

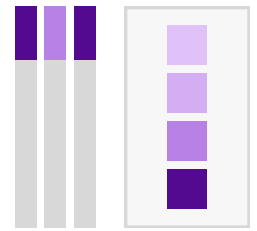


OWWL PATCH

Investigating Air Quality with Ozone Test Strips



Patch



Activity

About OWWL

Ozone Where We Live (OWWL) is a NASA project that studies air quality in California's San Joaquin Valley. Kids and families can help by placing simple sensors at homes, schools, or other locations—or even by flying sensors on planes—to collect data that helps scientists track and predict pollution.

Why Do Scientists Study Ozone?

In places like California's San Joaquin Valley, heat, sunlight, and pollution from cars, farms, and factories can combine to create high ozone levels. By measuring ozone in different places, scientists can learn where pollution is strongest, how weather affects air quality, and how to help keep communities healthier.

Activity

In this activity, we are going to explore differences in ground-level ozone around their community using ozone-sensitive test strips. Design an experiment, collect ozone data from multiple locations, and analyze how factors such as traffic, sunlight, and environment affect air quality.

Materials Needed

- Potassium iodide
- Corn starch
- Distilled water
- 250 mL beaker
- Stirring rod or spoon
- Hot plate
- Oven mitt
- Filter paper
- Small paintbrush
- Glass or plastic plate
- Scissors
- String or wire
- Zipper storage bags
- Pen or marker
- Spray bottle with distilled water
- Access to Google Maps or Google Earth

Time Needed

- 8 hours for each exposure of the paper
- 1-2 days to analyze the results and make conclusions
 - Best completed over 2 days so the test strips have enough time to dry and collect ozone data outdoors.

OWWL PATCH ACTIVITY

1. Make the Ozone Solution

- Pour 100 mL of distilled water into a beaker.
- Add 1¼ teaspoons of cornstarch.
- Heat and stir until the mixture thickens, then remove from heat.
- Add ¼ teaspoon potassium iodide and stir well.



2. Prepare the Test Strips

1. Place filter paper on a plate, then brush both sides of the paper with the solution.
2. Let the paper dry away from direct sunlight.
3. Cut the paper into 1-inch strips.
4. Store strips in a sealed bag until ready to use.

3. Plan Your Investigation

Choose:

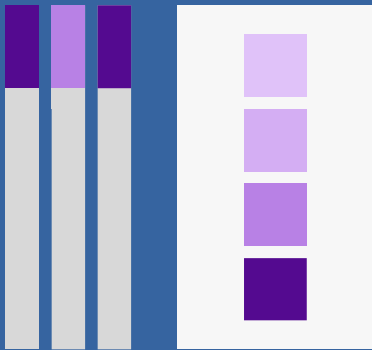
- 2 locations where you expect higher ozone (hint: near busy roads)
- 2 locations where you expect lower ozone (hint: near parks, trees)

Write a hypothesis predicting where ozone levels will be the highest and lowest.



4. Collect Your Data

1. Lightly spray a test strip with distilled water.
2. Hang the strip outdoors in a shaded area.
3. Leave it outside for about 8 hours.
4. Label each strip with its location.
5. Store collected strips in sealed bags if you are not analyzing them right away.



5. Analyze Your Results

1. Spray the exposed strips again with distilled water.
2. Observe the color change and record your observations.

What the Colors Mean

- Darker purple = more ozone
- Lighter color = less ozone

6. Discussion Questions

- Where on the map were the concentrations the highest? The lowest?
- Looking at the area of highest concentration, does there appear to be any obvious explanation for the variation?



Get your patch at:
tinyurl.com/ames-earth-science-patch