



# “Let’s Talk Health”

## Dust

DISCUSSION AID 

### INTRODUCTION

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This talk has been developed to assist the person facilitating the “Let’s talk health” week topic on workplace dusts. It provides pointers to get the conversation started and is not a full explanation of all health and safety requirements, related to this subject, and should not be relied upon as such.

#### What does the term “workplace dust” mean to you?

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In many workplaces dust is a major problem. However, dust can be more than just a nuisance – it can be a killer.

Dust is simply small particles in the air. Often these particles are too small to be seen but, because they are airborne, they can be breathed in through the nose and mouth. It is the size and chemical nature of the dust particles that determine the effect they have on the body. Larger sized particles are called inhalable dust. Most of this will be filtered out in the nose and throat. Smaller size dust (called thoracic dust) can reach the lungs. If the dust is small enough it can be inhaled deeply. This is called respirable dust. Very small particles can pass through the lungs into other organs of the body. Smaller particles also stay in the air for much longer so can be a danger for a longer period of time.

Usually the smaller particles are the most hazardous but inhalable dust can also cause major health problems. A lot of dust however contains particles of different sizes and may be a mixture of inhalable and respirable. Dust can be caused by a huge number of processes and comes in many different forms. It is divided into two types - organic and inorganic. Inorganic dusts come from stones, chemicals and metals. Among the inorganic dusts that workers encounter are cement, coal, asbestos, metal, concrete, talc, stone, grout and sand. Organic dusts come from living things and include dust from textiles, wood, poultry, leather, grain and flour. These often also contain fungal spores and microbes. Dusts can also come from organic chemicals such as pesticides and dyes.



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### What are the serious health issues caused by inhalation of dusts?

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The two most serious health problems caused by dust are cancers of the lungs, throat and nose, and other lung conditions called Chronic Obstructive Pulmonary Disease (COPD) that includes chronic bronchitis and emphysema.

Many dusts also cause asthma and other allergies, rhinitis and even heart disease.

Many can also be an explosive hazard if they are allowed to build up.

Some of the diseases caused by dust take decades to develop and once symptoms appear it is too late. Often the worker will have left the workplace by the time they develop a cancer or COPD, especially in industries with a high turnover like construction.

Often people think the problems of dust have long gone as most of the exposure was from industries that have disappeared such as coal mining and textile manufacturing. This is not the case. There are still huge problems with dust in a wide range of workplaces including bakeries, quarrying, agriculture and construction. In some sectors the problem is getting worse. Recycling has led to a whole new sector of workers being exposed to a wide range of dusts, while in construction refurbishment work is more common and the use of materials like plasterboard mean that often workers are exposed to very high levels of dust. The same is true in some manufacturing processes and warehousing where increased use of MDF has led to a significant dust problem.



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### What are the main construction dusts from?

**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
- **Other ‘general’ dust** – created when working on other materials containing very little or no silica. The most common include gypsum (e.g. in plasterboard), limestone, marble and dolomite.

### Do you know what WEL means?

#### **Answer: Workplace Exposure Limits (WEL)**

The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg/m<sup>3</sup> of inhalable dust or 4 mg/m<sup>3</sup> of respirable dust as measured by a formula that takes account of the length of time that a person is exposed, so it is the equivalent of an 8-hour day. This is called the 8-hour TWA. If any worker is exposed above these levels employers are meant to take action to remove the risk. In addition, some dusts have been assigned specific Workplace Exposure Limits (WELs) and these limits should not be exceeded. There are over 500 substances that have been given a WEL, including many dusts. There are separate regulations covering asbestos dust. Unfortunately, a lot of dust does just not contain one substance. It could be a mixture of different substances, some of which are covered by the dust exposure limit and others may have their own WEL. However, if a mixture of dust includes a substance with a WEL then the exposure must be managed at least below the WEL for that substance.



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### What control measures can be implemented to reduce the risk of inhalation of dusts?

**Employers have a duty to control any hazardous substances, regardless of exposure and there is an order of priority for those actions the employer is meant to take, this is:**

- eliminate the use of a harmful substance and use a safer one
- use a safer form of the product, such as paste rather than powder
- change the process to emit less dust
- enclose the process so that the dust does not escape
- extract dust near the source
- have as few workers in harm’s way as possible
- provide free personal protective equipment (PPE) such as a respirator.

PPE must fit the wearer. This means that employers cannot protect workers simply by giving them face masks and continue to let them work in dusty conditions. They first have to look at other ways of preventing the dust getting into the air either by using other materials or introducing ways of keeping dust out of the atmosphere. Often solutions can be simple such as using water to prevent dust being formed during grinding or the cutting of materials or local exhaust ventilation in woodworking workshops.



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### Does COSHH (Control of substances hazardous to health) apply to dusts?

**The Control of Substances Hazardous to Health Regulations (COSHH) cover activities which may expose workers to construction dust. There are three key things you need to do:**

- Assess (the risks)
- Control (the risks)
- Review (the controls)

Assess (the risks) Assess the risks linked to the work and materials.

#### High dust levels are caused by one or more of the following:

- **task** – the more energy the work involves, the bigger the risk. High-energy tools like cut-off saws, grinders and grit blasters produce a lot of dust in a very short time
- **work area** – the more enclosed a space, the more the dust will build up. However, do not assume that dust levels will be low when working outside with high-energy tools
- **time** – the longer the work takes the more dust there will be
- **frequency** – regularly doing the same workday after day increases the risks.

Control (the risks) Use the following measures to control the risk.

Stop or reduce the dust Before work starts, look at ways of stopping or reducing the amount of dust you might make. Use different materials, less powerful tools or other work methods. For example, you could use the right size of building materials so less cutting or preparation is needed, a less powerful tool – e.g. a block splitter instead of a cut-off saw or a different method of work altogether – e.g. a direct fastening system.



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### What PPE can be used as a last resort to control dust inhalation?

#### Personal Protective Equipment and Face Masks.

Where other methods of controlling dust, including ventilation and extraction, have been tried and there is still dust in the atmosphere then respirators or face masks should be the last resort. Many face masks are useless against respirable dust or are so uncomfortable that the wearer does not use them. This is especially true when they are used for long periods as they get wet and uncomfortable. Also, the mask has to fit the face of the worker so needs to be available in all sizes, and different protection may be necessary for workers with beards.

There are three classes of face mask. The lowest one (P1) only filters 80 per cent of airborne particles. The top range (P3) collects over 99 per cent, but only if there is no leakage and the masks are worn properly and well maintained. The kind of disposable masks found in DIY stores are not suitable for most workplaces. Any worker who wears a face mask has to be face fitted.

Detailed advice on breathing protection can be found in the Health and Safety Executive (HSE) guidance HSG53. Respiratory protective equipment (RPE) Water or on-tool extraction may not always be appropriate, or they might not reduce exposure enough. Often respiratory protection (RPE) has to be provided as well.

#### You will need to make sure that the RPE is:

- **adequate for the amount and type of dust** - RPE has an assigned protection factor (APF) which shows how much protection it gives the wearer. The general level for construction dust is an APF of 20. This means the wearer only breathes one twentieth of the amount of dust in the air
- **suitable for the work** - disposable masks or half masks can become uncomfortable to wear for long periods. Powered RPE helps minimise this. Consider it when people are working for more than an hour without a break
- compatible with other items of protective equipment
- fits the user. Face fit testing is needed for tightfitting masks
- worn correctly. Anyone using tight-fitting masks also needs to be clean shaven.
- **Remember** - RPE is the last line of protection. If you are just relying on RPE you need to be able to justify your reasons for this.