

TST #116-B

Slurry Burns

Concrete is as essential a part of the modern world as are electricity or computers. Concrete's versatility, durability and economy have made it the world's most used construction material. The U.S. uses about 260 million cubic yards of ready-mixed concrete each year. It is used in highways, streets, parking lots and garages, bridges, high-rise buildings, dams, homes, floors, sidewalks, driveways and numerous other applications. Workers in every sector of the construction industry are exposed to concrete and, in solid state, it is also one of the safest known building materials.

Portland cement is the basic ingredient of concrete. Concrete is formed when Portland cement creates a paste with water that binds with sand and rock to harden. Although the terms "cement" and "concrete" are often used interchangeably, cement is actually an ingredient of concrete. Portland cement is not a brand name, but the generic term for the type of cement used in virtually all concrete.

Through a process called hydration, the cement and water harden and bind the aggregates into a rock-like mass. Hydration is a chemical reaction in which the major compounds in cement form chemical bonds with water molecules and become hydrates or hydration products.

When cement is dry, it contains hexavalent chromium and other trace metals along with calcium oxide, which is not particularly dangerous. However, when water is added to cement, calcium hydroxide is formed, which is extremely alkaline with a pH of 12 to 13. Consider that water is pH 7 (neutral), but human skin is acidic and has a pH of about 4.5 to 5.5. Vinegar, a weak acid, has a pH of 3.5, while battery acid (sulfuric acid) has a pH of 1. Strong alkalis have pH values between 12 and 14. Wet cement is near the top of the charts with a pH that ranges from 12 to 13, therefore wet cement can produce alkaline (caustic) skin burns which progress and get worse even without more exposure. A worker may have wet concrete on his or her skin for hours without feeling any discomfort, however the cement is damaging the skin microscopically. Early identification of changes to the skin is important so steps can be taken to treat the affected area. It must not be assumed that the burn cannot get worse. By the time a worker becomes aware of a burn, much damage has already occurred and further damage is difficult to stop. Cement burns frequently produce discoloration of the skin, gradually changing to a deep purple-blue color, eventually progressing to painful burns, ulcerations and in worse cases amputation. Some patients report red inflamed skin near the affected area followed by severe blistering. Wet concrete and slurry have additional characteristics that are harmful to human skin.

To safeguard against accidental exposure, appropriate protective clothing and equipment should be worn. Workers should wear protective eyewear, long-sleeve shirts and long pants, coveralls, rubber boots and waterproof alkali-resistant gloves. Washing with clean water prior to putting on protective gear will reduce the chance of perspiration reacting with dry particles of cement inside of the protective clothing.

In the case that direct contact with wet concrete or slurry occur, the first few minutes after contact are the most important in mitigating the effect of the burn. Wash your skin with cool, clean water immediately. If your clothing becomes saturated, change it. If your skin begins to sting, itch, hurt, form blisters, scabs, develops fissures, gets red and becomes swollen it is important to seek medical attention. Upon locating a medical professional, he or she should be told that the person has a caustic burn from cement because the burn can look like a standard trauma burn, but treating a concrete burn with ointments that would soothe a normal burn may trap the corrosive materials against the skin, making the burn worse.

Tips for Treating Slurry Burns

- Carefully remove any clothing that has been soiled with wet concrete or slurry.
- Rinse the affected skin with cool, clean water.
- Add vinegar to the affected area to neutralize alkalinity and wash well.
- Wash using a pH-neutral or acidic soap.
- Avoid petroleum jelly, creams and lotions.
- Seek medical attention.

Slurry Burns Quiz

The following statements should be answered with “True” or “False.” Answers below.

1. Slurry burns are immediately detectable.
2. Any type of lotion or burn cream should be applied to an area of skin affected by slurry burns.
3. Common household vinegar is a weak acid and can help neutralize slurry burns.
4. Once you rinse a slurry burn with cool, clean water there is no further risk of damage to the skin.
5. A slurry burn may continue to draw moisture from skin even after the area has been washed with clean water.

Employee Name: _____

Signature: _____ **Date:** _____

Answers:

1. False
2. False
3. True
4. False
5. True