SAFETY BULLETIN

AMERICAN SOCIETY OF CONCRETE CONTRACTORS
ENHANCING THE CAPABILITIES OF THOSE WHO BUILD WITH CONCRETE

CONCRETE BURNS

Concrete contractors are exposed to countless safety hazards, one of which is wet concrete. Skin that comes into contact with wet concrete can result in a concrete burn. It is a common injury that can be avoided with proper protection, planning, and understanding of the hazards.

What Causes Concrete Burns?

Concrete itself doesn't "burn," as the material is cold to the touch. It is the chemicals and materials in concrete that create the hazard. When mixed with water, a chemical reaction takes place creating calcium hydroxide, a substance that when exposed to unprotected skin can result in a chemical burn. Hexavalent chromium, also present in concrete, is harmful to the skin as well.

How Does the Burn Take Place?

Wet concrete affects people differently, and a number of variables contribute to the severity of the reaction. Typical concrete burns tend to be on the extremities. Concrete workers' hands and feet are consistently exposed to wet concrete. Forearms, hands, wrists, knees, lower legs, and feet are most vulnerable. Time plays a significant role in the seriousness of the wound. Brief direct contact, properly washed, will typically have little, if any, adverse effect. As an individual continues to work with wet concrete on his or her skin, the greater the damage.

What Are the Effects of a Concrete Burn?

Concrete burns tend to worsen over time. They may start out as simple redness known as a non-allergic irritant contact dermatitis (ICD). Untreated, ICD leads to scabbing, blistering and pain. The site of irritation will gradually turn blue or purple, followed by skin deterioration and extreme pain. Open wounds or ulcerations can develop. In severe cases disfiguring scars, hospitalization or amputation have been the result.

Some individuals develop an allergic response to concrete over time. This is known as Allergic Contact Dermatitis (ASD). For these individuals, sensitization can result from a single or repeated exposures. Once an individual has become sensitized, very small exposure to wet concrete can trigger ACD.

Concrete Burn Prevention

Exposure to concrete burns is easily prevented through education and training. Along with good communication, pre-planning and proper PPE, work practices that minimize skin contact with wet concrete will lead to reduced concrete burns.

- Wear appropriate protective clothing and equipment: long sleeves, long pants, non-permeable gloves, and rubber boots made from butyl or nitrite material, safety glasses, and, if needed, a face shield. If you find plastic face shields are easily scratched or reduce visibility, try using mesh face shields as they are easily cleaned with water and last longer.
- Utilize coveralls made from thin Tyvek. These provide a better layer of protection, while still allowing the worker not to overheat while handling hoses.
- Use duct tape to wrap where the top of rubber boots and pants meet, and where gloves and long sleeves meet. Barrier creams serve as a good source of protection for commonly exposed areas.
- Immediately remove clothing splashed by wet concrete. Clean and wash exposed skin and monitor the area for irritation.
- Remove jewelry, bracelets, watches as they increase opportunities for abrasion and areas for wet concrete to accumulate.
- Ensure clean, potable water is available to wash exposed skin.
- Train workers on the hazards related to wet concrete, concrete burn prevention, and first-aid.
- Wash work clothes contaminated with wet concrete separately from street clothes.
- Be proactive on the jobsite. Set up concrete burn prevention kits and have them readily available. Kits should include clean, absorbent towels, spare nitrile gloves, clean socks, eyewash solution and white vinegar.

First-aid, Treatment and Medical Response

If exposure occurs and a concrete burn is sustained follow these steps:

- Report exposures immediately.
- Remove contaminated clothing.
- If the concrete has dried, brush it off with a clean towel; adding water to dried concrete will only make matters worse.

- Clean exposed skin thoroughly with a pH neutral soap without scent or alcohols. Do not use hand sanitizers. Vinegar can help neutralize the alkalinity of the burn.
- If the eyes are exposed, flush with clean potable water for at least 20 minutes.
- Monitor the area for signs of worsening.
- Do not use creams or lotions containing lanolin or petroleum to treat the affected area.
- If a doctor visit is required have the Safety Data Sheet available for the physician. Serious conditions may require antibiotics or more invasive treatments. Maintain communication with the physician to ensure all treatments and rehabilitation requirements are met.

OSHA Requirements

OSHA has several standards in place to ensure employers take the correct steps to protect workers exposed to wet concrete. Familiarize yourself with the following:

- Personal Protective Equipment (29 CFR 1926 Subpart E for construction; 29 CFR 1910 Subpart I for general industry; 29 CFR 1915 Subpart I for shipyards)
- Sanitation (29 CFR 1926.51 for construction; 29 CFR 1910.141 for general industry; 29 CFR 1915.97 for shipyards)
- Hazard Communication (29 CFR 1926.59 for construction; 29 CFR 1910.1200 for general industry; 29 CFR 1915.1200 for shipyards) and Safety Training (29 CFR 1926.21 for construction)
- Recordkeeping (29 CFR 1904)
- Permissible Exposure Limit (PEL) (29 CFR 1926.55 for construction; 29 CFR 1910.1000 for general industry; 29 CFR 1915.1000 for shipyards

Conclusion

By understanding the potential severity of concrete burns and how they occur, this injury can be avoided. With education, training, and the appropriate PPE, along with early intervention and immediate care, every concrete contractor can do their part in reducing concrete burns.

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