



## CRITICAL THINKING ACTIVITY: THE CLIMATE CHANGE MYSTERY BOX

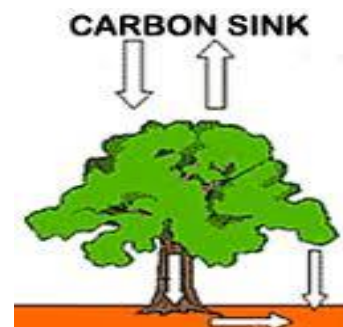
The impacts of global climate change are predicted to be diverse and wide-ranging. Climate scientists warn that increased temperatures will have major impacts on global sea levels, temperature and precipitation patterns. Many



ecosystems will undergo enormous changes and the human communities that live in and depend upon these ecosystems may be greatly affected.

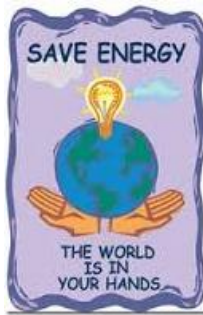
**Sea level rise** is predicted as one of the most serious results of global warming. Because of melting glaciers and thermal expansion of ocean waters, it is predicted that sea levels could rise between 15cm and 95cm within this century. A one-meter rise would lead to 6% of the Netherlands, 17% of Bangladesh and 80% of the Marshall Islands being under water. These are just a few examples of the many areas that would be affected.

Climate scientists believe the warming of the earth's temperatures is directly related to the reduction of **carbon sinks** (areas of stored carbon) and the release of carbon, and other greenhouse gases, into the Earth's atmosphere. These gases remain in the atmosphere where they trap solar radiation that would normally be reflected back into outer space. The more we add, the warmer the earth becomes.



Since the Industrial Revolution, the amount of carbon in the earth's atmosphere has increased and is estimated to be increasing per year. **Methane**, another important greenhouse gas, has increased by 151% and nitrous oxide by 17%. The most powerful of the greenhouse gases, a group of human-made compounds which includes **chlorofluorocarbons (CFC's)** did not even exist before the 1930's but now account for 12% of the current enhanced greenhouse effect. All of these greenhouse gases are destroyed over time by atmospheric chemistry but the process can take decades to centuries.

## Student Sheet 2



It is human activity that is causing the rise in global temperatures and it must be human activity that changes in order to stop or slow the increase. Improving fuel efficiency standards for cars and trucks, using public transport, riding a bicycle, scooter or skateboard, planting trees, turning off unnecessary lights, recycling, and buying locally produced goods, including food, will all help to slow the rate of climate change. There is much that people can do on an individual level to minimize our own "carbon contribution". In addition, the observation of our actions can inspire others to make the same changes in their own lifestyles.



### COMPREHENSION QUESTIONS:

1. What do scientists expect to be the major impacts of climate change?
2. Why will these affect human populations?
3. What will contribute to sea level rise? Name 2 places that will be impacted by this event.
4. What could sea level rise impact the populations of low-lying countries? What could happen as a result?
5. What do scientists feel is responsible for the increase in atmospheric temperature?
6. How do the greenhouse gases cause the temperature of the atmosphere to increase?
7. When did man-made activity start to affect the climate in a bad way? Explain why.
8. Name 2 other greenhouse gases other than  $CO_2$ . Which is the most potent?
9. Are these gases in the atmosphere forever? If not, why are they still a problem?
10. What is really the only way to slow down or stop climate change? Why does the responsibility belong to humans?