



# Demolition Operative

## HAZARDS AND RISKS

The use of explosives and 360° machines to demolish structures or to loosen, remove, or displace earth, rock, or other materials can generate high levels of airborne dust, as well as settled dust on the ground, surfaces, clothing and vehicles which can later be propelled into the air by impact or movement. Soft strip demolition work can also produce high dust levels because of the tasks that are usually involved, such as grinding, drilling, cutting, chiselling and blasting.

### Construction dust

Construction dust is a general term and includes dust from soil and building materials. Breathing in any dust can (over time) cause serious lung disease such as chronic obstructive pulmonary disease (COPD) which includes chronic bronchitis and emphysema. There are also dusts, such as silica dust or wood dust, that can cause specific serious lung diseases.

### Silica Dust/ Respirable crystalline silica (RCS)

Silica is present in large amounts in most rocks, sand and clay, and in products such as bricks, concrete and mortar. Some of the dust created by demolition activities is fine enough to be breathed deeply into the lungs; this is called respirable crystalline silica (RCS). Exposure to RCS over many years or in extremely high doses can lead to serious lung diseases, including fibrosis, silicosis, COPD and lung cancer. These diseases cause permanent disability and early death: it is estimated that over 500 construction workers die every year from exposure to silica dust.

### Wood dust

Dust from softwood, hardwood, and wood-based products such as MDF and chipboard can cause asthma which is a serious, debilitating, and sometimes life-limiting condition. Exposure comes from cutting, machining and drilling wood and from settled dust that is later disturbed. Fine dust particles are most likely to damage the lungs. Some wood types can cause cancer. Wood dust exposure may also cause dermatitis. The dermatitis risk is high for softwoods.

### Asbestos\*

Demolition workers may come into contact with or disturb a number asbestos containing materials (ACMs). Asbestos is classified as a category 1 carcinogen and causes over 5000 work-related deaths each year in the UK. Inhalation of asbestos fibres can cause mesothelioma, asbestos-related lung cancer, asbestosis, and pleural thickening, all fatal or serious and incurable diseases that take many years to manifest.

## CONTROL OPTIONS

### Engineering controls

- Control dust at source through local exhaust ventilation (LEV) or other engineering control equipment, or on-tool extraction where possible, though containment/LEV is unlikely to be feasible for outside work.
- Enclosed spaces may also need general mechanical ventilation to remove dusty air.
- Use vacuum attachments fitted to an H or M Class extraction unit for cleaning operations.

### Safe working methods

- Eliminate or minimise dust creation through water spray for damping down work areas beforehand, water suppression for soft strip demolition tasks, and damping down during rubble and debris removal.
- Use covered chutes and skips where needed and screened off areas to prevent dust spreading.
- Choose work methods that avoid or limit grinding, drilling, cutting, chiselling and blasting of stone or wood wherever possible.
- Clean up regularly using vacuums or wet cleaning; avoid dry sweeping or use of compressed air to remove dust from clothes.
- Limit the number of people who need to be in the work area.

### PPE

- Use respiratory protective equipment (RPE) with an APF protection rating of 20 or higher depending on location, duration and type of work; consider powered RPE for longer duration work; when wearing tight-fitting RPE, wearers must be clean shaven and fit-tested.
- Disposable dust masks (FFP3) may be acceptable for outdoor work but must be fit-tested.

## MANAGING THE RISK

**Training & communication, supervision, maintenance & testing of controls and air monitoring\*** are all vital aspects of managing the risk, in addition to health surveillance which can be a requirement in certain circumstances.

See our introductory *Respiratory Health Hazards in Construction Fact Sheet Series: Overview* for more information about what things to consider and implement.

### Air monitoring\*

Air monitoring is a specialist activity. It may be needed as part of a COSHH assessment, as a periodic check on control effectiveness and to assess compliance with relevant WELs, or where there has been a failure in a control (for example if a worker reports respiratory symptoms). A qualified Occupational Hygienist can ensure it is carried out in a way that provides meaningful and helpful results.

The decision to undertake exposure monitoring should be made in accordance with HSE's monitoring strategies outlined in HSG173. In some situation, qualitative or semi-quantitative methods may be suitable. See also COSHH regulation 10 ACOP which details when exposure monitoring is necessary or unnecessary.

Also, see HSE leaflet G409, Exposure measurement: Air sampling. [www.hse.gov.uk/pubns/guidance/g409.pdf](http://www.hse.gov.uk/pubns/guidance/g409.pdf)



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## WORKPLACE EXPOSURE LIMITS (WELs) & EXPOSURE LEVELS

Agent or substance	Control/Exposure Limit	Exposure Levels/Comments
Asbestos (all types)	0.1 fibres/ml (4 hr TWA) 0.6 fibres/ml (10 min TWA)	The aim should be to avoid any exposure. There is a high risk of exposures from particular ACMs, including sprayed asbestos coatings and asbestos insulation, which may be disturbed by workers when demolishing buildings built before 2000. All such work, as well as any which could be at exposures near to or above the control limit, must be carried out by an HSE licensed contractor.
Construction dust	10mg/m <sup>3</sup> (8 hour TWA) <sup>2</sup> 4mg/m <sup>3</sup> (8 hour TWA) <sup>2</sup>	These levels are not workplace exposure limit but the level at which the dust becomes defined as a 'hazardous substance' and so it subject to the COSHH regulations. This does not apply to substances listed in Table 3.2 of part 3 of Annex VI of the CLP Regulation, substances specified with an indication of danger e.g. very toxic, toxic, harmful, corrosive or irritant, or substances for which the HSE has an approved WEL.
Silica - RCS	RCS: 0.1 mg/m <sup>3</sup> (8 hr TWA).  All Party Parliamentary Group for Respiratory Health (which is an informal, cross-party group formed by MPs and Members of the House of Lords) published a report named "Silica- the next asbestos". This recommends that the WEL for RCS is reduced to 0.05 mg.m-3 as this would be in line with the recommended exposure standard from the Scientific Committee on Occupational Exposure Limits proposed in 2003	Different types of stone contain different amounts of silica, with sandstone (70-90%) and concrete (anything from 25-75%) typically containing the most, granite, slate and brick at around 30%, and limestone and marble (2%) the least. All dust exposure levels are affected by the frequency and duration of the work and are likely to be higher in poorly ventilated spaces. Dry working without extraction controls is likely to produce the highest levels of dust.
Hardwood Dust	3 mg/m <sup>3</sup> (8 hour TWA)	Capable of causing cancer. Capable of causing occupational asthma. If hardwood dusts are mixed with other wood dusts, the WEL shall apply to all the wood dusts present in that mixture. All dust exposure levels are affected by the frequency and duration of the work and are likely to be higher in poorly ventilated spaces. Dry working without extraction controls is likely to produce the highest levels of dust.
Softwood Dust	5 mg/m <sup>3</sup> (8 hour TWA)	Capable of causing occupational asthma. If softwood dusts are mixed with hardwood dusts, the WEL for hardwood dusts shall apply to all the wood dusts present in that mixture. All dust exposure levels are affected by the frequency and duration of the work and are likely to be higher in poorly ventilated spaces. Dry working without extraction controls is likely to produce the highest levels of dust.

### Further information

- COSHH Essentials guidance sheet on how to control exposure to hazards in construction: [www.hse.gov.uk/pubns/guidance/cnseries.htm](http://www.hse.gov.uk/pubns/guidance/cnseries.htm)
- COSHH Essentials: Health surveillance for those exposed to respirable crystalline silica (RCS): [www.hse.gov.uk/pubns/guidance/g404.pdf](http://www.hse.gov.uk/pubns/guidance/g404.pdf)
- COSHH Essentials: Woodworking to control exposure to dusts: <https://www.hse.gov.uk/coshh/essentials/direct-advice/woodworking.htm>
- Construction dust leaflet: [www.hse.gov.uk/pubns/cis36.pdf](http://www.hse.gov.uk/pubns/cis36.pdf)
- Silica dust: [www.hse.gov.uk/construction/healthrisks/cancer-and-construction/silica-dust.htm](http://www.hse.gov.uk/construction/healthrisks/cancer-and-construction/silica-dust.htm)
- Wood dust: [www.hse.gov.uk/woodworking/wooddust.htm](http://www.hse.gov.uk/woodworking/wooddust.htm)