

# Highlights: Overview of Findings Regarding Respiratory Diseases

Smoking causes lung disease, including chronic obstructive pulmonary disease, or COPD. COPD includes the diseases emphysema and chronic bronchitis. People with COPD have damaged airways and slowly die from lack of oxygen. The number of Americans suffering from COPD is increasing, and there is no cure. Genetic factors also make some people more susceptible to lung disease from smoking.

## How Tobacco Smoke Damages Lungs

There are small tubes in the lungs that are about the thickness of a human hair. These bronchial tubes are called bronchioles, and they end in tiny air sacs. Oxygen moves from the lungs to the blood through tiny blood vessels that line the walls of the air sacs. Tobacco smoke irritates tender tissue in the bronchioles and air sacs and damages the lining of the lungs.

## Emphysema

Elastin is an important protein that enables the lungs to expand and contract when air is breathed in and out. Smoking damages the elastin in the lungs. Reduced ability of the lungs to expand and contract is a characteristic of emphysema.

Emphysema causes the walls between the air sacs in the lungs to lose their ability to stretch and shrink back. The air sacs become weaker and wider, and air gets trapped in the lungs. With emphysema, lung tissue is destroyed, making it difficult for the body to get enough oxygen.

## Chronic Bronchitis

Bronchitis is the swelling of the lining of the bronchial tubes. When the bronchioles are swollen, they become narrower, and less air flows to and from the lungs. Chronic inflammation of the bronchioles can cause mucus to build up in the lungs. Over time, the lining of the bronchial tubes thickens and airways eventually can become scarred.

## Other Respiratory Damage Caused by Smoking

New research shows that poisons in tobacco smoke harm the body from the moment they enter through the mouth. They damage tissue and cells all the way to the lungs.

Cilia are tiny hair-like projections that protect the airways by sweeping away mucus and dust particles and keeping the lungs clear. Smoking damages and eventually destroys these cilia. When the cilia become less effective at keeping the lungs clear, smokers may develop a habitual cough as they attempt to remove the mucus from their lungs.

Smokers are at increased risk of contracting pneumonia and other respiratory infections. Cigarette smoke can also trigger asthma attacks in people who have asthma.

Although the lungs have defenses to protect against injury when toxic substances are inhaled, these defenses are overwhelmed after years of exposure to cigarette smoke. Chronic inflammation that comes from continued exposure to tobacco smoke makes the body become less able to repair damaged lung tissue.

The only proven way to reduce the risk for tobacco-related lung diseases is to stop smoking entirely.

**Disclaimer:** Data and findings provided on this page reflect the content of the 2010 Surgeon General's Report (*How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*). More recent information may exist elsewhere on the Smoking & Tobacco Use Web site (for example, in fact sheets, frequently asked questions, or other materials that are reviewed on a regular basis and updated accordingly).