# EXPLORING YOUR ENVIRONMENT

FORTIS ALBERTA

# The Environment is everywhere.

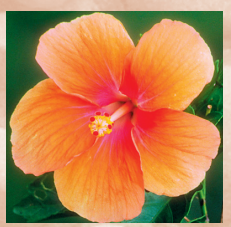
Everything that surrounds and affects a living being is the environment. You can find out about the environment using your senses (seeing, smelling, hearing and touching) to explore it.

## Explore Your Environment

Directions: Spend 15 minutes outside or inside your home or school. Use your senses to answer these questions:

List everything you can see.

_____



Breathe in and describe what you smell.

_____

_____

Close your eyes and list the sounds that you hear. Where did they come from?

_____

_____

Touch something close by and describe how it feels.

_____

# The Environment is Everything

You are in an environment whether you're inside or outside. The environment is not just the natural world — it includes all the things that people make.


## What if?

Draw a picture of what you think your environment would be like if human beings had not lived here.

Now, draw another picture to show the changes human beings have made to the area.

Why did people make these changes?

How have these changes been helpful? How have they been harmful?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# Animals adapt TO FIT The Environment

Every environment has special features like mountains or rivers. And every environment changes, like spring turns to summer. In order to survive, plants, animals, and people have to adapt to their changing environment.

Beavers live in and around rivers, streams, and lakes that are near woodlands. They build dams to block and change the flow of water to make deep ponds. They build their homes, called lodges, in these ponds. The ponds keep them safe.

Waterproof fur keeps a beaver warm in the water all year. Its back feet are webbed for swimming. Its wide flat tail is used to steer.

The beaver's large front teeth are shaped so it can chew down trees. A beaver uses its tail to build its dam and lodge, and for balance when it stands up.

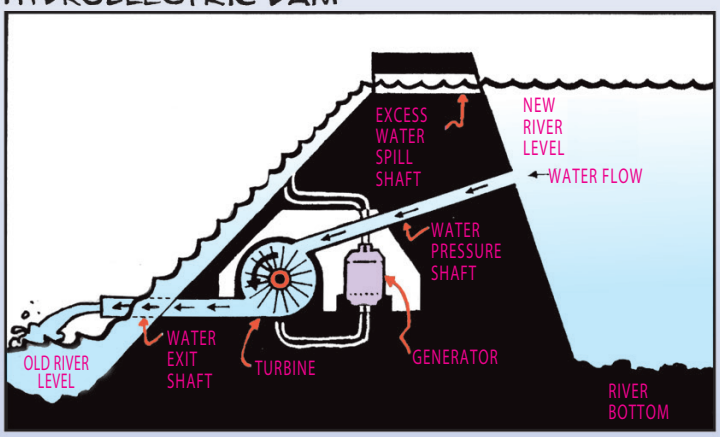
## Explore

In what ways is a beaver's body adapted to fit the environment?

How do these features help the beaver survive?

# PEOPLE ALSO CHANGE

## THE ENVIRONMENT




In some areas, the power of falling water is used to produce electricity. In places where dams cannot be built, we get energy from fuels like coal, oil, and natural gas.

Electricity is sent through wires to factories, stores, schools, and homes.

Beavers change the environment so they can survive. People do, too. We change the environment in many ways. For example, we use energy and build dams.

How does a dam change the river it is built on?

What is necessary to get the electricity from the dam to you?

How does that change the environment?

## Who Can Build The Best Dam?

Divide into teams. Each team constructs a dam in a plastic tub. Build it from recycled or natural materials such as wood chips, sticks, paper, sand, dirt, metal or plastic. Test each dam to see how long it can hold back two liters of water.

# Nature

## Adjusts To Changes

When you ride your bike, you have to keep your balance. No matter where you ride, you can adjust so that you don't fall. In nature, living things adjust to changes in order to survive.

### What do you need to survive?

In 2 minutes, list ten things you need to survive.

- Put a star on all the things the natural world gives you.
- Check the ones that use energy.
- Circle the things that you need every day.

Pick one item from your list.

- How would you adjust if you didn't have enough of it?
- What would you do if you had too much of it?

# COULD YOU SURVIVE WITHOUT USING ENERGY?

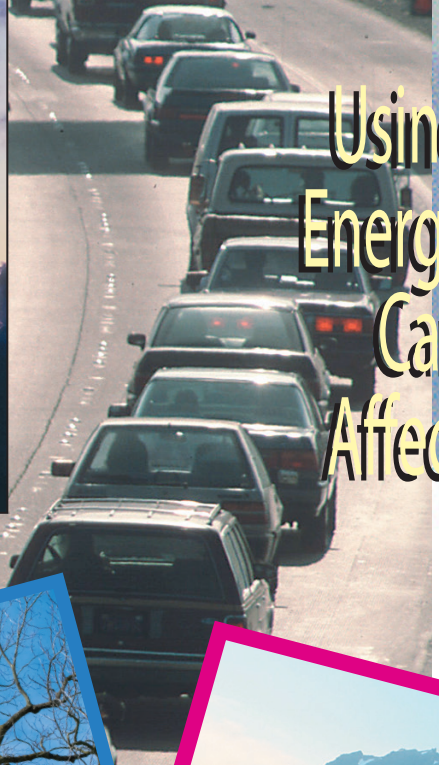
You use energy every day.

You use light to see. You use heat to stay warm, get clean, and cook your food. You use energy to travel.

## Daily Energy Use

Keep track of the energy you use during one day. Use this chart to help you. Forms of energy you might use in one day: electricity, gasoline, natural gas, fuel oil, propane, coal, wood, solar, other.

| Time of Day | Machines or Appliances Used? | To Do What? | Form of Energy |
|---|---|---|---|
| Morning | | | |
| | | | |
| | | | |
| Afternoon | | | |
| | | | |
| | | | |
| Evening | | | |
| | | | |



# Using Energy Can Affect Rain

Burning fuels like coal, oil and natural gas gives us energy. These fuels also give off sulfur and nitrogen gases, called oxides. The sulfur and nitrogen oxides mix with water in the air to form weak acids. These acids fall back to earth with rain and snow. In some places, acid rain can harm the environment.

Sometimes you can see the effects of pollution...

...and sometimes you can't. This lake looks beautiful, but there is too much acid for the fish to survive there.

## 1. Water Samples

Collect water from different places (rain, puddle on pavement or ground, tap water). Put some of each in a separate bottle and label it. Pour some water from one bottle through a coffee filter. Then examine the filter with a magnifying glass. Do this for each bottle using a clean filter each time. Write down what you can see. How clean or dirty was the water? How do you know?

## 2. Litmus Paper

Now, test for acid in your water samples. Dip a piece of blue litmus paper (litmus paper indicates acid) into one sample. Keep a record of what happens for each water sample. Test liquids like orange juice and vinegar, too. How many of the water samples changed the paper in the same way as the vinegar did? Can you see acid without litmus paper? How might you know it was there?

# The Atmosphere

## Using Energy Can Affect

All the air that surrounds the earth is called the atmosphere. Like the windows in a car, the atmosphere lets in sunlight and keeps in heat to warm the earth. This is called the greenhouse effect. Burning coal, oil, and natural gas for energy adds carbon dioxide gas to the atmosphere. Carbon dioxide is mostly responsible for the greenhouse effect. Many scientists believe our climate is changing because of the carbon dioxide that is released to the atmosphere as a result of human activities.

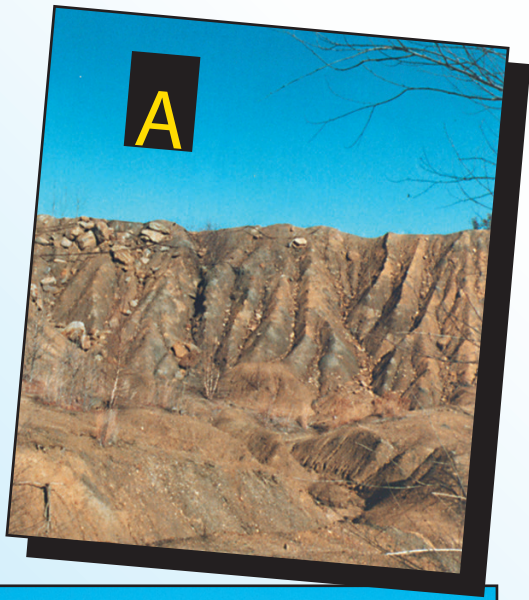
How much carbon dioxide does your use of energy add to the atmosphere?

1. Suppose your family used about 900 kilowatt hours of electricity last month. (A kilowatt hour is the unit of measure for electricity.)
2. How many pounds of coal would have been needed to make that much electricity? Multiply kilowatt hours by 1/3.
3. How many pounds of carbon dioxide would have been given off by the coal needed to make that electricity? Multiply kilowatt hours by 2 1/2.
4. With a partner or by yourself, write down what you could do to use electricity more wisely and affect the atmosphere less.


Coal is used to make electricity. Most of the coal we use is dug out of big open holes in the ground, called surface mines. When mining is finished, surface mines must be reclaimed. The land must be made useful again. Mines are reclaimed by putting back the top layers of soil. These layers are saved when the hole is dug.

## Think!

Both of these pictures show where a coal surface mine used to be. Look at the pictures and answer the questions.





How is Picture A different from Picture B?

_____

_____

Look at Picture A. Is the environment in balance? How can you tell?

_____

_____

Look at Picture B. Is the environment in balance? How can you tell?

_____

_____

How would you reclaim the land in Picture A to make it useful again?

_____

_____

# PLANTING TREES HELPS PROTECT THE ENVIRONMENT

Trees take carbon dioxide out of the air in order to survive. So, trees can help balance the effects of using energy.

Use the yellow words to complete the exercise.

OXYGEN

CHANGE

BALANCE

TREES

CARBON

ENERGY

GREENHOUSE

ATMOSPHERE

ENVIRONMENT

Using _____ adds _____ dioxide to the _____. We don't know how it will _____ the environment but to help the _____ keep its _____ we can plant trees.

_____ and other green plants take carbon dioxide out of the air. This gas is responsible for the _____ effect. Trees and green plants give back _____, the gas that humans need to breathe.

# Use Energy Wisely!

Every time you use energy it affects the environment. By using energy more wisely, we can live more comfortably and take care of the environment.

## Lighting

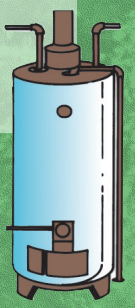
4%

Lighting uses the least amount of energy at home. How can you use lights at home more wisely?

## Hot Water Use

15%

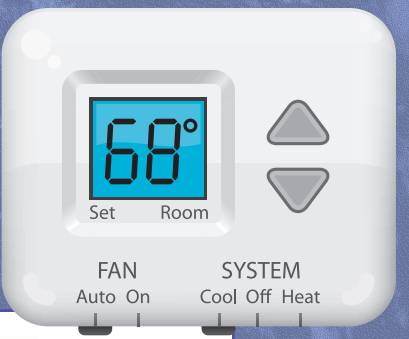
A water heater can use almost as much energy as all other appliances. What can you do to use hot water more wisely in your home?



## Heating and Cooling

53%

The LARGEST amount of home energy is used for heating and cooling. What can you do to use heating and cooling more wisely?




## Appliances & Devices

28%

Home appliances and devices use about 28% of home energy. How can you be more energy efficient when you use appliances and devices at home?

# RECYCLING IS NATURAL!

Recycling is one way the environment keeps its balance

When we recycle, we save energy. Look at the pictures below and answer the questions.


In the pictures above, purple shows the energy used to create new products, and green shows the energy used to create recycled products.

1. Which kind of aluminum uses less energy? Which kind of glass? Which kind of paper?
2. Which kind of aluminum, glass, and paper is easier on the environment? How do you know?
3. What can you tell about recycling from this pictograph?

**Reduce** **Reuse** **Recycle** **Refuse**

Directions: Read each description below and then write one of the four "R" words above on the line below that best describes it.

Collect and separate waste by type so that it can be used to make new products

R _____

Do not buy products that will damage our environment.

R _____

Do not throw things away that can be used again. Think of different ways to use things.

R _____

Use energy wisely. Limit the amount of waste that you throw out.

R _____

# You Can Take Action To Help The Environment!

## SAVE ALL THE PAPER

THAT WOULD HAVE BEEN THROWN OUT BY YOUR CLASS IN A WEEK!

**ANSWER THESE QUESTIONS:**

HOW MUCH PAPER IS THERE? HOW CAN YOU MEASURE IT?
WAS THE PAPER USED COMPLETELY?
HOW MUCH OF THE PAPER CAN STILL BE USED?
HOW MANY WAYS COULD YOU RE-USE SOME OF THE PAPER?
HOW COULD YOU COMPLETE YOUR SCHOOLWORK WITHOUT PAPER?
HOW DOES REUSING PAPER USE ENERGY WISELY?
HOW DOES IT HELP THE ENVIRONMENT?

## Alternatives

Which environmentally friendly or energy-saving products can you think of to replace the following? Be creative!

Instead of using Use

Paper towels _____

Plastic trash bags _____

Disposable diapers _____

Toothpaste pumps _____

Incandescent light bulbs _____

Spray underarm deodorants _____

Cleansers in plastic containers _____

# Help The Environment By Using Energy Wisely!

**Together with your family and classmates, you can make a difference in the environment.**

## Take the energy pledge!

1. Think of one way to save energy for each area of home and school listed below.
2. Decide to follow one or two of your ideas with your family or class. Sign the pledge.
3. Then, look at your energy bills for the next two months to see how much energy you have actually saved.

### At Home

Kitchen _____

Living Room

Bedroom _____

Bathroom _____

Car _____

### At School

Classroom _____

Cafeteria _____

Halls _____

Playground

Parking Lot


### Answer Key

**PAGE 11**

Energy, Carbon, Atmosphere, Change, Environment, Balance, Trees, Greenhouse, Oxygen

**PAGE 13**

Recycle
Refuse
Reuse
Reduce

**BACK COVER**

Down — 1. Coal 2. Environment 4. Acid 6. Water 8. Recycling 10. Energy

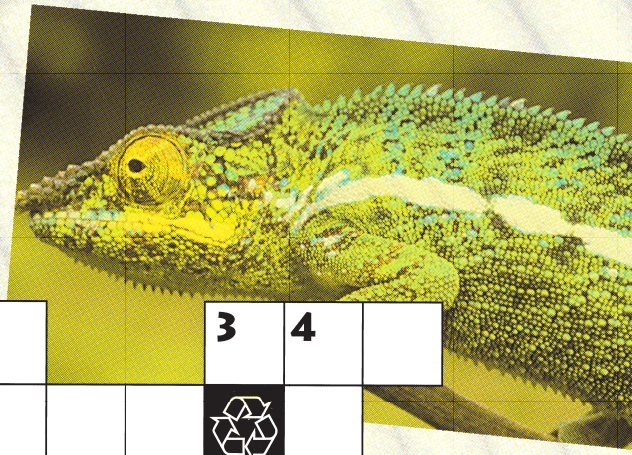
Across — 3. Dam 5. Balance 7. Carbon Dioxide 9. Greenhouse 11. Tree

## ENERGY PLEDGE

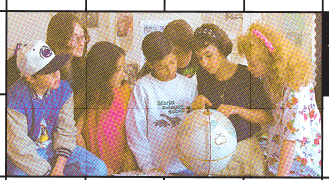
I promise to work together with my family and friends to help bring the environment back into balance by using energy more wisely.

Signed: _____

# ENVIRONMENTAL Crossword challenge!



**After reading this booklet and doing the activities, complete this crossword puzzle!**



## ACROSS

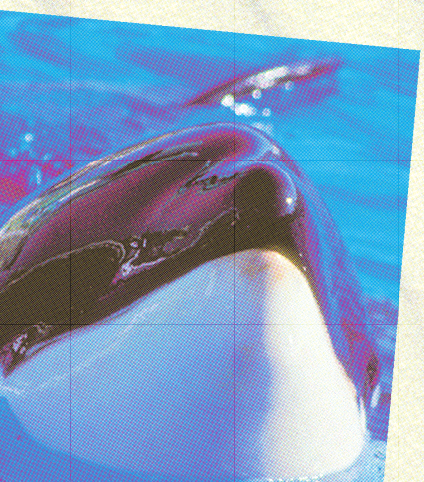
**3.** Something beavers build that changes the environment.

**5.** We help the environment keep its _____ by using energy wisely.

**7.** This gas is mostly responsible for the greenhouse effect.

**9.** Keeping the heat from the sun near the Earth's surface is the _____ effect.

**11.** A _____ takes carbon dioxide out of the air.



## DOWN

**1.** We get this from surface mines.

**2.** Everything that surrounds and affects a living being is the _____.

**4.** This type of rain comes from sulfur and nitrogen oxides.

**6.** People build dams to get electricity from it.

**8.** Making new materials from things that already exist is _____.

**10.** We can help the environment by using _____ more wisely.