Astrocamp

Greenhouse Gases

Greenhouse gases are gases in Earth's atmosphere that trap heat. The allow sunlight to pass through the atmosphere, but prevent the heat from leaving the atmosphere. Common greenhouse gases are Carbon Dioxide, Ozone, Nitrous Oxide, Water Vapor and Methane. A greenhouse gas can absorb ***infrared radiation*** emitted from the Earth's surface and reradiate it back to the Earth, thus warming the Earth.

Molecular Model

Oxygen = Red Gumdrops
Nitrogen = Green Gumdrops
Carbon = Purple Gumdrops
Hydrogen = White Gumdrops
Toothpicks = Chemical Bonds

1. Use 3 red gumdrops to represent Ozone with 3 Oxygen atoms: O_3.

Ozone

2. Nitrous Oxide has one Oxygen (Red) atom and 2 Nitrogen (Green) atoms: N_2O.

Nitrous Oxide

Carbon Dioxide

Water Vapor

3. Carbon Dioxide has one Carbon and two Oxygen atoms: CO_2.
4. Water Vapor is comprised of one Oxygen and two Hydrogen atoms: H_2O.
5. Methane has one Carbon atom (purple) and four Hydrogen atoms (white): CH_4.

Methane

Greenhouse Gas. *NASA Astrocamp Live Binder*. Retrieved from: http://www.livebinders.com/b/2650190?backurl=%2Fshelf%2Ffeatured&play_view=play&tabid=e9f56ddd-0acf-cf57-1d6a-3d8d8dfccadb&utf8=%E2%9C%93

Meet the Greenhouse Gases. *NASA Climate Kids*. Retrieved from: https://climatekids.nasa.gov/greenhouse-cards/

National Aeronautics and Space Administration

WATER VAPOR

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H_2O

This is water in gas form, like steam above a boiling pot or water evaporating off a lake. It forms clouds and rains back on Earth. This can cause a cooling effect.

WATER VAPOR

H_2O

Water vapor blocks heat from escaping, so it gets warmer. That makes even more water evaporate. Once this process happens, it can happen again more easily.

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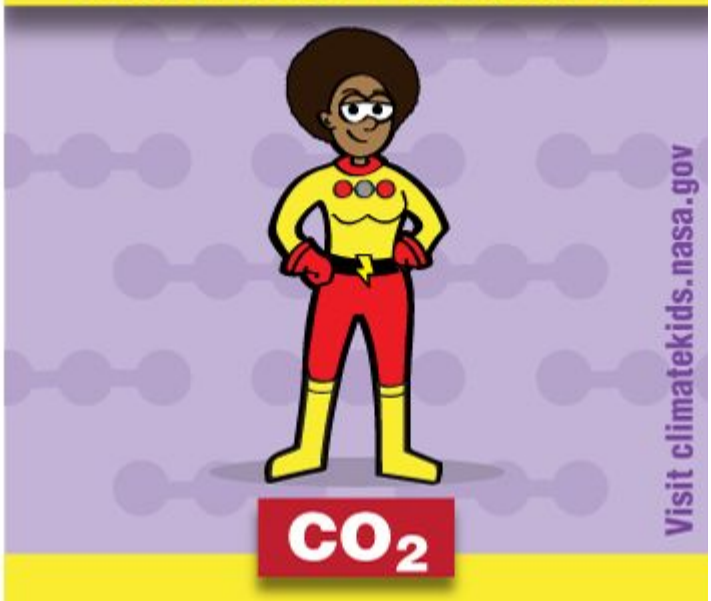
CARBON DIOXIDE



CO_2

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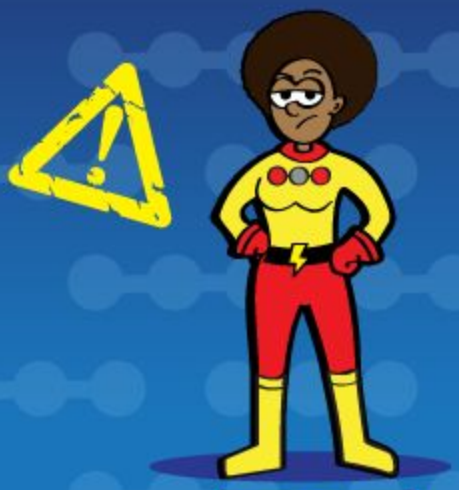
Made up of carbon and oxygen, CO2 is all around us naturally. It comes from decaying and living organisms, and from volcanoes.

CARBON DIOXIDE



CO_2

CO2 is released when burning fossil fuels like coal and oil. It's the most important contributor to human-caused global warming.

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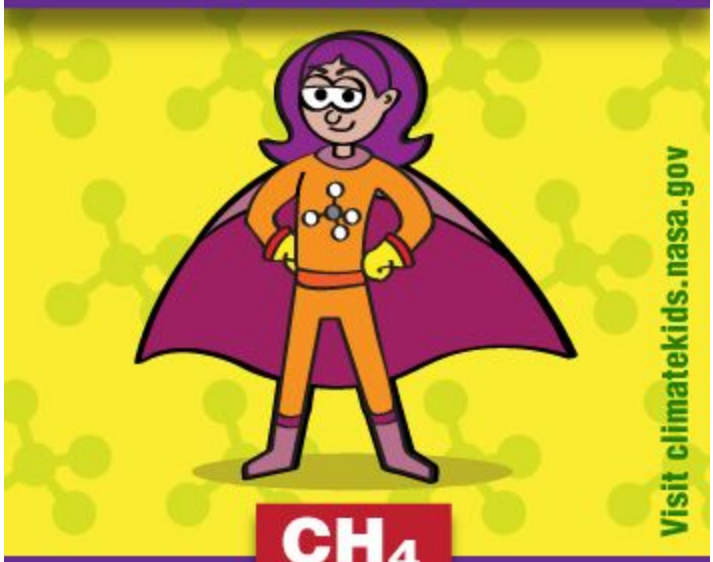
METHANE



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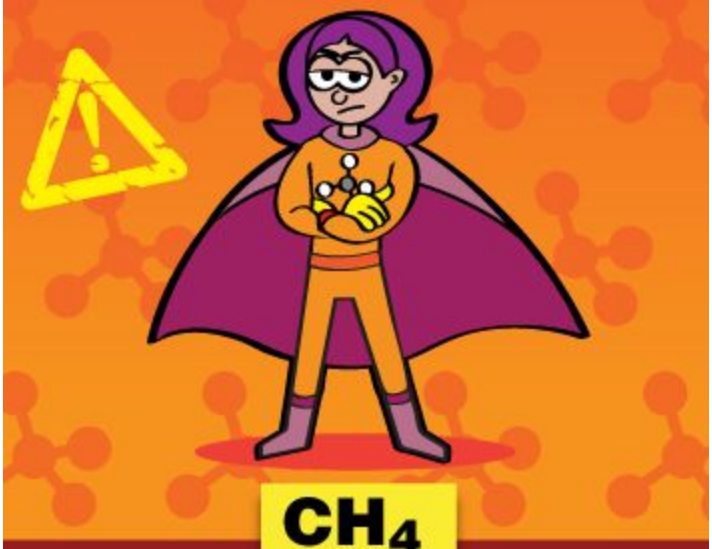
CH_4

Methane, made of carbon and hydrogen, is a normal gas released from wetlands, growing rice, raising cattle, using natural gas, and mining coal.

METHANE



CH_4

It traps a lot of heat. Scientists consider it the second most important contributor to human-caused global warming of all the greenhouse gases.

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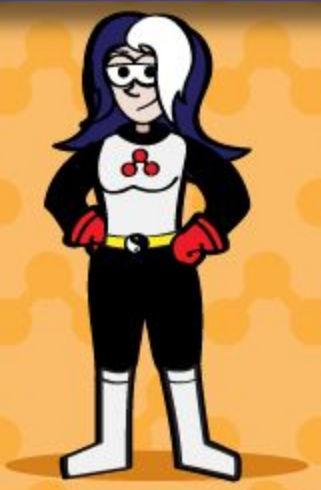
OZONE



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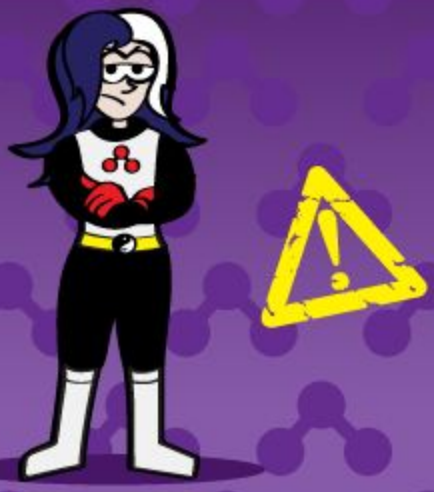
O_3

Up in the atmosphere where the planes fly, the ozone layer blocks the sun's radiation, which helps protect us from the powerful rays.

OZONE



O_3

Close to the ground, ozone acts as a greenhouse gas and can be formed by burning gas in cars and factories.

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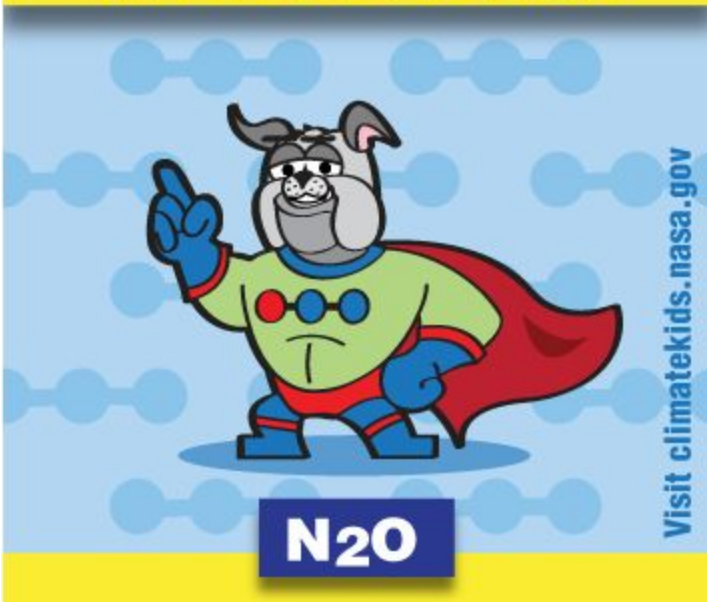
NITROUS OXIDE



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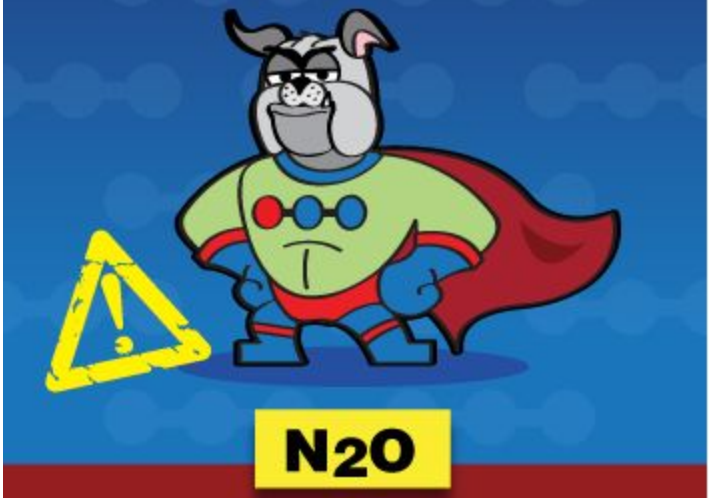
N2O

Nitrous oxide is a natural part of the nitrogen cycle. Bacteria in soil and the ocean make it.

NITROUS OXIDE



N2O

Nitrous oxide is released by some types of factories, power plants, and plant fertilizer. It damages the protective ozone layer and is a powerful greenhouse gas.