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Man's Struggle for Environmental Preservation

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From the time of early humans to the time of the astronauts, few have realized how closely all living things in the world are related to each other. Today many people and especially young people, are looking at the whole world in an effort to learn about the life web that threads through the entire planet. Everyone must agree that a better understanding of the relationship between human kind and the environment is a positive step forward to help solve environmental problems. Each human being must accept his own person as a part of the ecosystem, and develop and use a workable set of ecological values. This curriculum unit is aimed at getting middle school students to become critically aware of environmental problems and issues and to help them realize that they can make a difference and help heal our planet.

In this unit, students will learn the importance of chemical cycles to organisms in the environment, the role of recycling and the measures being taken to prevent endangered animals from becoming extinct.

The teaching methods will include experiments, discussions, debates, field trips, role playing and oral reports. Other features that will be included in the unit are lesson plans, reading lists and bibliography. The duration of the unit is about four weeks and an interdisciplinary approach is encouraged among teachers.

The Carbon-Hydrogen-Oxygen-Nitrogen Cycles

Objectives

Students will have opportunities to:

a. Trace the cycling of nitrogen, oxygen, carbon-dioxide and water through the biosphere with the aid of diagrams.

b. Explain the flow of energy through an ecosystem using examples.

Approximate time: one week

Nitrogen Cycle

All living things need nitrogen to help build proteins, DNA, and certain other body chemicals. However, in spite of being surrounded by nitrogen gas, most organisms cannot use this free nitrogen in the air. Most living

things can use only nitrogen that is combined with other elements by nitrogen fixing bacteria. Useable nitrogen is also added to an ecosystem by lightning, which converts atmospheric nitrogen and oxygen into nitrate. Other sources of nitrogen are erosion of rocks rich in nitrates and the decomposition of organic matter. The nitrogen cycle is the process by which nitrogen in the air is changed to a form which can be taken up and used by plants to make proteins. Organisms that eat plants use the plant proteins to make their own proteins. When plants and animals die, decomposers break down the proteins of dead organisms, changing them into ammonia which can be used by plants or returned to the air. Thus, nitrogen is returned to the atmosphere when it is once more released as a gas by denitrifying bacteria that break up organic molecules for their food releasing any nitrogen they contain as gas. (See diagram below.)

Decomposers are very essential to the ecosystem. Firstly, they rid the environment of dead plant and animal matter and secondly return substances such as nitrogen, carbon, phosphorous, sulphur and magnesium to the environment. These substances are then used by other plants to make food and the cycle continues. If the nutrients were not returned to the environment, organisms within that ecosystem could not survive for long. A few kinds of bacteria can take nitrogen directly from the air and form nitrogen compounds. This process is called nitrogen-fixation. Some of these nitrogen-fixing bacteria live in the soil. Others grow on the roots of plants known as legumes including beans, peas and peanuts. The bacteria therefore supply the plants with usable nitrogen.

Oxygen and Carbon-Dioxide Cycle

Plants use carbon-dioxide and produce oxygen during photosynthesis. Plants, animals and other organisms produce water and carbon-dioxide during respiration. N.B. See diagram below. During photosynthesis, plants return oxygen to the atmosphere as a by-product which animals use up during respiration. Carbon-dioxide is also added to the air by the decomposition of organic matter, and the burning of coal, oil and gas. Plants balance this action by carrying on photosynthesis as well as respiration.

Water Cycle

Water is the molecule that supports life. Most of the water on earth is found in lakes, streams and oceans. Surface water in these lakes, streams and oceans is heated by the sun and turns to water vapor, a gas. This process is called *Evaporation* . The water vapor then rises up into the air. In the upper atmosphere, water vapor cools and changes into liquid droplets. Eventually, the droplets fall back to the surface as rain and snow. This process is called *Precipitation* . This circulation of water from the atmosphere to the earth and back to the atmosphere is called the water cycle. From pure, clean water to waste water, back to pure, clean water again, is still another kind of water cycle. Even the land part of the earth itself is part of a cycle. The soil that forms a thin layer on much of the land part of the earth was once rock. Through long years of grinding, wearing away by winds, or the action of animals and plants that lived on the rock, smaller and smaller pieces of rock were changed to soil. Soil is also composed of organic matter, decomposed animals and plants. Since the plants which supply our food depend on the soil, it is very important for people to conserve the supply. Just by growing things may deplete the quality and the supply, and the water washes much of the soil toward the sea. Thus, the human animal has interfered also with the soil and rock cycle. Year after year, the cycles of nature continue. In addition to the cycles of their physical environments, the complicated food chain supports a balance of life on our planet Earth. The balance fluctuates, depending on the number of natural enemies and the conditions that favor certain complex interrelationships between plants and animals, and between prey and predator, exists in all kinds of ecosystems.

Supplies are very limited in this closed system and it makes a great deal of sense for us to turn to recycling as

a means of survival. We must learn to use and reuse, on a larger and bigger scale to prevent an imbalance in the ecosystem.

TRASH AND RECYCLING

OBJECTIVE #2

Students will:

a. be able to list many causes for our trash crisis and discuss why this problem exists.
b. generate ideas as to what can be done to solve such problems. That is, to revise a way of life so as to reduce the amount of waste we produce.
c. discuss the greatest possible use of a material in the most efficient manner.
d. be able to describe different methods of disposal of solid waste.
e. discuss natural resources and their conservation and the problems of pollution.

Approximate time: 2 weeks Sometimes people have disposed of trash carelessly, resulting in unsightly litter. This type of activity pollutes the environment and can damage land and water. Americans throw out 160 million tons of solid waste each year. This means that each of us creates three and one-half pounds of garbage every day. More than three quarters of this trash is trucked to landfills. If this continues, many landfills will reach their capacity in the not-too distant future.

Municipal refuse is composed largely of packaging materials and of items that have been discarded because they were not built to last in the first place. Depletion of resources and environmental disruptions are caused when these goods are produced.

Much of the solid waste in the U.S. is deposited in unsightly, uncontrolled, smelly, polluting open dumps. Recycling conserves not only material resources but fuel reserves as well. If an item cannot be reused or repaired, it may be practical to recover and reuse the materials of which it is made.

In the past, most products were not as “packaged” as they are today. For example, some frozen foods are covered in plastic then sealed in a paper box. Much food was formerly purchased in bulk, not individually wrapped. There was a time when it was common to use and wash and reuse cloth diapers. Today billions of disposable diapers crowd landfills.

Eighty-two percent of the collected urban solid waste is deposited in landfills; eight percent is burned in municipal incinerators, ten percent is recycled and a tiny fraction is composted.... Organic matter is broken down in the presence of oxygen by aerobic bacteria to produce a humus-like end product, which can be used as a soil conditioner. Incineration and sanitary landfills are two accepted methods of disposing garbage. Unfortunately, both of these methods can present environmental problems. Even though they reduce the volume of garbage, some pollutants are still given off. In addition, these incinerators produce ash that can be toxic and needs to be buried. In garbage dumps, poisonous chemicals can mix with biodegradable materials. This causes toxic substances to form. These substances can leach into groundwater.

Probably the single most effective way to reduce waste is to recycle it. By recycling, we reduce air pollution, water pollution, and we conserve energy. The following are four different techniques used in recycling:

a. Melting e.g. metal, glass
b. Repulping e.g. cloth, paper
c. Composting e.g. any plant or animal matter
d. Rendering e.g. fat, bones to tallow, the raw material for soap

Each American uses directly or indirectly an average of about 600 pounds of paper every year. Almost three quarters of the United States paper production ends up in the trash with waste paper making up about half the volume of urban solid waste produced each year.

Recycling a stack of papers only 36 inches high saves one tree and reduces the harmful environmental effects of clearcutting. In addition, about 30-55 percent of the energy needed to produce paper is saved and reduces air pollution from the pulp mills by about 95 percent.

Many large companies are actively seeking ways to make products and packaging friendly to the environment. These products or packages are designed to be recycled, or they are made of recycled materials. This attempt to produce these goods is a result of an awareness and concern of our environment.

Mandatory recycling laws are being enacted across the country. Voluntary recycling is on the rise. Everyone, from kids to big corporations, must reduce the amount of trash thrown out. This will reduce landfill consumption and lower consumption of precious natural resources and energy.

Materials left at the recycling center are sorted out, and sometimes sold to a broker who looks for the best market for specific material. Other times big companies buy back their containers to reuse in their products.

Today, state and local governments are working together with waste-management companies and industry. They are seeking ways to insure there will be enough markets for recycled materials and enough recycled materials.

To solve our garbage crisis, we need to practice recycling in the fullest sense:
REDUCE—REUSE—REPAIR—RECYCLE

a. *BUY LESS PACKAGING*

Packaging costs us 10 percent of our grocery budgets and becomes 30 percent of our nation’s trash.

¥ Buy products in bulk or in large quantities.
¥ Avoid single-serve products and convenience packaging. e.g. juice packs, toothpaste pumps.
¥ Avoid aerosol containers.

b. *USE LESS PAPER*

¥ Use cloth towels and napkins instead of buying paper products.
¥ Reuse grocery bags.
¥ Don’t make unnecessary photocopies, and make two-sided copies when possible.
¥ Use a lunch box instead of brown paper bags.
¥ Adopt the practice of writing on both sided of the paper.

c. *DON’T USE DISPOSABLE PRODUCTS*

¥ Buy durable products that are designed for reuse and repair.

- ¥ Repair small appliances, furniture, clothing, and shoes.
- ¥ Use reusable items such as cloth.

d. *AVOID STYROFOAM AND PLASTICS*

- ¥ Use a coffee mug at work and keep one in your car for coffee breaks while travelling.
- ¥ Purchase goods packaged in paper, glass, or aluminum.

e. *SUPPORT RECYCLING*

- ¥ Recycle glass, aluminum, paper, and yard wastes.
- ¥ Buy recycled paper and packaging by looking for the recycled symbol. Buying recycled products, particularly paper, is critical for encouraging the development of recycling plants.
- ¥ Give old clothing and furniture to the Salvation Army and/or Goodwill.
- ¥ Start a recycling program in your school.

Endagered Species

Objective #3

Students will have the opportunities to:

a. Recognize that every organism is part of an ever changing environment.
b. Describe how human activities cause extinction.
c. Explain how habitat destruction endangers plants and animals.
d. Integrate other disciplines e.g. math, art in the presentation of environmental issues.

Approximate time: 1 week When there is an imbalance in the ecosystem it makes it very difficult for many species to survive. Living things in danger of dying out are called “endangered species”, for example, giant panda, elephant, humpback whale, bald eagle and whooping crane. Endangered species have so few members left that they are in danger of becoming extinct. Human activities such as farming, lumbering, and house, dam, and road building, often destroy habitats. Preventing the extinction of species is important for human survival.

Species have become extinct throughout the history of life. However, many species today are becoming extinct in a short amount of time. Many others have been reduced to such small numbers of individuals that they are in danger of becoming extinct. Often human activities destroy habitats, upsetting ecological balances. For example, when a forest is cut down to build housing or farms, or for lumber, a complex environment is destroyed. Populations adapted to life in the forest cannot always survive during such rapid changes.

The Endangered Species Preservation Act of 1966 and Endangered Species Conservation Act of 1969 demonstrated concern for disappearing species on a worldwide scale, but the laws did not directly protect the species themselves. The 1973 Endangered Species Act was the most effective and far-reaching law ever passed in the United States to protect plants and animals in the natural ecosystem. The act made it illegal for anyone to injure, molest, kill, capture, or transport species identified as endangered or threatened. The legislation provided habitat protection programs for endangered plant species, and led to the protection of endangered species in other countries through the control of the importing of skins, feathers, shells, and living

specimens for commercial purposes.

With the knowledge of how these life systems work, it should be our primary concern that we clean our air and our water and protect ourselves from the chemical pesticides. We must find new alternatives to safe-guard our crops and become active advocates for a clean and balanced ecosystem.

Suggested Activites

Objective #1

Ask students to volunteer and express their concerns/opinions on the following statements before the class.

a. By burning coal and oil, people are adding a lot of carbon-dioxide to the atmosphere. In addition, people are cutting down trees and destroying forests at a rapid rate. How could this affect the carbon-dioxide/ oxygen cycle?

b. Students will develop an essay to show how water flows between the atmosphere and the surface of the earth using the following terms:

evaporation precipitation condensation

Objective #2

Divide the class into two teams and have the students debate the following topics:

a. Debate the idea that a recycling tax, say, $500 (old car) $1000 (new car) be added to the price of all automobiles as a deposit to be returned when the vehicle is delivered to an official recycling center.

b. Washington State law should require litter bags in every car and a $50 minimum fine and/or litter pick-up for persons convicted of littering.

c. Have students write letters to the senator or alderman for support of enforcing laws for a healthy environment.

d. During the last week of school before summer vacation, students will not be assigned homework provided that no one litters the classroom. Any student who violates this rule will automatically create homework assignments for the entire class.

Objective #3

a. Have students research the article, “ENDANGERED SPECIES” in Compton’s text using the computer at school. This information will help them understand more about the needs of wildlife and the threats to their habitats.

b. Have students choose an animal or plant and generate a list of reasons why it would be bad if this animal or plant became extinct. Students can also generate a list that describes what people can do the help protect their animals or plants.

c. Divide students into small groups according to the class size and have each make a poster showing why it may be important to help keep their animal or plant alive. Each poster will be presented and explained to the rest of the class.

d. Discuss with students factors that can lead to a species becoming endangered or extinct.

Lesson Plan #1

Simple Experiment to Show Transpiration

In these hands-on activities, students will be able to observe, relate and make their own conclusions.

Materials a simple leaf, plastic sandwich bag and a piece of string.

Steps

1. Cover a large size leaf on a house plant or a tree with a plastic sandwich bag.
2. Tie the bag to the stem of the leaf securely with a piece of string. Be careful not to bend or break away the leaf from the tree.
3. Observe the leaf and sandwich plastic bag after 1-2 days.
4. Record your findings and explain what you observe. Students should be encouraged to use drawings, tables and graphs to report their findings.

Lesson Plan #2

Experiment to Show the Greenhouse Effect

Materials wide mouth glass jar, 2 pieces of white cardboard, 2 identical thermometers and 1 piece of black construction paper.

Steps

1. Attach the thermometers to the white cardboard using transparent tape. Label one thermometer A and the other B.
2. Line the bottom of jar with black construction paper as shown in the diagram below.
3. Place thermometer A in the jar.
4. Place the jar in front of a sunny window for 30 minutes. Turn the jar so that the thermometer does not face directly into the sun.
5. Place thermometer B in front of the window for the same time period. Make sure that it does not face direct sunlight.

Observations

The temperature on thermometer A is _____. The temperature on thermometer B is _____.

(figure available in print form)

The temperature reading on thermometer A is _____. Does the temperature increase or decrease? Touch the jar. How does it feel? The temperature of thermometer B placed in front of the window is _____ .

Which thermometer has a higher temperature? _____ .

Allow students to record temperatures every ten minutes for 30 minutes. (See data table below).

DATA TABLE

Time Temperature Inside Temperature Outside Jar(Greenhouse) Jar(Greenhouse)
00:00 00:10 00:20 00:30 Briefly answer the following questions:

1. Identify the a)control and b)experimental part of this experiment.
2. Name the atmospheric gases which trap heat and act in the same way as the glass jar.
3. Relate this experiment to the earth's greenhouse effect.
4. What changes can occur in the world as a result of the greenhouse effect?
5. List two ways people can help stop 'global warming' to occur.

LESSON PLAN #3

"A Trip to the Grocery Store"

Discuss with students the different ways in which the amount of packaging we throw away can be reduced, e.g. careful buying decisions. Remind students that a percentage of the cost of packaged foods purchased goes towards packaging.

Learning Objectives

Students will understand:

a. How recycled materials are used in packaging.
b. Which natural resources are used in packaging and how these resources can be conserved through careful buying and recycling.

Materials

Survey chart on Packaging. For homework, have students visit a grocery store and list ten different products that have too much packaging. Examine the products chosen carefully and answer the following questions:.

a. Which products need special packaging to protect public health?
b. Which products packaging was made from recycled materials? (Look for the recycling symbol)
c. Which products could be bought in a less processed or packaged form?
d. Which products could be bought in bulk or in large containers?
e. Which product's packaging could be improved to save energy and resources and ultimately reduce waste? Students should be given the opportunity to write to the different companies and share their creative ideas with them about packaging.

Procedure

1. Review the following terms with the students:

Organic: derived from living organisms. Renewable Resources: naturally occurring raw materials derived

from an endless sources such as the sun, wind, water(hydroelectricity) and trees. Nonrenewable Resources: naturally occurring raw materials which because of their scarcity, the great length of time required for their formation, or their rapid depletion, are considered exhaustible. That is, when they are gone, they are gone.e.g. petroleum.

2. Distribute survey form below on “Product & Packaging Chart” to students. Review the headings on the survey chart with students.
3. Ask students to complete the packaging chart using the *ten* products chosen for their homework assignments.

LESSON PLAN #4

Worm Composting

Learning Objectives

Students will:

a. Discover a beneficial, low technology way to reduce household waste.
b. Know how to improve soil through worm composting.
c. Learn the benefits of composting.

Materials

wooden worm bin	dirt
red worms	food waste
paper	water

Procedures

1. Talk about the impact of food wastes on the solid waste stream.
2. Discuss the alternative methods of handling food wastes.
3. Introduce the idea of using red worms.
4. Set up worm bin as follows:
    a. Shred newspaper for bedding.
    b. Wet the bedding and squeeze out excess water in the sink.
    c. Sprinkle in 1 or 2 eggshells.
    d. Place worms in the box.
    e. Bury food waste e.g. banana peelings, eggshells.
    f. Rotate the location of food burial.
    g. Change the bedding every 3-6 months and remove the newly made soil.

5. Students will make observations of the worm bin on a weekly basis and complete the table below.
6. Answer the following questions:
    a. Are there any organisms present in the worm bin? What is the interrelationship of these organisms?
    b. Do you see any baby worms? How do worms reproduce?
    c. Do you see any dead worms? How long do the worms seem to live?

Preference Tests

7. Encourage students to ask questions and provide them with the opportunity to perform experiments as a way of finding the answers to their questions. For example, students may want to find out what would happen if one worm was fed with shredded lettuce and the other fed with ground coffee laced with a chemical.

AS THE WORM CHURNS

Temp.of Room	Food type	Amt of food	Worm	Vol. of	Wt. of Compost	Temp	fed to worms	fed to worms	Act	Compost soil

LESSON PLAN #5

Public Hearing on Siting a Solid Waste Disposal Facility

Learning Objectives

Students will:

1. Understand the complexity of managing solid waste.
2. Realize the wide range of perspectives and values involved in making decisions about solid waste.
3. Will learn an interdisciplinary decision making process through role playing.

Materials

Scenario and role description Agenda

Procedure

A refuse disposal siting/solid waste management hearing will be conducted with students, taking the parts of various participant roles in the waste management decision-making process. The disposal facility under consideration includes option for an incinerator with ash only, landfill(s) only, or both. Teacher should discuss pertinent issues like waste prevention and reduction, recycling and the role it should play in the waste management plan. Also stress that the class's job is to understand and discuss the solid waste problem and come up with solutions. The emphasis should be on possible alternative solutions and not just a single answer to the problem.

Step 1 Distribute copies of the scenario and a role description to each participant of the class.

Step 2 Choose a student to serve as the Town Commissioner/Hearing Examiner. Then choose other students to act out the following roles:

Environmental Activist	Recycler
Homeowner & Lawyer	Garbage hauler
Citizen	Mayor
Journalist Real	Estate Developer

Step 3 Have students study and research a particular aspect of their roles' concerns about the disposal strategies. Remind them to contact their counterparts in their town to add more information to the parts.

Step 4 Hand out the sample hearing agenda.

Step 5 Assign a specific date for conducting the hearing. When the hearing takes place, have the remainder of the class not playing specific roles serve as the Town Council, for questioning the hearing participants and, in the end, reaching a decision about what to do with all that garbage.

Scenario

The population of New Haven is growing rapidly. The volume of solid waste produced in the city is growing even more rapidly. Recent state regulations have outlawed open dumping, so that all the old dumps have been closed. To protect human health and the environment, safeguards must be built into any new sanitary landfill, but this makes it very expensive to construct and it must be monitored throughout its use and for many years after. The city public works department, which has responsibility for proper disposal of all municipal waste generated within the city, is increasingly concerned about the growing amount of waste and is considering a new landfill. The existing landfill is filling up fast and, given the long lead time needed to site and build a replacement, a decision about what to do with the city's waste must be made soon.

Role Description

Environmental Activist As an environmentalist, you are concerned about the effects of incinerator emissions on air quality. You understand that a mass burn incinerator will require huge amounts of refuse to operate efficiently and thus discourage recycling efforts, while at the same time presenting problems in disposing of the toxic ash generated. Nevertheless, you are aware that a landfill could cause considerable environmental damage to the land, air, and water.

Homeowner You are worried that the city is planning to build a landfill or an incinerator near your home. You are also worried about the roadway litter you're afraid will result. You are also worried about the increase in the rat population, toxic leachate that could contaminate drinking water. You are angry when you think that a landfill may decrease the value of the house you've worked so hard to own.

Lawyer Represents the homeowner and is knowledgeable of zoning ordinances and environmental statutes.

Mayor Oversees the hearing and listens dispassionately to each party.

Citizen You lead a busy life and you like the convenience that some packaged foods give you, though you are

sometimes bothered by the amount of packaging left over. You are paying the garbage hauler and the city taxes to take care of the trash for you. You don't feel you have enough time in your day to fool around with the trash, separating it for recycling.

Journalist Your job is to ask questions, understand the important issues, and report accurately the decision-making process.

Recycler You are worried that a mass burn, waste-to-energy type incinerator will cut the bottom out of the recycling market. You have been involved in recycling for a very long time and you are angry and a little bit frightened that you and your business or recycling will get lost in the shuffle.

Garbage hauler You own a garbage collection company which is licensed by the state of Connecticut. Your prime concerns are providing good service to a rapidly growing number of customers and keeping costs down. You are now worried about city and state regulations regarding your business (e.g. collection fees and garbage removal).

Real Estate Developer You are convinced that the expansion now underway must not be interrupted. You strongly believe that the economic growth for the area far outweighs the short-term pollution of the conversion of agricultural land for suburban housing and shopping centers.

Agenda

1. Opening Statement by the City Commissioner
2. City Proposals:
   - ¥ Combination incinerator with ash and landfill
   - ¥ Question period
3. Expert Reports:
   - ¥ Citizen testimony
   - ¥ Business testimony
4. Final Summarization and Questions
5. Conclusion and Vote
6. Report by journalist

BIBLIOGRAPHY

TEXTS FOR STUDENTS

Bernstein, Schachter, Winkler, Wolfe ©1991. *Concepts and Challenges in Life Science.*

Carson, Rachel, Published in 1962.

A simple, illustrative and interesting text for slow learners. Each lesson develops problem solving skills, builds vocabulary and enhances critical thinking.

Carson, Rachel, Published in 1962. *Silent Spring* .

She made people realize that chemical poisons in insect sprays could harm other living things. She made people aware that these poisons could find their way into the plants and animals that people eat.

Hall, Prentice © 1988. *Life Science* .

Organized in a motivating and easy-to-learn format. Includes colorful photographs and illustrations which further motivate students' interest in science.

Hungerford, Harold R. ©1971. *Ecology, The Circle of Life* .

Hyde, Margaret O. © 1971. *For Pollution Fighters Only* .

Pringle, Laurence. *The Only Earth We Have,* Science for Survival Series. MacMillan, 1969.

Scott and Foresman, Copyright © 1987. *Life Science* .

Easy simple reading for students. Filled with colorful demonstrations. Students will learn how living and nonliving factors affect each other. They will also learn how essential materials cycle through an environment.

RESOURCES/MATERIALS

FIELD TRIPS

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a. Whitney Water Center, 945 Whitney Avenue, Hamden, Ct. 06517.	
¥	offers free programs for class groups. It serves as a focal point for the study of ecology in the laboratory.
b. Regional Water Authority, 90 Sargent Drive, New Haven, Ct. 06511.	
¥	features a fully-equipped laboratory, complete with video microscopy equipment, a computer room and a media area for viewing audiovisual presentations.
¥	offers free programs for class groups. It serves as a focal point for the study of ecology in the laboratory.

SPEAKERS

Ms. Janet Hall—787-0646

Mr. Steve Gallagher—787-8082

Environmental scientist involved with recycling. An innovative environmental education program.

TEACHING RESOURCES

Energy Center

Sonoma State University

Rohnert Park, CA 94928

BIBLIOGRAPHY

TEXT FOR TEACHERS

Grosset and Dunlap © 1971. *The How and Why Wonder Book of Ecology* .

Heath, Biolgoical Science, *A Molecular Approach, Sixth Edition* © 1990.

Completely annotated within each chapter and provides additional background information, resources, teaching strategies and laboratory guidelines.

Jurk, Jonathan and Amos, *Environmental Science* , Copyright ©1978.

The material is presented in a logical, orderly fashion. It is organized into units that are individually self-contained. Included are also chapter summaries, glossary and simple experiments are provided at the end of the book.

Miller, G. Tyler, Jr. © 1985. *Living in the Environment* .

Nickelsburg, Janet, © 1969, *ECOLOGY* .

Provides an understanding of the relationships between living organisms and their environment. Detailed discussions related to the biomes and other areas throughout the United States. This text is also recommended for its illustrations—photographs and drawings.

Pollack-Shea, Cynthia. *Realizing Recycling's Potential* . State of the World. 1987 New York, N.Y.: W.H. Norton & Company, 1987.

ENVIRONMENTAL ORGANIZATIONS

1. Department of Environmental Protection
   Bureau of Environmental Services, Rm. 112
   State of Office Building
   165 Capitol Avenue
   Hartford, Ct. 06106 Deals with a wide range of environmental issues.
2. Keep America Beautiful
   Mill River Plaza
   Nine West Broad Street
   Stamford, Ct. 06902 Fosters cooperation among government business and the public to improve the quality of life.
3. Cause for Concern
   RDI, Box 570
   Stewartsville, N.J. 08886 This group goal is to educate people about toxic household chemicals. They encourage the use of nontoxic products.

(figure available in print form)

Product and Packaging Chart

(figure available in print form)