

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Emissions, Monitoring, and Analysis Division
Office of Air Quality Planning and Standards
79 T.W. Alexander Drive, Research Triangle Park, North Carolina 27711

November 7, 2000

TECHNICAL MEMORANDUM

To: EPA Air Docket A-99-06

From: Eric Ginsburg, Senior Program Advisor
Emissions Monitoring and Analysis Division, OAQPS

Subject: Reference for Currently Available 1-hour Data and Summary of Current Ambient Concentrations Data for Certain Levels of Ground-Level Ozone over Prolonged Periods

This memorandum provides:

1. information on the availability of air quality data to which the public has access, and on which EPA relied in identifying those areas which are currently measuring violations of the 1-hour national ambient air quality standard (NAAQS), and
2. information on the number of people currently living in metropolitan counties in which ozone monitors have repeatedly recorded certain levels of ozone of potential concern over prolonged periods, i.e., 8-hours.

Public access to 1-hour air quality data

The Aerometric Information Retrieval System (AIRS) AIRS is a computer-based repository of information about airborne pollution in the United States and various World Health Organization member countries. The system is administered by EPA's Office of Air Quality Planning and Standards (OAQPS), Information Transfer and Program Integration Division, located in Research Triangle Park, North Carolina. AIRS is installed on the IBM computer system at the EPA's National Computer Center in Research Triangle Park, North Carolina. Any organization or individual with access to the EPA computer system may use AIRS to retrieve air pollution data. The Air Quality Subsystem (AQS) of AIRS contains measurements of ambient concentrations of air pollutants and meteorological data from thousands of monitoring stations operated by EPA, state and local agencies. AQS also contains descriptive information about each monitoring station, including its geographic location and who operates it. Individuals interested in viewing information on 1-hour ozone and other pollutant measurements through the internet can do so at the following web address: <http://www.epa.gov/airsdata/monvals.htm>.

Potential for population exposure to ozone over more prolonged periods

The focus for the analysis described in this memorandum on metropolitan areas reflects the substantially greater likelihood that heavy-duty vehicles contribute to the air quality concentrations reported, since they contribute a substantial fraction of ozone precursors in any metropolitan area. To provide a quantitative estimate of the number of people residing in areas in which ozone monitoring data show patterns involving multiple days with 8-hour ozone in the range of 0.08 to 0.12 ppm and higher, we analyzed the complete and validated ozone monitoring data from the three most recent complete years, 1997-99. Our reason for considering this longer averaging period is that, irrespective of 1-hour air quality and the occurrences of exceedances of the level of the 1-hour NAAQS, the potential exists for exposures to levels of ozone for more prolonged periods which have been associated with a range of health effects, including lung function decrements, respiratory symptoms, and pulmonary inflammation. By examining air quality over the 3-year period of 1997-99 we have attempted to reflect air quality and meteorological conditions which are more representative over the long term, or less subject to fluctuations in any given year. Our analysis relies on population estimates from the U.S. Bureau of the Census for the year 1998, which we regard as representative of the population of these areas over the 3-year period being considered.

For each county, we determined the number of days for the 3-year period on which the highest recorded 8-hour concentration of any monitor in the county was, for example, between 0.08 and 0.12 ppm (after rounding from 3 decimal places). We then grouped the counties which had days with ozone in this range according to the number of days this happened, and summed their populations. We repeated this for ozone ranges of 0.09 to 0.12 ppm, 0.10 to 0.12 ppm, 0.11 to 0.12 ppm and greater than or equal to 0.12 ppm. The results of this analysis are presented in the attached table. 168 million people, or 95% of all the population considered in the analysis, lived in areas with at least 2 days with 8-hour average concentrations of 0.08 ppm or higher. The number of people involved diminishes as the lower end of the concentration range increases or as the number of days experiencing such peak 8-hour average concentrations increases.

cc: J. Anderson, ASD/OTAQ
R. Evans, ISEG/AQSSD
M. Horowitz, OGC
D. Kodjak, ASD/OTAQ
S. Napolitano, OTAQ
J. Hemby, AQTAG/EMAD
N. Possiel, AQMG/EMAD

Attachment

**Populations Living in Metropolitan Counties with a Monitor Reporting
Daily Maximum 8-Hour Ozone ≥ 0.080 ppm ¹**

Total number of days in 1997-1999 with peak 8-hour ozone in the ranges shown ²	1998 Population (Millions)				
	0.080-0.119 ppm	0.090-0.119 ppm	0.100-0.119 ppm	0.110-0.119 ppm	≥ 0.120 ppm
At least 2 days	168	153	125	71	36
At least 3 days	166	149	110	58	24
At least 4 days	164	143	95	46	20
At least 5 days	163	137	82	40	19
At least 6 days	161	131	69	30	19
At least 7 days	158	127	63	28	18
At least 8 days	155	123	55	24	18
At least 9 days	153	120	53	22	17
At least 10 days	148	113	50	20	17
At least 15 days	140	92	34	18	16
At least 20 days	129	72	27	18	6
At least 30 days	112	46	19	7	3
At least 40 days	82	36	19	6	2
At least 50 days	70	25	17	6	2
At least 60 days	62	21	8	2	2

¹Total population in counties evaluated: 176 million

²Total number of days in the 3-year period from which values were computed is equal to $3 \times 365 = 1095$