

Chemical Burns*

The severity of a burn depends on what substance caused it, how long the substance was in contact with the eye and how the injury is treated. Damage is usually limited to the front segment of the eye such as the cornea (the clear front surface of the eye responsible for good vision), the conjunctiva (the layer covering the white part of the eye) and occasionally the internal structures of the eye including the lens. Burns that penetrate deeper than the cornea are the most severe, often causing cataracts and glaucoma.

Causes

Most chemical eye injuries occur at work. Industries use a variety of chemicals daily. However, chemical injuries also frequently occur at home from cleaning products or other household products. These injuries can be just as dangerous as those at work and must be treated seriously and immediately.

Chemical burns to the eye can be divided into three categories: alkali burns, acid burns and irritants.

The acidity or alkalinity, called the pH, of a substance is measured on a scale from one to 14, with seven indicating a neutral substance. Substances with pH values less than seven are acids, while numbers higher than seven are alkaline. The higher or lower the number, the more acidic or basic a substance is and the more damage it can cause.

Alkali burns are the most dangerous. Alkalis or chemicals that have a high pH penetrate the surface of the eye and can cause severe injury to both the external structures like the cornea and the internal structures like the lens. In general, more damage occurs with higher pH chemicals.

- Common alkali substances contain the hydroxides of ammonia, caustic soda, potassium hydroxide, magnesium and lime.
- Substances you may have at home that contain these chemicals include cleaning products (ammonia), drain cleaners (caustic soda), oven cleaners, plaster or cement (lime) and fertilisers.

Acid burns result from chemicals with a low pH and are usually less severe than alkali burns because they do not penetrate into the eye as readily as alkaline substances. The exception is a hydrofluoric acid burn, which is as dangerous as an alkali burn. Acids usually damage only the very front of the eye. However, they can cause serious damage to the cornea and also may result in blindness.

- Common acids causing eye burns include sulphuric acid, sulphurous acid, hydrochloric acid, nitric acid, acetic acid, chromic acid and hydrofluoric acid.
- Substances you have at home that may contain these chemicals include glass polish (hydrofluoric acid), vinegar (acetic acid) and nail polish remover (acetic acid). A car battery can explode and cause a sulphuric acid burn.

Irritants are substances that have a neutral pH and tend to cause more discomfort to the eye than actual damage.

- Most household detergents fall into this category.
- Pepper spray is also an irritant. It can cause significant pain but usually does not affect vision and rarely causes any damage to the eye.

*Courtesy of WebMD <http://www.webmd.boots.com/eye-health/guide/chemical-eye-burns>