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 inhale about 7,000 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.

Tobacco smoke contains over 60 known cancer-causing chemicals. Smoking harms nearly every organ in the body, causing many diseases and reducing health in general.

### Dangerous chemicals in tobacco smoke

The most damaging components of tobacco smoke are:

- **Tar** – this is the collective term for the various particles suspended in tobacco smoke. The particles contain chemicals, including several cancer-causing substances (carcinogens). Tar is sticky and brown, and stains teeth, fingernails and lung tissue. Tar contains the carcinogen benzo(a)pyrene.
- **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 that transports oxygen molecules around the body. However, carbon monoxide binds to haemoglobin better than oxygen. In response, the body makes more red blood cells to carry the oxygen it needs, but it makes the blood thicker. This means that when the body demands more oxygen during exercise, 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.
- **Oxidizing chemicals** – these highly reactive chemicals (which include free radicals) 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 that are known to be carcinogenic.

### Effects of smoking tobacco on the body

Inhaling tobacco smoke causes damage to many of the body’s organs and systems.

### Effects of smoking on the 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.

Effects of smoking on the 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 during exercise
  - ‘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 (fingers and toes)
  - increased risk of stroke and heart attack due to blockages of the blood supply.

Effects of smoking on the immune system
- The effects of tobacco smoke on the immune system include:
  - greater susceptibility to infections such as pneumonia and influenza
  - more severe and longer-lasting illnesses
  - lower levels of protective antioxidants (such as vitamin C), in the blood.

Effects of smoking on the musculoskeletal system
- The effects of tobacco smoke on the musculoskeletal system include:
  - tightening of certain muscles
  - reduced bone density.

Effects of smoking on the sexual organs
- The effects of tobacco smoke on the male body include an increased risk for:
  - lower sperm count
  - higher percentage of deformed sperm
  - genetic damage to sperm
  - impotence, which may be due to the effects of smoking on blood flow and damage to the blood vessels of the penis.

The 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.

Other effects of smoking 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).

**Effects of smoking on babies**

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 of the growth and development of children. Low birth weight is associated with an increased risk of heart disease, stroke, high blood pressure, being overweight and diabetes in adulthood
- increased risk of cleft palate and cleft lip
- paternal smoking can also harm the fetus if the non-smoking mother is exposed to second-hand smoke.

If a parent 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, larynx, tongue, nasal sinus, oesophagus, throat, pancreas, bone marrow (myeloid leukaemia), kidney, cervix, ovary, ureter, liver, bladder, bowel and stomach
- lung diseases such as chronic bronchitis and chronic obstructive pulmonary disease, which includes obstructive bronchiolitis 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 QUIT (13 7848)

**Top tips to help you Quit**

It's hard and you will probably fail a couple of times. But with the right plan and the right help, you will eventually succeed and quit for good. Scroll through our top 10 tips and learn the tricks that will help you butt out for good this time.
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