



Character Education



Cooperation

Middle School - September, 2005

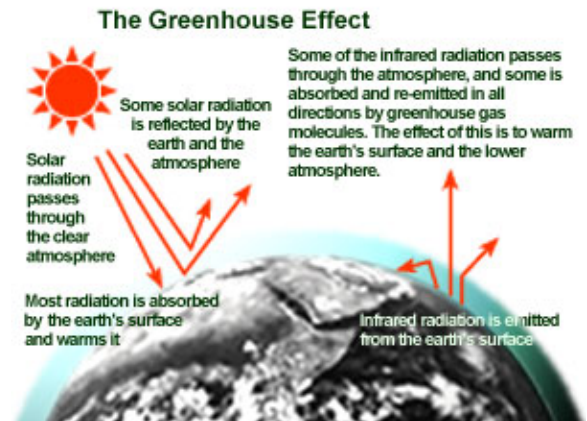
“Working with others to accomplish a common purpose.”

Dear Teacher:

On behalf of the Broward County Environmental Protection Department, welcome back to school! **Cooperation** is essential for almost every aspect of our lives. Students will learn how to work together to accomplish the goals of this activity just as we all need to **cooperate** in order to decrease the greenhouse gases in our environment. Only by working together will we be able to ensure the health of our planet.

Global Warming

Global warming is a subject that has received a lot of attention over the last decade, both in the media and the scientific world. While it is a subject of much debate, one thing not debated is that the temperature of the earth's surface has increased by 1°F over the last century. Global warming is the increase in temperature of the earth by greenhouse gases emitted into the atmosphere by natural or man made causes. Greenhouse gases include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). The greenhouse effect is a naturally occurring process where the sun's rays strike the surface of the earth and warms it. After striking the earth's surface, the rays are reflected back into space, but a portion of them remain trapped in the earth's atmosphere by water vapor, carbon dioxide and methane. Without the natural greenhouse effect, the earth's temperature would be significantly colder (by about 59°F). While greenhouse gases do occur naturally in the environment, manmade sources include industry, deforestation and the burning of fossil fuels such as coal, oil and natural gas. The increases of these sources, and consequently these gases being emitted into the environment, has caused more and more heat to be trapped near the earth's surface, causing the rise in temperature we have been experiencing.



Activity: The Greenhouse Effect Debate

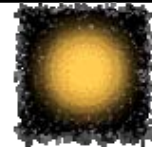
This activity focuses on the international debate over the “Greenhouse Effect,” possible causes for it, whether we should be concerned and take action to reduce the greenhouse effect, or whether there is no problem to be worried about. Have students work in groups collecting information on the greenhouse effect, and evidence for and against the possibility this phenomena exists. While doing the research, students should be identifying what effect global warming might have on the earth and what possible solutions exist. This will be followed by a group debate about the greenhouse effect. As they offer their views, they should support their position with evidence from their research. Positions and evidence should be scrutinized by the group according to scientific merits, verifiability, weight of evidence and influences by outside parties.

Questions to Consider:

- What are the greenhouse gases involved in global warming?
- Which of these gases are produced the most in South Florida?
- What impact might CO₂ emissions have on overall global warming?
- Is there evidence of a strong connection between CO₂ emissions and global warming?
- What impact have emissions from air conditioners had on global warming?
- How is the ozone layer related to global warming?
- Would the earth be warming as quickly if we had not invented and used cars for our transportation?
- How much scientific weight should we place on the results of these investigations about global warming?

Resources:

commtechlab.msu.edu/sites/letsnet/noframes/subjects/science/b5u112.html
 yosemite.epa.gov/oar/globalwarming.nsf/content/index.html
 www.globalwarming.org/
 www.npr.org/templates/story/story.php?storyId=1893089&sourceCode=gaw
 www.dep.state.fl.us/air/pollutants/greenhouse.htm
 www.pbs.org/wgbh/nova/ice/greenhouse.html
 www.ucar.edu/learn/1_3_1.htm
 earthguide.ucsd.edu/earthguide/diagrams/greenhouse/



Autumn Equinox Is September 22nd

The autumn equinox is when there is exactly 12 hours of daylight and 12 hours of darkness at the earth's equator. This is because the equator is in the direct path of the sun, so day and night are of equal length. After this day, in the northern hemisphere, the night will be longer than the daytime. Also on this day, the sun will rise for the first time in 6 months at the south pole!

Remind your students never to look directly into the sun. Permanent eye damage can occur.



Announcing the 2005-2006

EnvironmentTile Contest

Theme: Protecting Florida's Environment

Deadline for entries is December 2, 2005

Prizes to be awarded in January, 2006

Grand Prize — family 4-pack of passes to *Walt Disney World!*

2nd Place—2-pack of passes to *Sea World*

3rd Place—family 4-pack of passes to *Miami Seaquarium*

To obtain contest information and rules, visit www.broward.org/kids and click on the Environmental Kids Club button. Contact us at airoutreach@broward.org or 954-519-1220