CONDITION

Chlorinated lime poisoning

Learn how chlorinated lime can harm the eyes, skin, lungs, and digestive tract, what to do after an exposure, and when to seek emergency care.

WHAT IT IS
Chemical poisoning from chlorinated lime

BODY SYSTEM
Lungs, digestive system, eyes and skin

MAIN SYMPTOMS
Burning eyes or skin, coughing or chest tightness, shortness of breath, vomiting or trouble swallowing

WHAT CAUSES IT
Exposure to chlorinated lime

HOW IT IS DIAGNOSED
Exposure history and medical examination

MAIN TREATMENT
Decontamination and supportive care

CAN IT BE CURED?
Sometimes - minor exposures usually improve

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

LONG-TERM OUTLOOK
Most minor exposures improve, but severe exposures may cause lasting injury

Overview

Chlorinated lime is a bleaching and disinfecting powder that usually contains calcium hypochlorite along with other calcium compounds. It may also be called bleaching powder. Products vary in strength and composition, so the label or safety data sheet is important when evaluating an exposure.

Chlorinated lime can injure tissue because it is a strong oxidizing chemical. An oxidizer can damage cells through chemical reactions. The powder or a concentrated solution may irritate or burn the eyes, skin, mouth, throat, esophagus, and stomach.

A second hazard is toxic gas. When hypochlorite products are mixed with acids, they can release chlorine gas. Mixing them with ammonia may produce irritating chloramine gases.

These gases can damage the airways and lungs. Mixing chlorinated lime with other chemicals or combustible material can also create a fire hazard.

The severity of poisoning depends on the product's concentration, the amount involved, the route of exposure, how long the chemical remained in contact with tissue, and whether gas was produced. A brief skin exposure may cause irritation, while swallowing concentrated material or breathing a large amount of gas can cause serious injury.

Any ingestion, significant eye exposure, breathing symptoms, or exposure involving mixed cleaning chemicals should be discussed promptly with a poison center or medical professional. In the United States, Poison Help can be reached at 1-800-222-1222.

Symptoms

Symptoms may begin immediately, but some breathing problems can worsen over several hours. The absence of severe pain does not always rule out deeper injury.

After breathing dust, chlorine, or chloramine gas, symptoms may include:

Heavy exposure can cause fluid to collect in the lungs, known as pulmonary edema. Warning signs include increasing breathlessness, rapid breathing, low oxygen levels, or coughing up frothy fluid.

Swallowing chlorinated lime may cause burning pain in the mouth, throat, chest, or upper abdomen. Other symptoms can include drooling, trouble swallowing, vomiting, coughing, or a hoarse voice. Vomit may contain blood if the digestive tract has been injured. Swelling around the airway can make breathing difficult.

Eye contact may cause intense burning, redness, tearing, light sensitivity, blurred vision, or difficulty keeping the eye open. Concentrated products can injure the cornea, the clear front surface of the eye.

Skin exposure may cause redness, pain, swelling, blistering, or a chemical burn. Dry powder can remain in clothing or skin folds and continue causing injury.

Call emergency services immediately for:

Do not enter an area containing a chemical cloud or strong chlorine odor unless emergency officials say it is safe. Rescuers can also be poisoned.

- Burning of the nose or throat
- Coughing, choking, or chest tightness
- Hoarseness or noisy breathing

- Shortness of breath or wheezing
- Watery or burning eyes
- Headache, nausea, or dizziness
- Trouble breathing, blue or gray lips, collapse, or confusion
- Severe chest pain, choking, or noisy breathing
- Inability to swallow, heavy drooling, or repeated vomiting
- Vomiting blood or severe abdominal pain
- A seizure or loss of consciousness
- A large exposure in an enclosed space

Causes and risk factors

Exposure often occurs while disinfecting water, cleaning surfaces, treating swimming pools, bleaching materials, or handling industrial chemicals. Accidents may happen when powder is transferred into an unmarked container or stored where children can reach it.

Mixing chlorinated lime with an acidic product is especially dangerous. Acids may be found in toilet-bowl cleaners, rust removers, descaling products, vinegar, and some industrial cleaners. Ammonia-containing cleaners and urine can also react with hypochlorite products to produce irritating gases.

Risk may be higher when:

Children may swallow a product because of unsafe storage. Adults can be exposed during work, home maintenance, pool care, or an attempt at self-harm. Intentional ingestion requires emergency medical and mental health assessment, regardless of whether early symptoms appear mild.

- The product is concentrated or used in a poorly ventilated area
- Protective gloves and eye protection are not used
- Powder becomes airborne while a container is opened or poured
- A person has asthma or another lung condition
- The chemical is stored in a drink bottle or food container
- Different cleaning or pool-treatment chemicals are combined
- The product contacts moisture, heat, organic material, or incompatible chemicals

Diagnosis

Diagnosis begins with the exposure history. Clinicians will ask about the product name, ingredients, concentration, amount, route of contact, timing, symptoms, and whether it was mixed with anything else. A photograph of the label or safety data sheet can be useful. Do not carry a leaking or contaminated container into a home, vehicle, or healthcare building.

The medical examination focuses on breathing, oxygen level, circulation, mental status, and signs of burns. The mouth and skin may be examined, but the appearance of the mouth does not reliably show how much injury is present deeper in the esophagus or stomach.

Testing depends on the exposure. A person with breathing symptoms may have continuous oxygen monitoring, blood tests, or a chest X-ray. A normal early X-ray does not always exclude developing lung injury.

After a concerning ingestion, specialists may consider upper endoscopy. During this procedure, a flexible camera is passed through the mouth to inspect the esophagus and stomach. It helps assess the depth and location of a chemical burn. Endoscopy is not necessary after every small exposure, and its timing depends on symptoms and the person's stability.

CT imaging may be used when clinicians are concerned about deep tissue injury, a hole in the digestive tract, or damage involving the chest or abdomen. There is no single blood test that confirms chlorinated lime poisoning.

Treatment and management

There is no specific antidote. Treatment limits continued contact with the chemical and supports breathing, circulation, and injured tissues.

After inhalation, move to fresh air without entering a contaminated space. Avoid exertion if coughing or shortness of breath is present. Emergency clinicians may provide oxygen, inhaled medicine to relax narrowed airways, or breathing support. People with significant symptoms may need observation because lung injury can progress after the initial exposure.

For dry powder on the skin, carefully remove contaminated clothing and brush away visible material without spreading it. Rinse exposed skin with plenty of lukewarm running water. Do not scrub harshly or apply acids, vinegar, or other chemicals in an attempt to neutralize the product. Wash contaminated clothing separately or follow hazardous-material disposal advice.

For eye exposure, begin irrigation immediately. Use clean lukewarm water and continue rinsing for at least 15 to 20 minutes. Remove contact lenses if they come out easily, but do not delay

rinsing to find or remove them. Eye pain, blurred vision, persistent redness, or exposure to a concentrated product requires urgent medical assessment.

If chlorinated lime is swallowed, rinse the mouth gently and contact a poison center or emergency service right away. Do not induce vomiting. Vomiting can expose the esophagus and airway to the chemical again. Do not attempt to neutralize the product with another chemical. Do not give anything by mouth to a person who is drowsy, vomiting, having trouble swallowing, or having a seizure.

Activated charcoal does not reliably bind corrosive hypochlorite products and may interfere with examination or endoscopy. Stomach pumping can cause further injury and is not routine treatment for caustic ingestion.

Hospital care may include intravenous fluids, pain control, oxygen, airway monitoring, and consultation with toxicology, gastroenterology, surgery, or ophthalmology. A severely swollen airway may need a breathing tube. Deep burns, perforation, or dead tissue can require surgery. Antibiotics and acid-suppressing medicines are considered according to the clinical findings rather than used automatically for every exposure.

Complications

Most minor exposures improve after the chemical is removed, but concentrated or prolonged exposure can cause lasting injury.

Possible respiratory complications include airway swelling, pneumonia caused by inhaled material, pulmonary edema, and respiratory failure. Some people develop ongoing airway sensitivity with cough or wheezing after a major irritant-gas exposure.

Deep digestive-tract burns can lead to bleeding, infection, or perforation. Perforation means a hole has formed in the esophagus or stomach and is a medical emergency. During healing, scar tissue may narrow the esophagus. This is called an esophageal stricture and can cause food to stick or make swallowing difficult.

Severe eye exposure can damage the cornea and affect vision. Deep skin burns may heal slowly or leave scars.

Follow up

Follow-up depends on the route and severity of exposure. A mild skin exposure that fully resolves after washing may need only routine care. Persistent redness, blistering, pain, or drainage should be assessed by a healthcare professional.

After inhalation, seek urgent reassessment if cough, wheezing, chest tightness, or shortness of breath appears or worsens over the next several hours. People treated for a major gas exposure may need follow-up for persistent cough, reduced exercise tolerance, or asthma-like symptoms.

After ingestion, follow the discharge plan given by the treating team. New difficulty swallowing, pain with swallowing, repeated vomiting, weight loss, or a feeling that food is sticking requires prompt medical review. These symptoms can indicate narrowing during the healing process.

Eye injuries may require repeat examinations to confirm that the cornea is healing. Seek urgent eye care for worsening pain, light sensitivity, discharge, or any change in vision.

Before using the product again, review its label and safety data sheet. Store it in the original labeled container, away from food, acids, ammonia, heat, moisture, children, and pets. Never combine it with another cleaner or pool chemical.

Sources

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