

Global Warming

Environmental Climate Change

Background

- ! Global warming is the scientifically observed increase in the average temperature of the Earth over recent decades.
- ! Rising temperatures are a result of an exaggerated greenhouse effect.
- ! The greenhouse effect is a natural process that enables the Earth to sustain life. The sun emits radiation that travels to the Earth (also known as UV rays). Once radiation from the sun enters the Earth's atmosphere it encounters greenhouse gases, which trap energy from the sun within the atmosphere, thus heating the Earth, and the lower atmosphere to enable life. Without the greenhouse effect, the Earth would be an estimated total of 60 degrees cooler. With temperatures that frigid life would be unable to flourish. (EPA)
- ! Unfortunately, since the agricultural and industrial revolution and the rise of technology the amount of gases released into our atmosphere due to human activity has drastically increased. These gases trap additional energy from the sun, causing the Earth's temperature to rise beyond its stable range.
- ! The Earth is already seeing signs and changes due to global warming, which will only get more severe with time. (UCS)

Statement of the Problem

- ! Global warming is one of the most serious environmental issues in today's society.
- ! To protect the health and economic well-being of current and future generations, we must reduce our emissions of heat-trapping gases. (UCS)
- ! For over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation have caused the concentrations of heat-trapping "greenhouse gases" to increase significantly in our atmosphere. (EPA)
- ! Some greenhouse gases occur naturally in the environment such as carbon dioxide, however, it is the excess of these gases in addition to gases created and emitted through human activity that are the bulk of the problem. Problem gases include:

Carbon dioxide, emitted from human activity via the burning of fossil fuels, wastes, and wood products. It is also emitted into the atmosphere through chemical reactions caused by manufacturing (cement, for example); (EPA)

Methane is emitted via the production and transport of coal, natural gas and oil, animal wastes (primarily livestock), and decomposing organic wastes in land fills; (EPA)

Nitrous Oxide is emitted as a result of industrial activities, including the combustion of fossil fuels and solid wastes. (EPA)

Fluorinated gases (CFC's) are typically emitted in trace amounts, but are such potent gases they are called high GWP's or "High Global
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Warming Potential" gases. These are also ozone depleting substances. (EPA)

Epidemiologic Picture of the Problem

! Climate change will effect the Earth's population as a whole. Currently, signs of global warming are already being seen. Global warming is a slow process, and the full effects of damage may not be seen for hundreds of years, so the effect on population can only be estimated. (UCS)

! Current signs of global warming:

- Heat waves and periods of unusually warm weather
 - Increased temperature of the ocean
 - Sea level rise and costal flooding
 - Glacial melting and retreat
 - Arctic and Antarctic warming
 - Erratic Weather Patterns
 - Severe weather
- On average, the Earth has increased in average temperature one whole degree in the past 100 years. While this may seem like a small amount, it affects all aspects of ecosystems, which will lead to future problems. (UCS)

! Estimated issues of the future:

- Spread of disease. Most diseases thrive in warm climates; this means increased temperatures will result in the Earth being an incubator for assorted pathogens. The bulk of the diseases are guessed to be tropical of origin.
- Lack of seasons.
- Plant and Animal range shifts, possible extinctions due to environmental instability and change/loss of habitat.
- Coral Reef Bleaching
- Downpours, heavy snowfall, and flooding.

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- Droughts and fires, dry conditions make forests and other plant material highly susceptible to brush and forest fires. (EPA)

! All the threats of global warming are or will affect human health, economy, quality of life and overall well being of the population.

Solutions

Climate Change Technology Program

<http://www.epa.gov/climatechange/policy/cctp.html>

This initiative from the United States Environmental Protection Agency is designed to make use of new and innovative energy technology to substantially reduce emissions. It is also managed around the Department of Energy and is centered around five technology area, energy end-use and infrastructure, energy supply, non-CO2 greenhouse gases, monitoring and measurement, capturing and sequestering carbon dioxide.

Clean Air, Cool Planet

http://www.cleanair-coolplanet.org/conference_GWS05/index.php

This organization gathers business, government, investment and opinion leaders together to discuss the future of global warming, with the intention of finding solutions to the issue. Together they exchange the newest information, technology and ideas to benefit the cause and create solutions.

Clean Energy Solutions

<http://www.sierraclub.org/globalwarming/cleanenergy/>

The Sierra Club's clean energy solutions program gathers information and technology to create solutions to the everyday activities that increase gas emissions.

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This concept uses technology to get more energy from renewable energy sources that won't harm the environment.

Internet Resources/ Bibliography

United States Environmental Protection Agency. Climate Change. 23 Oct. 2006. 2 Dec. 2006 <<http://www.epa.gov/climatechange/>>.

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Global Warming Fact Sheet (Class Handout)

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