STEP CHANGE IN SAFETY

# Occupational Lung Disease & RPE Awareness


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PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

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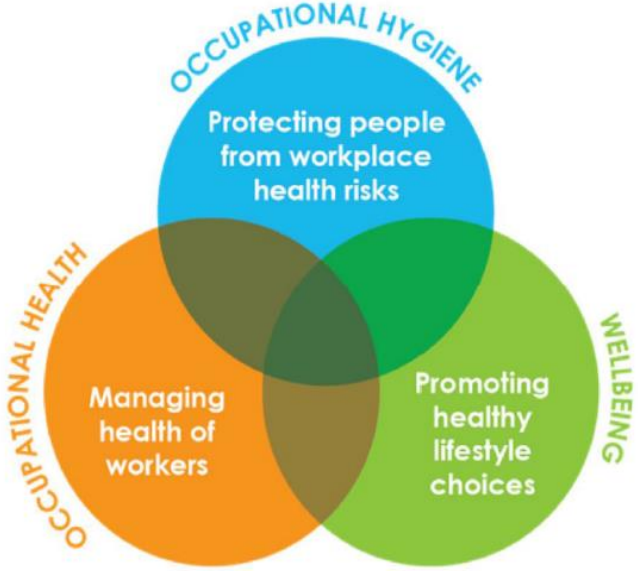
# What is Industrial Hygiene?

- The interface of people and their workplaces.
- Science and engineering to prevent ill health caused by the work environment
- The assessment and control of risks to health from workplace exposure to hazards.
- Help employers and employees to understand these risks and to eliminate or reduce them.
- Adequate control!
- Wider scope offshore…

BOHS British Occupational Hygiene Society

The Chartered Society for Worker Health Protection




## MYTH

If a workplace looks clean, it's safe.

## TRUTH

Many hazards in the workplace are invisible to the naked eye. Airborne contaminants, noise levels, and even stress can be significant health risks that require thorough assessment and control.

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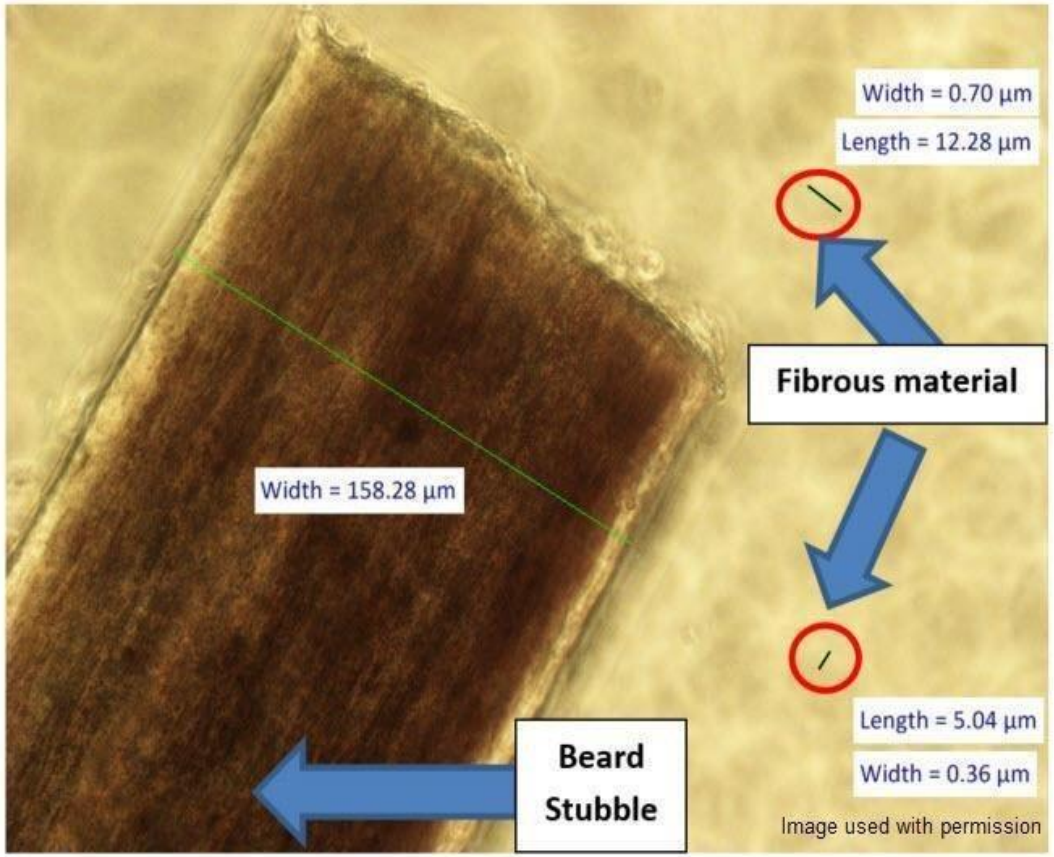


Comparison between beard stubble and hazardous fibrous materials under a microscope

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# UK 2023 Statistics – Health and Occupational Lung Disease


## 1.8 million

Workers suffering from work-related ill health (new or long-standing) in 2022/23

*Source: Estimates based on self-reports from the Labour Force Survey, people who worked in the last 12 months*

## £13.1 billion

Annual costs of new cases of work-related ill health in 2021/22, excluding long latency illness such as cancer

*Source: Estimates based on HSE Cost Model*

## 12,000

Lung disease deaths each year estimated to be linked to past exposures at work

*Source: Counts from death certificates and estimates from epidemiological information*

## 2,268

Mesothelioma deaths in 2021, with a similar number of lung cancer deaths linked to past exposures to asbestos

*Source: Counts from death certificates and estimates from epidemiological information*

## 19,000

Estimated new cases of breathing or lung problems caused or made worse by work each year on average over the last three years according to self-reports from the Labour Force Survey

# HSE strategy 2022 to 2032 - Protecting people and places

## The Challenge –

**12k**
Lung disease deaths each year estimated to be linked to past exposures at work

**1·8 million**
Working people suffering from work-related ill health

**123**
Workers killed at work

**0·6 million**
Workers sustaining a non-fatal injury (Labour Force Survey)

**0·9 million**
Workers suffering from work-related stress, depression or anxiety in 2021/22

**0·6 million**
Workers suffering from a work-related illness caused or made worse by the effects of the pandemic


## 1/5 Strategic "Key" Objectives -

**Reduce work-related ill health, with a specific focus on mental health and stress**

## Current UK Initiatives -


CAMPAIGN ARCHIVE


# Control of Substances Hazardous to Health - COSHH

The objective of COSHH is to prevent, or adequately control, exposure to substances hazardous to health so as to prevent ill health.

Specifically, COSHH Regulation 7 places the duty on employers to either prevent exposure or, where this is not reasonably practicable, adequately control exposure by applying protection measures appropriate to the activity and consistent with the risk assessment. This means by applying the hierarchy of control and principles of good control practice as set out in Schedule 2A.


# RPE (Respiratory Protective Equipment)

Work activities may result in harmful substances contaminating the air in the form of dust, mist, vapour, gas or fume. For example, when:

■ cutting a material such as stone or wood; ■ using a product containing volatile solvents; ■ handling a dusty powder; ■ welding steel

Many workers wear respirators or breathing apparatus to protect their health in the workplace. These devices are collectively known as respiratory protective equipment (RPE).

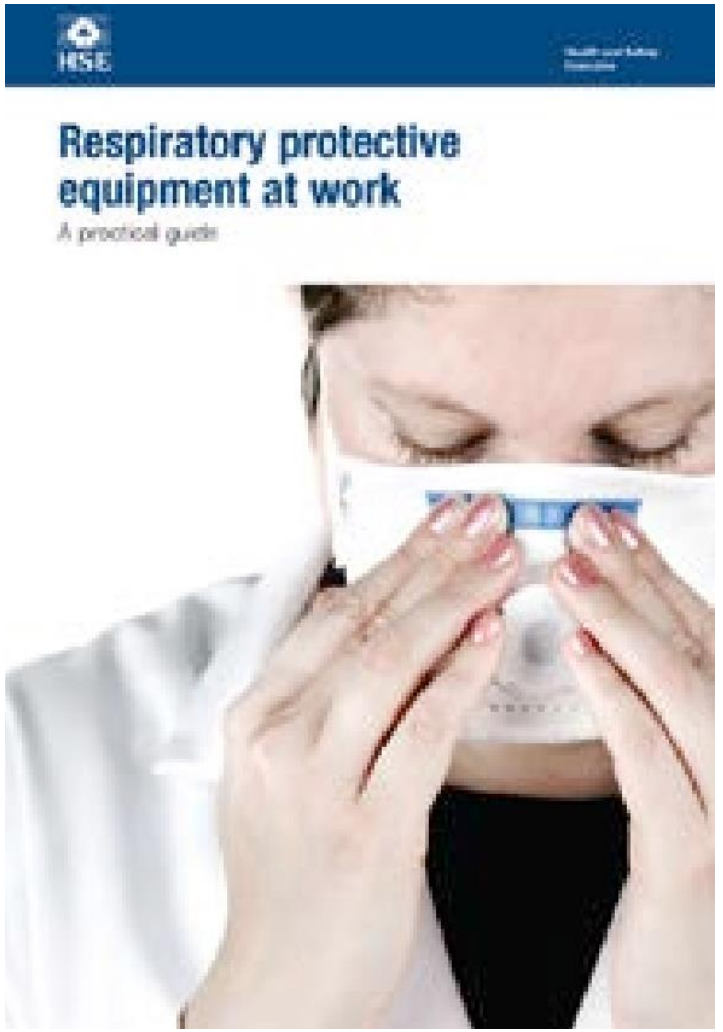
To select RPE that will protect the wearer you will require a basic understanding of:

■ the hazardous substance and the amount in the air (exposure)

■ the form of the substance in the air (eg gas, particle, vapour)

■ the type of work being carried out

■ any specific worker requirements, such as other PPE or a need for spectacles



# RPE Types - Respirators and Breathing apparatus

non-powered filtered respirators
(Tight Fitting)

powered filtered respirators
(Loose Fitting)

Breathing apparatus
(Tight Fitting)

# HSG 53 – Assigned Protection Factors – APF's

**Table 2** RPE types

| Adequacy/suitability | Respirators | | | | | | |
|---|---|---|---|---|---|---|---|
| **RPE type** |  |  |  |  |  |  |  |
| | **Disposable half mask – particle filter*** | **Reusable half mask – particle filter** | **Reusable half mask – gas/ vapour filter** | **Full face mask – particle filter** | **Full face mask – gas/vapour filter** | **Powered mask** | **Powered hoods/helmets** |
| Effective for particles | ✔ | ✔ | ✘ | ✔ | ✘ | ✔ ** | ✔ ** |
| Effective for gas/vapour | ✘ | ✘ | ✔ | ✘ | ✔ | ✔ ** | ✔ ** |
| Continuous wear time | Less than 1 hr | Less than 1 hr | Less than 1 hr | Less than 1 hr | Less than 1 hr | More than 1 hr | More than 1 hr |
| APF4 types | ✔ | ✔ | ✘ | ✔ | ✘ | ✘ | ✘ |
| APF10 types | ✔ | ✔ | ✔ | ✔ | ✘ | ✔ | ✔ |
| APF20 types | ✔ | ✔ | ✘ | ✘ | ✔ | ✔ | ✔ |
| APF40 types | ✘ | ✘ | ✘ | ✔ | ✘ | ✔ | ✔ |
| APF200 types | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ |
| APF2000 types | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ |
| Page reference | 29 | 30 | 31 | 32 | 33 | 34 | 35 |

* Sometimes referred to as a filtering facepiece or orinasal respirator.

** Only protects against particle or gas/vapour when the appropriate filter is fitted.

**Substance – Toluene (a common solvent)**

- Measured airborne toluene concentration: 350 ppm (parts per million) within an eight-hour time-weighted average (TWA).
- Toluene WEL: 50 ppm (from EH40).
- Required APF to reduce to WEL = 350/50 = 7.

Select RPE device with an APF above the required protection factor. In this case an APF of 10 will be required.

# HSG53 - Filter Types

**Table 7** Filter types

| Filter types | | | | |
|---|---|---|---|---|
| **Colour code** | **Type** | **For use against** | **Class** | **Other information** |
| **White** | P | Particles | 1<br>2<br>3 | European standard: EN 143 |
| **Brown** | A | Organic gases and vapours, boiling point above 65 °C | 1<br>2<br>3 | European standard: EN 14387 |
| **Grey** | B | Inorganic gases and vapours | 1<br>2<br>3 | European standard: EN 14387<br>Do not use against carbon monoxide |
| **Yellow** | E | $SO_2$ and other acid gases | 1<br>2<br>3 | European standard: EN 14387 |
| **Green** | K | Ammonia and its organic derivatives | 1<br>2<br>3 | European standard: EN 14387 |
| **Red & white** | Hg P3 | Mercury | – | European standard: EN 14387<br>Includes P3 particle filter<br>Maximum use time 50 hours<br>No class number |
| **Blue & white** | NO P3 | Oxides of nitrogen | – | European standard: EN 14387<br>Includes P3 particle filter<br>Single use only<br>No class number |
| **Brown** | AX | Organic gases and vapours, boiling point at or below 65 °C | – | European standard: EN 14387<br>Single use only<br>No class number |
| **Violet** | SX | Substance as specified by the manufacturer | – | European standard: EN 14387 |

# Adequate/Suitable

For work activities for which it is foreseen that employees will need to wear RPE, the employer must ensure RPE must be both **adequate** and **suitable**:

- **Adequate –** It is right for the hazard and reduces exposure to the level required to protect the wearer's health.

- **Suitable –** It is right for the wearer, task and environment, such that the wearer can work freely and without additional risks due to the RPE.

# Specific requirements for RPE

RPE at work should:

■ adequately control inhalation exposure to provide the wearer with effective protection;

■ be suitable for the intended use;

■ be CE-marked or of an approved type/standard approved by HSE;

**Note - CE marking does not indicate that an RPE device is automatically adequate and suitable for use in your workplace. It is your responsibility to select the correct RPE to meet your specific requirements**

CE marking

■ be used by properly trained people who are supervised;

■ be properly stored, cleaned and checked (maintained) regularly to ensure it remains effective

# What is an RPE programme?

As part of your risk assessment, justify the reasons behind your decision to use RPE.

An RPE programme (normally documented within a written procedure) encapsulates all the elements of RPE use you need to ensure that your RPE is effective in protecting the wearers.

To have an effective RPE programme you need to:

- Correctly select RPE.
- Train for correct use.
- Ensure correct use (including supervision).
- Check to ensure RPE is working correctly before each use.
- Maintain RPE in accordance with manufacturer's instructions.
- Record Keeping.
- Correctly store RPE.
- Correctly dispose of RPE.

Any shortcomings in one of the steps in the programme could result in wearers not receiving adequate protection.

# Maintaining RPE

Maintenance is a requirement for all RPE (COSHH Reg 9.3), except for disposable (single use) RPE.

There are five key points you should follow when carrying out RPE maintenance:

- Follow the manufacturer's instructions.
- A competent person should carry out the work.
- Keep records
- Ensure the intervals for maintenance are appropriate.
- The maintenance programme should reflect the complexity of maintaining the RPE

Key maintenance tasks include:

- changing any replaceable filters;
- cleaning the device;
- valve maintenance and replacement;
- checking the straps for damage;
- checking the battery charge and flow rate for powered devices.

# RPE Storage and Disposal

Remember that all RPE requires clean storage facilities.

- RPE should be stored in accordance with the manufacturer's instructions
- RPE should be cleaned before being stored to prevent the storage area becoming contaminated.
- Provide storage that is easily accessible so that RPE can be safely stored during breaks

GOOD



**Vs**

EVIL

Disposal - Contaminated RPE, or components, or any of the materials used to clean or disinfect the RPE, may need to be considered as hazardous waste. This will depend on the specific substances and the amounts involved. In some cases, specific legislation may apply. If in doubt, seek specialist help.

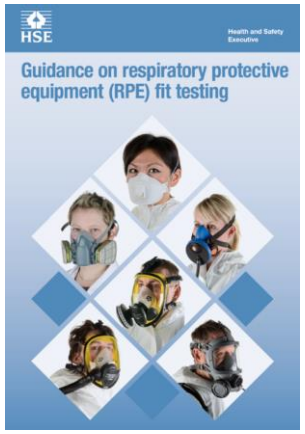
# IIT and FFT

Information, instruction, and training (IIT) must be given to employees, in accordance with regulation 12.

IIT should cover all aspects of achieving and maintaining adequate control of exposure by all routes.

**In particular, employers should stress the importance of how the combination of good practice and the protection measures the employer applies under regulation 7 are designed to protect employees' health from exposure to hazardous substances.**

For tight-fitting RPE,  ACOP L5 (Para 160) requires wearers to be face-fit tested, using a suitable method, by a competent person. It also requires wearers to be clean shaven in the area of the face seal when using tight-fitting RPE (further guidance INDG479).

# Clean Shaven and RPE Management Concerns

RPE is essential for safeguarding workers from hazardous substances. The effectiveness of RPE however hinges on proper fit to the face.

RPE can't protect the wearer if it leaks, and a major cause of leaks is poor fitting of RPE.

Facial hair is known to interfere with the sealing surface of the mask to the wearer.

A recent study by the Health and Safety Executive (RR1052) on the effect of stubble growth on the protection given by filtering facepieces and half masks, showed that protection could be significantly reduced where stubble was present, beginning within 24 hours from shaving, and generally worsening as facial hair grew.

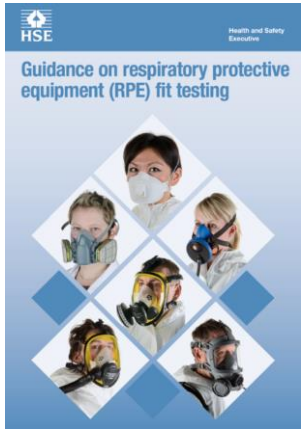
**Therefore the current guidance advising being clean-shaven in the area of the mask seal is justified.**


# COSHH and RPE Management Concerns

There was a HSE bulletin which has caused some confusion which stated…*"You should note that under health and safety law, employers cannot require workers to be clean shaven; this is because alternative RPE to tight fitting respirators are available and can be used instead…"*

Whilst in many work situations this statement is correct in that the employer should always consider alternative options to tight fitting RPE such as loose fitting powered assisted personal respirators (PAPR's) and further consider factors that may influence the wearing of RPE (such as personal circumstances i.e medical, religious reasons etc), in terms of offshore ERT/firefighting this statement is **not practicable**.

This is due to ERT members being equipped and required to wear self-contained breathing apparatus (SCBA), which is classed as tight-fitting RPE and as mentioned under COSHH and relevant guidance (HSG53 and INDG479) this requires face fit testing and the wearer clean shaven.

# COSHH and RPE Management Concerns

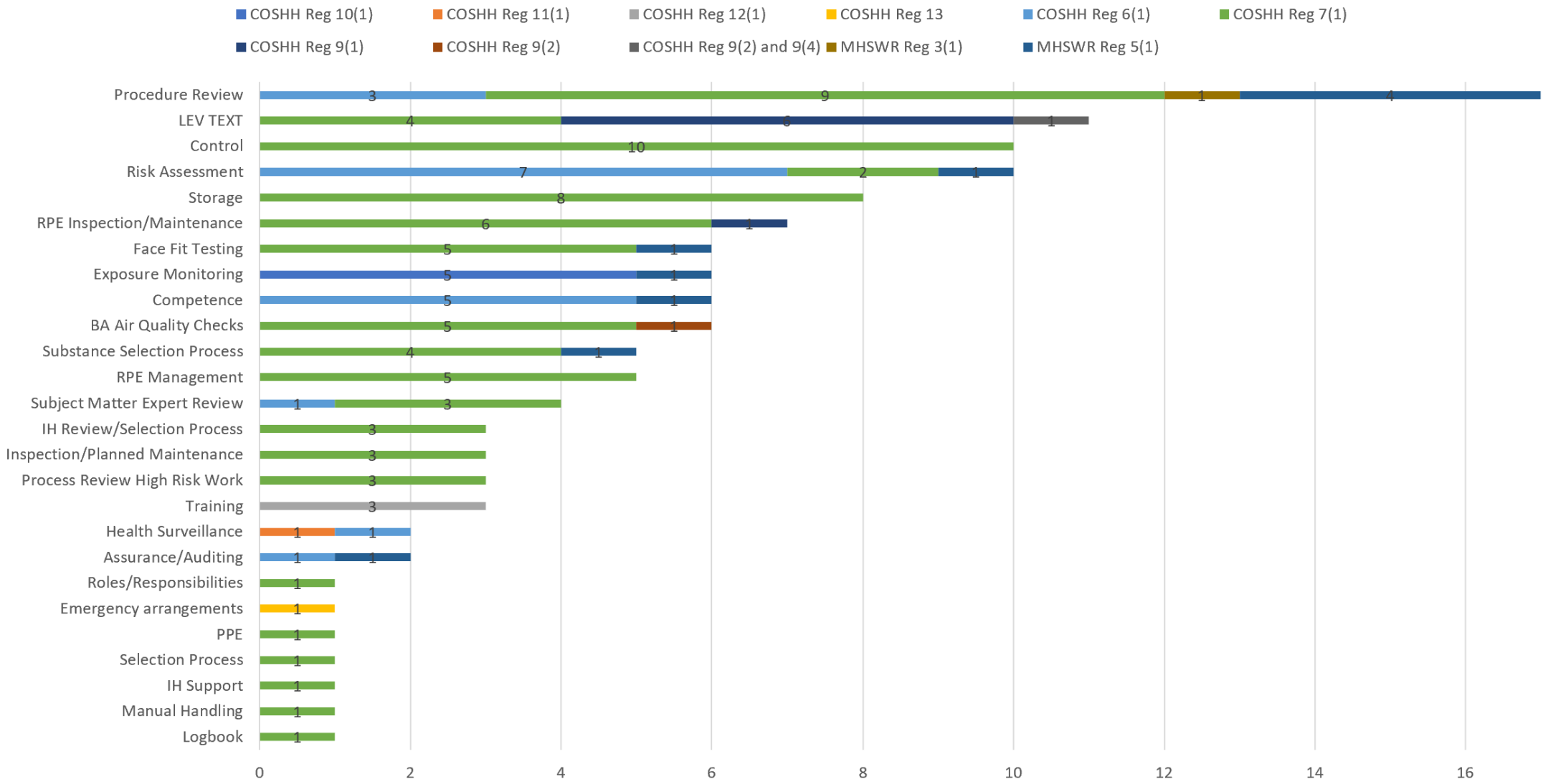
For offshore ERT/firefighting, we have an information sheet which should assist you further [Info sheet 03/2013 - Fit testing respiratory protective equipment for escape and emergency response on offshore installations (hse.gov.uk)]

**Specific action is for duty holders to ensure face fit testing is completed as required by COSHH and implement a clean-shaven policy for all users of tight fitting RPE. The duty holder should ensure that this policy is routinely managed and enforced across all offshore assets.**

**The right to have facial hair is often cited as a reason for not being clean-shaven at work. However, this needs to be balanced against the requirement under the Health and Safety at Work, etc Act 1974.**

**This requires employees to follow the training they have received, take care of their own health and safety and co-operate with their employer on health and safety.**

# COSHH Issues Breakdown




Q&A