



Silica Dust Exposure

eliminating the risk!

May/2023

Silica Dust – eliminating the risk

1. What is Silica Dust?
2. Impact of exposure – it's nasty!
3. Assessing and controlling the risk
4. Keeping a safe work environment
5. Moving forward

What is Silica Dust?

❑ CRYSTALLINE SILICA (sand) is a building block of modern life; it's used in the construction of:

- Steel
- Plastics
- Concrete
- Tiles
- Microchips
- Paint
- Ceramics
- Glass
- Road base
- Asphalt
- Paper
- And heaps more



IN EVERYDAY CONTEXT, CRYSTALLINE SILICA (SAND) IS SAFE!

- It is inert, meaning that it does not react with any chemicals, and it is not harmful to health.

Silica Dust = RCS

HOWEVER, when materials containing crystalline silica are **cut, crushed, ground, drilled or used in similar industrial and construction processes**, **silica dust** particles are produced.

Materials containing Crystalline Silica in the construction environment

Engineered stone	Fibre cement board	Concrete	Sandstone	Brick	Plasterboard	Natural Wood
						
> 93% crystalline silica	20 - 60% crystalline silica	5 - 40% crystalline silica	61 - 68% crystalline silica	50 - 60% crystalline silica	< 5% crystalline silica	<0.5% crystalline silica

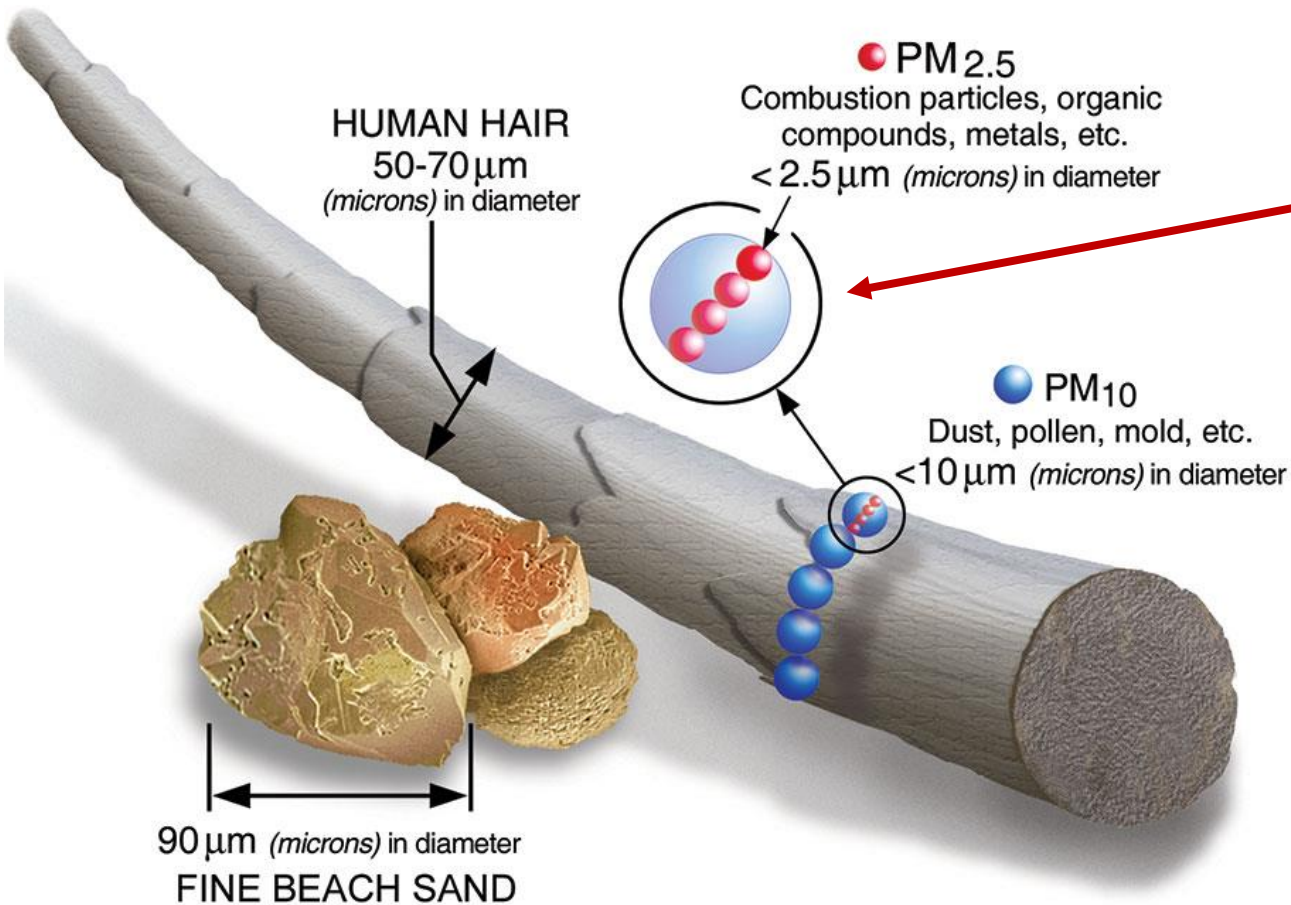


RCS (silica dust) is nasty!
No one should breath it in.



Silica Dust – in the construction environment

SOME OF THESE PARTICLES ARE VERY FINE – known as **respirable crystalline silica or RCS**.



RCS – for a size perspective, it's more than 10 times smaller than human hair

- ❑ These tiny dust particles (RCS) are generated small enough to lodge deep in the lungs and cause disease, including silicosis and lung cancer among other diseases.

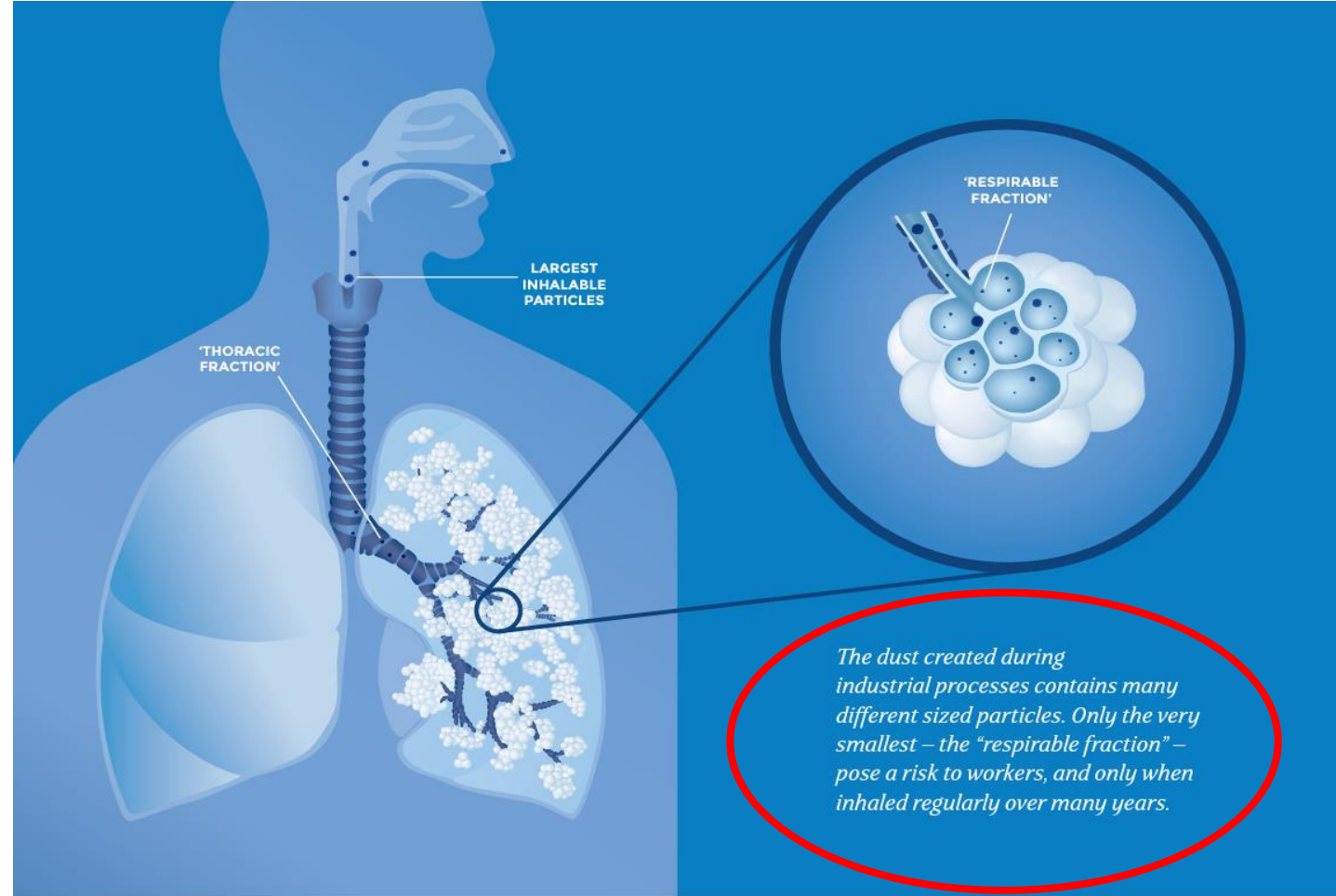
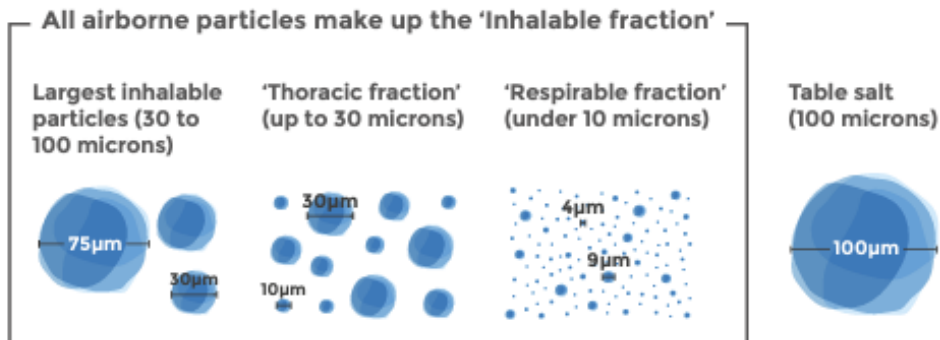
Why is RCS is so nasty?

DUST PARTICLES ARE GROUPED TOGETHER INTO THREE “FRACTIONS”

1. The ‘inhalable’ fraction which includes all of the particles in the dust cloud. These are all small enough to be breathed into the nose or mouth.
2. Thoracic particles are able to penetrate into the lungs.
3. Respirable Fraction are able to penetrate into the gas exchange areas of the lungs, and cause irritation.

Respirable Crystalline Silica (RCS) is exclusively made up of the ‘respirable fraction particles’.

RCS = Silica Dust



WHO: Hazard Prevention and Control in the Work Environment: Airborne Dust http://www.who.int/occupational_health/publications/en/oehairbornedust3.pdf

➤ **Silicosis is the primary health effect of direct, long-term RCS exposure**

Assessing and controlling this risk

WHS Regulations sets out a list of construction work that is high risk for which a safe work method statements (SWMS) is required.



This includes works: 'carried out in an area that may have a contaminated or flammable atmosphere'.



Processing (drilling, cutting, cleaning) of silica-containing materials may be considered **high risk construction work** if silica dust contaminates the work environment atmosphere.



Assessing and controlling this risk

AS A BUSINESS WE HAVE COMPLETED THE FOLLOWING:

1. Consulted within our team (+WHS Committee), + Govt bodies regarding the risk
2. Developed this training program to educate our team on the risks of silica dust
3. Developed a SWMS (Safe Work Method Statement) based on the assessed risk



These precautions are being taken for:

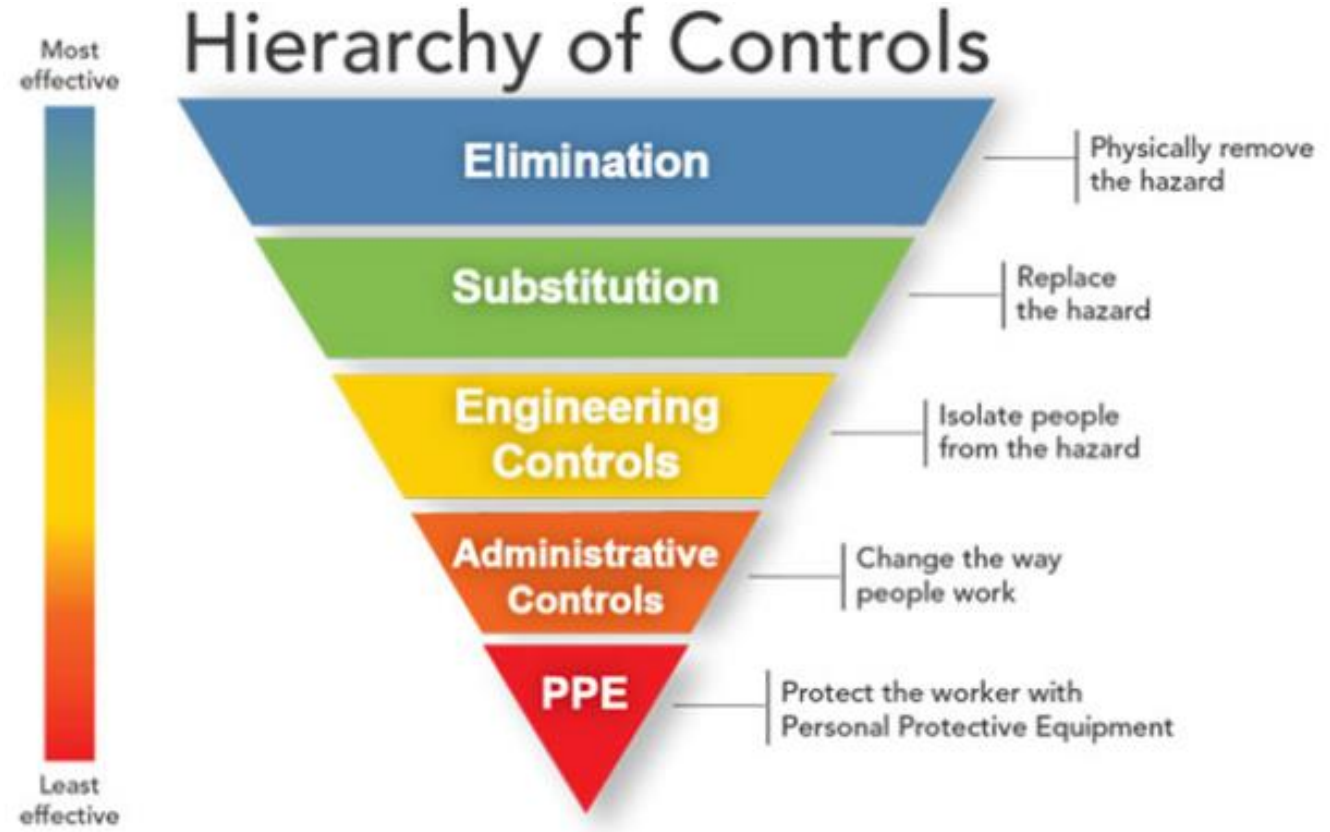
- A. Your protection
- B. The protection of those working around you
- C. Protection of company interests – your health

Using the Hierarchy of Controls to keep safe

When creating a SWMS, **PREVENTING** or **MINIMISING** the impact of the high risk activity is paramount.

Our high risk activity:

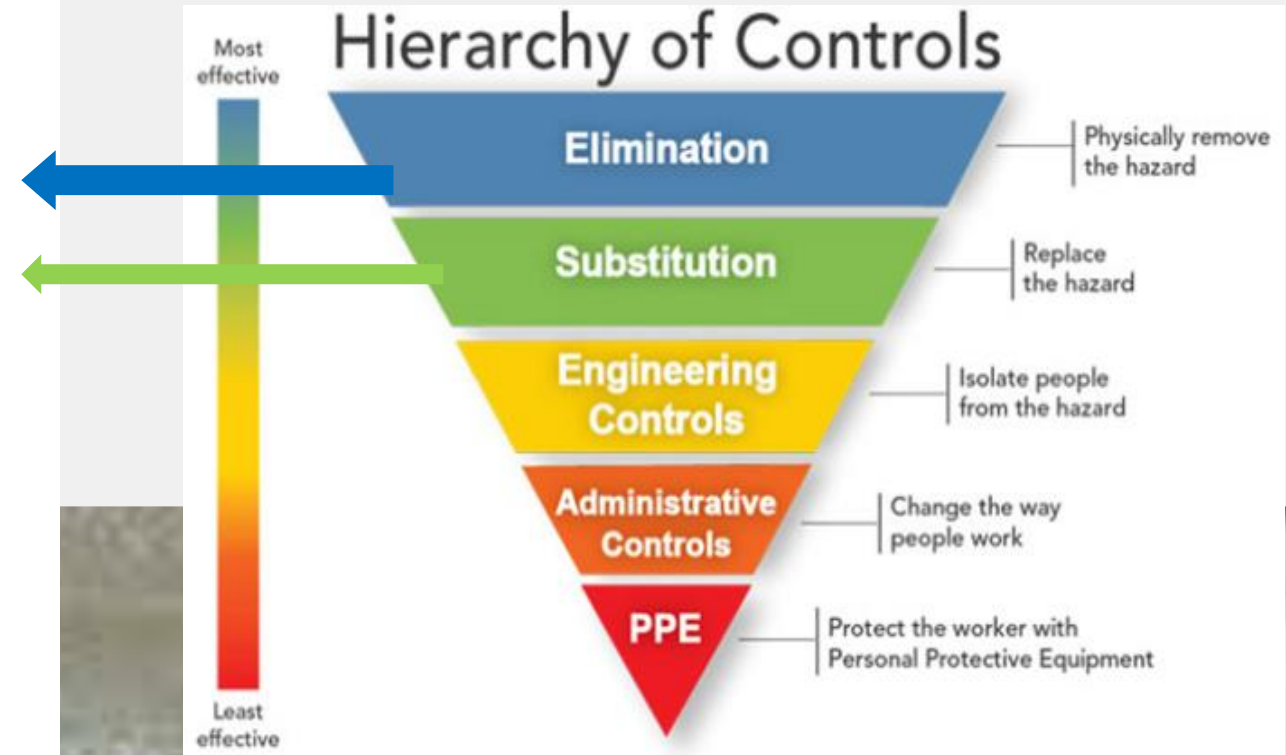
“work carried out in an area that may have a contaminated atmosphere”



Available Measures for Elimination / Substitution Controls

Elimination & Substitution:

is rarely an available option for our works (drilling and cutting).



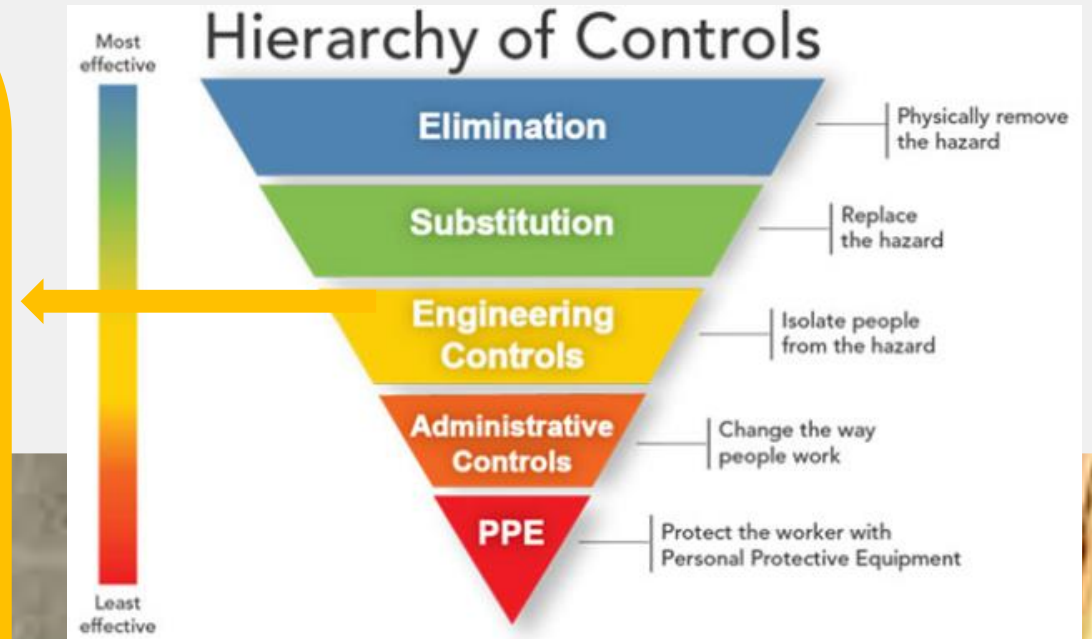
Available Measures for Engineering Control

The following engineering controls can reduce exposure to the RCS:

- a water delivery and slurry system that supplies a continuous feed of water over the areas being cut to suppress the generation of dust,
- equipment extraction systems (e.g. class M or H vacuum attachments) attached to the tool used for the cutting / drilling that captures the dust produced by drilling and cutting



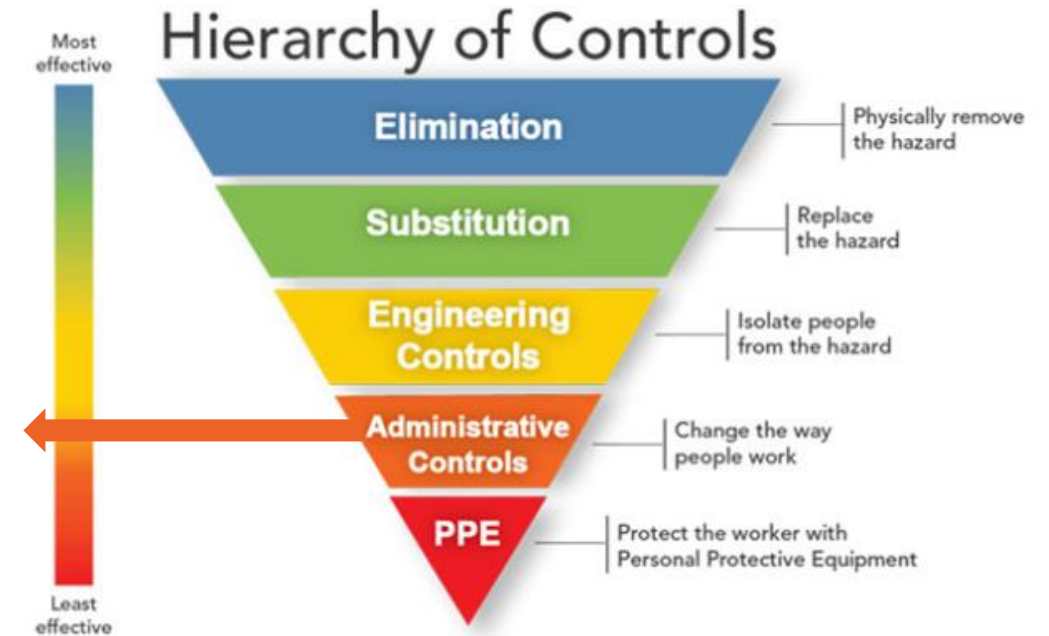
- a exhaust ventilation system that captures the dust produced by the cutting and transports the dust to a safe emission point or to a filter or scrubber.
- direct fasten (instead of drill)
- cleaning up dust with a M or H class industrial vacuum cleaner



Available Measures for Administrative Controls

The following admin controls can reduce exposure to the RCS:

- Planning cutting tasks to make sure the minimum number of drilling / cuts are made
- written rules and policies for working with silica or cleaning silica waste for example, a written clean-up procedure and log
- Cleaning process (RCS must be double bagged to for correct seal prior to disposal in waste bins). Never sweep up and dispose directly into bins.
- Usage of Blower Vacs to clean up RCS is strictly prohibited!
- Instruction on working in areas with RCS made by other (do not work and report to customer site supervisor) or via your PM/Site supervisor
- restricted area policies so that only staff who are carrying out a task that generates silica dust are allowed access to those areas,



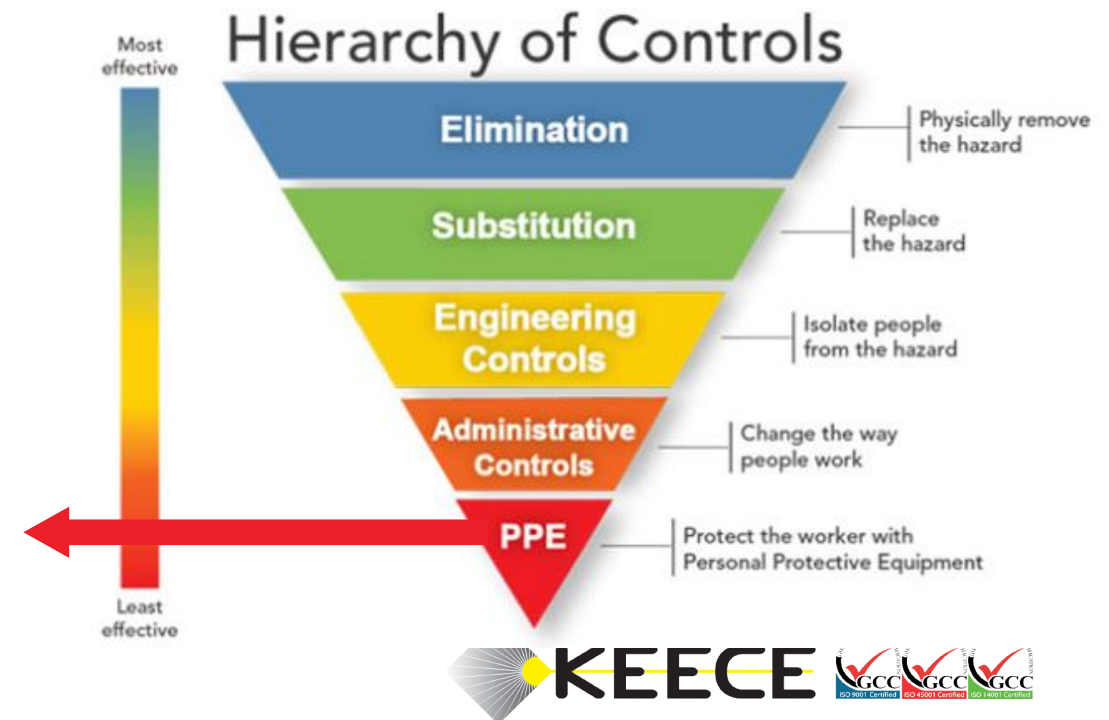
- **Signage at the workplace** highlighting there is a dust hazard and any required use of RPE and PPE.



Available Measures for PPE Control

The following PPE Controls can reduce exposure to the RCS:

- Wear a well fitted N95 (P2) face masks
- Be aware and make sure mask is fitted correctly
 - Only remove when air quality is clean
 - Change mask if it becomes moist
 - If you breath and feel cool air – it is not fit correctly
- Clean and vacuum dusty clothes using an industrial M-H- class vacuum cleaner while wearing mask
- clean PPE and equipment in designated areas only.
- **In QLD / ACT you must be fit tested for masks!**



What mask is appropriate?

AS/NZS 1716:2012 – Respiratory Protective Devices details the types of particulate and gas filters and their capacity that are available in Australia. Particulate filters are classified into categories:

- P1 (lowest level of protection)
- P2 (moderate)
- P3(highest).

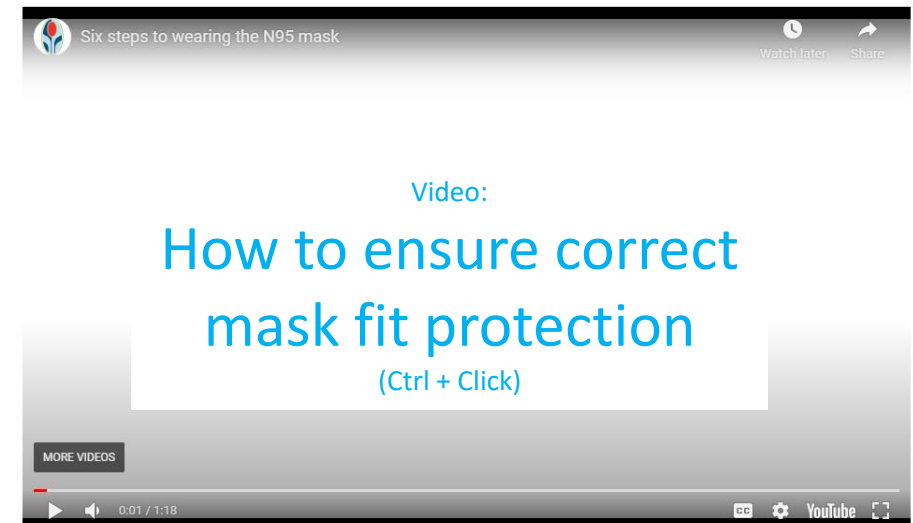


FYI for mask protection:

- P2 (EU+AU Classification) = N95 (US Classification)
- Same protection level / different global standard numbers

P2 respirators offer protection against mechanically and thermally generated particles.

- As compared to P1 masks, P2 masks offer higher protection. They are ideal for workplaces that involves sanding, cutting and drilling with moderate dust levels.
- **P2 RESPIRATORS** protect against low toxic fine dust up to 10 times the acceptable limit.

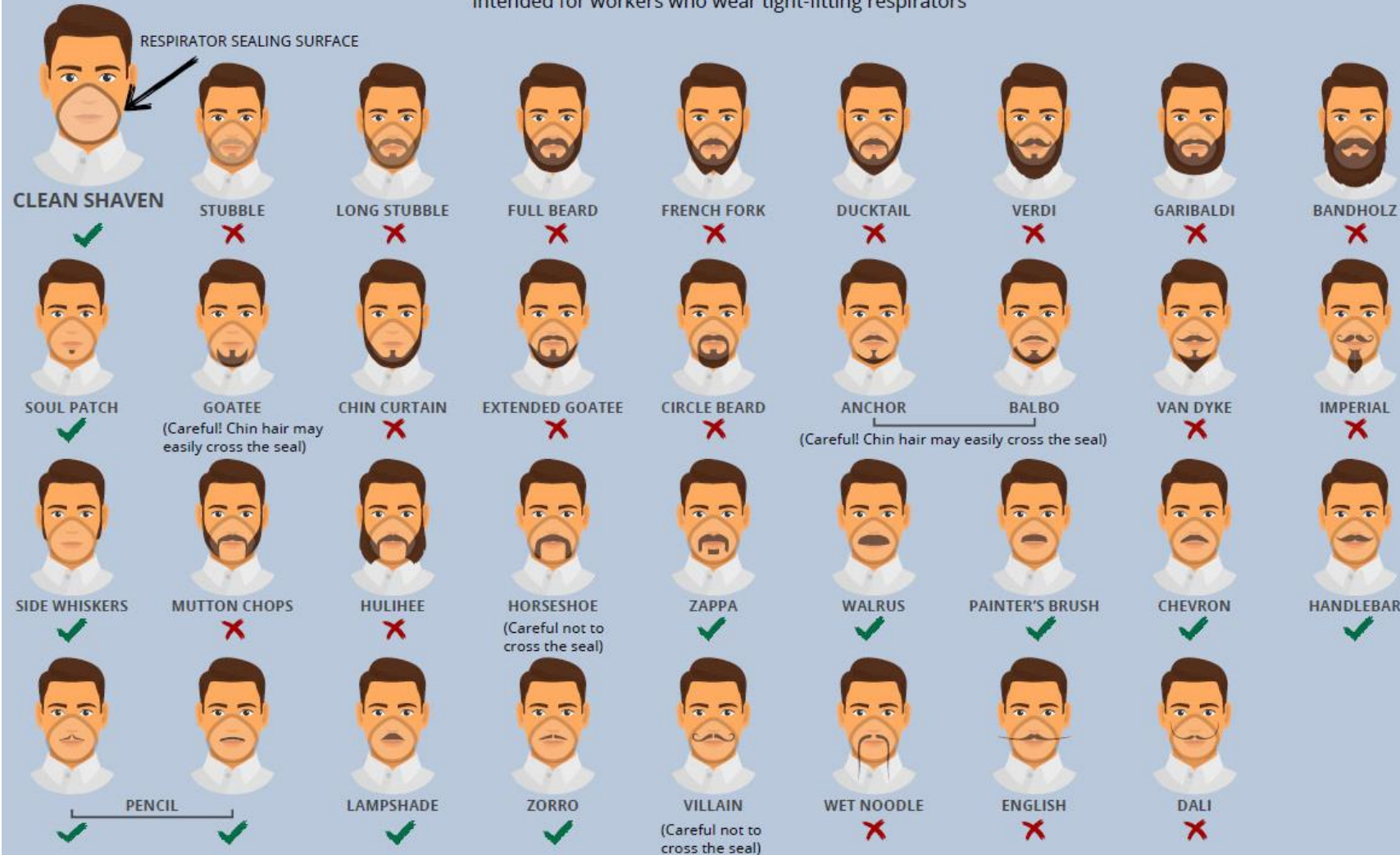


<https://www.youtube.com/watch?v=b3aEY52et7k>

Does your mask fit?

Facial Hairstyles and Filtering Facepiece Respirators

Intended for workers who wear tight-fitting respirators



IN QLD / ACT YOU MUST BE FIT TESTED FOR MASKS.

➤ Yes, you need a mask license!

To have a sound fit:

- P2 approved mask
- Fit following the instructions
- Approved facial hair styles only

What our SWMS looks like – Planning and Prep

Job Task #	Job Step	Potential Health, Safety and Environmental Hazards	Control Measures	PERSON(S) RESPONSIBLE
1	Planning and Preparation	Non-compliance with current legislative requirements and company processes.	All personnel must read, understand, and sign off on this SWMS. All personnel are given the opportunity to provide input into the content of this SWMS and any additional items required from a safety perspective. All Keece employees to have completed Keece Silica Dust -Minimising the Risks Training. All Keece employees to have completed Correct Fitting P2 Mask training	Project Manager Work crew Supervisor
		Specific to job step below, ensure accessibility to control measure requirements.	Available access to potential equipment needed: - water for floor penetrations and wet cutting. - barricading and RCS Signage - Min P2 face mask protection (<u>Hepa</u> grade masks) - correct fitting vacuum extraction units for equipment being used - disposal bags for disposal of vacuumed/extracted dust	Project Manager Supervisor Work crew

What our SWMS looks like – Commencing work

2	Commencing works	RCS Dust present in work area.	DO NOT commence work in RCS contaminated environment. Report hazard to customer site supervisor directly or via Keece Site Supervisor/PM. Area should be watered down and/or cleaned correctly, prior to commencing works.	Work crew Supervisor
		Others will be working in the near vicinity = +7mtrs or within a closed space area $\geq 40\text{sq mtr}$ will be exposed to potential RCS	Others working in the close vicinity (+7mtrs) to wear minimum P2 mask protection.	Work crew Supervisor
		Cutting or grinding of surfaces creating RCS	Continual wetting of area, ideally with wet cutting and slurry management equipment All workers to have minimum P2 <u>masks</u>	Work crew Supervisor
		Drilling overhead	All workers to have minimum P2 <u>masks</u> Clearly mark out and prepare prior to drilling attempting to minimise number penetrations. Use of specifically fitted vacuum attachment for hammer drill.	Work crew Supervisor

What our SWMS looks like – Cleaning up

5	Removing of clothes with dust	Cleaning down clothes creating RCS	Use vacuum with appropriate P2 <u>Hepa</u> filter. DO NOT SHAKE OFF DUST	Work crew Supervisor
6	Cleaning and disposal of captured RCS from vacuum and extraction units	Risk of dust inhalation Risk of latent RCS in work environment	All workers to have minimum P2 masks while cleaning up <u>RCS</u> Always DOUBLE BAG RCS Dust. DO NOT PUT DIRECTLY INTO BINS – ALWAYS DOUBLE BAG AND THEN IN BIN Use a HEPA filtered vacuum cleaner to vacuum up residual dust/fibres on completion of work. Use clean damp rags to clean up residual RCS waste where the vacuum is ineffective <u>and also</u> bag rags before disposal.	Work crew Supervisor

AS A SUMMARY THE FOLLOWING IS STRICTLY PROHIBITED:

1. Creating RCS without:
 - Capturing it (engineering)
 - Protect yourself with a mask (PPE)
 - Restricting others from the environment (admin)
2. Commencing work in an area where RCS is present
3. Using a blower/compressed air to clean up dust, debris and clothing (admin)
4. Disposing of RCS directly into bins without double bagging esp. from vacuums (admin)
5. P2 masks **MUST** be worn correctly while working



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THERE MAY BE FURTHER CHANGES NEEDED:

- In ACT – post **July 2023** all industry participants must complete accredited Silica dust training course: (10830NAT – Crystalline Silica Exposure Prevention)
- WorkSafe Australia has potential changes for some industries July 2023
- It's foreseeable that mandatory fit testing will be phased in nationally for construction participants July 2023.
- Any changes will be communicated through Teams and Toolboxes.



WE NEED YOUR ONGOING ASSISTANCE:

- If you see additional risks regarding RCS or any OHS matter notify us via:
 1. Your manager
 2. Teams | Health&Safety | WHSCommittee
 3. hseq@keece.com.au



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