Eye injuries - chemical burns
Summary

A chemical burn occurs when a liquid chemical contacts the eye.
Alkalis are especially dangerous to the eyes.
In many cases, prompt and thorough rinsing of the eye (with saline or fresh water) dramatically reduces the risk of injury and long-term damage. It is often better to go straight to the nearest tap than to wait for saline from the first aid kit.
Always wear appropriate safety goggles or a face shield when handling liquid chemicals.

A chemical burn occurs when a liquid or powder chemical contacts the eye. Most commonly, the injury happens when a chemical splashes over the face. However, chemical burns may also result from rubbing your eyes after handling chemicals. Depending on the chemical and the degree of exposure, the potential for injury ranges from temporary redness and irritation to blindness. Chemicals splashed into the eyes can also cause poisoning as they are absorbed into the bloodstream many times more rapidly than chemicals splashed onto the skin. Always wear appropriate safety goggles or a face shield when handling liquid or powder chemicals. For splashes of non-toxic liquids, such as soaps or shampoos, flushing the eye with fresh water is usually all the treatment you need. However, splashes from acids or alkali chemicals are serious and may cause vision loss. Seek urgent medical attention.

Symptoms of chemical burns to the eye

The symptoms of a chemical burn depend on the substance splashed into the eyes, but may include:

- stinging
- a burning sensation
- redness
- pain
- swelling of the eyelids
- blurry vision.

Complications of chemical burns to the eye

Complications of severe chemical burns can include:

- corneal perforation – full thickness damage to the cornea, the clear surface of the eye
- corneal ulcer – superficial damage to the cornea
- cataracts – an abnormal clouding of the eye’s lens
- glaucoma – high pressure within the eye, which damages the optic nerve.

First aid suggestions for chemical burns to the eye

Liquid or powder splashes from chemicals may seriously damage the eye. In many cases, prompt and thorough rinsing of the eye (with saline or fresh water), dramatically reduces the risk of injury and long-term damage. It is often better to go straight to the nearest tap than to wait for saline from the first aid kit.

First aid suggestions include:

- Hold your face under running water for 15 to 20 minutes and allow the water stream to flood into your eyes. Use your fingers to hold your eyelids apart (make sure there is no trace of the chemical on your fingers).
- If you wear contact lenses, remove them as soon as possible.
- Seek immediate medical advice. Medical staff will need to know what chemical was involved, particularly whether it was acid or alkaline, liquid or powder.
- Do not judge the seriousness of your eye injury on the degree of pain. For example, alkali chemicals don’t usually cause significant symptoms, but can seriously damage the eye.
- Powder chemicals can be particularly damaging since they are more difficult to flush out.

Diagnosis of chemical burns to the eye

Professional care for chemical burns to the eye may include:

- irritation – the doctor or ophthalmologist will first flush your eyes, even if you’ve already flushed them yourself. In most cases, prompt and thorough rinsing of the eye (with saline or fresh water) dramatically reduces the risk of injury and long-term damage
- full eye examination – this is to check for the location of the burn and the amount of damage
- diagnostic tests – may include a fluorescein evaluation, which involves the use of a special dye that colours damaged or dead eye tissue yellow-green when
Treatment for chemical burns to the eye

Treatment differs according to the chemical agent and the severity of the injury, but may include:

- pain-relieving medication
- topical antibiotics to reduce the risk of infection
- dedicated eye drops
- lubricants applied to the eye surface to prevent the eyelids from sticking to the cornea as it heals
- anti-inflammatory medication
- in mild cases, an eye patch worn until the eye recovers
- in more serious cases, hospital admission is necessary and treatment is given for any complications.

Self-care after a chemical burn to the eye

Be guided by your doctor or healthcare professional, but general suggestions include:

- Don’t drive a vehicle while you are wearing an eye patch.
- Use medication strictly as directed.
- Attend all follow-up appointments.
- See your doctor or eye specialist straight away if you have new symptoms, such as eye pain, redness, photophobia (tolerance of light) or blurry vision.

Always wear eye protection

Estimates suggest that about 90 per cent of chemical burns to the eye are avoidable. Wear eye protection every time you handle liquid or powder chemicals. Prescription glasses or sunglasses do not provide reliable protection, because the loose fit allows liquids or powder to splash behind the frames.

Appropriate safety gear is the best way to reduce your risk of injury. Options depend on the job, but may include:

- **safety glasses** – look similar to regular prescription glasses, but have shatter-resistant lenses, stronger frames and side shields. However, safety glasses do not seal against the face, which means liquids may splash or run into the eyes. Safety glasses may be an option if the risk of splash is low or if the liquid is non-toxic
- **safety goggles** – are made from smash-resistant materials and seal against the face. Some styles of safety goggles are large enough to be worn over the top of prescription glasses
- **face shields** – offer maximum protection against splash injury. In some cases, safety goggles are also worn. Face shields are recommended when handling dangerous chemicals, such as corrosive liquids or powders, cryogenic fluids or biological materials.

Other eye safety suggestions

Important ways to reduce your risk include:

- **know your chemicals** – check the chemical’s label and its Material Safety Data Sheet (MSDS) for information on safe handling. Strictly follow the manufacturer’s instructions
- choose safer products – hazardous chemicals can occasionally be replaced with less toxic options, or you may be able to buy the same chemical in a less dangerous form. For example, a liquid product may also be available as pellets
- **keep safety equipment in good repair** – safety goggles and face shields need to be replaced regularly. Check the manufacturer’s guidelines
- **don’t wear contact lenses** – a contact lens may absorb the chemical and concentrate the burn on the eye surface. When working with chemicals, wear prescription glasses instead of contact lenses, and always wear protective equipment over the glasses
- **dispose of unwanted chemicals safely** – visit the Sustainability Victoria website to look for chemical collection times and places around Victoria, or call 1800 353 233.

Where to get help

- In an emergency, always call triple zero (000)
- Emergency department of your nearest hospital
- Your doctor
- Victorian Poisons Information Centre. Tel. 13 11 26 – for advice when poisoning or suspected poisoning occurs, and poisoning prevention information (24 hours, 7 days)
- Ophthalmologist
- Your manager or supervisor
- Your elected occupational health and safety (OH&S) representative and your workplace OH&S coordinator
- WorkSafe Victoria. Tel. (03) 9641 1555 or 1800 136 089 (toll free) – for general enquiries
- WorkSafe Victoria Emergency Response Line Tel. 13 23 60 – to report serious workplace emergencies (24 hours, 7 days)
- Sustainability Victoria. Tel. 1800 353 233 – for information about safe chemical disposal

References

- How to handle common eye injuries, 2016, All about vision. [More information here](#)
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More information

Eyes

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Eye basics
- Eye injuries and irritations
- Eye conditions
- Vision change and loss
- Vision aids and treatment
- Living with vision loss

Eye basics

- 10 tips for good eye health
  Most vision problems are avoidable or can be treated so have your eyes regularly checked by an optometrist or other eye care health professional.

- Eye care - optometrists
  A standard eye examination with an optometrist includes a screening for all common eye diseases, such as glaucoma and cataracts.

- Eye care - orthoptists
  Orthoptists assist in the diagnosis and treatment of eye disease.

- Eye safety at work
  Wearing eye protection appropriate for the task can significantly reduce the risk of injury.

- Eyes - common problems
  You can help prevent dry eyes and minimise the risk of tired or sore eyes while reading or using a computer.

- Eyes explained
  The eye's complicated design means that an image can pass through its many layers and end up crisply focused on the retina.

- Eye tests
  Regular eye tests or check-ups detect problems early, so you can have early treatment to minimise any permanent damage to your eyes.

- Short-sightedness
  If you are short-sighted, you will have trouble seeing objects clearly in the distance and they will appear blurry.

- Smoking and eye disease
  Smoking is thought to be a factor in age-related macular degeneration and blindness.

Eye injuries and irritations

- Dry eye
  A person suffering from dry eye syndrome does not have enough of the right kind of tears to keep the eye comfortable.

- Eye floaters
  Some eye floaters look like small dots, while others appear like threads or little hairy clumps.

- Eye injuries - chemical burns
  Always wear safety goggles or a face shield when handling liquid or powder chemicals.

- Eye injuries - foreign body in the eye
  Don't try to remove a foreign body from your eye - go to your doctor or hospital emergency department for help.

- Eyes - blocked tear duct
  Some babies are born with a blocked tear duct, but other events, including infection and trauma to the nose, can cause a blocked tear duct.
- **Styes**
  
  Styes may be red and sore, but they generally do not cause any damage to the eye or eyelids.

**Eye conditions**

- **Blepharospasm**
  
  Blepharospasm means involuntary twitching, blinking, closure or squeezing of the eyelids.

- **Cataracts**
  
  A cataract of the eye is like the lens of a camera becoming fogged up.

- **Colour blindness**
  
  People who are colour blind can't see some colours or see them differently from other people. Colour blindness is inherited, and affects more boys than girls. Out of 20 boys, it is likely that one or...

- **Conjunctivitis**
  
  Conjunctivitis is an eye infection caused by a bacteria or virus. Symptoms include eye redness, a discharge and swollen lids. Conjunctivitis is treated with antibacterial eye drops or ointment.

- **Diabetic retinopathy**
  
  Without treatment, diabetic retinopathy can cause loss of vision and blindness.

- **Eyes - giant cell arteritis**
  
  Giant cell arteritis is inflammation of the arteries that can cause sudden blindness in one or both eyes.

- **Eyes - glaucoma**
  
  Glaucoma can happen at any age and without early detection can lead to permanent vision loss and blindness.

- **Eyes - optic neuritis**
  
  Optic neuritis is inflammation of the optic nerve that causes blurred, grey and dim vision.

- **Eyes - retinitis pigmentosa**
  
  Retinitis pigmentosa is the collective name for a range of diseases that damage the retina and cause vision to fade.

- **Eyes - trachoma**
  
  A clean face and clean environment are the best protection against trachoma.

- **Eyes - uveitis**
  
  Iritis can cause vision problems if it is not treated.

- **Pterygium**
  
  A pterygium is a fleshy overgrowth of the conjunctiva that may affect one or both eyes.

- **Retinal detachment**
  
  If a detached retina is not treated, it can lead to total blindness.

**Vision change and loss**

- **Eyes - age-related macular degeneration**
  
  Age-related macular degeneration (AMD) is a type of vision loss where there is a distortion or absence of the central field of vision.

- **Eyes - long-sightedness**
  
  A significant amount of long-sightedness can lead to blurred vision, particularly for close objects.

- **Eyes - refractive errors**
  
  Refractive errors are common eye disorders causing blurry vision and are related to the focusing ability of your eyes.

- **Short-sightedness**
  
  If you are short-sighted, you will have trouble seeing objects clearly in the distance and they will appear blurry.

- **Vision loss - neurological**
  
  Neurological vision impairment (ABI VI) is vision loss caused by damage to the areas of the brain that are responsible for sight.
Vision aids and treatment

- Corneal transplantation and donation
  Corneal transplant surgery would not be possible without generous donors and their families, who have donated corneal tissue so that others may see.

- Eyes - contact lenses
  Proper care of your contact lenses will help avoid irritation or damage to your eyes.

- Eyes - laser eye surgery
  During laser eye surgery, a computer-controlled laser is used to remove microscopic amounts of tissue from the front surface of the eye.

- Vision therapy
  Vision therapy is effective for everyone; however, its impact is greatest in children and young adults.

Living with vision loss

- Braille
  Braille is a reading and writing system for blind and vision impaired people, made up of raised dots that can be “read” by touch.

- Vision loss and sport
  Many sports can be adapted to suit people who are blind or have low vision.

- Vision loss - living with a guide dog
  Guide dogs are intelligent animals that thrive on the challenge of helping their handlers.

- Vision loss - occupational therapy
  Occupational therapy for people with vision impairment offers new strategies and alternative ways to do things.

- Vision loss - offering assistance
  When you meet a person who is blind or has low vision, ask them if they want help.

- Vision loss - recreational activities
  Many recreational activities can be reworked to suit a person who is blind or has low vision.

- Vision loss - safety around the home
  There are many ways to improve home safety for people whose vision is deteriorating.

- Vision loss - social events
  With planning and preparation, most social events can be adapted to suit people with vision loss.

- Vision loss - training guide dogs
  Guide dogs are specially bred and trained to enable people who are blind or vision impaired to achieve freedom and independence.

Related Information

- Eye injuries - foreign body in the eye
  Don't try to remove a foreign body from your eye - go to your doctor or hospital emergency department for help.

- Eyes - flash burns
  Flash burns are like sunburn in the eye and can affect both your eyes. Find out more.

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