CONDITION

Sodium hypochlorite poisoning

Sodium hypochlorite poisoning is chemical injury caused by swallowing, breathing, or touching bleach.

WHAT IT IS
Chemical injury from bleach exposure

BODY SYSTEM
Digestive system, lungs, eyes, and skin

MAIN SYMPTOMS
Burning pain, vomiting, coughing, breathing difficulty

WHAT CAUSES IT
Swallowing, inhaling, or contacting sodium hypochlorite

HOW IT IS DIAGNOSED
Clinical assessment, endoscopy, or imaging for internal injury

MAIN TREATMENT
Decontamination and supportive hospital care

CAN IT BE CURED?
Sometimes - recovery depends on injury severity

IS IT AN EMERGENCY?
Sometimes - breathing trouble, severe pain, or concentrated exposure

LONG-TERM OUTLOOK
Mild exposures recover; deep burns can cause lasting damage

Overview

Sodium hypochlorite is the active chemical in many household bleaches, disinfectants, and some pool products. Poisoning happens when it is swallowed, breathed in, splashed into the eyes, or left on the skin.

Sodium hypochlorite is an irritant and a corrosive chemical. A corrosive chemical can damage tissue on contact. The seriousness of an exposure depends on the product's concentration, the amount involved, how long it remained in contact with the body, and the route of exposure.

A small accidental taste of ordinary household bleach often causes irritation rather than deep injury. Larger amounts and concentrated industrial or pool products can cause severe burns. Vomiting after swallowing bleach can expose the food pipe and airway a second time.

Bleach may also release dangerous gases when mixed with other cleaning products. Acids, including some toilet cleaners and vinegar, can release chlorine gas. Products containing ammonia can produce irritating chloramine gases. These gases can injure the eyes, throat, and lungs, especially in an enclosed space.

Sodium hypochlorite poisoning is an exposure-related condition, not an infectious or inherited disease. Prompt first aid and advice from a poison service can reduce further injury.

Symptoms

Symptoms may begin immediately, but breathing problems or signs of deeper internal injury can sometimes develop over several hours.

After swallowing sodium hypochlorite, symptoms may include:

Severe injury can cause swelling around the airway, bleeding, or a hole in the food pipe or stomach. This is called a perforation. It may cause severe chest or abdominal pain, fever, a fast heartbeat, or a rigid and very tender abdomen.

Breathing bleach fumes or gases produced by mixing cleaners may cause watery eyes, nose and throat irritation, coughing, wheezing, chest tightness, headache, or shortness of breath. More serious lung injury can cause low oxygen levels or fluid to collect in the lungs.

An eye splash may cause immediate pain, redness, tearing, light sensitivity, or blurred vision. Concentrated products can damage the clear front surface of the eye, called the cornea.

Skin exposure may cause redness, stinging, blistering, or a chemical burn. Wet clothing can hold the chemical against the skin and make the injury worse.

- Burning or pain in the mouth, throat, chest, or abdomen
- Drooling or difficulty swallowing
- Nausea, vomiting, or blood in vomit
- Coughing, choking, or a hoarse voice

Causes and risk factors

Poisoning is caused by direct exposure to sodium hypochlorite or by breathing gases released during a chemical reaction.

Common situations include accidentally swallowing household bleach, transferring bleach into an unlabelled drink container, using concentrated products without protection, or mixing

cleaning chemicals. Exposure can also happen during spills in workplaces, pools, or poorly ventilated rooms.

Factors linked with more serious injury include:

Young children are at risk of accidental swallowing if products are within reach. People with asthma or another lung condition may develop troublesome breathing symptoms after inhaling irritating gas, although anyone can be affected.

- Concentrated industrial, commercial, or pool products
- A large swallow or prolonged skin or eye contact
- Vomiting or inhaling liquid into the lungs
- Mixing bleach with acids or ammonia
- Exposure in a small, enclosed space
- Delayed removal of contaminated clothing or delayed eye rinsing

Diagnosis

There is no single blood test that confirms sodium hypochlorite poisoning. Diagnosis is usually based on what happened, the product involved, symptoms, and physical examination.

If possible, the product container, label, concentration, and estimated amount help the poison service or hospital assess the exposure. Do not delay getting help to search for this information.

In hospital, clinicians may monitor breathing rate, heart rate, blood pressure, temperature, and oxygen level. Blood tests can look for effects of a serious exposure, such as changes in acid balance or signs of organ stress, but they do not directly detect bleach poisoning.

A chest X-ray may be used if there is coughing, breathing difficulty, or concern that liquid entered the lungs. A camera examination of the throat may be needed if airway swelling is suspected.

After a significant ingestion, endoscopy may be considered. This uses a flexible camera to examine the food pipe and stomach for burns. CT imaging can help assess deep tissue damage or a possible perforation. These tests are chosen according to symptoms and the circumstances of the exposure; not every accidental taste requires them.

Eye examination may include checking vision, measuring the eye's surface acidity, and staining the cornea to reveal damage.

Treatment and management

The first step is to stop the exposure without putting anyone else at risk.

For inhaled fumes, move into fresh air if this can be done safely. Do not enter an enclosed contaminated area without suitable emergency equipment. Open doors or windows only if you can do so without further exposure.

For an eye splash, start rinsing immediately with plenty of clean, lukewarm water. Remove contact lenses if they come out easily. Continue rinsing while urgent advice is arranged.

For skin exposure, remove contaminated clothing and rinse the affected skin thoroughly with water. Avoid spreading the chemical to unaffected skin.

After swallowing bleach, rinse the mouth gently. Do not make yourself vomit. Do not try to neutralize bleach with vinegar, lemon juice, or another chemical, because the reaction can release gas and heat. Do not give food or drink to someone who is drowsy, having a seizure, vomiting repeatedly, or unable to swallow safely.

Contact a poison information service promptly for instructions based on the exact product and exposure. In the United States, Poison Control can be reached at 1-800-222-1222. Elsewhere, use the local poison centre or emergency service.

Hospital treatment is supportive, meaning it protects breathing and circulation while the tissues recover. It may include oxygen, medicines to open narrowed airways, intravenous fluids, and treatment for pain or nausea. A breathing tube and ventilator may be required if the airway is swollen or the lungs are seriously affected.

Eye exposure may require prolonged irrigation and assessment by an eye specialist. Significant digestive tract burns may require temporary feeding support. Surgery may be necessary if there is a perforation or extensive tissue destruction.

Activated charcoal does not reliably bind sodium hypochlorite and can complicate the assessment of a corrosive ingestion. Antibiotics and corticosteroids like prednisone or hydrocortisone are not automatically used for every exposure; they may be considered for specific complications.

Complications

Most minor household exposures do not cause lasting injury. Complications are more likely after concentrated exposure, a large swallow, aspiration into the lungs, or delayed decontamination.

Possible complications include:

As a digestive burn heals, scar tissue may narrow the food pipe. This is called an esophageal stricture. It can cause food to stick, painful swallowing, regurgitation, or weight loss weeks or months after the exposure.

Some people develop continuing cough, wheezing, or sensitivity to fumes after a major inhalation exposure. These symptoms need follow-up because they can resemble asthma and may require lung testing.

- Airway swelling that interferes with breathing
- Chemical inflammation of the lungs
- Fluid in the lungs or severe respiratory failure
- Bleeding or perforation of the food pipe or stomach
- Infection around damaged internal tissue
- Corneal injury, reduced vision, or eye scarring
- Deep skin burns and scarring

Prevention

Most sodium hypochlorite poisonings can be prevented. Safe storage and using one cleaning product at a time are especially important.

Keep bleach in its original, labelled container. Never transfer it to a cup, water bottle, or food container. Store it closed and out of the sight and reach of children.

Never mix bleach with acids, ammonia, or another cleaner. This includes vinegar, some toilet cleaners, glass cleaners, drain products, and unknown cleaning solutions. Rinsing surfaces between products does not make intentional mixing safe.

Use the product only as directed on its label. Ensure good ventilation, and use recommended eye or skin protection when handling concentrated products. Do not use industrial or pool-strength sodium hypochlorite as if it were household bleach.

Dispose of unwanted products according to local hazardous-waste instructions. Do not combine partly used cleaners before disposal.

Living with it and what to expect

After a mild exposure, irritation often improves over hours to a few days once contact has

stopped. A poison service may recommend observation at home when the product, amount, and symptoms indicate a low-risk exposure.

More significant poisoning can require hospital monitoring for delayed breathing problems or internal burns. Recovery may take days or weeks. People with serious digestive injury may need temporary changes in eating, nutritional support, repeat endoscopy, or surgery.

Scar-related narrowing of the food pipe may become noticeable weeks or months later. Treatment can include procedures that gently widen the narrowed area. More than one procedure may be needed.

After lung injury, cough, breathlessness, or wheezing may continue during recovery. Follow-up may include oxygen measurement, chest imaging, or breathing tests. Eye injuries also need follow-up until the surface has healed and vision is stable.

Once an uncomplicated acute exposure has healed, sodium hypochlorite does not remain in the body or keep causing poisoning. Long-term effects come from tissue damage caused at the time of exposure, not from stored bleach.

When to get medical help

Call emergency services now if someone has severe trouble breathing, collapses, has a seizure, is difficult to wake, turns blue or grey, or has severe chest or abdominal pain. Also seek emergency care for vomiting blood, marked drooling, inability to swallow, a hoarse voice with breathing difficulty, or signs of a deep eye burn.

Move away from fumes before making the call, if you can do so safely. Do not re-enter a contaminated enclosed space.

Contact a poison information service promptly after any sodium hypochlorite ingestion, exposure to a concentrated product, or exposure caused by mixing cleaners. Get urgent assessment for persistent coughing, wheezing, repeated vomiting, worsening pain, blurred vision, or ongoing eye symptoms after rinsing.

After discharge, arrange routine follow-up as advised. Seek an earlier review if swallowing becomes difficult, food begins to stick, weight falls, breathing symptoms persist, or vision changes. These can be signs of a healing complication rather than continued poisoning.

Common questions

Is swallowing bleach always fatal?

No. A small accidental swallow of household bleach often causes limited irritation, but the outcome cannot be judged from the amount alone. Concentrated products, larger swallows, symptoms, and aspiration into the lungs increase the risk of serious injury. Contact a poison service rather than waiting for symptoms.

What should I do immediately after swallowing bleach?

Rinse the mouth, do not induce vomiting, and contact a poison service. Do not try to neutralize the bleach. Emergency help is needed for breathing difficulty, severe pain, repeated vomiting, drooling, drowsiness, or trouble swallowing.

Can mixing bleach with vinegar or ammonia poison me?

Yes. Mixing bleach with acids such as vinegar can release chlorine gas. Mixing it with ammonia can produce chloramine gases. Both can irritate or injure the lungs. Leave the area for fresh air and seek urgent advice if coughing, chest tightness, wheezing, or breathlessness develops.

Does milk neutralize bleach?

No. Milk does not neutralize sodium hypochlorite. A poison service may sometimes advise a small amount of water or milk after a minor ingestion, but this is not suitable for someone who cannot swallow safely, is vomiting, or is drowsy. Do not delay the call to try a home remedy.

Can symptoms appear later?

Yes. Mouth or eye irritation is usually immediate, but lung symptoms and signs of deeper digestive injury may worsen over several hours. Scar-related swallowing problems can appear weeks or months later.

Can sodium hypochlorite poisoning cause permanent damage?

It can, but lasting damage is uncommon after minor exposure. Deep burns may leave scars in the food pipe, eyes, skin, or lungs. The long-term outlook is mainly determined by the concentration, route of exposure, and depth of the initial injury.

Sources

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