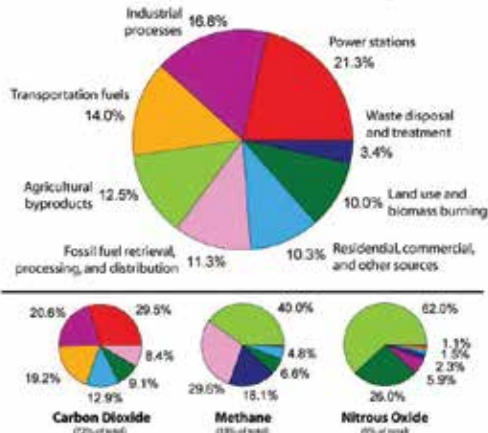


Rapid Climate Change Research Packet 3

Topic: How Are People Affecting Our Climate? Understanding the Greenhouse Effect

Directions: Read the following as a group. Create a newscast about the greenhouse effect: explain what causes it and how it results in global warming. Include a “special report” using information from the *Special Report: Our Living Home* section in your newscast.

Annual Greenhouse Gas Emissions by Sector¹



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Deforestation



When we burn fossil fuels (coal, oil, or natural gas, formed deep in the earth from decayed matter) to power our machines, they release a gas called **carbon dioxide** into the atmosphere. Carbon dioxide is called a **greenhouse gas** because like the glass walls and ceiling of a greenhouse, it lets the warmth of the sunlight in to heat up the air, but it prevents a lot of that heat from leaving the upper atmosphere. Imagine your room on a very sunny day. If sun comes in the window it will heat up the air in the room. If the window is closed, the room will stay hotter; if you open the window, some of that hot air will go out and the room will cool down. Gardeners keep the windows in a greenhouse closed in cool weather to retain heated air inside. Carbon dioxide has a similar effect in our atmosphere. While life on earth does depend on the atmosphere to trap some heat (a planet with no atmosphere would be as cold as outer space), the greenhouse effect is causing the earth to trap too much heat. When the warming is too much and too fast it then becomes harmful to organisms who are not equipped to live in those conditions.

Carbon dioxide is not the only gas that has a greenhouse effect. Other greenhouse gases in the atmosphere include **methane** and **nitrous oxide**. These gases actually have a stronger greenhouse effect than carbon dioxide – meaning that they warm the atmosphere more rapidly – but they don’t stay in the air for as long. Large-scale animal agriculture (factory farming) is responsible for 37 percent of all methane emissions and 65 percent of all nitrous oxide emissions worldwide.²

Special Report:

Our Living Home: Deforestation

Trees and other plants are made mostly of carbon, which they get from the carbon dioxide in the air. They take it in through their leaves and use it to build all the parts of the plant. This means that every tree and green plant is a storage place for carbon that might otherwise be adding to the carbon dioxide in the air.³

Deforestation, where large areas of forest are clear-cut for agriculture or to build homes and services for people, releases that stored carbon into the air, and eliminates one of the most important methods that exists for reducing the amount of carbon dioxide in our atmosphere.

Deforestation also destroys the homes of more than 70 percent of terrestrial plants and wildlife living in forest habitats. Right now, more than half of all the habitable land on our planet is already used for agriculture, and the ongoing deforestation of tropical rainforests around the world is mostly due to clearing land for grazing livestock and planting corn and soy to feed them.⁴

¹ https://en.wikipedia.org/wiki/Greenhouse_gas

² EcoWatch Website: www.ecowatch.com/how-factory-farming-contributes-to-global-warming-1881690535.html

³ National Public Radio: www.npr.org/sections/krulwich/2012/09/25/161753383/trees-come-from-out-of-the-air-says-nobel-laureate-richard-feynman-really

⁴ World Wildlife Fund Website: wwf.panda.org/what_we_do/footprint/agriculture/impacts/habitat_loss/