

PROCEDURE

DUST AND FUMES

Dust: A fine, dry powder consisting of tiny particles of earth or waste matter lying on the ground or on surfaces or carried in the air.

Fumes: A gas, smoke, or vapour that smells strongly or is dangerous to inhale

Dusts and fumes can be a particular problem because health effects may become evident months or years after exposure. In addition, combustible dusts can cause catastrophic explosions.

Health problems can range from extremely serious to simply a nuisance. Some of these problems have been recognised for some time within industry, i.e. Asbestos. Often, much of the attention is focused on new substances, when the greater problems relate to more common substances, e.g. concrete, wood dust, paint spraying or even some welding fumes.

The operation of vehicles and machinery on site can generate large amounts of dust, especially during periods of dry weather and when surfaces have been stripped of vegetation or hard surfacing. In addition, the amount of dust or fumes arising from the use of power tools can be such that control measures are needed, e.g. drilling or cutting masonry, welding or cutting metal etc.

Most solid materials that can be ignited can form an explosive dust cloud if the particle size of the solid is small enough. Even materials that do not burn in larger pieces such as aluminium or iron can, given the proper conditions, be explosive in the dust form.

Guidance

Hazards

The principal hazards associated with dust and fumes are:

- Nose / throat / eye irritation;
- Occupational asthma;
- Lung cancer, mesothelioma, silicosis
- Explosion

Risk Assessment

When work activities are likely to create dust or fumes especially in confined spaces, specific control measures and protective clothing / equipment will be required. These precautions should be selected with advice from specialist contractors, manufacturers, Safety manager(s) and from COSHH assessments. When carrying out the risk assessments to establish suitable controls for dust and fumes the following should be considered:

- Type of material involved and the hazardous properties of the created dust. See the HSE publication EH/40: Occupational Exposure Limits, which is updated annually. Go to the [HSE website](#) and enter "EH40" in the search box, at top right.

- Activity to be carried out
- Environment the activity will take place in
- Period of exposure
- Position of employee
- Sensitive environmental receptors

In some cases, there will be a need for atmospheric sampling of respirable dust and fumes to determine the levels of exposure. Results of such surveys will assist in determining control measures appropriate to the hazard. In some cases it may also be necessary to undertake atmospheric sampling for environmental purposes, i.e. to determine whether or not the dust being created by the works is causing an environmental nuisance to adjoining properties.

Respirable Crystalline Silica (RCS)

Cutting paving slabs, kerb stones or other concrete or stone products produces enormous amounts of dust. This dust will contain some very fine dust called respirable crystalline silica. Exposure to RCS dust can cause serious health problems which may eventually prove to be fatal.

Health Effects

Stones, rocks, sands and clays can contain large amounts of crystalline silica and are used to make kerbs, flags, bricks, tiles and concrete. Cutting these materials produces airborne dust containing very fine RCS particles. These particles are small and it is not always possible to see the RCS dust in normal lighting.

Serious health effects, such as lung cancer or silicosis, can result from exposure to RCS. This is because fine RCS particles can penetrate deep into the lungs.

Workplace emissions from hot bitumen work are subject to Workplace Exposure Limits (WELs), which establish an atmospheric concentration to which workers may be exposed without causing adverse health effects. For Respirable Crystalline Silica this is 0.1 mg/m³ TWA (Time Weighted Average) over an 8hr period

Control Measures

Following the risk assessment, effective control measures must be established, including how the work will be monitored and supervised and how the effectiveness of control measures will be maintained throughout the activity.,.

The following hierarchy of controls should be considered:

- Designing the activity to avoid processes which will cause dust or fumes.
- Capturing dust or fumes by using local exhaust ventilation.
- Using tools equipped with wet suppression or by keeping the work area damp, particularly in periods of dry weather and on sites close to housing or sensitive amenities.
- Reducing the exposure of individuals by excluding non-essential personnel from the work area, and job rotation for those involved in the work
- Protect individuals by provision and use of respiratory protective equipment (RPE) , the following are some types of RPE available:

- Disposable face mask
- Half mask
- Positive pressure powered
- Compressed airline breathing apparatus
- Ventilated visor and helmet

Advice on the appropriate type of RPE for the particular work activities should be sought from manufacturers or Safety team.

Where RPE is used as a control measure it is vital that it is adequate and suitable. RPE must reduce exposure to as low as reasonably practicable, and in any case to an acceptable level. To ensure that the selected RPE has the potential to provide adequate protection for individual wearers it must be fit tested as part of the selection process. The Respirator fit test report may be used to record the results of a face fit test.

Site wide control measures

Spraying/dampening down of haul roads and areas of site where dust is likely to be created may be effective in reducing windblown dust, but it may be necessary to wear goggles on some sites to protect eyes.

Speed limit of 5 mph for all vehicles and plant while operating on site.

Design one-way systems to reduce the requirement for reversing.

Define times for deliveries ensuring these times are suitable with neighbours i.e. after 09:00 hrs

Identify a specific area for deliveries and unloading, to be communicated to the suppliers.

Stockpiles to be maintained as low as possible.

Stockpiles may require dampening and or covering.

Consideration to using debris netting secured to Heras mesh fencing.

Monitoring of wind direction and planning works accordingly to minimise the potential increased levels of dust which could be generated.

Advice on environmental dust monitoring and control should be sought from the Safety team.

Aggregate Crushing Machines

These machines generate dust in the process of crushing aggregates, rocks and macadam type products. The operative must wear face fit tested RPE adequate to protect against the levels of dust generated when using these machines. The machine should be fitted with water suppression to contain the dust at source and to prevent dust becoming a site wide problem. The machine must be registered with the local Council.

Awareness Training

Awareness training, instruction and information should be provided for employees who are likely to be exposed to harmful dust or fumes. This should include the findings of risk assessments and information about the:

- Health risks
- Need for controls
- Correct use of protective clothing / equipment



- Reporting procedure for defective equipment
- Cleaning of protective clothing / equipment
- Legal responsibilities of the employer / employee