CONDITION

Metal cleaner poisoning

Metal cleaner poisoning is toxic injury caused by swallowing, breathing, or touching chemicals used to clean or polish metal.

WHAT IT IS
Toxic injury from exposure to metal-cleaning chemicals

BODY SYSTEM
Digestive tract, lungs, skin, eyes, heart, and kidneys

MAIN SYMPTOMS
Mouth burns, vomiting, breathing trouble, eye or skin pain

WHAT CAUSES IT
Acids, alkalis, solvents, or metal-binding chemicals

HOW IT IS DIAGNOSED
Exposure history, examination, blood tests, imaging, or endoscopy

MAIN TREATMENT
Decontamination, monitoring, and supportive hospital care

CAN IT BE CURED?
Sometimes - recovery possible, but burns may scar

IS IT AN EMERGENCY?
Yes - after swallowing, breathing problems, or severe burns

LONG-TERM OUTLOOK
Often good after mild exposure; severe burns may cause lasting damage

Overview

Metal cleaner poisoning happens when a product used to clean, polish, descale, or remove rust from metal harms the body. Exposure may occur by swallowing the product, breathing its fumes, or getting it on the skin or in the eyes.

"Metal cleaner" describes many different products rather than one chemical. Some contain strong acids or alkalis, which can burn tissue. Others contain solvents that may affect the lungs, brain, liver, or kidneys. Certain rust removers contain fluoride compounds that can disturb calcium levels and heart rhythm.

The seriousness of an exposure depends on the product, its strength, the amount involved, the route of exposure, and how quickly first aid begins. A small splash of a mild polish is different from swallowing a concentrated industrial cleaner.

Possible poisoning should be assessed using the exact product information. Do not wait for symptoms after swallowing a metal cleaner. Contact a poison centre promptly for instructions tailored to the product.

Symptoms

Symptoms may begin at once or develop over several hours. A person can have internal injury even when there is little or no visible burning around the mouth.

After swallowing a metal cleaner, possible symptoms include:

Breathing fumes may irritate the nose, throat, and lungs. This can cause coughing, chest tightness, headache, dizziness, hoarseness, or breathing difficulty. Lung symptoms may worsen after the person has left the area, especially if liquid entered the lungs during vomiting.

Skin exposure can cause redness, pain, blistering, or a chemical burn. Some chemicals penetrate deeply, so the injury may be more serious than it first appears. In particular, pain from weaker hydrofluoric acid solutions can be delayed.

Eye exposure may cause tearing, severe pain, redness, blurred vision, or sensitivity to light. Concentrated products can damage the clear front surface of the eye, called the cornea.

Some ingredients can affect the whole body. Warning signs include muscle cramps, tingling, severe weakness, an abnormal heartbeat, seizures, or loss of consciousness.

- Burning or pain in the mouth, throat, chest, or abdomen
- Drooling, painful swallowing, or difficulty swallowing
- Nausea, vomiting, or vomiting blood
- Coughing, choking, wheezing, or shortness of breath
- Drowsiness, confusion, weakness, or collapse

Causes and risk factors

Poisoning is caused by the ingredients in the product. These may include hydrochloric, phosphoric, sulfuric, oxalic, or hydrofluoric acid; strong alkaline chemicals; petroleum-based solvents; or other corrosive substances. The label or safety data sheet may list the ingredients.

Acids and alkalis cause chemical burns. Solvents can irritate the lungs and may affect the nervous system if swallowed or inhaled. Fluoride-containing cleaners can bind calcium and magnesium in the blood, which may lead to dangerous heart rhythm problems.

Risk is higher with concentrated industrial or automotive products. Exposure is also more likely when cleaners are poured into unlabelled bottles, stored near food or drinks, or used without ventilation or protective equipment.

Mixing products creates an additional risk. Combining an acidic metal cleaner with household bleach can release chlorine gas, which can injure the airways and lungs.

Children may drink a cleaner left within reach. Adults can also be exposed through a workplace accident, a splash while pouring, fumes in an enclosed space, or mistaking a cleaner stored in a drink container for a beverage.

Diagnosis

There is no single test that confirms every type of metal cleaner poisoning. Diagnosis begins with what happened, which product was involved, and the person's symptoms and examination.

If it can be done safely, take the original container or a photograph of its label to the emergency department. Useful details include the product name, ingredients, concentration, time of exposure, likely amount, and whether it was swallowed, inhaled, or splashed.

Blood tests may check calcium and other salts, blood acidity, kidney and liver function, and signs of tissue injury. An electrocardiogram, or ECG, records the heart's electrical activity and can detect rhythm changes.

Chest imaging may be needed after breathing fumes, choking, or vomiting. After swallowing a corrosive cleaner, a specialist may use endoscopy-a flexible camera passed through the mouth-to look for burns in the oesophagus and stomach. CT imaging can help assess deep injury or a possible hole in the digestive tract.

Eye examination may include a dye that makes corneal damage easier to see. Not everyone needs every test; the product and symptoms guide the assessment.

Treatment and management

First aid and treatment depend on the route of exposure and the chemical involved.

After inhaling fumes, move into fresh air if this can be done without entering a contaminated or poorly ventilated space. Do not attempt a rescue in an enclosed chemical area without appropriate protective equipment.

For skin or eye exposure, remove contaminated clothing and rinse with plenty of

room-temperature running water. Contact lenses should be removed if they come out easily. A poison centre can advise how long rinsing should continue for the specific product. Chemical burns and ongoing eye symptoms need medical assessment.

If the cleaner was swallowed, do not make the person vomit. Vomiting can expose the throat to the chemical again and may allow it to enter the lungs. Do not try to neutralise an acid with an alkali, or an alkali with an acid. The reaction can produce heat and worsen the burn. Do not give food, drink, or activated charcoal unless a poison specialist specifically recommends it.

Hospital treatment may include:

Fluoride-containing products may require specialist calcium treatment and close heart monitoring. This treatment is selected according to the exposure and test results; it is not suitable as home treatment.

- Support for breathing, including oxygen or a breathing tube when necessary
- Intravenous fluids, pain relief, and medicines for symptoms
- Monitoring of heart rhythm, oxygen level, and blood chemistry
- Treatment of chemical burns to the skin or eyes
- Endoscopy or imaging to assess internal injury
- Surgery for a deep burn, perforation, or severely damaged tissue

Complications

Many limited exposures heal without lasting harm, but concentrated or prolonged exposures can cause serious complications.

A corrosive burn can create a hole, called a perforation, in the oesophagus, stomach, or intestine. This may allow digestive contents to leak into the chest or abdomen and cause severe inflammation or infection.

As an oesophageal burn heals, scar tissue may narrow the swallowing tube. This narrowing is called a stricture. It can cause food to stick, painful swallowing, weight loss, or repeated chest infections if food enters the airway.

Cleaner or vomit entering the lungs can cause chemical pneumonitis, which is inflammation of lung tissue. Severe inhalation exposure can also lead to fluid in the lungs and prolonged breathing problems.

Other possible complications include lasting eye damage, deep skin injury, kidney or liver injury, abnormal heart rhythms, and disturbances of calcium or other blood salts. The exact risks are

linked to the product's ingredients.

Prevention

Most metal cleaner poisoning can be prevented.

Keep products in their original, clearly labelled containers. Never transfer a cleaner into a cup, soft-drink bottle, food jar, or other container that someone might drink from.

Store cleaners locked away from children and separate from food and medicines. Close the cap immediately after use and clean up spills according to the label.

Read the label before each use. Use the recommended gloves, eye protection, and ventilation. Workplace users should follow the safety data sheet and their employer's chemical safety procedures.

Never mix a metal cleaner with bleach, ammonia, another cleaner, or an unknown chemical. Use only one product at a time unless the manufacturer specifically states that products can be combined.

Living with it and what to expect

Metal cleaner poisoning is usually a single exposure rather than an ongoing illness. What happens afterward is shaped by the chemical and the depth of injury.

Mild skin or airway irritation may settle over hours to several days after the exposure ends. Eye irritation may also improve, but persistent pain, light sensitivity, or blurred vision needs reassessment.

Deeper chemical burns heal more slowly. Skin wounds may require dressings and follow-up over weeks. Burns inside the oesophagus or stomach may need repeat appointments, nutrition support, or procedures to manage scar-related narrowing.

A stricture can appear weeks or months after the original injury. New or worsening difficulty swallowing should not be ignored, even if the early recovery seemed to be going well.

People who recover from a mild exposure usually return to normal activities without ongoing effects. Severe lung, digestive tract, eye, or skin injuries can cause lasting limitations and may require care from several specialists. Follow-up is based on the organs affected rather than on poisoning alone.

When to get medical help

Contact a poison centre immediately if a metal cleaner has been swallowed, even if there are no symptoms. In the United States, Poison Help is available at 1-800-222-1222. Elsewhere, use the local poison information service or emergency health line. Have the container or label available if possible.

Call emergency services now if the person has:

Do not enter an area filled with chemical fumes to help someone unless trained responders say it is safe.

Routine follow-up is different from emergency care. Keep scheduled appointments for burn checks, blood tests, eye examinations, endoscopy, or lung assessment. Seek earlier review for a cough that is not improving, new hoarseness, worsening skin damage, reduced vision, or increasing difficulty swallowing.

- Trouble breathing, severe wheezing, or blue or grey lips
- Collapse, severe confusion, a seizure, or difficulty waking
- Drooling or inability to swallow
- Severe chest or abdominal pain
- Repeated vomiting or blood in vomit
- A widespread or deep chemical burn
- Severe eye pain or sudden change in vision
- Signs of an abnormal heartbeat, such as fainting or strong palpitations

Common questions

What should I do if I swallowed only a tiny amount of metal cleaner?

Contact a poison centre promptly. A small amount may still matter if the product is concentrated or contains a particularly hazardous chemical. Do not wait for pain or vomiting before calling, and do not induce vomiting.

Can I drink milk or water to neutralise it?

Milk and water do not neutralise every metal cleaner. Giving fluids may also be unsafe if swallowing is difficult, vomiting has started, or the product could enter the lungs. Follow instructions from a poison specialist for the exact product.

Can symptoms start later?

Yes. Lung inflammation, deeper skin injury, low calcium from fluoride exposure, and scarring of the oesophagus may not be obvious immediately. This is why product-specific advice and follow-up instructions are important.

Is metal polish poisonous too?

It can be. Some polishes contain petroleum-based solvents or other chemicals that are harmful if swallowed or inhaled. A polish may not burn like a strong acid, but liquid entering the lungs can still cause significant injury.

Will a mouth burn show how serious the internal injury is?

Not reliably. The mouth may look normal even when the oesophagus or stomach has been injured. The reverse is also possible. Medical assessment uses the exposure details, symptoms, examination, and sometimes endoscopy or imaging.

Can metal cleaner poisoning cause permanent damage?

It can, particularly after a deep chemical burn, severe lung exposure, or major eye injury. Possible lasting effects include swallowing problems from scar tissue, reduced vision, skin scarring, or impaired lung function. Many mild exposures resolve without these complications.

Sources

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