



British Heart  
Foundation

# Air pollution and your heart

## What is air pollution?

Air pollution is the name for extremely small particles and gases in the air which can cause harm if you breathe them in.

Pollution is made up of different parts, including:

- gases such as nitrogen dioxide, ozone, sulphur dioxide and carbon monoxide
- particulate matter (PM), made up of solid and liquid particles such as soot and dust.

In the UK, outdoor air pollution contributes to an estimated 40,000 premature deaths (before the age of 75) each year.

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## What causes air pollution?

Exhaust fumes from motor vehicles are a major source of outdoor air pollution in the UK, because vehicle engines release harmful gases and PM from their exhausts into the air. Diesel vehicles are especially harmful, producing very high levels of PM.

Air pollution is also caused by the release of gases and PM from industry (such as factories) and people's houses, for example by burning fuel for power and heating. This includes using wood-burning stoves.

## Air pollution and heart disease

The World Health Organisation states that the majority of premature deaths across the world related to outdoor air pollution are caused by problems with the heart and circulation, such as a heart attack or stroke.

Research shows that being exposed to high levels of air pollution can cause heart conditions, or make existing ones worse. For example:

- Both short-term and long-term exposure to large amounts of air pollution have been linked to a higher risk of developing **angina**.
- If you have **heart failure** or **heart valve disease**, even short-term exposure to large amounts of air pollution can make your condition worse. This could increase your risk of having to go to hospital with symptoms such as shortness of breath.
- Other studies have shown that air pollution can cause people to experience **atrial fibrillation**, a type of abnormal heart rhythm.

## How does air pollution affect me?

Research suggests that there are several ways that air pollution could cause a heart or circulatory condition, or make an existing condition worse. For example, breathing in polluted air could:

- **damage the inside walls of your blood vessels or increase your blood pressure.** These effects could cause your arteries to become narrower which can add to the strain on your heart, increasing the risk of coronary heart disease, angina, heart attack or stroke.
- **make your blood more likely to clot.** This could increase your risk of a heart attack or stroke, if you already have problems with your heart or your blood vessels.
- **affect the normal electrical functioning of your heart.** This could cause abnormal heart rhythms, some of which may be harmful.

## Who is most at risk?

People who have heart conditions, or long-term lung diseases such as asthma and chronic obstructive pulmonary disease (COPD), are at higher risk of being affected by air pollution.

If you are healthy and have no history of heart and circulatory disease, current evidence shows that you are at low risk of having a heart attack or stroke after being exposed to high levels of air pollution.

## How can I protect my heart?

There are small changes that you can make to your life to reduce the chance of breathing in high levels of polluted air:

- If you can, try to avoid spending time in places where there are high levels of air pollution, such as near areas of busy traffic, or near where air pollution generated by industrial fumes.
- If you need to go to these places, try to go at times of day when there won't be as much traffic, avoiding the 'rush' hours of people travelling to and from work, or children being taken to or collected from school.

There is little evidence to recommend the use of face masks. It is thought that they don't keep out the smallest, most harmful particles of air pollution.

## Checking air pollution levels

If you have a heart condition, it is a good idea to regularly monitor the air pollution levels around where you live and work. This information is easy to find on the Government's UK-AIR website: [uk-air.defra.gov.uk](http://uk-air.defra.gov.uk)

This website lets you search for your postcode to find a daily pollution forecast for your area. This forecast shows the levels of pollution as low, moderate, high or very high. It also gives health advice for each level of pollution.

Or you can follow the [@DefraUKAir Twitter feed](https://twitter.com/DefraUKAir), or call their helpline on 0800 55 66 77.

## Is it safe to exercise outdoors?

Being physically active is very good for your heart, and for most people the benefits of doing exercise outweigh the risks of breathing in polluted air.

But if you know you have a heart condition, it is a good idea to monitor air pollution levels if you are planning to do exercise outdoors, because your body takes in more air when you are physically active and your heart is working harder.

When the air pollution level is moderate, high or very high, it is recommended to reduce how much physical activity you do outdoors if you have a heart condition. This is particularly important if you have symptoms such as shortness of breath or chest pain.

It is still a good idea to stay as active as you can indoors when it's not possible to exercise outside.

## Heart Helpline

**Our cardiac nurses and Information Support Officers are here to answer your questions about anything heart related.**

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**Call us on 0300 330 3311**

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**Similar cost to 01 or 02 numbers.  
Lines are open 9am - 5pm Monday to Friday.**

**This information does not replace the advice that your doctor or nurse may give you. If you are worried about your heart health in any way, contact your GP or local healthcare provider.**

## How can I help reduce air pollution? Research into air pollution

You can help to reduce air pollution by walking or cycling short distances instead of driving. This will lower your emissions of polluted air, help you to increase your physical activity, and could save you money. If you need to drive somewhere, you could think about sharing a lift with colleagues or a friend.

If you own a diesel car, do not remove the diesel particulate filter (DPF) on your exhaust, because it is illegal to drive a diesel vehicle without a DPF.

Do make sure that the DPF is maintained and emptied regularly, because it helps to protect you and those around you from potentially harmful emissions.

If you buy or switch your motor vehicle, you can avoid choosing a diesel vehicle and instead choose a petrol vehicle or an ultra-low emission vehicle (ULEV).

Research funded by the BHF has found that diesel exhaust fumes are a particular cause for concern for people's health. This is because there is a link between the very fine particles produced by diesel vehicles and heart and circulatory disease, with these particles increasing the risk of heart attack and stroke.

Since 2010 the BHF has funded £3.2million of research into air pollution and heart and circulatory disease. We continue to fund scientists to better understand how air pollution affects the heart and blood vessels.