CONDITION

Sodium bisulfate poisoning

Sodium bisulfate poisoning is harmful exposure to an acidic chemical that can burn the eyes, skin, airways, or digestive tract.

WHAT IT IS
Injury from an acidic cleaning and industrial chemical

BODY SYSTEM
Digestive tract, lungs, eyes, and skin

MAIN SYMPTOMS
Burning pain, vomiting, coughing, trouble swallowing

WHAT CAUSES IT
Swallowing, inhaling, or contacting this acidic chemical

HOW IT IS DIAGNOSED
Exposure history, examination, and tests for internal injury

MAIN TREATMENT
Decontamination, supportive care, and specialist assessment

CAN IT BE CURED?
Sometimes - prompt care may limit injury

IS IT AN EMERGENCY?
Sometimes - ingestion, breathing trouble, or severe burns

LONG-TERM OUTLOOK
Many recover; deep burns can cause lasting complications

Overview

Sodium bisulfate is an acidic chemical also called sodium hydrogen sulfate. It may be found in products used to lower swimming-pool pH, clean surfaces, process metals, or carry out industrial work. It is sometimes sold as "dry acid."

Poisoning happens when the chemical is swallowed, breathed in as dust, splashed into the eyes, or left on the skin. Sodium bisulfate becomes strongly acidic when mixed with moisture. This can irritate or burn wet tissues, including the mouth, throat, lungs, and digestive tract.

The seriousness of an exposure is influenced by the product's strength, the amount involved, the body area exposed, and how quickly the chemical is removed. A brief skin contact may cause irritation, while swallowing a concentrated product can produce deep internal burns.

Suspected swallowing should be discussed with a poison centre immediately, even if symptoms are not yet severe. Breathing problems, collapse, seizures, or difficulty waking are emergencies.

Symptoms

Symptoms often begin soon after contact, but the full depth of a chemical burn may not be clear right away. A person can also have significant internal injury without obvious burns around the lips.

After swallowing sodium bisulfate, symptoms may include:

Breathing sodium bisulfate dust can irritate the nose, throat, and lungs. This may cause coughing, chest tightness, wheezing, or shortness of breath. Heavy exposure can injure the lungs and lead to worsening breathing symptoms over the following hours.

Eye exposure may cause immediate burning, redness, tearing, blurred vision, or sensitivity to light. A concentrated exposure can damage the clear front surface of the eye, called the cornea.

Skin contact can cause redness, pain, blistering, or a chemical burn. Damp skin and chemical trapped under clothing may increase the injury.

Severe poisoning can cause low blood pressure, confusion, weakness, reduced alertness, or abnormal blood acidity. These are signs of serious illness and require emergency treatment.

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

Causes and risk factors

Sodium bisulfate poisoning is caused by contact with the chemical, not by an infection or inherited condition.

Accidental exposures may happen while opening, pouring, mixing, or storing pool and cleaning products. Dust may rise when a dry product is poured. Splashes can occur when the chemical is added to water.

Risk is higher when the product is concentrated, used in a poorly ventilated space, or handled without suitable eye and skin protection. Children may be exposed when chemicals are stored within reach or transferred into cups, drink bottles, or unlabelled containers.

Workplace exposure may occur in cleaning, metal treatment, manufacturing, or pool maintenance. Repeated low-level dust exposure is more likely to cause ongoing irritation than the sudden, severe burns associated with a large exposure.

Mixing sodium bisulfate with other chemicals may create extra hazards. The exact reaction depends on the products involved. Pool and cleaning chemicals should never be mixed unless the product instructions specifically direct it.

Diagnosis

Diagnosis starts with finding out what product was involved, how the exposure happened, and when it occurred. The product container, label, safety data sheet, or a clear photograph can help identify the chemical and its concentration. Do not delay emergency care to look for this information.

A healthcare team may examine the mouth, eyes, skin, breathing, heart rate, blood pressure, and level of alertness. A normal-looking mouth does not always rule out injury farther down the throat or digestive tract.

Tests are chosen according to the type and severity of exposure. They may include blood tests to check blood acidity, salts, kidney function, and signs of tissue injury. An electrocardiogram, or ECG, may be used to check the heart rhythm. Chest imaging may be needed after inhalation, vomiting, chest pain, or breathing difficulty.

After a significant ingestion, specialists may use a flexible camera called an endoscope to look for burns in the oesophagus and stomach. The oesophagus is the tube that carries food from the throat to the stomach. CT imaging may be used when a deep burn, a hole in the digestive tract, or injury to nearby tissues is suspected.

Eye injuries may be assessed with vision testing, acidity measurements, and examination under magnification.

Treatment and management

Immediate first aid is meant to stop further contact. It does not replace poison-centre or emergency advice.

If sodium bisulfate is swallowed, do not make the person vomit. Vomiting can expose the throat and mouth to the chemical again. Do not try to neutralize it with another chemical, because the reaction may release heat and worsen the burn. Rinse material from the mouth and contact a poison centre promptly for instructions tailored to the product and symptoms. Do not give anything by mouth to someone who is drowsy, having a seizure, vomiting repeatedly, or unable to swallow safely.

For an eye splash, remove contact lenses if they come out easily and rinse the eye immediately with plenty of room-temperature running water. Continue rinsing while poison-centre or emergency advice is arranged. Do not place other chemicals or eye drops in the eye unless instructed.

For skin exposure, remove contaminated clothing and brush away visible dry material without spreading it. Rinse the skin thoroughly with running water. Clothing contaminated with chemical should be kept away from other people until it can be cleaned or safely discarded.

After inhalation, move into fresh air without entering an unsafe area. Coughing, wheezing, chest tightness, or shortness of breath needs prompt assessment.

Hospital treatment may include airway support, oxygen, intravenous fluids, pain relief, and medicines for symptoms. Clinicians may continue washing exposed skin or eyes. An eye specialist may treat corneal injury.

Digestive-tract burns may require care from gastroenterology, surgery, or ear, nose, and throat specialists. Activated charcoal does not reliably bind caustic chemicals and can interfere with examination. Procedures that force vomiting or blindly pass a tube into an injured digestive tract may cause additional harm.

A deep burn, perforation, severe bleeding, or badly damaged tissue may require surgery. There is no specific antidote for sodium bisulfate.

Complications

Most small exposures that are washed away quickly do not lead to lasting problems. Concentrated or prolonged exposure can cause deeper injury.

Possible complications include:

Oesophageal narrowing is called a stricture. It can develop over weeks or months and may make food feel stuck or cause increasing difficulty swallowing. Treatment may involve procedures to widen the narrowed area.

A hole in the digestive tract can allow stomach or intestinal contents to leak into the chest or

abdomen. This is a life-threatening complication, but it is not expected after every exposure.

- Scarring or reduced vision after an eye burn
- Skin scarring after a deep chemical burn
- Lung inflammation after inhaling dust or vomit
- A hole in the oesophagus, stomach, or intestine
- Bleeding or infection around damaged tissue
- Narrowing of the oesophagus during healing

Prevention

Sodium bisulfate poisoning is usually preventable. Keep products in their original, labelled containers and store them locked away from children and pets. Never place the chemical in a food container, cup, or drink bottle.

Read the label before use. Avoid creating dust, work in a well-ventilated area, and use the eye, skin, and breathing protection listed on the product label or workplace safety instructions.

Add and handle pool chemicals exactly as directed. Do not mix sodium bisulfate with bleach, chlorine products, drain cleaners, or other chemicals. Keep products dry unless the instructions say to add them to water.

Wash your hands after handling the product. Contaminated work clothing should not be taken into living spaces where other people could be exposed.

Living with it and what to expect

Recovery after a minor skin, eye, or dust exposure may take hours to days once the chemical has been removed. Irritation should generally improve rather than worsen. Persistent pain, redness, cough, or changes in vision need follow-up.

Recovery after a significant internal burn can take weeks or months. Hospital care may be needed while swelling settles and damaged tissue heals. Eating and swallowing may need to be supported temporarily.

Some complications appear after the initial illness. New or increasing trouble swallowing, repeated vomiting, weight loss, or food sticking can suggest scar-related narrowing. Follow-up may include digestive-tract imaging, endoscopy, nutrition support, or procedures to widen a stricture.

Deep burns can lead to lasting swallowing, breathing, skin, or vision problems. The long-term outlook is mainly shaped by the depth and location of the injury, rather than by the chemical name alone. Many people recover fully after limited exposure, but a severe ingestion can be life-threatening and may require long-term specialist care.

When to get medical help

Call emergency services now if the exposed person:

Contact a poison centre immediately after any suspected swallowing. Also seek prompt advice for an eye splash, breathing symptoms, a concentrated skin exposure, or an exposure involving a child. In the United States, Poison Control is available at 1-800-222-1222. Elsewhere, use your local poison information service.

Arrange routine follow-up if symptoms are improving but do not fully settle, or if a healthcare team has recommended review. Increasing difficulty swallowing, food sticking, ongoing cough, persistent skin pain, or changes in vision should not wait for a routine appointment.

- Has trouble breathing, severe wheezing, or throat swelling
- Collapses, has a seizure, or cannot be awakened
- Is confused, very weak, or showing signs of shock
- Vomits blood or has severe chest or abdominal pain
- Has a serious eye injury or sudden loss of vision

Common questions

Is sodium bisulfate the same as sulfuric acid?

No. They are different chemicals, but sodium bisulfate forms an acidic solution when it contacts water. Concentrated products can therefore irritate or burn tissue in a similar way to other acidic substances.

What should I do if I swallowed pool pH reducer?

Rinse your mouth, do not make yourself vomit, and contact a poison centre immediately. Keep the container or label available. Call emergency services for breathing difficulty, collapse, seizures, severe pain, or reduced alertness.

Can I neutralize sodium bisulfate with baking soda?

Do not try to neutralize it on the body or after it has been swallowed. Acid-base reactions can

release heat, cause foaming, or worsen tissue injury. Use running water for external contamination and follow poison-centre instructions.

Can symptoms be delayed?

Yes. Pain and irritation often begin quickly, but swelling, lung injury, or the full depth of an internal burn may become clearer over several hours. Scar-related swallowing problems can develop weeks or months later.

Is breathing a small amount of sodium bisulfate dust dangerous?

A brief, low-level exposure may cause only temporary nose, throat, or eye irritation. Move to fresh air and avoid further dust. Persistent coughing, wheezing, chest tightness, or shortness of breath needs prompt medical assessment.

Will sodium bisulfate poisoning cause permanent damage?

Not always. Many limited exposures heal without permanent effects. Deep eye, skin, airway, or digestive-tract burns can leave scarring or other lasting problems.

Sources

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