Greenhouse Effect Student Activity Book

I. Introduction

The greenhouse effect is an increase in the average temperature of the Earth. It happens because certain gases absorb infrared heat that would normally be radiated into space. Infrared light is what you feel as heat from heat lamps used in restaurants to keep French fries hot. It also causes the heat you feel from ordinary light bulbs. Since carbon dioxide absorbs this heat, the more carbon dioxide there is in the atmosphere, the warmer the air will be. If the air gets too hot, the balance of life will be disrupted. Species of plants and animals will die. The food chain could be upset. This would cause many serious problems worldwide.

Get Info Objectives

- 1. Identify greenhouse gases.
- 2. Determine why some proposed replacements for greenhouse gases wouldn't work.
- 3. Determine the percentage of the various greenhouse gases' effects on global warming.

Gather Data Objectives

- 1. Determine the change in the concentration of carbon dioxide in the air.
- 2. Determine the possible causes of the greenhouse effect.
- 3. Determine the link between industrialization and the greenhouse effect.

Application Objectives

- 1. Hypothesize reasons for increases in production of certain greenhouse gases and propose solutions to global warming.
- 2. Infer what international problems need to be addressed to stop the greenhouse effect.
- 3. Describe the effects of global warming on humans and on plants.

Before doing anything else, add the NOAA Research "Greenhouse Effect" site to Bookmarks or Favorites on your web browser.

II. Get Info

A. Greenhouse Gases

- Click on the "Greenhouse Warming" site.
- Read the information and answer the following questions.



1. What are some greenhouse gases other than CO_2 ?

Chlorofluorocarbons (CFCs) were used in refrigerators and spray cans. They cause the ozone hole. Perfluorocarbons (PFCs) were thought to be a good alternative to CFCs since PFCs don't destroy ozone.

2. What are two reasons PFCs are a bad alternative to CFCs?



- Click "Back" to return to Greenhouse Effect "Get Info.1" web page.

B. Contributions of Gases

- Click on the "Major Greenhouse Gas" site.
- A. What is the least important greenhouse gas? _____
- B. What in the most important greenhouse gas? -
- C. Which greenhouse gas destroys another greenhouse gas?
- Click "Back" to return to the NOAA Research Greenhouse Effect home page.

III. Gather Data

A. Change in CO_2



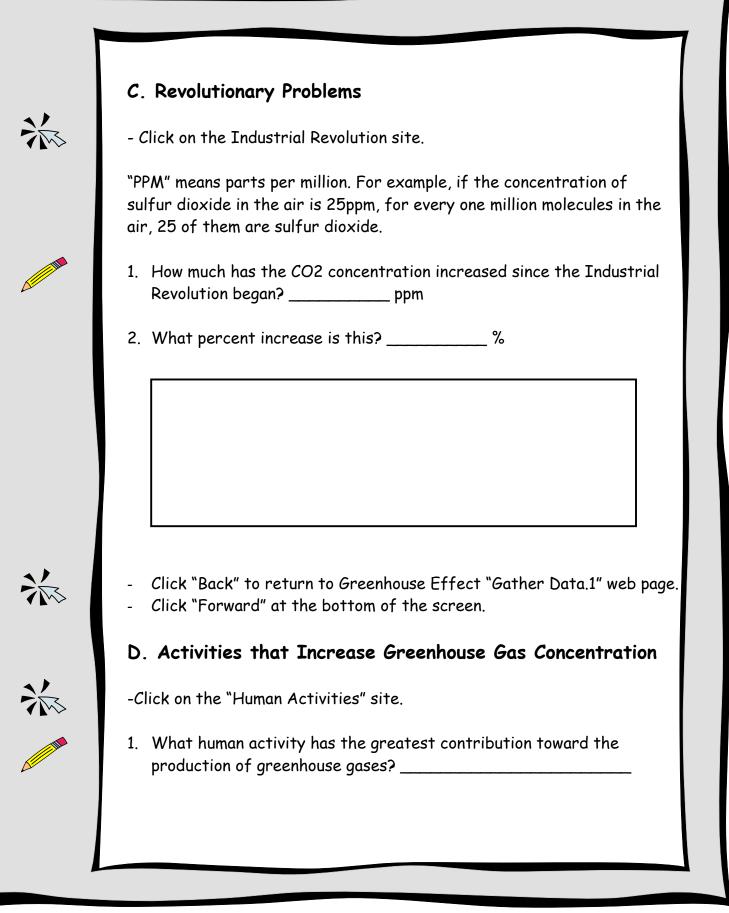
- Click on the CO2 Monthly Mean site.
- 1. What is happening to the concentration of atmospheric CO_2 ?
- Click "Back" to return to Greenhouse Effect "Gather Data.1 web page.

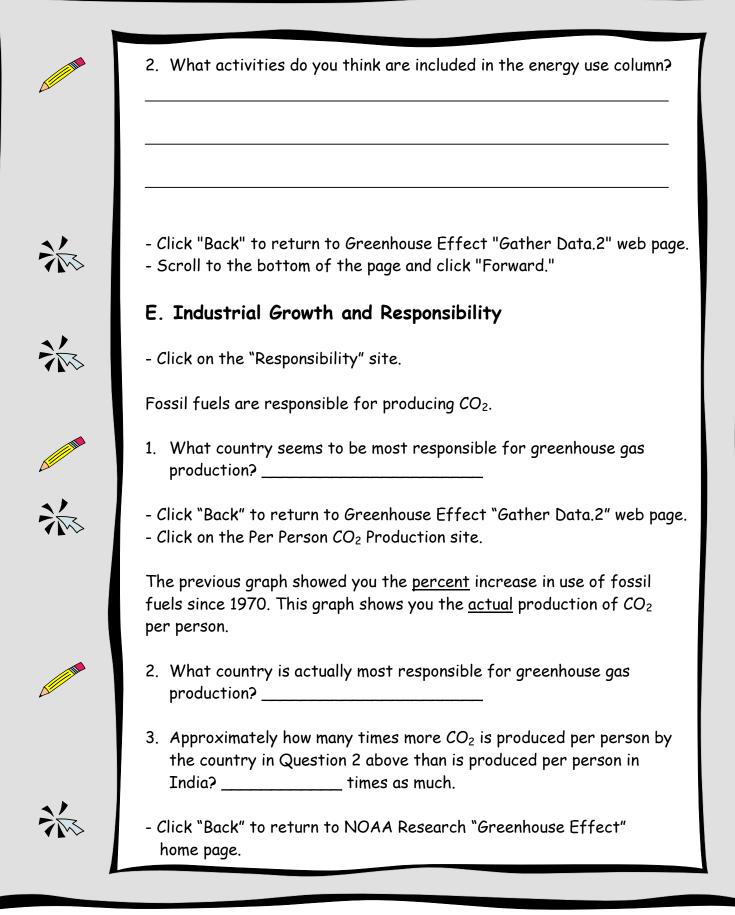
B. Timeline



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- Click on the Possible Future site.
- 1. If there are no efforts to stop the greenhouse effect, what is the range of possible temperature increases predicted to be by the time you are 50 years old? ______ °C to ______ °C
- Click "Back" to return to Greenhouse Effect "Gather Data.1 web page.







A. Reasons for Increase

- Click on Application
- Click on the Sources of CO₂ site.
- 1. Why might India's use of fossil fuels have increased so dramatically from 1970 to 1989?



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- Click "Back" to return to Greenhouse Effect "Application.1" web page.

B. Ways to stop the greenhouse effect

- Click on the Summary site
- 1. What can we do to slow the global warming increase due to the following gases?

Carbon	Dioxide	
Cui Don	DIOXIGE	

Methane

Nitrous Oxide
CFCs
 Click "Back" to return to Greenhouse Effect "Application.1" web page. Click on the "Slow Warming" site.
2. What else can we do to slow global warming?
 Click "Back" to return to Greenhouse Effect "Application.1" web page. Click "Forward" at the bottom of the screen.

C. Cartoon



- Click on the "Cartoon" site.
- 1. What is the point of this cartoon?



- Click "Back" to return to Greenhouse Effect "Application.2" web page.

D. Effects of Global Warming

1. Predict the economic effects on people affected by increasing global temperatures.

2. Predict the effects on plants affected by increasing global temperatures and increased carbon dioxide concentration.

V. Enrichment Activities

A. Research

- 1. Research Venus' greenhouse effect. How is it different from Earth's greenhouse effect?
- 2. Research ozone's role as a greenhouse gas. Find out which greenhouse gases destroy ozone.
- 3. Mars' atmosphere has a high concentration of carbon dioxide. Find out why Mars is so cold despite a high percentage of atmospheric CO_2 .
- 4. Develop a plan for all countries to help decrease the greenhouse effect.

B. Related Web Sites

- 1. Climgraph Educational Graphics on Global Climate Change http://www.fsl.noaa.gov/outreach/education/climgraph/
- 2. Climate Monitoring and Diagnostics Laboratory http://www.cmdl.noaa.gov
- CMDL Observatory Operations sites Links to stations in Alaska, the South Pole, Samoa, and Mauna Loa in Hawaii http://www.cmdl.noaa.gov/obop/