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Everyone Counts

The Science of Global Atmospheric Change: Activity 11

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Everyone Counts (post-assessment)

The objectives of this activity are aligned with the National Science Education Standards, specifically those related to Science as Inquiry and Physical Science. "Everyone Counts" provides a review of ideas covered in this unit and helps students to reach conclusions regarding the importance of the global environment and their health. Students will write persuasive letters and examine and revise the pre-assessment they completed at the beginning of the unit. They will make comparisons, infer, identify relationships, and apply prior knowledge to new situations.

This activity reinforces the concept that students are able to influence their own health and that of the planet.

Student Worksheets

Student pages in the teacher's guide are provided in English and in Spanish.

Reference

Moreno N., and B. Tharp. (2011). *The Science of Global Atmospheric Change Teacher's Guide*. Third edition. Baylor College of Medicine. ISBN: 978-1-888997-76-7. Development of this student activity was supported, in part, by grant numbers R25 ES06932 and R2510698 from the National Institute of Environmental Health Sciences of the National Institutes of Health to Baylor College of Medicine.

Image Reference

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Key Words

lesson, assessment, global change, global warming, climate change,

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Materials

- Crayons or markers
- Drawing paper
- Pencils or pens
- Copy of “Do You Know?” page

Do You Know?

Name _____

Circle the letter beside the correct answer to each question below.

- Where are fossil fuels found?
a. In a Geomuffin
b. Underground
c. In a tree
d. In the atmosphere
- Why is your skin important?
a. It sends messages to the circulatory system.
b. It can get sunburned.
c. It helps keep germs out of the body.
d. It has no layers.
- What is the source of almost all energy on Earth?
a. The moon
b. The sun
c. Electricity
d. The water cycle
- Most air pollution is found in which layer of the atmosphere?
a. Thermosphere
b. Mesosphere
c. Stratosphere
d. Troposphere
- Which of the following contains carbon?
a. Sugar
b. Water
c. Spoon
d. Glass
- Which answer about greenhouse gases is not true?
a. They are present in large amounts in the atmosphere.
b. They are produced by things people do.
c. We can't see them.
d. They help trap heat in the atmosphere.
- Which of the following zones has a climate with warm temperatures year-round?
a. Polar
b. Temperate
c. Tropical
d. Desert
- How could you estimate how much skin an orange has?
a. Squeeze out the juice.
b. Use the Law of Kiniks.
c. Make a rectangle.
d. Peel it and lay the skin out flat.
- A rainbow is made of:
a. tiny colored specks.
b. microwaves.
c. wavelengths of light.
d. a prism.
- When should a person wear sunscreen?
a. Every day
b. Only if a person gets sunburned easily
c. Only at the beach
d. Only if it is hot outside

EARTH'S ENERGY SOURCES
Preassessment

THE SCIENCE OF GLOBAL ATMOSPHERIC CHANGE
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Materials

Begin the activity with a whole-class discussion, after which have students will work individually.

Materials per Student Group

- Crayons or markers
- Drawing paper
- Pencils or pens

Each student will need:

- A copy of his or her pre-assessment worksheet

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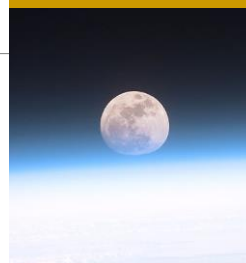
Key Words

materials list, materials needed,

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Protecting Earth's Atmosphere

- Have you ever heard of global warming or global atmospheric change? What causes it?
- Do you think that global atmospheric change can permanently modify our climate?
- Why is the ozone layer so important for life on Earth?
- What can we do to protect Earth from global warming and ozone depletion?



Earth's atmosphere is seen in the lighter and lighter shades of blue. The atmosphere is partially blocking the view of the full moon.



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Protecting Earth's Atmosphere

To focus student's attention for this activity, begin by asking, *Have you ever heard of global warming? What about the layer of Earth's atmosphere called the "ozone layer"? Do you think global warming can permanently change Earth's climate? Why is the ozone layer so important for life on Earth?* Follow the discussion by asking, *What can we do to protect Earth from global warming and ozone depletion?*

Guide students into a class discussion about the importance of the sun as a source of heat and other energy on Earth. Explain that Earth's climate and our lifestyles are dependent on the sun's energy, and that an increase in Earth's temperature (global warming) can drastically change life on Earth.

Tell students they will be writing persuasive letters to each other, related to global atmospheric change. Introduce letter-writing skills if needed. Mention that global atmospheric change is a broad category that includes global warming and the loss of the "ozone hole." Also, mention that all of us do things every day that contribute to atmospheric change.

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Image Reference

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Key Words

lesson, energy, sun, atmosphere, Earth, climate, global change, global warming, atmospheric change, global warming, ozone,

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Let's Get Started

1. Select a topic from this unit on global resources.
2. Write a letter convincing someone to help protect the atmosphere and/or slow global atmospheric change.
3. Review the answers on your pre-assessment worksheet.
4. Using a different colored pencil, circle new answers based in the information you have learned.
5. Discuss your answers as a class.



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Let's Get Started

In this activity, each student will write a persuasive letter on a topic related to protecting the atmosphere. Students will make comparisons, identify relationships, infer, and apply prior knowledge to new situations.

1. Review the importance of our global environment to individual and global health. You may use the "Tips for Healthy Living" on page 3 of this unit's *Explorations*, or pages 34–35 in *Mr. Slaptail's Curious Contraption*, or simply review the activities this unit's teacher guide.

2. Have each student select one issue presented in this unit and write a letter trying to convince someone to help protect the atmosphere and/or slow global atmospheric change.

3. Return each student's pre-assessment and have students examine their original answers. Then, have them use a different color pencil to circle any new answers, based on what they have learned in this unit. Discuss students' changes as a group.

Pre- and Post-assessment Answer Key

1. b
2. c
3. b
4. d

- 5. a
- 6. a
- 7. c
- 8. d
- 9. c
- 10. a

Reference

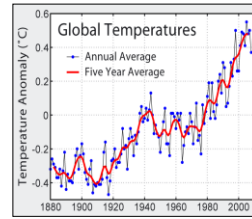
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Let's Talk About It

- The sun is the source of Earth's light, heat and energy. The atmosphere allows sunlight to pass through and warm Earth's surface.
- Climate zones are determined by distance from the equator and angle of light received from the sun.
- Global warming results from burning fossil fuels, releasing CFCs, and depletion of the ozone layer.
- Global atmospheric change could drastically alter our climate and way of life.



Temperatures on Earth have been rising since the year 1920.



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Let's Talk About It

This activity allows students to review ideas covered in the global resources unit, and also to reach conclusions regarding the importance of the global environment to their wellbeing. The following properties of global resources are covered in this activity.

- **The sun is the source of Earth's light, heat, and energy.**
- **Students are able to make a difference in their own health and that of the planet.**
- **The atmosphere allows sunlight to pass through and warm Earth's surface.**
- **Global atmospheric change results from burning fossil fuels, releasing CFCs (chlorofluorocarbons), and depletion of the ozone layer of Earth's atmosphere.**
- **Increases in greenhouse gases could lead to rising temperatures on Earth, and also change the planet's normal weather patterns. Over time, global warming could drastically change our climate and way of life. This could increase the risk of skin cancer and damage populations of plants, animals, and marine life.**

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Image Reference

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http://commons.wikimedia.org/wiki/File:Instrumental_Temperature_Record.png

Key Words

lesson, energy, sun, atmosphere, Earth, climate, global change, global warming, light, heat, sunlight, climate zone, ozone, fossil fuels,

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