Name: _____ Chem 9 Section: _____
Location: _____
Lab Partner(s): _____ Experiment Date: _____

Air Quality Analysis

Part A: Location Data

Table 2 – Air Quality at location

Location	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	HCHO mg/m^3	TVOC mg/m^3	AQI color and level	Observations

Part B: Regional Data

Table 3 – Air Quality from other sources

	AQI color and level	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$
Weather app			
iQAir			
PurpleAir		N/A	

Analysis and Questions

1. What are three examples of particulate matter (PM) found in air?

2. Explain the difference between $PM_{2.5}$ and PM_{10} in terms of size and health effects.

3. From Table 2 (Location Data), which SMC campus had the highest levels of PM_{10}? Of $PM_{2.5}$? What are possible sources of PM at that campus?

4. Calculate the average of the three $PM_{2.5}$ values in Table 3: _____
   Compare the average Table 3 $PM_{2.5}$ value to the $PM_{2.5}$ value at your location (Table 2). How similar are the values? If different, what could account for the difference?

5. Current U.S. ambient air quality standards for air pollutants are shown in the table at right.

   Which pollutant is the most toxic? Explain, including what a "standard" value represents.

   Which pollutant is the least toxic? Explain

Pollutant	Averaging Time	Level
Carbon Monoxide (CO)	8-hour	9 ppm
	1-hour	35 ppm
Lead (Pb)	Rolling 3-mo. Average	0.15 µg/m^3
Nitrogen Dioxide (NO_2)	1-hour	100 ppb
	Annual	53 ppb
Ozone (O_3)	8-hour	0.070 ppm
Particulate Matter ($PM_{2.5}$)	Annual	9 µg/m^3
	24-hour	35 µg/m^3
Particulate Matter (PM_{10})	24-hour	150 µg/m^3
Sulfur Dioxide (SO_2)	1-hour	75 ppb

National Ambient Air Quality Standards (NAAQS), U.S. EPA

6. Is the average Table 3 $PM_{2.5}$ value higher or lower than standard (table above)? (circle one)

   If that $PM_{2.5}$ is higher than the standard, what does that imply for health?

7. The standard for ozone is 0.070 ppm. Express this value in ppb. Show your work using the stepwise conversion method.

8. Cigarette smoke contains approximately 2% carbon monoxide.
   a. Express this value in ppm. Show your work using the stepwise conversion method.

   b. How does this value compare to the standard in both a 1-hour and 8-hour period?

9. If the AQI rating for the day is “red”, what is the level of health concern? How should your adjust your plans for the day?