

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. RCS is classified as a Group 1 carcinogen and is a definite cause of cancer in humans. These diseases cause permanent disability and early death. The WHO* and the ILO* estimate that approximately 30 people die annually in Ireland from occupational exposure to respirable crystalline silica (RCS).

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 asbestos containing materials (ACMs). Asbestos is classified as a category 1 carcinogen. 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. In Ireland, over 50 cases of mesothelioma are reported annually. The WHO* and the ILO* estimate that approximately 400 people die annually in Ireland from occupational exposure to asbestos.

**The WHO is the World Health Organisation and the ILO is the International Labour Organisation. They are both United Nations agencies.*

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 screen 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 the location, duration and type of work. Consider powered RPE for longer duration work. Operators wearing tight-fitting RPE 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 and 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.

Air monitoring

Air monitoring is a specialist activity. It may be required as a result of a chemical agents risk assessment, as a periodic check on control effectiveness and to assess compliance with relevant occupation exposure limit value (OELV), 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.

Refer to the current Chemical Agents Code of Practice for Occupational Exposure limit Values (OELVs)

To obtain the most accurate and up-to-date information, it is recommended to visit the Health and Safety Authority (HSA) website or contact the HSA directly. The website may have the latest versions of the relevant code of practice, guidelines, and regulations.

<https://www.hsa.ie>

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OCCUPATIONAL EXPOSURE LIMIT VALUES (OELVs) & EXPOSURE LEVELS

Agent or substance	Control/Exposure Limit	Exposure Levels/Comments
Asbestos (all types)	0.1 fibres/cm ³ (8-hr reference period)	The aim should be to avoid any exposure. There is a high risk of exposure from particular ACMs, including sprayed asbestos coatings and asbestos insulation, which may be disturbed by workers when demolishing or renovating buildings built before 2000. An asbestos survey must be completed by a qualified independent Asbestos consultant prior to any construction work taking place.
Dust non-specific		
Total inhalable	10 mg/m ³ (8-hr reference period)	
Respirable	4 mg/m ³ (8-hour reference period)	
Silica - RCS	0.1 mg/m ³ (8-hour reference period).	Different types of stone contain different amounts of silica, with sandstone (70 - 90% silica) and concrete (anything from 25 - 75% silica) typically containing the most, granite, slate and brick at around 30% and limestone and marble 2% silica. 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 control is likely to produce the highest levels of dust.
Hardwood Dust	2 mg/m ³ (8-hour reference period)	Capable of causing cancer. Capable of causing occupational asthma. If hardwood dusts are mixed with other wood dusts, the OELV 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 ³ (8-hour reference period)	Capable of causing occupational asthma. If softwood dusts are mixed with hardwood dusts, the OELV 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

[Safety, Health and Welfare at Work \(Chemical Agents\) Regulations, 2001. S.I. No. 619/2001, as amended 2015, 2021.](#)

[Safety, Health and Welfare at Work \(Carcinogens, Mutagens & Reprotoxic Substances\) Regulations, 2024](#)

[Current Code of Practice for the Safety, Health and Welfare at Work \(Chemical Agents\) Regulations, 2001 as amended, and the Safety, Health and Welfare at Work \(Carcinogens, Mutagens & Reprotoxic Substances\) Regulations, 2024.](#)

[Control of Chemical Agents: Your Steps to chemical safety.](#)

[Guidelines on Occupational Asthma. Health and Safety Authority.](#)

[Guidelines on Occupational Dermatitis. Health and Safety Authority.](#)