

# The Effects of Tobacco on the Respiratory System

## Objectives:

- Explain how the Respiratory System works.
- Be aware of some of the dangerous chemicals found in cigarettes.
- Know some of the harmful effects of tobacco on the respiratory system and the entire body.

## Respiratory System

Your body has several needs that must be met in order to stay strong and healthy. You need good, nutritious food, lots of water and plenty of sleep. One of the most important things your body needs is clean, fresh air. Your body needs oxygen to carry out all of its activities. Every cell in your body uses oxygen to help get energy from the food you eat.

When you breathe, the air taken into your nose and mouth travels down a tube called the **TRACHEA**. Your trachea is in the front of your neck and it is very hard with tough rings around it.

- ☞ Have students tilt head back and feel the front of the neck. Students should be able to feel the rings of the trachea.

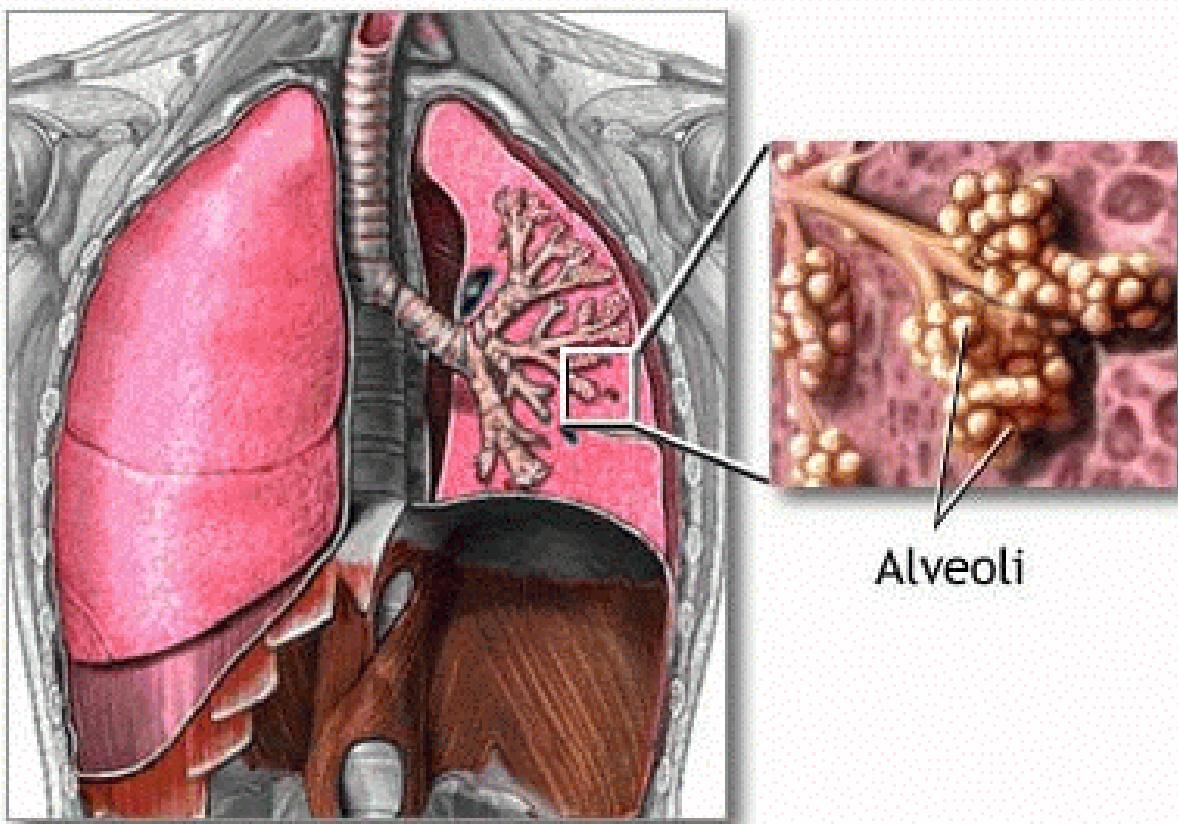
The trachea is an air tube only and there is a special flap of skin that covers the trachea when you're eating or drinking. This little flap makes sure no food gets into your lungs. Occasionally tiny food particles may get into the trachea causing you to cough very hard as your lungs get rid of the food.

As air travels down the trachea it comes to a fork in the road. This is where the trachea branches into two tubes called the **BRONCHIAL TUBES**. The bronchial tubes go into your lungs and continue branching into smaller and smaller tubes forming a maze. Air continues through these tubes until it reaches tiny air sacs called **ALVEOLI**. The sacs look like bunches of grapes at the end of the bronchial tubes. The alveoli are where oxygen from the air enters your blood. At the same time carbon dioxide, a waste gas produced by the cells is passed out of the blood. The carbon dioxide then begins the journey out of the body. When we exhale, the carbon dioxide is passed out of the body. Once oxygen is picked up by the blood, it is carried to the heart which pumps the oxygen rich blood around the body. Your heart and lungs work together to make sure every cell in your body gets enough oxygen.

Your **DIAPHRAGM** is a big sheet-like muscle below your lungs that is responsible for your breathing. When your diaphragm moves down, you breathe in. When your diaphragm moves up, you breathe out.

- Have students take a deep breathe in. Can they feel a stretching in their stomach? The stretching is the diaphragm moving down as they breathe in. Now ask them to breathe out all the air in their lungs. The tightness they feel below the chest is the diaphragm pushing up to get the air out of the lungs.

Your respiratory system has built in filters that work to prevent germs and dirt particles in the air from entering the lungs. Your nose is lined with hairs that filter the air you inhale. It also produces a sticky mucus that catches germs and dirt particles before they enter your body. When you blow your nose you're getting rid of all the bad germs



 **ADAM**

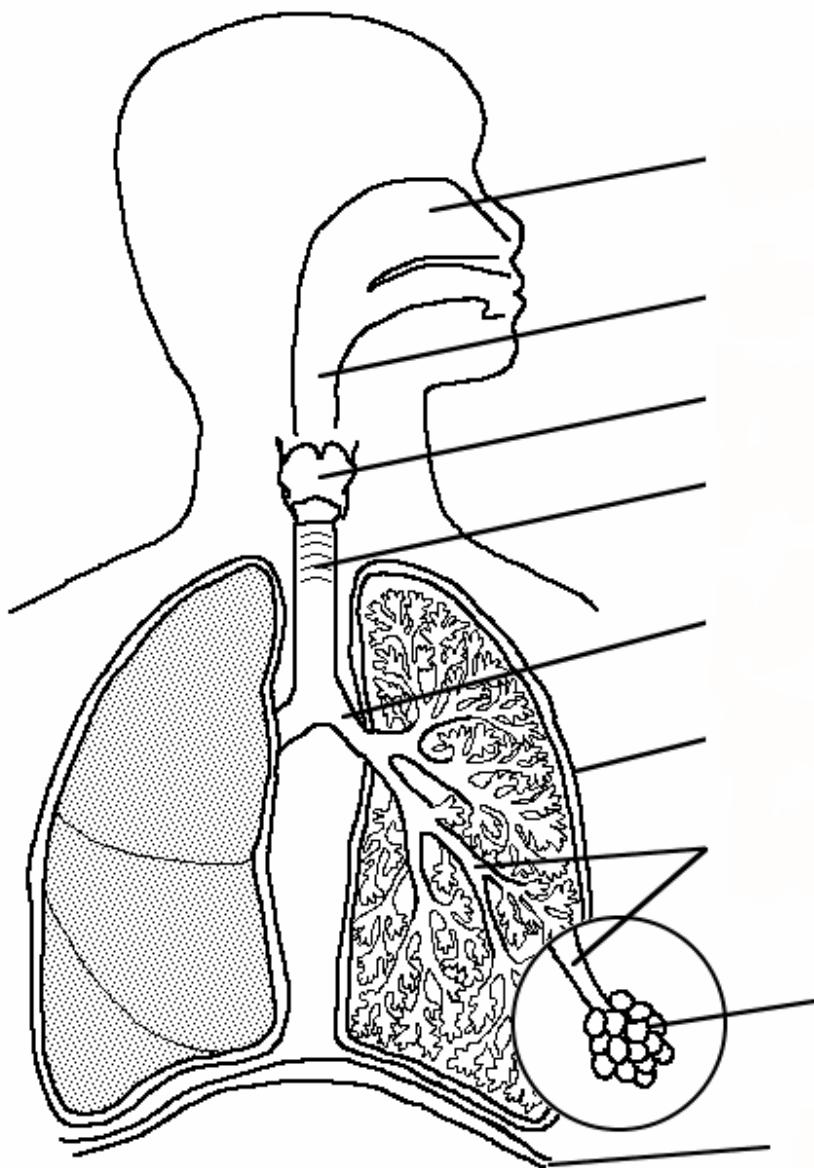
and dirt that your nose stopped from getting into your body. Your bronchial tubes are also covered with mucus that catches any particles missed by the nose. The bronchial tubes are covered with tiny hairs called **CILIA** which sweep back and forth about ten times every second. The cilia act like brooms and sweep the germs and dirt particles out of your lungs.

### RESPIRATORY SYSTEM DIAGRAM

- Have students label the parts of the respiratory system on the following diagram.



# Respiratory System



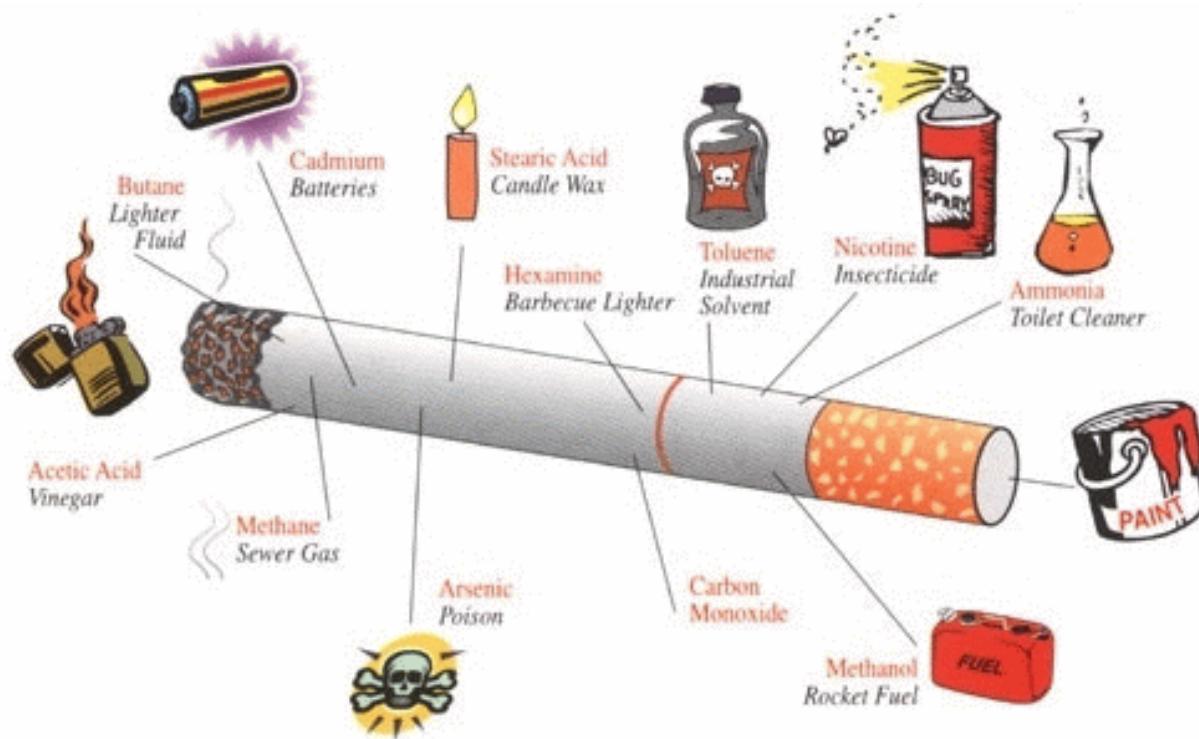
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What is in a cigarette?

Cigarettes contain many toxins. In fact, cigarettes contain over 4000 dangerous chemicals, many of which are known to cause cancer. Here are just a few of the many chemicals found in cigarette smoke:

- Tar
- Nail Polish Remover (Acetone)
- Paint Stripper (Turpentine)
- Toilet Cleaner (Ammonia)
- Glue (Toluene)
- Pesticides (Nicotine)
- Rat Poison (Arsenic)

## WHAT IS IN A CIGARETTE?



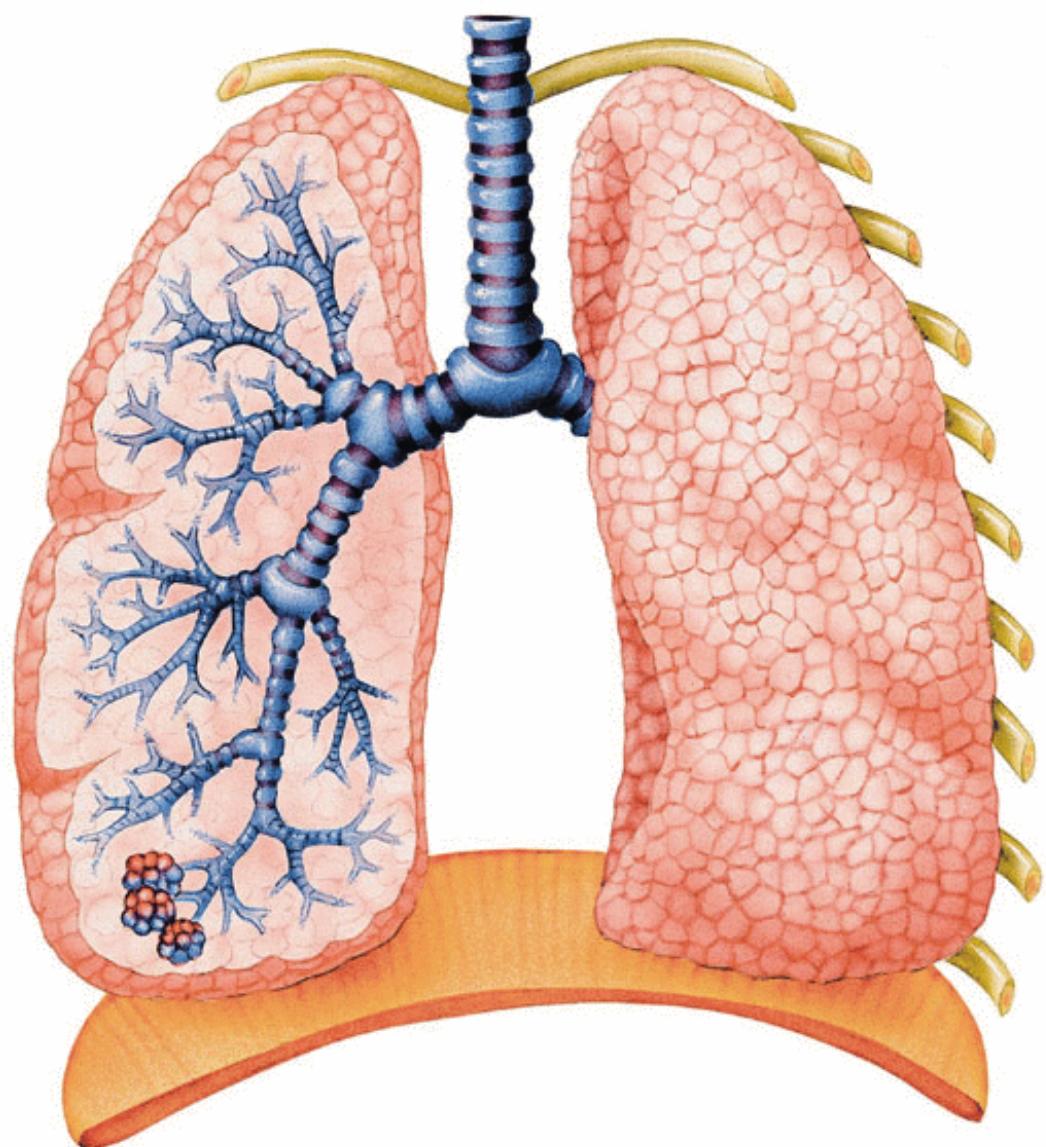
## Harmful Effects of Tobacco

The chemicals in cigarette smoke have many effects on the body, they cause wrinkling of the skin making smokers look older, and the tar in cigarettes stains the teeth and fingers of smokers. Cigarette smoke also leaves a bad smell that sticks to a smoker's hair, clothes and breath.

The toxic chemicals in tobacco have very serious effects on the body. The tar which is

found in tobacco smoke collects on the lining of the trachea and bronchial tubes, sticking to the cilia. The tar makes it difficult for the cilia to sweep back and forth. This causes a build up of germs and dirt particles in the lungs which cause diseases. The many chemicals contained in cigarette smoke damage the respiratory system as well as other body systems. Diseases like lung cancer, throat cancer, mouth cancer, bladder cancer, emphysema and heart disease are caused by smoking. More than 45,000 Canadians will die each year of tobacco related diseases, that's more people than die of car accidents, suicides, murder, AIDS and drug use combined.

## **HEALTHY LUNGS**



## SMOKERS LUNGS

