



## Scientific Facts on **Tobacco**

### Active and Passive Smoking

**Source document:**  
IARC (2002)

**Summary & Details:**  
GreenFacts

**Context** - Over one thousand million people worldwide smoke tobacco.

In developed countries, the overall percentage of smokers has decreased, but the percentage is still increasing in developing countries and among women.

More and more is known about the harmful effects of tobacco on smokers.

Are passive smokers also at risk?

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This Digest is a faithful summary of the leading scientific consensus report produced in 2002 by the International Agency for Research on Cancer (IARC):  
*"Volume 83 Summary of data reported and evaluation on Tobacco Smoke and Involuntary Smoking"*

The full Digest is available at: <https://www.greenfacts.org/en/tobacco/>

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- Each question is answered in Level 1 with a short summary.
- These answers are developed in more detail in Level 2.
- Level 3 consists of the Source document, the internationally recognised scientific consensus report which is faithfully summarised in Level 2 and further in Level 1.

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## **1. What are the current trends in active tobacco smoking?**

1.1 Over one thousand million people worldwide smoke tobacco. The percentage of smokers has decreased in developed countries, but is increasing in developing countries and among women.

1.2 Tobacco is mainly smoked as cigarettes, but also as pipes, cigars or bidis.

1.3 All current tobacco products expose smokers to chemicals which can cause cancer. The amounts of harmful substances to which smokers are exposed depend on the type of tobacco, the way it is smoked, product design and whether filters are used.

## **2. What kinds of cancer does tobacco cause in smokers?**

2.1 Tobacco smoking strongly increases the risk of developing cancer of the lung, oral cavity (mouth), pharynx, larynx, oesophagus, pancreas, bladder and renal pelvis (the kidney outlet). It also increases the risk of cancers of the nasal cavities (nose) and sinuses, stomach, liver, kidney, cervix (neck of the uterus) and bone marrow (myeloid leukaemia).

The risk depends on how long a person has been smoking and the number of cigarettes smoked. For some cancers alcohol consumption increases the risk.

2.2 There is evidence suggesting that tobacco smoking does not cause breast cancer and that it reduces the frequency of cancer of the lining of the uterus.

2.3 No clear link has been found between smoking and colorectal cancer or prostate cancer.

2.4 Smoking cigars, pipes or bidis also causes a variety of cancers.

2.5 The risk for developing particular types of cancer can be amplified when smoking is combined with exposure to some substances in the workplace, alcohol consumption or some viral infections.

## **3. Does tobacco cause cancer in test animals?**

Laboratory tests have shown that tobacco smoke and tobacco smoke condensate cause cancer in many kinds of test animals, such as rats and mice.

## **4. What other biological effects can active smoking cause?**

In humans, active smoking can cause pregnancy problems, as well as diseases of the respiratory and cardiovascular systems.

Nicotine is the main component which makes tobacco addictive. Harmful substances from tobacco smoke and their breakdown products are present in the urine and blood stream of both active and passive smokers. In the body, carcinogens from tobacco smoke can bind to blood proteins and to DNA, and can thus produce gene mutations and chromosomal abnormalities. Smoking can also cause changes in the metabolism of cells or tissues, resulting in changes to the way foreign substances are broken down by the body.

Many of the effects seen in human smokers are also found in test animals exposed to tobacco smoke.

## 5. What is passive smoking?

Passive smoking is involuntary exposure to tobacco smoke. The secondhand smoke inhaled by passive smokers is a mixture of smoke exhaled by smokers and smoke directly released from smouldering tobacco. It contains nicotine as well as various carcinogens and toxins.

## 6. Does passive smoking cause cancer?

6.1 There is sufficient evidence to conclude that there is an increased risk of lung cancer for people who have never smoked but who have been exposed to tobacco smoke, e.g. spouses of smokers and non-smokers exposed at the workplace. However, the risk is much smaller than for active smokers.

6.2 For other cancers such as breast and childhood cancer, however, evidence is not conclusive.

6.3 Studies on laboratory animals support the evidence that passive smoking can cause cancer in humans and there is some data suggesting that dogs living in smoking households also have an increased risk for certain cancers.

## 7. Does passive smoking cause other health effects?

7.1 Passive smoking can cause coronary heart disease and chronic respiratory symptoms.

7.2 Though passive smoking does not seem to affect body weight, fertility and age at menopause of women, the birth weight of babies born to passive smokers may be lower than those born to non-smokers.

7.3 Similar to active smokers, passive smokers have harmful substances and breakdown products of tobacco smoke in their body, which can cause cell damage and lung cancer.

7.4 Test animals exposed to secondhand tobacco smoke show a range of adverse effects, including DNA damage, altered metabolism, reduced birth weight, as well as diseases of the arteries and the respiratory system.



## 8. Conclusions on tobacco and cancer

8.1 There is sufficient evidence to conclude that tobacco smoking causes several types of cancer in humans.

8.2 Moreover, there is sufficient evidence to conclude that passive smoking causes lung cancer in humans.

The International Agency for Research on Cancer (IARC) has therefore classified both active and passive tobacco smoking and tobacco smoke as "carcinogenic to humans" (Group 1).