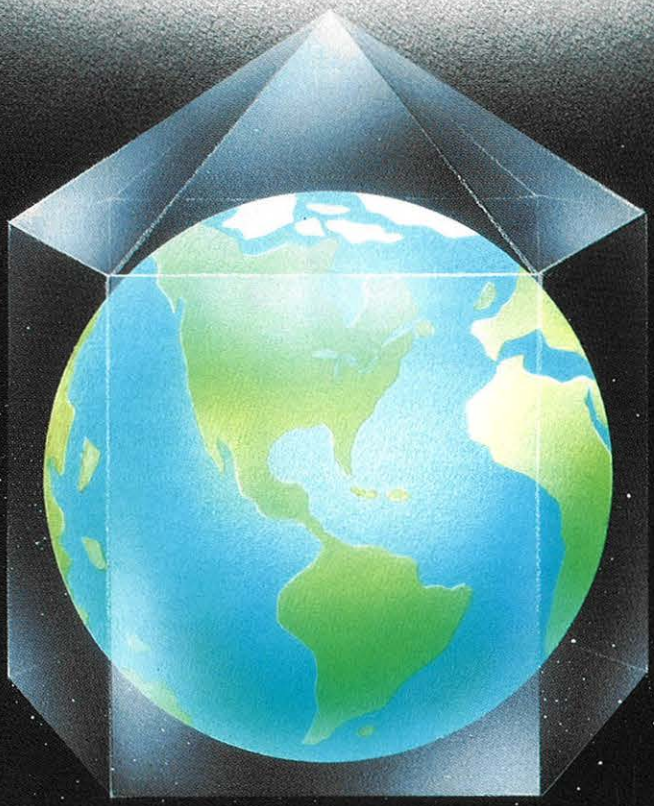
Did you know we live in a GREENHOUSE?



Environment Canada
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Atmospheric Environment Service
Service de l'environnement atmosphérique

CANADA'S GREEN PLAN

EARTH IN A GREENHOUSE ?

You probably know that flowers, fruit and vegetables can be grown in a greenhouse, but did you know that we humans also live in a greenhouse?

Of course we are not surrounded by glass. We are surrounded by a blanket of air called the atmosphere which has kept the temperature on Earth just right for centuries.

Just as the glass in a greenhouse holds the sun's warmth inside, so the atmosphere traps the sun's heat near the Earth's surface and keeps the Earth warm. We call this the natural greenhouse effect because it makes the Earth a perfect planet for growing and living things.

If it were not for the natural greenhouse effect, the Earth would be like the moon, too cold to support life.

Did You Know ? The average temperature of the Earth's surface with the greenhouse effect is 15 degrees Celsius. Without the natural greenhouse effect, the temperature would be -18 degrees Celsius.

The natural greenhouse effect works because tiny quantities of greenhouse gases in the atmosphere trap the sun's heat, warming land, air and water. Without these greenhouse gases, the sun's heat would escape into space.

Water vapour is the most common of these greenhouse gases, but others are very important too!

Fact: Greenhouse gases are both natural and manmade.

- **Carbon dioxide** or CO_2 is the most important natural and manmade greenhouse gas, and the major contributor to global warming. Plants and animals release CO_2 as they breathe. The burning of fossil fuels (coal, oil, natural gas) and global deforestation are the major manmade sources of CO_2.
- **Methane** is produced naturally when vegetation is burned, digested or rotted without the presence of oxygen. Today, large amounts of methane are released by rice paddies, grazing cattle, rotting material in garbage dumps or landfills, and by fossil fuels.
- **CFCs** (chlorofluorocarbons) are manmade industrial chemicals used in air conditioning and used to make foam and cleaning solvents. You have probably heard of CFCs because of the damage they are doing to the ozone layer.
- **Nitrous oxide** also occurs naturally in the environment. In recent years, quantities have increased significantly due to human activities. Today, large amounts are released from the use of chemical fertilizers and the burning of fossil fuels.

The Greenhouse Effect and Global Warming

For hundreds of years the Earth's atmosphere has changed very little. It has kept the right temperature for plants and animals, including humans, to survive quite comfortably.

Our modern lifestyle and the growth in global population are causing a huge increase in the world's use of energy. Much of the energy we use to power our cars, heat our houses, produce electricity and manufacture products comes from fossil fuels. When burned, these fossil fuels add large amounts of greenhouse gases - especially carbon dioxide - to the atmosphere. If we keep going the way we are today, humans will be responsible for doubling the amount of carbon dioxide in the air before the year 2050.

Many scientists now believe that the addition of greenhouse gases from human or manmade sources is throwing our atmosphere and the natural greenhouse effect out of balance. It would appear that the atmosphere is trapping too much heat and causing the Earth to heat up. This is known as GLOBAL WARMING.

Did You Know ? Some of our energy sources have been trapped beneath the ground for millions of years: Known as fossil fuels, **• coal • oil • natural gas**.

They release energy when they are burned. They also release large quantities of greenhouse gases.

Did You Know ? Plants and trees are natural regulators of the atmosphere. They help keep things in balance. Destroying our forests, or deforestation, upsets this balance and actually results in increasing amounts of carbon dioxide in the atmosphere.

What's Wrong With Global Warming?

So what is the problem, you ask. Don't most Canadians head south during the winter for the warm weather? Wouldn't Canadians enjoy more heat? We do seem to spend a lot of time complaining about the cold.

The fact of the matter is that global warming could easily mean changes to our daily lives. If the global warming trend continues, we may experience shorter, warmer winters, and longer hotter summers. But it is not as simple as that ...

- WATER SUPPLY — Some areas of Canada might get more rain, while other areas might have drier climates. Changes in water supply would have an effect on farmers and the crops they grow.
- SEA LEVELS — The level of the oceans may rise as polar icecaps melt and glaciers on mountain tops melt. If oceans rise then coastlines may flood. Some small islands may go under water.
- PLANT AND ANIMAL LIFE — Some species of animals and plants may have trouble adjusting to major changes in our climate. Many years from now, some may not be able to survive.

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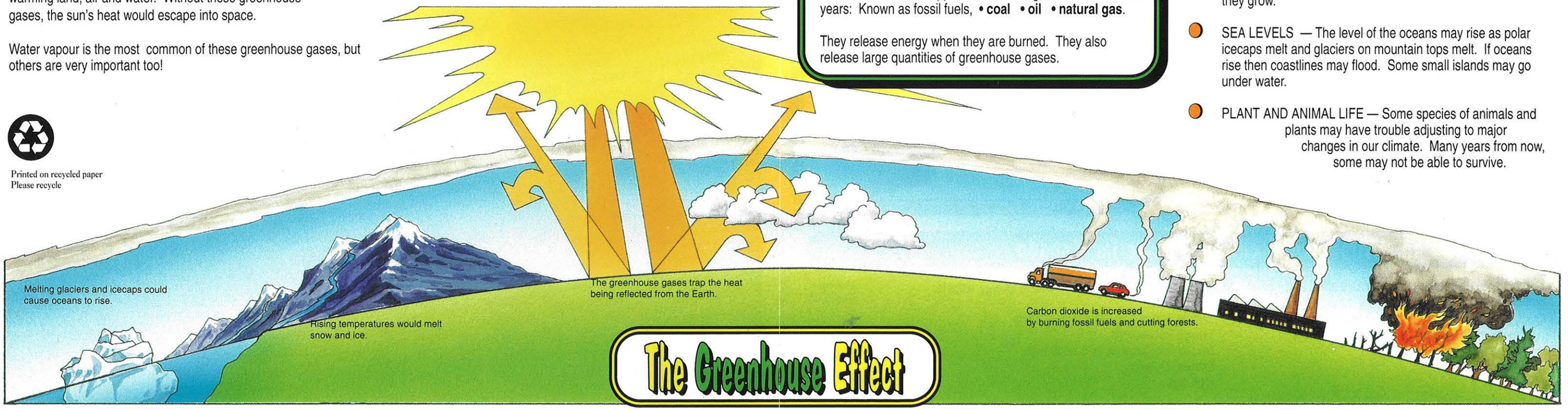


The Greenhouse Effect

Is The Earth Getting Warmer?

It's beginning to look that way. In fact, the Earth's warmest years since 1881 have been: 1944, 1979, 1980, 1981, 1983, 1987, 1988, 1989, 1990 and 1991. What's more, scientists predict that by the year 2050, if we keep increasing the amount of greenhouse gases in the atmosphere, the world could be 3 degrees Celsius warmer than it is today.

Fact: **Saving energy helps to slow global warming. Saving energy also helps solve other environmental problems like acid rain and smog.**

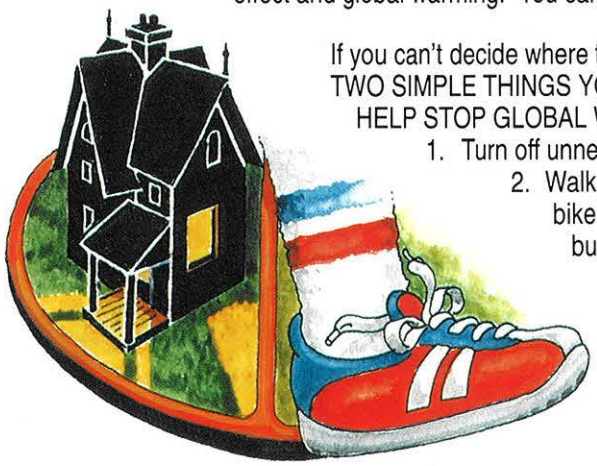
You Want to Help?

So what can you do about global warming?
First of all, think about what causes global warming.

If burning fossil fuels adds greenhouse gases to the atmosphere, we should find ways to use these fuels more efficiently.

If cutting down forests and trees aids global warming, we should be sure to plant a new tree for every one that is cut down or burned.

Decide how you can help. It may be as simple as sharing the information you learned in this paper with your parents and friends — It's a start!! Many people don't understand the greenhouse effect and global warming. You can help them learn.



If you can't decide where to begin, here's TWO SIMPLE THINGS YOU CAN DO TO HELP STOP GLOBAL WARMING ...

1. Turn off unnecessary lights.
2. Walk, ride your bike or take the bus more often than asking an adult to drive you.

Word Match

A. Deforestation **B.** Skateboarding **C.** Atmosphere
D. Coal **E.** Bicycling **F.** Global Warming
G. Oil **H.** Sea Level Rise **I.** Methane
J. Carbon dioxide

Name the most important natural and manmade greenhouse gas. ☐

Name a greenhouse gas that comes from rotting garbage. ☐

What word means "clearing trees and forests"? ☐

Name two fossil fuels . ☐ ☐

What types of transportation do not use fossil fuels? ☐ ☐

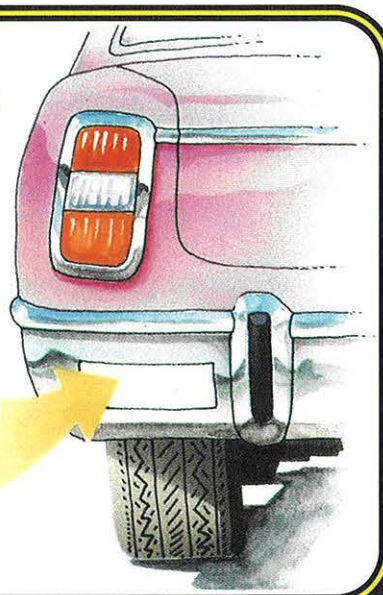
What might happen if our world gets warmer? ☐

What do we call the blanket of air that surrounds the Earth? ☐

When there are too many greenhouse gases and the Earth starts to heat up, scientists call that trend ... ☐

Design a Bumper Sticker

More and more, bumper stickers are being used to present short snappy messages, some funny and some serious. Why don't you try to think of an original saying to pass along a message about saving our planet from Global Warming.



Be an environmental citizen — Care for Canada

To find out more about the greenhouse effect and global warming, write to:

Environment Canada
Inquiry Centre
Ottawa, Ontario
K1A 0H3

To find out more about how you can save energy, write to:

Energy, Mines and Resources Canada
Energy Publications
c/o Canada Communications Group
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