



Radiation in Tobacco

Tobacco used to make cigarettes and other tobacco products contains small amounts of radioactive materials.

- Stay away from secondhand smoke as much as you can.
- Smoking makes radon exposure more likely to cause cancer.

About Radiation in Tobacco

You have probably heard plenty of reasons not to smoke or use other tobacco products, but here is one more: The tobacco used to make these tobacco products contains small amounts of radionuclides. About 20 percent of all deaths in the United States are from tobacco use and diseases caused by smoking each year - that's around 440,000 people. Cigarettes kill more Americans than alcohol, car accidents, suicide, AIDS, homicide and illegal drugs combined.

Toxic chemicals in tobacco smoke are the main reason cigarettes cause cancer, but radiation also plays a part. Cigarette smokers inhale radionuclides that build up over time in the lungs and other parts of the body. Smokers are not the only ones affected by the radiation in cigarettes. Nearby non-smokers inhale the radionuclides as well.

Where do the radionuclides in tobacco come from? The fertilizer that farmers use to increase the size of their tobacco crops contains the naturally occurring radionuclide, radium. Radium radioactively decays to release radon, which then rises from the soil around the plants. The radon and its decay products cling to the sticky hairs (trichomes) on the bottom of tobacco leaves as the plant grows. The decay products include radioactive elements lead-210 and polonium-210. Rain does not wash them away.

Cigarettes made from this tobacco still contain these radioactive elements. Lead-210 and polonium-210 emit mostly alpha and gamma radiation. The radioactive particles settle in smokers' lungs, where they build up as long as the person smokes. (Unfiltered cigarettes allow the greatest amount of radionuclides to enter the lungs.) Over time, the radiation can damage the lungs and help cause lung cancer.

Smoking can make users more vulnerable to other cancer-causing contaminants. Radon gas is the second leading cause of lung cancer, right after smoking. This colorless, odorless, radioactive gas occurs naturally in soils. Radon can seep into houses, schools and other buildings through cracks in the foundation. Inhaling it over time can cause lung cancer. Smokers exposed to radon are more likely to develop lung cancer than non-smokers.



The sticky underside of tobacco leaves hold radionuclides that come from fertilizer.

Rules and Guidance

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA does not regulate tobacco. However, EPA works to protect families from secondhand smoke through its voluntary Smoke-Free Homes Campaignⁱ. The goals of the campaign are to teach people about secondhand smoke and the health risks of smoking indoors. Children's developing lungs are more easily damaged by secondhand smoke.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS), CENTERS FOR DISEASE CONTROL AND PREVENTION (CDC)

The CDC provides information on tobacco use and ways to prevent diseases caused by smoking. It also helps communities educate citizens on how to protect nonsmokers from secondhand tobacco smoke in public places.

The Office of the Surgeon General requires warning labels on cigarettes. It also offers provides information and resources to help people stop smoking.

What you can do

To help avoid health effects from chemicals and radiation in tobacco products:

- Do not chew or smoke tobacco.
- Stay away from secondhand smoke as much as you can.

Where to learn more

You can learn more about radiation in tobacco by visiting the resources available on the following webpage: <http://www3.epa.gov/radtown/tobacco.html#learn-more>.

ⁱ <http://www2.epa.gov/indoor-air-quality-iaq/secondhand-tobacco-smoke-and-smoke-free-homes>