

# Note to Teacher:

## Global Warming Experiment

### Background Information

Our Climate is changing because humans have increased the amount of Greenhouse Gases (GHGs) in the atmosphere. Greenhouse Gases are actually necessary, as they help to keep the earth's surface warm by trapping the earth's heat (the greenhouse effect). Without this warmth the earth would be unbearably cold. These Greenhouse Gases (GHG's) include Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O) and Ozone (O<sub>3</sub>). The problem is that their concentrations have increased dramatically in the last century due to human activity. When we burn fossil fuels to provide electricity for our homes and businesses or when we cut down trees these actions release Carbon dioxide in the atmosphere. This is making the earth very, very warm (global warming) and in turn causing our climate to change.

**Global Warming** = unusually high levels of warming in the earth's atmosphere/surface.

**Climate Change** = actual change in the earth's surface temperature over a period of time.

### About this Activity Sheet

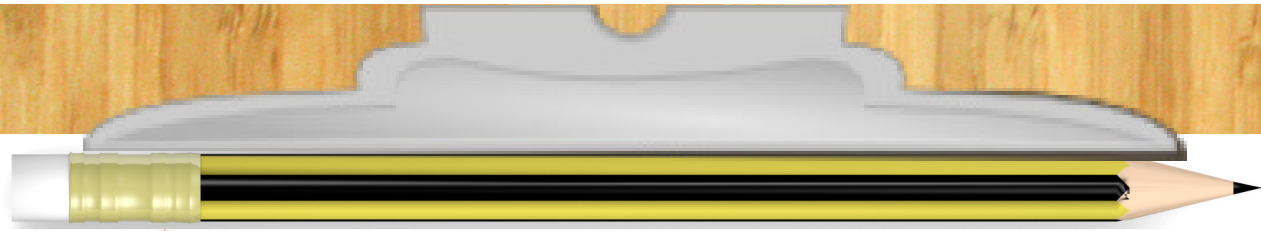
This exercise is targeted to children between the ages of **9-11** years. It is a hands-on interactive exercise that allows children to see firsthand the process of global warming and its effects on the earth's temperature. This experiment can be done between an adult and a child, or it can be done together in a class setting with many children. It is important to discuss with the child/children the results from this experiment.

### Skills developed

Children will develop critical thinking skills and reasoning ability. They will gain basic scientific knowledge by understanding the process behind global warming, thus making the connection to climate change.

### Additional Sources of Information:

1. GOJ/ EU/ UNEP Climate Change Adaptation and Disaster Risk Reduction Project Brochures
  - Climate Change: Let's Change the way we treat our Coasts and Beaches
  - Climate Change: We have to Change
2. GOJ/ EU/ UNEP Climate Change Adaptation and Disaster Risk Reduction Project Fact Sheets.  
<http://myspot.mona.uwi.edu/physics/csgm/climate-resources>



# GLOBAL WARMING EXPERIMENT

**Aim:** To demonstrate global warming.

## Background

Greenhouse gases like carbon dioxide exist in our atmosphere. They are called greenhouse gases because they cause the atmosphere to act like the glass of greenhouse. That is, the sun's rays pass through the atmosphere and heat up the earth, and then the greenhouse gases prevent the heat from leaving. Human activities like burning fossil fuels, are putting more greenhouse gases in the atmosphere. The extra greenhouse gases act like an extra layer or a blanket by trapping even more heat and warming the earth.

## What you will need

2 glass containers with lids; 12 cubes of ice; 6 cups of water; 2 thermometers;  
1 plastic Bag;

## What to do

Firstly, remember to ask an Adult for help! Follow instructions below.

## Discussion

(1) Which thermometer recorded the higher temperature? (2) Why? (3) How did the plastic bag act like extra greenhouse gases?

# Experiment Steps

Place 6 ice cubes and 3 cups of water in one jar. Do the same for the other jar and cover both lids

1



Place a plastic bag over one of the Jars. Cover it completely (greenhouse jar)

2



Place both jars in the bright sunlight outdoors, for one hour. Ensure they are secure and safe

3



After an hour has passed, measure the temperature in both jars using a thermometer.

4

