

## Assessment of Students

Assessment of student progress towards learning goals occurs throughout the entire lesson sequence. Teachers should be continuously monitoring learning by asking questions, both during class discussions and while students work in groups, to determine if modifications should be made to instructional strategies and activities. Formal assessments occur through evaluation of written materials including:

1. **Measuring Air Pollution:** Students will work in partners or small groups to determine procedures for data collection. As a class, students will collect data. Teachers can gather these to determine if students understand how to conduct the lab.
2. **Contextualizing Air Pollution:** Students will work in small groups or individually to develop a report on the air quality and contributing sources of a selected city. An answer key is provided.
3. **Mystery Town:** The final culminating activity will bring together understanding of sources of air pollution to justify a predicted level of air quality in a mystery location. The first part is completed as a class or in partners. Students will then complete this individually as a final assessment. A rubric and answer key is provided.
4. **Exit Tickets:** To check for individual understanding, the next page provides a list of questions to be used each day of the lesson sequence. These brief questions are an opportunity to assess individuals on the depth and accuracy of learning. Teachers can have students respond in a journal or piece of paper that is submitted at the end of class.

## Exit Ticket Questions

### Day 1: Engage

**Question:** Despite looking “clean”, what pieces of evidence support the idea that the air around us is full of tiny particles? Why don’t we often see these particles?

**Targeted Responses:** For this Day 1 exit ticket, we are simply looking for students to recall the various, recognizable particles in the air. Pollen (can be seen and triggers allergies), Dust (appears on things and is captured in filters), and Exhaust fumes (seen on large vehicles such as trucks). We don’t often see these particles as they are incredibly tiny, as compared to a grain of sand!

### Day 2: Explore

**Question:** Air is air, right? How might it be possible that our air monitors have different PM 2.5 readings when measuring air at different locations?

**Targeted Responses:** For this Day 2 exit ticket, we are checking that all students recognize that the air in a given location can change in quality based on its composition. We are building to the idea that specific features of a location contribute particles, so prior to that idea, all students must recognize that not all air is the same.

### Day 3: Explain

**Question:** Write down five “types” of air pollution. State whether they are natural or man-made and write down what *causes* those pollutants to enter the air.

**Targeted Responses:**

Examples:

1. Pollen is a natural air pollutant which comes from trees and flowers in the springtime.
2. Exhaust smoke is a man-made pollutant which comes from large trucks burning gas.
3. Smoke from powerplants is a man-made pollutant which comes from burning coal/oil.
4. Smoke from wildfires is a man-made pollutant which comes from burning plants.
5. Outside dust is a natural pollutant which comes from the ground and wind.
6. Indoor dust is a natural pollutant which comes from skin, pet dander and other things.

### Day 4: Elaborate

Complete and submit “Contextualizing Air Pollution” in small groups of 2-4 students.

**Targeted Responses:** See supplemental materials for both a blank template and sample completed report worksheet.

### Day 5: Evaluate

Individual Mystery Town Quiz - See Mystery Town activity for the individual assessment questions.