CONDITION

Plant fertilizer poisoning

Plant fertilizer poisoning is illness caused by swallowing, breathing, or having harmful contact with fertilizer.

WHAT IT IS
Harmful effects from swallowing, breathing, or touching fertilizer

BODY SYSTEM
Digestive, breathing, blood, skin, and eyes

MAIN SYMPTOMS
Nausea, vomiting, irritation, breathing difficulty

WHAT CAUSES IT
Toxic or corrosive fertilizer ingredients

HOW IT IS DIAGNOSED
Exposure history, examination, and targeted blood tests

MAIN TREATMENT
Decontamination, supportive care, and selected antidotes

CAN IT BE CURED?
Yes, most exposures recover with prompt care

IS IT AN EMERGENCY?
Sometimes, with breathing trouble, blue-grey skin, collapse, or burns

LONG-TERM OUTLOOK
Full recovery is common after mild exposures

Overview

Plant fertilizer poisoning means harmful effects after fertilizer is swallowed, inhaled, or gets on the skin or in the eyes. The effects range from mild irritation to serious problems with breathing or oxygen delivery.

Fertilizers are not all alike. Many contain nitrogen, phosphorus, and potassium compounds. Some concentrated products also contain ammonia, acids, alkalis, iron, or other minerals. Lawn products may combine fertilizer with weed killers, insecticides, or fungicides, which can cause different symptoms.

A small accidental taste of a standard household fertilizer often causes no symptoms or only stomach upset. Larger amounts, concentrated agricultural products, or products containing nitrates or nitrites can be much more harmful.

Nitrates and nitrites may cause methemoglobinemia . This is a blood disorder in which hemoglobin, the substance that normally carries oxygen, cannot release oxygen to the body properly. A person may look blue or grey and feel short of breath even when oxygen is being given.

If an exposure has just happened, do not wait for symptoms before contacting a poison information service. Keep the container or take a clear photo of its label.

Symptoms

Symptoms depend on the product, amount, route of exposure, and time since contact.

After swallowing fertilizer, possible symptoms include:

Fertilizer dust or fumes can irritate the nose, throat, and lungs. This may cause coughing, wheezing, chest tightness, or breathing difficulty. Ammonia-containing products can cause more severe irritation, especially in an enclosed space.

Skin contact may cause redness, itching, pain, or a chemical burn. Wet skin, damaged skin, and prolonged contact can increase absorption or injury.

Eye exposure can cause tearing, redness, pain, blurred vision, and sensitivity to light. Concentrated or corrosive products may damage the surface of the eye.

Blue or grey lips, skin, or nail beds can be a sign of methemoglobinemia. Other signs include a rapid heartbeat, severe headache, breathlessness, confusion, loss of consciousness, or seizures. These symptoms need emergency care.

Symptoms may begin within minutes, but some develop over several hours. A person who initially feels well may still need advice if the amount or product is uncertain.

- Burning or irritation in the mouth
- Nausea, vomiting, stomach pain, or diarrhea
- Headache, dizziness, weakness, or unusual tiredness
- Painful swallowing, drooling, or chest pain after a corrosive product
- Shortness of breath, confusion, or fainting in serious poisoning

Causes and risk factors

Poisoning happens when the body is exposed to enough of a harmful fertilizer ingredient. Swallowing is a common route, but inhaling dust or fumes and prolonged skin or eye contact

can also cause injury.

The main risk factors include:

The exact ingredients matter more than the word "fertilizer" on the package. Nitrate and nitrite compounds can interfere with oxygen delivery. Ammonia, acids, and alkalis may burn tissue. Large mineral loads can disturb the body's salt balance or affect the heart, kidneys, or nervous system.

Products described as natural or organic are not automatically harmless. They can still irritate the eyes, skin, lungs, or digestive tract. Some may also contain microbes or added minerals.

- Drinking fertilizer stored in an unlabelled bottle or cup
- Children gaining access to an open container
- Handling concentrated agricultural or greenhouse products
- Applying fertilizer without eye, skin, or breathing protection listed on the label
- Using dusty or ammonia-containing products in a poorly ventilated area
- Mixing fertilizer with other chemicals
- Deliberately swallowing a product
- Mistaking a fertilizer-and-pesticide mixture for plain fertilizer

Diagnosis

Diagnosis starts with finding out what happened. Useful details include the product name, ingredients, concentration, estimated amount, route of exposure, and time of contact. The package label or safety data sheet can help identify specific risks.

A healthcare professional may check breathing, heart rate, blood pressure, alertness, skin colour, and the mouth and eyes. Mild exposures often do not require extensive testing.

Tests may be needed when symptoms are significant or the product is concentrated. These can include blood tests for kidney function, acid balance, and mineral levels. An electrocardiogram, or ECG, checks the heart's electrical activity.

If methemoglobinemia is suspected, a blood test called co-oximetry measures abnormal methemoglobin directly. A standard fingertip oxygen monitor cannot reliably confirm or exclude this condition.

Chest imaging may be used after inhalation or if vomit may have entered the lungs. After swallowing a corrosive product, examination with a flexible camera may be considered to look for burns in the food pipe or stomach.

Treatment and management

First aid should begin by stopping the exposure without putting anyone else at risk.

If fertilizer was swallowed, rinse the mouth gently. Do not make the person vomit, and do not try to neutralize the product with another chemical. Contact a poison information service promptly for instructions about drinking water or taking any other action.

For skin contact, remove contaminated clothing and wash the skin thoroughly with running water. For eye exposure, rinse the eye with clean, lukewarm running water for at least 15 to 20 minutes. Remove contact lenses if they come out easily, but do not delay rinsing.

After inhaling dust or fumes, move to fresh air if this can be done safely. Do not enter an enclosed contaminated area without appropriate rescue equipment.

Medical treatment depends on the ingredient and symptoms. It may include oxygen, intravenous fluids, nausea treatment, pain relief, breathing support, and monitoring of the heart and blood tests.

Clinically important methemoglobinemia may be treated with an antidote called methylene blue. This treatment is selected by medical professionals because it is not appropriate in every situation. Other treatments may be used if methylene blue is unsuitable or ineffective.

Chemical burns may require specialist care. A mixed fertilizer and pesticide product may need treatment directed at the pesticide ingredient.

Bring the original container to medical care if it is safe to do so. Do not carry a leaking package inside a vehicle or enclosed space.

Complications

Most small exposures to ordinary household fertilizer cause temporary irritation or stomach symptoms. Serious complications are more likely after a large amount, a concentrated product, or delayed treatment.

Possible complications include:

Deep burns in the food pipe can heal with scarring and narrowing. This may lead to ongoing swallowing problems. Significant eye burns can affect vision.

Severe poisoning can be fatal, although this is not the expected outcome after a small accidental exposure to a standard household product.

- Methemoglobinemia and reduced oxygen delivery

- Chemical burns to the eyes, skin, mouth, food pipe, or stomach
- Swelling or injury of the airways
- Lung inflammation after inhalation or aspiration
- Abnormal heart rhythms or blood pressure
- Kidney injury or major disturbances in body salts
- Seizures, loss of consciousness, or organ injury from severe oxygen shortage

Prevention

Many fertilizer exposures can be prevented.

Keep fertilizer in its original labelled container with the lid secured. Never transfer it into a drink bottle, food jar, cup, or unmarked spray container. Store it away from food, medicines, children, and pets.

Read the entire label before use. Follow its instructions for gloves, eye protection, ventilation, dilution, application, and storage. Avoid creating dust, and wash your hands before eating, drinking, or touching your face.

Do not mix fertilizers with household cleaners, fuels, pesticides, or other chemicals unless the manufacturer specifically directs this. Mixing products can release irritating gases or create unexpected reactions.

Clean spills according to the label. Keep children and pets away from treated or storage areas until the product instructions say it is safe to return.

Living with it and what to expect

After a mild exposure, nausea, mouth irritation, coughing, or skin redness often settles over hours to a few days once contact has stopped. Follow the poison service's instructions even if symptoms are improving.

People treated for significant poisoning may need observation until breathing, blood oxygen handling, heart function, and laboratory results are stable. Methemoglobinemia often improves with prompt treatment, but repeat testing may be needed because symptoms can return with some chemicals.

Recovery from a chemical burn can take longer. Follow-up may involve eye care, lung assessment, or evaluation of swallowing. New trouble swallowing, persistent cough, ongoing

eye pain, or worsening skin injury should be reviewed rather than left until a routine appointment.

Most people who recover from a mild, one-time exposure do not have lasting effects. Long-term problems are more likely after deep burns, serious lung injury, or a prolonged shortage of oxygen.

If the exposure was deliberate, emotional and mental health support is an important part of recovery. Immediate help is available through emergency services or a local crisis service.

When to get medical help

Contact a poison information service promptly after fertilizer is swallowed, even if there are no symptoms. In the United States, Poison Control is available at 1-800-222-1222 . Elsewhere, use your local poison centre or urgent medical advice service.

Seek urgent medical assessment for persistent vomiting, worsening stomach pain, ongoing coughing, eye pain after rinsing, a skin burn, unusual weakness, or symptoms that are not settling.

Call emergency services now if the person has:

Do not give anything by mouth to someone who is drowsy, having a seizure, or unable to swallow safely.

- Difficulty breathing, severe wheezing, or airway swelling
- Blue or grey lips, skin, or nails
- Confusion, collapse, a seizure, or trouble waking
- Severe chest pain or an abnormal heartbeat
- Drooling or inability to swallow
- A serious eye injury or extensive chemical burn
- A deliberate or potentially large ingestion

Common questions

How poisonous is plant fertilizer to humans?

It depends on the ingredients, concentration, and amount. A small taste of ordinary household fertilizer may cause only irritation or stomach upset. Concentrated products, large amounts, nitrate or nitrite products, and fertilizer mixed with pesticides can cause serious poisoning.

What should I do if my child swallowed fertilizer?

Remove the product, rinse the child's mouth, and contact a poison information service right away. Do not cause vomiting. Have the container or a photo of the label ready. Call emergency services for breathing trouble, blue or grey skin, collapse, seizure, or severe drowsiness.

Can fertilizer burn my skin or eyes?

Yes. Concentrated, acidic, alkaline, or ammonia-containing products can cause chemical burns. Rinse exposed skin or eyes immediately with plenty of running water. Eye pain, blurred vision, or continuing redness after rinsing needs urgent assessment.

Can fertilizer poisoning symptoms be delayed?

Yes. Irritation often starts quickly, but vomiting, breathing problems, abnormal blood oxygen handling, or tissue injury may appear or worsen over several hours. Follow poison-centre advice about observation.

Is organic fertilizer safer if swallowed?

Not necessarily. Organic products may still contain irritating minerals, concentrated nutrients, animal material, or microbes. Treat any unintended ingestion as a possible poisoning and check the label.

Should I make myself vomit after swallowing fertilizer?

No. Vomiting can expose the throat again and may allow the product to enter the lungs. Rinse your mouth and contact a poison information service for product-specific advice.

Sources

- MedlinePlus Medical Encyclopedia - Plant fertilizer poisoning , U.S. National Library of Medicine
- Poison Control - Plant food and fertilizer poisoning information , National Capital Poison Center
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- CDC Emergency Response Safety and Health Database - Sodium Nitrite: Systemic Agent , National Institute for Occupational Safety and Health
- Merck Manual Professional Edition - Methemoglobinemia , Merck & Co.
- U.S. Environmental Protection Agency - Recognition and Management of Pesticide Poisonings, Sixth Edition , guidance relevant to combined fertilizer and pesticide products