

Human Effects on Greenhouse Gases and Global Warming

Lesson Overview

In this lesson, students will apply prior knowledge about the changes happening to our Earth due to human activity. For this lesson, students will already have background knowledge of what the greenhouse effect is, the basics of greenhouse gases, and the idea of global warming.

Standards Addressed

- SC 2014 6.E.2A.2 Critically analyze scientific arguments based on evidence for and against how different phenomena (natural and human induced) may contribute to the composition of Earth's atmosphere.
- NGSS MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Disciplinary Literacy Best Practices

Agree and Disagree Statements
Agreement Circle
Gallery Walk

Lesson Plan

Time Required: One 50-minute Class Period

Disciplinary Vocabulary: greenhouse effect, global warming, chlorofluorocarbons, methane, atmosphere, ozone layer

Materials Needed:

- Chart Paper
- Markers
- Agree/Disagree Statements
- Article on Causes of Greenhouse Effect (<http://www.benefits-of-recycling.com/humaneffectsofglobalwarming/>)

Assessment: Students will be assessed with their ability to express belief of human effect on global warming during for criterion evaluation and agreement circle. Students will also be assessed with the awareness poster they create to tell others how we can slow down global warming.

Engage

- The teacher will show three different slides of pictures (Slide 1: Pick a car, Slide 2: Pick a dinner Entrée, Slide 3: Pick a mode of transportation)

PICK A CAR, ANY CAR...

- 2014 Toyota Camry 
- 2015 Chevy Volt 
- Ford F-150 

CHOOSE YOUR MAIN COURSE

- Fried chicken 
- Pepperoni pizza 
- Salad without meat 
- 10oz Sirloin Steak 

WAY OF TRANSPORTATION

- Walk 
- Car 
- Bus 

- After Students have made their choices, the teacher will have a selection of students share the choices they made and briefly explain why they made that choice. Teacher will then show which choices are most likely to benefit our environment.

WHAT THREE DID YOU CHOOSE?

- The correct answers were

- Chevy Volt 

- Salad with no Meat 

- Walk 

What do these answers all have in common?

Explore

- Students will read an article on human activity that could possibly affect global warming. (<http://www.benefits-of-recycling.com/humaneffectsofglobalwarming/>)
- As they read, students will need to highlight important facts that best supports the essential question: "How do your everyday practices impact the environment?"

Explain

- Students will fill out an Agree and Disagree Statements sheet. As they check agree/disagree on each sheet, beside the question they will need to briefly write down why they agree or disagree with the statement or use supporting evidence from the article.
- When students complete their sheet, students will be asked to join a circle around the room. As each statement is read by the teacher, students who agree with the statement come to the middle inside of the circle, while those who disagree stay in position. The teacher will start with a person who disagrees asking them their supporting argument. Next choose a person who agrees, this student must “bounce” (using appropriate phrases) off what the previous students says. This will continue for about two different rounds. The teacher will then provide the correct answer.
- The teacher will do the same for each statement. (Some questions will call for incorrect/correct responses and others will have opinion based responses)

Extend

- Students will choose one of the human causes listed in the article. Students will be placed in small groups to create an awareness poster of how humans can help slow down the effects of global warming. As they complete, students will place posters around the classroom.
- A gallery walk will take place in order to view other groups' poster.

Teacher Reflections and Biographical Information

This lesson can be changed to fit your classroom however needed. Instead of agreement circle a Socratic Seminar strategy can be used. Also if enough time is not available for the whole lesson, the criterion evaluation can be taken out. (It allows students time to generate a good response to the essential question).

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Agree and Disagree Statements: Human Effects on Global Warming

Statement	What I Learned
1. Global warming is something we should be concerned about. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	
2. If people take more public transportation such as buses and trolleys, it will reduce the amount of harmful gases emitted into the atmosphere. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	
3. Eating less meat will be easy for me since I know that it will reduce the methane I release. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	
4. Paper producing companies emit a lot of bad gases and also cut down trees that absorb the carbon dioxide that trap too much heat. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	
5. 830,000,000 vehicles are used in the world, but that number is not significant to the effects of global warming. We should be looking at the effects of large companies that release fossil fuels in our air instead. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	
6. If you were traveling to the Rocky Mountains, (2,300 from your house), it would be eco-smart to ride a plane to get there. <input type="checkbox"/> Agree <input type="checkbox"/> Disagree	

Human Effects of Global Warming

Benefits of Recycling.com is presenting this series of pages on global warming because we believe there is evidence to support it is real. Even so, we are open to be proven wrong, which is why there are pages on why it is not real. Fair is fair.

The truth is we just want people to be aware that human activities (as well as natural causes) have the possibility of creating adverse effects in the US, Antarctica, Greenland, and throughout the world.

Global warming can also be detrimental to wildlife such as polar bears, creatures like sea turtles, and sea life like coral reefs.

So is global warming a myth or are there facts to support it as a reality of our times? Is there really such a thing as the greenhouse effect? And if so, what is that?

Whether you believe global warming is real or not, we invite you to read what we have uncovered on the many pages of this site... and beyond. Remember, knowledge is power.

Human Effects of Global Warming / Greenhouse Gases

There's no denying the fact that human beings play a huge role in global warming. Through industrialization and commercialization, we have dramatically increased the concentrations of greenhouse gases that cause heat to be trapped within the surface of the Earth. The most massive of all greenhouse gases we emit is carbon dioxide.

Worldwide, the largest contributor to carbon dioxide emissions stem from electricity generation. The majority of the world's power plants process coal, natural gas, and oil; all of which involve burning fossil fuels and releasing large volumes of carbon dioxide into the atmosphere.

Although some have begun generating energy from renewable resources and cleaner processes, the rate of adoption is still low. To significantly reduce the volume of emissions from power plants, human beings need to rely largely on low carbon technologies. Some of these include solar, wind, and hydropower technologies.

Human Effects of Global Warming / Transportation

Transportation is also among the largest contributors to global carbon dioxide emissions. Motor vehicles are dependent on fuel processed from oil. In 2006, there was already an estimated 830 million motor vehicles in the world, a number growing at the rate of 16 million per year.

To fuel the worldwide fleet of motor vehicles, millions of barrels of oil are burned each day. To minimize emissions, individuals must reduce dependency on motor vehicles by walking or biking when traveling short distances. People must also give preference to fuel-efficient cars and public transportation. In addition, car manufacturers need to develop better technologies that would allow their products to use fewer liters of gas per kilometer.

Airplanes are also large contributors to global carbon dioxide emissions. In fact, aviation is estimated to be responsible for 3.5% of the total contributors of global warming. Other large contributors to global warming are commercial and industrial buildings. These are estimated to account for at least 12% of all carbon dioxide emissions worldwide.

Human Effects of Global Warming / Deforestation

Atmospheric carbon dioxide levels are also dramatically increasing because of deforestation. In fact, deforestation for commercial and industrial purposes accounts for 20 to 25% of carbon emissions rising into the atmosphere. Forests absorb large quantities of carbon dioxide and produce oxygen.

At present, we destroy approximately 34 million acres of trees annually. The more trees we cut down and the more forests we burn, the higher volumes of carbon dioxide rises to the atmosphere.

Disturbances in permafrost and tundras also account for much of today's global carbon dioxide emissions. In such lands, carbon and other pollutants have been trapped for thousands of years. As human beings disturb those areas, ice melts and releases the pollutants into the Earth's atmosphere.

Human Effects of Global Warming / Carbon Dioxide

Through carbon dioxide emissions alone, human beings are already considered as main contributors to global warming. To neutralize and potentially reverse the rate at which global warming is occurring, we must significantly reduce our carbon emissions by relying on cleaner technologies and observing better practices.

Source: <http://www.benefits-of-recycling.com/humaneffectsofglobalwarming/>