

# TerranearPMC Safety Share

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According to the American Burn Association, there are approximately 486,000 burn related injuries requiring medical treatment each year. Of these burn related injuries, 8% occur in the workplace. This equates to roughly 38,880 workers. And based on investigations these work cases were attributed to inadequate training/awareness, a lack of guarding/personal protective equipment, or persons not using situation awareness, thereby not focusing on the task at hand: All precursors that if properly controlled could have prevented an unfortunate scenario.

While most people associate burns with flame, the fact is burns are more often the result of liquids rather than flames. Over 500,000 scald burns occur annually in the United States. The two highest risk populations are children under the age of 5 and adults over 65. Burns are one of the most common household injuries, especially among children. The term “burn” is a term that is characterized by skin damage resulting in the affected skin cells dying.

Most people can recover from burns without serious health consequences, depending on the cause and degree of injury. More serious burns require immediate emergency medical care that is necessary to prevent complications and even death.

Burns are classified as first-, second-, or third-degree, depending on how deep and severe they penetrate the skin's surface.

- First-degree (superficial) burns: These burns affect only the epidermis, or outer layer of skin. The burn site is red, painful, dry, and with no blisters. Mild sunburn is an example. Long-term tissue damage is rare and usually consists of an increase or decrease in the skin color.
- Second-degree (partial thickness) burns: Involve the epidermis and part of the dermis layer of skin. The burn site appears red, blistered, and may be swollen and painful.
- Third-degree (full thickness) burns: Destroy the epidermis and dermis and may go into the subcutaneous tissue. The burn site may appear white or charred.

In addition to the above 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> degree burns, there is also a fourth category used to describe damage to the underlying bones, muscles, and tendons. And while it would seem that these burns would cause the greatest amount of pain, burns that affect the deep skin layers (and beyond) typically result in no sensation as the nerve endings are destroyed.

Burns can occur from a variety of causes, including:

- scalding from hot, boiling liquids
- chemical burns
- electrical burns
- fires, including flames from matches, candles, and lighters
- excessive sun exposure

Burns are not classified based on the source or causative factor. Scalding, for example, can result in any of the above-listed burn-types - depending on how hot the liquid is and how long it stays in contact with the skin.



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Chemical and electrical burns warrant immediate medical attention because they can affect internal organs; even if skin damage is minor. For instance, even a thimble of hydrogen fluoride on the skin can result in very serious consequences (not so much from the actual contact burn, but through its systemic effect). At the same time, an electrical current of 0.1 to 0.2 amps can be just as devastating.

The first step to prevent burns is proper training for materials handling, including wearing the right PPE and understanding emergency response protocol. Workers need to be aware of sources in their workplace. Burns can be caused not just from the obvious thermal, chemical, electrical, friction, radiation, but extreme cold temperatures as well (ever hold “dry ice” with bare hands? – caution don’t do it!).

Thermal burns can be caused by extremely hot surfaces or fires. To prevent burns from surfaces, guards or interlocking mechanisms are typically used to prevent accidental contact. Of course, specific PPE must be worn, and proper postings need to be placed to caution employees. To mitigate the possibility of burns from exposure to fires, emergency action plans must be established while the workforce needs to have mock drills to ensure expedient evacuation. Additionally, firefighting equipment such as fire extinguishers and sprinkler systems should be inspected as required. Further precautions should also be taken for hot work where sparks and/or flames are expected (keep flammables at least 35 feet away from sparks and open flames).

To prevent chemical burns, it is always important to understand what you are working with. All workers should observe the warnings on the labels and adhere to manufacturer recommendations per OSHA's Hazard Communication Standard (29 CFR 1910.1200) which includes reading Safety Data Sheets (SDSs). A pictogram indicating corrosive properties is a definite warning for a potential chemical burn. SDSs will identify the necessary steps that should be implemented; whether personal protective equipment or first aid measures.

In addition to workplace burn hazards, the home can present some serious burn hazards – especially in the kitchen. For instance, aside from stoves being an obvious burn hazard (electric as well as gas stoves), hot water can cause 3<sup>rd</sup> degree burns under the following conditions:

- 1 second at 156°
- 2 seconds at 149°
- 5 seconds at 140°
- 15 seconds at 133°.

Basic 1<sup>st</sup> aid for minor burns include: 1) Holding the burned area under cool (not cold) running water or apply a cool, wet compress until the pain eases. 2) **Remove rings or other tight items from the burned area,** 3) **Don't break blisters** (Fluid-filled blisters protect against infection. If a blister breaks, clean the area with water), 4) Apply an antibiotic ointment (but if a rash appears, stop using the ointment). Once a burn is completely cooled, apply a lotion, such as Aloe Vera or a moisturizer. This helps prevent drying and provides relief. Next, cover the burn with a sterile gauze bandage (not fluffy cotton). Wrap it loosely to avoid putting pressure on burned skin. Bandaging keeps air off the area, reduces pain and protects blistered skin. And, if needed, take an over-the-counter pain reliever, such as ibuprofen, naproxen sodium (Aleve) or acetaminophen (Tylenol, others).

Burns that are more severe should be treated immediately by professional medical care.

**The best way to resolve any problem in the human world is for all sides  
to sit down and talk**

Dalai Lama