

Smog

The term 'smog' was invented in England in 1905 to name the haze caused by a combination of smoke and fog. Today, smog in large cities consists of pollutants from car exhausts and other sources chemically reacting in sunlight – photochemical smog. The brown tint of smog is due to the presence of nitrogen dioxide.

During Melbourne summers, the main type of smog is photochemical. Hydrocarbons and oxides from car and factory emissions react together in warm sunshine to form the gas ozone. Summer smog is measured by the amount of ozone in the air.

During Melbourne winters, the main causes of smog include wood heaters, open fires, and car and factory emissions. Winter smog is measured by the reduction in visibility, which indicates the amount of airborne particles.

Prolonged exposure to smog affects the lungs and reduces lung functioning. There is some evidence to suggest that smog may even trigger asthma in people with no previous history of the disorder.

Constituents of smog

Smog contains numerous small particles, which can be inhaled. It may contain many different chemicals and particles, including:

- Nitrogen oxides
- Volatile organic compounds
- Hydrocarbons
- Ozone
- Nitrogen dioxide
- Road dust
- Topsoil
- Pollens
- Wood smoke.

Health problems of smog

Smog can cause or contribute to a range of health problems, including:

- Red and irritated eyes
- Inflammation of the lung's airways
- Increased risk of asthma attacks
- Increased risk of hay fever attacks
- Temporary drop in lung function
- Unproven but suspected increased risk of chronic bronchitis
- Unproven but suspected increased risk of emphysema.

Health problems can occur when there is significant concentration in the air of small particles of less than 10 micrometres diameter. This is because they can be inhaled deep into the lungs and can lead to premature death in those with pre-existing heart or lung disease.

The link to asthma and other respiratory disorders

Smog doesn't just increase the risk of asthma attacks in those people with pre-existing asthma. Some studies have shown that prolonged exposure to smog can trigger asthma in people with no history of the disorder. Ozone and nitrogen oxide can make the lungs more sensitive to common asthma triggers, such as pollen and dust mites.

There is some evidence to suggest that prolonged exposure to air pollution may cause emphysema and chronic bronchitis, but more research is needed. Some of the chemicals in diesel exhaust may contribute to an increased risk of lung cancer, but the level of these chemicals in Australian air is considered too low to have an effect.

Smog alerts

The Environment Protection Authority (EPA) monitors air quality and issues smog alert warnings when necessary. Melbourne's smog can be reliably predicted, and warnings are usually issued the day before. Certain weather conditions contribute to the formation of smog.

According to the EPA, smog is likely (in summer) if the predicted weather includes:

- Clear, sunny skies
- Light easterly, north easterly or north winds, followed by an afternoon sea breeze
- A strong temperature inversion at less than 1,000 metres above ground.

In winter, a smog alert is issued if the predicted weather includes:

- A light wind
- Low cloud cover
- A temperature inversion near the ground.

Coping with smog

Suggestions for coping on smoggy days include:

- People with respiratory or cardiac disorders should try to remain indoors.
- People with asthma may need to take greater than usual amounts of reliever medications.
- You should avoid physical exercise outdoors.

Contributing to cleaner air

Suggestions for improving air quality include:

- Have your car regularly maintained to reduce exhaust emissions.
- Don't drive your car when you can walk or catch public transport.
- Car pool with friends or neighbours.
- If you have a wood burner, gather your untreated wood in summer and leave it to dry for at least eight months before using it.
- Maintain your wood heater and use it correctly.
- Switch to other forms of heating.
- Don't use incinerators or burn rubbish in the open air.
- Don't burn fallen autumn leaves.

Where to get help

- Your doctor
- The by-laws officer at your local council
- Environment Protection Authority, Pollution Watchline Tel. (03) 9695 2777
- The Australian Lung Foundation Tel. (03) 9570 3893 or 1800 654 301

Things to remember

- Smog in large cities are caused by pollutants from car exhausts and other sources chemically reacting in sunlight to form ozone.
- In Melbourne, summer smog is measured by the amount of ozone in the air, and winter smog by the reduction in visibility due to airborne particles.
- Prolonged exposure to smog irritates the lungs and reduces their functioning.

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Better Health Channel

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