

# **Air Quality Index Exceedances in Iowa: 2004**



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Ambient Air Monitoring Group*

# **What is the Air Quality Index (AQI)?**

The AQI is number used to report daily air quality. The AQI is computed from real-time air monitoring data and was created to inform of the public of health effects that can occur within a few hours or days after breathing polluted air. EPA has developed the AQI for five pollutants regulated by the Clean Air Act: ground-level ozone (O<sub>3</sub>), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>).

# AQI Exceedances

When air pollutant concentrations exceed an AQI of 100, EPA classifies the air quality as “Unhealthy for Sensitive Groups”. Pollutant concentrations corresponding to an AQI of 101 are listed below:

**Ozone: 85 ppb (8hr average)**

**PM2.5: 40.5 ug/m<sup>3</sup> (24hr average)**

**PM10: 155 ug/m<sup>3</sup> (24hr average)**

**SO<sub>2</sub>: 145 ppb (24hr average)**

**CO: 9.5 ppm (8hr average)**

Values over these levels are AQI exceedances. Additional AQI categories are given in the following table.

# Understanding the AQI

<b>Air Quality Index (AQI) Values</b>	<b>Levels of Health Concern</b>	<b>Colors</b>
<i>When the AQI is in this range:</i>	<i>...air quality conditions are:</i>	<i>...as symbolized by this color:</i>
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

# What is Particulate Matter?

The term “particulate matter” (PM) includes both solid particles and liquid droplets (excluding water droplets) that are found in outdoor air. Particulate matter may be emitted directly into the air or form from pollutants that react in the atmosphere. Small particles tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system.

Particles of less than 10 microns in diameter are referred to as PM10.

Particles of less than 2.5 microns in diameter are referred to as PM2.5.

Sources of PM2.5 include all types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Sources of particles that are smaller than PM10 but larger than PM2.5 include crushing or grinding operations, and dust from paved or unpaved roads.

# How is Particulate Matter Measured ?

Iowa operates two distinct types of PM samplers. One type collects the aerosol by drawing ambient air through a filter over a 24-hour period. The filters are then returned to an analytical laboratory where they are weighed. This process provides accurate concentrations, but the data is not available to the public until the analytical work is complete, usually about a month after the sampling date. In order to provide more timely information, Iowa operates continuous samplers that measure PM10 and PM2.5 in real-time.

The continuous PM10 samplers used in Iowa have been designated by EPA as equivalent to filter based methods. However, there are currently no continuous PM2.5 samplers designated by EPA as equivalent to filter based methods. EPA encourages use of continuous PM2.5 monitors for reporting the AQI when the data can be shown to be well correlated with the data from filter samplers. This report does not include data from continuous PM2.5 samplers.

# AQI Exceedances: 2004

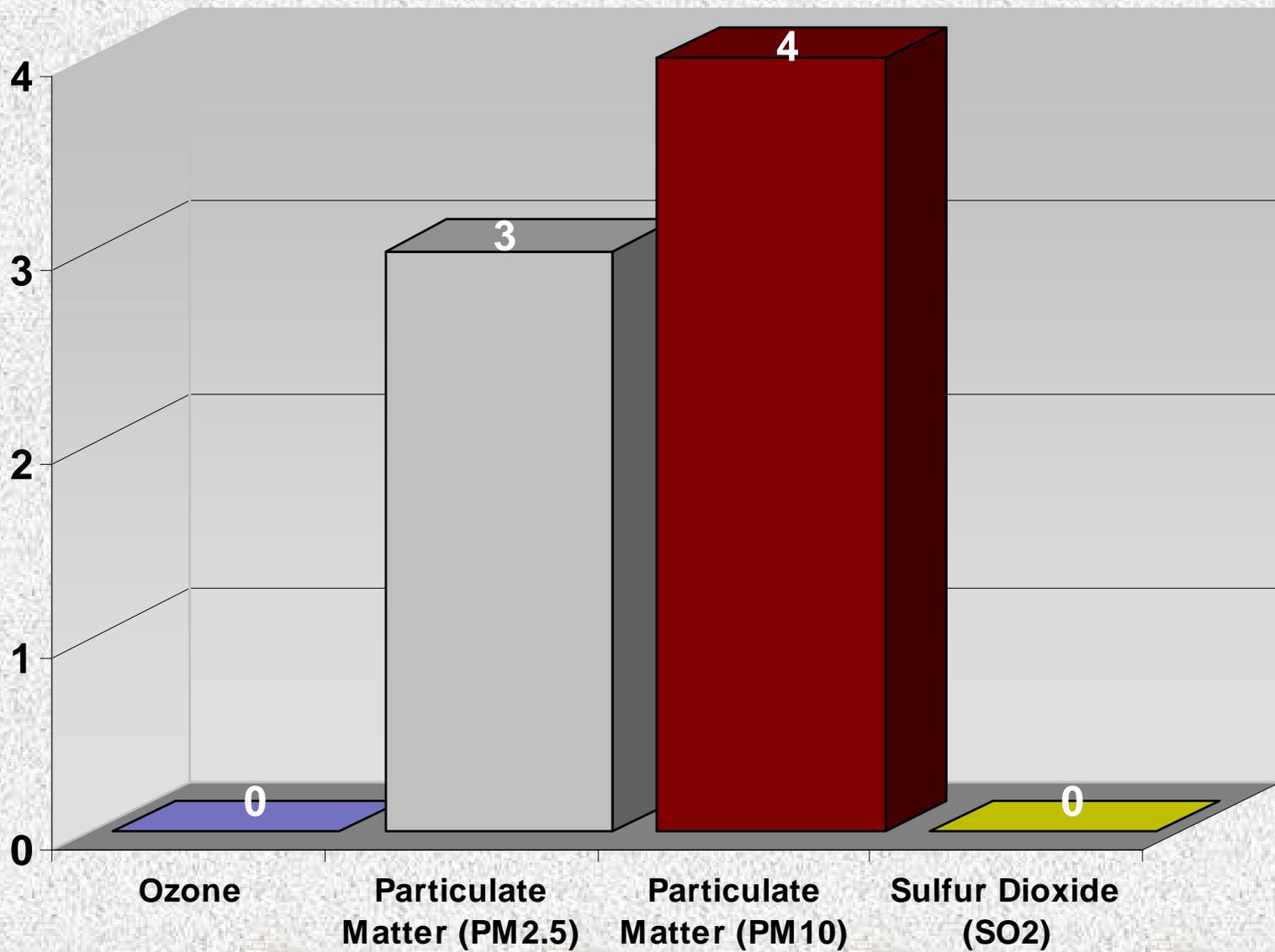
(Air Quality Index and Color Code Indicated in Final Column)

2004 Air Quality Index Values Over 100						
Monitor Type	Site Location	Site Name	Exceedance Date	Conc.	Units	AQI
PM10	Mason City	17th and Washington	1/14/2004	162	ug/m3	104
PM10	Emmetsburg	Iowa Lakes College	4/18/2004	158	ug/m3	102
PM10	Council Bluffs	Mid American Energy	4/18/2004	170	ug/m3	108
PM10	Buffalo	Linwood Mining	9/20/2004	171	ug/m3	109
PM2.5	Mason City	10th and Monroe	2/18/2004	42.3	ug/m3	105
PM2.5	Muscatine	Garfield Elementary	7/2/2004	59.3	ug/m3	138
PM2.5	Clinton	Rainbow Park	12/29/2004	42.3	ug/m3	105

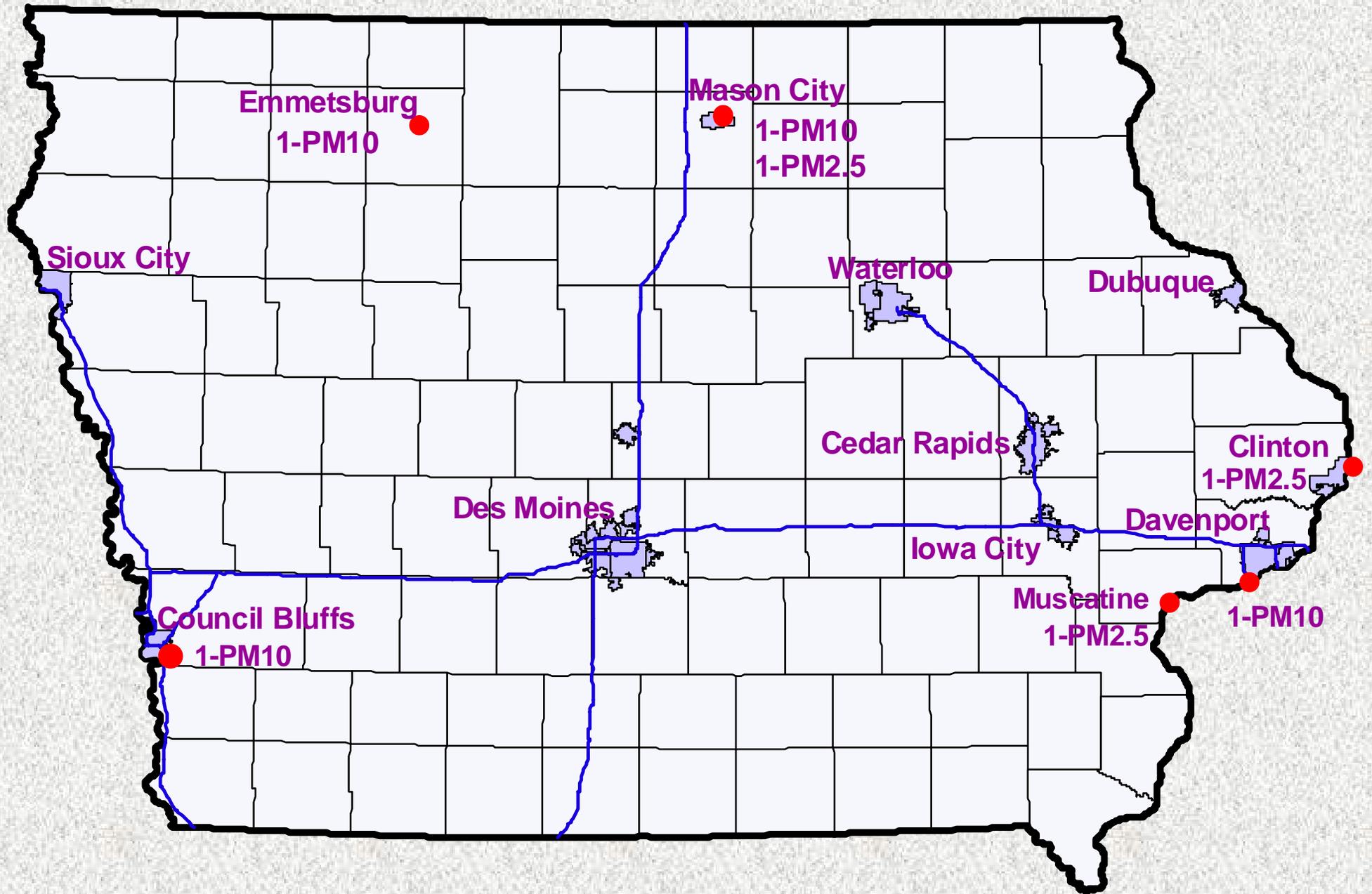
# Dates of AQI Exceedances: 2004

Date	PM2.5	PM10
1/14/2004		1
2/18/2004	1	
4/18/2004		2
7/2/2004	1	
9/20/2004		1
12/29/2004	1	

# AQI Exceedances by Pollutant 2004



# Air Quality Index Exceedances 2004



# Web Resources

## **Real-time AQI reporting :**

*In Polk County:*

<http://www.airquality.co.polk.ia.us/AQI.asp>

*In Linn County:*

<http://www.air.linn.ia.us/>

*Outside Polk and Linn Counties:*

<http://www.uhl.uiowa.edu/services/environment/airquality/ambient/index.html>

*Ozone Maps:*

<http://www.epa.gov/airnow/index.html>

**Historical AQI values for Iowa and Other States:**

<http://www.epa.gov/air/data/>