



Name: _____

Group: _____

What's Your AQI?

A. 8-HOUR OZONE EXAMPLE

Suppose you have an 8-hour ozone concentration of 0.0875125 ppm. First you round off the concentration to 0.087 ppm. Then look in the Breakpoints Table under the 8-hour ozone for the range of concentrations that contain this concentration (0.085 – 0.104 ppm). This range in the table for the 8-hour ozone corresponds to index values of 101 to 150. Now you have all the numbers needed to use the AQI equation:

$$I_p = \frac{I_{Hi} - I_{Lo}}{BP_{Hi} - BP_{Lo}} (C_p - BP_{Lo}) + I_{Lo}$$

Where I_p = the index for pollutant p

C_p = the rounded concentration of pollutant p

BP_{Hi} = the breakpoint that is greater than or equal to C_p

BP_{Lo} = the breakpoint that is less than or equal to C_p

I_{Hi} = the AQI value corresponding to BP_{Hi}

I_{Lo} = the AQI value corresponding to BP_{Lo}

$$\frac{(150 - 101)}{(0.104 - 0.085)} (0.087 - 0.085) + 101 = \frac{49}{0.019} 0.002 + 101 = 106.157 = 106$$

--> Therefore, an 8-hour concentration of 0.0875125 ppm corresponds to:
an AQI value: of **106**.

B. MULTIPLE POLLUTANTS EXAMPLE

Suppose you have an 8-hour ozone value of 0.077 ppm, a $PM_{2.5}$ value of $54.4 \mu\text{g}/\text{m}^3$, and a CO value of 8.4 ppm. You apply the equation 3 times:

For Ozone (O_3):	$O_3: \frac{(100 - 51)}{(0.084 - 0.065)} (0.077 - 0.065) + 51 = 82$
For Particulate Matter ($PM_{2.5}$):	$PM_{2.5}: \frac{(150 - 101)}{(65.4 - 40.5)} (54.4 - 40.5) + 101 = 128$
For Carbon Monoxide (CO):	$CO: \frac{(100 - 51)}{(9.4 - 4.5)} (8.4 - 4.5) + 51 = 90$

The AQI is 128 with $PM_{2.5}$ as the responsible pollutant.

