



# Air Pollution:

- *what it means for your health*
- *the public information service*

*Department for Environment, Food & Rural Affairs in partnership with the Department of Health, the Scottish Executive and the Department of the Environment in Northern Ireland.*

*These days, many people are concerned about air pollution and whether it might affect their health. The fact is that most of the time, air pollution levels are low. The air is certainly a lot cleaner today than in the days of the smogs of the 1950's, when factory chimneys belched out smoke and nearly everyone had a coal fire. But if you are concerned about air pollution, there is a free and easy to use service that allows you to check levels in your area.*

*The Government and the devolved administrations' Air Pollution Information Service is managed by the Department for Environment, Food and Rural Affairs (DEFRA). It provides detailed and easy-to-understand information on air pollution, completely free of charge. This information can be particularly important to people with medical conditions which air pollution may make worse.*

## INTRODUCTION

Everyone has a right to accurate, comprehensive and up-to-date information on the air they breathe.

This booklet is designed to be an easy to understand guide to the Air Pollution Information Service and to air pollution and health. It explains what the service is and tells you:

- how to use the service;
- the bands (or levels) of air pollution and how to understand the 1 to 10 index;
- the health effects of different levels of air pollution;
- what to do if air pollution affects your health;
- which pollutants the service covers;
- where air pollution comes from and what affects people's exposure; and
- where to find out more about air pollution.

**It also advises on:**

- "does it make a difference where I live?"; and
- how we can all help reduce air pollution.



## WHAT IS THE AIR POLLUTION INFORMATION SERVICE?

The service gives up-to-the-minute information at your fingertips, including:

- concise, easy-to-understand summaries;
- detailed information on individual pollutants, based on the latest medical and scientific research;
- health advice – essential for people whose health may be affected by air pollution; and
- forecasts for the following urban areas and regions are available on the internet, teletext and freephone:

### Urban areas

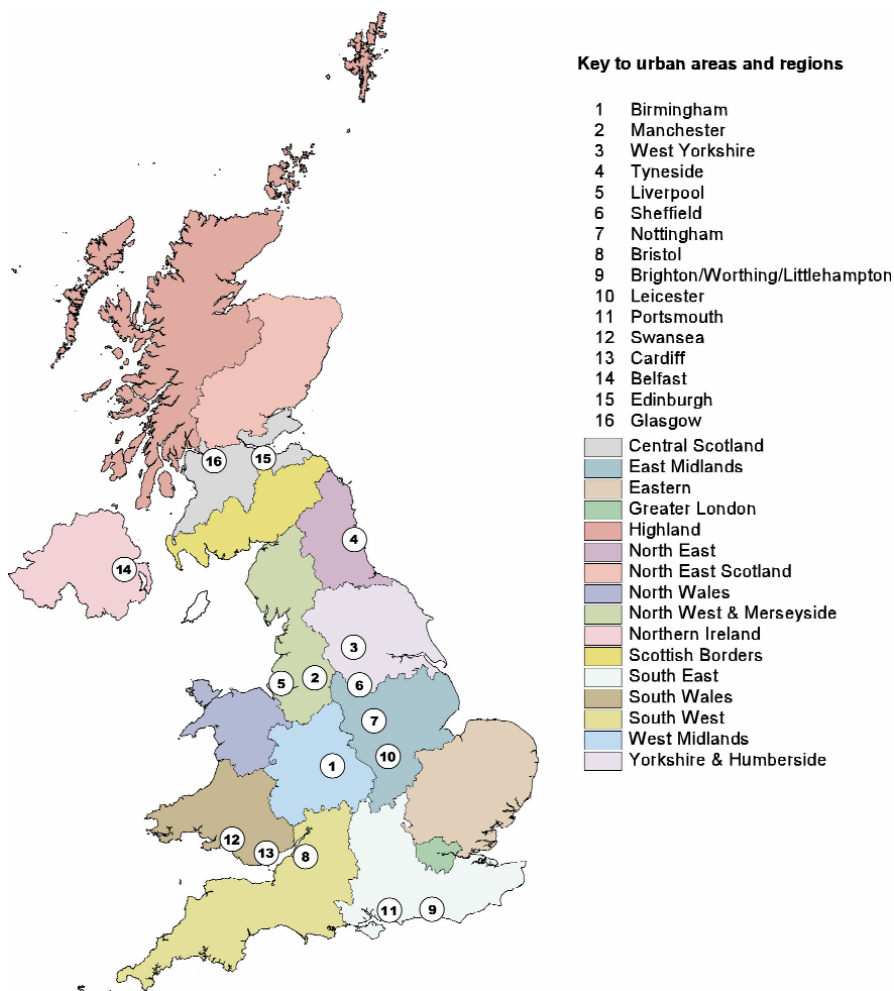
Birmingham  
 Manchester  
 West Yorkshire  
 Tyneside  
 Liverpool  
 Sheffield  
 Nottingham  
 Bristol  
 Brighton/  
 Worthing/  
 Littlehampton  
 Leicester  
 Portsmouth  
 Swansea  
 Cardiff  
 Belfast  
 Edinburgh  
 Glasgow

### Regions

North East  
 North West  
 Yorkshire and  
 Humberside  
 East Midlands  
 West Midlands  
 Eastern  
 Greater London

South East  
 South West  
 North East Scotland  
 Highlands  
 Central Scotland  
 Scottish Borders  
 North Wales  
 South Wales  
 Northern Ireland





A free leaflet ***Working Together for Clean Air*** (ref. 99EP0865) explains what the Government, the devolved administrations in Scotland, Wales and Northern Ireland and local authorities across the country are doing to improve air quality. Copies are available from DEFRA Free Literature at the address at the end of this leaflet.

## WHAT INFORMATION DOES THE SERVICE PROVIDE?

The service is available through TV teletext pages, freephone and the internet. The teletext and freephone services provide all the basic information, while there is more detail on the internet.

The service reports levels of the five main air pollutants that can cause immediate health effects, against a numerical index as:

- 1-3 (low)
- 4-6 (moderate)
- 7-9 (high)
- 10 (very high)



The descriptions are based on the latest medical and scientific research. They are available on:

**Teletext: pages 155 and 169**

**Freephone: 0800 55 66 77**

**Internet: <http://www.airquality.co.uk>**

(also see *How does the air pollution banding system work?*)

## TV teletext: pages 155 and 169

The information is in three categories:

- national and regional forecasts for the next 24 hours (p. 155);
- air pollution and health advice (p. 169); and
- Alert messages when air pollution is high (p. 155).

Up to date levels of air pollution are given for three types of area:

- in towns and cities nearer busy roads;
- elsewhere in towns and cities; and
- in rural areas.

Freephone 0800 556677:

- available 24 hours a day;
- fast-track service for frequent callers to access their region's forecasts quicker;
- three types of area as those on teletext; and
- more detailed information, particularly on health effects.

## Internet

- National Air Quality Information Archive <http://www.airquality.co.uk>
- same information as teletext and freephone.

The Archive also has:

- a comprehensive range of new and historic air pollution information;
- data on the concentrations of a large number of individual pollutants, measured on an hourly or longer basis at over 110 automatic and over 1,100 non-automatic monitoring sites around the UK.

Who might want to use the service?

- people with heart conditions or lung diseases, including asthma, bronchitis and emphysema;
- people whose breathing gets worse when air pollution increases;
- people who want to know more about air pollution levels and who want to help reduce it.

## How does the air pollution banding system work?

The system is a way of telling people of the daily changes in air pollution. It is especially helpful to those affected by air pollution, as it can help them adjust their medication or activities for the day.

The system uses a numerical index grouped into four bands to describe levels of air pollution. The bands, or levels, are 1–3 (low), 4–6 (moderate), 7–9 (high) and 10 (very high).

Information on each of the five main pollutants with short-term health effects is gathered every hour from over 110 automatic monitoring sites. **The five main pollutants are:**

- *sulphur dioxide*;
- *nitrogen dioxide*;
- *ozone*;
- *carbon monoxide*; and
- *particles (PM<sub>10</sub>)*.

**The air pollution level reported in the forecasts and summaries is the highest for any single pollutant.**

For example, if all but one of the pollutants in a region or city were 1–3 (low), with just a single pollutant registering 7 (high), the summary would describe air pollution as 7 (high). In the UK, very high levels of air pollution are rare. That is why the 'very high' band is only a single number – 10.

The service also issues special messages when air pollution levels are high. These report where and when exceedences occur and explain their likely cause. They also give a forecast of levels and specific health advice to sensitive people in the area affected.



## How might air pollution affect me?

If your health is good, the levels of air pollution we usually experience in the UK are unlikely to have any serious short-term effects. But on the rare occasions when air pollution levels are high, some people may feel eye irritation, others may start to cough, and some may find that breathing deeply hurts.



People with lung diseases or heart conditions are at greater risk, especially if they are elderly. Daily changes in air pollution trigger increased admissions to hospital

and contribute to the premature death of those who are seriously ill.

The table below describes how the health of people who are sensitive to air pollutants might be affected by pollution at the different levels or bands.

People with heart conditions or severe lung diseases (for example, chronic bronchitis or emphysema) **might** be more sensitive to changes in air pollution than the descriptions suggest.

### Pollution band and numerical index

### Health effect

1–3 (LOW)

Effects are unlikely to be noticed, even by people who know they are sensitive to air pollutants

4–6 (MODERATE)

Mild effects are unlikely to require action, but sensitive people may notice them

7–9 (HIGH)

Sensitive people may notice significant effects, and may have to act to reduce or avoid them (for example, by reducing time spent outdoors). Asthmatics will find that their reliever inhaler should reverse the effects of pollution on their lungs

10 (VERY HIGH)

The effects of high levels of pollution on sensitive people may worsen when pollution becomes very high

*Sensitive individuals are people who suffer from heart and lung diseases, including asthma, particularly if they are elderly.*

The changes from band to band are not sudden steps. The effects of air pollutants on health increase gradually as air pollution levels rise.

It is important to look at the levels and bands in the light of personal experience. Some people – especially those who are sensitive to air pollution – will learn from experience how air pollution affects them. Some may still notice the effects for several days after pollution levels have fallen to low or moderate levels.

The information service only provides information about the health effects of short-term exposure to certain air pollutants. Air pollution is also likely to affect health over the longer term. Understanding of the long-term health effects of exposure to air pollution is currently rather limited, but experts suggest that cutting long term exposure to fine particles by half could increase life expectancy by between 1 and 11 months on average. This is not as great as the effect of smoking on life expectancy (on average, non-smokers live 7 years longer than smokers).

### Asthma

There is little evidence that air pollution itself causes asthma.



Research is continuing on this subject. However, if you already have asthma, you may find that air pollution triggers an attack, although infections and allergens are more likely to do so.

If you suffer from lung diseases or a heart condition, you might like to follow the advice below.

#### HEALTH ADVICE FOR PEOPLE WITH LUNG DISORDERS AND OTHERS SENSITIVE TO AIR POLLUTION

***If you have asthma or another lung disease, your symptoms are unlikely to change when air pollution levels are 1–3 (low) or 4–6 (moderate). This applies whatever the time of year.***

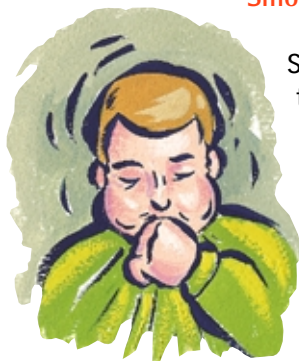
***However, your symptoms may get worse when air pollution reaches the 7–9 (high) or 10 (very high) bands, especially if you are elderly. If this happens, you may need to change your treatment in the usual way. If these steps don't help, consult your doctor.***

## Heart Disease

### HEALTH ADVICE FOR PEOPLE WITH HEART DISEASE

***If you suffer from a heart condition and you notice a change in your symptoms, get medical advice as you normally would. Do not try to change your treatment yourself.***

## Smoking



Smoking is likely to have a much more serious effect on your health than air pollution.

Giving up smoking will reduce your risk of lung and

heart disease considerably. It will also make you less vulnerable to the short-term effects of air pollution.

## In winter

- If traffic fumes make breathing harder, avoid busy streets as much as you can.
- If you are elderly, stay indoors as much as possible and keep warm.

## In summer

- If you find it harder to breathe on hot sunny days, avoid energetic outdoor activities, especially in the afternoons when pollution levels tend to be higher.
- If your child has asthma, they should still be able to take part in games as normal, but they may need to use their reliever inhaler more before they start. They do not need to stay away from school.



The table below describes the health effects that sensitive individuals might experience at very high levels of these pollutants.

With the exception of carbon monoxide, very high levels of all these pollutants can irritate the

lungs and cause inflammation. People with lung diseases, especially the elderly, may feel less well than usual. In some cases their symptoms may increase to such an extent that they need a change in treatment, or admission to hospital.

Pollutant	Health effects at very high levels
Nitrogen dioxide Sulphur dioxide Ozone	These gases irritate the airways of the lungs, increasing the symptoms of those suffering from lung diseases.
Particles	Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of heart and lung diseases.
Carbon monoxide	This gas prevents the normal transport of oxygen by the blood. This can lead to a significant reduction in the supply of oxygen to the heart, particularly in people suffering from heart disease.

## WHERE DOES AIR POLLUTION COME FROM?

The service reports daily outdoor levels of pollution, mostly from outdoor sources. Different sources are responsible for different pollutants. Road transport is the main source of nitrogen dioxide and carbon monoxide. Power stations and other industrial sources also produce nitrogen dioxide. Industry is the main source of sulphur dioxide. Particles

come from many sources, including road transport, power stations and other industry. The burning of wood or coal for home heating can also be an important source of sulphur dioxide and particles. Ground level ozone is not emitted directly from any source. Instead it is formed when sunlight acts on nitrogen dioxide and other atmospheric substances close to

the ground. The pollutants that cause ground level ozone come from a range of sources, including petrol and other fuels. Ground level ozone is different to the

ozone layer, which is affected by ozone depleting substances, such as CFCs, that have been released into the atmosphere.

## EXPOSURE TO AIR POLLUTION

Air pollution levels vary from area to area and from day to day. Levels of pollution can be influenced by a number of things:

- local landscape features and surroundings;
- local and regional sources of pollution; and

- seasonal variations and prevailing weather conditions.

For example, the following locations and weather conditions might lead to higher or lower levels of pollution.

Higher pollution	Lower pollution
Cities/towns in deep valleys	Cities/towns on hills
In summer, during sunny, still weather, particularly ozone in suburban and rural areas	Windy or wet weather at any time of year
In winter, in cold, still foggy weather, particularly vehicle pollutants in large cities	Rural areas away from major roads and factories (for most pollutants except ozone)
Busy roads with heavy traffic next to high buildings and busy road junctions	Residential roads with light traffic
High levels of solid fuel, for example coal and wood, used for heating in the local area	Smoke control area or areas with high levels of gas or electric used for heating

## DOES IT MAKE A DIFFERENCE WHERE I LIVE?

People often ask whether they should move home to reduce the risks to their health from exposure to air pollution. This is a difficult question to answer.

### What we do know:

- For an individual pollutant, levels vary across the country. Levels also vary between different places in the same area for example beside roads.

- Levels of some pollutants vary more than others and levels of different pollutants are higher in different areas. For example, ozone is higher in rural areas but particles are higher in urban areas.

- Air pollution can worsen the symptoms of heart or lung disease in some people but not in others.

- Some studies find that asthma symptoms are greater in those living beside roads but other studies do not.

### What we do not know:

- It may be unclear whether a person is truly sensitive to air pollution. For example, there are many triggers for asthma and reducing exposure to air pollution will not help if in fact it is another trigger that is more important.
- Despite the fact a person appears to be sensitive to air



pollution, they may not know which pollutant is having an effect.

- It may not be obvious how much of a reduction in exposure is required to make a significant difference.

It is therefore very difficult to give advice which is relevant to everyone in the same area. Moving home is a major life event and may have other consequences for

people's health. It is unlikely to be worthwhile for people to move simply because of concerns about possible effects of air pollution. However, if a person is in the process of moving, they could consider choosing a lower pollution area. Information is available (details at the end of this leaflet) on levels of air pollutants in different areas to enable people to make their own choice.

## HELPING TO REDUCE AIR POLLUTION

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland sets the framework for local action to reduce pollution. Local authorities monitor and assess air quality and prepare action plans where they identify pollution hot-spots. The Environment agencies and local authorities are monitoring and regulating emissions from industry. The European Union and other international organisations are acting to reduce global pollution. The Government and devolved administrations have introduced a wide range of measures, which have substantially cut harmful emissions from road vehicles and encouraged people to use cleaner fuels and vehicles.

But everyone can do their bit to reduce air pollution, especially when pollution levels are high.

### On the road

Road vehicles are a major source of many pollutants in urban areas. They produce over 50 per cent of the emissions of nitrogen oxides and over 75 per cent of carbon monoxide emissions in the UK.



### Before using your car, ask yourself:

- do I really need to make this journey?
- could I walk or cycle instead of taking the car?
- could I take a bus, tram or train?
- are the levels of air pollution already too high today?



### At home

- Buy water-based or low-solvent paints, varnishes, glues and wood preservatives.

### If you must drive:

- drive smoothly. You'll save fuel, and your engine will also pollute less;
- don't rev your engine unnecessarily;
- maintain your car. Keep the engine properly tuned and the tyres at the right pressure; and
- turn off the engine when your car is stationary.



- Avoid burning solid fuels if possible. If you live in a smoke control area, burn only authorised smokeless fuels (your local authority can advise you).
- Avoid lighting bonfires, but if you must, don't light them when pollution levels are high or while the weather is still and cold. Only burn dry material and never burn household waste, especially plastic, rubber, foam or paint. Levels of pollution can be quite high on bonfire night and other events/festivals with bonfires, and sensitive people, including people with respiratory conditions, may notice some effects. However exposure can be considerably reduced by remaining indoors and keeping windows closed.



## **MORE INFORMATION IS AVAILABLE FROM:**

**Teletext:** pages 155 and 169

**Freephone:** 0800 55 66 77

**Internet:** <http://www.airquality.co.uk>

Department for Environment, Food and Rural Affairs and air quality issues in England:

<http://www.defra.gov.uk/environment/airquality>

National Assembly for Wales:

<http://www.wales.gov.uk/linksenvironment>

Northern Ireland: <http://www.ehsni.gov.uk/environprotect>

Scottish Executive: <http://www.scotland.gov.uk/environment/airquality>

Department of Health, Committee on the Medical Effects of Air Pollutants and air quality issues:

<http://www.doh.gov.uk/hef/airpol/airpolh>

This website includes further details on the health effects of pollution discussed in this leaflet.

A leaflet/poster *Winter Smog, Summer Smog* (ref 97EP0353) and further copies of this leaflet (ref PB6472) are available from:

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SW1A 2XX

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Email: [defra@iforcegroup.com](mailto:defra@iforcegroup.com)



# DEFRA

Department for  
**Environment,  
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SCOTTISH EXECUTIVE



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in Northern Ireland

- Department for Environment, Food & Rural Affairs
- Department of Health
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