



## Working with Cement Grout

Working with cement grout is commonplace when installing tieback anchors, soil nails or micropiles. Employees can be exposed to wet cement grout if precautions are not in place such as the correct use of Personal Protective Equipment. There are hazards to the eyes and skin that you need to be aware of.

- Portland cement is alkaline in nature, so wet concrete and other cement mixtures are strongly basic (pH of 12 to 13). Alkaline compounds such as lime (calcium oxide) are corrosive to human tissue
- Portland cement is hygroscopic-meaning it absorbs water. In fact, Portland cement needs water to harden. It will draw water away from any material it contacts - including your skin.
- Cement contained in grout is abrasive to bare skin. Do not allow it to get inside of your gloves, clothing, or boots as it will abrade your skin and may cause a serious injury.
- The abrasive and alkaline effects of wet grout can be very hazardous to the eye. Exposure to airborne dust or wet grout may cause immediate or delayed irritation of the eyes. Depending on the level of exposure, effects may range from redness to chemical burns and blindness.
- Some workers can become allergic to the hexavalent chromium in cement. A small yet significant percentage of all workers using cement will develop an allergy to chromium, with symptoms ranging from a mild rash to severe skin ulcers.
- In addition to skin reactions, hexavalent chromium can cause a respiratory allergy called occupational asthma. Symptoms include wheezing and difficulty breathing. Workers may develop both skin *and* respiratory allergies to hexavalent chromium.
- Inhaling high levels of dust may occur when workers empty bags of cement. In the short term, such exposure irritates the nose and throat and causes choking and difficult breathing. Prolonged or repeated exposure can lead to a disabling and often fatal lung disease called *silicosis*. Some studies also indicate a link between crystalline silica exposure and lung cancer.

### Protective Measures:

- Protective eyewear, waterproof gloves, a long-sleeved shirt, and long pants should be worn, especially if hand mixing / breaking bags. If you must stand in fresh grout while it is being placed in an anchor or micropile, wear rubber boots tall enough to prevent grout from getting into them.
- Clothing worn as protection should not be allowed to become saturated with moisture from fresh grout, because saturated clothing can transfer the alkaline or hygroscopic effects to the skin.

- Wear suitable respiratory protective equipment such as a NIOSH approved P, N or R 95 (or greater) particulate respirator when cement dust can't be avoided during hand mixing. Ensure employees are physically fit to wear a respirator, have been trained on their use and the respirator is fit tested to their face.
- Ensure you have an adequate supply of eye wash solution on hand at all times. Keep the solution in a clean, well accessible area and protect it from freezing.

#### First Aid:

Once the eyes or areas of the skin have been directly exposed to wet grout, immediate steps should be followed to slow the burning process:

- Remove any contaminated clothing, being careful not to touch unexposed areas.
- Promptly rinse clothes in clean water.
- Gently brush any dry chemicals off the skin and flush the affected area with clean running water for at least 20 minutes. To help neutralize the alkalinity, add vinegar, citrus or a buffer to the water.
- If the eyes are involved, rinse eyes with clean water or eye wash solution for 20 minutes. Seek professional medical attention without delay. Provide the medical personnel with a product Safety Data Sheet (SDS) so the treating medical personnel understand what chemical they are dealing with for injury care.