

## Wood fires and breathing problems

Smoke from wood fires contains gases and particles that can reduce indoor and outdoor air quality, and potentially affect people's health. Wood smoke is generated from wood heaters, incinerators, open air burning and bushfires.

People who are most affected by wood smoke include those with heart or breathing conditions (including asthma), people with vascular conditions such as high blood pressure and those with complications from diabetes, smokers, frail older people, infants and very young children. There are a number of actions you can take to prevent or reduce the potential health effects of wood smoke.

### Wood smoke is a form of air pollution

Wood smoke is a complex mixture of gases and particles. These gases and particles are air pollutants. The main air pollutants in wood smoke include carbon monoxide and fine particles. Other pollutants include nitrogen oxides, benzene, butadiene, formaldehyde and polyaromatic hydrocarbons (PAHs).

### Wood heater use

The amount of air pollutants in wood smoke produced by a wood heater depends on:

- The quality of the wood fuel
- The type of heating appliance used
- How the heating appliance is used.

Higher levels of air pollutants are usually generated during fire start up and where a fire is poorly managed – for example, when airflow to the heater is reduced, allowing wood to smoulder. Higher levels of air pollutant emissions can occur where a heating appliance (such as a heater) is performing poorly, or when wood with high moisture content is used.

### Wood smoke exposure

Exposure to wood smoke can occur either:

- **Inside the home** – from your own wood heater or where the outdoor air contains smoke that penetrates inside the home
- **Outside the home** – where smoke from a wood heater or other source is released outside the home, affecting neighbours and the outdoor air in general.

Improperly installed heaters or clogged chimneys can increase the amount of air pollutants produced (inside the home) and increase the likelihood of health effects. Heaters that conform to Australian Standards (AS/NZS 4013), are installed properly, operated correctly and adequately maintained produce less air pollutants and a lower likelihood of creating a nuisance or adverse health effects.

### Health effects of wood smoke

Most healthy people recover quickly from exposure to wood smoke and do not suffer long-term effects. It is not known how low the level of fine particle pollution must be for it not to affect health.

The degree of health effects that someone may experience depends on how much smoke the person is exposed to and for how long. Symptoms of smoke irritation include itchy eyes, runny nose, a sore throat and coughing.

In addition to health effects, wood smoke can also cause smoke haze and odour nuisance.

People most susceptible to wood smoke include:

- People suffering from existing cardiac or respiratory conditions, such as asthma
- People with vascular conditions such as high blood pressure and those with complications from diabetes
- Smokers, as wood smoke increases the risk of reduced lung function
- Infants and very young children
- Frail older people.

## Carbon monoxide

Carbon monoxide (CO) is an odourless, tasteless and colourless gas that cannot be smelled by humans. CO levels will rise in a home where a wood-fired heater is used. A poorly installed, improperly vented or leaking wood heater can result in CO levels inside the home that may lead to CO poisoning.

A small increase in the level of carbon monoxide may result in trouble concentrating. At low to moderate levels of CO exposure, a person may experience flu-like symptoms, headaches, fatigue or chest pain. High exposure to CO can result in permanent damage to the heart and brain, which may result in death.

## Fine particle pollution

Fine particle pollution can affect the human respiratory and cardiovascular systems. Fine particles can cause a variety of short-term health problems, including itchy or burning eyes, throat irritation, runny nose and illnesses like bronchitis.

Fine particles can aggravate existing heart and lung conditions such as angina, chronic bronchitis, emphysema and asthma.

## Other airborne pollutants from wood smoke

Other airborne pollutants from wood smoke include benzene, butadiene, formaldehyde and polycyclic aromatic hydrocarbons (PAHs). Health effects from these pollutants range from eye irritation and headaches to more serious damage of the respiratory, nervous, reproductive, developmental and immune systems. Studies show that some of these pollutants are known to cause or are suspected of causing cancer.

## Health precautions – wood heaters

If you have a wood heater:

- Make sure you operate it properly to minimise smoke generation. Maintain the heater and arrange for regular cleaning of the chimney.
- Ensure fresh air enters the room to prevent CO build-up. This includes keeping the inside doors to the rest of the house open. If there are no vents in the wall in the room where the heater is, open a window slightly – at least a few centimetres.
- Be alert to symptoms such as drowsiness, as this can indicate high CO levels.
- Never burn plastics or foam, painted wood or copper chrome arsenate (CCA) treated or creosote-treated timber (for example, railway sleepers). Toxic fumes are generated in addition to wood smoke air pollutants.
- Consider installing a less polluting form of heating, such as flued gas or electric, or replace your wood heater with a model that complies with Australian Standards.

## Health precautions – wood smoke outside your home

To minimise possible health effects during times when outdoor wood smoke in your local area is a problem:

- Avoid outdoor physical activities.
- Stay indoors with windows and external doors closed – this provides some protection and prevents smoke entering your home.
- If you suffer from heart or lung disease and you notice symptoms of smoke exposure, take your regular medications, rest and seek medical advice if symptoms persist.

## Where to get help

- Environment Protection Authority Victoria Tel. 1300 372 842 – for general information on wood heaters and air quality, what to do about neighbours with smoky wood heaters, correct operation and maintenance of wood heaters
- Your local council – for advice and information on wood smoke pollution and for reporting complaints
- Environmental Health Unit, Department of Health Tel. 1300 761 874 – for information on the health effects of air pollutants
- Your doctor
- Plumbing Industry Commission Tel. 1300 815 127 – for advice about the correct installation of a wood heater
- Asthma Foundation of Victoria Tel. 1800 645 130
- Victorian Bushfire Information Line Tel. 1800 240 667 (TTY for the deaf 1800 122 969) – for the latest information on total fire bans, fire restrictions and major fires

## Things to remember

- Wood smoke contains gases and particles that may affect your health.
- Make sure you operate and maintain your wood heater properly and that the room is well ventilated.
- To protect your health, avoid outdoor physical activities when smoke is present.
- If you suffer from heart or lung disease and you notice symptoms of smoke exposure, take your regular medications, rest and seek medical advice if symptoms persist.

### **This page has been produced in consultation with, and approved by:**

Department of Health - Environmental Health Unit

Content on this website is provided for education and information purposes only. Information about a therapy, service, product or treatment does not imply endorsement and is not intended to replace advice from your doctor or other registered health professional. Content has been prepared for Victorian residents and wider Australian audiences, and was accurate at the time of publication. Readers should note that, over time, currency and completeness of the information may change. All users are urged to always seek advice from a registered health care professional for diagnosis and answers to their medical questions.

For the latest updates and more information, visit [www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)

**Copyright** © 1999/2012 State of Victoria. Reproduced from the Better Health Channel ([www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.