CONDITION

Asphalt cement poisoning

Learn how swallowing asphalt cement, breathing its fumes, or contacting hot material can affect the body, and what to do after an exposure.

WHAT IT IS
Poisoning from asphalt cement exposure

BODY SYSTEM
Breathing, digestive, skin and eyes

MAIN SYMPTOMS
Coughing, shortness of breath, nausea, burns

WHAT CAUSES IT
Swallowing, fumes, or direct contact

HOW IT IS DIAGNOSED
Exposure history, symptoms, physical examination, product identification

MAIN TREATMENT
Supportive care

CAN IT BE CURED?
Sometimes - mild effects improve after exposure

IS IT AN EMERGENCY?
Sometimes - severe breathing difficulty or major burns

LONG-TERM OUTLOOK
Most mild effects improve, but significant exposure can cause complications

Overview

Asphalt cement is a thick petroleum product used to bind stone and sand in pavement, roofing materials, and other construction products. Despite its name, it is different from concrete cement. It may be solid or semi-solid at room temperature and is often heated before use.

"Asphalt cement poisoning" describes harmful effects from swallowing the material, breathing concentrated fumes, or getting it in the eyes or on the skin. Hot asphalt can also cause serious thermal burns because it stores heat and sticks to tissue.

The health effects depend on the product, temperature, route of exposure, and amount involved. Brief exposure to paving odors outdoors may cause temporary irritation, while swallowing asphalt or breathing dense fumes in an enclosed area can be more serious. Some asphalt products contain additives or solvents that create additional risks.

After a known or suspected exposure, contact a poison control center for advice tailored to the product and situation. In the United States, call Poison Help at 1-800-222-1222. This service is available 24 hours a day. Call 911 for severe breathing difficulty, collapse, a seizure, inability to wake the person, or a major hot-asphalt burn.

Symptoms

Symptoms may begin during the exposure or develop over the next several hours. The pattern often suggests how the exposure happened.

Breathing asphalt fumes

Fumes from heated asphalt can irritate the eyes, nose, throat, and lungs. Symptoms may include:

Symptoms are more concerning when exposure occurs in a tank, poorly ventilated room, or other enclosed space. Heated asphalt may release hydrogen sulfide and other gases. High concentrations can quickly cause confusion, loss of consciousness, or severe breathing problems.

Anyone attempting a rescue in an enclosed space may also be overcome. Do not enter an unsafe area without appropriate training and protective equipment.

Swallowing asphalt cement

Swallowing asphalt may cause burning or discomfort in the mouth and throat, nausea, vomiting, or abdominal pain. The greatest immediate concern is aspiration. This means material enters the lungs, often during swallowing or vomiting.

Aspiration may cause coughing, choking, wheezing, chest pain, or difficulty breathing. Lung symptoms can sometimes be delayed for several hours. Vomiting should not be induced because it can increase the chance of asphalt entering the lungs.

Skin contact

Cool asphalt may irritate the skin, especially after prolonged contact. Products containing solvents may remove natural oils from the skin and cause redness, dryness, or cracking.

Hot asphalt can produce deep burns while remaining stuck to the skin. The burn may continue until the material is thoroughly cooled. Trying to pull hardened asphalt away can remove skin and worsen the injury.

Eye exposure

Fumes may cause stinging, redness, and tearing. A splash of liquid or hot asphalt can injure the eye surface or eyelids. Vision changes, severe pain, or material stuck to the eye require urgent

medical assessment.

- Burning or watering eyes
- Runny nose or throat irritation
- Coughing, chest tightness, or wheezing
- Headache, dizziness, nausea, or fatigue
- Shortness of breath

Causes and risk factors

Exposure most often occurs during road paving, roofing, asphalt production, transportation, maintenance, or cleanup. It may also happen when a product is transferred between tanks or heated without adequate ventilation.

Risk is higher with:

Children may be exposed if asphalt products are stored within reach. Workers with asthma or another lung condition may notice stronger respiratory effects from irritant fumes, although symptoms after any significant exposure should be assessed on their own merits.

Long-term workplace exposure is different from a single poisoning event. Research on cancer risk varies by the type of bitumen, how it is processed, and the job being performed. The International Agency for Research on Cancer has classified some occupational exposures to bitumen emissions as possibly or probably carcinogenic. This classification describes evidence of a potential hazard; it does not predict whether a particular person will develop cancer.

- Work in tanks, trailers, pits, or other enclosed spaces
- Heating asphalt to high temperatures
- Poor ventilation or missing respiratory protection
- Splashing during transfer or application
- Lack of heat-resistant gloves, face protection, or protective clothing
- Eating, drinking, or smoking with contaminated hands
- Improper storage in an unmarked or beverage container
- Products that contain solvents, recycled materials, or other additives

Diagnosis

There is no single blood test that confirms asphalt cement poisoning. Diagnosis is based on the exposure history, symptoms, physical examination, and the exact product involved.

Helpful information includes:

Bring the container or a photograph of its label to the hospital when this can be done safely. Do not bring a leaking or contaminated container into a vehicle or health care building.

A clinician may check breathing rate, oxygen level, heart rate, blood pressure, mental alertness, skin, and eyes. People with coughing or breathing difficulty may need a chest X-ray and repeated oxygen measurements. Because aspiration-related lung changes can take time to appear, an early normal examination does not always rule out later irritation.

Additional tests depend on the situation. An electrocardiogram may be used if there are heart symptoms or possible solvent exposure. Blood tests may help assess oxygen delivery, organ function, or exposure to gases such as carbon monoxide. Significant burns are evaluated for depth, size, location, and effects on movement or circulation.

- The product name and Safety Data Sheet, if available
- Whether the asphalt was hot, diluted, or mixed with another chemical
- How exposure occurred
- The estimated time and duration of exposure
- Symptoms that developed afterward
- First aid already provided

Treatment and management

Immediate care depends on the route of exposure. Protect yourself first. Do not enter an area with dense fumes or attempt an enclosed-space rescue unless trained and properly equipped.

For inhaled fumes, move the person into fresh air if this can be done safely. Keep them at rest and contact poison control. New or worsening coughing, wheezing, confusion, chest discomfort, or shortness of breath needs prompt medical evaluation.

If asphalt was swallowed, do not make the person vomit. Do not give food, drink, oil, or another home remedy unless a poison specialist or clinician recommends it. Wipe material from the mouth and call poison control promptly, even if symptoms are not yet present.

For skin exposure to hot asphalt, immediately cool the area with cool running water. Do not use ice directly on the burn. Do not pull, scrape, or peel adhered asphalt from the skin, and do not apply gasoline, kerosene, paint thinner, or other solvents. These chemicals can injure the skin

and create additional poisoning or fire risks.

Remove rings, watches, belts, or loose contaminated clothing before swelling develops, but leave clothing in place if it is stuck to the burn. Cover the cooled area loosely with a clean dressing and seek medical care. Burns involving the face, eyes, hands, feet, genitals, major joints, or a large body area need urgent evaluation.

For eye exposure, begin rinsing with clean, lukewarm water immediately. Remove contact lenses if they come out easily. Do not force the eyelids open around hardened material and do not try to peel asphalt from the eye. Continue irrigation while arranging poison-center or emergency guidance.

Hospital treatment is supportive, meaning it focuses on protecting breathing, circulation, skin, and other affected organs while the body recovers. It may include oxygen, inhaled treatment for wheezing, intravenous fluids, pain control, and observation for delayed lung symptoms.

Clinicians usually avoid treatments that could trigger vomiting after a hydrocarbon-like product is swallowed. Burn specialists can soften and remove adhered asphalt in a controlled way while protecting the tissue underneath. Deep burns may require wound care, surgery, or rehabilitation.

Complications

Most mild irritant symptoms improve after the exposure ends, but significant exposure can cause complications.

Aspiration may lead to chemical pneumonitis, which is inflammation of the lungs caused by the material rather than an infection. Symptoms include worsening cough, fever, rapid breathing, chest pain, or low oxygen levels. These effects may not be obvious immediately.

Severe fume or gas exposure can reduce oxygen delivery and affect the brain, heart, or other organs. This is mainly a concern after concentrated exposure in an enclosed or poorly ventilated location.

Hot asphalt burns may damage deeper layers of skin. Possible consequences include infection, scarring, changes in sensation, stiffness, and reduced movement near a joint. Eye burns can affect vision.

Repeated workplace exposure may contribute to ongoing skin irritation or respiratory symptoms. Employers and occupational health professionals can evaluate ventilation, work practices, protective equipment, and the specific asphalt formulation.

Follow up

Follow the observation and wound-care plan given by the poison center or treating clinician. A person who feels well after a minor exposure may need only home monitoring, while someone with aspiration symptoms, a burn, or concentrated fume exposure may need reassessment.

Seek urgent medical care if any of the following develops after the initial exposure:

Call emergency services for severe breathing difficulty, blue or gray lips, collapse, a seizure, inability to wake the person, or rapidly worsening symptoms.

Burn follow-up may include dressing changes, checks for infection, scar management, and exercises to preserve movement. Eye exposure may require follow-up with an eye specialist.

After a workplace incident, report the exposure according to workplace procedures. An occupational health review may help prevent another event. This can include checking ventilation, temperature controls, respiratory protection, protective clothing, training, and the Safety Data Sheet.

- New or worsening shortness of breath, wheezing, or chest pain
- Persistent coughing, choking, or repeated vomiting
- Fever or increasing breathing rate after asphalt was swallowed
- Confusion, fainting, unusual sleepiness, or weakness
- Increasing burn pain, swelling, drainage, redness, or fever
- Eye pain, light sensitivity, or any change in vision

Sources

- MedlinePlus Medical Encyclopedia. "Asphalt cement poisoning." U.S. National Library of Medicine.
- National Institute for Occupational Safety and Health. NIOSH Pocket Guide to Chemical Hazards: Asphalt Fumes . Centers for Disease Control and Prevention.
- National Institute for Occupational Safety and Health. Health Effects of Occupational Exposure to Asphalt . DHHS (NIOSH) Publication No. 2001-110, 2000.
- America's Poison Centers. Poison Help: First Aid . National poison-center guidance for inhaled, swallowed, skin, and eye exposures.
- American Burn Association. Guidelines for Burn Patient Referral . 2022.



- International Agency for Research on Cancer. Bitumens and Bitumen Emissions, and Some N- and S-Heterocyclic Polycyclic Aromatic Hydrocarbons . IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 103, 2013.