AIR QUALITY REPORT 1999-2003

Environmental Health Services
Jefferson County Department of Health
Birmingham, Alabama

Foreword

The Air Pollution Control Program (APCP) of the Jefferson County Department of Health (JCDH) prepared this report for the years 1999-2003. It analyzes the results of air monitoring stations located throughout Jefferson County for the purpose of measuring the outdoor concentrations of those pollutants for which the U. S. Environmental Protection Agency has established ambient air quality standards (with the exception of nitrogen dioxide, which is not necessary in an urban area the size of Birmingham):

- Carbon Monoxide
- Ozone
- Lead (not currently monitored by JCDH)
- Particulate Matter
- Sulfur Dioxide

This report includes general discussions of the background information, possible sources, and health effects of each pollutant, along with any occurrences of exceedances of air quality standards. Also included is a summary of compliance and enforcement activities. An effective field enforcement program contributes directly to improved air quality and pollutant level measurements within acceptable limits.

The air quality report for 2004 is expected to be available by October 1, 2005.

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List of Acronyms and Symbols

CO	carbon monoxide
EPA	Environmental Protection Agency
NAMS	National Air Monitoring Station
NO_x	oxides of nitrogen
O_3	ozone
Pb	lead
PM2.5	particulate matter of size 2.5 microns or less in diameter
PM10	particulate matter of size 10 microns or less in diameter
ppm	parts per million
SLAMS	State and Local Air Monitoring Station
SMOPs	Synthetic Minor Operating Permits
SO_2	sulfur dioxide
SPM	Special Purpose Monitoring
TSP	total suspended particulates
$\mu g/m^3$	micrograms per cubic meter
VOCs	volatile organic compounds

Executive Summary

The uniform air quality index was created for use as a standard measure of overall air quality. It is a national index that was designed to meet the needs of all citizens. The daily index report is based on the uniform pollutants' standards index structure that includes the pollutants for which primary short term National Ambient Air Quality Standards have been established: particulate matter (PM2.5 and PM10), sulfur dioxide (SO_2), carbon monoxide (CO), and ozone (O_3) (see Table 2.1).

As shown below, the ambient concentration of each pollutant is scaled on a range from 0 to 500 with 100 corresponding to the National Ambient Air Quality Standard level at which the pollutant is considered unhealthful.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0-50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51-100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101-150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201-300	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warnings of emergency conditions. The entire population is more likely to be affected.

The air quality index is available daily, Monday through Friday, by dialing (205) 933-0583. Or one can view the air quality index report on the internet at http://www.jcdh.org. The following table was extracted from the Environmental Protection Agency's Air Quality System and summarizes the measurements of overall air quality in Jefferson County from 1999-2003:

Air Quality Description	1999 # Days	2000 # Days	2001 # Days	2002 # Days	2003 # Days	Total # Days
Good (1 - 50)	44	52	83	109	103	391
Moderate (51 - 100)	255	259	214	233	251	1212
Unhealthy for Sensitive Groups (101 - 150)	52	48	49	22	11	182
Unhealthy (151 - 200)	10	4	12	1	0	27
Very Unhealthy (Alert) (201 -300)	4	3	7	0	0	14
					Total	1826

There were 223 days the air quality description exceeded an AQI of 101 or greater, representing 12% of the time air quality was unhealthy in Jefferson County, Alabama, from 1999-2003.

1.0 Introduction

The Jefferson County Department of Health operates an air pollution control program with its goal to ensure that citizens of Jefferson County have access to air which meets the health standards as established by the Environmental Protection Agency (EPA). A significant portion of air pollution resources is devoted to monitoring pollutant levels in the ambient air (that portion of the atmosphere to which the general public has access). Also, information received from the monitoring network concerning pollutant levels is used as the basis for developing any control strategies necessary to ensure that health standards are attained and maintained.

2.0 Ambient Air Quality Standards

The Environmental Protection Agency (EPA) has established two national ambient air quality standards--primary and secondary. The primary standards are designed to protect public health with an adequate margin of safety. The secondary standards are designed to protect public welfare related values (such as property, materials, plants and animal life). The Air and Radiation Protection Division of the Jefferson County Department of Health Air Pollution Control Program utilizes the following standards established by the EPA:

Table 2.1
National Ambient Air Quality Standards

Pollutant and Time Period	Standard (mean levels) Primary	Secondary
PM10 (inhalable particulates)		
(Micrograms per cubic meter)		
Annual mean level[a]	50	50
24-hour average[b]	150	150
PM2.5 (inhalable particulates)		
(Micrograms per cubic meter)		
Annual mean level[a]	15	15
24-hour average[c]	65	65
Sulfur Dioxide		
(Parts per million)		
Annual mean level[d]	0.03	
24-hour average[e]	0.14	
3-hour average[e]		0.5
Nitrogen Dioxide		
(not currently monitored by JCDH)		
(Parts per million)		
Annual mean level	0.053	0.053
Carbon Monoxide		
(Parts per million)		
8-hour average[e]	9	None
1-hour average[e]	35	None
Ozone		
(Parts per million)		
1-hour average[f]	0.12	0.12
8-hour average[g]	0.08	0.08
Lead		
(not currently monitored by JCDH)		
(Micrograms per cubic meter)		
3-month mean level	1.5	1.5

[a] A 3-year average of annual means determines compliance with the NAAQS.

[b] A 3-year average concentration, based on 99th percentile, determines compliance with the NAAQS.

[c] A 3-year average concentration, based on 98th percentile, determines compliance with the NAAQS.

[d] Annual standards are maximum permissible mean-level concentrations not to be exceeded in a calendar year.

[e] Short-term standards (24-hour and less) are not to be exceeded more than once a year.

[f] Not to be exceeded more than three times in three consecutive years. The 1-hour standard was revoked on June 15, 2004, for the Birmingham area since the area showed compliance with the standard.

[g] 3-year average of annual 4th highest daily maximum 8-hour concentrations.

3.0 Monitoring Network Types

Data provided through a complex network of air monitoring stations located throughout Jefferson County determine the quality of ambient air in the county. The network consisted of 16 monitoring sites with 50 air monitors and 10 collocated monitors (see Table 3.1). The air pollutants monitored at these sites were ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), particulates 2.5 microns (PM2.5 and less in size), and particulates 10 microns (PM10 and less in size). In 2001 three PM2.5 speciation monitors were added to the network as part of the National Speciation Trends Network to assess the chemical compositon of fine particles. Nitrogen dioxide is not monitored because the county population is less than one million, and monitoring is therefore not required. Each air monitor was classified as one of the following: State and Local Air Monitoring Station (SLAMS), National Air Monitoring Station (NAMS), or Special Purpose Monitoring (SPM) based on the general monitoring objectives.

The objective of the SLAMS network is to collect data that provide an overview of the state's air quality used in the development of statewide control strategies.

The primary objective of the NAMS network is to monitor in areas where the pollutant concentration levels and population exposures are likely to be high. EPA uses the data to develop nationwide control strategies.

The objective of the SPM network is to provide data for the development and refinement of local control strategies. The data also verify maintenance of air standards in areas not monitored by either the SLAMS or NAMS networks.

Table 3.1
Jefferson County Air Monitoring Network
January 1, 1999 - December 31, 2003

		Monitoring Type		
Site Location	**Pollutants**	**SLAMS**	**NAMS**	**SPM**
Bessemer	PM10	1	0	0
Corner	O3, PM2.5, PM10	1	0	3
Dolomite	PM10	1	0	0
East Thomas	CO	0	1	0
Fairfield	CO, O3, PM10, SO2	2	2	0
Hoover	O3, PM2.5, PM10	1	0	3
Leeds, Elementary School	O3, PM2.5 PM10	3	0	2
McAdory High School	O3, PM2.5, PM10	1	0	3
North Birmingham, Sloss	CO, PM10	0	0	2
North Birmingham, Southern Railroad	O3, PM2.5, PM10, PM2.5 Speciation	3	1	2
Northside School	PM10	1	0	0
Pinson High School	O3, PM2.5, PM10	2	1	1
Providence	O3, PM2.5, PM10, PM2.5 Speciation	1	0	4
Tarrant ABC Coke	PM10	0	0	1
Tarrant, Elementary School	PM10, O3	1	1	0
Wylam	PM10, PM2.5, PM2.5 Speciation	2	1	2

4.0 Description of Pollutants

4.1 Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless and tasteless gas. It is emitted into the atmosphere by natural and man-made sources. Globally, total emissions of CO are greater than emissions of any other air pollutant, due to the widespread extent of low-level emissions from natural sources.

The major natural source of CO is the spontaneous oxidation of naturally occurring methane. Other natural sources include the oceans, plant growth and decay, terpene oxidation, and forest fires. Globally, natural sources account for nearly 90 percent of CO emissions.

The major man-made source of CO is the incomplete combustion of carbon-based fuels. Gasoline motor vehicles--primarily automobiles and light duty trucks--are the most common source. Other sources include industrial process losses, open burning and industrial or utility boilers.

CO poses a threat to human health because of its ability to react with hemoglobin that carries oxygen to cell tissue. Hemoglobin preferentially absorbs CO, thus reducing the amount of oxygen transported throughout the body. Most people will experience symptoms including dizziness and headaches when exposed to high levels of CO. Eliminating exposure causes blood to return to normal levels of oxygen.

4.2 Ozone

Ozone is a highly reactive oxidant gas with a pungent odor and a faint bluish color. Ozone is photochemically produced in the atmosphere when volatile organic compounds (VOCs) combine with oxides of nitrogen (NOx) and carbon monoxide (CO) in the presence of sunlight. In the lower atmosphere, ozone is the predominant component of photochemical smog and is most likely to reach high concentration levels on hot, dry, summer days when sunlight is intense and wind movement is low.

In urban areas, man-made emissions of nitrogen oxides and VOCs lead to the formation of ozone in the lower atmosphere. Nitrogen oxides are primarily emitted from combustion sources such as motor vehicles and boilers. Primary sources of VOCs include motor vehicle exhaust, gasoline evaporation from storage facilities or tanker trucks, paint, and industrial use of solvents or coatings.

Ozone is a pulmonary irritant. Symptoms include irritation of the eyes, nose, throat and lungs as well as reduced lung function, asthma, stuffy nose, reduced resistance to colds and other infections. Ozone also damages plants, trees, rubber and fabrics.

Currently, the Jefferson and Shelby County area is designated “basic” nonattainment for 8-hour ozone. This means that the Jefferson and Shelby County areas have until June 2009 to meet compliance with the 8-hour ozone NAAQS. An Ozone Awareness Program has been underway in Jefferson and Shelby Counties since May 1996 to educate citizens about the health and economic effects of being ozone nonattainment. In addition, the program is designed to encourage citizens to take voluntary actions to help decrease ozone levels.

The EPA promulgated new 8-hour primary and secondary standards for ozone on July 18, 1997. The EPA was expected to declare Jefferson and Shelby Counties attainment for the 1-hour ozone standard because of early certification in December 2003 of the 2001-2003 data. Because of continuing violations at the Helena ozone monitor located in Shelby County, Alabama, the areas continue to be classified nonattainment for 8-hour ozone. However, all nine Jefferson County ozone monitors showed compliance of the 8-hour ozone standard for demonstration years 2001-2003.

4.3 Particulates

Particulate matter consists of airborne particles ranging from about 0.001 to 500 micrometers in diameter. Particulate matter includes dust, soot and other tiny bits of materials (solids and aerosols) released into and moving around in the air. PM2.5 consists of particles less than or equal to 2.5 micrometers in diameter, and PM10 consists of particles less than or equal to 10 micrometers in diameter. These are used as the basis for the ambient air quality standard. PM10 and PM2.5 are both subsets of the total airborne particles in the air.

Particulate matter has many sources, including burning of diesel fuels by trucks, buses and other diesel engines; incineration of garbage; mixing and application of fertilizers and pesticides; road construction; vehicular tire wear and exhaust; operation of fireplaces and wood stoves; and industrial processes (such as steel making and mining operations).

Exposure to high concentrations of particulate pollution causes eye, nose and throat irritation, aggravation of chronic lung disease, and symptoms of heart and respiratory problems. Particulates are the main source of haze that reduces visibility.

The EPA promulgated new primary and secondary standards for PM2.5 on July 18, 1997. The Jefferson County Department of Health began monitoring for PM2.5 on January 1, 1999. In December 2004, EPA designated Jefferson County, Alabama nonattainment for PM 2.5 based on 2001-2003 data. The effective date of this designation was April 5, 2005.

4.4 Sulfur Dioxide

Sulfur dioxide is a colorless, nonflammable gas formed during combustion of sulfur-containing fuels such as coal and oil. Partly converted by photochemical and catalytic reactions in the atmosphere, sulfur dioxide becomes sulfur trioxide, sulfuric acid, and various sulfate particles that can also have adverse health and welfare effects.

Globally, man-made emissions account for one-third of total emissions of sulfur compounds in the atmosphere. Of the natural emissions, most are hydrogen sulfide released from the decay of organic matter or sulfate particles released in sea spray. The combustion of sulfur-containing coal and oil in utility and industrial boilers is the major man-made source of sulfur dioxide emissions.

Sulfur dioxide is an irritant to the pulmonary system, primarily affecting the upper respiratory system. Damage to lungs occurs with deep inhalation of particles absorbing sulfur dioxide. Sulfur dioxide plays an important role in the production of acid rain (acid aerosols), which damages trees and lakes. Acid aerosols also erode stone used in buildings, statues, and monuments.

5.0 Monitoring Results

5.1 Carbon Monoxide

The carbon monoxide monitoring network consists of 3 monitors (2 NAMS and 1 SPM) strategically located within Jefferson County. (see Table 3.1). Carbon monoxide was the responsible pollutant 182 (of 1826) times, or 9% of the time for the air quality index from 1999-2003.

5.2 Ozone

The ozone monitoring network consists of 9 monitors (7 SLAMS and 2 NAMS) strategically located throughout Jefferson County. All of the ozone monitors are operated from March 1 through October 31, except the North Birmingham monitor which operates year round. Ozone was the responsible pollutant 155 (of 1826)

times, or 8% of the time for the air quality index from 1999-2003. Table 5.5.4 depicts the exceedances and violations of the 1-hour ozone standard from 1999-2003. Compliance with this NAAQS was first demonstrated at all sites for the 3-year period 2001-2003. Graph 5.5.5(a) depicts 8-hour ozone design values for both Jefferson and Shelby Counties. The area continued to be classified as nonattainment for 8-hour zone through the 3-year period 2001-2003 because of the Helena monitor.

5.3 Particulate Matter

The particulate matter (PM10) monitoring network consists of PM10 monitors (10 SLAMS, 2 NAMS and 6 SPM) and PM2.5 monitors (3 SLAMS, and 16 SPM) strategically located throughout Jefferson County (see Table 3.1). PM10 was the responsible pollutant 326 (of 1826) times, or 17% of the time for the air quality index from 1999-2003. PM2.5 was the responsible pollutant 1156 (of 1826) times, or 63% of the time for the air quality index from 1999-2003.

5.4 Sulfur Dioxide

The sulfur dioxide (SO2) monitoring network consists of 1 monitor (1 NAMS) located in Fairfield. SO2 was the responsible pollutant 7 (of 1826) times, or 0.3% of the time for the air quality index from 1999-2003.

5.5 Tables and Graphs

Table 5.5.1

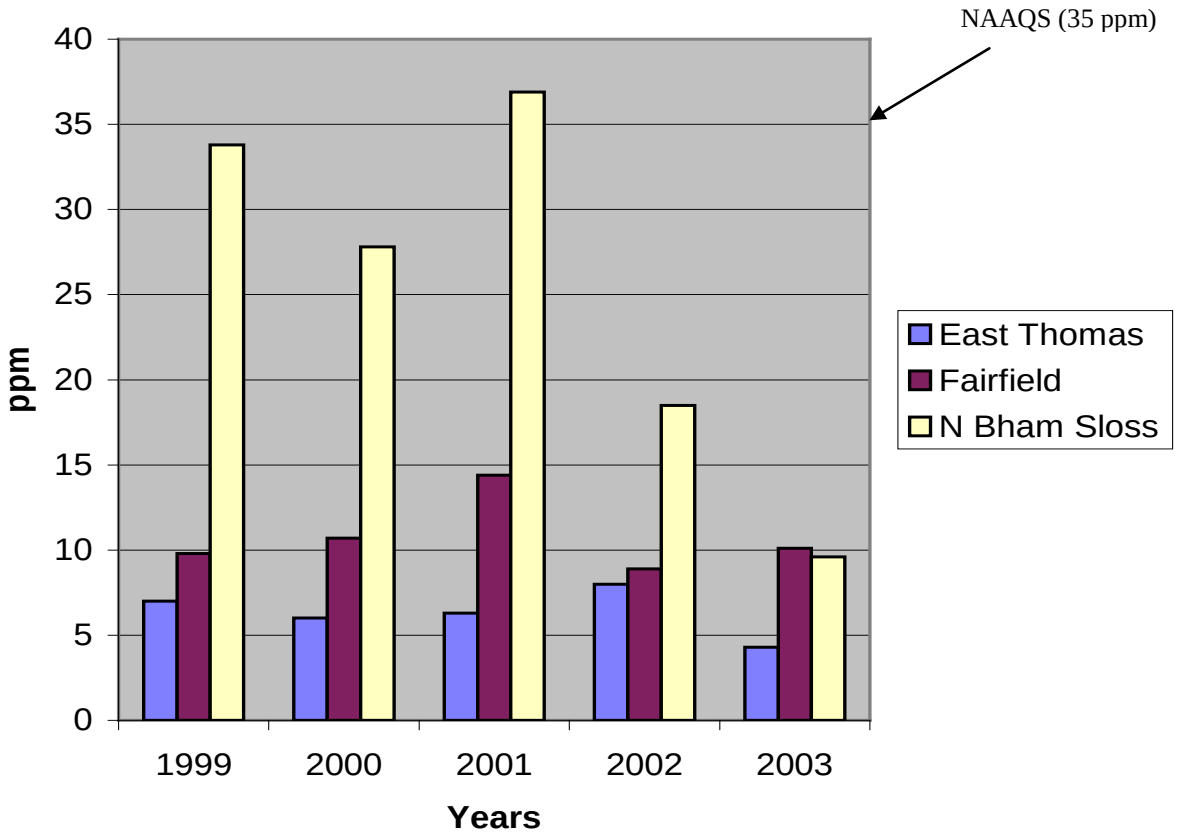
Carbon Monoxide Maximum Values
1999-2003

SITE	1999	2000	2001	2002	2003
E.THOMAS					
1-hour max.	7.0	6.0	6.3	8.0	4.3
8-hour max.	5.1	4.6	4.9	4.8	3.3
FAIRFIELD					
1-hour max.	9.8	10.7	14.4	8.9	10.1
8-hour max.	4.8	4.1	6.5	3.7	3.2
N.BHAM SLOSS					
1-hour max.	33.8	27.8	**36.9**	18.5	9.6
8-hour max.	**26.3**	**16.4**	**25.1**	**12.3**	6.4

Values measured in parts per million (ppm).
NAAQS 1-hour average not to exceed 35 ppm; NAAQS 8-hour average not to exceed 9 ppm.
Ambient air exceedances are in bold characters.

Graph 5.5.1(a)

Carbon Monoxide Maximum 1-Hour Values
1999-2003



Graph 5.5.1(b)

Carbon Monoxide Maximum 8-Hour Average Values
1999-2003

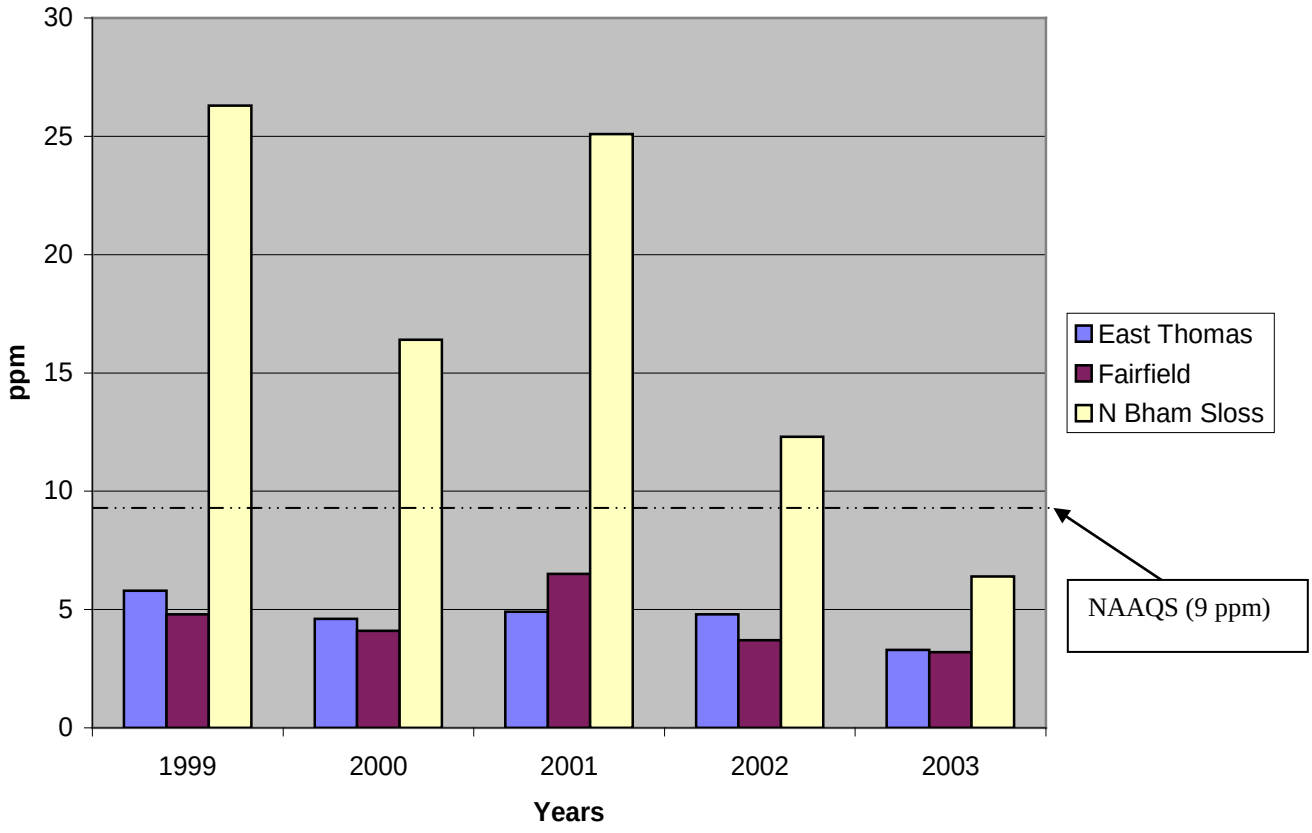


Table 5.5.2

Ozone Maximum 1-Hour Values

1999 – 2003

	1999	2000	2001	2002	2003
Fairfield	**0.125**	0.115	0.106	0.111	0.117
Tarrant	0.120	**0.135**	**0.140**	0.111	0.100
Pinson	**0.129**	**0.142**	0.112	0.106	0.101
McAdory	**0.127** (two occurrences)	0.122	**0.127**	0.101	0.103
Hoover	**0.132** and **0.131**	**0.128**	0.112	0.115	0.092
N. Birmingham	Began Operation in 2000	**0.131**	0.112	0.115	0.094
Providence	Began Operation in 2000	0.110	0.123	0.111	0.081
Corner	Began Operation in 2000	0.110	0.103	0.107	0.099
Leeds	Began Operation in 2001		0.118	**0.127**	0.089

Ambient air exceedances are in bold characters.
Values measured in ppm.

Graph 5.5.2(a)

Ozone Maximum 1-Hour Values

1999-2003

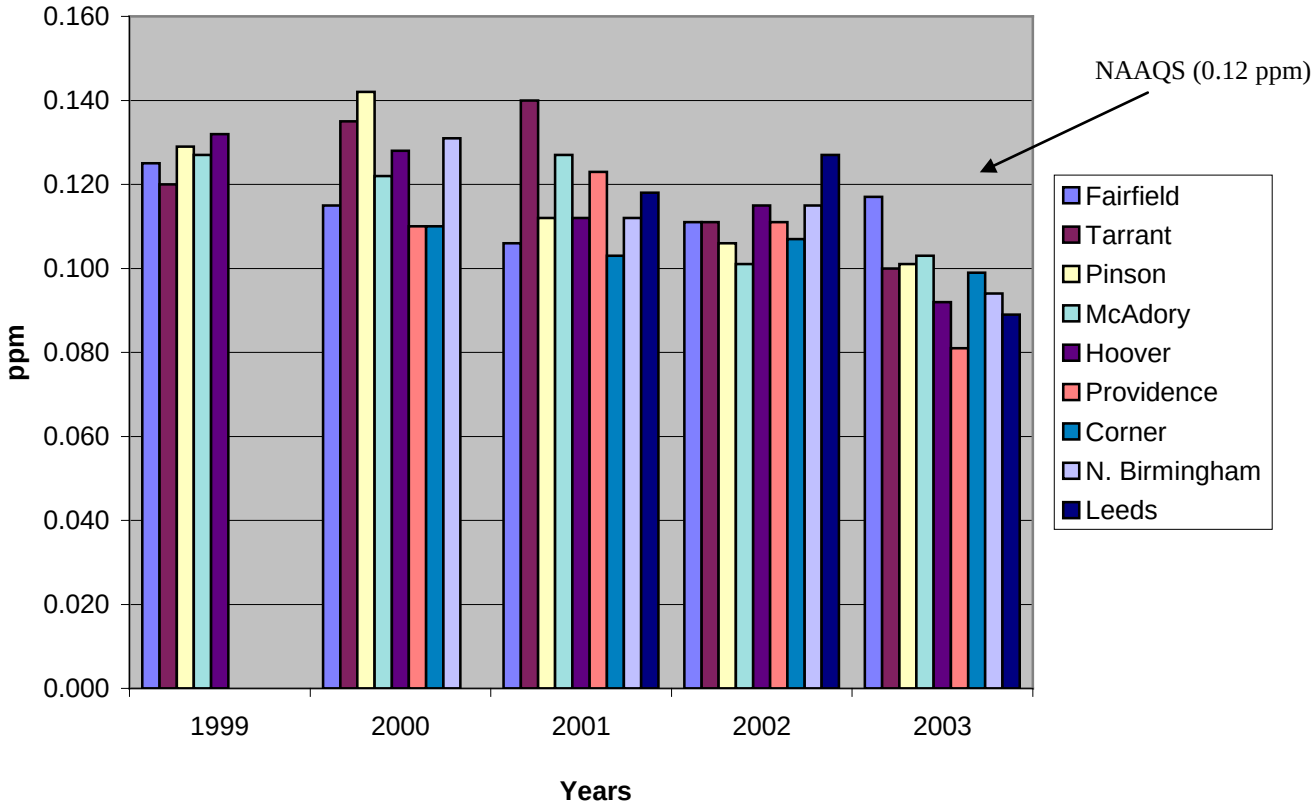


Table 5.5.3

Ozone 4th Highest 8-Hour Values
1999 – 2003

		1999	2000	2001	2002	2003
Fairfield	1.	0.103	0.100	0.090	0.090	0.096
	2.	0.099	0.094	0.086	0.089	0.080
	3.	0.095	0.090	0.083	0.088	0.076
	4.	**0.092**	**0.086**	**0.078**	**0.084**	**0.075**
Tarrant	1.	0.103	0.111	0.102	0.102	0.086
	2.	0.102	0.092	0.082	0.084	0.084
	3.	0.093	0.087	0.082	0.083	0.078
	4.	**0.092**	**0.085**	**0.080**	**0.083**	**0.075**
Pinson	1.	0.107	0.108	0.098	0.095	0.083
	2.	0.103	0.093	0.086	0.082	0.082
	3.	0.101	0.092	0.085	0.081	0.081
	4.	**0.096**	**0.089**	**0.080**	**0.078**	**0.081**
McAdory	1.	0.111	0.100	0.107	0.083	0.084
	2.	0.100	0.098	0.090	0.082	0.077
	3.	0.092	0.094	0.085	0.081	0.074
	4.	**0.092**	**0.094**	**0.084**	**0.081**	**0.073**
Hoover	1.	0.109	0.103	0.093	0.098	0.081
	2.	0.098	0.102	0.088	0.096	0.080
	3.	0.098	0.094	0.087	0.086	0.078
	4.	**0.097**	**0.092**	**0.086**	**0.086**	**0.077**
Providence	1.	Began Operation in 2000	0.094	0.093	0.095	0.075
	2.		0.091	0.092	0.092	0.072
	3.		0.089	0.088	0.091	0.071
	4.		**0.088**	**0.086**	**0.088**	**0.070**
Corner	1.	Began Operation in 2000	0.098	0.085	0.091	0.087
	2.		0.090	0.083	0.086	0.084
	3.		0.089	0.082	0.083	0.081
	4.		**0.087**	**0.081**	**0.083**	**0.077**
N. Birmingham	1.	Began Operation in 2000	.103	0.096	0.101	0.081
	2.		.102	0.090	0.088	0.079
	3.		.093	0.087	0.082	0.074
	4.		**.092**	**0.079**	**0.082**	**0.068**
Leeds	1.	Began Operation in 2001		0.097	0.112	0.083
	2.			0.091	0.088	0.073
	3.			0.071	0.078	0.072
	4.			**0.071**	**0.077**	**0.070**

An exceedance of the standard occurs when the 4th maximum value recorded during the year is greater than or equal to 0.085 ppm. Compliance with the 8-hour standard will be determined by averaging the 4th highest 8-hour ozone value at each site over a 3-year period. The 4th maximum values are in bold characters. Values measured in ppm.

Graph 5.5.3(a)

Ozone 4th Highest 8-Hour Values

1999-2003

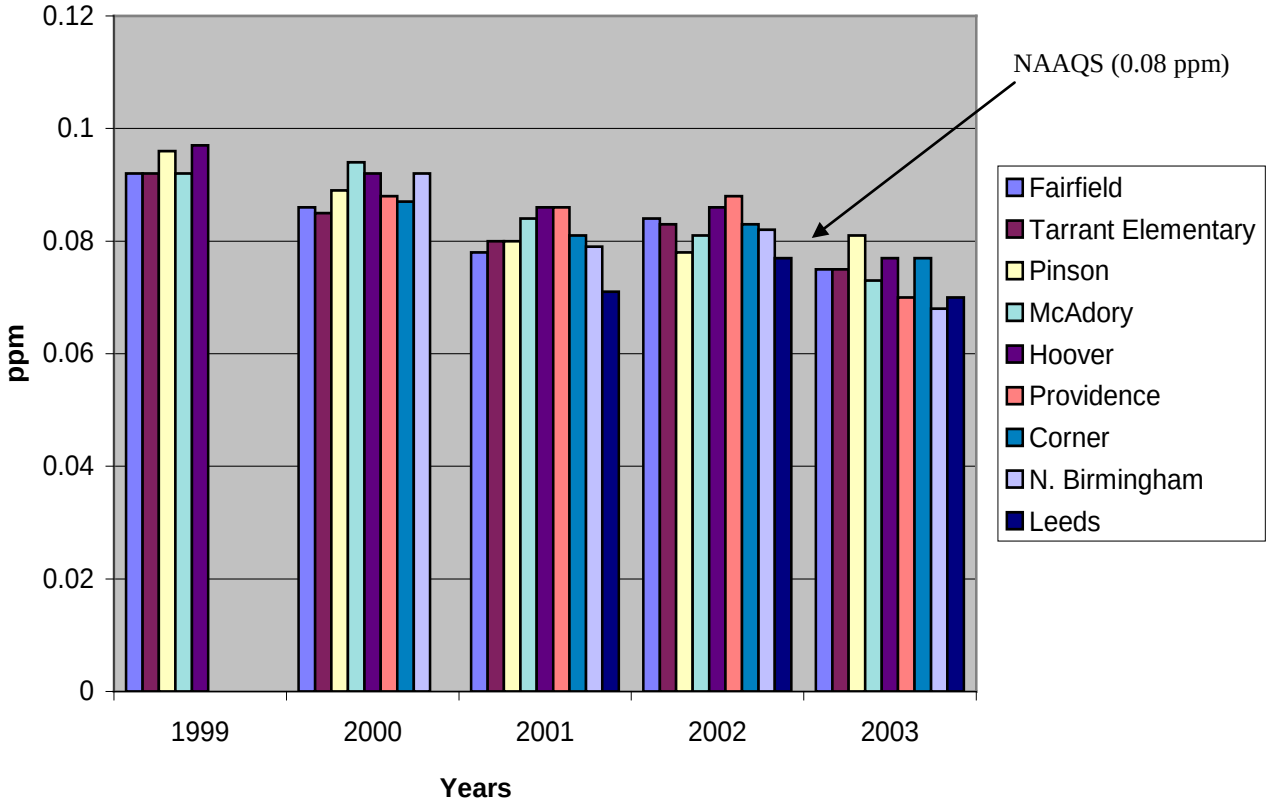


Table 5.5.4

EXCEEDANCES / VIOLATIONS
OF THE 1-HOUR OZONE NAAQS
Birmingham Ozone Nonattainment Area
1999 - 2003

Station	1999	2000	2001	2002	2003
Fairfield	1	0	0	0	0
Pinson	1	1	0	0	0
Tarrant	0	1	1	0	0
McAdory	2	0	1	0	0
Hoover	2	1	0	0	0
Helena	1	2	1[h]	1[i]	0
Corner	Began Operation in 2000	0	0	0	0
Providence	Began Operation in 2000	0	0	0	0
N. Bham	Began Operation in 2000	1	0	0	0
Leeds	Began Operation in 2001		0	1	0
Total	**7**	**6**	**3**	**2**	**0**

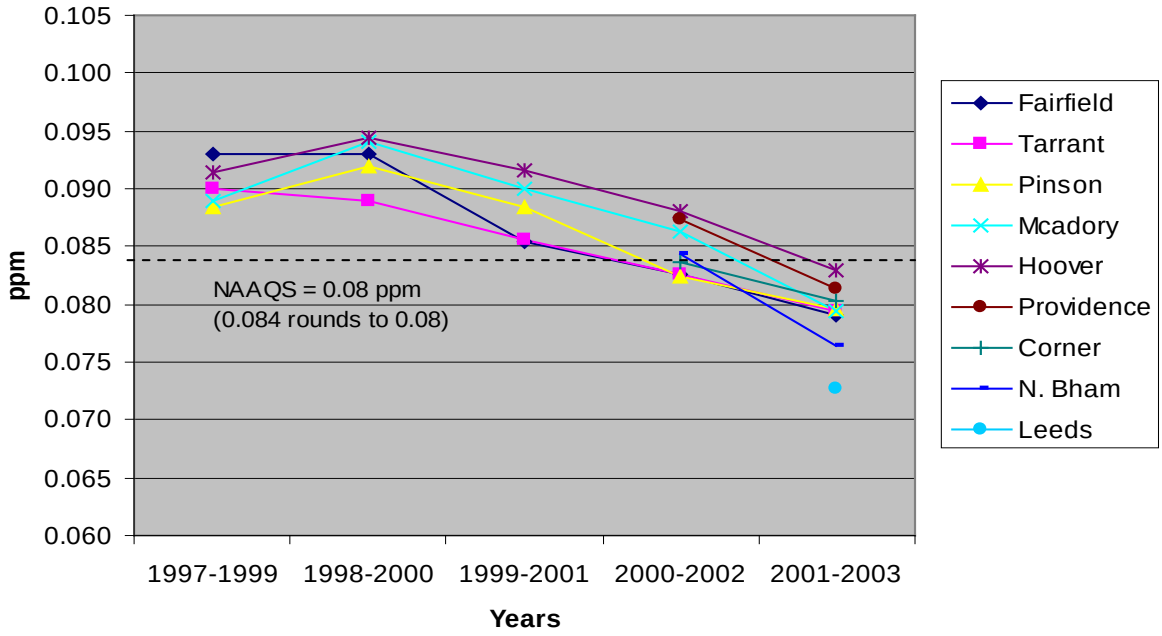
[h] Indicates violation of the NAAQS for 1999-2001.
[i] Indicates violation of the NAAQS for 2000-2002.

Table 5.5.5

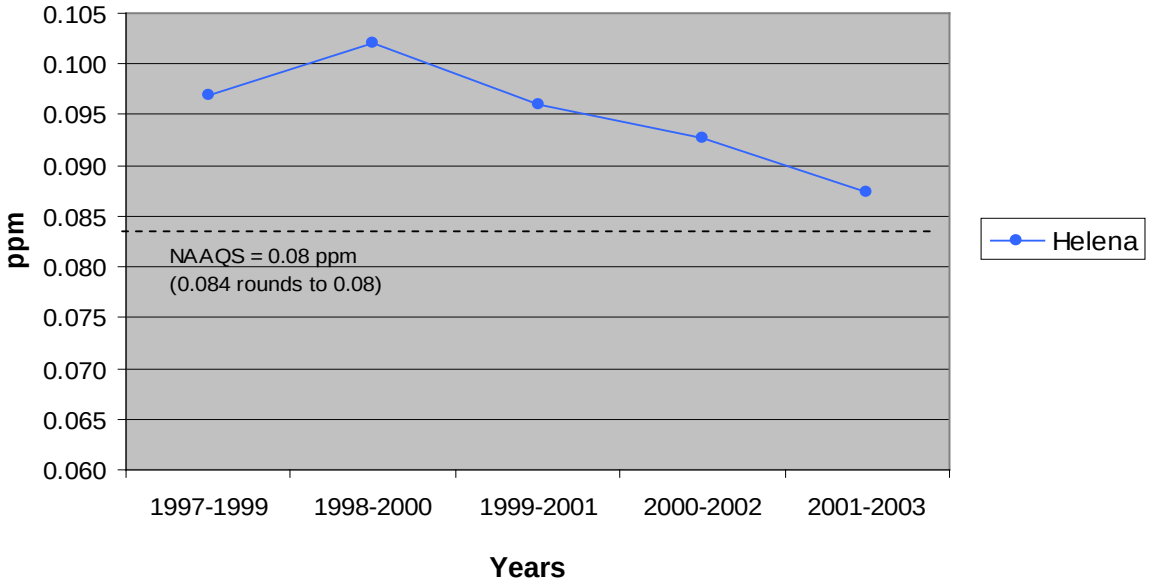
EXCEEDANCES
OF THE 8-HOUR OZONE NAAQS
Birmingham Ozone Nonattainment Area
1999 - 2003

Station	1999	2000	2001	2002	2003
Fairfield	6	6	2	3	1
McAdory	12	7	3	0	0
Hoover	16	7	4	6	0
Pinson	8	4	3	1	0
Tarrant	8	5	1	1	1
Helena	25	16	8	11	3
Corner	Began operation in 2000	4	1	2	1
Providence	Began operation in 2000	7	4	6	0
N. Bham	Began operation in 2000	4	3	2	0
Leeds	Began operation in 2001		2	2	0
Total	75	60	31	34	6

Graph 5.5.5(a)
Jefferson County
8-Hour Ozone Design Values [j]



Helena (Shelby County)
8-Hour Ozone Design Values [j]



[j] 3-year average of annual 4th highest daily maximum 8-hour concentrations to determine compliance with the NAAQS. All Jefferson County monitors show compliance with the 8-hour NAAQS for the 3-year period 2001-2003. The Helena monitor continued to show violation of all 3-year periods, including 2001-2003.

Table 5.5.6

PM10 Annual Means
1999-2003

	1999	2000	2001	2002	2003
Bessemer (HV)[k]	24.8	38.9	28.6	23.7	23.6
Northside (HV)	29.1	42.0	31.3	24.6	24.0
Fairfield (HV)	28.7	41.1	28.5	23.6	23.3
Dolomite (HV)	23.4	38.4	26.3	20.8	21.2
Leeds Elementary School (HV)	25.0	38.2	26.0	23.1	24.5
Tarrant Elementary (HV)	25.8	39.5	28.9	24.7	24.3
North Birmingham So. RR (C)[l]	39.9	40.0	37.9	34.9	35.2
North Birmingham (LV)[m]					35.7
Wylam (C)	31.4	37.5	23.8	27.5	26.5
Wylam (LV)					26.2
Tarrant ABC Coke (C)	39.5	N/A	N/A	31.9	N/A
North Birmingham Sloss (C)	49.2	N/A	N/A	46.4	**57.6** [n]
McAdory (LV)					23.1
Providence (LV)					18.1
Hoover (LV)					21.3
Pinson (LV)					20.1
Corner (LV)					21.0

[k] (HV) High Volume Method, Manual Monitor.
[l] (C) Continuous Monitor.
[m] (LV) Low Volume Method, Manual Monitor.
[n] Ambient air exceedances are in bold characters.

Note that the Tarrant ABC Coke monitor did not collect 75% of the data from 2000-2001 and 2003.

Graph 5.5.6(a)

PM10 Annual Means
1999-2003

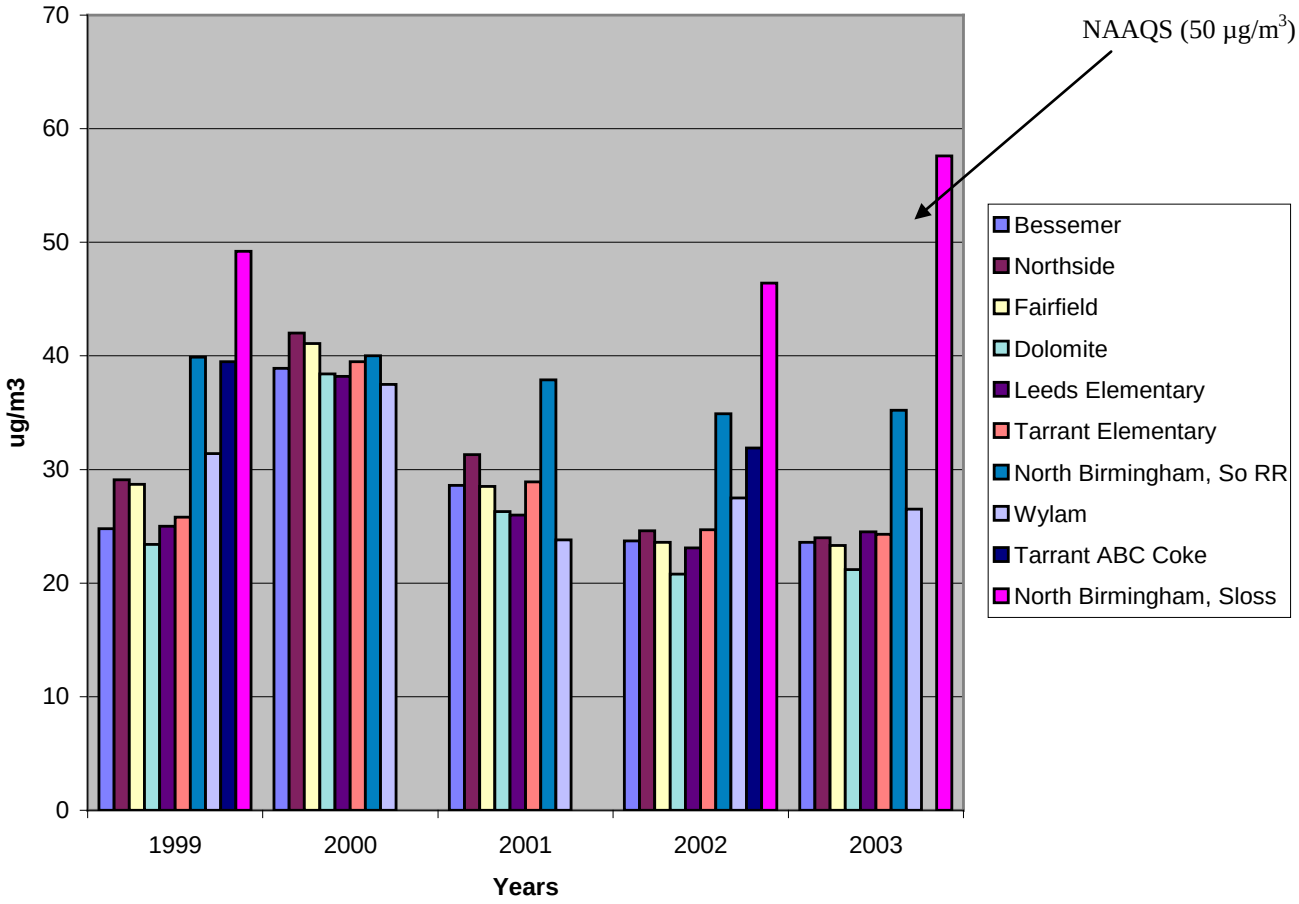


Table 5.5.7

PM10 99th Percentile Values (24-Hour)
1999-2003

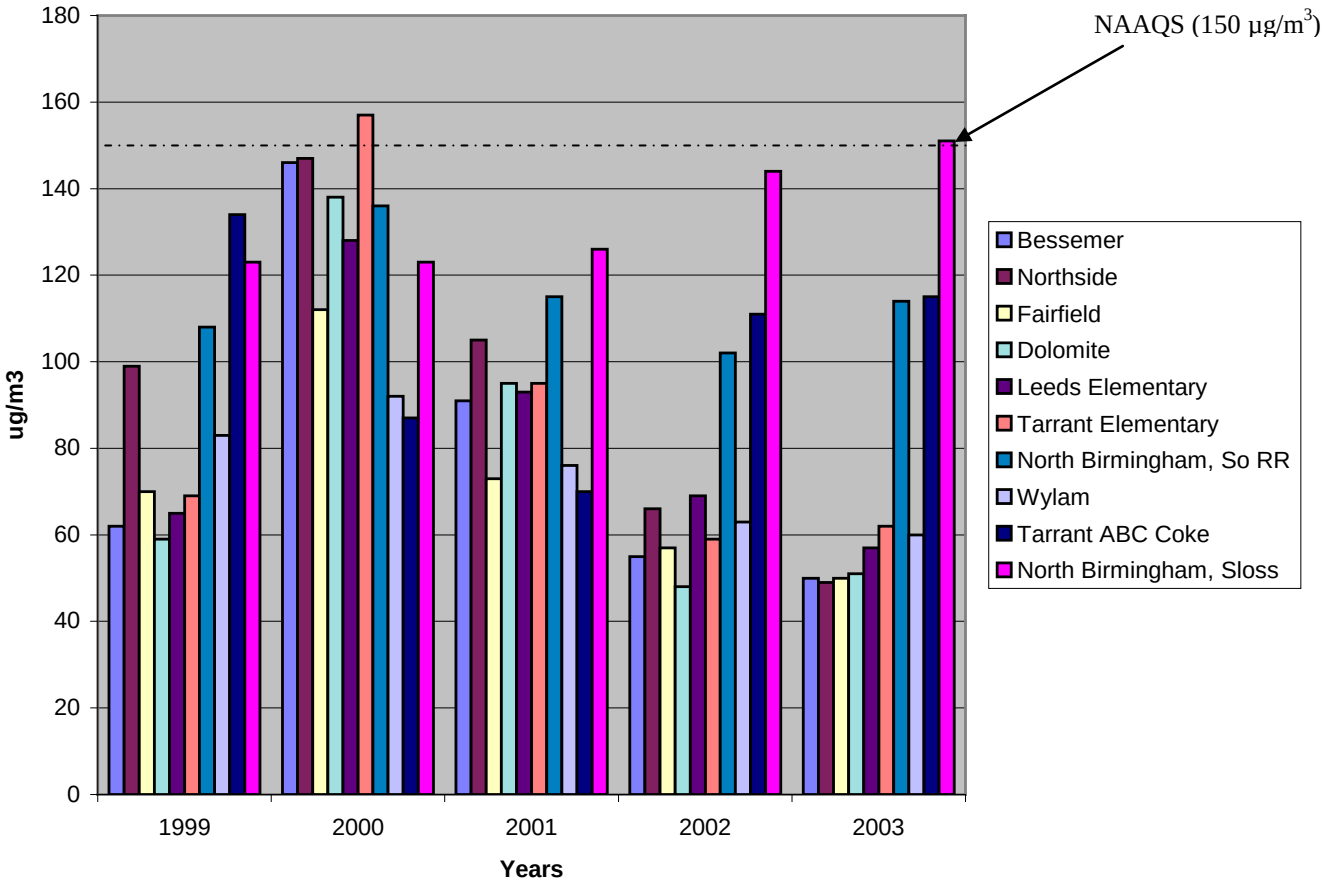
	1999	2000	2001	2002	2003
Bessemer (HV)	62	146	91	55	50
Northside (HV)	99	147	105	66	49
Fairfield (HV)	70	112	73	57	50
Dolomite (HV)	59	138	95	48	51
Leeds Elementary School (HV)	65	128	93	69	57
Tarrant Elementary (HV)	69	**157**	95	59	62
North Birmingham So. RR (C)	108	136	115	102	114
North Birmingham So. RR (LV)					93
Wylam (C)	83	92	76	63	60
Wylam (LV)					55
Tarrant ABC Coke (C)	134	N/A	N/A	111	N/A
North Birmingham Sloss (C)	123	N/A	N/A	144	151*
McAdory (LV)					59
Providence (LV)					38
Hoover (LV)					43
Pinson					41
Corner (LV)					46

These values represent the 99th percentile for CY99-CY03 per site.
(C) Continuous monitor; (HV) Manual monitor, High Volume Method; (LV) Manual monitor, Low Volume Method; Ambient air exceedances are in bold characters.

*Compliance with the NAAQS is determined by a 3-year average of the 99th percentile values which is rounded to the nearst 10 ug/m^3 (e.g., 154 ug/m^3 rounds to 150 ug/m^3 which is in compliance).

Graph 5.5.7(a)

PM10 99th Percentile Values (24-Hour)
1999-2003



These values represent the 99th percentile for CY99-CY03 per site.

Table 5.5.8

PM2.5 Annual Means[o]
1999-2003

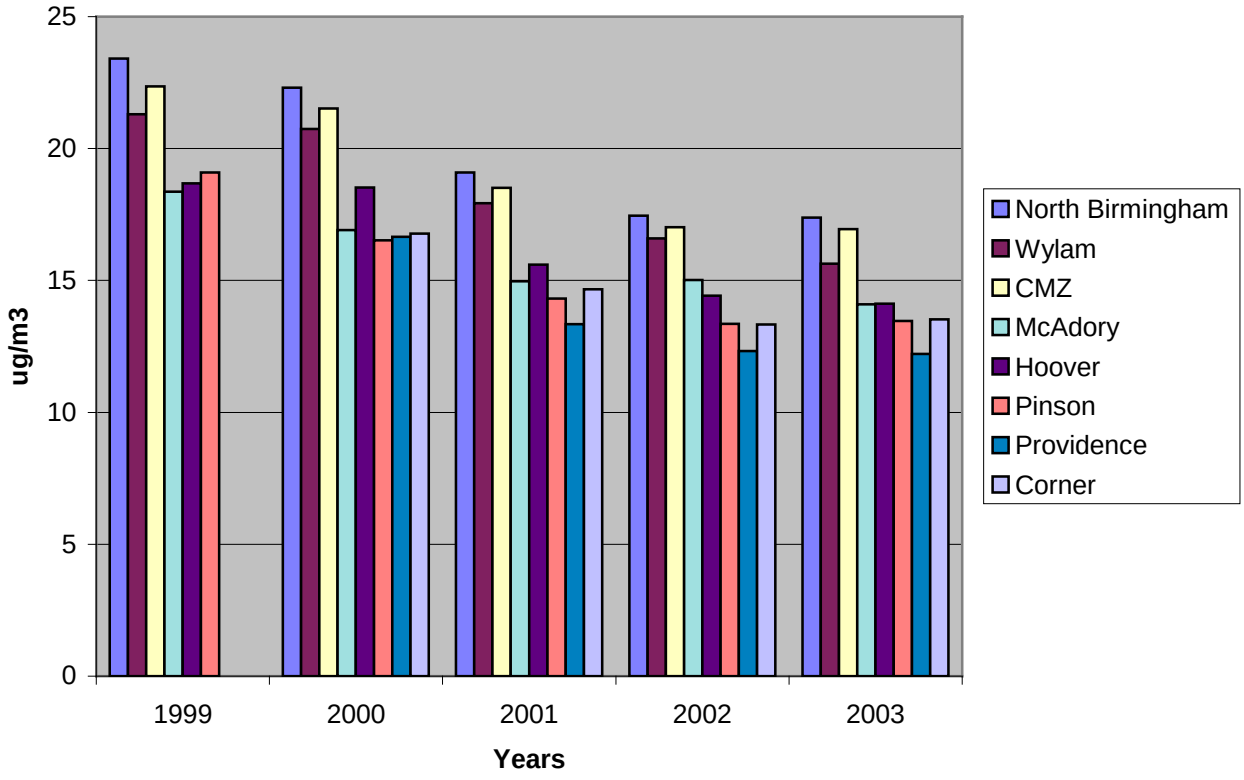
	1999	2000	2001	2002	2003
North Birmingham	**23.41**	**22.31**	**19.09**	**17.46**	**17.38**
Wylam	**21.30**	**20.74**	**17.93**	**16.59**	**15.63**
CMZ average (of North Birmingham & Wylam)[p]	**22.35**	**21.52**	**18.51**	**17.02**	**16.94**
McAdory	**18.36**	**16.91**	14.97	15.02	14.10
Hoover	**18.68**	**18.52**	**15.60**	14.42	14.12
Pinson	**19.09**	**16.52**	14.31	13.35	13.47
Providence	Began operation in 2000	**16.66**	13.34	12.33	12.21
Corner		**16.78**	14.67	13.33	13.53

Ambient air exceedances are in bold characters.

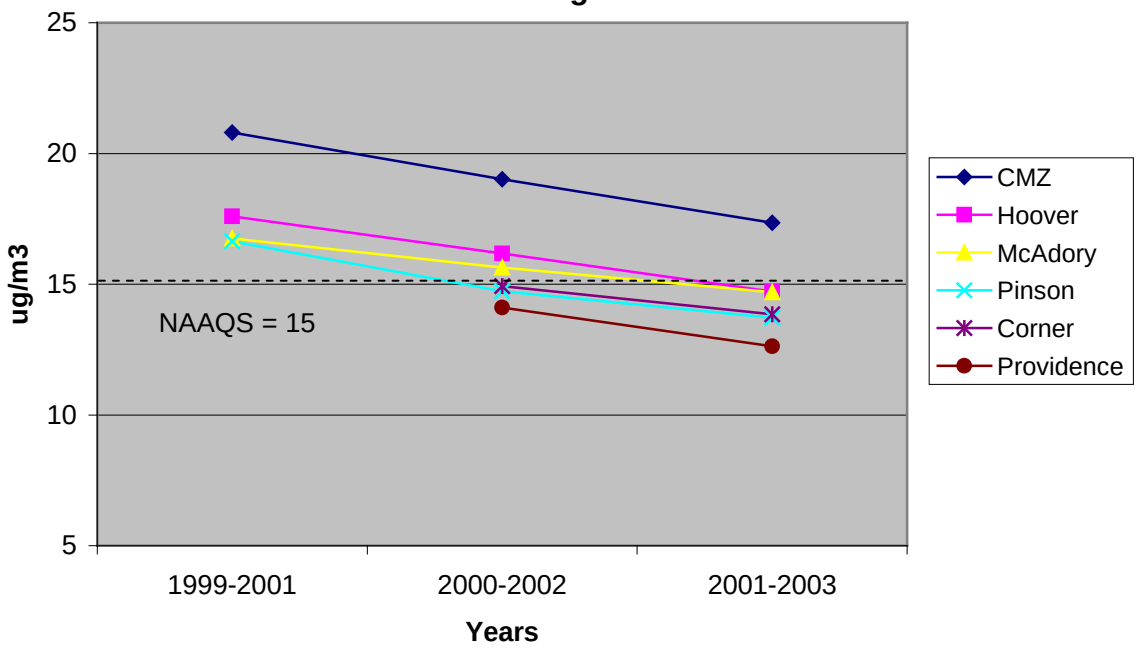
[o] Annual means are calculated by averaging quarterly values.
[p] Community Monitoring Zone – Spatial averages of the two sites, North Birmingham and Wylam.

Graph 5.5.8(a)

PM 2.5 Annual Means
1999-2003



Graph 5.5.8(b)
PM2.5 Design Values[q]



[q] The annual PM2.5 standard is met when the 3-year average of the spatially averaged annual mean is less than or equal to 15.0 ug/m^3. 3-year average of annual means used to determine compliance with the NAAQS.

Table 5.5.9

PM2.5 98th Percentile Values (24-Hour)
1999-2003

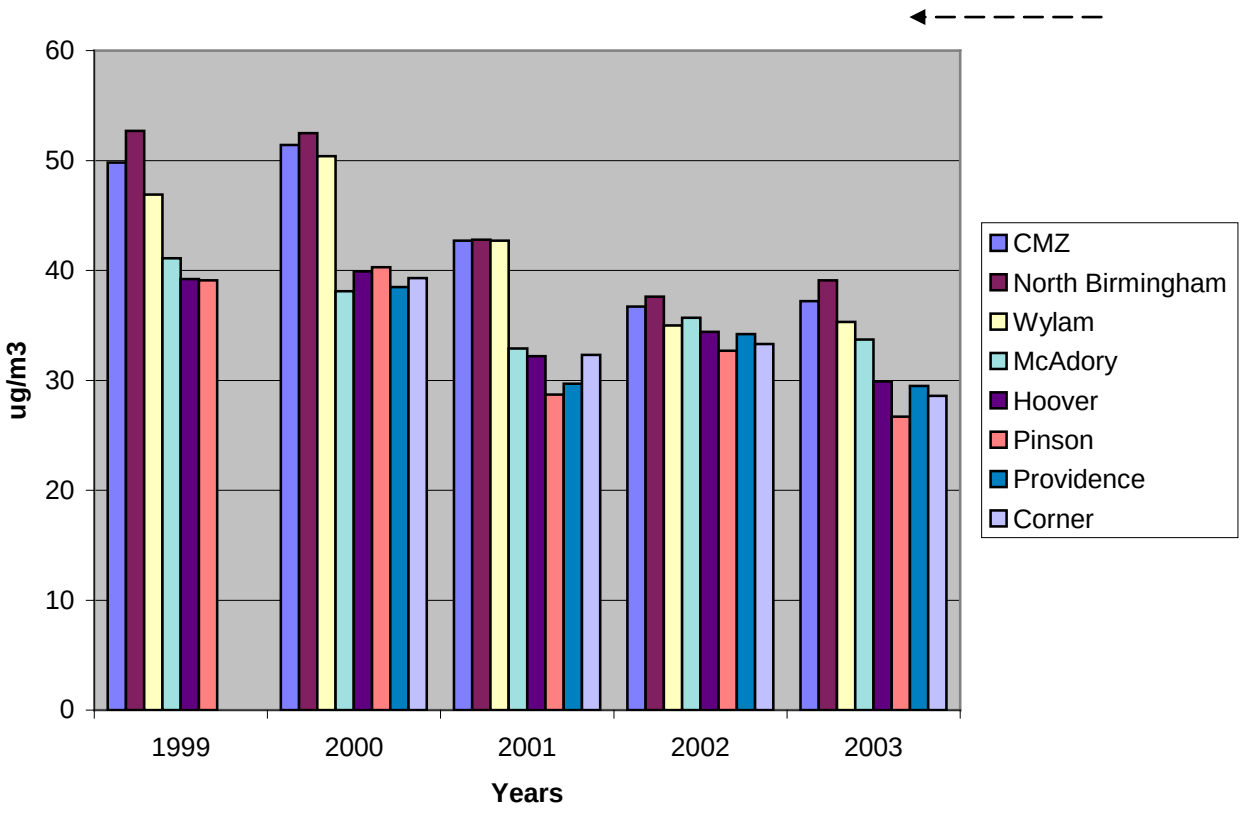
	1999	2000	2001	2002	2003
North Birmingham	52.7	52.5	42.8	37.6	39.1
Wylam	46.9	50.4	42.7	35.8	35.3
CMZ average (of North Birmingham & Wylam) [r]	49.8	51.4	42.7	36.7	37.2
McAdory	41.1	38.1	32.9	35.7	33.7
Hoover	39.2	39.9	32.2	34.4	29.9
Pinson	39.1	40.3	28.7	32.7	26.7
Providence	Began operation in 2000	38.5	29.7	34.2	29.5
Corner		39.3	32.3	33.3	28.6

These values represent the 98th percentile for CY99-CY03 per site.

[r] Telephone documentation: 24AUG2005 between JCDH (LaMonte Augustus) and EPA (Steve Scofield). Annual averaging not required by EPA, but included for additional informational purposes. The 24-hour PM2.5 standard is met when the three year average of the 98th percentile values at each monitoring site is less than or equal to 65 ug/m^3. Community Monitoring Zone – Spatial averages of the two sites, North Birmingham and Wylam.

Graph 5.5.9(a)

PM 2.5 98th Percentile Values (24-Hour)
1999-2003



These values represent the 98th percentile for CY99-CY03 per site.

Table 5.5.10

Sulfur Dioxide Short-Term Maxima and Annual Means
1999 - 2003

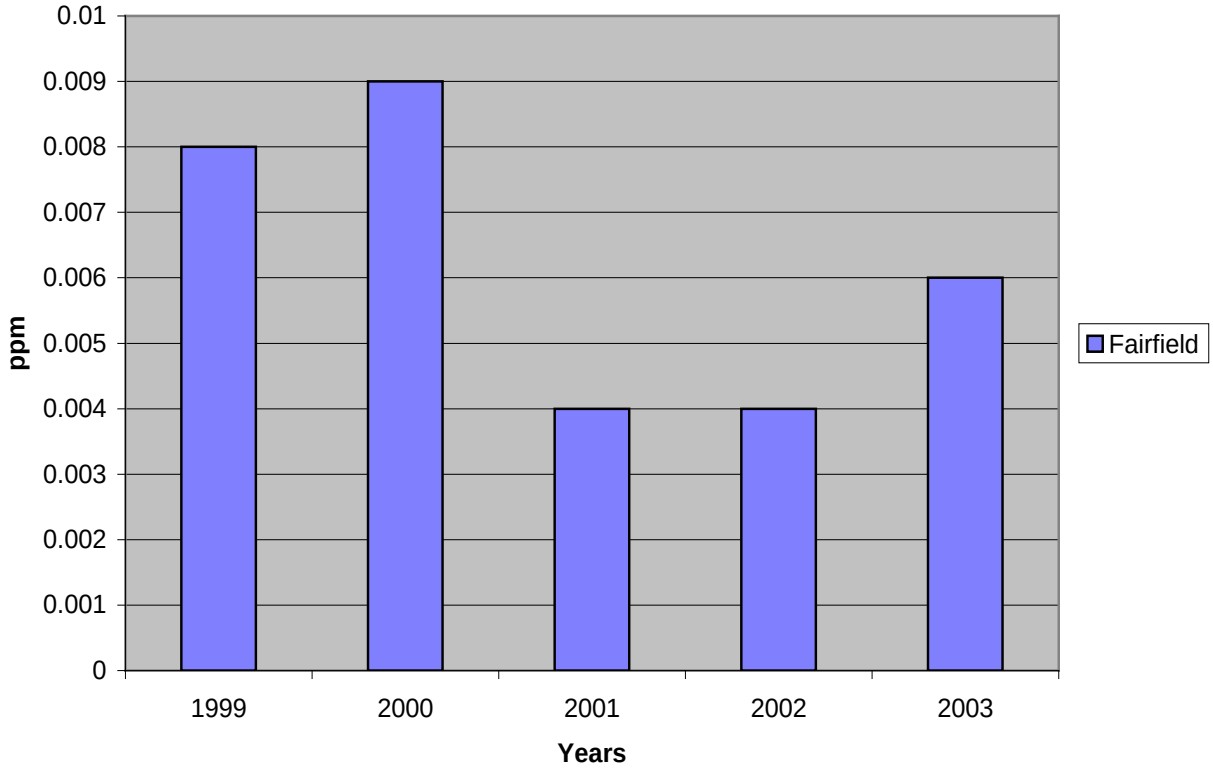
Fairfield	1999	2000	2001	2002	2003
Annual Mean	0.008	0.009	0.004	0.004	0.006
24-hour Averages					
1st Max	0.063	0.61	0.020	0.016	0.079
2nd Max	0.057	0.57	0.019	0.015	0.049
3-hour Averages					
1st Max	0.186	0.191	0.046	0.043	0.172
2nd Max	0.164	0.154	0.046	0.038	0.138

Values measured in ppm.

Graph 5.5.10(a)

Sulfur Dioxide Annual Means

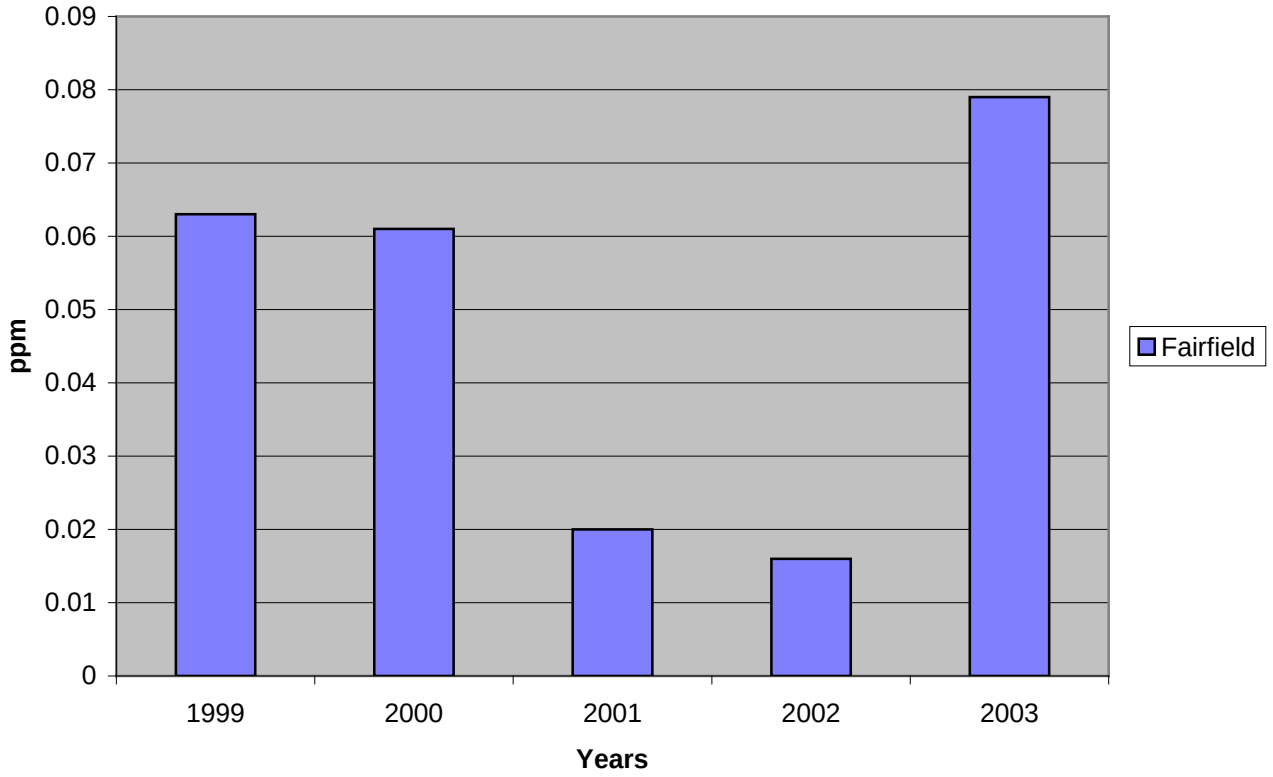
1999 – 2003



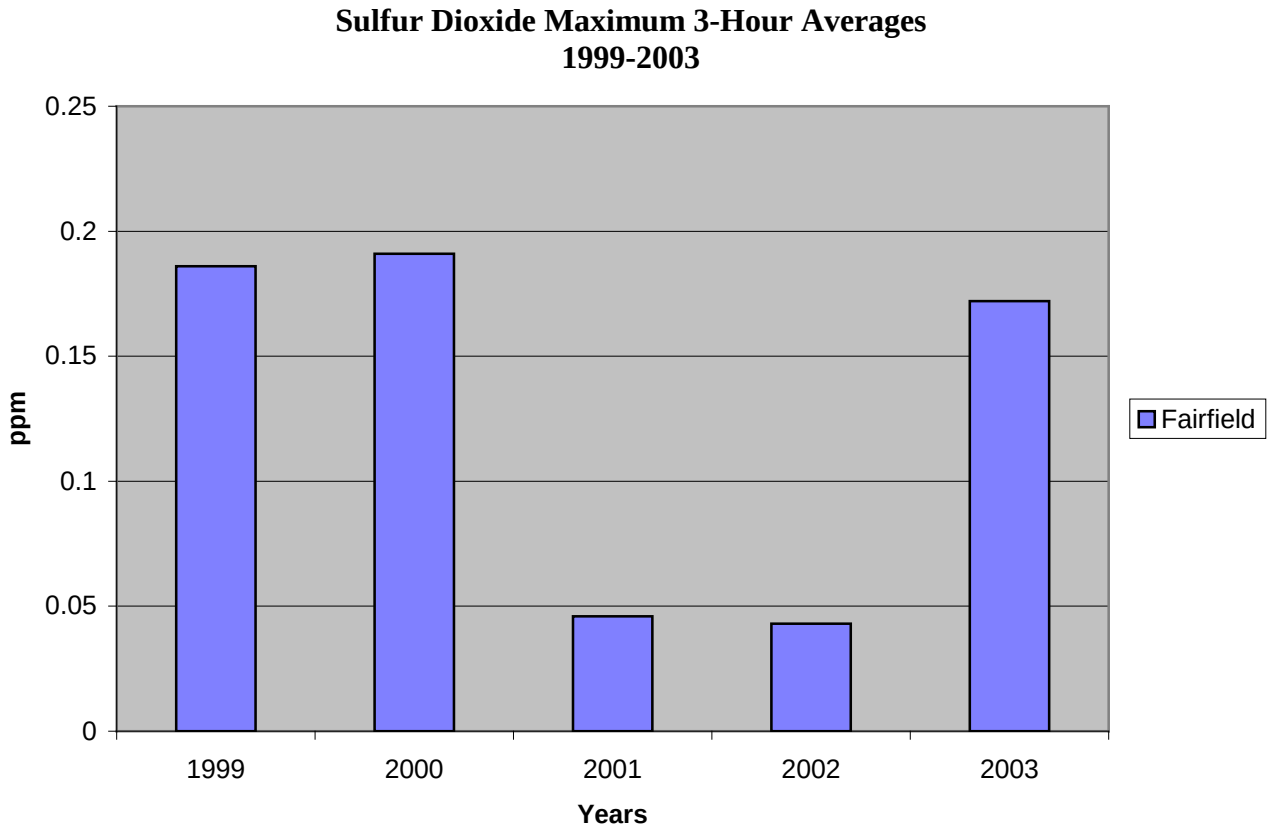
Graph 5.5.10(b)

Sulfur Dioxide Maximum 24-Hour Averages

1999-2003



Graph 5.5.10(c)


Sulfur Dioxide Maximum 3-Hour Averages
1999-2003
0.25
0.2
0.15
0.1
0.05
0
ppm
1999
2000
2001
2002
2003
Years
Fairfield

6.0 Exceedances of the Ambient Air Quality Standards

An exceedance of an ambient standard is the occurrence of a pollutant concentration that is greater than the numerical value of the standard for a period of time equal to the averaging time specified by the standard (see Table 2.1). A violation of an ambient standard, at a single monitor, is the occurrence of more exceedances of the numerical value of the standard than is allowed within a specified period of time.

An excludable exceedance is one that occurred as a result of an unusual natural or man-made event such as a severe drought, wildfire, tornado, structural fire, or temporary construction project near a monitor. The question of whether or not an exceedance will be excluded arises in determining the attainment status of an area. It is not a question of whether or not the exceedance occurred, but rather, of what it represents. An exceedance can only be excluded after consultation with the Alabama Department of Environmental Management (ADEM) and EPA. EPA granted exclusion of Jefferson County's ozone and particulate matter data for May 13, 14, 18, and 19 in 1998 due to Central-American forest fires which affected a large portion of the eastern United States. In addition, JCDH requested that EPA exclude late season exceedances of the 8-hour ozone and particulate matter (PM10 and PM2.5) NAAQS on October 23, 2000, and October 25, 2000. However, EPA failed to respond to both written requests and in-person requests. JCDH, therefore, included these data as valid.

7.0 Compliance and Enforcement Activities

7.1 Industrial and Commercial Facilities

All air pollution sources are subject to compliance monitoring by Environmental Health Specialists (EHS) and Air Pollution Control Engineers (APCE). Synthetic Minor air pollution sources receive a Full Compliance Evaluation (FCE) by the assigned EHS or APCE at least once every five years. Major air pollution sources receive an FCE biennially by an engineer. An FCE includes a thorough review of relevant records and an onsite inspection of the facility. The APCE or EHS prepares a comprehensive inspection report that is stored in the facility file maintained by the Air and Radiation Protection Division (ARPD). Emissions for all sources are calculated annually. From 1999-2003 the Air Pollution Control Program (APCP) performed 976 visible emission evaluations (195 per year average), conducted 1,819 inspections (363 per year average), investigated 64 complaints (13 per year average), and issued 11 Notices of Violations (2 per year average).

7.2 Open Burning

The APCP regulates open burning due to smoke nuisance, as well as particulate and volatile organic compound (VOC) emissions. Generally, open burning is prohibited except under specific circumstances allowed by the Department. All open burning for construction and right-of-way clearing is prohibited during the months of May through September. The issuing of open burning authorizations for land clearing operations requires a site evaluation by an EHS to determine if the material and circumstances meet regulation requirements, and to set distance restrictions for the burning site. From 1999-2003 the APCP issued 1,222 open burning authoriziations (244 per year average).

The APCP also investigates complaints regarding open burning. An Advisory Notice or Official Notice of Violation is issued if the investigation determines a violation of the regulations. From 1999-2003 the APCP investigated 1,735 open burning complaints (347 per year average), issued 392 Advisory Notices (78 per year average), and wrote 280 Notices of Violation (56 per year average).

7.3 Other Programs

7.3.1 Gasoline Dispensing Facilities and Tanker Trucks

The APCP regulates gasoline-dispensing facilities and tanker trucks due to emissions of volatile organic compounds (VOCs). Gasoline dispensing facilities must have and use Stage I Vapor Balance equipment while filling storage tanks. Gasoline tanker trucks are required to recover gasoline vapors while filling or emptying the truck vessels. Gasoline tanker trucks must certify vapor tightness annually and display an Air Sticker issued by the APCP. Regulatory activities for this segment of the gasoline marketing industry are performed by the Field Services Section staff. From 1999-2003 the APCP issued 2,678 Air Stickers (535 per year average).

There were 188 inspections conducted (37 per year average) to ensure that low sulfur/low vapor pressure gasoline was dispensed from gasoline dispensing facilities from June 1st through September 15th, in conjunction with the ozone season.

7.3.2 Asbestos Abatement

The APCP enforces the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for asbestos during renovation and demolition operations. The Evironmental Health Program Supervisor for Field Services serves as the Asbestos Abatement Coordinator for Jefferson County and is responsible for the regulatory activities in this program area. From 1999-2003 there were 1,326 regulated asbestos abatement or demolition notifications received and reviewed (265 per year average) of which 945 were subject to Federal asbestos standards, 614 inspections conducted (122 per year average), 99 complaints investigated (19 per year average), and 23 Notices of Violation issued (4 per year average).

7.3.3 Indoor Air Quality

The APCP acts as an information and referral resource regarding indoor air quality problems. Indoor air quality complaints in public buildings are investigated to a limited degree. Owners are often referred to other resources for more complex investigations or solutions. Individuals complaining about residential indoor air quality problems are also referred to other resources for additional information. The APCP has no regulations or enforcement policies regarding indoor air quality at this time. Complainants may be referred to other agencies like the Occupational Health and Safety Administration, if appropriate. From 1999-2003 the Air and Radiation Protection Division investigated 235 indoor air complaints (47 per year average).

7.3.4 Dry Cleaners

There are 135 dry cleaning facilities in Jefferson County that are subject to NESHAPs (**40 CFR 63, Subpart M**). From 1999-2003 the APCP inspected 103 dry cleaning facilities (20 per year average).

8.0 Air Pollution Source Permitting

Permit applications must be submitted prior to the construction of new sources that have the potential to emit air pollutants and before the modification of existing air pollution sources. The type of emission source determines the information required in the application. The Engineering Section evaluates the degree of air pollution control required for all emission points within each industrial/commercial facility. Field Services Section staff are responsible for processing all permit applications for gasoline tanker trucks and dispensing facilities. Using established emission factors to ensure allowable air emission standards, calculations are made to determine the estimated emissions for the proposed source. From 1999-2003 air permits were issued for 740 new (148 per year average) or modified sources. The APCP continues to issue Title V Major Source Operating Permits under Chapter 18 of *The Jefferson County Board of Health Air Pollution Control Rules and Regulations*. Qualified sources may apply for and receive a Synthetic Minor Operating Permit under Chapter 17 of the Regulations. Minor sources receive air permits under Chapter 2 of the Regulations.

The following table is a summary of source permitting for the years 1999-2003.

Table 8.1 Sources and Number of Permits Issued (1999-2003)

Source Type	Number of Permits Issued
Industrial/Commercial	240
Gasoline Tanker Trucks	429
Gasoline Dispensing Facilities	66
Total	**735**

Type of Permits Issued	Number of Permits Issued
Title V Major	56
Synthetic Minor	95
Minor	589
Total	**740**

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