

# 1999 IOWA AMBIENT AIR MONITORING NETWORK REVIEW

Iowa Department of Natural Resources  
Air Quality Bureau Ambient Air Monitoring Group  
August 15, 2000

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### Introduction

This document constitutes an element of the annual review of the air quality surveillance system for criteria pollutants in Iowa. The criteria pollutants designated by the United States Environmental Protection Agency (US EPA) are particulate matter  $\geq$  10 microns (PM<sub>10</sub>), particulate matter  $\geq$  2.5 microns (PM<sub>2.5</sub>), sulfur dioxide, ozone, nitrogen dioxide, carbon monoxide, and lead. In 1999, Iowa state and local agencies did not monitor for nitrogen dioxide or lead. The charts included in this review provide a graphical representation of the summary ambient air monitoring data for calendar year 1999. This review is a summary analysis of data gathered from monitors and atmospheric samplers operated by the University of Iowa Hygienic Laboratory, Polk County Public Works - Air Quality Division, and Linn County Health Department - Air Quality Division.

### Purpose

The purpose of this review is to summarize the data collected by the statewide network during 1999. This review cannot be used to determine attainment with the National Ambient Air Quality Standards (NAAQS). Monitored values exceeding the NAAQS concentrations do not necessarily constitute a NAAQS violation. To determine NAAQS compliance, 40 CFR part 50 must be referenced.

### Methods

Air monitoring data were retrieved from AIRS (Aerometric Information Retrieval System) by analyzing two kinds of reports. The AMP450 Quick Look Report was used to provide the data for review of both the gaseous pollutants (sulfur dioxide, ozone, and carbon monoxide) and particulate matter. The AMP350 Raw Data Report was used to review the particulate matter (PM<sub>10</sub>) data, however, the data presented in this report only represents those data from the AMP450 Reports.

Data capture for the 1999 data was determined. Data capture is a measure of the completeness of each monitor's data set and is based on the number of observations in 1999 out of the maximum number of observations possible for the calendar year. This is expressed as a percentage, with bar charts generated from the percentages. The number of actual observations was obtained primarily from the AMP450 Quick Look Report. The AIRS*Data* website queries were used to validate these data and were also used to obtain the 8-hr. ozone data capture. Ozone data capture was calculated for the ozone season, which extends from April 1-October 31. Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) data capture was calculated by a comparison of the actual number of observations to the number of observations possible relative to each particular monitor's sampling schedule.

Two other sets of bar charts were generated from the data that was input into spreadsheets. The first set of charts expresses monitored levels of pollutants as a percentage of the National Ambient Air Quality Standards (NAAQS) for each criteria pollutant. The second set of charts shows the average measure of each criteria pollutant for 1999, which can be compared to the NAAQS, denoted on the charts as solid lines.

Several tables were constructed to summarize the entire network, list the sites for each criteria pollutant, review the site and monitor additions, deletions, and changes, and report exceedances over the NAAQS. These tables were derived from the information obtained from the AIRS AMP450 Reports, and were verified from queries performed on the United States Environmental Protection Agency (US EPA) AIRS*Data* internet website (<http://www.epa.gov/airsdata/>).

Two types of samplers for the monitoring of particulate matter 2.5 microns are currently operated in Iowa. The Federal Reference Method Monitors (FRMs) monitor the data on a 3-day sampling schedule, while the Tapered Element Oscillating Microbalance Monitors (TEOMs), continuously monitor the data. The information presented in this report as PM<sub>2.5</sub> data refers only to the FRM data because TEOMs are not US EPA approved Federal Reference Methods. TEOMs generally report lower amounts of PM<sub>2.5</sub> than the FRMs in the winter because of cold temperatures. General site information about the TEOMs is provided in this report. Specific information, however, including tables, charts, and maps are not provided.

Monitor site information is included in several tables. Monitor sites may contain monitors (samplers, analyzers) for different parameters (pollutants, meteorological data). It should be noted that specific monitors may begin or end sampling independently of other monitors at the same site. Individual monitors may end sampling at a given site, but the overall site has not been terminated. If a site or monitor is removed, installed, or relocated at any time in 1999, the data for the portion of the year in which the site/monitor was operable is included in this summary.

**National Ambient Air Quality Standards and Exceedances of the NAAQS in Iowa**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Exceedance Level</b>	<b>Units</b>	<b>Number of Exceedances In Iowa</b>
Sulfur Dioxide	3hr	0.55	ppm	0
	24hr	0.145	ppm	1
	Annual	0.035	ppm	0
PM <sub>10</sub>	24hr	155	micrograms per cubic meter	3
	Annual	50.5	micrograms per cubic meter	0
PM <sub>2.5</sub>	24hr	65.5	micrograms per cubic meter	0
	Annual	15.5	micrograms per cubic meter	0
Ozone	1hr	0.125	ppm	0
	8hr	0.085	ppm	5
Carbon Monoxide	1 hr	35.5	ppm	0
	8hr	9.5	ppm	0
Lead	Quarterly	1.55	micrograms per cubic meter	N/A
Nitrogen Oxides	Annual	0.0535	annual	N/A

**Iowa Ambient Air Monitoring Network  
Site Locations**

No.	Monitor ID	Site Address	City	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
1	190130008	West Park St. & South St.	Waterloo	0	0	0	1	1	1	0
2	190330011	Water Plant	Mason City	0	0	0	1	0	0	0
3	190330018	17th St. & Washington St.	Mason City	0	1	0	1	1	0	1
4	190330019	12th & Monroe	Mason City	0	0	0	0	1	1	0
5	190450019	23rd & Camanche	Clinton	0	1	0	1	1	0	1
6	190450021	50 ft W Of Roosevelt St.	Clinton	0	0	1	0	1	1	0
7	190550001	Fish Hatchery Backbone State Park	Dundee	0	0	0	1	0	0	0
8	190851101	1575 Highway 183	Pisgah	0	0	1	0	0	0	0
9	191032001	2200 East Court St.	Iowa City	0	0	0	0	1	1	0
10	191111007	Highway 61 South	Fort Madison	0	1	0	0	0	0	0
11	191130019	14th Ave. & 10th St. SE - Jane Boyd Comm. Center	Cedar Rapids	0	0	0	1	0	0	0
12	191130028	6301 Kirkwood Blvd SW (Iowa Hall)	Cedar Rapids	0	1	1	0	0	0	0
13	191130029	1st St. & 5th Ave. SW	Cedar Rapids	0	1	0	1	1	0	1
14	191130030	200 2nd Ave. SE	Cedar Rapids	1	0	0	0	0	0	0
15	191130031	616 A Ave.	Cedar Rapids	1	1	0	0	0	0	0
16	191130032	1140 C St. SW	Cedar Rapids	0	1	0	0	0	0	0
17	191130033	408 E Linn St.	Coggon	0	0	1	0	0	0	0
18	191130034	1801 15th Ave. SE	Cedar Rapids	0	1	0	0	0	0	0
19	191130036	3200 Pioneer Ave. SE	Cedar Rapids	0	0	0	0	1	1	0
20	191130037	1599 Wenig Rd. NE	Cedar Rapids	0	0	0	1	2	1	1
21	191130038	Ely Rd. SW	Cedar Rapids	0	1	0	0	0	0	0
22	191390015	1409 Wisconsin	Muscatine	0	0	0	1	0	0	0
23	191390016	Fletcher St. & Kimble St.	Muscatine	0	1	0	0	1	1	0
24	191390017	2200 Steward Rd.	Muscatine	0	1	0	0	0	0	0
25	191390020	Oregon St. And Earl Ave.	Muscatine	0	1	0	0	1	0	1
26	191471002	Iowa Lakes Community College - S Campus	Emmetsburg	0	0	1	0	1	0	1
27	191530026	Main & S 5th St.	Grimes	0	0	0	1	0	0	0
28	191530052	19th & Grand Ave.	Des Moines	1	0	0	0	0	0	0
29	191530058	1701 Lay St.	Des Moines	0	0	1	0	0	0	0

No.	Monitor ID	Site Address	City	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
30	191530059	SE 18th & Scott	Des Moines	0	0	0	1	2	1	1
31	191530060	8th & Mulberry	Des Moines	1	0	0	0	0	0	0
32	191530061	2916 30th St. NW	Des Moines	1	0	0	0	0	0	0
33	191530062	6011 NE 62nd Ave.	Johnston	1	0	0	0	0	0	0
34	191532001	9th & Mulberry	Des Moines	0	0	0	1	0	0	0
35	191532510	9401 Indian Hills Dr.	Clive	0	0	0	0	1	1	0
36	191532520	5817 NE 3rd St.	Des Moines	0	0	0	0	1	1	0
37	191550009	3130 C Ave.	Council Bluffs	0	0	0	1	1	1	0
38	191630013	405 S Farragut St.	Davenport	0	0	0	1	1	0	1
39	191630014	Scott County Park	Davenport	0	0	1	0	0	0	0
40	191630015	10th St. & Vine	Davenport	0	1	0	1	2	1	1
41	191630017	11100 110th Ave.	Buffalo	0	0	0	1	1	0	1
42	191630018	3029 N Division St.	Davenport	0	0	0	1	1	1	0
43	191631001	Fire Station 331	Davenport	0	0	0	1	0	0	0
44	191632011	Hwy Z30 - 1.5 miles N of Argo	Argo	0	0	1	0	0	0	0
45	191690011	505 Linn St.	Slater	0	0	1	0	0	0	0
46	191692530	300 20th St.	Ames	0	0	0	0	1	1	0
47	191770004	PO Box 398 - Lacey Keosauqua State Park	Keosauqua	0	1	1	0	0	0	0
48	191770005	PO Box 538 - Lake Sugema	Keosauqua	0	1	0	0	0	0	0
49	191810022	1650 118th Ave.	Indianola	0	0	1	0	0	0	0
50	191930017	27th at Morgan	Sioux City	0	0	0	1	1	1	0

**Monitoring Sites Added in 1999**

Site ID	Site Name	Site Address	City	County	Date	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
190330019	Mason City - 12th & Monroe	12th & Monroe	Mason City	Cerro Gordo	7/1/99						1
190450021	Clinton - Rainbow Park	50 ft W of Roosevelt St.	Clinton	Clinton	4/1/99			1			1
191032001	Iowa City - Hoover Elementary	2200 East Court St.	Iowa City	Johnson	1/27/99						1
191130036	Cedar Rapids - Monroe Elementary	3200 Pioneer Ave. SE	Cedar Rapids	Linn	1/15/99						1
191130037	Cedar Rapids - US Army Reserve Center	1599 Wenig Rd. NE	Cedar Rapids	Linn	1/15/99				1 (8/1/99)	1 (1/15/99)	1 (11/1/99)
191530062	Johnston - 6011 NE 62nd Ave.	6011 NE 62nd Ave.	Johnston	Polk	7/1/99	1					
191532510	Clive - Indian Hills Junior High	9401 Indian Hills Dr.	Clive	Polk	1/15/99						1
191532520	Des Moines - Cornell Elementary	5817 NE 3rd St.	Des Moines	Polk	1/15/99						1
191550009	Council Bluffs - Franklin Elementary	3130 C Ave.	Council Bluffs	Pottawattamie	7/1/99				1 (11/27/99)	1 (7/1/99)	
191630014	Davenport - Scott County Park	Scott County Park	Davenport	Scott	5/11/99			1			
191630018	Davenport - Adams Elementary	3029 N Division St.	Davenport	Scott	7/1/99				1		1
191692530	Ames - Meeker Elementary	300 20th St.	Ames	Story	1/15/99						1
191770005	Keosauqua - Lake Sugema	PO Box 538 - Lake Sugema	Keosauqua	Van Buren	12/7/99		1	1			

**Monitors Added in 1999**

Site ID	Site Name	Site Address	City	County	Date	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
190130008	Waterloo - Grout Museum	West Park St. & South St.	Waterloo	Black Hawk	1/15/99						1
191130028	Cedar Rapids - Kirkwood Community College	6301 Kirkwood Blvd. SW (Iowa Hall)	Cedar Rapids	Linn	4/1/99			1			
191630015	Davenport - Jefferson Elementary	10th St. & Vine	Davenport	Scott	1/27/99				1	1	1
191530059	Des Moines National - By-Products	SE 18th & Scott	Des Moines	Polk	10/31/99					1	

**Monitoring Sites Removed in 1999**

Site ID	Site Name	Site Address	City	County	Date	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
190330011	Mason City - Water Plant	Water Plant	Mason City	Cerro Gordo	12/31/99				1		
191130019	Cedar Rapids - Jane Boyd Comm. Center	14th Ave. & 10th St. SE	Cedar Rapids	Linn	8/1/99				1		
191530060	Des Moines - Employers Mutual	8th & Mulberry	Des Moines	Polk	7/27/99	1					
191631001	Davenport - Fire Station	Fire Station 331	Davenport	Scott	12/31/99				1		
191770004	Keosauqua - Lacey Keosauqua State Park	PO Box 398 - Lacey Keosauqua State Park	Keosauqua	Van Buren	12/6/99		1	1			

**Monitoring Sites Changed in 1999**

Site ID	Site Name	Site Address	City	County	Date	CO	SO2	O3	PM <sub>10</sub>	PM <sub>2.5</sub> (FRM)	PM <sub>2.5</sub> (TEOM)
191030008	Waterloo - Grout Museum	West Park St. & South St.	Waterloo	Black Hawk	3/1/99					1	1
	*Reporting organization changed from the University Hygienic Laboratory (UHL) to Linn County Des Moines										
191530059	National - By-Products	SE 18th & Scott	Des Moines	Polk	10/31/99					1	
	*Changed PM <sub>10</sub> Hi-Vol Monitor (2-day sampling schedule) to PM <sub>10</sub> TEOM Monitor (continuous sampling schedule)										

**Carbon Monoxide Monitors in Iowa**

Site ID	Site Name	Site Address	City	County
191130030	SCI Financial Group	200 2nd Ave. SE	Cedar Rapids	Linn
191130031	Scottish Rite Temple	616 A Ave.	Cedar Rapids	Linn
191530052	Tech High School	19th & Grand Ave.	Des Moines	Polk
191530060	Employers Mutual	8th & Mulberry	Des Moines	Polk
191530061	Easter Seals	2916 30th St. NW	Des Moines	Polk
191530062	Johnston	6011 NW 62nd Ave.	Johnston	Polk

**Sulfur Dioxide Monitors in Iowa**

Site ID	Site Name	Site Address	City	County
190330018	17th St. & Washington St.	17th St. & Washington St.	Mason City	Cerro Gordo
190450019	Chancey Park	23rd & Camanche	Clinton	Clinton
191111007	Fruehauf	Highway 61 South	Fort Madison	Lee
191130028	Kirkwood Community College	6301 Kirkwood Blvd SW (Iowa Hall)	Cedar Rapids	Linn
191130029	Science Station	1st St. & 5th Ave. SW	Cedar Rapids	Linn
191130031	Scottish Rite Temple	616 A Ave.	Cedar Rapids	Linn
191130032	1140 C St. SW	1140 C St. SW	Cedar Rapids	Linn
191130034	Van Vechten Park	1801 15th Ave. SE	Cedar Rapids	Linn
191130038	Ely Rd. SW	Ely Rd. SW	Cedar Rapids	Linn
191390016	Greenwood Cemetery	Fletcher St. & Kimble St.	Muscatine	Muscatine
191390017	Muscatine Power & Water	2200 Steward Road	Muscatine	Muscatine
191390020	Musser Park	Oregon St. & Earl Ave.	Muscatine	Muscatine
191630015	Jefferson Elementary	10th St. & Vine	Davenport	Scott
191770004	Lacey Keosauqua State Park	PO Box 398 - Lacey Keosauqua State Park	Keosauqua	Van Buren
191770005	Lake Sugema	PO Box 538 - Lake Sugema	Keosauqua	Van Buren

**Ozone Monitors in Iowa**

Site ID	Site Name	Site Address	City	County
190450021	Rainbow Park	50 ft. W of Roosevelt St.	Clinton	Clinton
190851101	Pisgah	1575 Highway 183	Pisgah	Harrison
191130028	Kirkwood Community College	6301 Kirkwood Blvd. SW (Iowa Hall)	Cedar Rapids	Linn
191130033	Coggon	408 E Linn St.	Coggon	Linn



Site ID	Site Name	Site Address	City	County
191471002	Emmetsburg	Iowa Lakes Community College - S Campus	Emmetsburg	Palo Alto
191530058	Phillips School	1701 Lay St.	Des Moines	Polk
191630014	Scott County Park	Scott County Park	Davenport	Scott
191632011	Argo	Hwy Z30 - 1.5 miles N of Argo	Argo	Scott
191690011	Slater Elementary	505 Linn St.	Slater	Story
191770004	Lacey-Keosauqua State Park	PO Box 398 - Lacey-Keosauqua State Park	Keosauqua	Van Buren
191810022	Indianola	1650 118th Ave.	Indianola	Warren

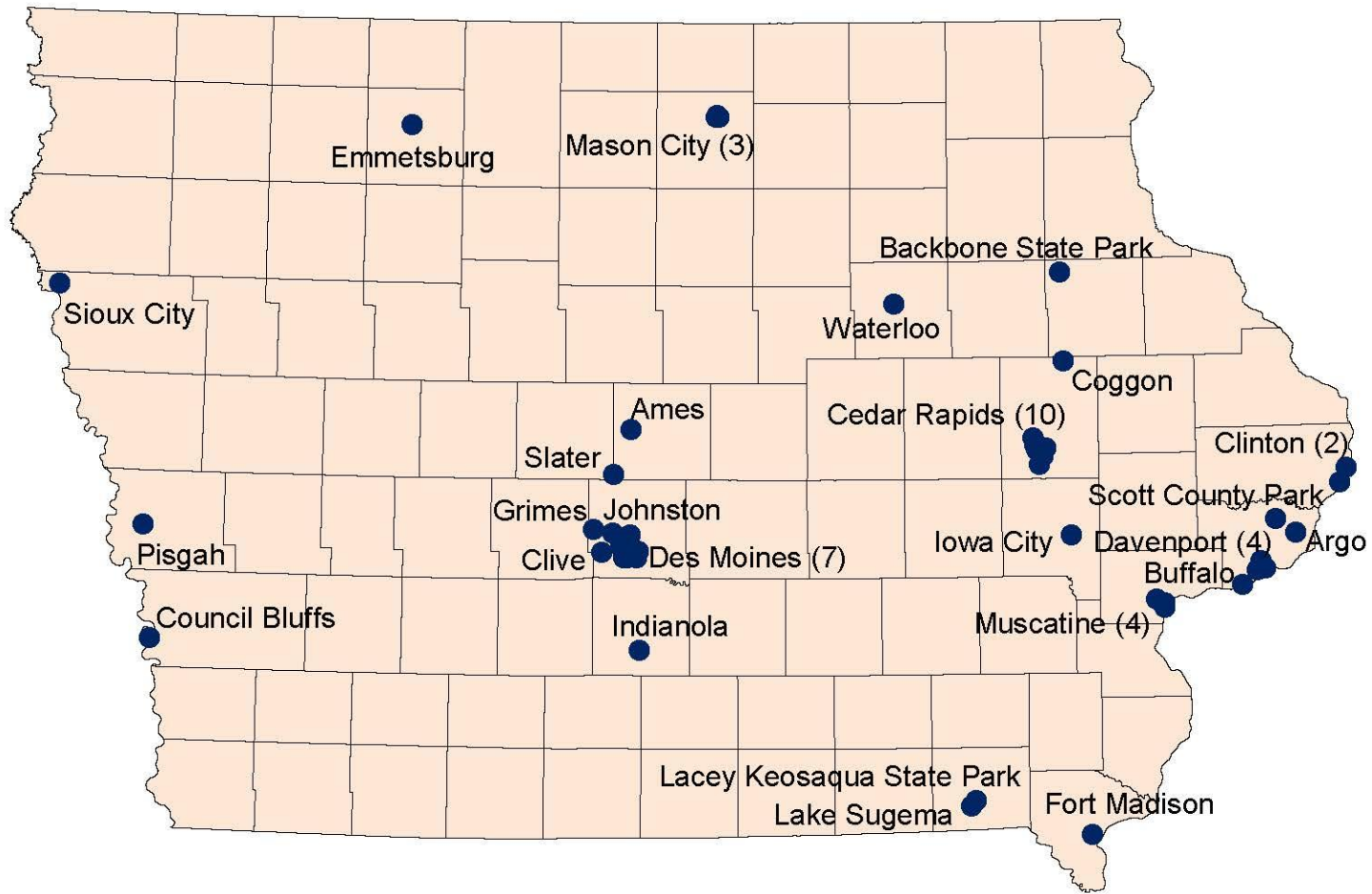
#### PM<sub>10</sub> Monitors in Iowa

Site ID	Site Name	Site Address	City	County
190130008	Grout Museum	West Park St. & South St.	Waterloo	Black Hawk
190330011	Water Plant	Water Plant	Mason City	Cerro Gordo
190330018	17th St. & Washington St.	17th St. & Washington St.	Mason City	Cerro Gordo
190450019	Chancey Park	12th & Monroe	Clinton	Clinton
190550001	Fish Hatchery Backbone State Park	Fish Hatchery Backbone State Park	Backbone State Park	Delaware
191130019	Jane Boyd Comm. Center	14th Ave. & 10th St. SE	Cedar Rapids	Linn
191130029	Science Station	1st St. & 5th Ave. SW	Cedar Rapids	Linn
191130037	US Army Reserve Center	1599 Wenig Rd. NE	Cedar Rapids	Linn
191390015	Garfield School	1409 Wisconsin	Muscatine	Muscatine
191530026	Dallas Center - Grimes Elementary	Main & S 5th St.	Grimes	Polk
191530059	National By-Products	SE 18th & Scott	Des Moines	Polk
191532001	Fire station #1	9th & Mulberry	Des Moines	Polk
191550009	Franklin Elementary	3130 C Ave.	Council Bluffs	Pottawattamie
191630013	Black Hawk Foundry	405 S Farragut St.	Davenport	Scott
191630015	Jefferson Elementary	10th St. & Vine	Davenport	Scott
191630017	Linwood Mining	11100 110th Ave.	Buffalo	Scott
191630018	Adams School	3029 N Division St.	Davenport	Scott
191631001	Fire station 331	Fire station 331	Davenport	Scott
191930017	Lowell Elementary	27th at Morgan	Sioux City	Woodbury

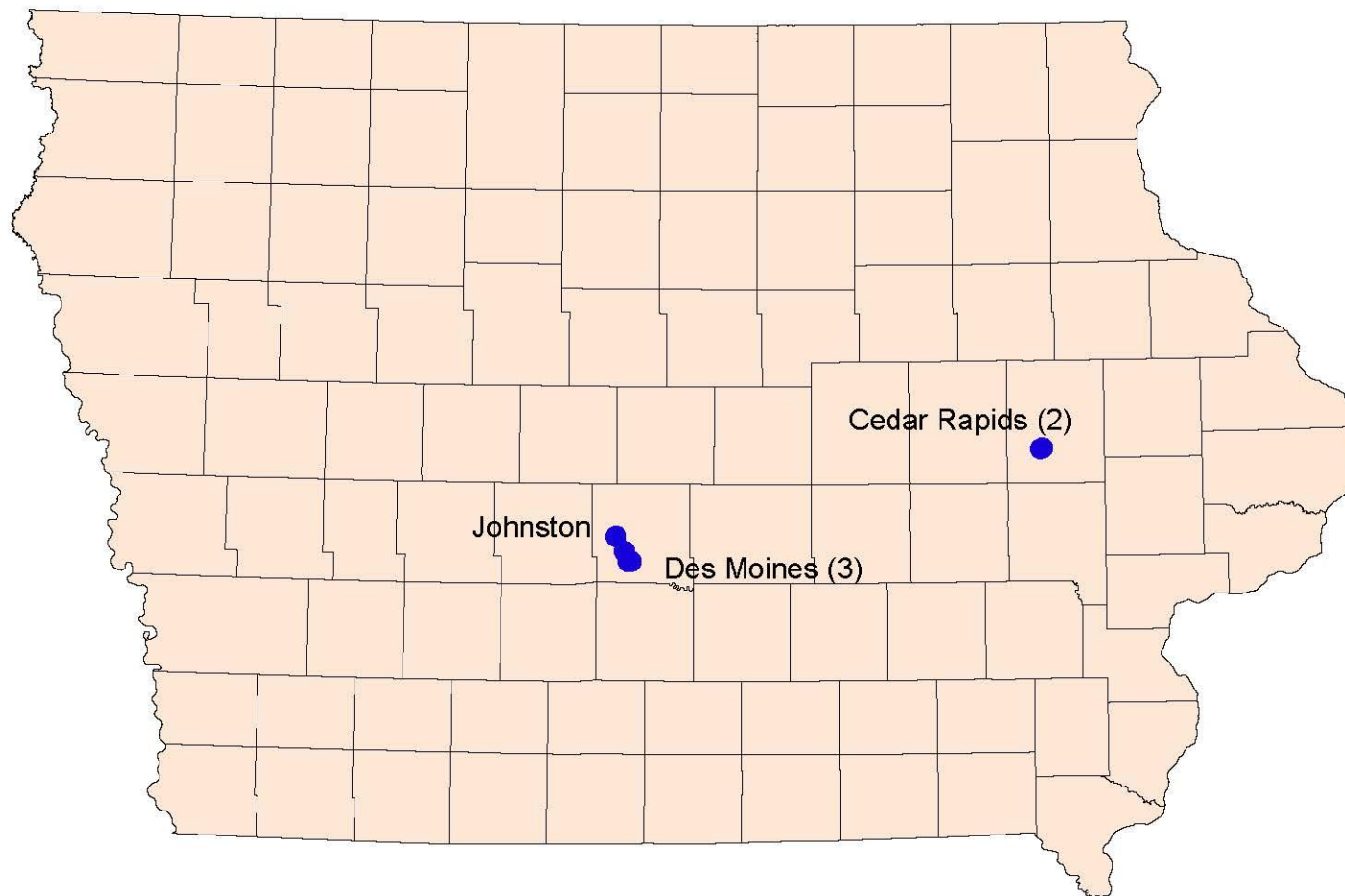
**PM<sub>2.5</sub> Monitors in Iowa**

<b>Site ID</b>	<b>Site Name</b>	<b>Site Address</b>	<b>City</b>	<b>County</b>
190130008	Grout Museum	West Park St. & South St.	Waterloo	Black Hawk
190330019	12th & Monroe	12th & Monroe	Mason City	Cerro Gordo
190450021	Rainbow Park	50 ft W of Roosevelt St.	Clinton	Clinton
191032001	Hoover Elementary	2200 East Court St.	Iowa City	Johnson
191130036	Monroe Elementary	3200 Pioneer Ave. SE	Cedar Rapids	Linn
191130037	US Army Reserve Center	1599 Wenig Rd. NE	Cedar Rapids	Linn
191390016	Greenwood Cemetery	Fletcher St. & Kimble St.	Muscatine	Muscatine
191530059	National By-Products	SE 18th & Scott	Des Moines	Polk
191532510	Indian Hills Jr. High	9401 Indian Hills Dr.	Clive	Polk
191532520	Cornell Elementary	5817 NE 3rd St.	Des Moines	Polk
191550009	Franklin Elementary	3130 C Ave.	Council Bluffs	Pottawattamie
191630015	Jefferson Elementary	10th St. & Vine	Davenport	Scott
191630018	Adams School	3029 N Division St.	Davenport	Scott
191692530	Meeker Elementary	300 20th St.	Ames	Story
191930017	Lowell Elementary	27th at Morgan	Sioux City	Woodbury

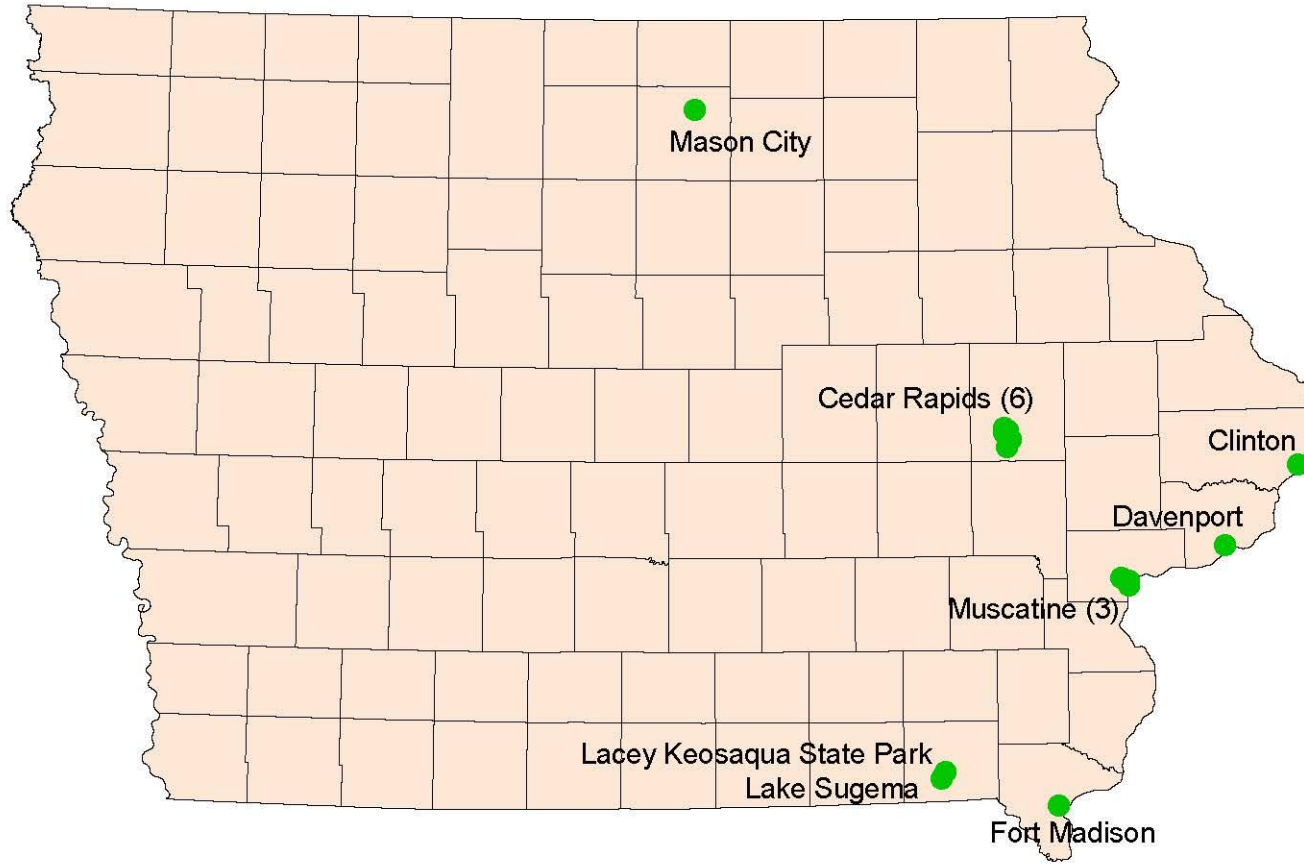
Monitoring Sites



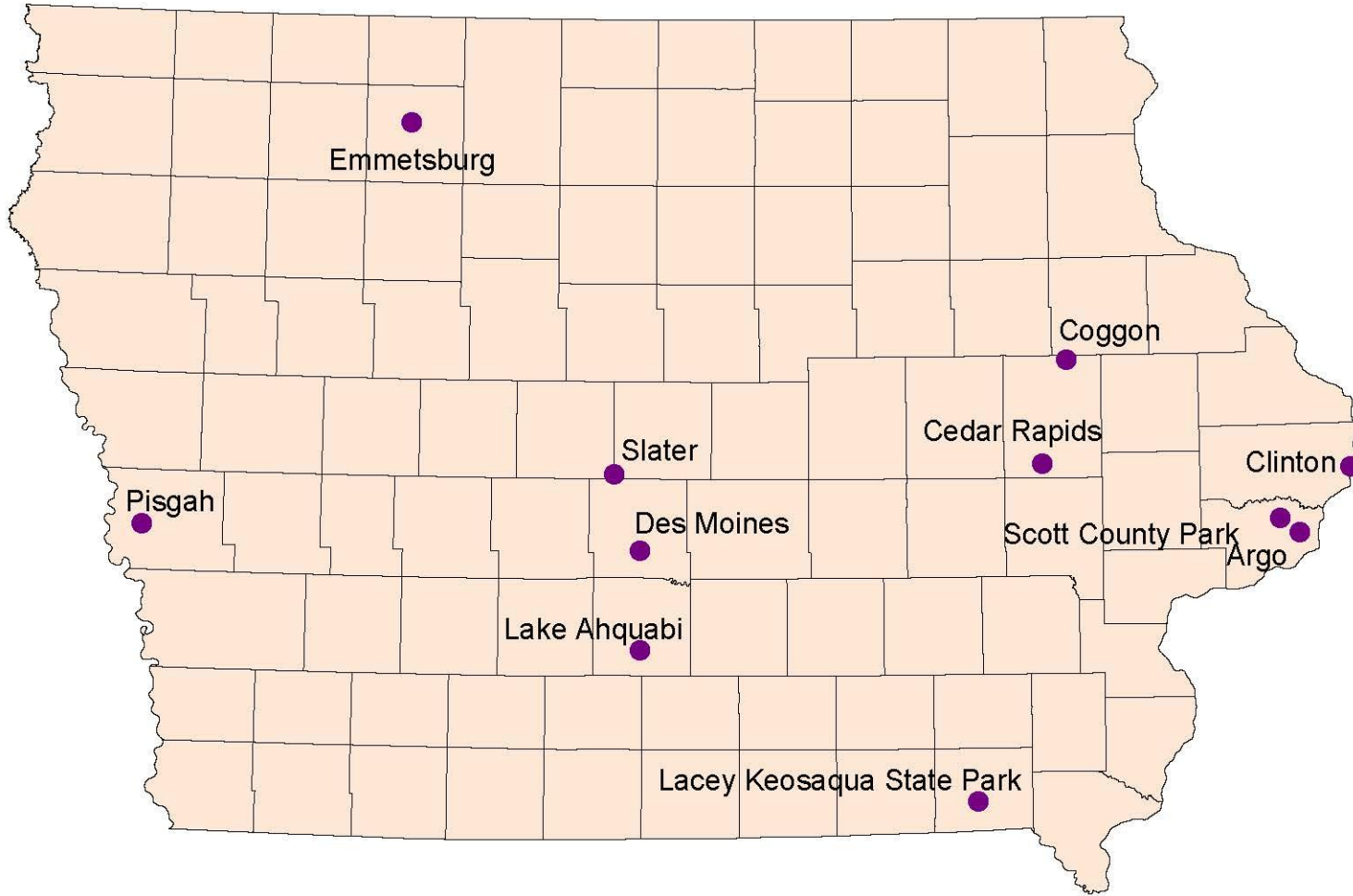
**Carbon Monoxide Monitors**



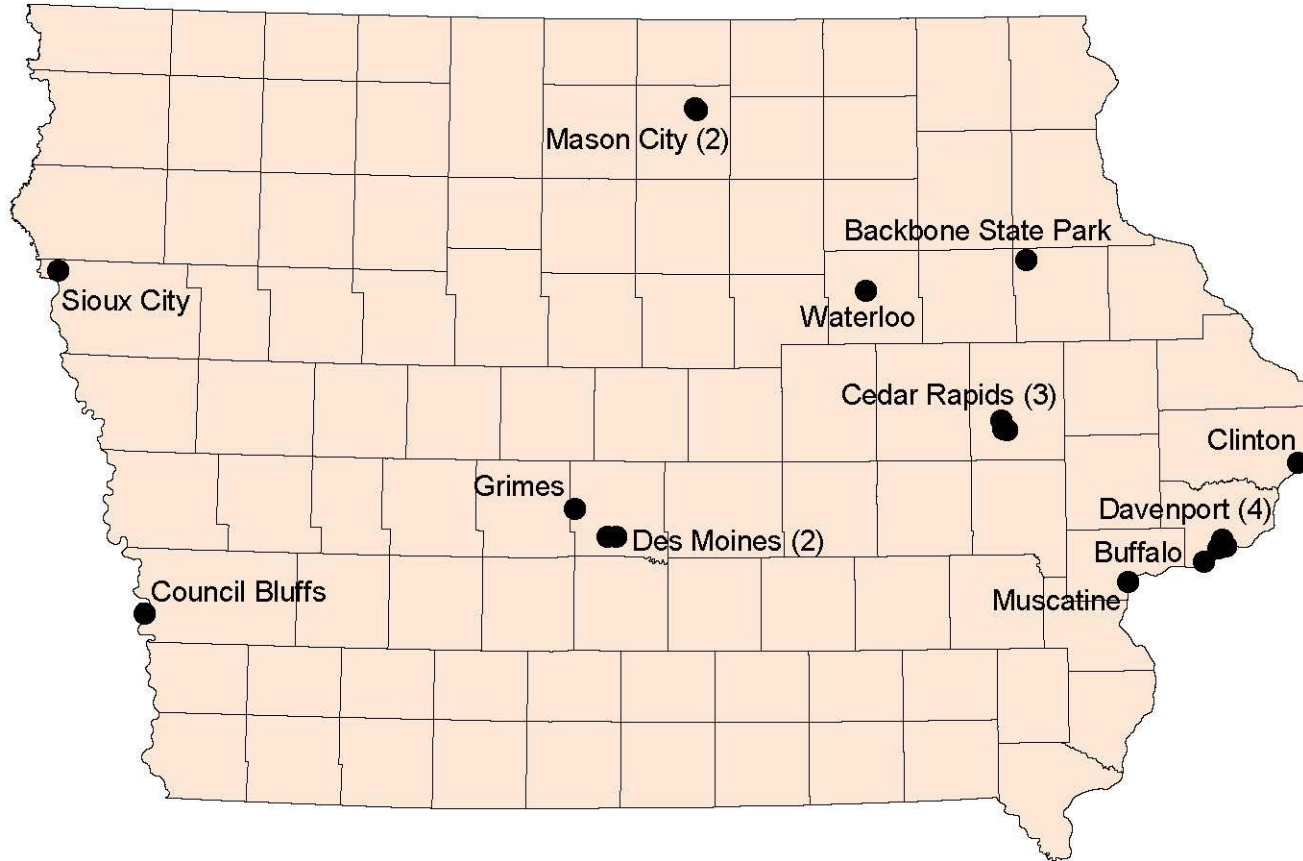
1999 Sulfur Dioxide Monitors



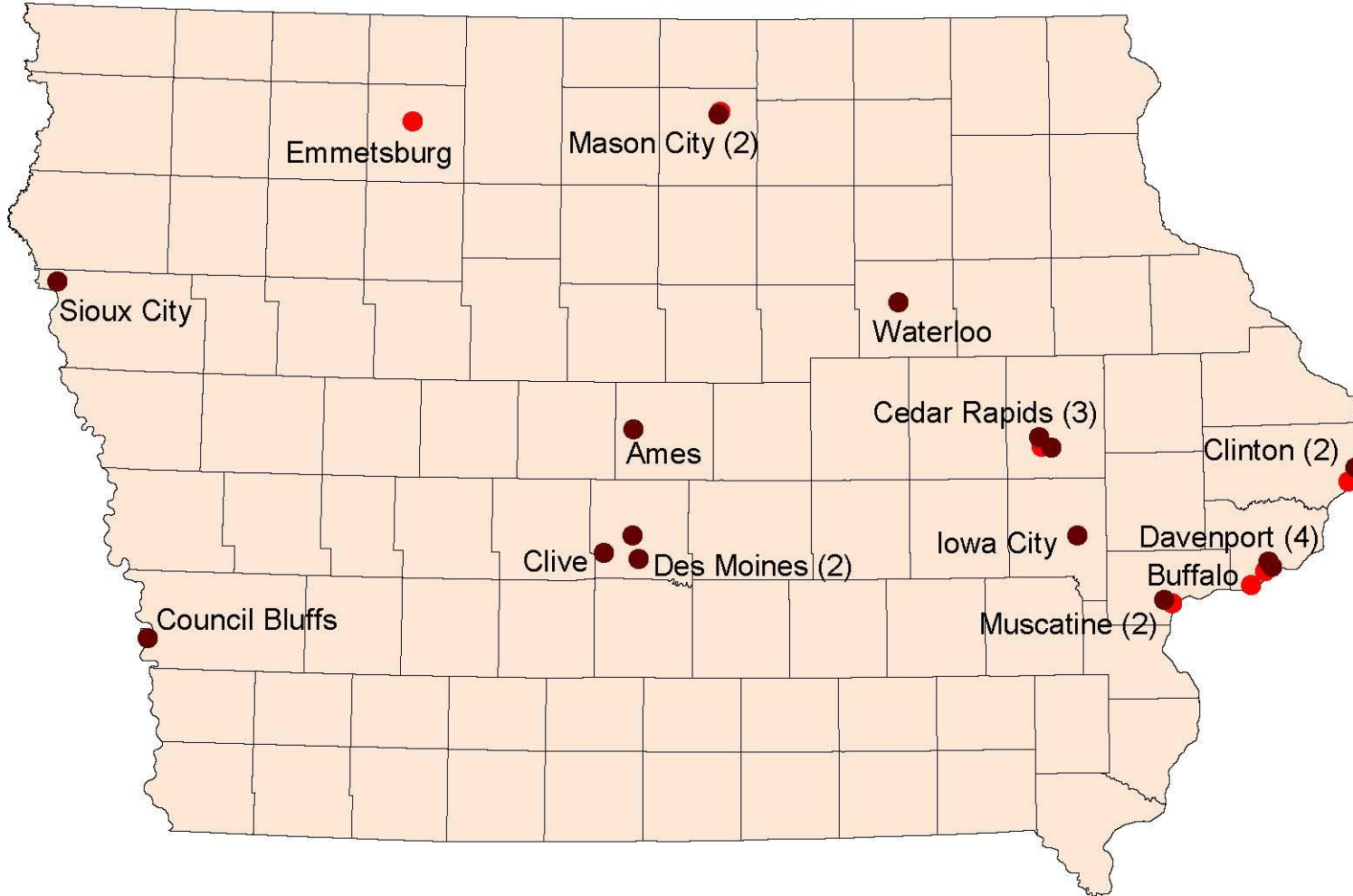
Ozone Monitors



PM105 Monitors

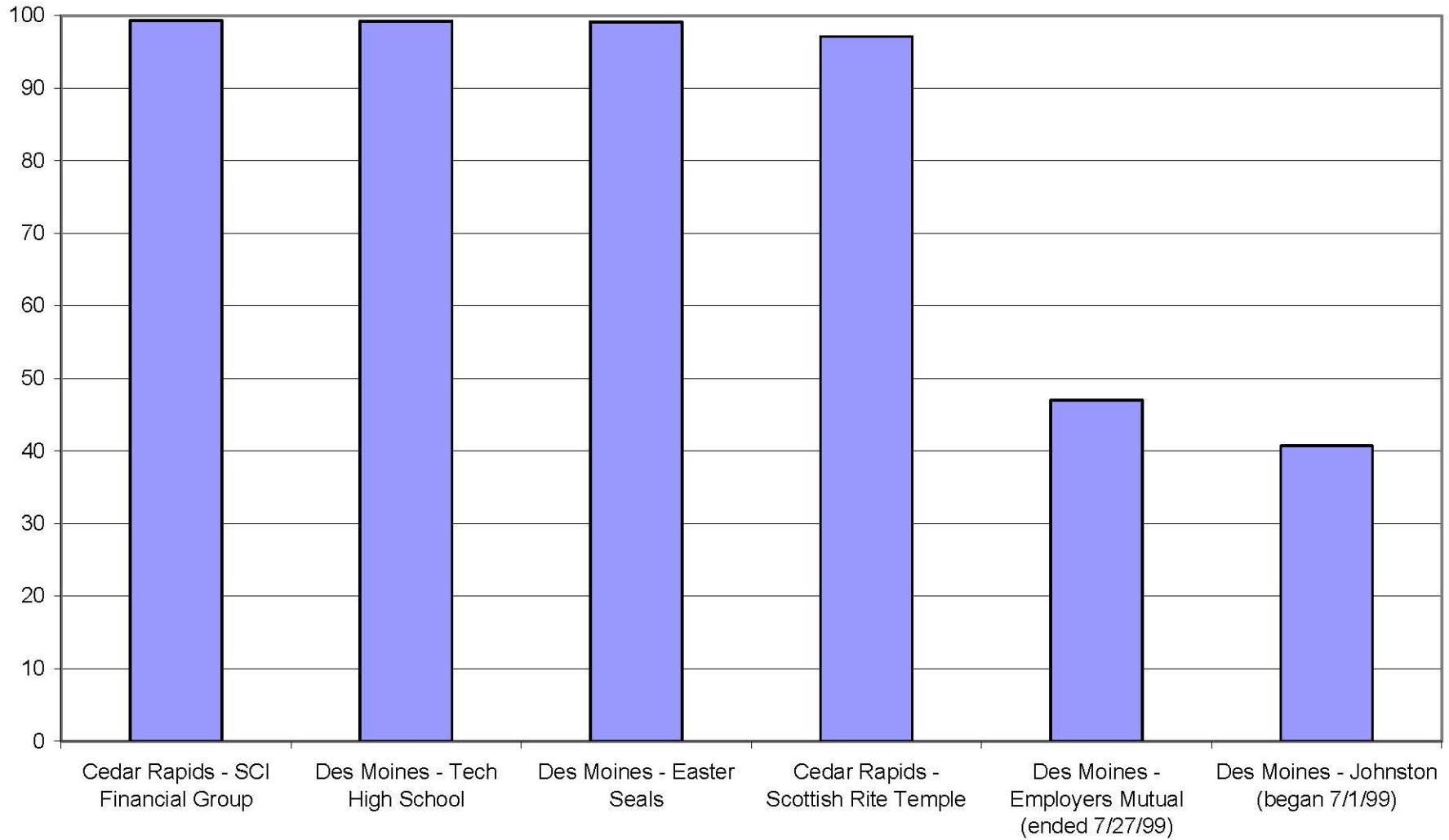


PM2.5 Monitors

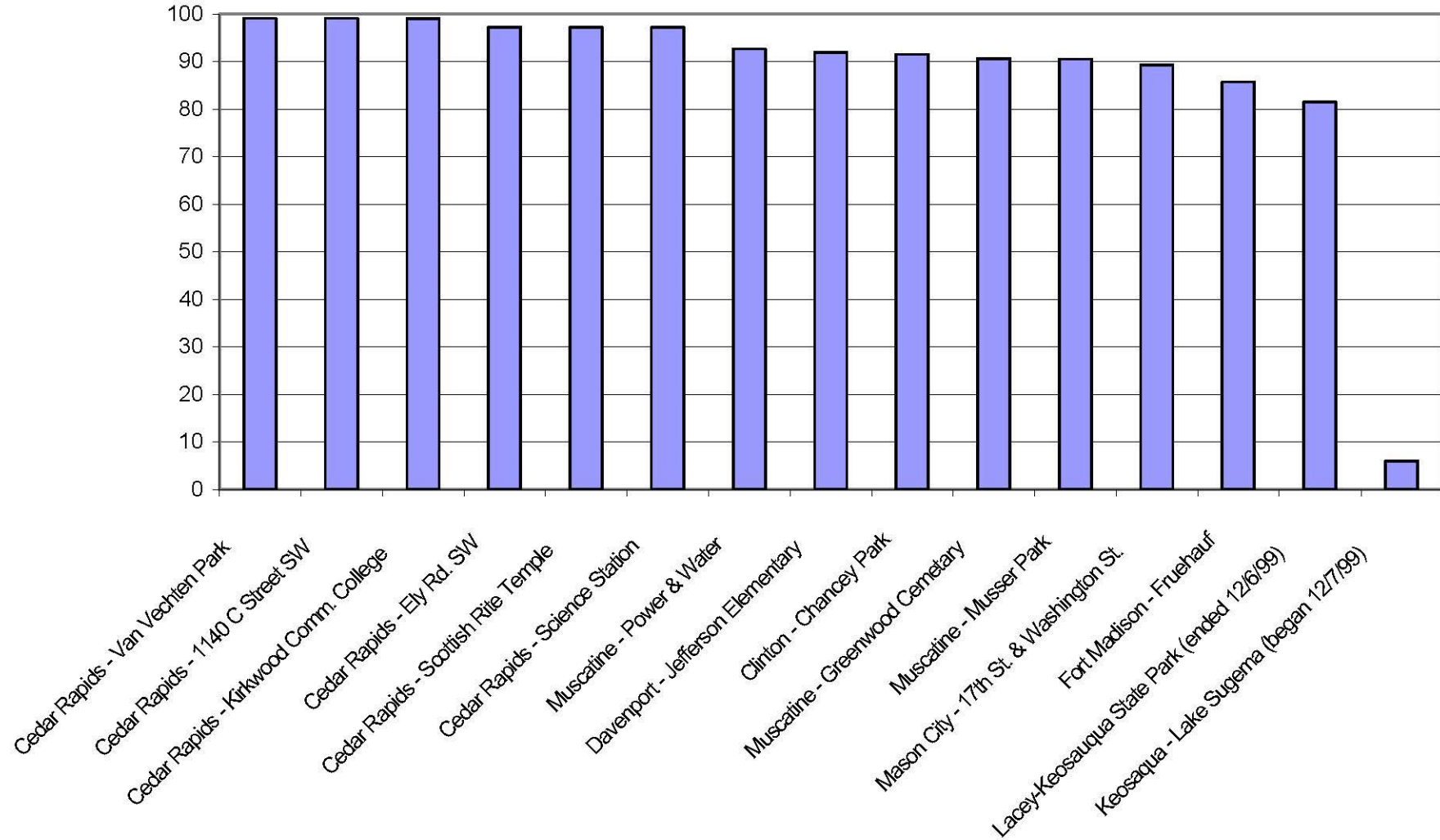




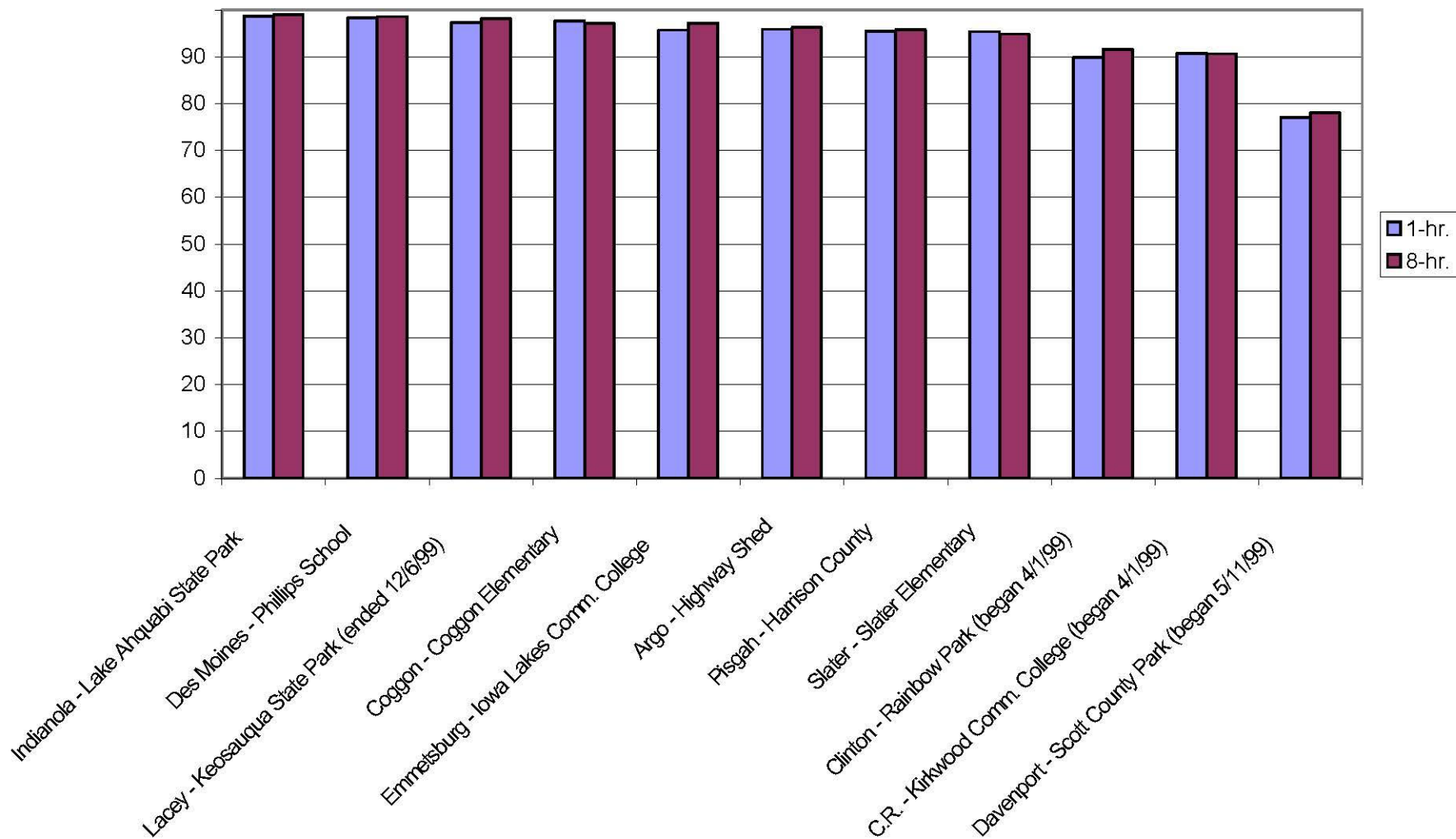
Carbon Monoxide Monitor Data Capture in Iowa (As a percentage of the maximum number of observations possible in 1999)



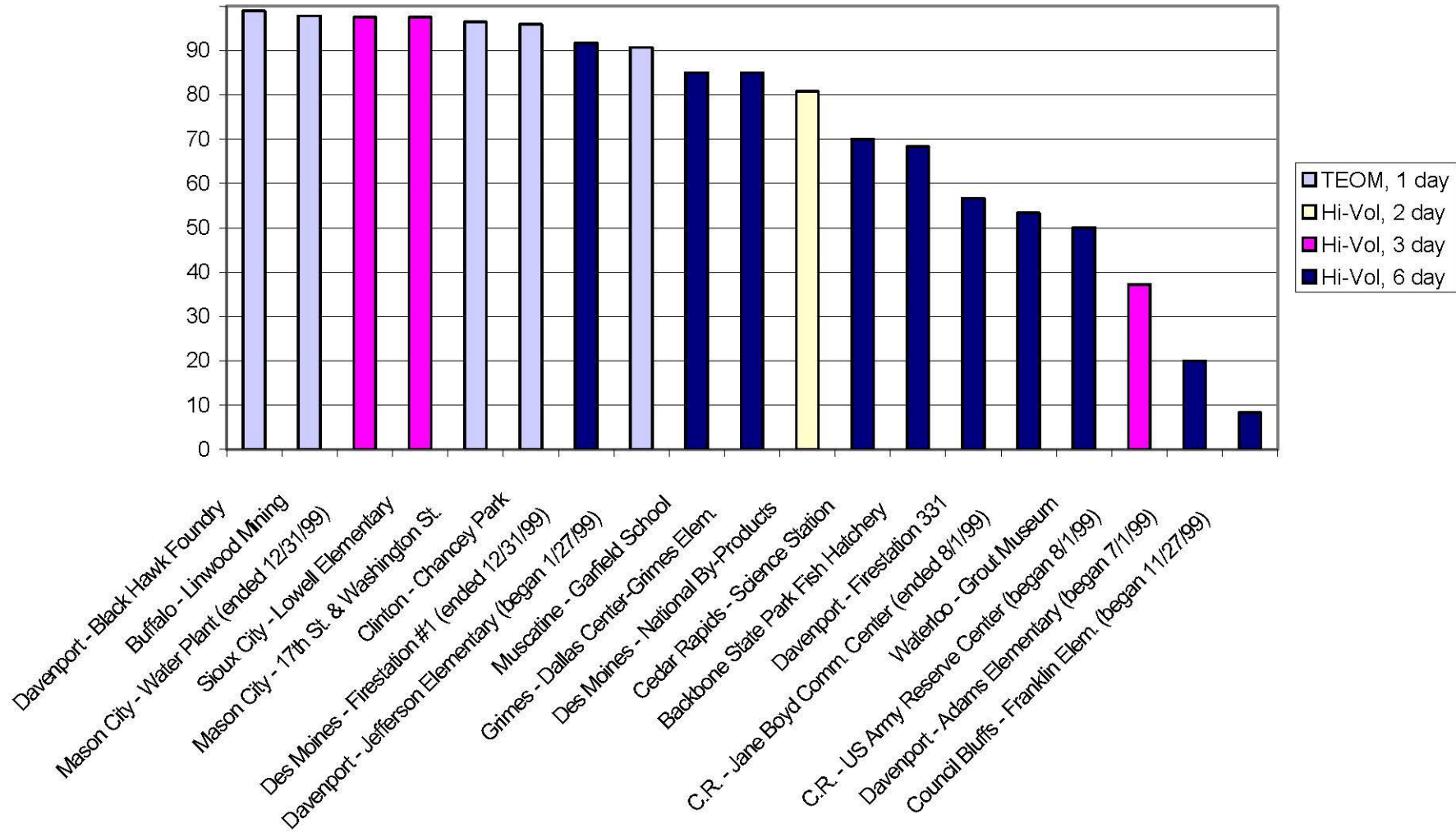
**Sulfur Dioxide Monitor Data Capture in Iowa (As a percentage of the maximum number of observations possible in 1999)**



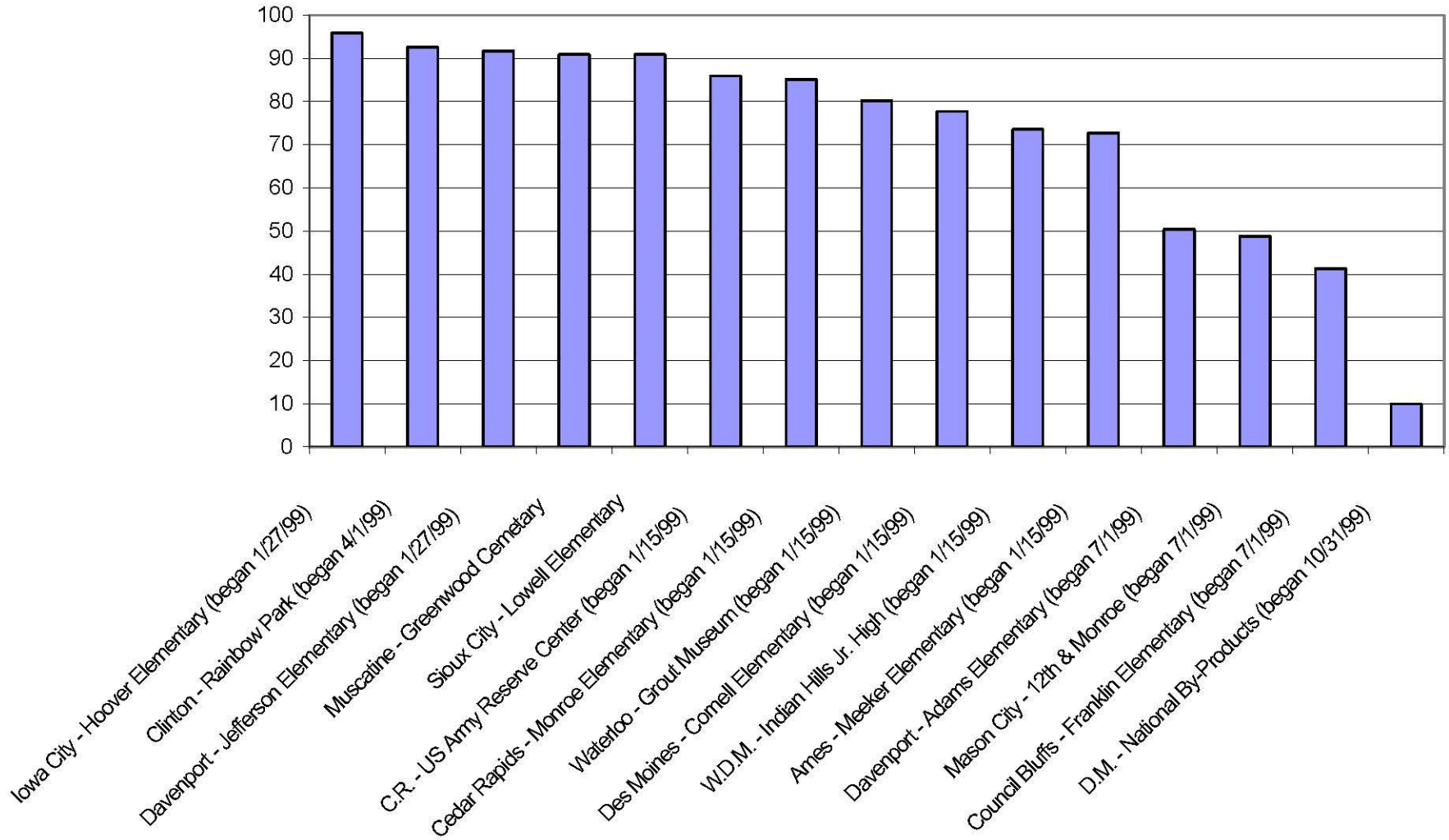
Ozone Monitor Data Capture in Iowa (As a percentage of the maximum number of observations possible in the 1999 ozone season (April 1 - Oct. 31))



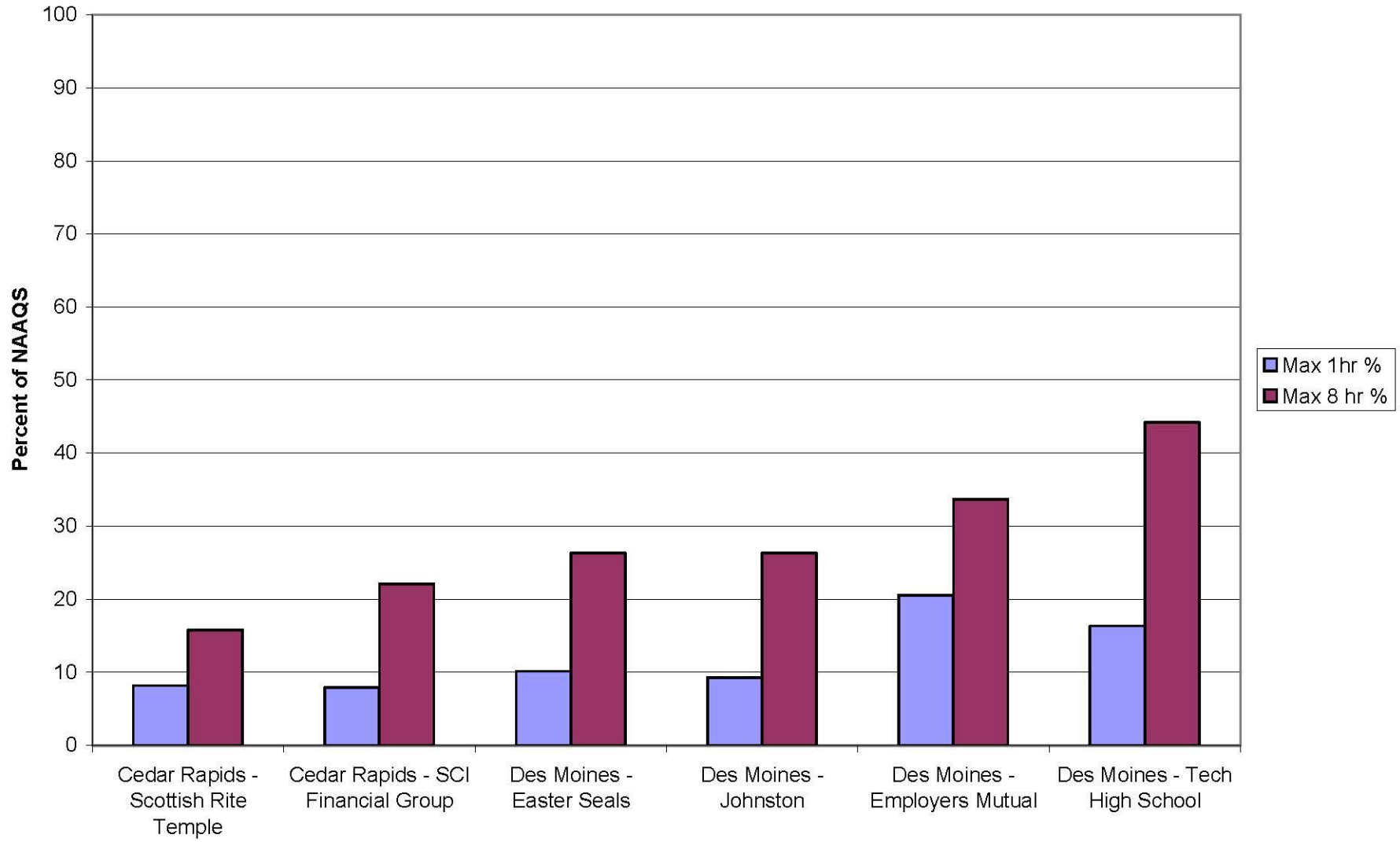
PM<sub>10</sub> Monitor Data Capture in Iowa (As a percentage of the maximum number of observations possible in 1999)



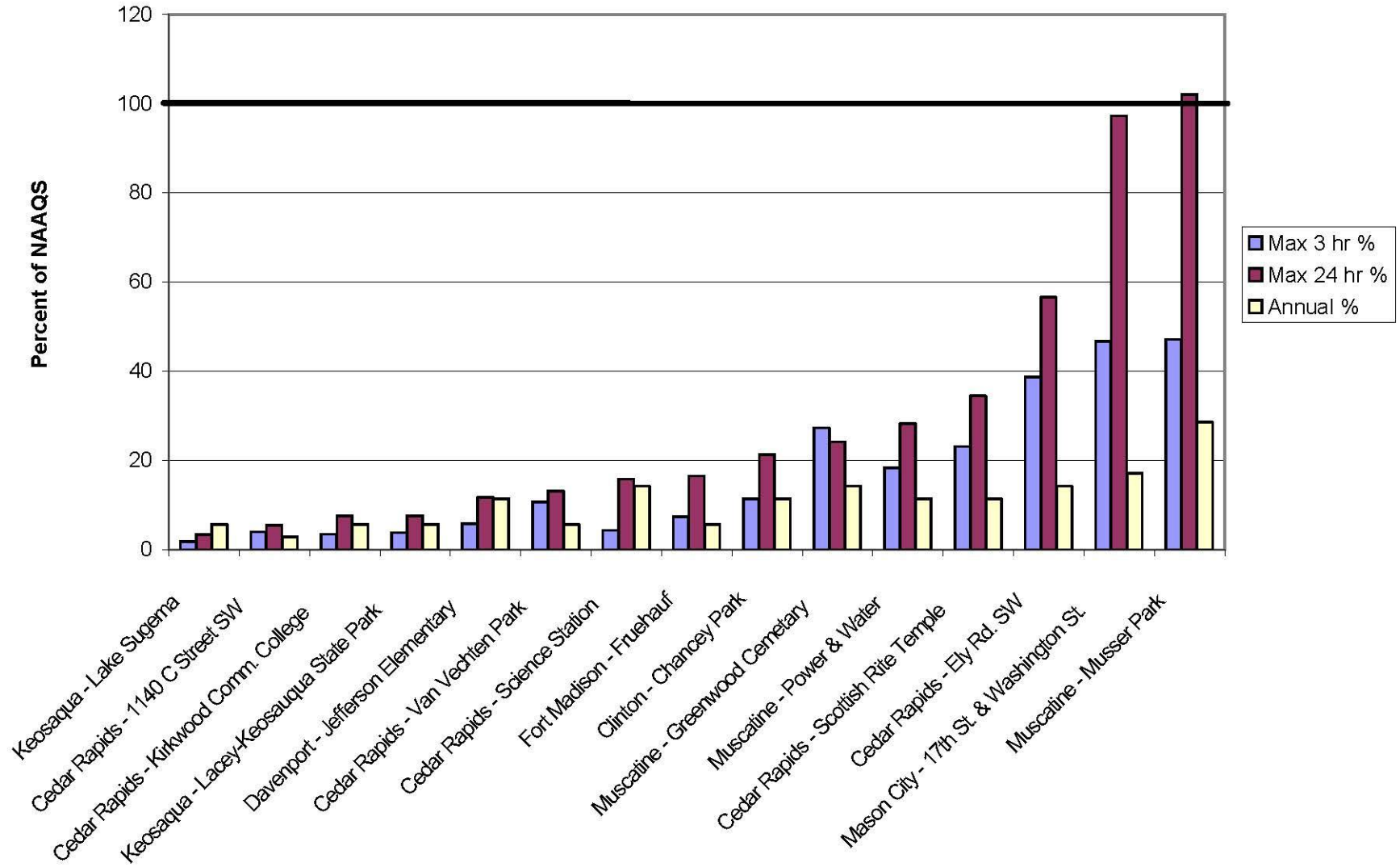
**PM<sub>2.5</sub> Monitor Data Capture in Iowa (As a percentage of the maximum number of observations possible in 1999)**



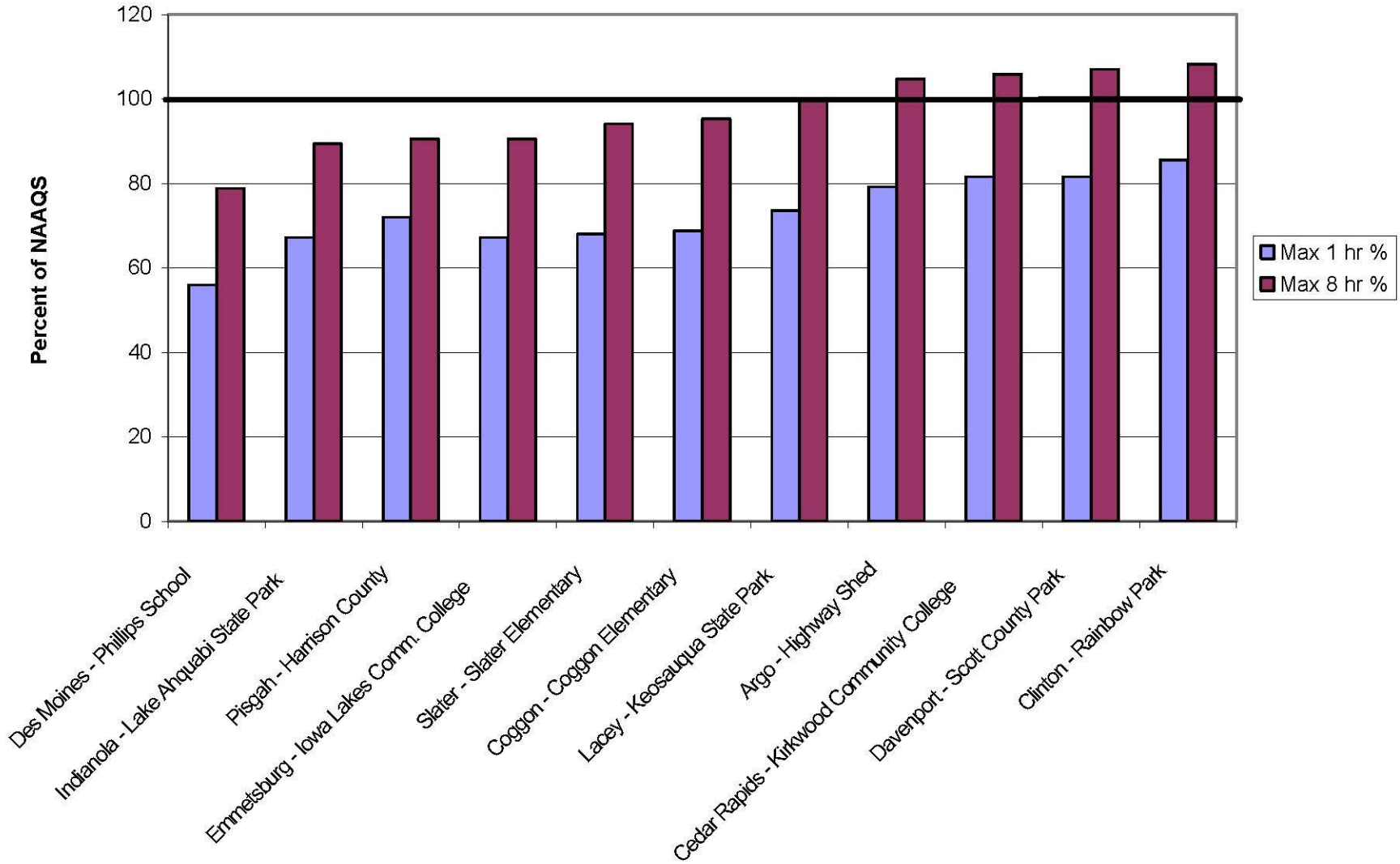
### Comparison of 1999 Carbon Monoxide Data with National Ambient Air Quality Standards



Comparison of 1999 Sulfur Dioxide Data with National Ambient Air Quality Standards

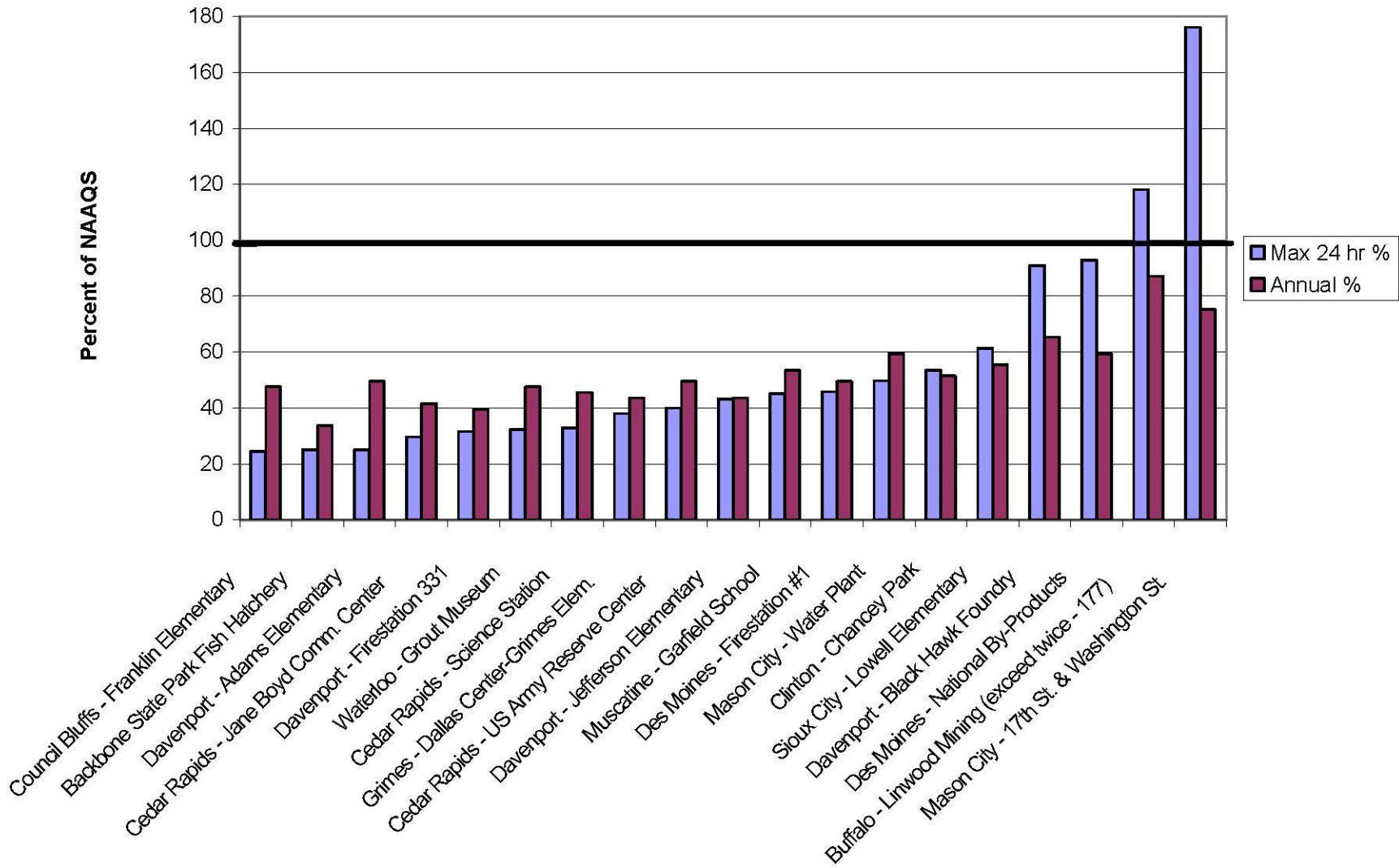


Comparison of 1999 Ozone Data with National Ambient Air Quality Standards

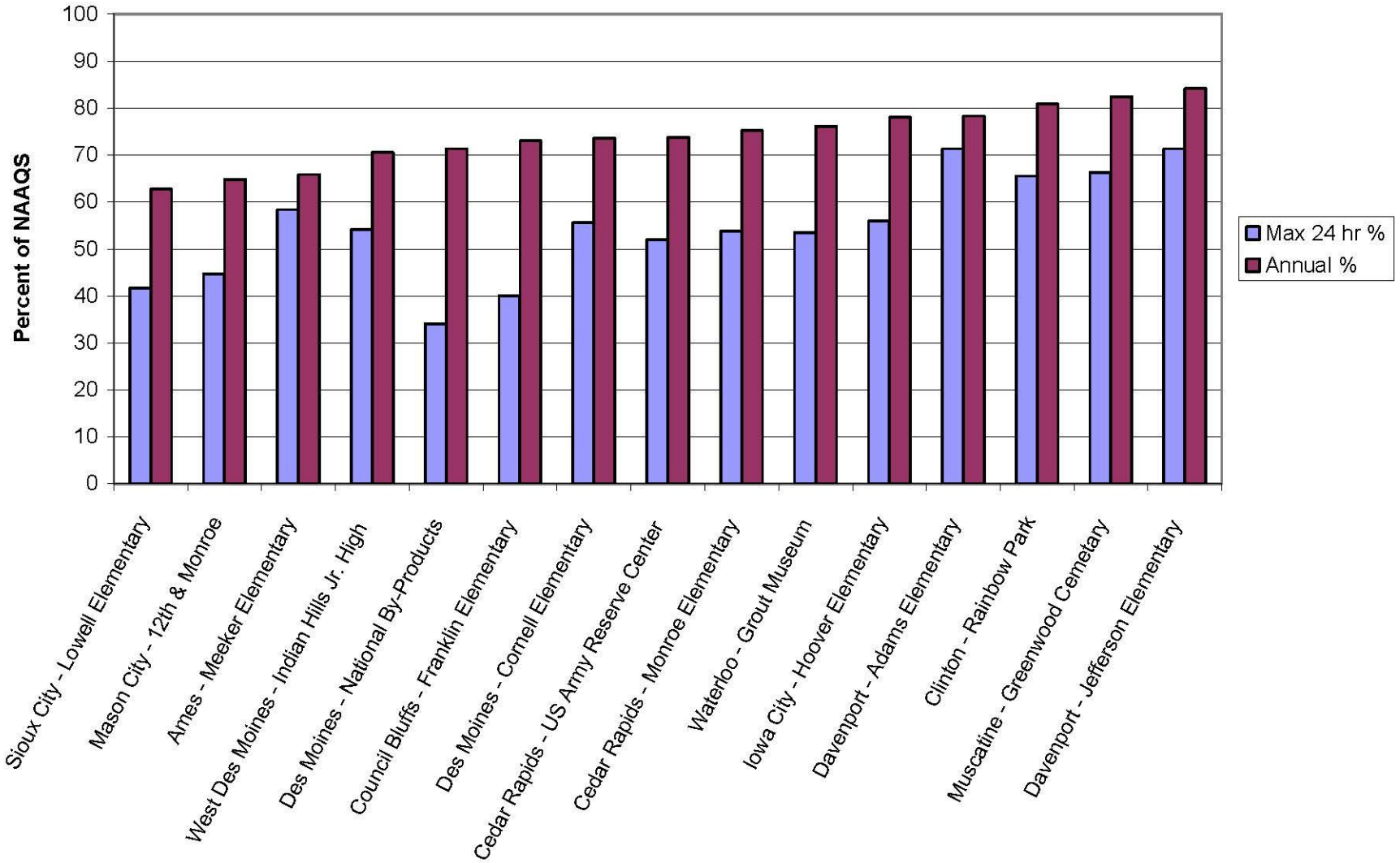




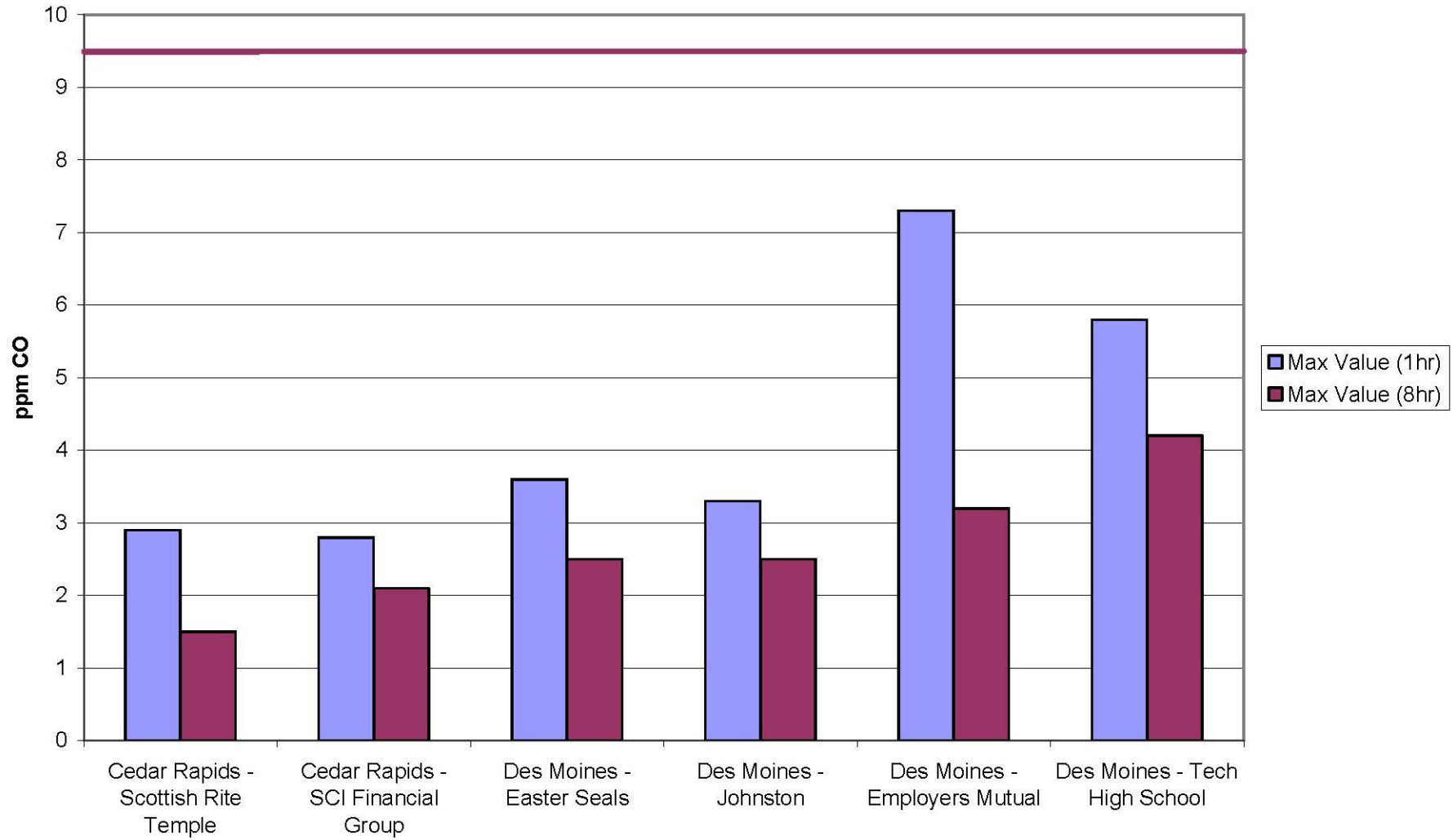
Comparison of 1999 PM<sub>10</sub> Data with National Ambient Air Quality Standards



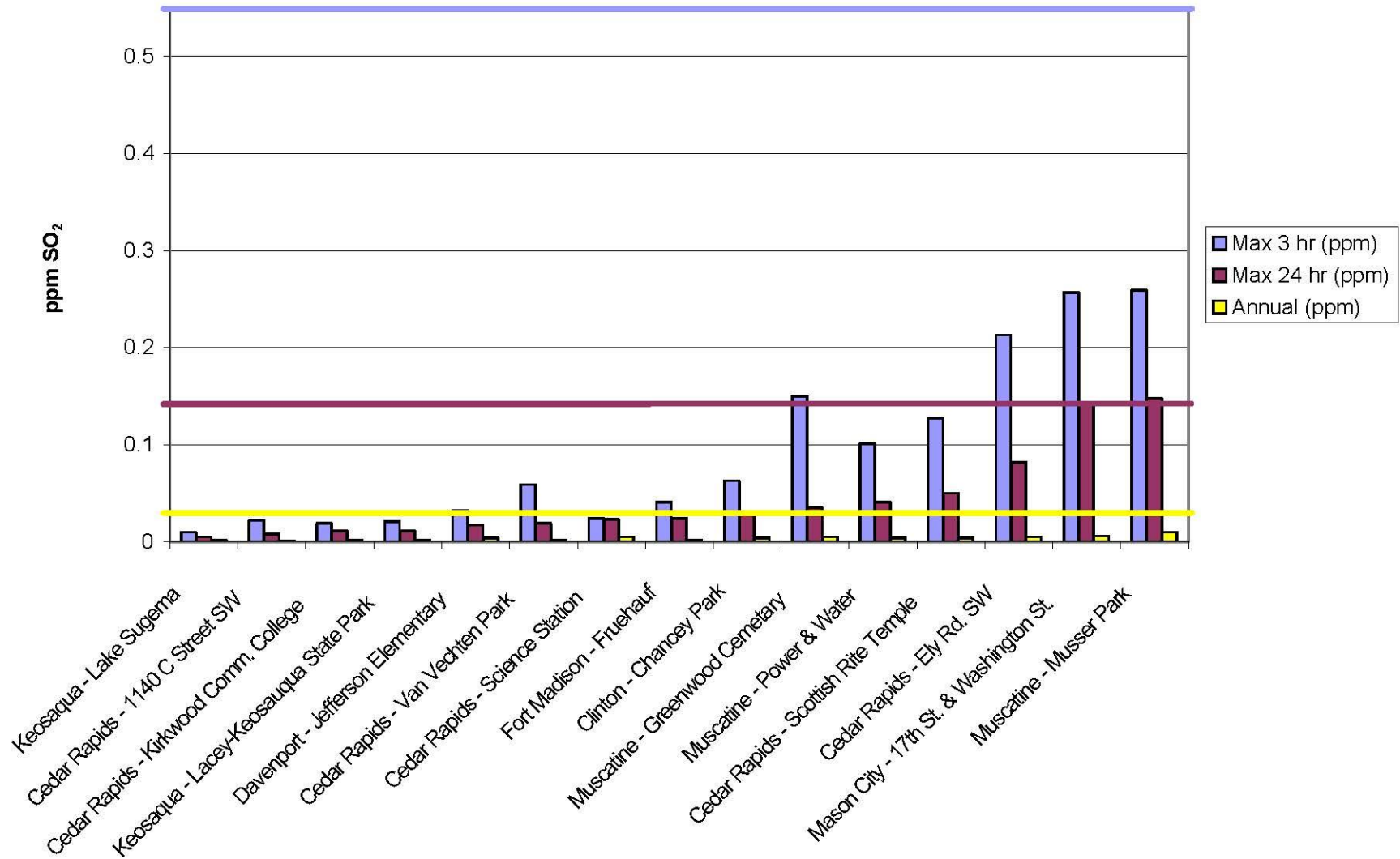
### Comparison of 1999 PM<sub>2.5</sub> Data with National Ambient Air Quality Standards



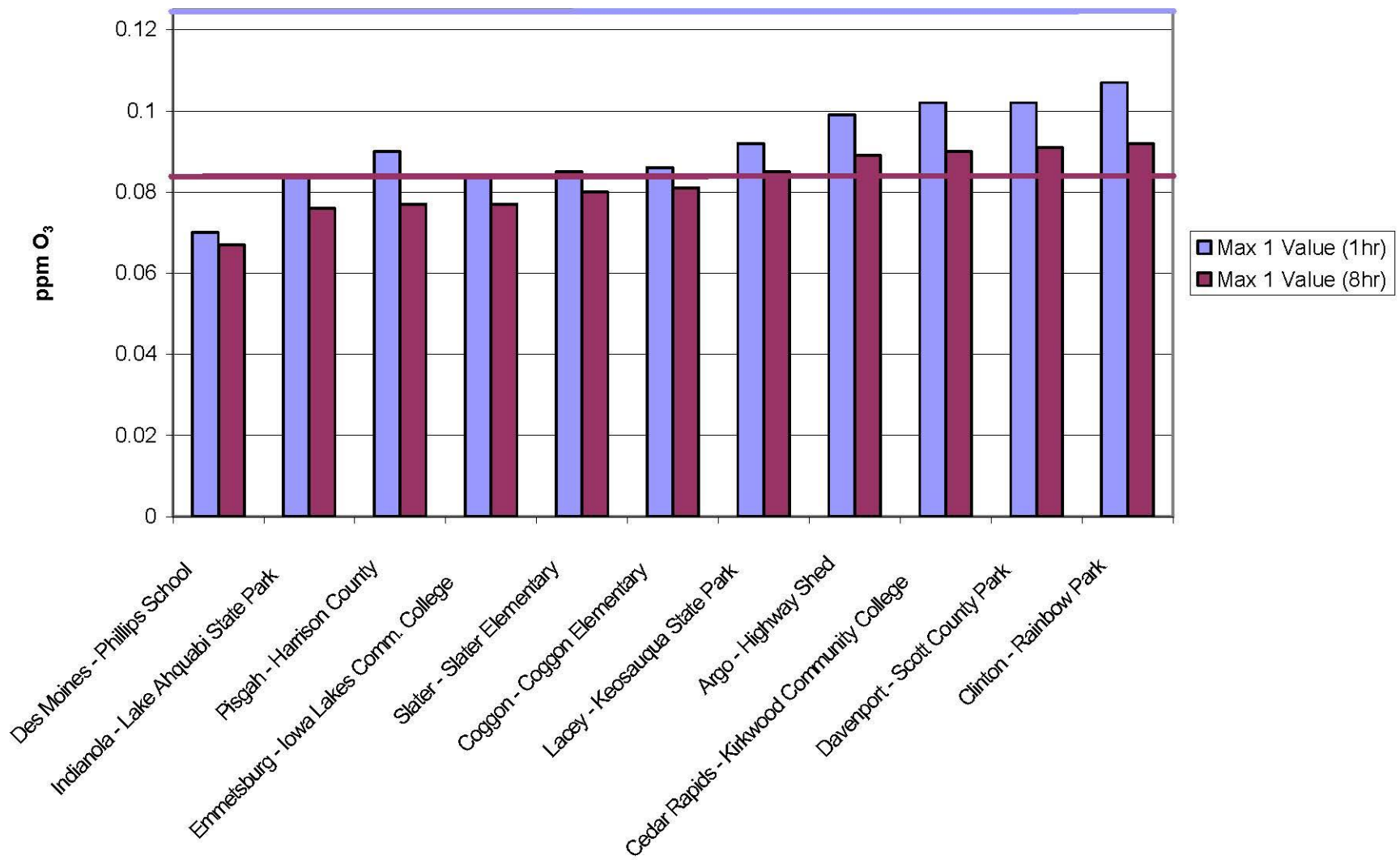
### Comparison of 1999 Carbon Monoxide Data with National Ambient Air Quality Standards



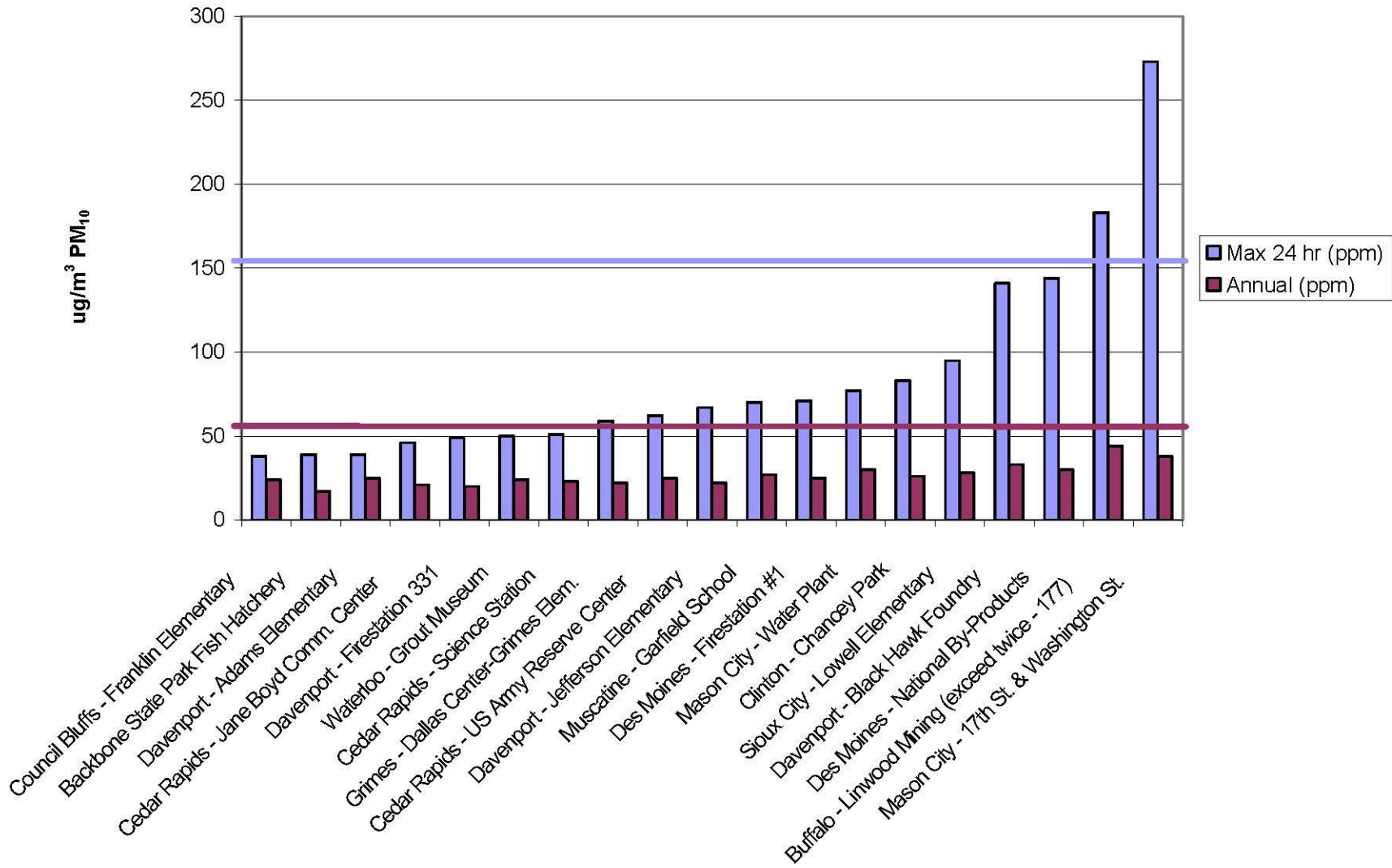
Comparison of 1999 Sulfur Dioxide Data with National Ambient Air Quality Standards



Comparison of 1999 Ozone Data with National Ambient Air Quality Standards



Comparison of 1999 PM<sub>10</sub> Data with National Ambient Air Quality Standards



### Comparison of 1999 PM<sub>2.5</sub> Data with National Ambient Air Quality Standards

