



## Ozi and Me The Day of The Big Fire Lesson II



### **Objective:**

Students will better understand the causes and effects of Ozone in their geographic area and what can be done about it by writing a research paper or creating a video presentation.

**Grade Levels:** 6 – 8 (middle school); 9 – 12 (high school)

### **Subjects:**

- 6<sup>th</sup> grade – Energy in the Earth System (Earth Science), Ecology (Life Science), Resources, and Investigation & Experimentation
- 7<sup>th</sup> grade – Investigation & Experimentation
- 8<sup>th</sup> grade – Investigation & Experimentation
- High School – Ecology, Energy in the Earth System (Earth Science), Structure & Composition of the Atmosphere, and Investigation & Experimentation

### **California Science Standards:**

#### **6<sup>th</sup> Grade:**

- Energy in the Earth System 4e
- Ecology 5e
- Resources 6b
- Investigation & Experimentation 7a, 7d, & 7e

#### **7<sup>th</sup> Grade:**

- Investigation & Experimentation 7b & 7c

#### **8<sup>th</sup> Grade:**

- Investigation & Experimentation 9a

#### **High School:**

- Ecology 6b
- Energy in the Earth System 6d
- Structure & Composition of the Atmosphere 8c
- Investigation & Experimentation 1d, 1l, & 1m

### **Materials:**

- Access to a Computer



### **Background:**

Some background in this lesson is taken from NASA's Aura mission to better understand and protect the air we breathe: <http://nasascience.nasa.gov/missions/aura>

- Students should be aware that local governments struggle to meet their national air quality standards. It has become very important for local governments to understand the sources and transport of air pollutants.
- Most pollution sources are local, but satellites show that winds can carry pollutants great distances. Pollution can carry from the western and mid-western states to the East Coast of the United States.
- Southeast Asia contributes to poor air quality in India. Pollutants crossing from China and Japan can reach the West Coast of the United States.
- Pollutants originating in the United States can reduce air quality in Europe. Ten percent of the gasses that can become Ozone in the United States may originate from outside the U.S.
- The Los Angeles basin is a primary source of wind blown smog into the high desert.
- Inter-regional and inter-continental pollution transport is an important subject.

### **Procedure:**

- Since Ozone is the most difficult to control of all the criteria pollutants, students should understand the origin and potential transport of Ozone to and from their area of the world.
- Teachers should assign different areas of their country or of the world to different students. Students should research Ozone in their assigned region and the potential sources and geographical factors that may transport Ozone to or from their regions. If no data can be found on an individual student's geographic area and Ozone, the student may pick a different area of the country or world which interests them to do their report.
- Students should write a report or make a video presentation, which addresses the following questions:
  1. What human activities contribute to the production of Ozone in their region?
  2. What are the levels of Ozone in their region? Are they above or below the Air Quality Standards for Ozone set by their region?
  3. Does the Ozone in their region contribute to air quality problems in other regions or does the air quality in other regions contribute to the Ozone levels measured where they are?
  4. What can be done to reduce the amount of Ozone in the air?
  5. Why is the depletion of Ozone in the Stratosphere not a good thing compared to depletion of Ozone in the Troposphere?

### **Conclusion:**

What can you and your family do TODAY in order to help our Ozone problem?

