CONDITION

Acetone poisoning

Learn how acetone exposure can affect the body, which symptoms need emergency care, and how poisoning is diagnosed, treated, and monitored.

WHAT IT IS
Poisoning from harmful acetone exposure

BODY SYSTEM
Nervous and digestive systems

MAIN SYMPTOMS
Drowsiness, confusion, dizziness, nausea

WHAT CAUSES IT
Toxic acetone exposure

HOW IT IS DIAGNOSED
Exposure history, examination, blood or urine testing

MAIN TREATMENT
Supportive care and decontamination

CAN IT BE CURED?
Yes, body removes acetone over time

IS IT AN EMERGENCY?
Sometimes, trouble breathing or inability to wake

LONG-TERM OUTLOOK
Most small exposures cause no lasting injury

Overview

Acetone poisoning happens when enough acetone enters the body to cause harmful effects. Acetone is a clear, highly flammable liquid with a strong, sweet odor. It is used as a solvent in some nail polish removers, paint products, cleaning agents, adhesives, laboratories, and industrial processes.

Exposure can occur by swallowing acetone, breathing concentrated fumes, or getting it on the skin or in the eyes. Brief contact with a small amount may cause only irritation. Larger or more concentrated exposures can slow activity in the brain and nervous system. This is called central nervous system depression . It can lead to poor coordination, confusion, severe drowsiness, or loss of consciousness.

The body also makes small amounts of acetone when it breaks down fat. This can happen

during fasting or uncontrolled diabetes. That natural production is different from direct poisoning, although the symptoms and laboratory findings may overlap. Isopropyl alcohol, also called rubbing alcohol, is converted into acetone in the body and can cause a similar illness.

Possible acetone poisoning should be discussed promptly with a poison center or medical professional. Early advice is useful because the safest response depends on the amount, route, concentration, symptoms, and other chemicals in the product.

Symptoms

Symptoms may begin soon after a significant exposure. Their severity varies widely. A product may also contain chemicals other than acetone, which can change the expected effects.

Breathing acetone vapor can irritate the nose, throat, and lungs. It may also cause headache, dizziness, nausea, weakness, or a feeling similar to intoxication. Risk is greater in a small or poorly ventilated space.

Swallowing acetone may irritate the digestive tract and affect the nervous system. Possible symptoms include:

Skin contact may cause redness, dryness, irritation, or cracking because acetone removes natural oils from the skin. Eye exposure can cause immediate burning, redness, pain, and tearing.

Severe poisoning may cause very low alertness, slow or ineffective breathing, low blood pressure, or coma. Vomiting while very drowsy can allow stomach contents to enter the lungs. This is called aspiration and can cause serious lung inflammation.

Call emergency services immediately if the exposed person:

In the United States, contact Poison Control at 1-800-222-1222 for immediate guidance after a possible exposure, even if symptoms seem mild. Outside the United States, contact the local poison center or emergency service.

- Burning or irritation of the mouth and throat
- Nausea, vomiting, or abdominal pain
- Headache, dizziness, or poor coordination
- Unusual tiredness or drowsiness
- Confusion or slurred speech
- A sweet or fruity odor on the breath

- Has trouble breathing
- Collapses, has a seizure, or cannot be awakened
- Is severely confused or unable to stand safely
- Has blue, gray, or unusually pale lips or skin
- May have intentionally swallowed acetone or another chemical

Causes and risk factors

Acetone poisoning most often results from accidental or intentional contact with an acetone-containing product. The label may list acetone as an ingredient, but product formulas vary. Some nail polish removers contain acetone, while others do not.

Situations that can increase exposure include:

Children may become ill from a smaller amount than adults because of their lower body weight. People who are already drowsy, intoxicated, or medically unwell may be more vulnerable to breathing problems or aspiration.

Acetone is extremely flammable. Vapors can travel to an ignition source and catch fire. Although this is a physical hazard rather than poisoning, it is an important part of safe handling. Smoking, flames, sparks, and electrical ignition sources should be kept away from spills.

Repeated workplace or household exposure may cause ongoing skin irritation, headaches, or airway symptoms. These effects are different from a single acute poisoning but still deserve medical or occupational health review.

- Swallowing a solvent or cosmetic product
- Using acetone in an enclosed area without enough ventilation
- Spilling concentrated acetone on the body
- Working with acetone without suitable training or protective equipment
- Transferring acetone into an unlabeled drink or food container
- Deliberately inhaling fumes or swallowing a product
- Mixing products or being exposed to several chemicals at once

Diagnosis

Clinicians diagnose acetone poisoning by combining the exposure history, symptoms,

examination, and laboratory findings. A sweet breath odor may raise suspicion, but it cannot confirm the cause.

Useful details include the product name, concentration, estimated amount, time of exposure, and whether it was swallowed, inhaled, or spilled. Clinicians also need to know whether the product contained other chemicals. If it is safe to do so, bring the original container or a photograph of its label. Do not bring a leaking or contaminated container into an enclosed vehicle or medical facility.

The examination focuses on alertness, breathing, heart rate, blood pressure, temperature, coordination, and signs of eye, skin, or airway irritation.

Testing depends on the circumstances. It may include:

Acetone and isopropyl alcohol exposure can produce ketosis , meaning ketone chemicals build up in the body. Unlike diabetic ketoacidosis, this may occur without marked acid buildup. However, laboratory patterns are not always simple, especially when more than one substance is involved.

Clinicians may need to rule out low blood sugar, diabetic ketoacidosis, alcohol-related illness, head injury, infection, and poisoning from isopropyl alcohol, methanol, ethylene glycol, or sedating medicines. These conditions can look similar but may require different treatment.

- Blood glucose, electrolytes, and kidney function
- Blood tests that assess acid-base balance
- Blood or urine ketone testing
- Measurement of blood concentration, or osmolality, to look for dissolved chemicals
- An electrocardiogram to check heart rhythm
- Testing for acetone, isopropyl alcohol, or other toxic alcohols when available
- A chest X-ray if aspiration or lung injury is suspected

Treatment and management

There is no specific antidote that reverses acetone poisoning. Treatment is mainly supportive care , meaning clinicians protect breathing and circulation while the body removes the chemical.

After a possible exposure, move away from the source only if it is safe. Do not enter an area with heavy fumes without proper protective equipment. Acetone is flammable, so avoid flames, smoking, and sparks.

For inhalation exposure, move to fresh air. For skin contact, remove contaminated clothing and rinse the skin thoroughly with running water. Wash gently with soap after the initial rinse. For eye exposure, remove contact lenses if they come out easily and rinse continuously with lukewarm water for at least 15 to 20 minutes. Do not delay rinsing while waiting for advice.

If acetone was swallowed, do not make the person vomit. Vomiting increases the risk of aspiration, especially if the person becomes drowsy. Do not give food, drink, or home remedies unless a poison specialist or clinician recommends it. Call a poison center promptly for instructions based on the exact product and exposure.

In an emergency department, care may include:

A breathing tube and ventilator may be needed if a person cannot protect the airway or breathe effectively. Activated charcoal and stomach-emptying procedures are not routine treatments for acetone exposure; clinicians decide whether any decontamination procedure could be useful based on the specific product and timing.

Many patients improve as acetone is exhaled through the lungs and processed by the body. The observation period depends on symptoms, test results, the amount involved, and whether other substances were present. Severe or mixed exposures may require hospital admission and specialist consultation.

- Monitoring oxygen level, heart rhythm, blood pressure, and alertness
- Oxygen or breathing support when needed
- Intravenous fluids for dehydration or low blood pressure
- Treatment of abnormal blood glucose or electrolyte levels
- Medicine for significant nausea or other symptoms
- Care for chemical irritation or aspiration-related lung injury

Complications

Most small exposures do not lead to lasting injury, but significant poisoning can cause complications. These may include:

Kidney or liver abnormalities may occur in severe cases or when other chemicals are involved. Intentional exposure may also signal a need for confidential mental health and substance-use support.

Fire and explosion are additional hazards. Contaminated clothing and spill materials should be handled according to poison-center, workplace, or local hazardous-material guidance.

- Aspiration-related lung inflammation
- Respiratory failure from severe nervous system depression
- Dehydration and electrolyte changes after repeated vomiting
- Low blood pressure and reduced blood flow to organs
- Eye injury after prolonged contact
- Skin inflammation after repeated or extended exposure
- Injury related to falls, poor coordination, or loss of consciousness

Follow up

After discharge, follow the care team's instructions about fluids, activity, medicines, and repeat testing. Temporary fatigue, headache, nausea, or throat irritation may take time to settle. Avoid driving, using machinery, drinking alcohol, or taking nonessential sedating substances until alertness and coordination have fully returned.

Arrange routine follow-up if symptoms continue, laboratory tests were abnormal, or the exposure happened at work. An occupational health professional may review ventilation, storage, protective gloves, eye protection, and respiratory controls. Repeated skin symptoms may require evaluation for irritant dermatitis.

Seek prompt medical reassessment for worsening cough, fever, shortness of breath, repeated vomiting, increasing abdominal pain, persistent dizziness, new confusion, reduced urination, or ongoing eye pain or vision changes. Lung symptoms can sometimes appear after vomiting and aspiration.

Call emergency services for severe breathing difficulty, collapse, seizure, or inability to wake the person.

To prevent future exposure, keep acetone in its original labeled container. Store it away from children, food, drinks, heat, flames, and sparks. Never place it in a cup, water bottle, or other container that could be mistaken for a beverage.

Sources

- Agency for Toxic Substances and Disease Registry. Toxicological Profile for Acetone . U.S. Department of Health and Human Services; 2022.

- National Institute for Occupational Safety and Health. NIOSH Pocket Guide to Chemical Hazards: Acetone . Centers for Disease Control and Prevention.
- National Institute for Occupational Safety and Health. Emergency Response Safety and Health Database: Acetone-Systemic Agent . Centers for Disease Control and Prevention.
- MedlinePlus Medical Encyclopedia. Acetone Poisoning . U.S. National Library of Medicine.
- National Center for Biotechnology Information. PubChem Compound Summary for CID 180: Acetone . U.S. National Library of Medicine.