

EPA Phoenix
Student Form
Level 2

Group Login _____

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Web sites used in EPA Phoenix

<http://www.epa.gov/agweb/> (AIRS Graphics Home Page)
http://www.epa.gov/region09/air/maps/r9_o3.html (Ozone Map)
<http://www.phx.noaa.gov/climate/index.html#historical> (Climate Data)
<http://www.arizonatourism.com/cities/photos/default.htm> (Photo Gallery)
<http://www.epa.gov/region09/air/> (Search Tool)

STUDENT VERSION

Introduction

Every year, the Far West Tri-State Junior Soccer League holds championship games in the Arizona/California/Nevada tri-state region. Within the next few years, the League needs to find a new home for the games. The location must meet the following requirements:

- The air quality needs to be fairly good but it doesn't need to be perfect.
- If the location has air pollution, the League must be convinced that the air quality is likely to improve there in the future.
- The weather during the games should not be too hot.

Phoenix, Arizona is one of the finalist cities. The Soccer League wants you to:

- research the air quality and climate in Phoenix
- recommend if Phoenix would be a good location, explain why, and use evidence from the Web sites to support your recommendation
- recommend what season to hold the games (should they choose Phoenix), and explain why
- research how one pollutant, ozone, could affect the soccer players' health

Part A. Daily Pollution Trends in Phoenix

The U.S. Environmental Protection Agency (EPA) collects data on air quality in cities and counties throughout the United States and posts the data on its Web site. You will look at data on three major pollutants -- carbon monoxide (CO), ozone (O₃), and

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particulate matter (PM10). Most of your attention will be spent on ozone. The EPA sets standards for how much of each pollutant is legally permitted.

DIRECTIONS: On the Web, you will go to the EPA's AIRS Graphics Web site. It contains maps and charts for air pollution levels, including PSI (Pollution Standards Index) charts, which show daily pollution values for cities and counties in the United States.

You will generate three PSI charts for Phoenix for the years 2000, 1999, and 1998. Generate the chart for 2000 first, then answer questions 1 and 2.

Item 1. What are the abbreviated names of the three pollutants that are charted on your graph?

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Item 2. Each data point on the chart represents the amount of pollution on a particular day. On what part of the chart are the unhealthy days? (Circle the one correct answer.)

- a. top part
- b. middle part
- c. bottom part

Item 3. The table below is meant to show the number of unhealthy and very unhealthy days in Phoenix from 1998-2000. Fill in the table. Follow these steps as you go along.

- Step 1. Fill in cells on the table for the year 2000.
- Step 2. Bring up a PSI chart of Phoenix for the year 1999.
- Step 3. Fill in cells on the table for the year 1999.
- Step 4. Repeat Steps 2-3 for the year 1998.
- Step 5. Calculate totals.

Table for Item 3.
Number of unhealthy and very unhealthy days in Phoenix from 1998-2000.

	Jan-Mar	Apr-June	July-Sept	Oct-Dec	Total
2000					
1999					
1998					
Total					

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DIRECTIONS: Use your table and the PSI charts to answer Items 4-6. You may want to regenerate the three charts to examine the data.

Item 4. How did the air quality in Phoenix change from 1998 to 2000?

Item 5. What do you think is the least polluted three-month period in Phoenix? (Circle one answer. Use your best judgment. Any answer can be correct.)

- a. January-March
- b. April-June
- c. July-September
- d. October-December

Item 6. Use evidence from the PSI charts to explain why the 3-month period you selected is the least polluted.

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Part B. Comparing Phoenix to Other Locations

DIRECTIONS: Click http://www.epa.gov/region09/air/maps/r9_o3.html. A map will appear. The map shows locations in the three states and rates them on whether they have been attaining EPA standards for ozone. Study the map and what's written about it on the sides. Answer questions 7-11.

Item 7. According to the map, what area is severely polluted and has been given 15 years by law to meet the standards? (Circle the one correct answer.)

- a. Phoenix
- b. San Francisco Bay Area
- c. Ventura
- d. South Coast

Item 8. According to the map, which labeled locations have a worse ozone problem than Phoenix?

Item 9. How can you tell?

Item 10. Finish the sentence:

The map would be more helpful to the Soccer League if it had... (Circle the correct answer)

- a. more states on it
- b. larger letters
- c. information that is more recent
- d. information about water pollution too

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Item 11. Do you think that Phoenix would be a good site or a bad site for the League's championship games? Explain why. Support your answer with evidence from:

- the PSI charts
- your table of unhealthful days
- the ozone map

Part C. The Climate of Phoenix

Item 12. Find and write down the average high temperatures in Phoenix during these four months in the year 2000:

February:

May:

August:

November:

(Each is the second month of a 3-month period you examined on the PSI Charts.)

TO ANSWER QUESTION 12, FOLLOW THESE STEPS:

Step 1. Click <http://www.phx.noaa.gov/climate/index.html#historical> to access historical climate data about Phoenix.

Step 2. Generate a table of climate data for February 2000.

Step 3. On the table, find the average high temperature for that month.

Step 4: Repeat Steps 2-3 for the other three months.

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Item 13. From what you learned in Item 12, what three-month period in Phoenix has the best climate for the games? (Circle one answer. Use your best judgment. Any answer can be correct.)

- a. January-March
- b. April-June
- c. July-September
- d. October-December

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Part D. Research Health Effects of Ozone.

Item 14. Click <http://www.epa.gov/region09/search.html> to go to a search engine hosted by the EPA's Region 9 Web site (Region 9 covers Arizona, California, and Nevada). Use the search engine to find a Web site that explains how ozone could affect peoples' health.

- Do two searches with two different search phrases
- Record below the search phrases you used and the number of documents the searches yielded
- Answer Item 15

My first search phrase:

Number of documents:

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My second search phrase:

Number of documents:

--	--

Item 15. Which of your two search phrases got better results. What makes it better?

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Item 16. Find information about the effects of ozone on human health in one or more of the documents. Summarize in one or two sentences what you learn. Also, write down the Web site's URL (universal resource locator).

Summary:

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URL :

(If the URL has more than 20 characters, you may copy and paste it into the end of your report or presentation file instead of writing it in here.)

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Part E. Your Recommendations

Item 17.

DIRECTIONS: Write an electronic report or create an electronic presentation for the Soccer League. Your final project will contain:

- a) your recommendations about:
 - whether Phoenix would be a good location, with supporting evidence from your table or from the Web sites that shows you have met the League coordinators' requirements
 - what 3-month period they should hold the games if they pick Phoenix, and why
- b) the mean air temperature during the middle month of the 3-month period you recommend (look at your answer to question 11)
- c) health effects of ozone that could affect the soccer players if Phoenix is picked

Your letter or presentation should also contain:

- a) an introduction
- b) clear, logical organization
- c) complete sentences and good grammar (i.e., correct spelling and punctuation)
- d) a bibliography of sources you used
- e) **(if you write a report on the computer using a program your teacher has made available to you):** graphics that support your text, (if technically possible on your computer)
- f) a caption for at least one graphic
- g) **(if you write a report on the computer using a program your teacher has made available to you):** a title that is centered AND in a different font size than the body of report
- h) **(if you create a slide presentation using a program your teacher has made available to you):** multiple slides AND, a title that is in a different font size than the body of the presentation