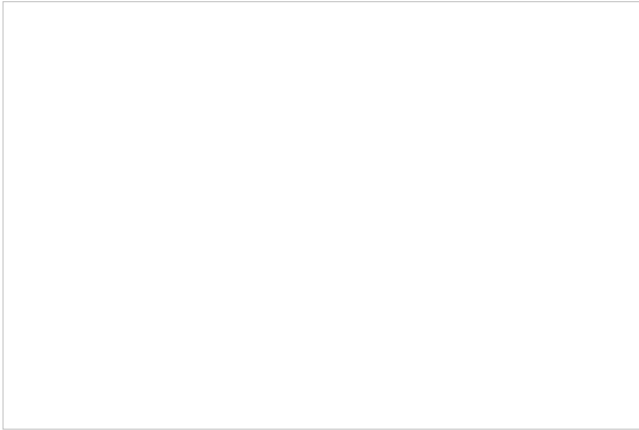


## Dry cough and environmental factors that can cause it



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**A dry cough** is a common symptom that manifests itself as a sudden, sometimes intense expulsion of air from the respiratory tract without sputum or other secretions. Unlike a wet cough, which helps clear sputum from the airways, a dry cough is often irritating and can be distressing to the patient without reducing discomfort or helping to clear airway irritants. The causes of a dry cough are varied and include both infectious and non-infectious conditions, and its duration can vary from short-term to long-term (chronic) cough.

### Causes of dry cough

A dry cough is a symptom that can occur for a variety of reasons, including infectious and non-infectious conditions, as well as external stimuli and certain medical conditions. This type of cough does not produce sputum and can be extremely distressing, interfering with daily activities and even disrupting sleep. There are a wide range of causes of dry cough, and proper treatment depends on determining the exact cause.

#### Upper respiratory tract infections

One of the most common causes of a dry cough is an upper respiratory tract infection, usually caused by viruses such as rhinoviruses, coronaviruses (including SARS-CoV-2, which causes COVID-19), influenza and parainfluenza viruses. These infections cause inflammation of the nose, throat, and trachea, which can lead to a dry, irritating cough.

#### Allergic reaction

Allergic reactions to environmental allergens such as pollen, house dust, animal dander, or mold spores can also cause a dry cough. Inflammation of the lining of the nose caused by allergens (allergic rhinitis) and allergic asthma are among the most common allergic conditions that cause this symptom.

#### Asthma

Asthma is a chronic respiratory disease characterized by narrowing and inflammation of the airways, causing difficulty breathing, recurrent wheezing and a dry cough. A dry cough is often an early symptom of asthma or may be the only symptom in some patients, known as "cough asthma."

#### Gastroesophageal reflux disease (GERD)

GERD is a condition in which stomach contents back up into the esophagus, causing heartburn and sometimes a dry cough. Cough is caused by irritation of the esophageal mucosa or by a reflex response of the airways to stomach acid.

#### Respiratory irritants

Environmental irritants such as tobacco smoke, polluted air, chemical fumes, and cold weather can irritate the airways and cause a dry cough. Individuals working in the workplace who are exposed to certain chemicals or dust may experience this symptom as an occupational risk.

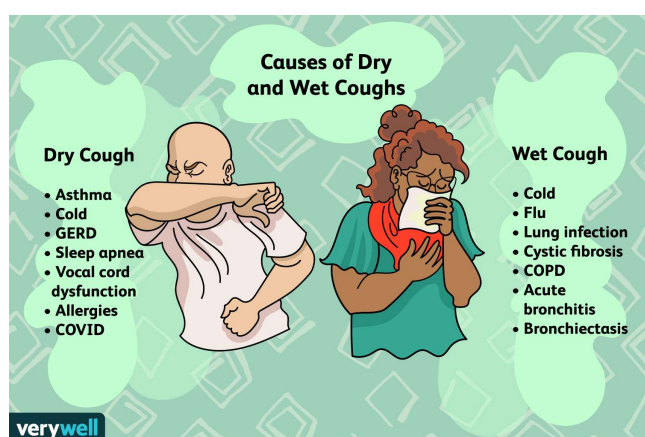
### Side effects of drugs

Some medications, especially angiotensin-converting enzyme (ACE) inhibitors used to treat high blood pressure, can cause a dry cough as a side effect. The cough usually disappears after stopping the drug.

### Chronic respiratory diseases

Conditions such as chronic obstructive pulmonary disease (COPD), cystic fibrosis, and interstitial lung disease can also cause a dry cough due to persistent inflammation and damage to the airways.

Diagnosis and treatment require a thorough medical evaluation, including history, physical examination, and, if necessary, additional tests such as a chest X-ray, allergy tests, or respiratory function tests. The goal of treatment is to identify and eliminate the underlying cause of dry cough, while reducing symptoms and improving the patient's quality of life.



## What environmental factors can cause or worsen a dry cough?

Environmental factors significantly contribute to the development and worsening of dry cough by affecting the airways and causing or intensifying inflammation and irritation. A dry cough that is irritating and non-wet can be a direct result of exposure to environmental irritants or indirectly related to environmental health conditions. These factors include air pollution, tobacco smoke, occupational irritants, chemicals in the home environment, climatic conditions, and allergens.

- **Air pollution**, including vehicle exhaust, industrial emissions and fine particles, can irritate the airways and cause a dry cough. Fine particles (PM2.5 and PM10) can go deep into the lungs, causing inflammation and increasing susceptibility to respiratory infections, which can worsen coughs.
- **Smoking** is one of the main causes of dry cough, both for the smoker and for the person who passively inhales the smoke. The chemicals and particles in tobacco smoke irritate the lining of the respiratory tract, promoting inflammation and increasing the sensitivity of the cough reflex. Long-term exposure to tobacco smoke can cause chronic bronchitis and other respiratory diseases that are accompanied by a persistent dry cough.
- **In certain workplaces**, such as chemical factories, construction sites or the agricultural sector, workers may be exposed to dust, fumes, fumes and chemicals that can irritate the respiratory tract and cause dry cough. The occupational variant of asthma caused by specific allergens in the work environment can also be associated with a dry cough as one of the symptoms.
- **Chemicals used in the home environment**, including cleaning products, paints, and fragrances, can also act as irritants to cause or worsen a dry cough. Air fresheners and perfumes with strong chemical

scents can irritate the respiratory tract, especially in individuals with hypersensitivity or allergies.

- **Cold weather and dry climates** can irritate the respiratory tract and cause a dry cough. Cold air reduces the humidity of the mucous membrane of the nose and respiratory tract, increasing irritation and the activity of the cough reflex. Also, sudden changes in temperature, for example from a cold to a warm environment, can cause respiratory irritation.
- House dust mites, animal hair, mold and pollen are common **allergens** that can cause allergic rhinitis or allergic asthma, characterized by a dry cough. Inflammation and irritation of the airways caused by allergic reactions stimulate the cough reflex.

## Prevention and management

Prevention and management of a dry cough involves identifying and eliminating environmental factors that can cause or worsen a cough. These include quitting smoking, avoiding second-hand smoke, improving home air quality, following occupational safety measures, and controlling allergens in the home. Using humidifiers in dry environments and breathing in warm, moist air can help relieve coughs. If the cough persists or is associated with other symptoms, it is important to see a healthcare professional for a more accurate diagnosis and treatment plan.



## Information sources

1. Harrison's Principles of Internal Medicine
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3. The Lancet Respiratory Medicine
4. Centers for Disease Control and Prevention (CDC)
5. World Health Organization (WHO)