

Let's Talk Dust engagement presentation – Briefer notes

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This PowerPoint is part of Network Rail and IOSH's No Time To Lose campaign which aims to raise awareness and get the causes of occupational cancer more widely understood so that preventative measures can be taken to proactively reduce the risks.

NOTE TO BRIEFER - NEXT SLIDE IS A FILM THAT CAN BE PLAYED BY CLICKING THE LINK ON THE IMAGE

You will now watch a short film that takes you through the ballast story from quarry to worksite, note the film last approximately 15mins.

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For film please see below link:

<http://www.tracksafetyalliance.co.uk/videos/track-safety-matters-2--the-ballast-dust-story/s977/->

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Start the discussion by asking people what safety risk all the photos have in common, the below may form part of the immediate responses:

- Heavy machinery
- Moving parts
- Poor visibility
- Vibration-related condition
- Noise-induced hearing loss
- Manual handling injury, slips or trips
- Slips or trips

Answer to “What do they all have in common”?

In every scenario, silica dust can be released into the air. If operatives breathe in silica dust, it can eventually result in serious health conditions. Make it clear to participants that these long term health risks can be as severe as the more obvious short term safety risks they probably picked up quite quickly from the pictures.

The long term health effects associated with silica dust are irreversible. We will cover this in more detail later.



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What is Silica - Silica is a natural mineral that makes up a large part of materials like sandstone and granite. It's also found in many common products such as concrete, mortar and ballast we use on our track.

Here's an additional list of some of the materials and products that contain silica:

- plastic composites like fillers or composite panels
- bricks
- tiles
- slate
- shale

It's worth mentioning - Undisturbed silica containing material is safe – it's the dust that's dangerous.

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When any of the mentioned materials are worked on, silica dust is created and released in the air as a fine dust that contains Respirable Crystalline Silica or RCS. This is hazardous should exposure be uncontrolled or prolonged to allow breathing in of small silica dust particles that float in the air for longer than larger dust particles - so there's more chance of breathing them in.

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Silica dust is harmful if exposure is not appropriately controlled. Silica dust can cause, but is not limited to, the following diseases:

- lung cancer
- silicosis
- chronic obstructive pulmonary disease – including bronchitis and emphysema
- asthma
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Even though some diseases can take a long time to develop, don't forget that they can result in anything from permanent disability to early death.

More information on ill health can be found on the respiratory page on safety central (move below to safety central)



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It's estimated that nearly 800 people die a year from lung cancer caused by silica exposure at work in Britain – that's 15 a week. There are approximately 900 new cases of lung cancer a year in Britain attributed to past exposure to silica dust at work. Silica is second only to Asbestos.

Globally, silicosis claimed the lives of more than 46,000 people in 2013.

Right now there are millions of people across the world who could be exposed to silica dust at work. Here are some examples:

- 500,000 in the UK
 - 5 million in the EU
 - 2.2 million in the USA - 10 million in India
 - 23 million in China
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Anything that disturbs a product or material that contains silica will create hazardous dust.

Within Network Rail, activities that may lead to this can be, but is not limited to:

- ballast tamping
- loading / unloading of ballast and
- drilling and / or cutting of concrete.

Other examples of activities that may cause disturbance:

- laying, maintaining or replacing ballast
 - handling, mixing or shoveling dry materials that include silica such as ballast
 - breaking, crushing, grinding or milling materials like concrete, aggregate or mortar
 - drilling, cutting or sanding things like bricks, slates, concrete or plastic composites
 - dealing with cement
 - excavating, mining, quarrying or tunneling
 - abrasive blasting or sandblasting
 - dry sweeping up after a task where silica dust has been created
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This is a trick question – it's actually smaller than all of these.



The nearest answer is a grain of tree pollen. Pollen can be a wide range of sizes, but a grain of sweet chestnut pollen is about 12 micrometers. A particle of Respirable Crystalline Silica is smaller still, at less than 5 micrometers. Another way of looking at it is to say that a single grain of table salt, at 300 micrometers, is 60 times bigger than one particle of silica dust.

The tiny size of the silica particles makes it difficult for our body to deal with when they are breathed deep into the lungs.

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Remember that the coin and silica dust image will not be life-sized on a screen.

Explain that the tiny amount of dust next to the coin shows the British workplace exposure limit for silica (it varies from country to country). This is the **most** dust people should breathe in during a single day **after** they've used all the right controls. It's one 40,000th of a teaspoon of dust*. Use a real coin to help participants visualize the tiny exposure limit for silica.

Exposure limits, as specified in the EH40, are the maximum allowable concentration in workplace air, usually averaged over an 8-hour working day.

If the audience continues to struggle with understanding this question, explain that it's usually what's specified as a maximum under the law – the most they can be exposed to 'safely' over one day. Prompt them to think about what it means in practice.

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How can you reduce the risk?

Hierarchy of Exposure:

To ensure the health and safety of our staff on site the following hierarchy shall be employed when dust is present during our working activities:

- Exclusion – if you're not required to be in the immediate vicinity of the area affected by dust then remove yourself to a position not affected by dust
- Ensure mitigations identified within the activity risk assessment is adhered to
- Dampen down the material used where possible to reduce airborne dust
- Consider engineering controls where possible
- FFP3 RPE – if your activities require you to be in the area where dust is present you may be provided with a disposable dust mask which must be a minimum of FFP3.



- If a tight fitting RPE is used, a face fit test must be conducted to ensure the mask is adequate.

Remember – disposable masks should only be worn for a maximum of one hour. Alternative RPE should be considered where the requirement to wear RPE exceeds an hour in a high risk area for which you have been face fit tested. To achieve the best protection a tight fitting mask offers, you must be clean shaven.

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Additionally:

- Maintain cleanliness by washing hands before eating or drinking
- Raise Close Calls should be a concern
- Ensure PPE is laundered
- Be aware smoking increases the chances of lung diseases
- Report instances of excessive dust using the close call system
- Use RPE appropriately
- Participate in health surveillance where required

Remember - We are all responsible for each-others health, be aware of colleagues working nearby who could also be affected in the same way. Should you see someone taking an unnecessary risk, do they know of the health consequences?

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Wearing of respiratory protective equipment that is adequate and suitable protects you from inhaling hazardous substances and, if worn correctly, will reduce the risk of developing long term ill health such as silicosis.

Bear in mind that:

- Personal respiratory protection is last in the hierarchy, as engineering and other controls are usually ranked ahead of personal protective equipment. **BUT** in the case of controlling dust exposure such as silica, suitable masks will often be needed on top of other mitigations if air sampling shows there is still too much dust in the working environment.
- It is at times difficult to place controls in a strict hierarchy as the most suitable control measure will depend on the type of work being done

Don't forget to cover other tasks that create dust – for example, clearing up after a dusty job – remind all dry sweeping will only liberate dust.

Remember - 'nuisance' dust masks won't prevent inhalation of silica dust, an FFP3 is the minimum to be worn?



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Key points to consider are:

- make sure that you're wearing the right type of respirator for the job;
 - get trained in how to use, check and clean your respirator;
 - change the filters regularly – or the mask itself if it's disposable;
 - store RPE in a clean place free from dust;
 - tell your line manager if there's a problem with your respirator or if it doesn't fit properly, is dirty or has an old filter;
 - have a 'face-fit' test for a tight-fitting respirator to make sure the fit is both suitable and adequate;
 - Remember that a disposable mask should only be worn for a maximum of one hour
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Remind participants that it's their job and their health. They know more about the task than anyone else.

Whilst health implications are **NOT** immediately visible, they can be detrimental in the long term should we not protect our health now. When we start to notice symptoms, it may be too little too late.

Remember - A small difference today (such as wearing of RPE) could lead to significant benefits in the future (such as good health in retirement).

Take note of this briefing action where necessary.

- **Remember - If it's silica dust, it's not just dust!**

