

# POLLUTION SOLUTION

## Life Skills

- ◆ Predicting and Collecting Data
- ◆ Written Communication Skills



# LESSON FIVE: AIR POLLUTION

**KEY CONCEPT:**

Students predict where their school has the most air pollution and test the areas with “pollution catchers.” After 24 hours, the catchers are collected and examined.

**SUBJECT MATTER OUTCOME:**

Students learn about where air pollution is worst in their environment and learn about what causes it.

**TARGETED AGE:** 5<sup>th</sup> Grade

**TIME NEEDED:** 2 class periods  
 45 minutes for introduction and initial slide activity  
 30 minutes after collecting slides to process results

**MATERIALS NEEDED:**

- Wax paper
- Petroleum jelly
- Tape
- Cardboard
- Magnifying glass or microscopes

**ADVANCE PREPARATION:**

Review *Project Overview* and *Background Basics*

**FLORIDA'S SUNSHINE STATE STANDARDS:**



- |            |            |
|------------|------------|
| HE.A.1.2.2 | LA.B.1.2.3 |
| HE.A.1.2.5 | LA.B.2.2.3 |
| HE.A.1.2.6 | LA.D.1.2.2 |
| HE.B.1.2.2 | LA.D.2.2.1 |
| HE.B.3.2.2 | MA.E.3.2.1 |
| HE.B.3.2.5 | SC.H.1.2.2 |
| LA.B.1.2.1 | SC.H.1.2.3 |
| LA.B.1.2.2 | SC.H.1.2.4 |

## LET'S BEGIN

Most people think air pollution is something that only occurs outside, but it is possible to have indoor air pollution as well. Who can give the class a definition for air pollution? (*Anything put in the air by man that can interfere with the health, comfort, and/or safety of any living thing in that environment; air pollution can be harmful, causing health problems and diseases in some people*)

What causes air pollution? Where does it come from? Responses will vary, but may include vehicles, burning fossil fuels or wood, fumes from toxic cleaners, aerosol sprays, landfills giving off methane.

Air pollution not only harms humans, but it also has serious effects on the environment. The protective ozone layer above the Earth has been substantially thinned due to air pollution. Plants, water, and animals can all be harmed by pollution. Air pollution is so powerful that it can even damage buildings, statues, and other structures.

Now that you have some basic information about air pollution, where do you think the most air pollution is around our school? Responses may include bus drop-off, parent pick-up, dumpster area, playground, inside the classroom, etc. How about the least?

How would we be able to know for sure what level of pollution different locations have? Remind students of prior activities where they set up an experiment and collected factual data (*Household Hazards, Mold*).

We need to set up an experiment to test where there is the most pollution around our school. To do that, we need to make “air pollution catchers.” Divide students into small groups.

## FAST FACTS

It would take 20 of today's new cars to generate the same amount of pollution as one mid-1960s model car.

did you know?



## Day 1 - Creating Slides

**STEP 1:** First, cut out 2 cardboard squares that are 3" x 3". Each group needs to create 2 squares.

**STEP 2:** Take one square and write the word **MOST**. Underneath **MOST**, write the location that your group thinks will have the most pollution.

**STEP 3:** Repeat the same process with the other square using the word **LEAST**. Underneath **LEAST**, write the location that your group thinks will have the least pollution.

**STEP 4:** On the clean side of each square, tape a piece of wax paper and then apply a thin layer of petroleum jelly to the wax paper. Assign each individual slide its own number prior to placing them at their locations. Make sure groups note the number given to each of their slides.

**STEP 5:** Now we are going to place the squares in the places you think have the most and least pollution. Leave slides in a place where they will not be disturbed for **at least 24 hours** (longer for better results). You may want to let the janitorial staff know about the project so the slides will remain undisturbed.

## Day 2 - Analyzing Slides

**STEP 1:** You will need to collect the slides ahead of time so that students will be able to perform the next part of the activity without bias.

**STEP 2:** Now that our slides are collected, I want you to put them in order from cleanest to dirtiest without looking at where they came from. Do not let students look at the back of the cards. Once they have placed all the slides in order, draw a graph on the board.

**STEP 3:** Flip over the slides so that students see how close they were to their predictions. On the board record the final results (cleanest to dirtiest).



# EXTRA! EXTRA!

## LET'S REFLECT

1. What did you base your predictions on? What made you think an area would have more or less pollution?
2. Were our classroom results different from your predictions...
  - about the location of the **MOST** pollution?
  - about the location of the **LEAST** pollution?
3. What process did we use to determine the levels of pollution around our school? How did labeling the catchers help you collect data efficiently?
4. What personal safety tips will you include in your news article about school air pollution?



# THINK ALL ABOUT IT!



## QUICK FACTS

Air pollution is defined as anything put in the air by man that can interfere with the health, comfort, and/or safety of any living thing in that environment.

Symptoms from pollution may include:

- burning eyes and nose
- itchy, irritated throat
- breathing problems

Air pollution not only harms humans, but it also has serious effects on the environment.

- The protective ozone layer above the Earth has been substantially thinned due to air pollution.
- Plants, water, and animals can all be harmed by pollution.
- Air pollution can damage buildings, statues, and other structures.

There are many steps one person can take to lessen his/her personal contribution to air pollution.

- Limit driving. Carpooling, walking, or riding the bus can make a big impact.
- Limit dry cleaning. The chemicals released in dry cleaners have a big impact on the amount of air pollution in an area.
- Conserve energy. We release less harmful chemicals into the air and help keep air pollution levels down when we conserve energy.
- Consume fewer products. “Reduce, reuse, and recycle” plays a big part in decreasing the amount of air pollution introduced into the environment.

## LET'S APPLY

1. Why is organization so important when you are doing experiments?
2. Could you use the results we found here at school to predict where you would find high levels of pollution in your home? In your community? What additional factors would you need to include?
3. How can you transform your data into information that is easy for people to understand? Why is it important to use a variety of different techniques for different types of readers (learners)?
4. How can experiments help convey a message and add credibility to a report? What other types of experiments, statistics, or surveys can you think of that are used to support a particular viewpoint?

# IN TODAY'S EDITION...

FROM THE  
EDITOR'S DESK

*This assignment is part of a series of newspaper-related pieces that each student will include in his/her own Children's Environmental Health Newspaper. At the conclusion of this unit, students will bring the newspapers home to educate parents and other family members about the possible dangers in their own environments.*



## Have students:



- Write a NEWS ARTICLE to summarize the results of the air pollution experiments.
- Create a graphic or picture for the news article. Include a caption for the graph. Use a sketch of the experiment setup, a location where there was a high level of pollution, or a some other type of graphic showing the results.

To aid students in creating the above newspaper pieces, provide them with the Editor's TIP SHEET on "Writing a News Article" and the Editor's TIP SHEET on "Using Graphics and Advertising".

*Need more ideas? Below are activities that can be integrated into this lesson for a challenge or to simply provide variety.*

- Have students conduct this experiment at home and see where the most and least amounts of air pollution are present.
- Discuss which locations around your city would have the most air pollution. Which would have the least?
- Create action plans to help reduce air pollution in homes and schools.



## NOTES: