This includes extra entries or mounting holes

Markings that require caution

While verifying the compliance of the majority of Hazardous Area equipment is straight forward there are two certification situations to be aware of and where the certification documentation must be available:

- Ex S equipment. This equipment certification is “special” and generally has significant additional requirements or limitations

- Equally certification with an “X” or “U” after the certification type (eg “Ex e x”) indicates that the certification has limitations or conditions

In both cases the documentation must be available to verify that the conditions or limitations are being complied with

Ex S is often used for lamps

Electric cars and charging

EV charging equipment is very unlikely to be suitable for use in a hazardous area, although an Ex certified system could be constructed

The connection system (plug/coupler) on the car is also not suitable as it has a connection monitoring system that is likely to create an incendive spark

There is also no certainty that the car itself would be safe in a hazardous area

EV charging is not permitted in a hazardous area, including near service station pumps, near storage tanks, LPG filling etc.

Medical locations

The medical sector uses flammable antiseptic liquids and anaesthetic gases.

This is an area where special precautions apply.

Test and Tag

The test and tag system has no relevance in a hazardous area.

The standard that it applies, AS/NZS 3760, is entirely inadequate.

In-service testing must be carried out in accordance with manufacturers instructions.

This applies in particular to gas detection equipment.

This is one of the reasons why equipment dossiers are important.

Where gas detectors are being used, their calibration program should be checked.

The ESR refer to gas detection equipment as safety function equipment.

Specific Situations

There are three particular examples where the control of the release of the flammable substance is exercised and where controls over the electrical equipment are different.

These three can be compared with the principal of protection by interlock or protection by ventilation, but all three are actually not included in the normal series of Standards and practices.

These situations are not part of the AS/NZS 60079 family of requirements

Specific Situations

Spray booths are locations where a special Standard applies and the interlock applies to the release of the flammable substance ventilation is the principle control factor. AS/NZS 4114.1

Fume cupboards are situations where the quantity is limited and ventilation is a controlling factor and electrical interlock is applied based on the ventilation operating. AS/NZS 2243.10 (and Part 7)

Gas fired boilers. For these the supply of gas is interlocked with a gas detector. Special equipment is not required because there is an open flame during normal operation. Again ventilation is a factor. Refer to: http://www.hse.gov.uk/comah/sragtech/techmeasareaclas.htm

Changes of the sources of flammable products

In the race to protect the planet from global warming, there will be an increased use of substances that have different risks of flammability

For example, refrigerants are being replaced by flammable substances, including IsoButane. These can be used in heat-pumps.

Mines

The specific electrical safety requirements for Mining are located within the Energy Safety regime, to allow them to dovetail into the wider electric safety regime as a high risk rated activity.

These provisions are closely related to the HSW Mining Regime, but also extend to quarries and alluvial mining.

There are very different requirements applying to the methane environment of Underground Coal Mines.

Outside the area

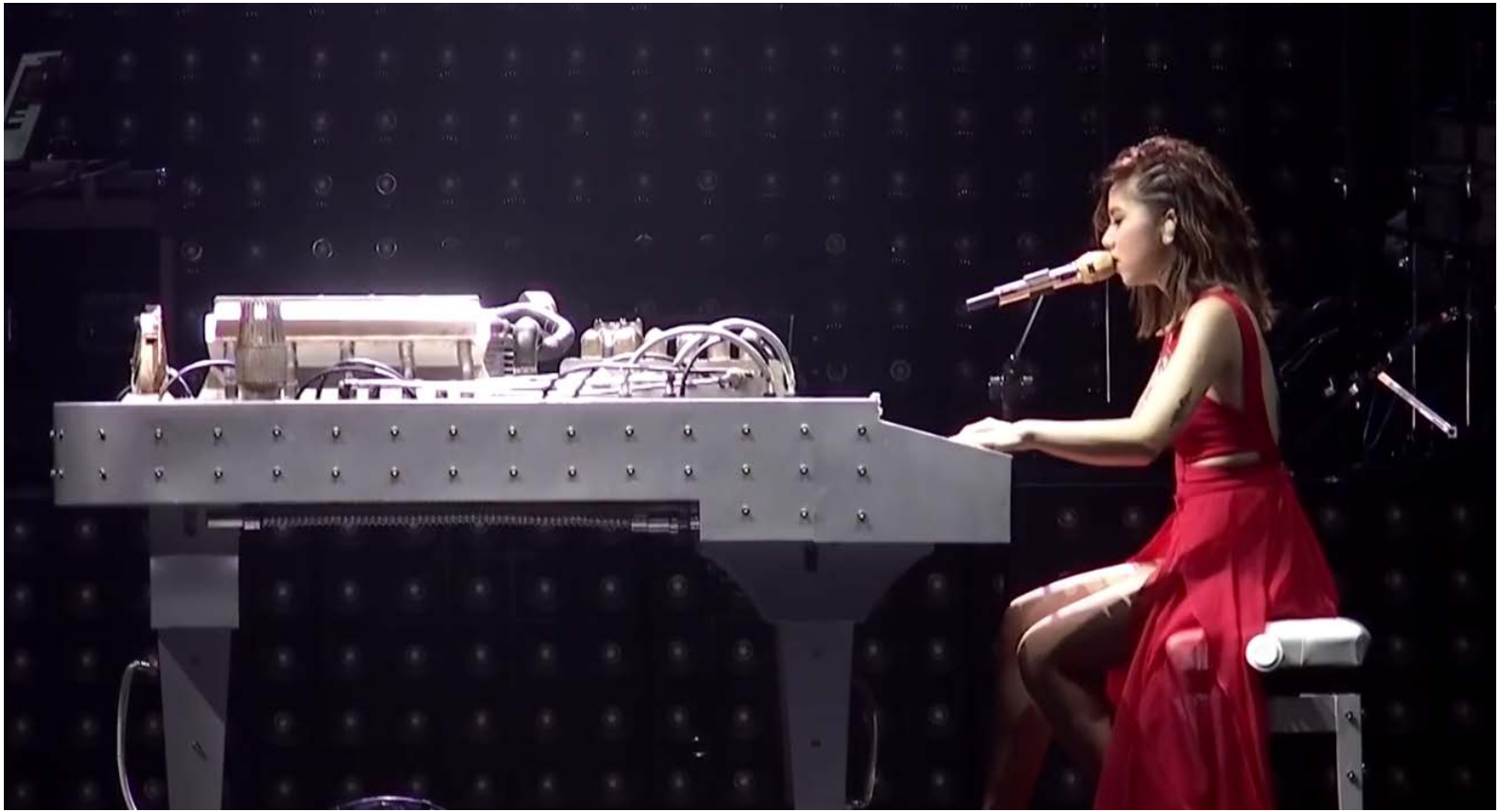
It is always a good practice to take a look around outside the designated areas for undocumented situations and other hazards

Sometimes a situation can exist where a hazardous area is brought inside another hazardous area

One particular situation that is not uncommon is where spray painting is being carried out inside an area established for a petrochemical facility

Another Airport picture!

Hazardous Area Music



Something very different

What about one of these?

These have very special controls and in winter often look like a miniature iceberg

What would happen if one of these caught fire?

These are an item to discuss with the operator!


music

Questions?

Peter Morfee CV

Peter is currently the Principal Technical Advisor with EnergySafety an operating unit of WorkSafe New Zealand.

Peter is a graduate of Canterbury University, holding a Bachelor's degree in Electrical Engineering and a Master's degree in Mechanical Engineering.

He has a background in applying electronics to power systems and has been employed in both inspectorate and engineering roles in the mining industry, an area, as he puts it, *of very different risks.*

His time for the last 20 years has been split between addressing complex technical safety issues, operating crystal balls, and leading 3 major legislative reforms of electrical and gas safety legislation, with a smattering of international trade agreement design and negotiation including NZ's FTA with China, where he has introduced an increasing focus on Regulatory Compliance enhancement.

Peter was involved with a regulatory oversight of most of the "Think Big" projects which were built to the Hazardous area rules of their "owner's jurisdictions" using the performance based Regulatory regime of those times.

Peter has been involved in a number of Standards committees, several relating to hazardous areas, including the chairmanship of the committee that produced AS/NZS 3800.

Peter is currently a member of the UNECE Group of Experts on Risk Management in Regulatory Systems.

He now calls his role: "Regulatory Engineering"

3 Assessment of electrical items

Assessment of electrical compliance

What should a certifier check / request before the site visit?

- CoC, RoI, ESC? Check database of PEW? Dossier of information?
- Periodic assessment RoA / CoV? Dossier of information?
- Hazardous area drawing?

Assessment of electrical compliance

What should a certifier check / verify on site?

- That the list of equipment in the CoC / periodic assessment is accurate – matches what's there?
- What is new in the zone?
- That the hazardous area drawing matches what's there?
- Look for electrical equipment that isn't earthed/ bonded?
- That the PCBU is managing the hazardous area

Assessment of electrical compliance

What should a certifier check on site?

- Condition of equipment in the hazardous area?
  - Rust, fittings, water-logged?
  - Labels are real, and have correct information?
- Look for non-rated electrical equipment – clocks?

4 Audit and investigation update

Audit

HS regulations, Part 6, subpart 3

Audit—

- at least once every 4 years - may be more frequent
- compliance with the Act, HS regulations, SWIs and performance standards
- production of documents / reasonable requests
- audit report
- pay fee

Audit

Compliance Certifier Audit Policy (available on website)

Developing procedure—

- SOP - during trial audits
- 4-year audit plan with haz subs team
  - objective / scope / criteria
  - desktop / office / site
- major / minor / PAOC / OFI
- agreed corrective action plan
- audit closure

Investigations

Regulation 6.15 of HS regulations

Investigation -

- WorkSafe may investigate complaints and concerns

scope -

- Ability
- Conduct

Investigations

resolution –

- NFA
- Warning
- Caution
- Audit
- Suspend or cancel authorisation

Mind-set shift

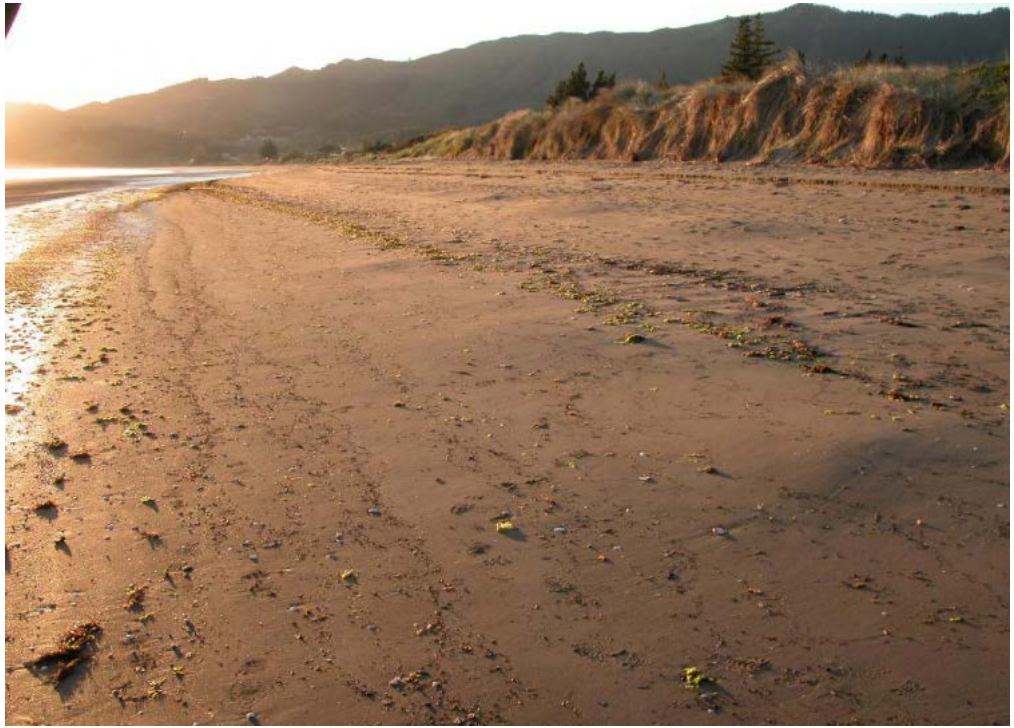
WorkSafe NZ Investigations do not relate to strict liability breaches

WorkSafe VADE approach

VADE

- Voluntary – voluntarily comply and informed
- Assisted – attempting to comply and uninformed
- Directed – propensity to be non-compliant
- Enforced – intentionally non-compliant

Investigation outcomes are varied



5 Public place, protected place, neither

Public place

Definition in regulation 3 of HS regulations

public place—

(a) means a place (other than **private property or a protected place**) that is open to, and frequented by, the public; and

(b) includes a public road

Public place

Any questions about this?

If a separation distance to public place extends from a hazardous substance location into a public place, the business must seek an agreement with the neighbour as required under regulation 9

This is likely to be a council or similar – what then?

Protected place

Definition in regulation 3 of HS regulations

protected place—

(a) includes—

i. a dwelling, residential building, place of worship, public building, school or college, hospital, child care facility, or theatre, or any building or open area in which persons are accustomed to assemble in large numbers, whether within or outside the property boundary of a place where a hazardous substance location is situated

Protected place

protected place (cont'd)—

ii. any factory, workshop, office, store, warehouse, shop, or building where persons are regularly employed, whether within or outside the property boundary of a place where a hazardous substance location is situated:

iii. a ship lying at permanent berthing facilities:

iv. a public railway; but

(b) does not include a small office or other small building associated with a place where storage, handling, use, manufacture, or disposal of a class 2, 3, 4, 5, 6, or 8 substance is a major function

Protected place

- Persons – **one or more**
- Regularly employed
  - Every place different
  - Judgement / decisions required
- Small office or other small building
  - **Not** a large office even if everyone in it is well-trained. This means laboratories, and rooms directly related to handling hazardous substances – not accountants, administrators etc

Separation distances

What happens when the required separation distance to public place from an HSL:

- Does not cross the boundary?
- Crosses the boundary into a protected place?
- Crosses the boundary into a public place?
- Crosses the boundary into a ‘neither’ place – private property?

Separation distances

What happens when the required separation distance to protected place from an HSL:

- Overlaps with an on-site protected place?
- Does not cross the boundary?
- Crosses the boundary into a protected place?
- Crosses the boundary into a public place?
- Crosses the boundary into a ‘neither’ place – private property?

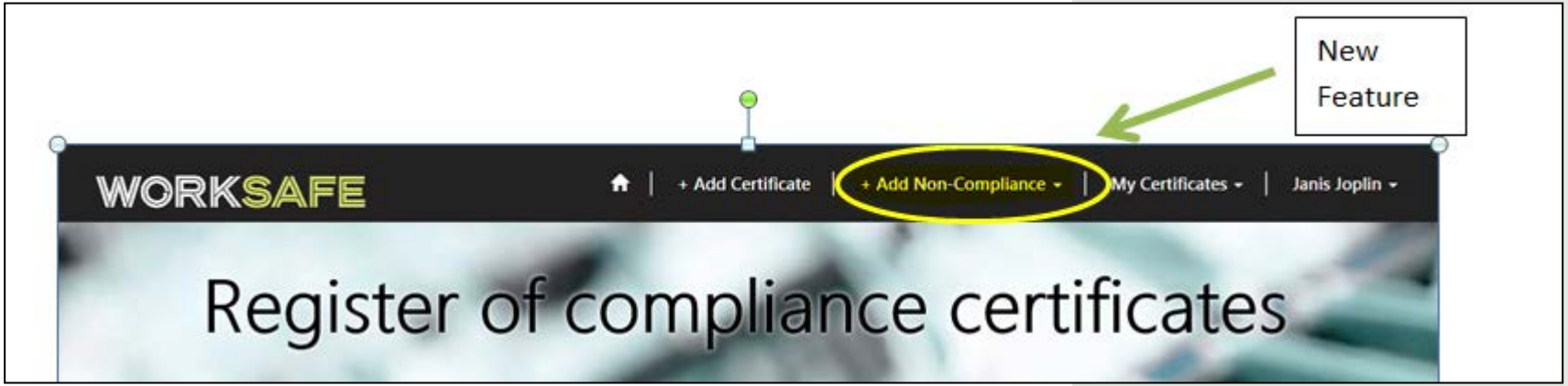
6 Register of compliance certificates

Register of compliance certificates

New function

- Non-compliance and refusal to issue compliance certificates
- Instead of the notification form to WorkSafe
- Anonymous
- Available to all compliance certifiers and administrators
- Designed as a communication tool between certifiers and WorkSafe

Non-compliance register



Non-compliance register

How to…

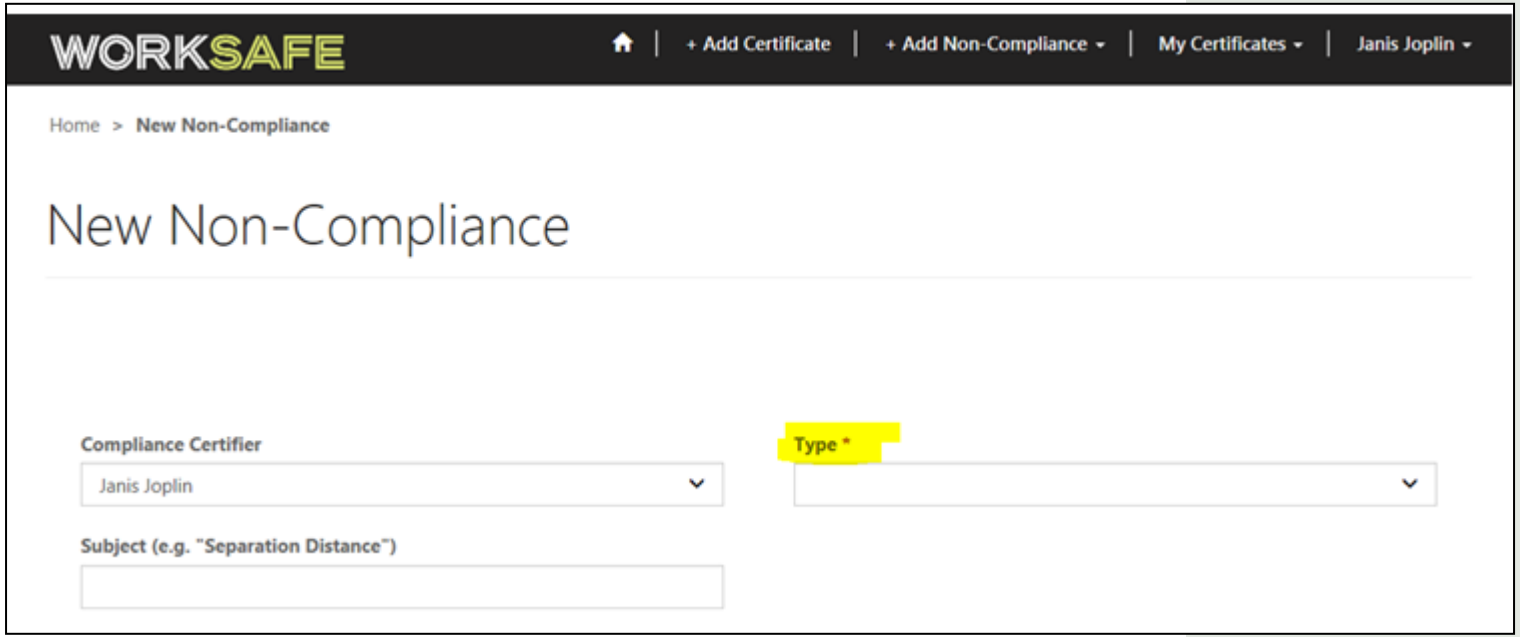
- Go to ‘Add Non-Compliance’
  (i) All Non-Compliance
  (ii) My Non-Compliance

- All Non-Compliance → List will display ‘All Entries of Refusal to Issue a Certificate’
- My Non-Compliance → List will display only the entries from your business which you are able to edit

Non-compliance register

How to…

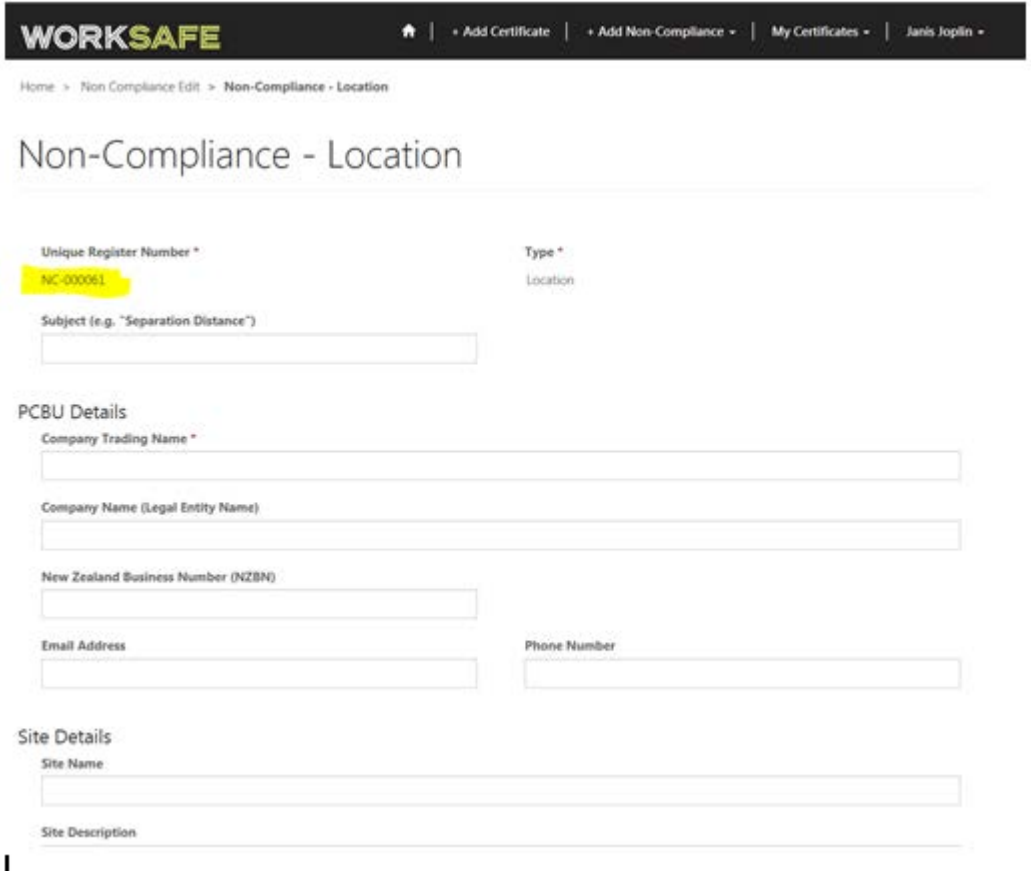
Select + Add Non-Compliance → this screen pops up



Non-compliance register

How to…

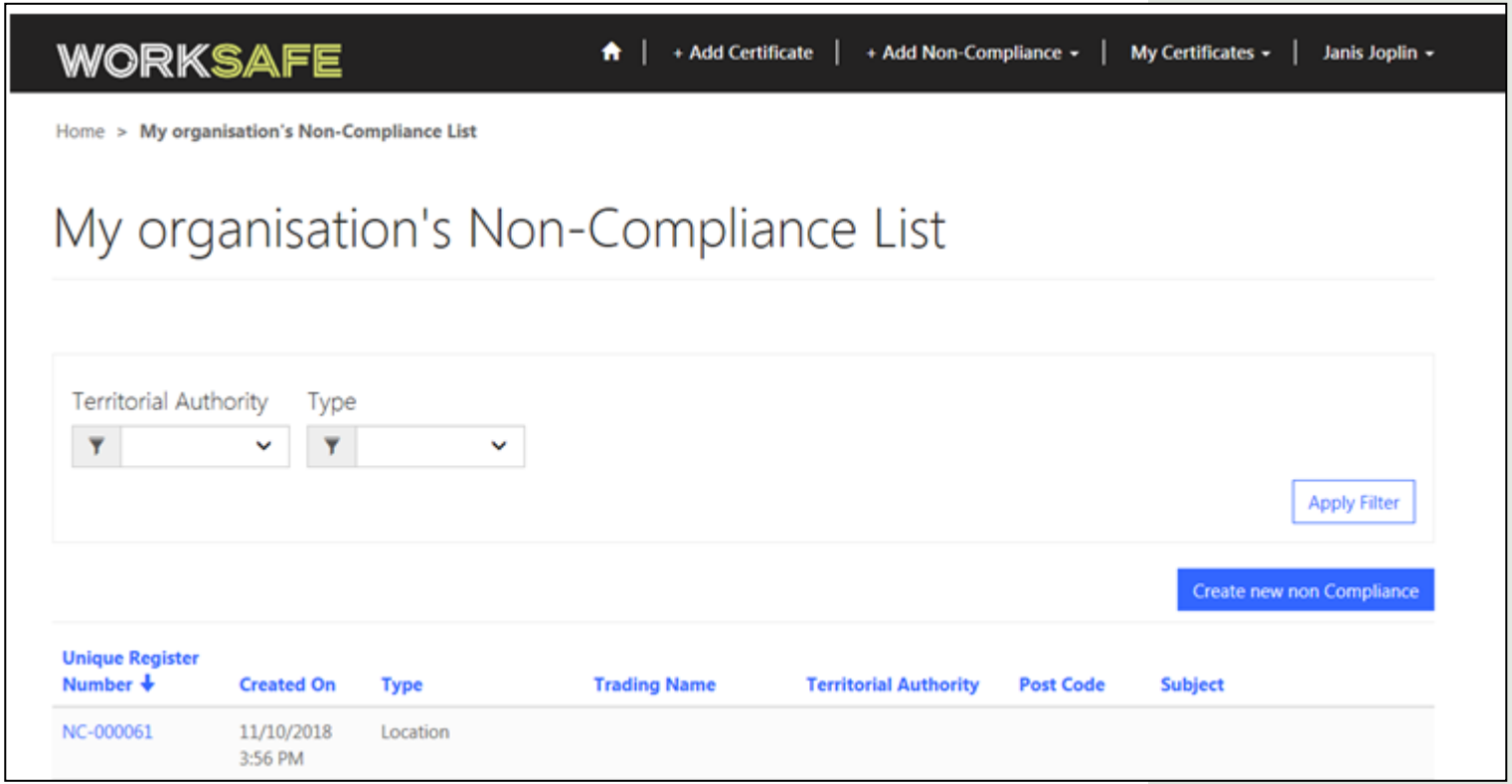
- You are able to select the certifier if you are admin and entering on behalf of the certifier
- From the drop down ‘Type’ there are 8 certificate type options plus other
- Subject to help with the key idea of the notification (refusal)
- Select continue and another screen will pop up


WORKSAFE
+ Add Certificate
+ Add Non-Compliance
My Certificates
Janis Joplin
Home > Non Compliance Edit > Non-Compliance - Location
Non-Compliance - Location
Unique Register Number *
NC-000061
Type *
Location
Subject (e.g. "Separation Distance")
PCBU Details
Company Trading Name *
Company Name (Legal Entity Name)
New Zealand Business Number (NZBN)
Email Address
Phone Number
Site Details
Site Name
Site Description

Non-compliance register

How to…

- Select Save → it will take you to the My organisation's Non-Compliance List
- In this screen:
  - You are able to select the number and edit your entry at any time
  - Once entered the record cannot be deleted


WORKSAFE
+ Add Certificate
+ Add Non-Compliance
My Certificates
Janis Joplin
Home > My organisation's Non-Compliance List
My organisation's Non-Compliance List
Territorial Authority
Type
Apply Filter
Create new non Compliance
Unique Register Number
Created On
Type
Trading Name
Territorial Authority
Post Code
Subject
NC-000061
11/10/2018 3:56 PM
Location

Non-compliance register

- We hope you find this way of entering a non-compliance easier than the current method (notification form to healthsafety email)

- We will let you know when it has been released

7 WorkSafe update

Changes at WorkSafe

- The CAR team is no more
- The hazardous substances team is now in the High Hazards, Energy and Public Safety group
    - Headed by Tony Hetherington
- The audit and investigations team is now in the Specialist Interventions group
    - Headed by Simon Humphries

Getting you home healthy and safe.
That's what we're working for.

WORKSAFE
NEW ZEALAND | MAHI HAUMARU AOTEAROA