

## Smoking - effects on your body

Nicotine is the addictive drug in tobacco smoke that causes smokers to continue to smoke. Addicted smokers need enough nicotine over a day to 'feel normal' – to satisfy cravings or control their mood. How much nicotine a smoker needs determines how much smoke they are likely to inhale, no matter what type of cigarette they smoke.

Along with nicotine, smokers also inhale about 4,000 other chemicals in cigarette smoke. Many of these chemicals come from burning tobacco leaf. Some of these compounds are chemically active and trigger profound and damaging changes in the body.

There are over 60 known cancer-causing chemicals in tobacco smoke. Smoking harms nearly every organ in the body, causing many diseases and reducing health in general. **In Victoria, from 1 January 2010, it is illegal to smoke in cars carrying children under 18 years of age.**

### Tobacco smoke contains dangerous chemicals

The most damaging compounds in tobacco smoke include:

- **Tar** – this is the collective term for all the various particles suspended in tobacco smoke. The particles contain chemicals including several cancer-causing substances. Tar is sticky and brown and stains teeth, fingernails and lung tissue. Tar contains the carcinogen benzo(a)pyrene that is known to trigger tumour development (cancer).
- **Carbon monoxide** – this odourless gas is fatal in large doses because it takes the place of oxygen in the blood. Each red blood cell contains a protein called haemoglobin – oxygen molecules are transported around the body by binding to, or hanging onto, this protein. However, carbon monoxide binds to haemoglobin better than oxygen. This means that less oxygen reaches the brain, heart, muscles and other organs.
- **Hydrogen cyanide** – the lungs contain tiny hairs (cilia) that help to clean the lungs by moving foreign substances out. Hydrogen cyanide stops this lung clearance system from working properly, which means the poisonous chemicals in tobacco smoke can build up inside the lungs. Other chemicals in smoke that damage the lungs include hydrocarbons, nitrous oxides, organic acids, phenols and oxidising agents.
- **Free radicals** – these highly reactive chemicals can damage the heart muscles and blood vessels. They react with cholesterol, leading to the build-up of fatty material on artery walls. Their actions lead to heart disease, stroke and blood vessel disease.
- **Metals** – tobacco smoke contains dangerous metals including arsenic, cadmium and lead. Several of these metals are carcinogenic.
- **Radioactive compounds** – tobacco smoke contains radioactive compounds, which are known to be carcinogenic.

### Respiratory system

The effects of tobacco smoke on the respiratory system include:

- Irritation of the trachea (windpipe) and larynx (voice box)
- Reduced lung function and breathlessness due to swelling and narrowing of the lung airways and excess mucus in the lung passages
- Impairment of the lungs' clearance system, leading to the build-up of poisonous substances, which results in lung irritation and damage
- Increased risk of lung infection and symptoms such as coughing and wheezing
- Permanent damage to the air sacs of the lungs.

### Circulatory system

The effects of tobacco smoke on the circulatory system include:

- Raised blood pressure and heart rate

- Constriction (tightening) of blood vessels in the skin, resulting in a drop in skin temperature
- Less oxygen carried by the blood
- Stickier blood, which is more prone to clotting
- Damage to the lining of the arteries, which is thought to be a contributing factor to atherosclerosis (the build-up of fatty deposits on the artery walls)
- Reduced blood flow to extremities like fingers and toes
- Increased risk of stroke and heart attack due to blockages of the blood supply.

### **Immune system**

The effects of tobacco smoke on the immune system include:

- The immune system doesn't work as well
- The person is more prone to infections such as pneumonia and influenza
- Illnesses are more severe and it takes longer to get over them.
- Lower levels of protective antioxidants, for example Vitamin C, in the blood.

### **Musculoskeletal system**

The effects of tobacco smoke on the musculoskeletal system include:

- Tightening of certain muscles
- Reduced bone density.

### **Other effects on the body**

Other effects of tobacco smoke on the body include:

- Irritation and inflammation of the stomach and intestines
- Increased risk of painful ulcers along the digestive tract
- Reduced ability to smell and taste
- Premature wrinkling of the skin
- Higher risk of blindness
- Gum disease (periodontitis).

### **The male body**

The specific effects of tobacco smoke on the male body include:

- Lower sperm count
- Higher percentage of deformed sperm
- Reduced sperm mobility
- Changed levels of male sex hormones
- Impotence, which may be due to the effects of smoking on blood flow and damage to the blood vessels of the penis.

### **The female body**

The specific effects of tobacco smoke on the female body include:

- Reduced fertility
- Menstrual cycle irregularities or absence of menstruation
- Menopause reached one or two years earlier
- Increased risk of cancer of the cervix
- Greatly increased risk of stroke and heart attack if the smoker is aged over 35 years and taking the oral contraceptive pill.

### **The unborn baby**

The effects of maternal smoking on an unborn baby include:

- Increased risk of miscarriage, stillbirth and premature birth.
- Low birth weight, which may have a lasting effect on the growth and development of children. Low birth weight is associated with an increased risk for early puberty and, in adulthood, is an increased risk for heart disease, stroke, high blood pressure, being overweight and diabetes.

- Increased risk of cleft palate and cleft lip.
- Paternal smoking can also harm the foetus if the non-smoking mother is exposed to secondhand smoke.
- If the mother or father continues to smoke during their baby's first year of life, the child has an increased risk of ear infections, respiratory illnesses such as pneumonia and bronchitis, sudden infant death syndrome (SIDS) and meningococcal disease.

### **Diseases caused by long-term smoking**

A lifetime smoker is at high risk of developing a range of potentially lethal diseases, including:

- Cancer of the lung, mouth, nose, voice box, tongue, nasal sinus, oesophagus, throat, pancreas, bone marrow (myeloid leukaemia), kidney, cervix, ureter, liver, bladder and stomach.
- Lung diseases such as chronic obstructive pulmonary disease, which includes chronic bronchitis and emphysema.
- Coronary artery disease, heart disease, heart attack and stroke.
- Ulcers of the digestive system.
- Osteoporosis and hip fracture.
- Poor blood circulation in feet and hands, which can lead to pain and, in severe cases, gangrene and amputation.

### **Where to get help**

- Your doctor
- Your pharmacist
- Quitline Tel. 13 7848 (13 QUIT)

### **Things to remember**

- Many of the 4,000 chemicals in tobacco smoke are chemically active and trigger profound and potentially fatal changes in the body.
- Smoking harms nearly every organ in the body.

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