Calculating 8-Hour Ozone Design Values

AQS Conference, June 19, 2007
Pittsburgh, PA

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Agenda

- What is the 8-hour ozone National Ambient Air Quality Standard?
- How do we calculate ozone 8-hour design values?
- Questions and Answers

What is the 8-hour ozone National Ambient Air Quality Standard?

Background

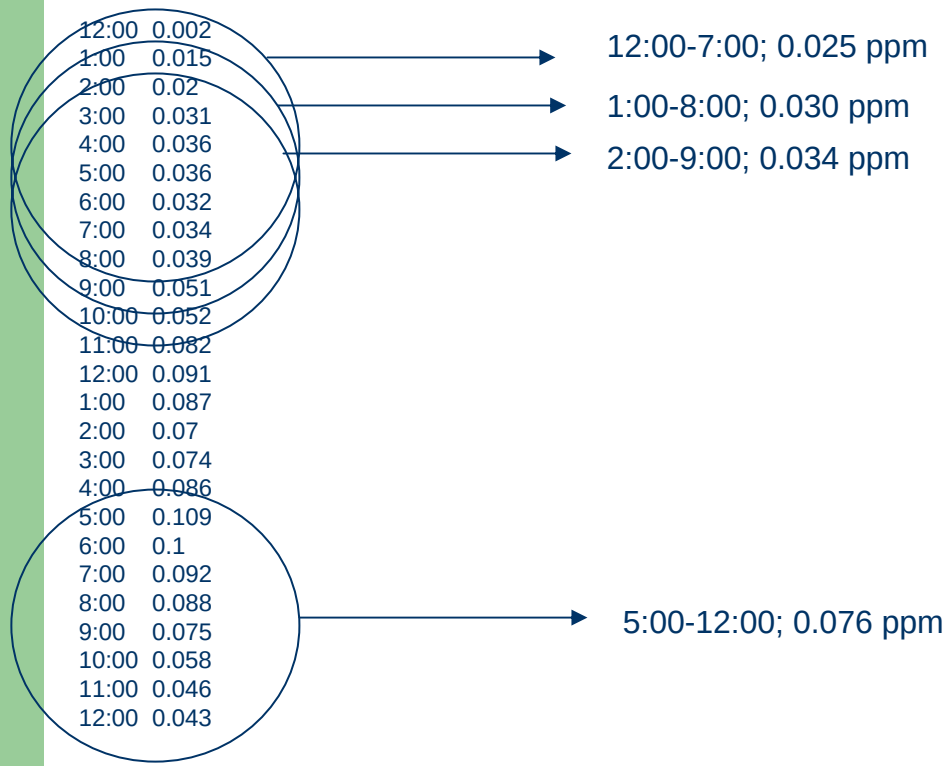
- The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for ground-level ozone and five other criteria pollutants. The Clean Air Act established two types of national air quality standards for ground-level ozone.
  - Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.
  - Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings.
- The National Ambient Air Quality Standard for ozone can be found 40 CFR Part 50
- Appendix I to 40 CFR Part 50 interprets the 8-hour Primary and Secondary National Ambient Air Quality Standards for Ozone specified in Section 50.10
- In April 2004, EPA, using 2001-2003 data, designated 126 areas as nonattainment for the 8-hour ozone standard.

How do we calculate ozone 8-hour design values?

Running 8-hour averages

- Use hourly ozone concentrations
- A valid 8-hour average is one with at least 75% of the hourly data available
  - If there are only 6 or 7 hourly averages, divide by 6 or 7
  - Don’t ignore 8-hour periods with less than 6 hours
    - Substitute ½ the minimum detectable limit (MDL) for missing hourly concentrations. After the substitution, if the 8-hour average is greater than the level of the standard keep the 8-hour average.
- The 8-hour average is reported to three decimal places, and insignificant digits to the right of the third decimal place are truncated.

Example of Calculating 8-Hour Averages



How do we calculate ozone 8-hour design values?

Daily Maximum 8-hour average concentrations

- 24 possible running 8-hour average ozone concentrations for each calendar day during the ozone season.
- The daily maximum is the highest of the 24 possible 8-hour averages.
- A valid day is defined as one with at least 75% of the possible 8-hour averages in the day (18 of the 24 averages)
- If a day is less than 75% complete, the day is counted valid if the daily maximum is greater than the level of the standard

How do we calculate ozone 8-hour design values?

Summary Statistic

- The standard-related summary statistic is the annual fourth-highest daily maximum 8-hour ozone concentration averaged over three years, also known as the design value.
- The three year average is expressed to three decimal places, and any remaining digits to the right are truncated.

How do we calculate ozone 8-hour design values?

Comparisons with the Primary and Secondary Standards

- The standards are met when the 3-year average is less than or equal to 0.08 ppm
  - Rounding Convention: The third decimal place of the computed 3-year average is rounded. Thus, a computed 3-year average of 0.085 ppm is smallest value greater than 0.08 ppm.
- Completeness Criteria
  - A monitor has to have three consecutive complete calendar years of monitoring data.
  - A monitor has to have 75% of the valid days in ozone season for each year and a average of 90% for the three years
  - Years with concentrations greater than the level of the standard shall not be ignored due to having less than complete data.

The End

- Questions
- Contact Information
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