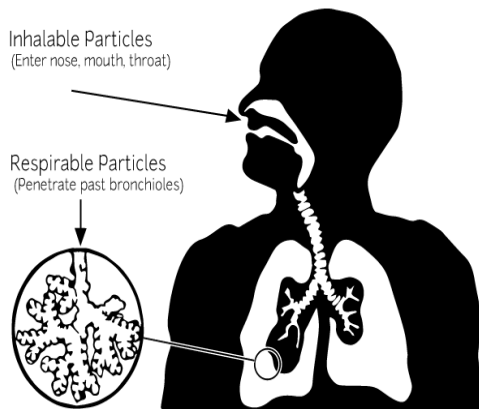


Let's Talk:
Dust in Mining



Dusts in Mining

- Mining, whether it is hard rock, quarrying or coal, open cut or underground, is a dusty process.
- Some of those dusts can be classified as nuisance dusts while others can contain toxic materials such as silica, lead or even asbestos depending on the geology of the area.
- The particles also vary in size, some are classed as “inhalable” which settle in the upper levels of our respiratory system, i.e. nose and throat.
- Other very fine or “respirable” dusts can get down into the depths of our lungs.



Key Hazards



Depending on the location and geology, some of the hazardous components of mining dust can include but are not limited to:

- Respirable crystalline silica (RCS)
- Lead
- Naturally occurring fibres (i.e. Asbestos)
- Coal dust

These will be covered in more detail in other presentations

Why are some dusts called “Nuisance Dusts”?



- This is where the composition of the dust has been shown not to contain levels of toxic components.
- However, they are still capable of causing irritation and/or, aggravation of pre-existing conditions and general discomfort.
- Excessive levels of these dusts must also be identified and eliminated or controlled.

Where are you most likely to be exposed?

Due to the varied nature of the mining process there are a number of tasks and areas where dust exposure can occur:

- Drill and blast
- Operation of heavy mobile equipment in the mine
- Crushing, screening and materials handling
- During maintenance of mobile equipment and stationary plant.



Drill and Blast in Mines



Dust exposures can occur when drilling and general preparation of a blast pattern in a mine.

Dust can be released from the drill process, nearby mobile equipment movement such as stemming trucks and other heavy and light vehicles.

Significant dust is also generated from the blast itself which can spread over a distance.

Operation of heavy mobile equipment in the mine



Heavy mobile and operating equipment such as excavators, draglines, bucket wheel dredgers and exploration drills will all generate dust in an open cut mine.

Earth moving equipment such as graders, dozers and haul trucks being filled and constantly moving along haul roads can generate dust (as do light vehicles).

Also continuous and longwall miners in an underground mine.

Maintenance of heavy mobile equipment and stationary plant



- Dust deposits on mobile plant and equipment can become airborne when disturbed as a result of maintenance.
- Clearing of air filters on equipment used in the mines can also generate high levels of airborne dusts.
- The use of compressed air to clean off equipment and filters for maintenance should always be avoided.

General Mobile equipment



To ensure exposure to hazardous dusts is minimised when using mobile equipment in mining environments:

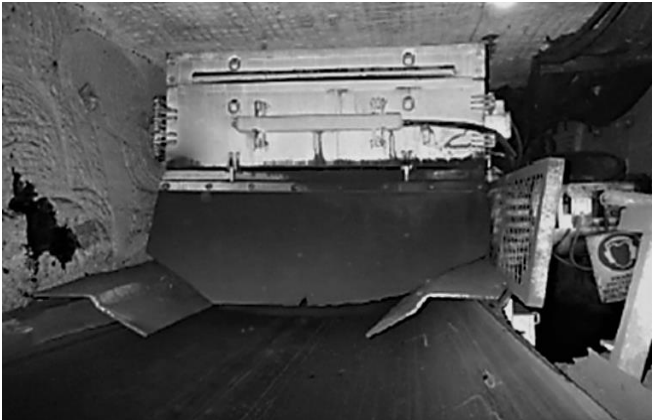
- Good air-conditioning maintenance regime should be followed
- Windows up policy encouraged
- Cab seal testing undertaken after any major maintenance
- Cabin internals be maintained to avoid collection of mud which can readily dry out and become airborne

Crushing, Screening and Materials Handling Dust Sources



- Conveyor belts transporting ore and overburden out of the mine, particularly at transfer points if they are not designed correctly.
- Primary secondary crushing plant and sizing screens found in processing plants can be significant sources of dust.
- Stockpiles can be sources of dust as material is deposited from the stacker and also as dust blown off the stockpile by the wind.

Controlling Dust from Conveyors



Potential controls for conveyor systems include:

- Fitting Sprays to transfer points and return belts
- Utilising containment curtains at transfer points
- Return belt fine dust scrapers
- Material wetting systems utilising water sprays or other agents such as foams

Water Suppression

Water suppression is a common method used as a control for silica containing dusts in open cut mines. A number of methods include:

- Utilising water trucks to dampen down roads with water and/or dust suppressants
- Wetting down of the stockpile
- Fine mist sprays are sometimes included on specialised mining equipment
- Wet drilling for blast and exploration holes



Respiratory Protection



Image courtesy of the Queensland Government

When other controls are not adequate, respiratory protection may be required.

Workers must pass a fit-test before they start wearing a tight-fitting respirator. Fit-testing measures the effectiveness of the seal between the respirator and the wearer's face.

Men must be clean-shaven or only have facial hair that doesn't sit beneath the seal or interfere with the valve.

Fit-test should be repeated each year.

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

Health Monitoring



The health monitoring requirements for workers exposed to specific dusts such as respirable crystalline silica, lead, etc. is dependent on local State guidelines.

Where it is not regulated, it is recommended that health monitoring is performed when exposures are not controlled to below 50% Safe Work Australia Exposure Standard (WES) for substances such as respirable crystalline silica.

Health Monitoring

Health monitoring by an Appointed Medical Practitioner is a crucial part of managing the health of workers exposed to toxic dusts.

It must be done or supervised by a doctor with experience in worker health monitoring such as Fellow of the Australian Faculty of Occupational and Environmental Medicine, The Royal Australasian College of Physicians website.

In the case of silica it has been covered in detail in the module titled Silica Dust – Health Monitoring and additional information is also available from:

<https://www.racp.edu.au/about/racps-structure/australasian-faculty-of-occupational-and-environmental-medicine/find-a-consultant>.

Make sure you understand your obligations under WHS law.

Summary Dust Hazard Management

1. Identify workers exposed to hazardous dust
2. Ensure risk assessments have been done and identify suitable controls.
3. Water can be utilised in a number of ways to help suppress dust.
4. Where air monitoring has been conducted, results of air monitoring is communicated to staff
5. Use low pressure water, or wet sweeping to clean.
6. Avoid using compressed air to clean dusty equipment.
7. Provide facilities to wash face and hands.
8. RPE and Equipment - workers trained in correct use and fit tested for RPE.
9. Health surveillance is provided where there is a risk and complies with WHS regulations.
10. Records of instruction, risk assessments & air monitoring as well as training is maintained. Also, records on health monitoring services and information provided are managed appropriately.

Reference Material (30 June 2019)

1. Queensland - Recognised Standard 15. Underground respirable dust control.
https://www.dnrme.qld.gov.au/_data/assets/pdf_file/0018/1242225/recognised-standard-15.pdf
2. South Australia www.safework.sa.gov.au/health-safety/hazards-risks/air-quality/managing-respirable-crystalline-silica-exposures