



## Controlling Exposures to prevent occupational lung disease in the construction industry

# 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, and 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 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 potentially fatal or serious and incurable diseases that take many years to manifest.

#### Silica and respirable crystalline silica (RCS)

Silica occurs in many types of stone and in concrete, and in dust form 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. Over 500 construction workers die every year from exposure to silica dust.

#### 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.

### 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 TECHNIQUES 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 BS EN 14594) and compressed air breathing supply.

#### 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.
- Ensure good general ventilation for all types of solvent application.
- Segregate spraying areas & minimise access to non essential workers.

##### 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 at all 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 & 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 situations, 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)

# Painter/Decorator

## WORKPLACE EXPOSURE LIMITS (WELs) & EXPOSURE LEVELS

Agent or substance	Control/Exposure Limit	Exposure Levels
Asbestos (all types)	0.1 fibres/ml (4 hour TWA) 0.6 fibres/ml (10 min TWA)	Most work on or near ACMs must be carried out by an HSE licensed contractor. There is HSE guidance* for removing areas of textured coating containing asbestos which is non-licensed work.
Chromium (VI) compounds	0.01 mg/m <sup>3</sup> (direct use e.g. Cr6 applied for chrome plating) 0.025 mg/m <sup>3</sup> (process generated e.g. fume from welding)	Capable of causing occupational asthma and cancer.
Gypsum	10mg/m <sup>3</sup> (inhalable dust) (8 hour TWA) 4mg/m <sup>3</sup> (respirable dust) (8 hour TWA)	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 <sup>3</sup> (8 hour TWA) 0.07mg/m <sup>3</sup> (15 min TWA)	
Paint solvents	Refer to SDS for solvents present and to EH40/2005 for limits	
Paint pigment (titanium dioxide)	10mg/m <sup>3</sup> (inhalable dust) (8 hour TWA) 4mg/m <sup>3</sup> (respirable dust) (8 hour TWA)	
Silica (amorphous)	6mg/m <sup>3</sup> (inhalable dust) (8 hour TWA) 2.4mg/m <sup>3</sup> (respirable dust) (8 hours TWA)	
Silica - RCS (respirable crystalline)	0.1mg/m <sup>3</sup> (8 hour TWA)	Most work on or near ACMs must be carried out by an HSE licensed contractor. There is HSE guidance* for removing areas of textured coating containing asbestos which is non-licensed work.
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

**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**

- \*For removing small areas of textured coating containing asbestos: Asbestos Essentials: Removing textured coating from a small area: [www.hse.gov.uk/pubns/guidance/a28.pdf](http://www.hse.gov.uk/pubns/guidance/a28.pdf)\*
- For dry sanding tools: Controlling construction dust with on-tool extraction: [www.hse.gov.uk/pubns/cis69.pdf](http://www.hse.gov.uk/pubns/cis69.pdf)
- COSHH Essentials: Hand-held sanding machines: [www.coshh-essentials.org.uk/assets/live/wd07.pdf](http://www.coshh-essentials.org.uk/assets/live/wd07.pdf)
- For abrasive blasting: COSHH Essentials in construction: Silica; Abrasive blasting: [www.hse.gov.uk/pubns/guidance/cn7.pdf](http://www.hse.gov.uk/pubns/guidance/cn7.pdf)
- For roller and brush applications: Offshore COSHH Essentials: Painting by brush/roller: [www.hse.gov.uk/pubns/guidance/oce2.pdf](http://www.hse.gov.uk/pubns/guidance/oce2.pdf)
- For spraying: Construction solvents: Spraying: [www.hse.gov.uk/construction/healthrisks/hazardous-substances/spraying.htm](http://www.hse.gov.uk/construction/healthrisks/hazardous-substances/spraying.htm)
- Offshore COSHH Essentials: Painting by spraying: [www.hse.gov.uk/pubns/guidance/oce3.pdf](http://www.hse.gov.uk/pubns/guidance/oce3.pdf)
- Construction isocyanates: Spraying: [www.hse.gov.uk/construction/healthrisks/hazardous-substances/isocyanates-spraying.htm](http://www.hse.gov.uk/construction/healthrisks/hazardous-substances/isocyanates-spraying.htm)