What is the Environment?

Nearly everybody has heard about "the environment". It's in the newspapers, magazines, books, radio, and television. But what is it exactly? Quite simply the environment is your surroundings. No matter where you are, you have an environment. At home, at school, at work, at the lake, in the forest, downtown in your city or town, everything around you is your environment.

If you think about it, your surroundings can be a large subject. Where are you right now? Look at your surroundings. Are they noisy? That's part of your environment. What kind of light are you reading this by? That's also part of your environment. Is the air fresh or stuffy? What's the weather like outside? All these things and many more are part of your environment right now.

Your environment has an effect on you and you can have an effect on your environment. If you throw litter into the street. you are changing your environment. You are making it less livable and dirtier. If you are sitting in a stuffy room, you may feel sleepy. Your environment (or one part of it, the air) is having, an effect on you.

In a day you can go through many different environments. Your neighbourhood is an environment. The province of Alberta can be considered an environment. So is Canada. So is the whole world.

The different parts of the environment affect each other. A very simple example is that cities are warmer at night than the country. This is due to the large concrete buildings which store heat from the sun. At night, as the air begins to cool, the buildings warmed by the sun give off the heat. In addition, pollutants in the air around a city trap more heat so that it takes longer to cool off. Listen to weather reports. It is seldom as cold in the city at night as it is in the country.

Alberta Environment

Background

Many scientific disciplines contribute to our understanding of the environment. The science of **ecology** brings these many disciplines together to study the environment. Animals and plants, like people, do not live alone. They are surrounded by other plants and animals. They have certain needs in order to live and reproduce. The environment (sunlight, water, air, soil, and other plants and animals) provides these needs.

Ecology: the study of plants and animals to their environment.

Let's look at a flowering plant. It needs warm temperatures to grow. It needs sunlight to produce food. It needs air in order to get the carbon to produce food. It needs water to transport nutrients from the soil, and food from the leaves to other parts of the plant. Most plants need other plants of the same species to cross fertilize. Many need insects to pollinate the flowers to create new seeds.

If any of the environmental factors are not correct for our plant, it will not thrive, may not reproduce, and could die. Too little sunlight and the plant will die (try growing a plant in the dark). Without nutrients from the soil it cannot grow. Too much water will drown the plant. Too little and it cannot carry on normal life processes. Plants which require pollen from other plants of the same species need those other plants close by. if conditions are not right for bees and pollinating insects. most flowering plants will not produce seeds.

All the plants and animals in the environment are connected. If enough plants do not grow, then the animals which eat plants will either move away or die. The animals which eat plant eaters will also have to move away or die.

Plants and animals can also affect their environment. If many plants died because of a drought, the plant roots would no longer hold the soil particles together. Without roots to hold the soil, wind picks up the tiny particles and they blow away. Under severe drought conditions, large amounts of topsoil may blow away. When the drought is over, there are few nutrients for plants. The plants that do grow are weak. When the rain returns, instead of soaking into the soil, it runs off over the ground and carries more soil particles into the rivers. It may take hundreds of years for the plants and animals to recover. Sometimes permanent chances in the environment happen like this.

This example shows how complex the connections in an **ecosystem** can be. Most ecosystems are carefully balanced. When humans do not understand, or ignore all the connections, they can upset this balance.

Ecosystem: a group of plants and animals living in balance with their environment.

Humans and the Environment

Fire was one way that early humans changed their environment. Fire was a good way to drive animals into places where they could be killed for food and skins. Burning dead grass puts nutrients into the soil so that new grass will grow more quickly. Grazing animals will come to this rich grass and can be easily hunted.

When humans began herding animals and farming, they made great changes in their environment. They cleared forests and tilled the soil to kill "weeds" and

make a good place for seeds to grow. They put animals on pastures in greater numbers than would occur naturally. They changed the earth forever. The Sahara Desert has grown in size because humans tried to farm and herd cattle and goats close to its edge. When drought came, the topsoil blew away and the land could not recover.

Humans have had the ability to change their environment for thousands of years. Today this ability is greater than ever. This is because there are more people living now than ever before and human activity is concentrated in huge cities. Also, science and technology allow us to interfere with natural processes in more direct ways.

We now understand more about the environment and how it works. Sometimes this understanding came about after a problem had surfaced. The story of DDT is a good example. DDT was introduced after World War II as a very effective pesticide. DDT is broken down slowly through natural processes. The DDT was washed into the soil and into rivers where animals and plants absorbed small amounts of it. Birds, which are at the top of the **food chain,** were greatly affected. The DDT caused them to lay eggs with very thin shells. The eggs did not survive. Ospreys, eagles, and falcons were particularly affected by DDT. When DDT was banned, these birds made a dramatic recovery but DDT **residue** is still found in every environment on earth.

Food Chain: the patterns of feeding relationship in an ecosystem.

Residue: that which is left. In this case, the products of the breakdown of DDT.

Pollutant: any substance that causes pollution.

Pollution problems are not just problems of the air, water, or soil. Pollution affects all parts of the environment. When we put something into the environment, it doesn't just "go away". The **pollutant** eventually becomes part of the environment. When a toxic chemical enters our lakes and rivers, it doesn't just stay there. It enters the plants and animals that live in the water. It may enter drinking water that people use. It may get into the soil through irrigation. Eventually it is washed into the ocean where fish and other creatures may become contaminated. if we eat these fish, we too become contaminated. Serious diseases, like cancer, could be associated with pollution.

Some environmental problems are not easy to see. Not all pollutants cause immediate or short-term problems. It may take years of exposure or build-up before any effects are seen. A good example is the accumulation of carbon dioxide in the air. One of the by-products of combustion is carbon dioxide. For over a century man has been burning huge amounts of coal, oil and gas. Research suggests that we have burned so much that we have increased the amount of carbon dioxide in the air. Carbon dioxide absorbs heat. A small increase in the amount of carbon dioxide will increase the temperature of the earth. This is called the "enhanced greenhouse effect". A rise of the average annual temperature of 3C° would make most of the prairies unsuitable for agriculture. It would be too dry. This same rise in temperature would start melting the polar ice caps. The world's sea coasts could be flooded by several metres of water.

The better we understand the earth. the better we can understand the problems that face us. An environmental viewpoint is one way of looking at the earth. This

way of looking at problems goes beyond immediate questions and looks at how they affect the whole environment.

Conclusion

A functioning, well balanced environment is important to humans. We need clean air to breathe, clean water to drink, food to eat, and shelter. All these things are part of our environment and are interconnected. We now know that if we pollute our air we may be affecting our food and water supply.

Governments, industry, and public groups all recognize the need to manage and protect the environment so that it continues to provide the necessities of life. Scientists in government and industry research environmental problems. New information is used to make new regulations or devise new processes which improve environmental quality. Public groups tell government and industry of their concerns and interests. Each of us has a part to play in this process.

The planet Earth is the only place we know of in the whole universe where mankind can live. We need to take care of it.

Alberta Environment - Information Centre
Main Floor, Oxbridge Place
9820-106 St.
Edmonton AB T5K 2J6
Phone: (780) 427-2700 (Toll free in Alberta by calling 310-0000)
Fax: (780) 422-4086
E-mail: env.infocent@gov.ab.ca
Web: http://www3.gov.ab.ca/env/
Pub No. I/706
ISBN 0-7785-0252-X