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# AIR POLLUTION

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## Introduction

The air contains a wide variety of substances as particles, vapours and gases. If these substances harm human health, harm the environment, or cause a nuisance, then the air can be described as being polluted.

We can look in Hertfordshire at trends in air pollution, and whether it is getting better or worse, by looking at two particular pollutants. We measure the concentration of nitrogen dioxide at specific sites in each district or borough of the county. Also we add up the number of days in each year when ozone pollution is classed as 'low', 'moderate', 'high' or 'very high'.

## Air Pollution Trend between 1993 and 1998

	1993	1994	1995	1996	1997	1998
Hertfordshire Annual Average (ppb)	25	28	27	27	25	21
NAQS Standard (ppb)	21	21	21	21	21	21

As can be seen from the table above, the level of air pollution in Hertfordshire has remained about the same over the last six years, and only just above the National Air Quality Strategy (NAQS) standard of 21 ppb. The current NAQS objective is to achieve a nitrogen dioxide concentration below this standard (of 21 ppb) by the year 2005.

## Improved Air Quality Monitoring in Hertfordshire

Monitoring of the air pollution in Hertfordshire has never been so widespread or so accurate as it is today. Just about every district / borough council has at least one monitoring site that measures for air pollution continuously. These sites are often supplemented by non-continuous air pollution monitoring, such as passive diffusion tubes measuring monthly nitrogen dioxide concentrations, at many sites throughout the district / borough.

### Indicator 1: Nitrogen Dioxide

In towns, most nitrogen dioxide in the air will have come from road vehicles. Nitrogen dioxide is harmful in two main ways: it can cause breathing problems and it also contributes to the problem of acid rain. Acid rain is harmful to nature and it can also damage buildings by attacking the materials the building is made of.

### Estimated Annual Average Nitrogen Dioxide Concentration (ppb)

District	Site	1993	1994	1995	1996	1997	1998	1999
Broxbourne	Cheshunt	32	37	37	37	24	17	19
Dacorum	Hemel Hempstead	30	45	44	41	42	40	30
East Herts	Hertford	24	26	22	20	19	21	22
Hertsmere	Borehamwood	24	31	33	29	30	29	31
North Herts	Letchworth	26	26	22	26	22	18	17
St Albans	St Albans	15	17	23	30	30	28	35
Stevenage	Stevenage	16	17	19	15	17	16	15
Three Rivers	Rickmansworth		25	22	24	21	20	22
Watford	Watford	28	28	27	27	27	24	28
Welwyn Hatfield	Welwyn Garden City	26	26	24	24	22	18	18
Whole of Herts		25	28	27	27	25	23	24
Whole of UK		23	24	25	24	23		

The results so far for 1999 indicate that for most (6 out of the 10 sites) of Hertfordshire the concentrations of nitrogen dioxide currently exceed the National Air Quality Strategy (NAQS) standard of 21 ppb. The current NAQS objective is to achieve a nitrogen dioxide concentration below this standard by the year 2005. In most cases the results for 1999 are higher than for 1998 due to the meteorological conditions experienced in 1998 which helped to disperse the pollution.

## Indicator 2: Ozone

Ozone is called a 'secondary pollutant'. This means that ozone is not emitted directly into the atmosphere, but is formed in the air by a complex series of chemical reactions powered by sunlight, so ozone pollution is worse on sunny summer days than in the winter.

This is 'ground level ozone pollution' and should not be confused with the 'hole in the ozone layer' which is high above the earth. Ozone high in the atmosphere protects us from the sun, therefore lack of ozone in the upper atmosphere also causes a problem. Ozone at ground level can irritate your eyes, nose and throat and it can cause coughs and headaches

Ozone is now monitored continuously at six sites in Hertfordshire. Overall ozone pollution in Hertfordshire is within the 'low' or 'moderate' bands, however several days of 'high' ozone pollution have been measured so far in 1999.

### Ozone Concentrations 1998 & 1999 Percentage of Days in Each DETR Air Pollution Band

	Low	Moderate	High	Very High
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Dacorum 1998	97	3	0	0
Dacorum 1999	93	6	1	0
East Herts 1998	94	6	0	0
East Herts 1999	74	24	2	0
Hertsmere 1998	89	11	0	0
Hertsmere 1999	86	13	1	0
St Albans 1998	97	3	0	0
St Albans 1999	84	16	0	0
Watford 1998	99	1	0	0
Watford 1999	94	6	0	0
Welwyn Hatfield 1998	97	3	0	0
Welwyn Hatfield 1999	88	12	1	0

### Indicator 3: Particles – PM<sub>10</sub>

Particles in the atmosphere come from a wide range of sources and are made up of a wide variety of substances. They can come from road traffic, be formed by chemical reactions in the atmosphere, or may even be seasalt, biological particles or dust.

Particulate air pollution is associated with a range of effects on health including effects on the respiratory and cardiovascular systems, asthma and mortality.

Particles are now monitored continuously at seven sites in Hertfordshire. Overall particulate pollution in Hertfordshire is within the 'low' band, however several days of 'moderate' particulate pollution have been measured so far in 1999.

#### Fine Particulates (PM<sub>10</sub>) Concentrations 1998 & 1999 Percentage of Days in Each DETR Air Pollution Band

	Low	Moderate	High	Very High
Dacorum 1998	99	1	0	0
Dacorum 1999	100	0	0	0
East Herts 1998	100	0	0	0
East Herts 1999	100	0	0	0
Hertsmere 1998	100	0	0	0
Hertsmere 1999	100	0	0	0
North Herts 1998	No data			
North Herts 1999	97	3	0	0
St Albans 1998	100	0	0	0
St Albans 1999	99	1	0	0
Three Rivers 1998	No data			
Three Rivers 1999	100	0	0	0
Watford 1998	No data			
Watford 1999	100	0	0	0

### What Can You Do About Your Local Air Quality ?

Do you know what your local air quality is like?

Do you do anything to help improve it?

For example, do you walk, cycle or use public transport instead of using the car, especially during 'poor' air quality times?

Some local television now gives daily bulletins on the quality of our air.

Other sources of information are:

- the Department of the Environment air quality freephone - 0800 556677
- ceefax or teletext pages
- internet - <http://www.environment.detr.gov.uk/airq/aqinfo.htm>
- internet - <http://www-seiph.umds.ac.uk/hbnet.htm>
- your local council environmental health department.