

# Summertime Smog

## Introduction

Summertime smog problems typically occur in periods of hot and sunny weather. The smog is made up of high levels of ozone, sometimes accompanied by other pollutants. Summertime smogs can cause problems for asthmatics and increase sensitivity to allergens such as pollen. Government experts estimate that smog levels may be responsible for up to 12,500 premature deaths and up to 9,900 extra hospital admissions every year.

This briefing looks at how ozone is formed, what effects ozone has on health, where Britain's worst ozone problems are and what must be done to reduce ozone levels.

## How is ozone created?

Ozone is not emitted directly into the atmosphere by cars, lorries, factories or power stations, but is produced by a complex series of chemical reactions. These reactions involve other pollutants such as nitrogen oxides (NO<sub>x</sub>) and hydrocarbons (HCs) and are triggered by ultraviolet radiation from sunlight. This is why ozone levels are highest in the summer, and particularly in hot, sunny weather.

The main source of both nitrogen oxides and hydrocarbons in Britain is road transport. This accounts

for 53 per cent of emissions of nitrogen oxides and 37 per cent of emissions of hydrocarbons.

## Where are levels highest?

Ozone is not a typical pollutant. Ozone levels tend to be higher in rural areas, rather than in towns and cities. There are two main reasons for this:

- C The chemical processes producing ozone can take many hours. This means that the ozone may be formed some distance downwind of the original NO<sub>x</sub> and HC sources;
- C Ozone is also destroyed by other pollutants in vehicle exhausts. In these reactions, the ozone reacts with nitric oxide to produce nitrogen dioxide. This tends to reduce ozone levels in towns and cities where there are large amounts of nitric oxide, also from vehicle exhausts. In rural areas, with lower levels of vehicle exhaust pollution, this 'mopping up' process is slower.

Not all of the ozone found in the UK is the result of emissions in the UK. High ozone levels in southern and eastern areas can be as a result of emissions of NO<sub>x</sub> and HCs in continental Europe, if the wind is in the right direction.

## What are the health impacts?

Government experts estimate that smog levels may be responsible for up to 12,500 premature deaths and up to 9,900 extra hospital admissions every year.

Ozone irritates the mucous membranes of the respiratory system, causing coughing, choking and impaired lung function, particularly in people who exercise. Other common symptoms include headaches, eye, nose and throat irritation, and chest discomfort on deep breathing.

Ozone can increase a person's sensitivity to other allergens such as pollen, and can also impair defences against bacteria and viruses.

Asthmatics are not significantly more sensitive to ozone than other people, but the effects of the ozone may be greater. Although some people believe that there is a causal link, there is no proof that ozone and other air pollutants cause asthma.

These health impacts take place at levels which are frequently found in the UK in the summer.

## What other impacts does ozone have?

Exposure to ozone levels typically found in the UK has also been shown to affect crop yield levels, and to restrict the growth of plants and trees.

## What are the health standards?

The Government's health standard for ozone is set at 50 parts per billion (ppb) as an average over any eight-hour period. This was set in the National Air Quality Strategy, launched in March 1997, following a recommendation by Government health experts.

However medical evidence shows that ozone can have health impacts below this level.

## What monitoring is carried out?

The Government now has a network of 65 air quality monitoring sites for ozone.

These are located in most major cities and conurbations plus a number of rural areas. The monitoring network now provides a reasonably good geographical coverage, although there are still significant gaps. There is no monitoring in some counties where ozone levels are likely to be high such as Cornwall, and much of Dorset, Wiltshire and Norfolk.

## What does the monitoring data show?

Friends of the Earth's analysis of Government monitoring data shows that the Government's health standard is exceeded regularly across the country.

In 1997 the top ten sites, in terms of the number of days when the health standard was exceeded, were as follows:

Site	Days
Lullington Heath (Sussex)	63
Somerton (Somerset)	43
Rochester (Kent)	43
Harwell (Oxfordshire)	42
Teddington (London)	38
Sibton (Suffolk)	34
Ladybower (Derbyshire)	29
Narberth (Pembrokeshire)	28
Aston Hill (Powys)	28
High Muffles (North Yorkshire)	27

## Where can I find information on smog levels?

Information on and forecasts of levels of ozone and other pollutants is available from a number of sources:

Freephone: 0800 556 677

CEEFAX: pages 410 - 417

TELETEXT: page 106

Website:

[www.environment.detr.gov.uk/airq/aqinfo.htm](http://www.environment.detr.gov.uk/airq/aqinfo.htm)

## How can we reduce ozone levels?

In order to reduce the number of summertime smogs, we must reduce emissions of those pollutants which react to form ozone.

Because summertime smogs are often the result of emissions at some distance from where the smog actually occurs, this is not a problem which can be tackled at a local level. Action is needed at a regional, national and European level.

Reducing emission levels needs action in three areas:

### Traffic reduction

Reducing the number of vehicles on the roads and the distance that these vehicles travel will help reduce emissions.

### Fuel quality

Fuel quality standards are set at a European level. Tough standards requiring cleaner fuel will help to reduce emissions from road transport.

### Vehicle emissions

Vehicle emissions standards - specifying the maximum amount of pollution that vehicles are allowed to emit - are also set at a European level. Tougher standards will also help reduce pollution levels.

## What is being done?

Friends of the Earth was one of the prime movers behind the Road Traffic Reduction Act 1997, which became law in March 1997. This requires local councils across the country to set targets for reducing traffic levels. FOE has also ensured the passage through Parliament of the Road Traffic Reduction (National Targets) Act 1998.

This requires the Secretary of State to deal with the adverse effects of traffic. In order to do this he must either set a national traffic reduction target, or set in chain other measures which must be assessed in terms of the traffic reduction they would achieve. FOE is still calling for ten per cent less traffic on the country's roads in 2010 than in 1990.

On fuel quality and vehicle emissions, the Government is currently involved in discussions in Europe to decide new standards to come into force in the year 2000. These discussions follow the Auto/Oil programme, involving the European Commission, the car industry and the oil industry, which aimed to determine the most cost-effective way of achieving air quality targets across Europe. Friends of the Earth is pushing for these standards to be as tough as possible. The UK Government has pushed for tough standards in the negotiations, but the adoption of these standards is currently being hampered by the much weaker position of other governments, such as Spain, Portugal and Greece.

## References

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