CONDITION

Potassium hydroxide poisoning

Potassium hydroxide poisoning is caustic tissue damage caused by swallowing, touching, or inhaling potassium hydroxide.

WHAT IT IS
Tissue injury from a strongly caustic alkali

BODY SYSTEM
Digestive tract, eyes, skin, and lungs

MAIN SYMPTOMS
Burning pain, drooling, vomiting, breathing difficulty

WHAT CAUSES IT
Contact with concentrated potassium hydroxide

HOW IT IS DIAGNOSED
Exposure history, examination, endoscopy, and sometimes CT

MAIN TREATMENT
Immediate rinsing, supportive care, and specialist treatment

CAN IT BE CURED?
Sometimes - superficial burns can heal fully

IS IT AN EMERGENCY?
Yes - after swallowing, eye exposure, breathing trouble, or burns

LONG-TERM OUTLOOK
Complete healing or lasting scarring, based on burn depth

Overview

Potassium hydroxide is a strong alkali, meaning it has a very high pH. It is also called caustic potash or potash lye. It may be found in some drain or oven cleaners, soap-making supplies, industrial products, and battery fluids.

Potassium hydroxide poisoning is mainly a chemical burn rather than poisoning caused by the chemical circulating through the body. Concentrated potassium hydroxide can break down tissue and penetrate deeply. It may injure the mouth, throat, food pipe, stomach, eyes, skin, or airways.

The food pipe is also called the oesophagus. It carries food from your mouth to your stomach. A deep burn there can cause a hole, known as a perforation, or later form scar tissue that makes swallowing difficult.

The seriousness of an exposure is affected by the product's concentration, whether it was a liquid or solid, how much contacted the body, and how long it remained in place. A brief contact with a dilute product may cause limited irritation. Swallowing a concentrated product or getting it in an eye can cause severe injury.

Potassium hydroxide exposure needs prompt advice from a poison centre or emergency service. Do not wait for symptoms to become severe.

Symptoms

Symptoms often begin quickly, but the full depth of an internal burn may not be clear at first. A normal-looking mouth does not rule out injury farther down the throat or food pipe.

After swallowing potassium hydroxide, symptoms can include:

Eye exposure may cause intense pain, redness, watering, blurred vision, or sensitivity to light. Serious burns can damage the clear front surface of the eye, called the cornea. Vision may be threatened even if the amount seems small.

Skin contact can cause redness, pain, blistering, or pale, slippery-looking tissue. Alkali burns may keep getting deeper while the chemical remains on the skin. Pain does not always show how serious the burn is.

Breathing in dust, mist, or fumes may irritate the nose, throat, and lungs. Symptoms include coughing, chest tightness, wheezing, and breathing difficulty. Swelling in the upper airway can sometimes worsen after the exposure.

- Burning pain in the mouth, throat, chest, or abdomen
- Drooling or difficulty swallowing
- Nausea, vomiting, or vomiting blood
- Swelling of the lips, tongue, or throat
- Hoarseness, coughing, noisy breathing, or shortness of breath

Causes and risk factors

The condition is caused by direct contact with potassium hydroxide. It is not contagious and is not inherited.

Exposure may happen when a product is swallowed, splashed into the eyes, spilled on the skin, or inhaled as dust or mist. Common settings include cleaning, soap making, manufacturing,

laboratory work, and handling leaking batteries.

Factors that can increase the chance or severity of injury include:

The product label can help identify the chemical and concentration. Keep the container or take a clear photograph if this can be done safely. Do not bring a leaking or contaminated container into a vehicle or healthcare building unless emergency staff advise it.

- Using concentrated products without suitable eye and skin protection
- Mixing, pouring, or transferring chemicals where splashes can occur
- Storing chemicals in drink bottles or unlabelled containers
- Leaving household chemicals within a child's reach
- Delayed removal of contaminated clothing or delayed rinsing
- Intentional swallowing of a caustic product

Diagnosis

There is no single blood test that confirms potassium hydroxide poisoning. Diagnosis starts with what happened, the product involved, where it contacted the body, and what symptoms followed.

Healthcare professionals examine the mouth, throat, breathing, skin, and eyes as appropriate. Blood tests may be used to look for dehydration, bleeding, acid-base disturbances, or signs of organ stress. These tests help assess the effects of a serious burn rather than identify potassium hydroxide itself.

After a significant ingestion, an upper endoscopy may be needed. During this procedure, a flexible camera is passed through the mouth to examine the food pipe and stomach. It helps show the depth and extent of injury. Endoscopy is performed only after the airway and circulation are stable.

A CT scan may be used if a deep burn, perforation, or damage around the food pipe or stomach is suspected. Chest or abdominal imaging can also look for air or fluid where it should not be.

Eye assessment may include checking vision, measuring surface pH, and examining the cornea with magnification and dye. Breathing problems may require airway examination, chest imaging, or bronchoscopy, which uses a camera to inspect the airways.

Treatment and management

There is no antidote that reverses a potassium hydroxide burn. Treatment focuses on removing the chemical, protecting breathing, controlling symptoms, and managing damaged tissue.

For skin or eye contact, immediate irrigation is important. Remove contaminated clothing without spreading the chemical. Rinse affected skin continuously with plenty of lukewarm running water. For an eye exposure, begin flushing at once and continue while arranging urgent help. Remove contact lenses if they come out easily, but do not delay rinsing.

If potassium hydroxide has been swallowed, rinse the mouth gently and spit out the water if the person is awake and able to do so. Do not cause vomiting. Vomiting can expose the food pipe and mouth to the chemical again.

Do not try to neutralise potassium hydroxide with vinegar, lemon juice, or another acid. The chemical reaction can release heat and worsen the injury. Activated charcoal does not reliably bind caustic alkalis and may interfere with assessment. Do not give food, drink, or medicine unless a poison specialist or emergency professional advises it.

Hospital treatment may include:

Antibiotics and corticosteroids like prednisone or hydrocortisone are not automatically used for every caustic ingestion. Specialists decide whether they have a role based on the location and depth of injury and the presence of infection or airway swelling.

Scar-related narrowing of the food pipe may later be treated with endoscopic dilation. This gently stretches the narrowed area and sometimes must be repeated.

- Airway support, oxygen, or a breathing tube if swelling threatens breathing
- Fluids through a vein and medicines for pain or nausea
- Endoscopy and imaging to assess internal injury
- Nutrition support while swallowing is unsafe
- Eye treatment guided by an eye specialist
- Burn care for damaged skin
- Surgery for perforation, dead tissue, or other severe complications

Complications

Deep burns can cause swelling of the throat and airway. This may make breathing difficult. Lung injury can also occur if the chemical or vomit enters the airways.

A severe burn of the food pipe or stomach may bleed or develop a perforation. Leakage into

the chest or abdomen can lead to serious inflammation and infection. These complications need emergency treatment and sometimes surgery.

During healing, scar tissue can narrow the food pipe. This is called an oesophageal stricture. It may cause food to stick, painful swallowing, regurgitation, weight loss, or repeated chest infections from food entering the airway. Scarring near the stomach outlet can also interfere with digestion.

Eye burns can lead to corneal scarring, dry eye, raised pressure inside the eye, or permanent loss of vision. Deep skin burns may leave scars or restrict movement across a joint.

People with a history of severe caustic injury to the food pipe have a higher long-term risk of oesophageal cancer. This risk develops over many years. A specialist can explain whether long-term monitoring is appropriate after a major injury.

Prevention

Most potassium hydroxide exposures can be prevented. The chemical itself cannot be made harmless, so prevention depends on safe storage, handling, and protective equipment.

Keep products in their original, labelled containers. Never place them in cups, drink bottles, or food containers. Store them locked away from children and separate from food and medicines.

Follow the product label and workplace safety instructions. Use suitable gloves, protective clothing, and chemical splash goggles when handling concentrated products. Good ventilation and appropriate respiratory protection may be required in workplaces where dust or mist is produced.

Do not mix potassium hydroxide products with acids or other cleaning chemicals. Inspect batteries and chemical containers for leaks. Arrange safe disposal according to local hazardous-waste instructions.

Living with it and what to expect

Recovery is shaped by the depth and location of the burn. Mild skin irritation may settle after thorough rinsing and medical assessment. Superficial internal burns can also heal without lasting problems. Deeper injuries may require a hospital stay, procedures, surgery, or longer-term nutrition support.

The first days focus on breathing, pain control, and identifying deep tissue damage. Internal burns may continue to evolve, so repeated examinations or imaging may be necessary.

Over the following weeks, healing tissue can form scars. New or increasing difficulty swallowing may be a sign of narrowing in the food pipe. Some people need repeated dilation procedures over months or years. Severe injury can lead to lasting changes in eating, voice, breathing, vision, or skin movement.

Follow-up may involve digestive specialists, surgeons, dietitians, eye specialists, burn teams, or speech and swallowing therapists. Keeping follow-up appointments matters even when the immediate pain has improved.

An accidental exposure can be frightening. Intentional ingestion also needs compassionate mental health support alongside treatment of the physical injury. Many people recover fully from limited exposures, while deep burns can have lasting effects. Early appearance alone cannot reliably predict the course.

When to get medical help

Call emergency services or a poison centre immediately if potassium hydroxide has been swallowed or has entered an eye. Also get emergency help for breathing difficulty, noisy breathing, severe chest or abdominal pain, repeated vomiting, vomiting blood, collapse, confusion, extensive skin burns, or inability to swallow saliva.

Begin rinsing an exposed eye or skin immediately while help is being arranged. Do not delay irrigation to search for instructions. Protect yourself from contact with the chemical.

In the United States, Poison Control can be reached at 1-800-222-1222 . Elsewhere, contact your local poison information centre or emergency service.

After discharge, seek urgent reassessment for worsening swallowing difficulty, food becoming stuck, new breathing problems, fever with chest or abdominal pain, black stools, vomiting blood, or increasing eye pain or loss of vision.

Routine follow-up is appropriate for ongoing mild swallowing discomfort, poor appetite, weight change, persistent hoarseness, wound healing concerns, or problems returning to usual activities. Report these symptoms promptly rather than waiting until a scheduled appointment if they are getting worse.

Common questions

Is potassium hydroxide the same as lye?

Potassium hydroxide is one form of lye and is sometimes called caustic potash. Sodium

hydroxide is another form. Both are strong alkalis that can cause deep chemical burns.

Should I neutralise it with vinegar?

No. Mixing an alkali with an acid can produce heat and increase tissue damage. Use plenty of running water for skin or eye exposure, and follow instructions from a poison specialist.

If there are no burns in my mouth, is my food pipe safe?

Not necessarily. The mouth can look normal even when the food pipe or stomach has been injured. The exposure history, symptoms, examination, and sometimes endoscopy or CT are needed to assess the risk.

Can symptoms appear later?

Yes. Airway swelling, deeper tissue injury, bleeding, or perforation may become clearer after the initial exposure. Scar-related swallowing problems usually develop during healing rather than immediately.

Will potassium hydroxide poisoning cause permanent damage?

Limited, superficial burns may heal completely. Concentrated or prolonged exposure can cause lasting scars, swallowing problems, skin changes, or loss of vision. Early medical assessment helps identify injuries that need treatment.

What if a battery containing potassium hydroxide leaks?

Avoid touching leaked fluid with bare skin. Move away from fumes, rinse any exposed skin or eye immediately, and contact a poison centre. A swallowed battery is also an emergency, even if it appears intact, because it can cause additional types of injury.

Sources

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