HANDOUT

Introduction to Air Quality Data Analysis

Name: _____ **Date:** _____

Introduction

Texas is known for its wide, open skies and bright summer days. However, sunny weather and pollutants from cars, trucks, and factories can cause our air to become dirty and unhealthy, especially for Texans who are sensitive to air pollution. Two things that can cause the air to become unhealthy are **ozone** and **particulate matter**.

What is Ozone?

Ozone is a gas that forms when three oxygen molecules bond together. It performs a very important job in our upper atmosphere by protecting the earth from the sun's harmful rays. This blanket of ozone is called the **ozone layer**. However, when ozone is at high enough concentrations in our lower atmosphere, where we breathe air, it can be harmful to humans.

What is Particulate Matter?

Particulate matter is a mixture of small particles and water droplets in the air. When it is present in large amounts, it is unhealthy for people to breathe, especially if they have asthma or other health conditions that might make them sensitive to air pollution.

How Do We Measure Air Quality?

Scientists use instruments called "air monitors" to measure **air quality** where we live and play. By tracking the amounts of ozone and particulate matter, we can determine how clean or dirty our air is. To make it easy to understand, scientists created a color chart. This chart is called the **Air Quality Index (AQI)**. The colors move from green to purple, with green being healthy, clean air and purple being very unhealthy air.

How Can Texans Help?

The easiest way for us to help reduce air pollution is to walk or ride our bikes instead of driving short distances, turning off lights when we leave the room, and carpooling or taking the bus to school.

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How is our customer service? www.tceq.texas.gov/customersurvey

Procedure

View the EPA's AirNow webpage on a computer.

1. Find your town or region on the map. What color is it?

2. Find another city on the map. What is the name of the city? What color is it?

3. List three Green cities that you can see on the chart.

4. List two Yellow cities that you can see on the chart.

5. Find an Orange city. Write it below.

6. What are the health concerns for Orange AQI days?

7. Why is it important for scientists to track air quality?

8. Why is it important for us to know how to read the AQI chart?

Now visit the EPA's AirCompare webpage.

1. Select your county and record how many days you had in the most recent year with an AQI of orange or higher. If your county is not there, you can use the closest county to your own.

2. Compare your county to a friend or family member's county. Which one of your counties had the highest number of days with an AQI of orange or higher?

3. If air quality is affected by sunny weather, where in the United States would we expect to see the highest amount of days with an AQI of orange or higher?

4. List actions you can take to reduce your personal impact on air quality.

Glossary

- **Air Quality** – the degree to which the air we breathe is free of pollution.
- **Air Quality Index (AQI)** – a chart used to communicate how clean or dirty the air is using colors.
- **Ozone** – a highly reactive inorganic gas formed by three oxygen atoms.
- **Ozone Layer** – a blanket of ozone molecules that resides around 6 to 30 miles above the earth's surface.
- **Particulate Matter** – a mixture of solid and liquid pollutants in the air.