Data Collection Worksheet

1

First, let's take a look at the AirBeam Sensor and the particles it measures.

FIGURE 1

The particulate matter sensor inside the AirBeam pulls air into its sensing chamber using a fan. Inside the sensing chamber, light from a laser bounces or scatters off particles in the airstream. The more particles in the air and the smaller those particles are, the more the light from the laser is scattered. A detector located at the edge of the sensing chamber then measures the intensity of the scattered light and uses an algorithm to translate this into a mass based particulate matter measurement.

FIGURE 2
Image Source: South Coast AQMD Community in Action: A Comprehensive Guidebook on Air Quality Sensors

Particulate matter is measured using mass-based units, specifically micrograms per cubic meter, which is abbreviated as ug/m3. An AirBeam measurement of 10 micrograms per cubic meter (ug/m3) means that if you collected and weighed all the particles in the cubic meter of air from which the AirBeam sampled, they would weigh 10 micrograms or 10 millionths of a gram.

2

Before you begin the experiments, reference the "Getting Started With AirBeam3" and "Mobile Monitoring with AirBeam3" videos and connect the AirBeam3 to the AirCasting app.

AirCasting Actions

3

Begin recording a mobile session just before the source is activated and finish the session before moving to the next station.

SOURCE	PM2.5 PEAK	PM2.5 AVG

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Answer the following questions:

a. What source emitted the most PM2.5 and why?

b. What happened when you moved closer or farther from a source; did the concentration of PM2.5 increase or decrease and why?

c. Are the PM measurements in the classroom higher, lower, or the same as when you started this activity; why do you think that is?