working well together

Construction Dusts:

Much more than a Nuisance!

working well together

“It’s only dust you know”

What is construction dust?

- A general term used to describe what is found on a construction site.
- 3 main types
  - Silica
  - Wood
  - Lower toxicity

Silica

working well together

Crystalline silica concentrations in common materials

plastic composites	up to 90%
sandstone, gritstone, quartzite, flint	more than 70%
concrete, mortar	25% to 70%
shale	40% to 60%
china stone	up to 50%
tile	30 to 45%
slate	up to 40%
granite	up to 30%
brick	up to 30%
ironstone	up to 15%
basalt, dolerite	up to 5%

Wood Dust

- Hardwood
- Softwood
- MDF

Lower Toxicity Dust

- Dust with very low silica content e.g:
  - Gypsum
  - Marble
  - Limestone

How can It harm me?

Construction dust can cause serious lung diseases:

- **Lung Cancer**
- ***Chronic Obstructive Pulmonary Disease*** (COPD)
- **Pneumoconiosis** (including silicosis)
- **Asthma**:

How can
It harm me?

- Few develop quickly – acute silicosis, asthma
- Most take a long time – years
- Regularly breathing small amounts adds up over the years
- By the time you notice it may be too late to do anything about it

> **Important to control every single exposure**

How can it harm me?

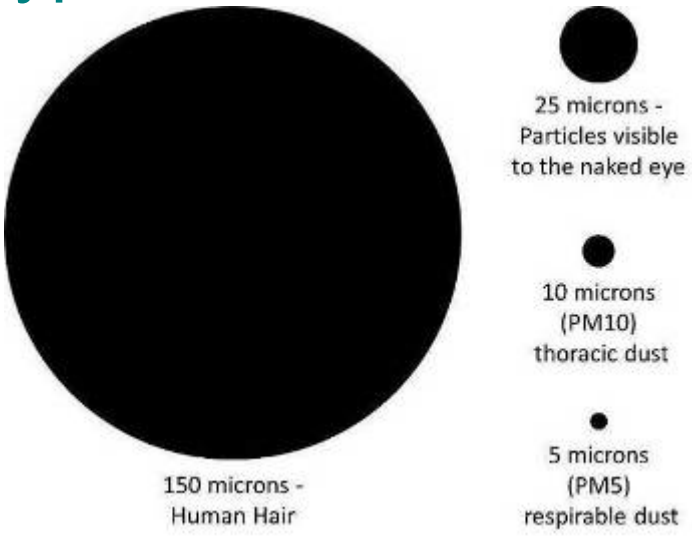
Statistics are imprecise:

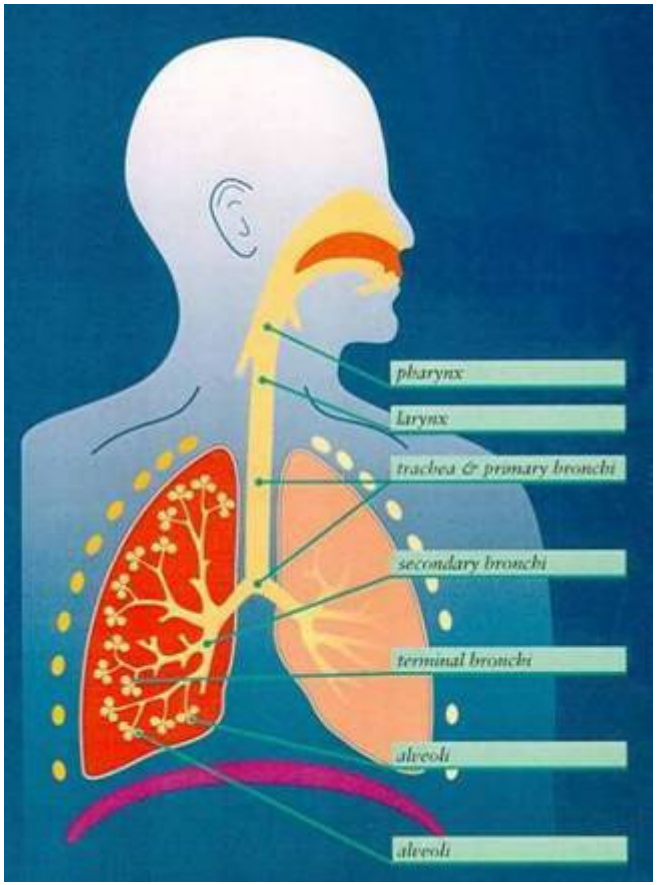
- 500+ silica related deaths in 2004 – over **10 a week**
- Silica is the second most important cause of occupational lung cancer after asbestos
- Construction workers 2-3 times greater risk of COPD
- Other research backs up link between construction work and lung disease
- Reduced quality of life and shorter working life

working well together

How much Dust is a problem?

- Depends upon
  - Amount of dust
  - Size of the dust particles
  - Type of dust





working well together

How much Dust is a problem?

- Measured in mg/m3
  - Bag of sugar = 1kg / 1,000 grams / 1 million mg
  - Teaspoon of sugar = 5 grams / 5,000 mg

Dust	Inhalable	Respirable
RCS	_____	0.1 mgm^3
Wood	5 mgm^3	As inhalable
Lower Toxicity	10 mgm^3	4 mgm^3

Based on an 8 hour average

How much Dust is a problem?

- Limit is the legal maximum, the most you can breathe **after** the right controls have been used.
- No short term limits **BUT** should not exceed x3 over a 15 min period
- Many construction tasks are short duration with very high exposure peaks

working well together

How much Dust is a problem?

- Silica: 0.02 – 0.1 mg/m3 8hrTWA
- **BUT** task specific exposure 1.7 – 9.9 mg/m3
- Respirable dust: 3.9 – 50 mg/m3
- Inhalable dust would also be very high

working well together

Managing Dust Risks:

Assess (the risks)

Control (the risks)

Review (the controls)

Assess
(the risks)

Identify your **High Risk Tasks** by thinking about:

- Material
- Task
- Work area
- Time
- Frequency

Assess:
Silica dust

- Some tasks ALWAYS produce very high levels:
  - Cut-off saws, grinders, chasers, grit blasters

Assess:
Silica dust

- Some tasks can in right conditions
  - Pneumatic drilling / coring with poor ventilation
  - Internal structural demolition
  - Dry sweeping indoors

Assess:
Wood and MDF

Cutting and Sanding

Assess:
Lower toxicity dust

- Plasterboard sanding:
- Grinding / Cutting:
  - Marble etc

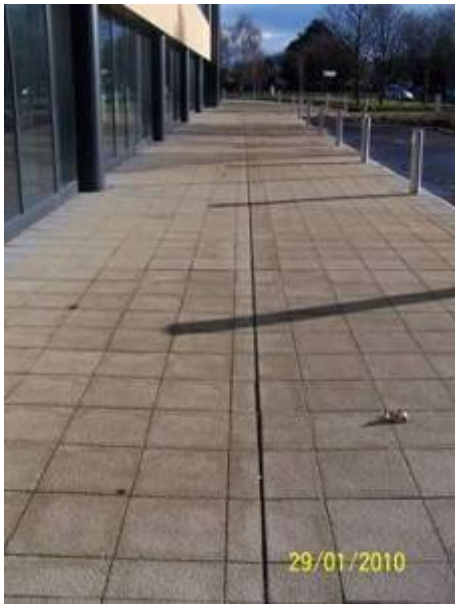
Control (the risk)

The law requires:

- First try and prevent exposure:
  - Design out, use different materials or processes
- Adequately control the remaining risk:
  - Higher the risk the better the controls needed

Control: Eliminate

- Design Out
- Alternative grit blasting media
- Different work processes



working well together

Control:
At source

- Water Suppression

Control:
At source

Water suppression key issues:

- Flow rate
- Water supply
- Managing the run-off
- Marking the cutting line

Control:
At source

- On-tool extraction

working well together

Control:
At source

On-tool extraction key issues:

- Effective capture hood
- Correct extraction unit
- The right tubing, blades, bags etc

Control:
RPE

- Controls are not 100% effective
- RPE is still needed for high risk tasks

Disposable

APF = 20

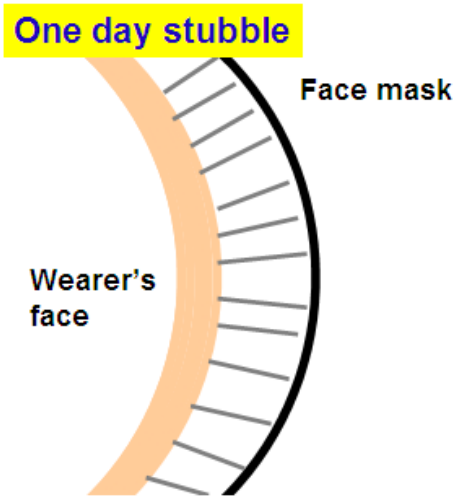
Orinasal Half Mask

working well together

Control:
RPE

RPE key issues:

- The right specification (FFP3 / P3)
- Fit the wearer
- Worn correctly



Control:
Other controls

- Also Consider:
  - Segregation
  - Ventilation – long duration power tool tasks, internal demolition
  - Limiting people / duration
  - Training
  - Involving workers

Review:
(The controls)

- Have work procedures
- Check controls working
- Maintenance
- Supervision

Information:

working well together

HSE

Health and Safety Executive

Construction dust

HSE information sheet

Construction Information Sheet No 36 (Revision 2)

Construction dust is not just a nuisance; it can seriously damage your health and some types can eventually even kill. Regularly breathing these dusts over a long time can therefore cause life-changing lung diseases.

This sheet tells employers what they need to know to prevent or adequately control construction dust risks. It is also provides advice for safety representatives and workers.

Construction dust

This is a general term used to describe different dusts that you may find on a construction site. There are three main types:

- silica dust – created when working on silica containing materials like concrete, mortar and sandstone (also known as respirable crystalline silica or RCS);
- wood dust – created when working on softwood, hardwood and wood-based products like MDF and plywood;
- lower toxicity dusts – created when working on materials containing very little or no silica. The most common include gypsum (eg in plasterboard), limestone, marble and dolomite.

Health risks

Anyone who breathes in these dusts should know the damage they can do to the lungs and airways. The main dust-related diseases affecting construction workers are:

- lung cancer;
- silicosis;
- chronic obstructive pulmonary disease (COPD);
- asthma.

Some lung disease, like advanced silicosis or asthma, can come on quite quickly.

Figure 1 Common tasks like cutting can create very high dust levels

However, most of these diseases take a long time to develop. Dust can build up in the lungs and harm them gradually over time. The effects are often not immediately obvious. Unfortunately, by the time it is noticed the total damage done may already be serious and life changing. It may mean permanent disability and early death.

Construction workers have a high risk of developing these diseases because many common construction tasks can create high dust levels. Over 500 construction workers are believed to die from exposure to silica dust every year. The amounts needed to cause this damage are not large. The largest amount of silica someone should be breathing in a day after using the right controls is shown below next to the penny.

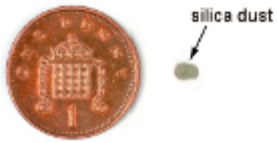


Figure 2 Your maximum daily silica exposure is tiny when compared to a penny

HSE

Health and Safety Executive

Controlling construction dust with on-tool extraction

HSE information sheet

Construction Information Sheet No 69

Introduction

This information sheet gives guidance on choosing, using and maintaining on-tool extraction for controlling construction dust. It is mainly for managers and supervisors but is also useful for trade union safety representatives and workers.

The hazards posed by construction dust

Regularly breathing construction dust can cause diseases like lung cancer, asthma, chronic obstructive pulmonary disease (COPD) – which includes emphysema and other breathing difficulties) and silicosis. Silica is the second biggest killer of construction workers after asbestos.[1]

Some of the most common construction jobs create high dust levels. These jobs often involve the use of power tools like cut-off saws, grinders, breakers and sanders. There is a legal duty for employers[2] to prevent or adequately control worker exposure to construction dust. On-tool extraction is an effective control for this dust and will reduce ill health.

How to choose on-tool extraction

On-tool extraction is a type of local exhaust ventilation (LEV) system which is fitted directly onto the tool. The 'system' consists of several individual parts – the tool, captor hood, extraction unit and tubing. Each part plays a role in establishing how effective the system is and the level of control it gives. Manufacturers/ suppliers do provide complete systems but some parts (especially extraction units) can be used with other tool makes and models.

It is important to choose parts that are compatible and work together. The dust may be poorly controlled if you do not. Make sure the system is right for the particular task(s) and the method(s) of work. Involve workers in the selection process. Use the following guidelines:

Tools and accessories

Limit the amount of dust created by choosing appropriate tools and accessories – eg sanding blocks/pads or grinding discs with enough holes to allow the dust to be extracted through them (see Figure 1).

Figure 1 Tools and accessories allowing effective dust removal

Captor hood

The hood is the most important part of the LEV system. It is often manufactured as part of the power tool but it can also be retro-fitted to existing equipment. See Figure 2 for examples.

Information:

working well together

- Website:
  - FAQ: http://www.hse.gov.uk/construction/faq-dust.htm
  - Time to Clear the Air
  - Website update coming

Dust

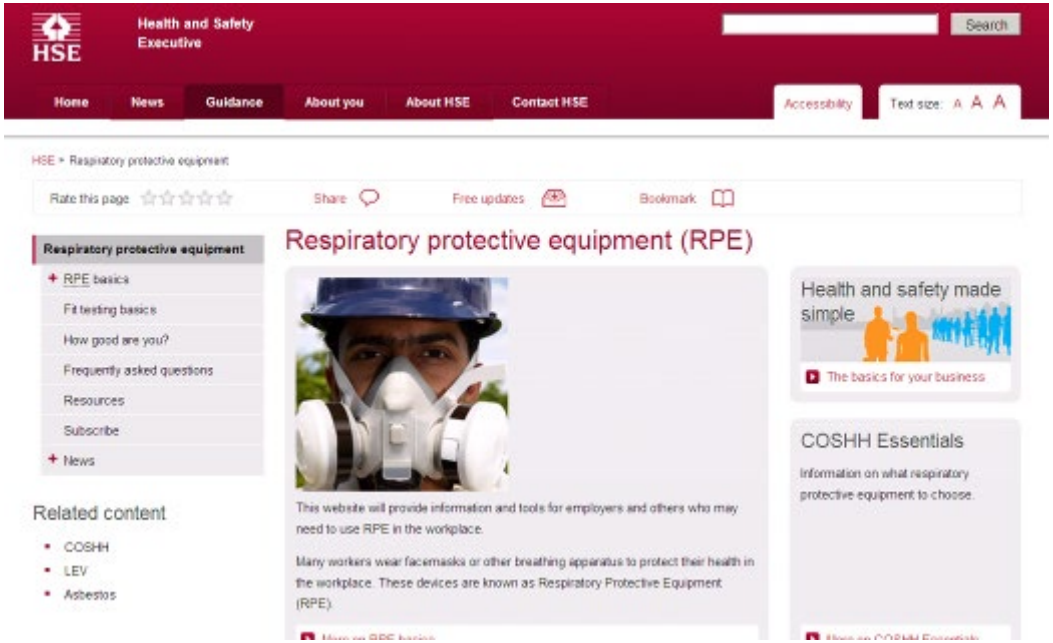
- What is Construction Dust?
- How can construction dust harm me?
- Construction dust is not just a nuisance; it is a real risk to your lungs
- Which tasks create the most dust?
- How much dust can harm me?
- How do I control construction dust?
- Do I need to use a mask as well?
- Why can't I just use a mask to protect me?
- I've been told I need a face-fit test for my mask. What is this?
- The dusty work I do is over very quickly. Does this mean I am OK?
- Am I OK if I am working outside?
- How far do I need to be away from someone else creating dust to be safe?
- Are members of the public at risk from breathing in this dust?

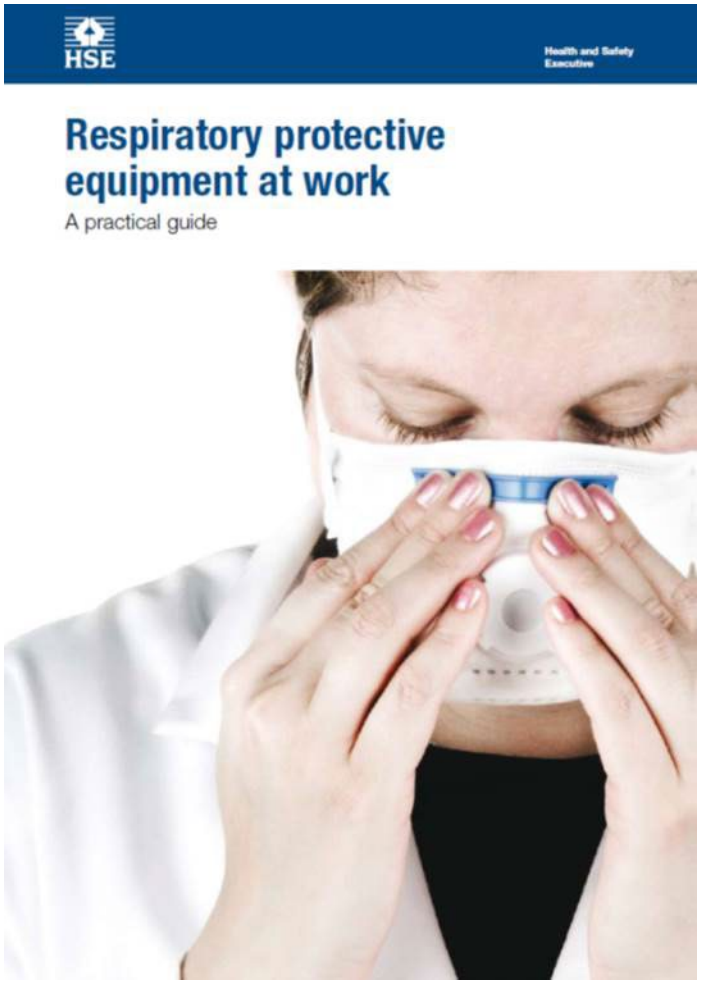
Information:

working well together

RPE:

- New website
- HSG 53 revision





working well together

Remember:

– Dust is **NOT** an inevitable part of construction work

– You can control it and protect your lungs