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ABSTRACT

Even though the condition of the planet is a serious subject, becoming ecologically aware and active can be fun. This workbook provides ecologically conscious-raising activities that children can do at home or with others. A series of worksheets guides students through eight activities including: (1) assessing community resources and environmental problems concerning water, sewage, garbage, air, food, and land; (2) collecting information on local recycling depots, environmental groups, and government agencies; (3) writing effective letters as a way to educate and influence people in politics, business, and the media; (4) reviewing 50 individual actions that could help save the planet; (5) reviewing 50 group actions that could help save the planet; (6) setting up an ecology action club; (7) organizing an ecology action project; and (8) completing an "Ecology Quiz" using a provided dictionary of 147 words related to environmental problems. (LZ)

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Good Planets Are Hard To Find!
Ecology Action Workbook
and
Dictionary

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* **Good Planets Are Hard To Find!**
"An environmental information guide, dictionary
and action book for kids (and adults)"
also available from the publisher (\$7.00 post paid)

Printed on recycled paper.



3 another Thor book



Introduction

Even though the condition of the planet is serious, becoming ecologically aware and active can be fun. In this workbook you will find ecologically conscious-raising activities that you can do at home or with others. By doing them at home you will be changing lifelong patterns while making a difference to the planet. By working with others your efforts will be multiplied and you will have the opportunity to make friends and to have fun.

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Our Community and the Environment

Water:

What is the source of our drinking water? Trace how it gets to the tap.

What pollutants are in it (if any) and how did they get there?

Is our drinking water treated? How? Why?

How old are the community water pipes and what are they made of?

What else do I need to learn about our drinking water?

How can I get my drinking water tested?

What can I do to make my drinking water better?

What can I do to conserve water?

What can we do to improve our community's water?

Sewage:

What happens to the sewage in our community? (Where does it go when we flush our toilets?)

What should I not flush down toilets or pour down sinks?

Is our sewage treated? If so, how? If not, why not? _____

What is done with the treated sewage? _____

What changes can be made to our sewage disposal system to make it better? _____

Garbage:

Does my community have curbside collection of recyclable materials?

Yes No

If "Yes", what is included in the curbside recycling collection? What isn't?

How could the curbside recycling be improved? _____

If "No", what can I do to help start curbside recycling? _____

What happens to our unrecycled garbage? (Does it get burned? Does it go to a landfill in our community? Is it taken to another community? Do the landfills have problems with leaching?)

How can I reduce my garbage? _____

How can our community reduce its garbage? _____

Air:

What air pollution problems does our community have? Be specific. _____

What are the sources of this pollution in order of importance? _____

What is being done about air pollution? _____

What else could be done to reduce air pollution? _____

What kinds of public or mass transit does our community have? _____

Does our community have bicycle paths? How can they be improved or expanded? _____

What are some of the things I can do to reduce air pollution? _____

Food:

Where is most of our food grown? _____

How many people in my community do I know who grow some of their own food? What foods do they grow? _____

Does our community have community gardens for people who don't have their own land for growing food? Where are they? _____

Where can I grow food? _____

Should our local farmland be protected from non-agricultural development? If so, why and how? _____

Land:

Make a list of all the parks, large greenspaces and undeveloped land in our community.

What types of plants, birds and animals live in these parks and green spaces? _____

Should they be protected from development? If so, why and how? _____

Should our community protect its trees? If so, why and how? _____

Other: (noise pollution, radiation, toxic or hazardous wastes, etc.)

What other special environmental problems does our community have? Be specific.

What do I need to learn about them? _____

What is being done about them? _____

What can I do about them? _____

What can our community do about them? _____

Possible sources of information: Public Health Director, Water or Public Works Departments, Department of the Environment, City Hall, State or Provincial Health Department, recycling or solid waste management companies, ecology groups, community centers.

Summary:

List in order of importance our community's most important environmental problems and proposed solutions:

Problem:	Solution:

Local Ecology Action Resources

Recycling Depots:

	Name	Address	Phone Number
Paper:			
Glass:			
Plastic:			
Metal:			
Kitchen and Yard Waste:			
Toxic Waste:			
Other:			

Environmental Groups Active in Our Community:

Name	What they do	Address	Phone Number

Government Agencies Responsible for Our Community's Environment:

Name	What they do	Address	Phone Number

How to Write an Effective Letter

Letters are a very powerful way to educate and influence people in politics, business and the media. They help elected representatives decide what to do. Letters can convince people in business to recycle or stop polluting. They help determine what newspapers write about and what will be shown on television. Your letters are important!

Remember, letters of appreciation can also be very important. Write companies and elected officials who are doing a good job. Let them know you approve.

Here are ten steps that will help you make your letter effective:

1. **Decide what you are going to write about.** Be specific and stick to one issue. Ask a specific question and be sure to ask for a reply. Be sure to do some research so that you will be knowledgeable about the situation. The more you know about an issue, the better your letter will be.
2. **Decide who is the appropriate person to write** (e.g. an elected representative, newspaper editor or the owner of a company that pollutes the environment). Be sure that the person is able to do something about your request.
3. **Address the letter properly.** Use the person's complete title (e.g. Honorable Mayor Jones). Look up the proper address.
4. **Identify yourself and your reasons for writing the letter.** Do this in the first paragraph.
5. **Use facts whenever possible.** Make it clear why you are interested in this issue. Use your own words. Make the letter reasonably short. Ask questions, but only a few.
6. **If you have a complaint, try to offer a constructive solution to the problem.** Remember, good reasoning and constructive criticism will strengthen your position, and threats, demands or lecturing will weaken it.
7. **Be clear as to what you want the person to do** (e.g. vote for or against a piece of legislation, create or change a law, tax or fine a polluter, protect or change an existing situation, donate money or time to a cause, etc.).
8. **Write the best letter you can.** Your letter does not need to be perfect to be effective. It is better to write a letter with a few mistakes in it than not to write at all!
9. **Be polite.** Thank the person for reading your letter.
10. **Sign and print your name.** Include your address and the date. You can also send a copy to the media or your elected representative. (Be sure to let the person you are writing know that you are doing this.)

Make a list of people and organizations you plan to write:

Name	Organization	Address	Zip/Postal Code

How My Actions Can Make a Difference

(50 things I can do to help save the planet.)

Check what you currently do. Choose a few more to do; then add more over time.

Inside:

- I can use paper instead of plastic products.
- I can use re-usable dishes and cups instead of throw-away paper and plastic products whenever possible.
- I can turn off the lights, TV, radio, etc. when I leave a room.
- I can cover pots so the water in them boils faster.
- I can insulate and weatherstrip my house.
- I can keep the door closed when it's cold out.
- I can save leftovers and not waste food.
- I can conserve water.
- I can take showers instead of baths to conserve water.
- I can turn off the water while brushing my teeth.
- I can turn down the thermostat on the furnace.
- I can use the air conditioner only when necessary.
- I can run washing machines and dishwashers only when they are fully loaded.
- I can use a clothesline rather than a clothes dryer whenever possible.
- I can avoid pouring harmful chemicals like paint or motor oil down the drain.
- I can be happy with less.
- I can be generous to people who are starving because of famine.
- I can give to the food bank.

Outside:

- I can put up bird feeders to control insects and save wildlife.
- I can stop littering and not be a litterbug.
- I can plant a tree.
- I can use a campstove where wood is scarce.
- I can protect my parks and beaches.
- I can plant a garden or window box.
- I can make compost for my garden.
- I can grow my lawn and garden without using chemical pesticides.
- I can water my lawn and garden at night or in the early morning.

Recycling:

- I can remember the **3-R's: Reduce** waste, **Reuse**, and **Recycle**.
- I can recycle paper, plastic, glass, metal and clothing I no longer use.
- I can return empty bottles.
- I can fix things instead of throwing them away.
- I can donate the clothing I no longer use to people who can use it.
- I can recycle by buying and selling things at garage sales.
- I can use recycled paper products.
- I can carry my lunch, sandwiches, snacks and drinks in reusable containers.

Shopping:

- I can buy "ozone friendly" and "environment friendly" products.
- I can avoid buying products that harm our environment.
- I can buy products with the least amount of packaging.
- I can ask for and buy organic produce.
- I can buy a live Christmas tree and re-plant it after Christmas.
- I can buy local produce when I can.
- I can buy rechargeable instead of disposable batteries.
- I can avoid buying ivory, furs and feathers from threatened or endangered species.
- I can buy beverages in returnable bottles.
- I can buy eggs in paper rather than in polystyrene cartons.
- I can buy less meat and eat more vegetables.
- I can buy energy efficient products.

Transportation:

- I can use a bicycle instead of a car on short trips.
- I can make sure that the family car is tuned properly to save energy.
- I can use mass transit, join a carpool, bike, or walk instead of using a car.

How Group Actions Can Make a Difference

Education:

- We can think globally and act locally.
- We can read and learn more about ecology and our local environment.
- We can begin a news clipping club about pollution problems and possible solutions for our community.
- We can organize a debate on the environment to discuss both sides of issues followed by a group discussion.
- We can make ecology displays in a school, mall or community center about environmental issues.
- We can make environmental protection posters.
- We can invite speakers on environmental problems from government, industry and environmental organizations to our school or club.
- We can educate ourselves about what our government plans to do about environmental issues.
- We can produce an environmental newsletter or video.
- We can organize field trips to parks and green spaces to learn about our local ecology.
- We can tour a factory to find out what it does with its waste.
- We can visit a waste disposal site (landfill), or water or sewage treatment facility.
- We can call our local newspapers, radios and TV stations to publicize our environmental projects.

Action:

- We can ask our mayor to set up or improve curbside recycling programs.
- We can help local community recycling efforts.
- We can ask our neighbours to participate in curbside recycling.
- We can write to business and government leaders about stopping pollution and starting recycling programs.
- We can ask businesses to use less packaging in their products and to make them more "environment friendly".

- We can join and support environmental groups and Green clubs.
- We can start our own ecology action club.
- We can adopt a tree, stream, park, beach, lake or forest and help look after it.
- We can raise money for ecology action projects which prevent animal or plant extinction.
- We can help save trees and plant seedlings in our community.
- We can circulate a petition to urge action about environmental problems.
- We can clean up streets, parks and beaches with our friends and classmates.
- We can organize a rally to get action on community environmental problems.
- We can twin with another school or club and have eco-contests and share eco-projects with them.
- We can set up a recycling program at our school.
- We can set up organic vegetable gardens and recycle lunch room food scraps in a compost bin.

Fundraising:

- We can organize a garage sale for our school or neighborhood.
- We can make or sponsor a slide show, perform a play or prepare a lecture about the environment and charge admission to it.
- We can buy environmental products in bulk (recycled paper, fabric lunch or shopping bags, eco-books, energy saving devices, etc.) and resell them for a profit.
- We can organize garage sales, car washes, dances, etc. to earn money to help protect a wilderness area.
- We can have a walk-a-thon or run-a-thon to gather pledges for ecology projects.

Celebration:

- We can go on wilderness trips.
- We can celebrate Earth Day (April 22nd) and Environment Day (June 5th).
- We can celebrate our accomplishments.

Make a budget:

Income: (How to get the money needed.)

membership fees _____
 donations _____
 fundraising project _____

total _____

Expenses: (How the money will be spent.)

project costs _____
 transportation _____
 office supplies _____
 telephone _____
 photocopying _____
 mailing _____

total _____

Keep good records of the money received and spent. Keep all receipts!
 Make sure one person (usually the treasurer) is responsible for keeping these records.

List outside resources needed (for assistance, information, materials, money). Thank them.

What We Need	Where We Can Get It	Contact Person	Phone Number

Organize the meetings:

Be sure all members know the date, time and place of every meeting:

date _____ time _____ place _____
 date _____ time _____ place _____
 date _____ time _____ place _____

Set an agenda. (What you are going to do at the meeting, and in what order.):

Be sure every member has a chance to speak.

Vote on issues. (Be sure that every member votes. Discuss every issue. Try to get all the members to agree - a consensus.)

Vote on how the group's money will be spent.

Meet regularly and keep meetings as short as possible.

Try to accomplish something at every meeting.

Keep a record of each meeting (minutes): the decisions that are made and who does what.

Always include fun activities and refreshments.

Budget: (How much money do we need to successfully complete this project?) \$ _____

Income: (How to get the money needed)

Expenses: (How the money will be spent)

specific donations _____

materials _____

fundraising project _____

transportation _____

office supplies _____

telephone _____

photocopying _____

mailing _____

total _____

total _____

Keep good records of the money and keep all receipts!

List outside resources needed (for assistance, information, materials, money). Thank them.

What We Need	Where We Can Get It	Contact Person	Phone Number

Meeting Schedules:

date _____ time _____ place _____

date _____ time _____ place _____

date _____ time _____ place _____

Evaluation of Project:

Review the project goals.

What worked well? _____

What didn't work well? _____

How can we improve next time? _____

Dictionary

acid rain: when water vapor in the air mixes with certain gases such as factory smoke and car exhaust, the water vapor dissolves those gases and becomes acidic. When acid rain falls it can harm plants, trees and fish.

aerosol can: a container that sprays a substance by means of a compressed gas. In the past the most commonly used compressed gas contained CFC's. Now we know that these chemicals are harmful to the ozone layer. Today most aerosol containers use other gases.

alcohol: a fuel usually made of gasoline and alcohol (a biofuel).

Amazon: the name of the largest river and the largest tropical rainforest in the world. The billions of trees in the Amazon Rainforest help keep the air on the planet fresh, provide moisture and regulate the Earth's climate. The Amazon is one of the most endangered large ecosystems in the world.

appropriate technology: small scale tools and machinery that people can use to improve their living conditions. This kind of technology uses smaller amounts of resources more efficiently and causes less environmental damage than large scale technology.

aquaculture: the growing of seafood and fish in fresh and sea water environments. Improperly done aquaculture can produce pollution and other environmental problems.

arable: capable of being used for farming. Due to environmentally inappropriate use of the land, less land is arable every year.

atmosphere: the layer of gases around a planet. The Earth's atmosphere contains many gases including nitrogen, oxygen, carbon dioxide and ozone.

biocide: a chemical which is poisonous to living things. Today many different kinds of biocides are produced in factories. They are used to control pests in monoculture farms, but as a result can contaminate groundwater.

bioconcentration: the accumulation of non-biodegradable chemicals (contaminants) in the tissues of living things. The higher up the food chain, the greater the bioconcentration of certain chemicals and the greater their danger to health.

biodegradable: something that is food for bacteria and other living things, and can be broken down and recycled in the ecosystem. Many mod-

ern products, such as certain kinds of plastics, are not very biodegradable and can take many years to decay. Most "biodegradable" plastics only disintegrate into smaller pieces or into plastic dust (which can still harm the environment).

biodiversity: the range of differences in life forms. Scientists have already identified nearly two million species of living things although they have examined only a small portion of them. They believe many millions more are yet to be discovered. Biodiversity is greatest in places which have evolved the longest (e.g. rainforests). Biodiversity is essential to keeping the living Earth healthy and in balance.

biofuel energy: energy that is made by converting plant or animal material into fuel. There are two main types of biofuels: alcohol and methane. These renewable sources of energy could be partial alternatives to fossil fuel energy.

biome: a large ecosystem with a specific climate and interrelating life forms (e.g. rainforest, desert, tundra, grassland).

biosphere: the layer of the Earth that includes all life. The biosphere contains air, soil, water and all plant and animal life.

biotechnology: the technological manipulation of living organisms resulting in changes to existing forms of life (e.g. the creation of new plants). This controversial technology is also known as genetic engineering.

birth rate: the number of births for every 1,000 people in a given year. The current global human birth rate is exceeding the death rate. The Earth's population is increasing rapidly and could double in less than 50 years.

blue box: a special plastic box used by households in many communities to store and set out recyclable materials for curbside recycling.

Brundtland Report: a report by the United Nations World Commission on Environment and Development, published in a book called "Our Common Future". This report was compiled and written by Mrs. Gro Harlem Brundtland, the Prime Minister of Norway. The report recommends sustainable development to solve the Earth's environmental crisis.

by-product: something that is left over after an industrial process (e.g. wood chips, smoke stack emissions, nuclear waste). Some by-products are poisonous to plant and animal life, and many are

difficult to dispose of.

canopy: the upper layer of a forest that consists of the leaves and branches of the tallest trees. A specialized group of plants and animals live in tree canopies.

carbon dioxide (CO₂): a heavy, colorless gas. Carbon dioxide is absorbed from the air by plants and is used in photosynthesis. CO₂ is a natural and necessary part of the air we inhale and exhale. It is also exhaled when animals breathe and when anything made with carbon is burned or rots (e.g. trees, fossil fuels). Excessive carbon dioxide, from the burning of fossil fuels, is accumulating in the atmosphere and contributing to the greenhouse effect.

carcinogen: anything that causes cancer. Many modern pesticides and chemical by-products are carcinogens. Natural carcinogens, however, are also found in plants.

carrying capacity: the largest population that a particular habitat can accommodate without breaking down because of food, water, shelter and space limitations. The human population will have exceeded the Earth's carrying capacity when there are more people to feed than Earth's natural resources can adequately provide for.

cash crop: a crop grown by farmers for sale to others rather than for their own use. When farmers in developing countries grow cash crops (usually for export), it is often at the expense of growing food for local consumption.

catalytic converter: an afterburner fitted onto the exhaust pipe of a car or the smoke stack of a factory. A catalytic converter completes combustion and reduces air pollution.

CFC's (chlorofluorocarbons): the name of a group of factory-made chemicals that are used to produce some kinds of foam cups, packaging and insulation, and as a propellant in aerosol containers. CFC's are also currently used in the cooling systems of most air conditioners and refrigerators (freon gas). It has recently been discovered that CFC's when released into the atmosphere are very harmful to the Earth's protective ozone layer. CFC use is now declining but the challenge is to recycle the existing stocks very carefully.

clear-cut: the process of cutting down all the trees in a given area during logging. Clear-cutting can lead to soil erosion. An alternative to clear-cutting is selective logging.

compost: the result of organic materials decomposing (breaking down) into humus. Compost can be used to fertilize gardens and fields. Composting is an excellent way to recycle kitchen, lawn and garden waste.

conservation: using the Earth's natural resources wisely and efficiently. It is important to conserve the Earth's resources so that they will be available for future generations. Recycling helps us to conserve natural resources.

contaminant: an unwanted substance that spoils or poisons another substance.

curbside recycling: the pick-up at the street of households' separated waste materials. Curbside recycling is the most efficient form of community recycling. Special blue boxes are often used for storage and pick-up.

cycle: when events or processes repeat themselves over time. There are many cycles in nature (e.g. the water cycle, the carbon cycle, the sun spot cycle).

DDT: once one of the most widely used pesticides in the world. DDT is now banned in many countries because it is toxic, it bioconcentrates and it is slow to biodegrade. Environmentalists are working to have DDT banned in all countries because of its harmful effects and replaced with less harmful pesticides.

death rate: the number of deaths for every 1,000 living people in a given year. Modern medicine has greatly reduced the human death rate. Currently the birth rate is exceeding the death rate.

decompose: to break down, rot or decay. Ultimately everything decomposes, even rocks, planets and solar systems!

deforestation: the removal of trees from an area. Deforestation can lead to soil erosion and, when the trees do not regenerate, to desertification.

desalinization: the process of converting salt water to fresh water.

desertification: the final stage in the loss of plant life in an area, through natural or unnatural causes, resulting in a desert. Desertification is caused by decreased rainfall and water availability. Contributing factors are overpopulation and the inappropriate use of the land (e.g. overgrazing grasslands, cutting down trees and bushes for firewood in natural dry areas and overuse and depletion of groundwater).

developed countries: countries where most people's basic needs for food, clean water, health care, etc. are generally met and many people have more than they need for basic survival. Developed countries are usually known as the industrially developed western nations (or First World). These countries include the U.S., Canada, the European nations, Japan, Australia and New Zealand. The developed countries produce most of the toxic chemicals and use most of the world's resources.

developing countries: countries where the basic needs of life for many people are not met, and many people face a daily struggle to survive. Developing countries include most countries in Africa, Latin America and much of Asia. They are also known as the Third World. Developing countries often supply natural resources to the developed countries in exchange for manufactured goods.

dioxins: a family of organo-chlorine compounds, extremely toxic in minute quantities. Some dioxins are produced by natural processes, but many are industrially made during burning of garbage and the production of chlorine-bleached white paper.

driftnet: a type of fishing net often many miles long. Driftnets capture not only the desired fish but also many other fish, sea mammals and sea birds at the same time (e.g. dolphins when fishing for tuna). Environmentalists are working to have driftnets banned worldwide because they are ecologically destructive.

drought: long-lasting, dry weather. Prolonged drought can lead to famine. Drought can be natural or caused by human activity (e.g. clear-cutting and overgrazing).

Earth Day: a special day set aside to focus on environmental concerns and finding ways to solve environmental problems. Earth Day is celebrated locally, nationally and internationally on April 22nd.

ecology: the scientific study of plants and animals in the places where they live, as well as their relationships to each other and to their natural environment.

ecosystem: a community of plants and animals that relate to each other within a specific natural environment. Each part of an ecosystem is interdependent on and interconnected to every other part (e.g. marine, forest, pond and desert ecosystems).

endangered species: a species in grave danger of becoming extinct. Endangered species require special protection and a secure habitat to ensure their survival. There is a rapidly growing number of endangered species on Earth today.

energy: the capacity to produce heat or motion. Energy is what we use to light, heat and cool our homes, and power our cars, factories and machines. Conserving energy minimizes the use of valuable resources.

energy efficiency: the measure of how much energy is consumed when useful work is done compared to how much is wasted. (e.g. Energy efficient cars and appliances use less energy to do the same amount of work as inefficient ones that waste both energy and resources.)

environment: a plant or animal's total surroundings, where it lives and all the things that affect it there. Pollution harms and degrades environments.

Environment Day: a special day set aside to focus on environmental concerns and to find ways to solve environmental problems. The United Nations has established June 5th as World Environment Day.

environmental degradation: the deterioration of the environment so that it has fewer species, poorer soil and a decreased ability to support life. Environmental degradation is often the first step to far greater problems (e.g. famine).

erosion: the wearing away of the Earth's surface by wind or water. Erosion occurs naturally over time. It also occurs at an accelerated rate by overgrazing, farming in arid areas and clear-cut logging in places with heavy rainfall.

estuaries: areas where fresh water flows into salt water (e.g. river mouths, lagoons, salt water marshes). Estuaries are among the most biologically productive ecosystems in the world.

extinction: occurs when the last individual of a species dies. More plants and animals are going extinct now than ever before because of the destruction and degradation of their habitats.

famine: the result of not having enough food to feed and nourish all the people in an area. Prolonged famine can lead to mass starvation. Besides prolonged natural drought, famine can be caused by the misuses of the environment, the unequal use of resources and as a result of wars and overpopulation.

First World: (See: developed countries)

fish farm: (See: **aquaculture**)

food chain: a series of relationships in which one group of plants or animals serves as food for other animals. Food chains link plant and animal life from the simplest and smallest life forms to the largest. The higher up the food chain, the more concentrated become the pollutants in the animals (bioconcentration).

food irradiation: a controversial process that uses radiation to kill the bacteria in food in order to extend its shelf life in stores and supermarkets.

formaldehyde: a poisonous substance created and used by industry for its industrial applications. (e.g. Formaldehyde is sometimes used in glue for making building materials and furniture.)

fossil fuels: coal, natural gas and oil (petroleum), from ancient deposits of decayed living matter, which are extracted from underground deposits. Fossil fuels are non-renewable resources and are being consumed very quickly by burning for energy, road building and the production of plastics.

fossil fuel energy: energy that is released by burning fossil fuels with carbon dioxide as the major by-product. The accumulation in the atmosphere of carbon dioxide from the burning of fossil fuels contributes significantly to the greenhouse effect.

Gaia: the name for the theory that the Earth is a self-sustaining living entity. It is sometimes used to describe the totality of life on Earth.

genetic engineering: (See: **biotechnology**)

geothermal energy: energy that is found within the Earth itself. In certain areas geothermal energy can be harnessed although there can be environmental drawbacks.

global commons: the term used to describe those areas that belong to all of humankind: the oceans, Antarctica, the atmosphere and outer space. The global commons are subject to a growing body of international laws often through the United Nations.

global village: the term used to illustrate the interdependence of people around the world given today's speed of communication and travel.

global warming: the gradual increase in temperature of the Earth that is occurring today. Many scientists believe the Earth is slowly getting warmer, primarily because of the increase of

carbon dioxide pollution from the burning of fossil fuels which creates a greenhouse effect.

green: the word and the color green are becoming symbols for ecology and the importance of the environment to life.

greenhouse effect: the global warming of the planet due to the accumulation of greenhouse gases which trap the Earth's heat much like a greenhouse glass traps the heat of the sun's rays. The greenhouse effect is caused primarily by the vast amounts of fossil fuels being burned. This is a major environmental concern.

greenhouse gases: the most common are: carbon dioxide and ozone from fossil fuel burning, methane from decay and digestion of organic material and CFC's from industrial processes and production.

groundwater: the water that flows underground and feeds springs and wells. Groundwater can be polluted by the dumping and leaching of waste from surface water.

habitat: the home or natural location of a plant or animal, where it finds food, water and shelter and where its offspring grow up. Many habitats are being destroyed by human activities such as agriculture, urbanization, industrialization and the misuse of the environment.

hazardous waste: waste that is harmful to living creatures. It can be corrosive, flammable, poisonous, radioactive or a combination of all these.

herbicide: a type of pesticide used to kill weeds and vegetation.

humus: soil that is made up of decomposed organic matter. It serves as a major source of plant nutrients and increases the water absorption capacity of soils.

hydrocarbons: molecules made up of carbon and hydrogen (e.g. gasoline).

hydroelectric energy: the energy that is generated from falling water. Hydroelectric energy requires dams which often destroy wildlife, habitats and farmland.

incineration: the process of burning. The incineration of household garbage leaves hazardous ash residue and often pollutes the air.

insecticides: a type of pesticide used to kill insects.

insulation: a type of material that does not conduct heat well. A properly insulated building conserves energy.

interdependent: dependent on one another. In an ecosystem each part is interdependent and affects every other part of the ecosystem. (e.g. How we live affects the air we breathe and the air we breathe affects us.)

landfill: an earth-covered garbage dump. It is a place where solid waste (garbage) is regularly deposited and covered with earth. Landfills create methane gas and toxic leachate, and take valuable space that could be used for homes or crops.

leaching: the process by which water seeps through the ground picking up various dissolved materials. Landfill and mining tailing leachates can pollute soil and underground water.

malnutrition: an illness resulting from lack of food or from an unbalanced diet. Many people suffer from malnutrition because of the misuse of the environment, the unequal use of resources or overpopulation in a given area.

mass transit: a way of transporting many people at the same time. It includes buses, trains, planes and subways. Mass transit conserves both energy and resources.

methane: a gas which is sometimes used as a biofuel. One way methane is produced is through the decay of organic material that is found in landfills. Another way is as a digestive by-product of animals such as cattle and termites. Unburned methane acts as a greenhouse gas. Methane from landfills is being used as a partial substitute for fossil fuel energy.

monoculture: planting large areas in a single crop. This kind of agriculture is often ecologically unsound because a single crop depletes the soil and is vulnerable to insects and disease.

natural resources: resources found in nature (e.g. trees, water, air, minerals, fossil fuels). Natural resources are commonly divided into renewable and non-renewable resources.

non-renewable energy: energy produced from materials that cannot be replaced (e.g. fossil fuels).

nuclear energy: the energy that is released by splitting an atom (fission) or joining atoms together (fusion). Utilizing energy from nuclear fission is an alternative to fossil fuel energy, but has created serious environmental problems (e.g. the disposal of radioactive waste and the radioactive air and water pollution from nuclear power plants.).

nuclear fission: the process of atoms splitting

apart and releasing energy. Nuclear reactors harness this energy. Its by-products are dangerous radiation and radioactive waste.

nuclear fusion: the process of joining atoms together. Scientists are working to develop a fusion reactor to capture this energy.

ocean dumping: every year enormous amounts of sewage and industrial waste are dumped directly into the world's oceans. Oceans are now becoming contaminated with pollutants. Ocean dumping of toxic chemicals is harmful to marine life and to the people and animals who eat contaminated marine food.

oil spill: the oil spilled by tankers, ocean well blowouts and boat fuel leaks. Large tankers carry millions of gallons of crude oil from oil producing wells to refineries. Large oil spills create ecological disasters by killing vast amounts of ocean lifeforms (e.g. snails, birds, sea mammals, fish, etc.) endangering marine ecosystems.

old growth forests: a natural area dominated by trees that have never been logged and are the result of natural diversity over millions of years. Old growth forests are also called ancient forests or primary forests.

organic farming: the growing of crops by natural methods, using natural pesticides and fertilizers instead of chemical pesticides and fertilizers produced in factories. Many people believe that organic farming is better for the soil, more sustainable and safer for the environment. It is also safer for the farmers who use this method and for the people who eat organic food.

overgrazing: the process whereby animals eat the vegetation of an area faster than it can grow back. If an area is overgrazed for a long time it can lead to loss of plant life, causing soil erosion and desertification.

overpopulation: too many people or animals living in a given area (exceeding its carrying capacity) often resulting in the degradation of the environment.

ozone layer: the fragile layer of a naturally formed gas that is found in the upper atmosphere surrounding the Earth. The ozone layer protects plants and animals from most of the sun's high-energy, harmful ultraviolet rays. It is gradually being destroyed by CFC's. Scientists hope this can be reversed by the complete banning of CFC's.

ozone (low level): a harmful gas that is produced by the exhausts from fossil fuels burned in car engines, homes and factories.

PCB's (polychlorinated biphenyls): a group of stable, factory made chemicals that were used for many industrial products, including electrical transformers and fluorescent lights. PCB's have recently been found to be toxic. Even though the use of PCB's has diminished, they are still found in many storage depots. Scientists are trying to find safe ways of disposing of them.

pesticides: factory-made chemicals that many farmers use to kill weeds and insects which might harm their crops. Many pesticides are harmful to the environment, to the farmers who use them and to the people who eat them on or in their food. Certain pesticides can also bioconcentrate in meat and dairy products.

petroleum: the name for unrefined, crude oil, a fossil fuel.

phosphate: one of the basic salts that plants need for growth. Excessive phosphates used in agriculture and in household laundry detergents can cause serious water pollution problems.

photosynthesis: the natural process by which green plants use sunlight energy to combine carbon dioxide and water to make food (carbohydrates).

photovoltaic cell: a device for converting sunlight energy directly to electrical energy.

pollution: the introduction of substances or products into the air, water and land that can harmfully affect living organisms.

polystyrene: the general name for a type of plastic foam product used in some kinds of insulation material and for throw-away cups and plates. A common brand name for this foam insulation is "styrofoam". Some polystyrene is made with CFC bubbling agents which damage the ozone layer. Products made with foam are not very biodegradable and can be difficult to recycle.

ppm (parts per million): a unit of measurement. The term "ppm" is used to measure minute quantities of a substance diluted in water or in the air.

preservation: to keep safe and to keep from harm. Many people believe it is important to preserve natural wildlife and plant habitats for future generations.

preservatives: food additives used to inhibit the decay of food. Some preservatives are harmful to our health, and some are not.

radioactive waste: material left over after nuclear fission has occurred in nuclear power factories. Radioactive wastes are highly toxic and difficult to store. Many radioactive substances last for thousands of years.

radon gas: a very heavy radioactive element. It can collect in basements from natural radiation decay. Radon is harmful to breathe.

rainforest (temperate): areas in the north and south latitudes that have over 100 inches of rain every year. Temperate rainforests are usually found in coastal areas near large oceans. Many are being clear-cut because they have large or valuable trees.

rainforests (tropical): forests in the tropics with a heavy annual rainfall of at least 100 inches every year. Tropical rainforests constitute the Earth's most complex ecosystems and are home to millions of species. Many tropical rainforests are being clear-cut for wood products and for agricultural or grazing usage, thereby destroying plant and animal habitats and endangering species.

recyclable: capable of being recycled. Many products are recyclable.

recycle: the re-use of things that would otherwise be thrown away. Recycling saves both the energy that it would take to replace them and the materials it would take to manufacture them. Recycling is a major way to conserve resources.

reef: an enormous limestone structure in the ocean that is made from the accumulated skeletal remains of once-living creatures. Reefs are the homes of many sea-life ecosystems. Many reefs are now endangered by pollution.

reforestation: the natural restocking or replanting of trees on previously forested lands. When trees have been over-cut or clear-cut, reforestation is often necessary to regenerate areas to keep the soil from eroding and to help it retain water.

renewable energy: the energy produced from sources that can be replaced (e.g. sun, wind, wood fiber).

resource: something that is found in nature and is useful. A renewable resource is a resource that can be replaced (e.g. trees and water). A non-renewable resource is one that cannot be replaced (e.g. metals, oil and coal).

salinization: the process of the soil turning

salty. Salinization is often caused by irrigation water evaporating thus leaving dissolved salt behind. When this happens the soil gradually becomes too salty to grow plants.

scrubber: the equipment used to remove poisonous gases from factory smoke stacks. The widespread use of scrubbers in industry is essential to reduce air pollution.

selective logging: a method of logging whereby some trees are cut and others are left to continue to grow to protect the soil and naturally reseed the areas that have been logged.

silviculture: the planting, tending and growing of trees as a crop.

smog: the results of the mixture of car exhaust and factory smoke reacting with sunlight energy in the air. Smog is harmful to human beings, animals and plant life, and contributes to the greenhouse effect.

solar collector: a device used to concentrate solar energy (e.g. a solar hot water tank or photovoltaic cell).

solar energy: solar energy is given off by the sun through its rays. It can be captured by solar collectors to heat water and it can be stored in photovoltaic cells. Solar energy is a non-polluting, safe and abundant alternative to fossil fuel energy.

Spaceship Earth: a term used to picture the Earth as a giant spaceship whose resources and carrying capacity are limited, and where everything must be used wisely and nothing can be wasted.

species: a category or a biological classification of plants or animals. Due to misuses of the environment, many species have become or are becoming threatened, endangered or extinct.

sustainable development: the idea that we must develop and continue to use resources but only in ways that do not compromise the ability of future generations to meet their own needs.

tailings: waste rock separated out during the processing of mineral ores. Sometimes tailing piles produce pollution problems through leaching or fires (e.g. coal tailings).

Third World: (See: **developing countries**)

threatened species: a rare species that is currently declining in numbers. A threatened species is not yet classified by scientists as an endangered species (a more severe classification closer to extinction). Plants and animals that are threatened species will become endangered

species unless their decline in numbers is stopped (e.g. elephants and some whales).

topsoil: humus-rich surface soil that holds moisture, and is essential to agriculture and silviculture. Topsoil takes a long time to develop and can be quickly destroyed by overgrazing and poor agriculture and silviculture practices.

toxic waste: (See: **hazardous waste**)

UNEP: the United Nations Environment Programme. UNEP gathers information about environmental issues from around the world and reports on environmental problems. UNEP has offices throughout the world, and its headquarters is located in Nairobi, Kenya.

ultraviolet rays (UV rays): a powerful type of sun ray energy that, in excess, is harmful to plant and animal life. Currently most UV rays are blocked by the ozone layer that is slowly being destroyed by CFC's.

variety: a range of different types of something. Within a single species of plant or animal, it is important to have a wide variety of types because each type is special, containing its own resistance to disease and its own ability to survive in the environment (e.g. varieties of apples).

watershed: the area defined by the height of land. A watershed is drained by a network of creeks, streams, lakes and rivers. One special kind of watershed that must be conserved is that which provides drinking water for cities.

watertable: the level below the surface of the Earth where the water lies. In many parts of the world the watertable is decreasing to lower depths because of overuse of irrigation.

wetlands: marshes, swamps and bogs. Wetlands are very biologically productive ecosystems. They regulate floods, cleanse water and provide habitats for migratory waterfowl. Some crops are grown in wetlands (e.g. rice). Currently, many wetlands are threatened by pollution or land reclamation and development.

windpower energy: the energy from the wind that can be captured by windmills and wind turbines and then converted to mechanical and electrical energy. Windpower energy is non-polluting and could be a partial alternative to fossil fuel energy.

wind turbine: a special type of windmill that transfers wind energy efficiently into mechanical energy.

Ecology Quiz

(Have some fun and learn!)

Re-define the words in quotation marks that have been humorously and incorrectly defined.

Look them up in the dictionary if you need to.

"Ozone" refers to the area between the N-zone and the P-zone. _____

An "ecosystem" is a way of organizing an ecology project. _____

"Overgrazing" is the term applied to people who eat too much salad when dieting. _____

"Spaceship Earth" is the name for the international effort, by scientists, to relocate the planet to another solar system where there is no pollution. _____

"Biomes" commit "biocide" on a regular basis. _____

"Earth Day" refers to the day the galaxy was formed. _____

A "clear-cut" refers to the latest punk hairdo. _____

"PPM" refers to the time between midnight and 1:00 A.M. _____

"Third World" is a term that describes the planet Earth's position in the solar system. _____

"Bioconcentration" is what one does while studying for a biology test. _____

"Photosynthesis" is a picture taken of a synthesis. _____

"Bruntland" is a small island off the coast of Greenland. _____

WE CAN DO IT!

If we begin now it is possible for us to halt the ecological destruction of our planet. Each ecologically conscious action we take makes a difference to the planet, and by working together our efforts are multiplied. The decisions our generation makes will be crucial to life on Earth.

First, we must become better informed because knowledge paves the road to change. Next, we must learn to consume less and to recycle more. Knowledge and action are a powerful combination. Finally, we must act in the light of the ancient Iroquois saying, "In every deliberation, we must consider the impact of our decision on the next seven generations."