BREATHE FREELY IRELAND

Controlling exposures to prevent occupational lung disease in CONSTRUCTION

Painter/Decorator

HAZARDS AND RISKS

Painting and decorating work can involve exposures to many different harmful substances during regular tasks such as the removal of old finishes, surface preparation, mixing and application of primer, undercoat and finishing coats and adhesives. The biggest respiratory health risks come from the hazardous dusts, mists, fumes and vapours which can be generated by these activities when working on or with asbestos, silica, hardwood, paints, gypsum, paint solvent, chromate in primers and isocyanates. In addition, there is a known small but measurable increased risk of lung and bladder cancer amongst professional painters, the cause of which has not been identified but cannot wholly be explained by exposure to asbestos or on smoking (both agents being known causes of lung cancer).

Asbestos

Decorators may come into contact with or disturb a number of asbestos containing materials (ACMs) during refurbishment/maintenance work on buildings, particularly those built before 2000. Asbestos is classified as a category 1 carcinogen. Inhalation of asbestos fibres can cause mesothelioma, asbestos-related lung cancer, asbestosis, and pleural thickening - all potentially 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 ILO* estimate that approximately 400 people die annually in Ireland from occupational exposure to asbestos.

Silica and Respirable Crystalline Silica

Silica occurs in many types of stone and in concrete and can be released during abrasive blasting or sanding tasks. Inhaling fine silica dust (RCS) can lead to serious lung diseases, including fibrosis, silicosis, chronic obstructive pulmonary disease (COPD) and lung cancer. The WHO* and ILO* estimate that approximately 30 people die annually from occupational exposure to RCS.

Chromium (VI) compounds (sometimes known as hexavalent chromium or CrVI)

Chromate from primer paints can be inhaled via dust, mist or spray given off during application, and exposure can lead to ulceration of mucous membranes as well as an elevated risk of lung cancer. Exposure may also cause occupational asthma.

Other dusts, mists and sprays

Gypsum dust from drywall materials, hardwood dust and paint pigment dusts can all be generated by stripping, sanding, brushing and burning activities, with potential respiratory effects from exposures including irritation, allergic rhinitis, shortness of breath, as well as COPD and nasal cancer. Inhaling solvents can lead to irritation and shortness of breath; and breathing in isocyanates, through roller, brush or spray paint applications, can cause allergic rhinitis and asthma.

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

CONTROL OPTIONS

Removing old finishes by stripping, sanding, wire brushing, burning and/or abrasive blasting

Smoothing surfaces using sandpaper, scrapers, brushes, steel wool and/or sanding machines.

Engineering controls

- When dry sanding with hand tools use on–tool extraction.
- Use a Class H Vacuum industrial cleaner (HEPA filter) for cleaning up dusts.

Safe working methods

- DO NOT USE THESE TECHNIQES ON ACMs!
- Wet methods preferred, including wet blasting & avoid burning where possible. For wet blasting use alumina or non-sand abrasives.
- Ensure good general ventilation by natural or mechanical means.
- Dry sanding with block on pole if possible.

PPE

- Impervious gloves and overalls recommended for all work.
- For dry sanding, when using penetrating stripper fluid or gel and for burning, use half face mask respiratory protective equipment (RPE) with P3 filter & minimum APF20 protection rating. RPE selection should be made in line with the risk assessment and with advice from the supplier sought if needed.
- For blasting wear gauntlets, safety boots & a slicker suit; use a blasting helmet (AFP40) with bib (to EN 14594) and compressed air breathing supply.
- Ensure good general ventilation for all types of solvent application.
- Segregate spraying areas & minimise access to non- essential workers.

Mixing & applying solvent-based primers and paint coatings using spraying, roller and brush applications

Engineering controls

- For spraying choose correct type of spray equipment for the task; for poorly ventilated areas, local exhaust ventilation (LEV) will be required.

Safe working methods

- Roller and brush application methods preferred.
- Consider alternative low hazard solvents first.

PPE

- RPE selection should be made in line with the risk assessment and with advice from the supplier sought if needed.
- For handling chemicals such as paints or solvents, a gas/vapour filter will likely be needed e.g. an A2 vapour cartridge.
- For spraying use RPE with vapour & particulate protection with minimum APF20 protection rating.

Spraying of specialised epoxy & isocyanate-based paints

Engineering controls

- Select correct type of spray equipment for the task.
- Use LEV if possible.

Safe working methods

- Ensure good general ventilation and segregation of spraying area.

PPE

- Impervious gloves and overalls recommended for all work.
- Whilst handling specialist 2-pack paints, RPE must be provided as a constant flow air-fed breathing apparatus (BA). In most instances this should be a visor/hood type air-fed BA with APF of 40 and a low flow indicator.

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 Occupational Exposure Limit Values (OELVs), 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 Health and Safety Authority's 'Code of Practice' for relevant 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

See reverse for Occupational Exposure Limit Values (OELVs)

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OCCUPATIONAL EXPOSURE LIMIT VALUES (OELVs) & EXPOSURE LEVELS

Agent or substance	Control/Exposure Limit	Exposure Levels
Asbestos (all types)	0.1 fibres/cm^3 (8-hr reference period)	The aim is to avoid any exposure to asbestos or ACMs. Most work on or near AC. Ms must be carried out by a qualified asbestos removal contractor.
Chromium (VI) compounds	0.01 mg/m^3 (direct use e.g. Cr6 applied for chrome plating) 0.025 mg/m^3 (process generated e.g. fume from welding)	Capable of causing occupational asthma and cancer. Upcoming OELV change (0.005 mg/m3) due to take effect January 2025.
Gypsum Total inhalable Respirable	 10mg/m^3 (8-hr reference period) 4 mg/m^3 (8-hr reference period)	Exposure levels are affected by the frequency and duration of the work being undertaken and are likely to be higher in poorly ventilated spaces/areas.
Isocyanates	0.02mg/m^3 (8-hr reference period) 0.07mg/m^3 (15-min reference period)	
Paint solvents	Refer to SDS for solvents present.	
Paint pigment (titanium dioxide) Total inhalable Respirable	 10mg/m^3 (8-hr reference period) 4 mg/m^3 (8-hr reference period)	
Silica (amorphous) Total inhalable Respirable	 6 mg/m^3 (8-hr reference period) 2.4mg/m^3 (8-hr reference period)	
Silica - RCS (Respirable Crystalline)	0.1mg/m^3 (8-hr reference period)	Capable of causing cancer. 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. Dust exposure levels are affected by the frequency and duration of work and are likely to be higher in poorly ventilated areas.
Hardwood Dust	2 mg/m^3 (8-hr 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-hr 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

Removing old finishes by stripping, sanding, wire brushing, burning and/or abrasive blasting/Smoothing surfaces using sandpaper, scrapers, brushes, steel wool and/or sanding machines

Current Chemical Agents Code of Practice 2024 - Health and Safety Authority (hsa.ie)

The facts on Silica Dust - Roadmap on Carcinogens

Isocyanates - Health and Safety Authority (hsa.ie)

Guidelines on Occupational Asthma - Health and Safety Authority (hsa.ie)

Guidelines on Occupational Dermatitis - Health and Safety Authority (hsa.ie)

Your steps to Chemical Safety - A Guide for Small Business - Health and Safety Authority (hsa.ie)