STATE ENVIRONMENTAL HEALTH INDICATORS COLLABORATIVE (SEHIC)
AIR QUALITY INDICATORS

Indicator: **AQ1: Ambient Concentrations of Pollutants**

Measure(s): **AQ1.3: Average of the Maximum Daily 8-Hour Averages for the Ozone Season, by County**

MEASURE DESCRIPTION

AQ1.3: Average of the Maximum Daily 8-Hour Averages for the Ozone Season, by County	
Last updated:	February 8, 2008
Measurement units:	Parts per million (ppm)
Geographic scale:	Counties with monitors (for counties with more than one monitor, values are averaged for each day)
Time scale:	Ozone season defined by EPA[1]
Significance/background:	As ozone levels rise, hospital admissions and emergency room visits for respiratory illnesses such as asthma also increase. On average, studies show that hospital admissions rise roughly 7 to 10 percent for a 0.05 ppm increase in ozone levels. In the Eastern United States, summer ozone pollution was found to cause an estimated 159,000 emergency room visits and more than 50,000 hospital admissions per year for COPD, asthma, pneumonia and other respiratory emergencies.
Rationale:	This measure will provide an indication of the long term trend in overall ozone burden, relevant to long term effects of ozone.
Limitations:	This measure provides a general indication of the overall trend in annual ozone concentrations. It may be affected by density and placement of monitors, and coverage will vary. It does not directly reflect exposure. However, ozone tends to be a regional rather than a localized pollutant, so measurement at the county level is informative.
Data resources:	Ozone seasons: **http://www.epa.gov/oar/oaqps/greenbk/o3season.html**; EPA data **http://www.epa.gov/airexplorer/**
Data limitations:	Air monitoring data provides information regarding concentrations at the specific location of each monitor. Considerable within County variation in concentrations will likely exist but will not be captured in this measure.
Related data:	PHASE predictions (once available)
Related SEHIC measures:	Asthma and other respiratory diseases
Related Indicators (from other projects):	HP2010: 8-1 Proportion of persons exposed to air that does not meet the US EPA's health-based standards for harmful pollutants.
Recommendations:	

Notes:

1 The length of the "ozone season" varies, with some areas monitoring for four months and some for 12 months. If annual averages were used instead of ozone seasons, then values for areas with "shorter" ozone seasons will not necessarily be comparable to those for areas with "longer" ozone seasons. This is because the areas with shorter monitoring duration will sample a relatively "worse" part of the distribution of values over a year.

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HOW-TO GUIDE: AQ1.3

Determine your state's ozone season:

1. Go to the EPA web site: **http://www.epa.gov/oar/oaqps/greenbk/o3season.html** and note your state's ozone season.

Obtain data from the EPA website:

2. Go to the EPA AIR Explorer web site: **http://www.epa.gov/airexplorer/**
3. Under **DATA** on the upper right side of the page, select **Query Concentrations** by clicking on the table icon, or click on Query Concentrations from the menu on the left side of the page.
4. You should be on the Query Concentrations page.
   - Under **Step 1: Select Pollutant**, select **Ozone**.
   - Under **Step 2: Select a County, MSA or State**, select your **State**.
   - Under **Step 3: Select a Site**, select **All Sites**.
   - Under **Step 4: Select Dates**, select the dates that cover your state's ozone season as determined in step 1 above.
   - Under **Step 5: Select Options**, **keep the defaults** (Include Exceptional Events? = Yes And Download or View Online? = Download)
   - Under **Step 6: Submit Selection**, select **Submit**.
5. Save the data file to your computer by selecting **Save** from the Open or Save Options on the Pop-up window that appears. Name the file [state abbreviation]**Data_AQ1.3**.

Create a SEHIC report in Excel:

6. Open the file named [state abbreviation]**Data_AQ1.3.csv** in Excel.
7. Go to **File** on the menu at the top of the screen, select **Save As**, and save the file as an Excel file.
8. Working from the newly saved Excel file, click anywhere in the worksheet, go to **Data** on the drop down menu at the top of the screen and choose **Sort**. In the sort popup, sort the data first by **COUNTY_NAME**, then by **DATE** and then by **SITE**. For the option **My list has,** select **Header Row** if not already selected.
9. Before averaging concentrations for each county, we first need to average multiple daily measurements for each county so that each date is weighted equally in the county averages. Go to **Data** on the drop down menu at the top of the screen and choose **Subtotals.** In the popup, for the option **At each change in** choose **Date**, for the option **Use function** choose **Average**, and for the option **Add subtotal to** select **Concentration**. Leave the options **Replace current subtotals** and **Summary below data** checked. Click OK.
10. Insert a column after the County_name column (the new column should be J). In the new column, in cell J2, type the formula =IF(I2="",I1,I2). To copy this formula to the other rows in the new column,

click on cell J2, copy the formula (control+C, or do Edit and Copy from the drop down menu). Click in cell J3, hold the shift key, use the scroll bar to go the last row with data, click in the cell for column J, hold down the shift key and paste (control+V or do Edit and Paste from the drop down menu). This formula will fill in all the county names for every row in the worksheet. Label this new column **County2** in the header.

11. Copy the contents of this worksheet and paste into a new worksheet (in the same Excel workbook) using **Paste Special** under **Edit** on the drop down menu to paste values only (check the values box).
12. In the new copy of the worksheet, choose **Autofilter** on the **Filter** option under **Data** on the drop down menu. Click on the down arrow that now appears on the column header for the Date column, and choose **Custom**. In the popup for the custom filter, show rows where Date **contains** (choose the word contains from the options in the first blank) **Average** (type the word Average in the second blank).
13. Copy the contents of this worksheet into a new worksheet (in the same Excel workbook) by using **Paste Special** under **Edit** on the drop down menu to paste values only (check the values box).
14. In the new copy of the worksheet, go to **Data** and then **Subtotals**, and at each change in **County2**, use function **Average**, and add subtotals to the concentration column.
15. Copy the contents of this worksheet into a new worksheet (in the same Excel workbook) by using **Paste Special** under **Edit** on the drop down menu to paste values only (check the values box).
16. In the new copy of the worksheet, choose **Autofilter** on the **Filter** option under **Data** on the drop down menu. Click on the down arrow that now appears on the column header for the **County2** column, and choose **Custom**. In the popup for the custom filter, show rows where County2 **contains** (choose the word contains from the options in the first blank) **Average** (type the word Average in the second blank).
17. You should now see the average concentrations of ozone for each county. Copy and paste the county names and averages to the Excel file **SEHIC Indicator Report Template.xls**, worksheet AQ1.3.