

# UNDERSTANDING HUMAN IMPACT ON EARTH SYSTEMS

## EVIDENCE OF BASIC KNOWLEDGE

BLU - Not there yet 2 -Nearing Proficient 3- Proficient 4- Beyond Proficient

Science concepts and processes that help us have a more global understanding of our earth and the role human activity has on it. Specific ideas relate to the greenhouse effect, human consumption of fossil fuels and the effect this has on global systems.

1. Where does the energy that warms our earth and atmosphere come from?

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2. Are atmosphere is filled with lots of gases ranging from nitrogen to water vapor. What force holds these gases in the atmosphere?

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3. What two gases make up the majority(about 99%) of the atmosphere?

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4. The remaining 1% of the atmosphere is made of argon and greenhouse gases. Name two of these greenhouse gases.

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5. In what form/s does the wave energy from the sun come in?
  6. Ultraviolet
  7. Visable light
  8. Infrared
  9. All of the above

10. When this light(wave energy) reaches the earth some of it is absorbed and some of it reflects toward space as infrared waves. What happens to the infrared waves that reach a greenhouse gases?
11. What happens if these infrared waves reach a non-greenhouse gas?
12. Why is the greenhouse effect a great thing?
13. In the pHet simulation What happens to the average temperature of the earth when we increase the amount of greenhouse gases in the atmosphere?
14. What evidence do scientists have that shows that the levels of greenhouse gases have increased in the last 100 years? Where do scientists obtain evidence from years prior to humans records.
15. What percentage of climate scientists attribute climate change to activities humans do regarding energy?
  16. 56%
  17. 12%
  18. 97%
  19. 70%
20. What is one natural occurrence that has happened through time that could explain changes in greenhouse gases.

21. What greenhouse gases is produced when humans combust fossil fuels?
22. What are fossil fuels made from?
23. Why are fossil fuels considered non-renewable even though they technically are still be made?
24. What is the number one use of fossil fuels?
  - a. Making plastics for various products.
  - b. Providing the fuel to power transportation.
  - c. Providing the energy needed to generate electricity.
  - d. Heating homes and buildings.
25. What are two alternatives to burning fossil fuels for meeting our energy needs?
26. Describe two different reasons people concern themselves with reducing their energy use.
27. What is one action adults can take to reduce their use of energy and reducing their carbon footprint?
28. What is one action you can take on a daily basis that will help to reduce your carbon footprint?

**MS-ESS3-4. EARTH AND HUMAN ACTIVITY**

***Science collects and analyzes data to describe and explain the consequences of increases in human populations and consumption of natural resources; however, science does not make the decisions for the actions society takes.***

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Use a separate sheet of lined paper to construct an argument supported by evidence for how increases in human population and per- capita consumption of natural resources such as **fossil fuels** impact Earth's systems. "Use the space below to explain how human activity can increase the amount of greenhouse gases in the atmosphere and impact Earth's systems."

Concepts and terms you may want to consider using in your argument should include: **fossil fuels, combustion, electrical energy, generators, transportation, production of goods, heating and cooling, carbon dioxide, greenhouse gases, ppm(parts per million), carbon footprint, global warming, ...hydrocarbons,**

*Essay written on a separate sheet of paper.*

## **MS-ESS3-5. EARTH AND HUMAN ACTIVITY**

**Thinking like a scientist. The more we learn, the more questions scientists have to ask and answer.**

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Write three questions that demonstrates your understanding of climate change and evidence scientists have collected that emphasis the major role human activities play in causing the **rise in global temperatures**. Questions

could relate to evidence provided, solutions available, and/or potential results of not doing anything.

1.

2.

3.