

CEMENT

Introduction

Cement is one of the most widely used construction materials. Anyone who uses cement (or mixtures containing it eg mortar and concrete) or is responsible for managing or supervising its use should be aware that it may be a hazard to health and that safe working practices must be used to minimise the risk. This sheet advises on how to use cement safely.

The most commonly used cement contains mainly calcium silicate with aluminium and iron compounds together with a small amount of gypsum. High-alumina cement contains calcium aluminates. A variety of additives such as alkaline hardeners may be used to produce special-purpose cements and these increase the risk of dermatitis.

Health effects

Cement can cause ill health mainly by:

Skin contact: contact with wet cement can cause both burns and dermatitis:

- 1) Cement burns: if freshly mixed concrete or mortar gets trapped against the skin, eg by falling inside a worker's boots or gloves, serious skin burns or ulcers can result which can take several months to heal and may need skin grafting;
- 2) Dermatitis: skin affected with dermatitis feels itchy and sore and looks red, scaly and cracked. Two sorts of dermatitis can occur:
 - a) **Irritant** dermatitis results from direct damage to the skin caused by the combination of wetness, chemical corrosiveness and abrasiveness of cement in concrete and mortar:
 - b) **Allergic** dermatitis results when workers become sensitised to chromium salts which may be present in the raw materials used to make cement. Sensitisation to additives such as pigments, epoxy resins and hardeners can also occur.

Eye contact: contact with cement powder or wet cement can cause irritation and inflammation.

Inhalation of dust: high levels of dust can be produced when cement is handled, for example when emptying bags of cement or during their disposal. In the short term, exposure to high levels of cement dust irritates the nose and throat and causes difficulty with breathing. There is uncertainty about the long term health effects of breathing in cement dust; chronic chest trouble is possible.

Abrading hardened concrete eg in scabbling or concrete cutting, can give rise to large amounts of inhalable dust which could contain high levels of silica, depending on the

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aggregate that has been used. Workers breathing in silica dust are at an increased risk of developing chest complaints.

Musculoskeletal risk: working with cement also poses less obvious risks such as sprains and strains particularly to the back, arms and shoulders from, for example, lifting and carrying bags of cement, mixing mortar, etc. there is also a risk of more serious damage to the back from the cumulative effects of long-term involvement with these activities, particularly the manual handling of cement bags weighing up to 50 kg.

Legal provisions

Work with cement is subject to the Control of Substances Hazardous to Health Regulations 1994 (COSHH) which requires the health risk to be assessed and then prevented or controlled. Users should get information on risks and precautions from manufacturers/suppliers who have a legal duty to supply it.

Manual handling activities are subject to the Manual Handling Operations Regulations 1992. These require employers and the self-employed to avoid manual handling activities where practicable. If the manual handling activity cannot be avoided, then the risks must be assessed and reduced so far as is reasonably practicable.

Precautionary measures

Preventing dust exposure.

Work in a way which avoids dusty methods of work. For example, scabbling is often carried out to ensure an adequate bond between successive concrete pours and the amount of scabbling can be reduced by larger pours. The need to cut or break hardened concrete can be reduced by designing work so as to allow for tolerances, by not relying on perfect fit nor on cutting away to make things fit, by leaving positive gaps and specifying expanding grout, mastic or resilient materials as joint fillers.

Controlling dust exposure

Work in a way which minimises the amount of dust produced. So, open bags of cement with care, mix carefully etc. Handle dry material in a well-ventilated area.

Personal protection

Workers must be provided with and wear clothing to protect their skin from cement and cement mixtures, eg

- Gloves
- Overalls with long sleeves and full-length trousers
- Waterproof boots

Clothing should be worn so as to avoid 'traps' for fresh mortar or concrete to fall in ie with sleeves over the gloves and trouser legs over the boots – not tucked inside. If 'trapping' does happen, steps should be taken **immediately** to clean the contaminated skin and protective clothing with copious amounts of clean water.

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Suitable respiratory protective equipment should be worn if dusty conditions cannot be avoided.

Suitable eye protection must be worn when conditions give rise to a risk of eye injury (eg opening cement sacks, during mixing where splashing might occur).

Manual handling

The manual handling of cement bags presents a risk of musculoskeletal injury, where possible employers and the self-employed should:

- Plan the work to remove the need for bags to be moved more than once (eg cement bags can be delivered straight to a mixing area)
- Consider mechanical handling assistance
- Specify and use lower weight bags (eg 25 kg size)

Where the manual handling of cement bags is unavoidable, employers and the self-employed must carry out a suitable and sufficient risk assessment that should consider the task, load, working environment and individual capability. This does not mean every job involving manual handling has to be looked at in detail. If the load is 25 kg, easily gripped close to the body and the working conditions are good, the risk of injury to most working people will be low and no further assessment will be needed.

Where the load is heavier than 25 kg, or handling involves twisting or lowering there may be more chance of injury and the assessment will need to be more detailed.

Hygiene

Personal hygiene is important. Adequate welfare facilities should be available on site and workers should wash their hands and face at the end of a job and before eating, drinking or smoking, and wash their hands before using the toilet. Facilities for cleaning boots and changing clothes should also be available.

First aid

Contaminated skin should be washed with cold running water as soon as possible. Particular attention should be paid to any wound which should be covered with a suitable dressing. Eye contamination should be washed with cold tap water for at least 10 minutes before the affected person is taken to hospital.