



What is Chemical Burn?

Chemical burns are those caused by substances such as **acids, bases, and hydrocarbons**. The **severity of burns** associated with the chemicals depends on several factors as following:

- The **concentration** of the substance
- The **duration** of contact time
- The **site of contact** (eye, skin, mucous membrane)
- The **type of chemical** causing the damage
- With **how much** of the chemical contacted
- How the chemical works**
- pH** of the agent
- Whether or not skin is **intact**

The swallowing of **solid pellets** of alkaline substances highlights the importance of these factors. The solid pellets will sit in the stomach for a longer period, thus more **severe burns sustained**. Another important factor is **concentrated forms of some acids and bases generate a large amount of heat when diluted**, this results not only in chemical burns but thermal burns too.

Some **signs and symptoms** of chemical burns include:

- Redness, irritation, or burning at the site of contact
- Pain or numbness at the site of contact
- Formation of black dead skin (Eschar)** – this occurs particularly with **acid chemical burns** as they produce a **coagulation necrosis by denaturing proteins** (**Eschar: The scab formed when a wound or skin is sealed by the heat of cautery or burning.**)
- Deep tissue injury to the skin is caused by alkali chemical burns as they produce a liquefaction necrosis that involves denaturing of proteins as well as saponification of fats
- Vision changes** or complete **loss of vision** if chemicals get into the eyes



In severe chemical burns where the agent has been swallowed, inhaled or **absorbed into the bloodstream**, the following **systemic symptoms** may occur.

- Cough** or **shortness of breath**
- Low blood pressure**
- Faintness, weakness, dizziness**
- Headache**
- Muscle twitching or seizures**
- Cardiac arrest** or **irregular heartbeat**

Chemical Burn Treatment

Before they are treated, chemical burns must be stopped. This is usually done by **flushing the area with large volumes of clean running water (at moderate water pressure and at least 15min)** until the chemical is dilute enough to stop reacting with the skin. If the chemical is dry, such as lime powder or cement should be gently brushed off the skin before flushing.

Chemical specific neutralizing agents are not used because the precise chemical may not be known, and **reactions with neutralizing agents produce heat, causing even more damage.**