CONDITION

Menthol poisoning

Menthol poisoning is illness caused by swallowing, inhaling, or absorbing more menthol than the body can safely handle.

WHAT IT IS
Harmful effects from excessive menthol exposure

BODY SYSTEM
Nervous, breathing, digestive, and heart systems

MAIN SYMPTOMS
Nausea, dizziness, confusion, breathing difficulty

WHAT CAUSES IT
Swallowing, inhaling, or absorbing excessive menthol

HOW IT IS DIAGNOSED
Exposure history and assessment; no routine confirmatory test

MAIN TREATMENT
Decontamination, monitoring, and supportive medical care

CAN IT BE CURED?
Yes - most recover with prompt supportive care

IS IT AN EMERGENCY?
Sometimes - breathing trouble, seizures, collapse, or severe drowsiness

LONG-TERM OUTLOOK
Usually full recovery after a single treated exposure

Overview

Menthol is a chemical that creates a cooling feeling in the mouth, nose, or on the skin. It occurs naturally in mint oils and can also be manufactured. It is used in cough drops, chest rubs, mouthwash, pain-relief creams, inhaled products, sweets, and some tobacco or vaping products.

These products usually contain a small amount of menthol and are generally safe when used as directed. Poisoning can happen when someone swallows a concentrated product, uses much more than instructed, or is exposed through the lungs, eyes, or skin.

Menthol activates the body's cold-sensing nerves. This produces a cooling sensation without necessarily lowering body temperature. With a large exposure, menthol can affect the brain, breathing, digestion, and circulation.

Some menthol products contain other potentially harmful ingredients, such as camphor, eucalyptus oil, nicotine, alcohol, or local anaesthetics. Symptoms after exposure may therefore come from more than menthol alone. The product label or container can help a poison specialist assess the risk.

Severe menthol poisoning is uncommon, but it can be serious. Early advice from a poison centre is important because symptoms and treatment depend on the product, strength, amount, route of exposure, and the person's age and health.

Symptoms

Symptoms may begin within minutes or develop over several hours. A strong mint smell or cooling sensation does not show how severe the exposure is.

Possible early symptoms include:

A larger exposure may cause more serious effects, including tremors, seizures, loss of consciousness, slowed or difficult breathing, or changes in heart rate and blood pressure.

Vomiting creates an additional risk if liquid enters the lungs. This is called aspiration. It can cause coughing, breathing difficulty, and inflammation or infection in the lungs.

Skin exposure usually causes local irritation rather than whole-body poisoning. However, risk may be greater with concentrated menthol, prolonged contact, damaged skin, or use over a large area.

Symptoms from a combination product can be different. For example, nicotine may cause sweating, excessive saliva, agitation, or a fast heart rate, while camphor can cause seizures. Do not assume menthol is the only relevant ingredient.

- Burning or irritation of the mouth, throat, eyes, or skin
- Nausea, vomiting, abdominal pain, or diarrhoea
- Headache, dizziness, weakness, or unsteady walking
- Coughing, choking, or throat irritation
- Unusual sleepiness or confusion

Causes and risk factors

Menthol poisoning is caused by exposure to more menthol than the body can safely process. There is no single amount that is toxic in every situation. Concentration, product ingredients,

body size, age, and route of exposure all matter.

Common situations include accidentally swallowing a liquid medicine, mouthwash, essential oil, chest rub, or concentrated flavouring. Young children are at particular risk because they may drink pleasant-smelling liquids or eat cough drops like sweets.

Other risk factors include:

Older adults and people with breathing, heart, kidney, or liver problems may be less able to tolerate a serious poisoning. However, anyone can become ill after a sufficiently large or concentrated exposure.

- Storing menthol products in cups, drink bottles, or unlabelled containers
- Taking repeated doses without checking the label
- Using several products that contain menthol at the same time
- Applying concentrated products over large or broken areas of skin
- Inhaling concentrated vapour in a poorly ventilated space
- Confusing peppermint or menthol oil with a food product

Diagnosis

There is no routine blood test that specifically confirms menthol poisoning. Diagnosis is usually based on what happened, the symptoms, and the findings from an examination.

A poison specialist or emergency team may ask for the product name, ingredients, concentration, estimated amount, time of exposure, and how the exposure occurred. Bring the container or a clear photograph of its label if it is safe to do so.

Medical assessment may include checks of breathing rate, oxygen level, heart rate, blood pressure, temperature, alertness, balance, and blood glucose. An electrocardiogram, or ECG, records the heart's electrical activity and may be used after a significant exposure.

Blood and urine tests may be ordered to look for dehydration, acid-base disturbances, or effects on the kidneys, liver, and other organs. Chest imaging may be needed if aspiration or lung injury is suspected. These tests assess complications rather than directly measuring menthol in most cases.

Because many products contain several active ingredients, the assessment also looks for poisoning from substances other than menthol.

Treatment and management

There is no specific antidote that reverses menthol poisoning. Treatment focuses on limiting further exposure, monitoring the person, and supporting breathing and circulation while the body clears the chemical.

After a suspected exposure, contact a poison centre promptly for instructions specific to the product and circumstances. Do not wait for symptoms after a child swallows a concentrated product or when the amount is unknown.

Immediate first aid may include:

Do not make the person vomit. Do not give salt water, oil, milk, alcohol, or another home remedy unless a poison specialist specifically recommends it. Do not give anything by mouth to someone who is very drowsy, having a seizure, or unable to swallow safely.

In hospital, treatment may include oxygen, intravenous fluids, medicines to control seizures or vomiting, and close monitoring of the heart and nervous system. A breathing tube and ventilator may be required if the person cannot protect their airway or breathe adequately.

Activated charcoal may sometimes be considered soon after a significant ingestion, but it is not suitable for every exposure. It should only be given under professional direction because it can enter the lungs if the person vomits or is not fully alert.

- Moving away from vapour and into fresh air
- Removing contaminated clothing and washing exposed skin with soap and water
- Rinsing an exposed eye gently with clean, lukewarm water
- Wiping remaining product from the mouth
- Keeping the container for identification

Complications

Most limited exposures do not cause lasting harm. Complications are more likely after swallowing a concentrated product, developing severe symptoms, or being exposed to other toxic ingredients in the same product.

Possible complications include aspiration into the lungs, breathing failure, seizures, coma, abnormal heart rhythms, and very low blood pressure. Severe vomiting or diarrhoea can cause dehydration and changes in body salts.

Kidney or liver injury has been reported after serious poisonings, although these effects are not expected after ordinary use of correctly labelled products. A prolonged lack of oxygen

during respiratory failure or cardiac arrest could cause lasting brain injury.

Eye exposure may injure the surface of the eye if concentrated product is not washed out. Persistent pain, redness, light sensitivity, or blurred vision needs medical assessment.

Prevention

Menthol poisoning is usually preventable. Menthol itself does not need to be avoided when an appropriate product is used according to its label.

Keep medicines, essential oils, chest rubs, vaping liquids, and concentrated flavourings locked away and out of children's sight and reach. Child-resistant packaging lowers risk but is not completely childproof.

Leave products in their original containers. Never transfer a menthol liquid into a drinking bottle, cup, or food jar. Keep the label available so the ingredients and concentration can be identified after an accident.

Use only the amount and frequency stated on the label. Check for menthol in several products before using them together. Products sold for skin application, inhalation, or household use should not be swallowed.

"Natural" peppermint or mint oil can still be harmful when concentrated. Do not treat essential oils as ordinary food ingredients unless the product is clearly labelled for that purpose and used as directed.

Dispose of unwanted products safely. Keep menthol and nicotine vaping liquids separate from food and drinks, as even small containers may hold concentrated ingredients.

Living with it and what to expect

Menthol poisoning is usually a single, short-term event rather than a chronic condition. People with mild irritation or digestive symptoms may improve over several hours once the exposure stops. More serious poisoning can require observation or hospital treatment for days.

Recovery time is shaped by the amount and concentration involved, whether material entered the lungs, and whether other ingredients caused toxicity. A person who needed breathing support, had seizures, or developed organ injury may take longer to recover.

Most people who recover from an uncomplicated exposure do not need ongoing treatment and do not develop a lifelong menthol-related illness. Severe cases are less predictable, particularly if breathing was interrupted or the lungs, brain, kidneys, or liver were injured.

After discharge, follow the specific instructions given by the medical team. Routine follow-up may be needed for an ongoing cough, shortness of breath, poor balance, unusual tiredness, reduced urination, or abnormal test results. These symptoms do not always mean permanent damage, but they should be reassessed.

When to get medical help

Call emergency services now if the person:

Place an unconscious but breathing person on their side if it is safe to do so. Do not put anything in their mouth. Start cardiopulmonary resuscitation if they are not breathing and you are able to do so.

Contact a poison centre promptly after swallowing concentrated menthol, an essential oil, an unknown amount, or any amount taken by a young child. Seek advice even if there are no symptoms yet. Product-specific advice is also important when menthol is mixed with camphor, nicotine, alcohol, or other medicines.

For eye exposure, begin rinsing immediately and obtain advice if pain, redness, or blurred vision continues. For skin exposure, seek help if irritation persists after thorough washing or if a concentrated product covered a large area.

Arrange routine medical follow-up after the acute event if cough, breathing problems, balance difficulties, confusion, unusual weakness, or changes in urination do not improve as expected.

- Has trouble breathing, pauses in breathing, or blue or grey lips
- Has a seizure, collapses, or cannot be woken
- Is severely confused or unable to stand safely
- Is choking or develops breathing difficulty after vomiting
- Has severe chest pain or rapidly worsening symptoms

Common questions

Can eating too many menthol cough drops cause poisoning?

It is possible, especially if many are eaten in a short time. Cough drops may also contain other medicines or sweeteners that cause additional effects. Contact a poison centre with the product name, number eaten, and person's age and weight.

How much menthol is toxic?

There is no single reliable toxic amount for every person or product. Pure menthol and concentrated oils create a different risk from a correctly used cough drop or skin cream. Age, body size, route of exposure, and other ingredients also matter.

Is peppermint oil the same as menthol?

No. Peppermint oil is a mixture of natural chemicals, one of which is menthol. Concentrated peppermint oil can still be poisonous and may cause effects that are not due to menthol alone.

Can menthol be absorbed through the skin?

Some menthol can pass through the skin. Serious poisoning from normal topical use is unlikely, but risk rises with concentrated products, large amounts, damaged skin, prolonged contact, or covering the treated area tightly.

How long does menthol poisoning last?

Mild symptoms may settle within hours. Significant poisoning can last several days, especially after aspiration, seizures, breathing failure, or organ injury. The product and amount involved are important.

Should I make someone vomit after swallowing menthol?

No. Vomiting can cause the product to enter the lungs. Contact a poison centre or emergency service for instructions, and do not give anything by mouth if the person is drowsy or cannot swallow safely.

Sources

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