

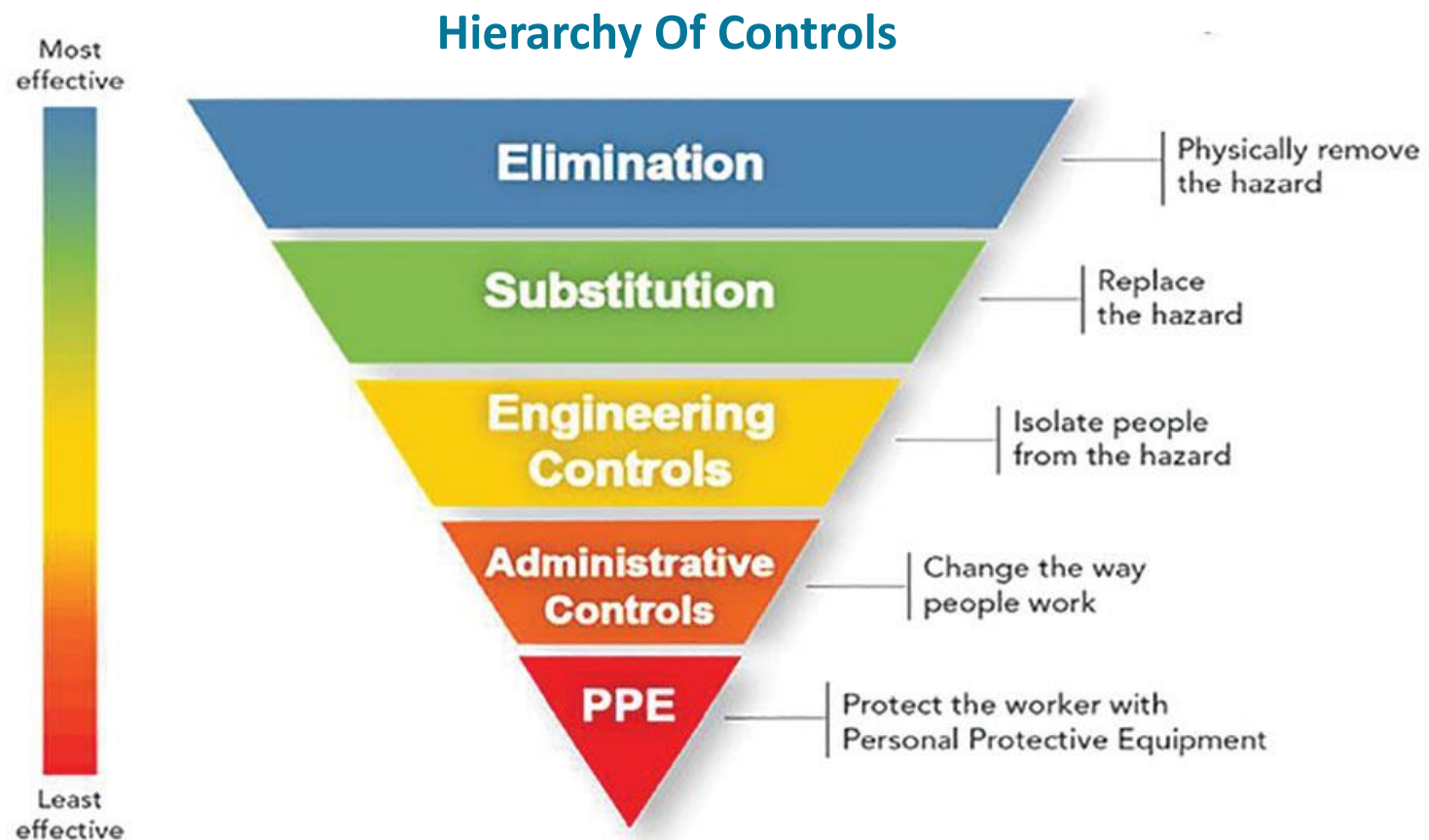


BREATHE FREELY New Zealand  
*Pūkahukahu Mahea Aotearoa*

Managers Toolkit 

## Let's Talk: **Hierarchy of Controls**

*The Hierarchy of Control is a system that ensures best practice controls are used to eliminate or reduce exposure to hazards*



**Hierarchy of hazard control** is a widely accepted system and underpins the best practice principles of occupational hygiene that are promoted throughout the Breathe Freely New Zealand website. There are 5 elements.

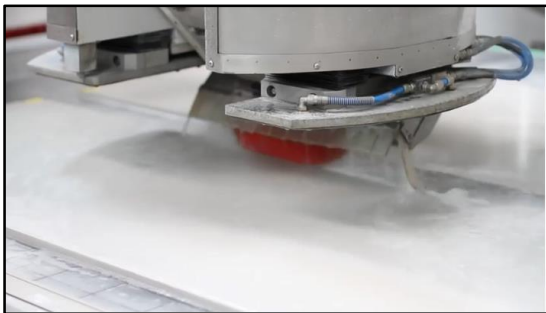


### 1. Elimination

Remove materials or processes that generate dusts from the workplace.

This is the preferred method of control as it completely eliminates the hazard, but unfortunately it is not often feasible.

Examples – Remote control of computerised equipment such as mobile vehicles or cutting engineered stone from a clean control environment.



## 2. Substitution

Use alternative materials that are less hazardous than the material currently being used. It removes the hazard or concern, but you need to be cautious that the material you are using instead, does not create hazards of its own.

### Examples

Selection of stone media and variation in crystalline silica content

<b>Approximate crystalline silica content of different materials</b>	
Engineered Stone	>90%
Sandstone	70 - 90%
Concrete, mortar	25 – 70 %
Granite	20 – 45%
Brick	Up to 30%
Limestone	2%
Marble	2%

### 3. Engineering controls

Change the process so that less dust is not formed or modifying equipment to prevent dust coming in to contact with workers. Examples:

- Wet processes
- Water suppression
- Ventilation
- Extraction systems
- Cabins to separate workers from dusty environment
- Vehicle Door Seals maintenance



Courtesy Australian Mining

## 4. Administrative controls

Changes in the way people work. Examples:

- Shift rosters impact on the numbers of hours worked which impact on exposures and adjustment to exposure standards
- Control the length of time to perform dusty tasks to reduce exposure
- Multi-skill and share the task to reduce frequent exposures
- Reduce the number of people being exposed during dusty tasks
- Apply good housekeeping practices
- Robust work instructions based on risk assessments to reduce exposures
- Worker education and awareness training.

These are less reliable than elimination or substitution because the hazard is still present in the work place.

## 5. Personal Protective Equipment (PPE)



The last line of defence and protection of the worker's health.





It should only be used when other controls are either (1) not feasible, (2) do not reduce exposures enough or (3) while other controls are being investigated.

PPE relies on the correct selection of RPE for the shape of face, the application for the particular hazard and risk as well as maintenance of each piece of equipment to give adequate protection.

Respiratory protection is frequently used where dusts exposures occur. The next slide provide guidance on the selection, maintenance and Fit – testing.

Workers need to be clean shaven when wearing tight fitting half face or full face respirators.

## What Respirator To Use with Dusts & Silica ?

Air Contamination Levels	Half-Face Disposable 	Half-Face Reusable 	Full-Face 	PAPR – Powered Air Purifying Respirator 
	Particles	Particles	Particles	Particles
Up to 10x WES	P1* P2	P1* P2	P1* P2	P1*
Up to 50x WES	x	x	P2	P2
Up to 100x WES	x	x	P3	P3
Over 100x WES	x	x	x	P3

P1\* - Not suitable for hot processes eg Soldering or welding

**WES – Workplace Exposure Standard, WorkSafe**  
- 0.05mg/m<sup>3</sup> Respirable Crystalline Silica (RCS) , 8 hour



## Fit Testing of Respirators

Fit Testing, to ensure a good facial fit, is a key component of a successful RPE Management Program. This can be performed using a quantitative method involving an instrument to measure leakage around the face seal and produces a numerical result called a “fit factor.” Also, qualitative test procedures can be used



**Quantitative**



**Qualitative**

## RPE Training

When issuing RPE, training is required to ensure that workers correctly use and maintain RPE.

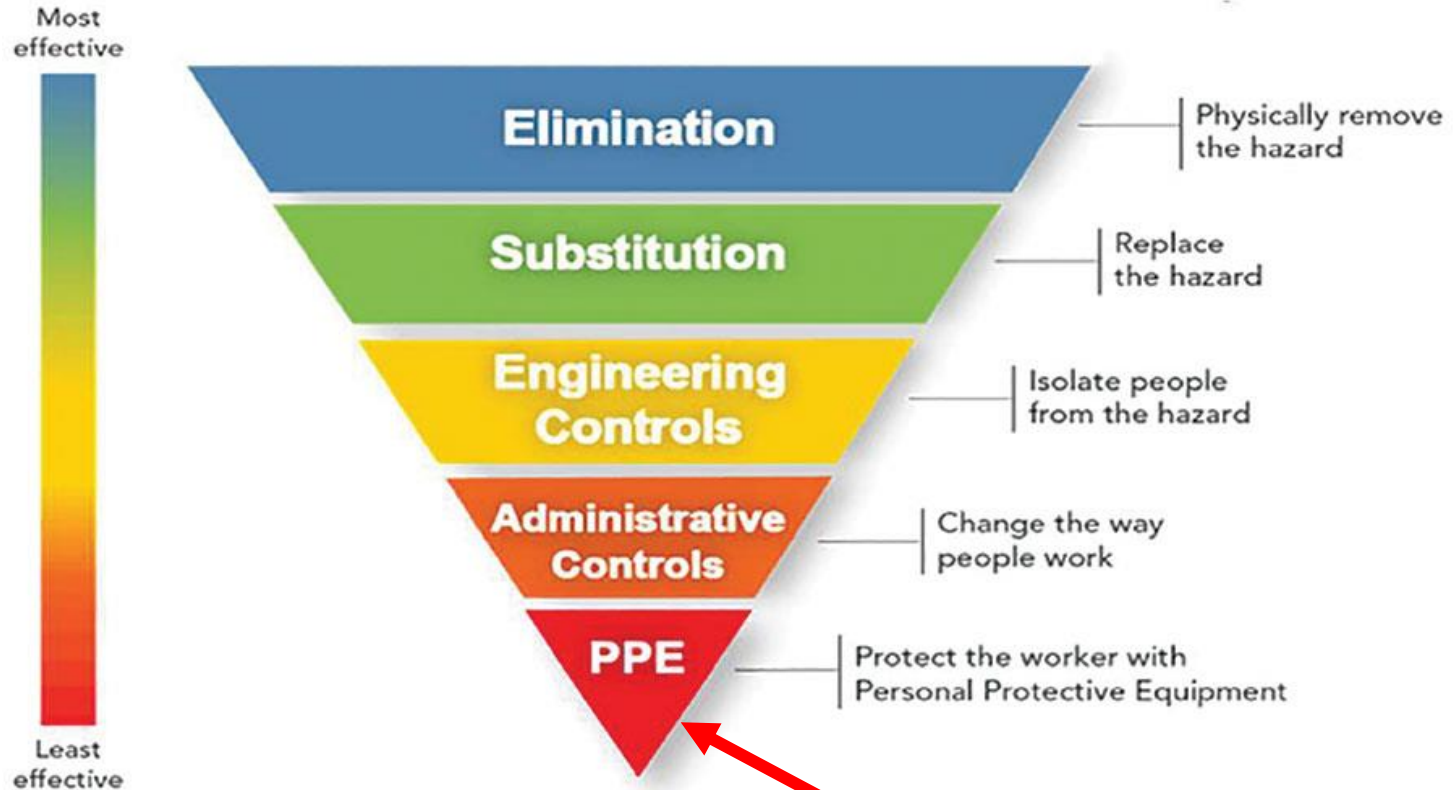
Training must be provided by a competent person, and cover the following topics:

- Why RPE is required
- When RPE is required to be worn
- How RPE works
- The limitations of RPE
- How to correctly put on and take off RPE
- How to conduct a FIT CHECK
- How to clean and maintain RPE
- When and how to replace filters
- How and where to store RPE when not in use.



PAPR

Workers need to be clean shaven when wearing tight fitting half face or full face respirators. PAPR respirators have become more popular as the worker does not have to be clean shaven to get the full protection plus it can be more comfortable in hot climates.



Last line of defence and it **MUST** work



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**Do your research and identify good engineering controls as well as safe work practices for your industry.**

**Make sure you understand your obligations under the WHS law.**

**Current titles in the Lets Talk series**

Diesel Fume  
Dust Control in Hard Demolition  
Dust Control in Soft Strip Demolition  
Housekeeping  
Painting with Brushes and Rollers

Removal of Lead-Based Paint  
Silica  
Water Suppression on Tools  
Welding Fume  
Wood Dust

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