"In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught."

Baba Dioum
- noted Senegalese conservationist

Presented by The EGBAR Foundation,
“Where Every Day is Earth Day.”

www.egbar.org
ENVIRONMENTAL AWARENESS

WHAT IS THE EGBAR FOUNDATION?

The EGBAR Foundation is an action vehicle for change. It focuses on going out and cleaning up the environment—one wall, one park, one neighborhood—one community at a time. Committed to restoring quality to the environment, The EGBAR Foundation makes every day Earth Day somewhere in the world.

The EGBAR Foundation focuses on helping the people of the world improve their environment by thinking globally and acting locally.

THE EGBAR FOUNDATION’S GOALS

■ Educate children throughout the world about the importance of recycling and protecting the environment.

■ Create greater awareness of community environmental clean-up needs and what can be done to meet them.

■ Challenge all segments of the community, both young and old, to be responsive to these needs.

■ Raise and provide funds to effect action on projects that address these needs.

■ Focus efforts on “Making A Difference” throughout the world.

E-TIP!

For more information about The EGBAR Foundation, write or call, The EGBAR Foundation, 15922 Pacific Coast Highway, Huntington Harbor, CA 92649, 1-800-EGBAR-55. Also, please visit our website at www.egbar.org.

please visit us on our website at www.egbar.org
25 million people die each year in developing countries because of water pollution.
83% of all marine pollution is derived from land based activities. Some 200,000 tons of oil enter the ocean each year through accidental loss and seepage.
ENVIRONMENTAL AWARENESS

INTRODUCTION

Protecting our environment is a concern that individuals of all ages share. It’s never too early to start teaching our children about their roles in the community. In a recent research study, young people selected “protecting the environment” from a list of five social concerns as the single most important issue. There’s no better place to start educating children about pollution, recycling, energy conservation and global warming than in their own classrooms.

The EGBAR Foundation is pleased to provide you with this comprehensive environmental education curriculum titled “THE EGBAR Clean-Up Challenge”. This curriculum was developed to help educators effectively and easily integrate environmental education into their classroom teaching.

This curriculum guide covers a variety of environmental issues such as: sources of pollution, hazardous wastes, recycling, energy, renewable and non-renewable resources, global warming, and environmental laws. Each lesson is designed with a student objective, grade level recommendation, list of materials, discussion of teaching strategies for the lesson, and an opportunity to extend the lesson through additional activities. For each lesson there is an accompanying student activity sheet. The activity sheet is ready for you to copy and can be used as an independent assignment or cooperative learning activity.

The unit also contains an environmental and recycling scavenger hunt and a recipe for recycling newsprint. A section titled, “Our Environment—A Family Affair,” contains eight cut-out activity coupons for students to take home and complete with their families. In addition, there is an extensive glossary of environmental terms to assist students with their study of environmental issues.

We are excited about the many opportunities for our young people to learn more about our environment and how we can all make a difference today...ultimately making our world a better place to live tomorrow.

please visit us on our website at www.egbar.org
ENVIRONMENTAL AWARENESS

SOURCES OF POLLUTION

Student Objective:
Students will identify sources of pollution in their community.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Discuss the term “pollution.” Make a list of students’ definitions and identify five causes of pollution.

- Have students scan the internet for examples of each of the identified causes. List them on a sheet of paper.

- Have students categorize their examples according to the type of pollution (noise, air, land, water, etc.). See student activity sheet.

- Create an environmental bulletin board and display students’ examples.

- Have students suggest things that might be done about the kinds of pollution shown on the bulletin board display.

EXTENDED ACTIVITIES

- Have students scan the internet, magazines and periodicals for articles or photographs describing the effects of pollution on the environment and on the quality of life.

- Ask students to write their own cutline (or caption) for photographs of pollution seen online for environmental education websites such as www.egbar.org.

please visit us on our website at www.egbar.org
Using different media resources, locate examples of different types of pollution. Classify them by writing your examples in the proper space below. Use a check mark to note examples that fit more than one category. For each type of pollution, write a short solution.

**AIR POLLUTION**

Pollution Solution: __________________

**WATER POLLUTION**

Pollution Solution: __________________

**LAND POLLUTION**

Pollution Solution: __________________

**NOISE POLLUTION**

Pollution Solution: __________________

**OTHER TYPES OF POLLUTION**

Pollution Solution: __________________
**Environmental Awareness**

**Changing Behavior**

**Student Objective:**
To develop students’ awareness of their responsibility in protecting the environment.

**Grade Level:** 4-9

**Materials:** The internet, magazines or newspapers, pencils, activity sheet

**Teaching Strategies:**
- Ask students to search the internet or magazines for articles dealing with some aspect of pollution (water, air, land, noise) or environmental disturbance.
- Have students select from these articles one of interest and instruct them to write a short paragraph on how what is noted in the article directly or indirectly affects their life.
- Ask students to rewrite the above article describing this world’s future if we do not act today with regards to this environmental disturbance or noted pollution.
- Have students complete the activity sheet titled, “Make This World A Better Place.”

**Extended Activities**
- Arrange students into groups and ask them to create a poem, song or rap pertaining to the environment. Have students illustrate their piece and share it with the rest of the class through a skit. Select the best to share during a school assembly.
- Have students in groups select one environmental issue, create or invent a solution to the problem, and illustrate how the solution would work. Have them use the following activity sheet for their work.
Make This World A Better Place

Make a list of at least three things you and your family can do to help make this world a better place for all of us to live in. Write your answers below in each of the following categories: water, land, air, and other ideas you may have for caring for our earth.

**How Can We Take Better Care of Our...**

1. 
2. ...
3. ...WATER

1. 
2. 
3. ...

1. 
2. 
3. ...

1. 
2. 
3. ...

1. 
2. 
3. ...

**Extra Credit Corner**

- How many of these ideas are you and your family already doing? Place an “X” next to the ideas you are already doing.
- Which of your ideas could you start tomorrow? Circle the number above next to that idea.
ENVIRONMENTAL AWARENESS

HAZARDOUS WASTES

Student Objective:
Students will evaluate various products and determine to what degree they affect the environment.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:

■ Have students brainstorm common household products that are classified as hazardous wastes such as: drain opener, oven cleaner, laundry detergent, room deodorizer, batteries, paint stripper, weed killer, rose dust, oil cans, etc.

■ Using the advertisements, have students locate five household products considered hazardous wastes which impact our environment.

■ Ask students to write the name of the products and rank them from #1 to #5 (#1 being the most harmful to the environment).

■ Ask students if there are any cleaning products that are less harmful to the environment.

■ Have students complete the “Household Inventory” activity sheet. Make copies of students’ “Environmental Recipes” to distribute; have students make recipes and demonstrate.

EXTENDED ACTIVITIES

■ Have students answer the following questions regarding the products they have identified as hazardous wastes:
- Where do we need to store these items?
- Why do we need to read and save these products’ labels?
- What do we need to keep in mind in purchasing these products?

please visit us on our website at www.egbar.org
HOUSEHOLD INVENTORY

Look around your house for examples of hazardous household products. Make a list of these products below and complete the chart for each product you have found. After you have finished your inventory write down a recipe for an alternative household cleaner. (Your parents, grandparents or library can help you with this.)

<table>
<thead>
<tr>
<th>Hazardous household products</th>
<th>Where is the product used?</th>
<th>Where is the product stored?</th>
<th>Is this a safe place to store?*</th>
<th>What is the warning on the label?</th>
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</table>

* For those products NOT stored in a safe place, use the back of this sheet to write WHY this is not a safe place and where it could be SAFELY stored.

Recycling Recipe!

**Ingredients:**

**Directions:**

**Cleaning Uses:**
ENVIRONMENTAL AWARENESS

RECYCLING

Student Objective:
Students will assess household practices related to recycling.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
■ Define and discuss the term “recycling.”

■ Have students scan advertisements and websites for a variety of household items commonly used in their home.

■ Have students categorize these items according to the student activity sheet, “Reduce, Reuse and Recycle.”

■ Ask students to note which of these items they currently recycle in their homes.

■ Have students write a short paragraph describing three ways the amount of garbage in their homes can be reduced.

EXTENDED ACTIVITIES

■ Have students look in various resources for advertisements for products identified as recycled or recyclable.

■ Have students design a flyer advertising and promoting recycling day in their community. Make copies of the flyer for all students in school to take home. Conduct a student poster/flyer contest for recycling day.

Over one-tenth of the Amazonian Rainforest has been destroyed.

please visit us on our website at www.egbar.org
REDUCE, REUSE AND RECYCLE

Look for 10 household items commonly used in your home. Write down the names of these items and categorize them for recycling below. Create five lists comparing the item totals in the categories below. On the back of this sheet create a graph comparing the item totals and answer the three extra questions.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Plastic</th>
<th>Glass</th>
<th>Aluminum</th>
<th>Non-Recyclable</th>
</tr>
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</table>

Answer the following questions:
1. What percent of the items above are not currently recycled?
2. What does this activity tell you about the variety of products you use in your home?
3. What conclusions can you make based on the information in your graph?
ENERGY EVALUATION

Student Objective: 
Students will evaluate the advantages and disadvantages of common appliances and their energy consumption.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Discuss different kinds of energy. (Energy we see, such as light; energy we feel, such as heat; energy we hear, such as sound).
- Note that Americans use more energy than any other country in the world and that energy is expensive. Also point out that the large amounts of energy we depend on can contribute to pollution.
- Ask students to scan magazines and the internet for pictures in advertisements of appliances found in their homes that use energy. Have them write the names of these items on the activity sheet titled, “Household Energy Survey.”
- Display completed student graphs.

EXTENDED ACTIVITIES
- Have students develop a list of ways they could use less energy and/or alternative sources of energy at home.
- As a class, compile a list of ways that most of us use energy in our homes. Ask students to write a story about a day in their life without electricity.
Look through the internet, your newspaper’s advertisements and different magazines for pictures of
appliances you have in your home. Name the appliances you find in the far left column. Answer the
questions for each appliance you have named.

<table>
<thead>
<tr>
<th>Household Appliance</th>
<th>Necessity</th>
<th>Luxury</th>
<th>Advantage to Using It</th>
<th>Disadvantage to Using It</th>
<th>Alternative to This Appliance</th>
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</table>

*To the left of the appliance’s name, rate the energy use of each. (#1 being the most efficient, #5 being the least efficient.)*
ENERGY EFFICIENCY

Student Objective:
Students will examine energy efficiency by creating an “Energy Contract.”

Grade Level: 7-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:

- Ask students to locate articles on the internet (or newspaper) reporting on energy issues such as energy shortages, non-renewable energy sources, energy costs, energy dependence, health problems associated with pollution or other effects of energy.

- Review the articles and ask students to list ways they can save energy.

- Have them create their own week-long “Energy Contract.” Suggestions might be taking shorter showers, not leaving the water running while washing dishes, turning off lights, television or radios when not in use, etc.

- Have students complete the “Energy Contract” activity sheet. The contract should include the student’s signature and date. Collect and save student contracts until the week is over.

- At the end of the week, return the contracts to the students. Ask students to reread their original contract and then write a summary explaining how they were or were not able to abide by it.

EXTENDED ACTIVITIES

- Ask students to scan the internet to find as many examples of renewable and non-renewable energy sources as possible. Prioritize the examples as those most necessary to sustain life.

- Have students list creative, non-polluting transportation methods to get to school.

Six and a half million tons of garbage is dumped into our oceans each year.
In order to become more aware of the uses and abuses of energy, and in order to become more aware of the impact our requirements for energy have on our environment, I will pledge upon my contract a personal goal which I will uphold for 1 week.

**YOUR OATH**

“In order to become more aware of the uses and abuses of energy, and in order to become more aware of the impact our requirements for energy have on our environment, I will pledge upon my contract a personal goal which I will uphold for 1 week.”
ENVIRONMENTAL AWARENESS

GLOBAL ISSUES

Student Objective:
Students will identify and classify stories about local, national and international environmental issues and create possible solutions.

Grade Level: 6-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Begin with a class discussion of environmental issues or problems. List on the board topics students identify as environmental issues.
- Over a period of several weeks, allow students to scan the internet (or the newspaper) for articles related to the environment.
- Have students collect articles, arrange and paste them on separate pages in a three-ring binder. Or have them compile a class folder with pages arranged under the appropriate tab or heading: local, national or international.
- Under each section in their binder, ask students to identify the who, what, when, where, and why. Ask them to identify any possible solutions to environmental issues noted in each article.

EXTENDED ACTIVITIES
- Using one of the environmental articles selected above, have students complete the activity sheet titled, “It’s All About Earth.”

Please visit us on our website at www.egbar.org
IT’S ALL ABOUT EARTH

Using the internet, the newspaper or a magazine, locate an article that discusses an environmental issue. Clip the article out and tape or glue it below. Read the article closely. Underline statements you feel are facts throughout the article. Circle statements you feel are opinions.

Attach your article here

Answer the following questions:

1. What is the environmental issue being discussed? _____________________________________________

2. Is the issue of local, national or international concern? _____________________________________________

3. Who is most directly impacted by the consequences of this issue? _____________________________________________

4. Do you feel this is important to the future of our environment? ___________________________
   Why or why not? ___________________________

5. What piece of information do you feel is missing in this article? ___________________________

EXTRA CREDIT CORNER

Page 16
Our Resources

Student Objective:
Students will understand the difference between renewable and non-renewable resources.

Grade Level: 6-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:

- Discuss with the students renewable and non-renewable resources. Non-renewable resources are those resources we use that take a very long time to be created such as, coal, oil and minerals. Renewable resources are resources that can be replaced such as, trees, animals, water, and crops.

- Have students find pictures of 10 different items they have around their houses.

- Have students write the names of these items on the activity sheet titled, “Renewable or Not” and complete the chart. Students may need to research the items they have selected to determine their resource origin.

Extended Activities

- Ask students to think about what it would be like without renewable or non-renewable resources. Have them select one of these types of resources and write about what their life would be like without the resource.

please visit us on our website at www.egbar.org
SCAN THE INTERNET, NEWSPAPERS AND MAGAZINES FOR PICTURES OF DIFFERENT ITEMS YOU HAVE AROUND YOUR HOUSE. MAKE SURE YOU SELECT A VARIETY OF ITEMS SUCH AS: THINGS YOU WEAR, THINGS YOU EAT AND THINGS YOU USE. WRITE THE NAME OF THE ITEMS YOU HAVE SELECTED IN THE SPACE BELOW.

COMPLETE THE CHART BY WRITING THE NAME OF THE RESOURCE USED TO MAKE EACH ITEM AND WHETHER THE ITEM IS MADE FROM A RENEWABLE OR NON-RENEWABLE RESOURCE.

<table>
<thead>
<tr>
<th>Item</th>
<th>Resource(s) Used to Make This Product</th>
<th>Renewable</th>
<th>Non-renewable</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE: gold bracelet</td>
<td>gold</td>
<td>X</td>
<td></td>
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</table>

| Extra Credit Corner |

Answer the following questions:

How many renewable resource items did you select? ____________

How many non-renewable resource items did you select? ____________

Which item’s origin surprised you the most? ___________________
PRODUCT PACKAGING

Student Objective:
Students will identify and classify the many types of product packaging and develop alternative methods for packaging.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
■ Begin with a discussion of the many different types of product packaging that exist today. Have students answer questions such as: How are products packaged differently today than they were 10 years ago? What is the most unusual type of packaging you can think of? Why do you think manufacturers package goods the way they do?

■ Scan the internet, magazines or newspapers and ask students to look through the grocery advertisements for five different examples of product packaging used today.

■ Have the students complete the activity sheet titled, “Packaging.”

EXTENDED ACTIVITIES
■ Ask students to go shopping with their family and make a list of as many different kinds of product packaging as they can for items they have in their grocery cart. Identify all of the packaging they are currently recycling in their homes.

■ Ask students to bring in a packaged good from home to class. Classify these packages into recyclable and non-recyclable products and renewable and non-renewable resources.
Locate the grocery advertisements on the internet, in your newspaper or in a magazine for examples of different types of product packaging. In the spaces below, describe five different kinds of packaging found in the advertisements. Complete the chart for each type of packaging you have identified.

<table>
<thead>
<tr>
<th>Examples</th>
<th>Recyclable</th>
<th>Not recyclable</th>
<th>Renewable resource</th>
<th>Not renewable</th>
<th>Benefit and drawback to this packaging</th>
<th>Suggest an alternative to this packaging</th>
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**E-FACTOID!**

*Each person who turns off the lights when no one uses them and uses energy-saving appliances reduces the amount of electricity a power plant has to produce. When less power needs to be produced, pollution from power plants decreases resulting in less acid rain!*
GLOBAL WARMING

Student Objective:
Students will identify causes and consequences of global warming.

Grade Level: 6-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Discuss the term “global warming” with students. Explain that by releasing amounts of greenhouse gasses (carbon dioxide, methane, chlorofluorocarbons, nitrous oxide and gasses that create tropospheric ozone) into the atmosphere, we have turned up the global thermostat.

- Divide the class into teams and have students complete the activity sheet titled, “Protecting the Earth’s Blanket.” It asks them to look through the newspaper for specific items that contribute to the global warming condition and/or illustrate the changes taking place as a result of this condition. (Examples: products that cause air pollution, references to climatic conditions such as increase or decrease of rainfall in areas, crop failure, soil erosion, etc.)

EXTENDED ACTIVITIES

- Have students create a list of energy-saving tips that will avoid a buildup of greenhouse gasses in our environment.

- Have students look through the newspaper for examples of ways global warming might be affecting their community, state or nation.

please visit us on our website at www.egbar.org
PROTECTING THE EARTH’S BLANKET

Locate the following items on the internet (or in your local newspapers) and note the website address (or page #) on which each appears. You may use articles, photos, words, and/or advertisements. Each item you select should either contribute to the global warming condition of our earth and/or illustrate changes taking place as a result of this condition. You may need to use your dictionary as a reference. Describe the items in the spaces below.

1. Something that produces carbon dioxide. (page ___)

2. An example of a climatic condition. (page ___)

3. Something that produces chlorofluorocarbons. (page ___)

4. Something that absorbs carbon dioxide and produces oxygen. (page ___)

5. An environmentally friendly source of energy. (page ___)

Write the letter corresponding to each symbol next to the category it matches above.

a.  

b.  

c.  

d.  

e.  

ENVIRONMENTAL AWARENESS

WATER WISE

Student Objective:
Students will examine their awareness level, attitude and beliefs about water.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Begin the activity by asking students to list reasons why they should care about conserving water.
- Introduce students to how a survey works. Explain that a survey is a set of questions for which there are no right or wrong answers. Create a survey which asks the following:
  - What is your name? Age?
  - Name five ways you use water every day.
  - What is your favorite activity that involves water?
  - Where do you think your water comes from?
  - Who do you think pays for the water you and your family use?
- Visit www.egbar.org for the “Environmental Survey”
- Compile the results of the survey and discuss what was discovered.
- Ask students to complete the activity sheet “Water Watch.”

EXTENDED ACTIVITIES
- Locate an article that discusses water concerns at the local and state level. Is there any political action taking place to resolve this issue? If so, what?
- Follow up the activity by inviting a representative from the local water district to speak to the class on the importance of water conservation.

please visit us on our website at www.egbar.org
**WATER WATCH**

Using the internet or your newspaper, locate photographs or advertisements for five things (living or not) that require the use of water. Look through photographs, articles and advertisements for five things that harm our waters. Write a description of the things in the spaces below. Be sure to include the page number where you found each thing.

<table>
<thead>
<tr>
<th>Things that require water</th>
<th>Things that harm our waters</th>
</tr>
</thead>
<tbody>
<tr>
<td>p.___</td>
<td>p.___</td>
</tr>
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<td>p.___</td>
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**EXTRA CREDIT CORNER**

Answer the following questions:
Which of the above things do you feel is most impacted by polluted waters? ____________________________
Why?  __________________________________________

Which of the things above do you feel is the most harmful to our waters? ____________________________
Why?  __________________________________________
**Environmental Awareness**

**Watching Our Watersheds**

**Student Objective:**
Students will understand the difference between sewer systems and storm drains and the impact storm drain pollution has on our watersheds.

**Grade Level:** 4-9

**Materials:** The internet, magazines or newspapers, pencils, activity sheet

**Teaching Strategies:**
- Begin the activity with a discussion and definition of the terms “watershed” and “storm drains,” as noted in the glossary of environmental terms. Storm drains are not sewers. Water that ends up in storm drains is not chemically treated. Storm drain pollution is caused by people dumping garbage, trash, oil, paint, detergents, fertilizers, pesticides, and anything that runs off lawns, roads, and gutters into the storm drain system.

- Have students look through their resources for five examples of potential storm drain pollutants. Write down the names of these items on a separate sheet of paper titled, “Storm Drain Pollutants.” Next to each item, ask them to list an alternative disposal method or product that could be used which would help reduce storm drain pollution.

**Extended Activities**
- Distribute a copy of the activity sheet on the following page entitled, “Storm Drain Survey.” Students may complete the activity sheet individually, as part of a team or as an activity done with their family. Be sure students answer the questions at the bottom of the activity sheet.

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80% of all the oil discovered in North America to date has already been extracted.

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Please visit us on our website at www.egbar.org
Unlike our sewer systems, water that enters our storm drains is not chemically treated before it mingles with our streams, creeks, lakes, rivers, and oceans. As directed by your teacher, take a “storm drain hike” in your neighborhood. Locate 10 different storm drains on your hike and map them below noting street names and storm drain locations. Write a brief description of what you found next to each storm drain on your map.

**Extra Credit Corner**

Answer the following questions:

Where do you think the “watershed” is for the storm drains on your map?

Write down one idea you have for eliminating storm drain pollution.
ENVIRONMENTAL LAWS

Student Objective:
Students will identify and understand the relationship between environmental laws and industry.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet

Teaching Strategies:
- Ask students what they feel the role of the government should or should not be with regards to environmental law and industry. Have them think of examples of industries that are impacted by environmental laws.
- Have students complete the activity sheet titled, “Earth Laws.”

EXTENDED ACTIVITIES

- Have students surf the Environmental Protection Agency website (www.epa.org) to locate an article that mentions the involvement of the EPA in our communities.
- Have students locate an article discusses an issue or event in the business community that may have an impact on our environment, such as: land development, new industry, new products, existing products and recycling, etc.
- Ask students to identify the 5 W’s in the above article: Who, What, When, Where, and Why? Based on the article, have them note what they feel the environmental impact will be.

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EARTH LAWS

Turn to the stock market listings on the internet or in your newspaper. Locate the names of four companies you feel have an impact on our environment. Some examples might be paper companies, auto companies, bottling companies, etc. List these companies below and complete the chart.

<table>
<thead>
<tr>
<th>Company</th>
<th>How does the company impact our environment?</th>
<th>Does it make recyclable products?</th>
<th>Any environmental regulations it must follow?</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

EXTRA CREDIT CORNER

Select one of the companies above and develop a new environmental regulation that you would like to see that industry follow. Write your idea on the back of this page.
**ENVIRONMENTAL AWARENESS**

**KEEPING OUR WATERS CLEAN**

**Student Objective:**
Students will increase their awareness of water pollutants, clean water mandates and ways to make a difference in how we manage our water sources.

**Grade Level:** 4-9

**Materials:** The internet, magazines or newspapers, pencils, activity sheet, scissors, tape

**Teaching Strategies:**
- Discuss with students the variety of water sources in their community. Discuss with them the need to protect these water sources and keep them free of pollutants. Ask them the following questions:
  - Why do our waters become polluted?
  - How can we stop polluting our waters?
  - What do you think are the primary causes of water pollution?
- Make a chart of the above answers for the class. After completing the chart, ask students to do the following activity sheet titled, “You Be The Judge.”

**EXTENDED ACTIVITIES**
- Research regulations and laws that protect our waters. Make a list of the regulations you find. Create two new laws you feel we need to implement in our country to help reduce water pollution. Who would your new laws impact the most, a business or an individual? Make a list of three things you can do right now that would help reduce water pollution.

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Over the years, our government has developed and implemented laws that regulate the impact of industry on our environment. The internet is the most powerful source for current information about needed changes in environmental laws and new laws that have been passed.

“You Be The Judge” by completing the following activity. Find an example of a photo or a news article either on the internet or in your newspaper showing a water pollution problem. Download or clip the article or photo and attach it below. You be the judge. In the space provided, write out your decision against the polluter and what consequences the polluter must pay. As a class, you may want to make copies of your findings and decisions, and pass this information on to your government representative for action.
Environmental Awareness

Recycled Waste

Student Objective:
Students will expand their understanding of recycling terms such as post-consumer waste and pre-consumer waste.

Grade Level: 4-9

Materials: The internet, magazines or newspapers, pencils, activity sheet, scissors, tape

Teaching Strategies:
- One of the goals of the Environmental Protection Agency is to educate the public and get as much post-consumer waste recycled back into finished products as possible. In order to do this, the general public must have a better understanding of the terms pre-consumer and post-consumer waste. Pre-consumer waste is waste such as paper, that does not get into a finished product, and is available to be recycled again into a finished product. Post-consumer waste is waste from products like paper, glass and aluminum, that have fulfilled their intended life cycle and are targeted for disposal.

- After you have discussed these recycling terms, have the students complete the following activity sheet titled, “Recycle...Cycle.”

Extended Activities
- Recycling today is mandatory if we are to reduce the rate at which our landfills are filling up, and if we want to leave behind a better place for generations to come. As a class, ask students to develop five new recycling laws or mandates for both consumers and manufacturers to follow. They should consider the type of penalties they would impose if these mandates were not followed.

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After you review the following environmental terms, look for pictures and/or words on the internet or in your newspaper that are examples of **municipal** solid waste, **post-consumer** waste and **pre-consumer** waste. Write the examples on the chart below.

<table>
<thead>
<tr>
<th>Municipal Solid Waste</th>
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</thead>
<tbody>
<tr>
<td>waste collected from residential, commercial, institutional and some industrial sources</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Post-Consumer Waste</th>
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</tr>
</thead>
<tbody>
<tr>
<td>products like paper, glass and aluminum that have fulfilled their intended life cycle and are targeted for disposal</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Consumer Waste</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>products like newsprint and/or some packaging materials that aren’t in a finished products form, and are available to be recycled again into finished products</td>
<td></td>
</tr>
</tbody>
</table>
ENVIRONMENTAL AWARENESS

TEAM ACTIVITY

ENVIRONMENTAL SCAVENGER HUNT

Mission: Using the internet or your newspaper, download and print out or cut out the following items and paste them onto a separate sheet of paper.

Student Objective: This is a good activity to do in cooperative learning teams.

1. A word or picture describing or illustrating a source of energy.
2. An article that reports on an abuse of the environment.
3. An example of a natural resource.
4. Examples of two ways we use water.
5. An example of a toxic substance.
6. An example of a renewable resource.
7. An example of a non-renewable resource.
8. An advertisement for a product that is described as energy efficient.
9. Two words that are environmental terms.
10. An example of something that harms or alters the environment.

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ENVIRONMENTAL AWARENESS

TEAM ACTIVITY

RECYCLING SCAVENGER HUNT

Mission: Using the internet or your newspaper, download and print out or cut out the following items and paste them onto a separate sheet of paper.

Student Objective: This is a good activity to do in cooperative learning teams.

1. Advertisements for recyclable products: one glass, one plastic and one aluminum.

2. The names of three companies listed on the stock market pages that produce or use recycled materials.

3. An advertisement for a product that cannot be recycled.

4. A picture of something that you can reuse in your home.

5. A picture of something that you can reduce the use of.

6. An advertisement for a product that is either made from or could be made from recycled material.

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ENVIRONMENTAL AWARENESS

MAKE YOUR OWN PAPER!

1. Have students cut or tear newspapers into small pieces. They may use all black and white pages, colored comic pages or even include some pieces of colored newsprint.

2. Soak the paper pieces in water. Use about one liter of water (or one quart) to 250 ml (or one cup) of paper bits. You may also add 1/2 cup of bleach to this mixture for whiter paper. The more bleach you add, the whiter the paper.

3. Have students take turns beating the paper-water mixture with a sturdy eggbeater. Or, place the mixture in a blender and process it several seconds.

4. Pour the paper and water (now called “slurry”) into a tub. Show students how to dip into the slurry with a wire-screen covered picture frame. Scoop up a thin, even layer of slurry in the picture frame.

5. Have the students pat the layer of slurry. Let it drip several seconds.

6. Students should now cover the layer of slurry with a pad of quartered newspaper. Supervise carefully as students use an old household iron to press the slurry and the sheets of newspaper that encase it.

7. As the newspaper dries, show students how to peel it away. A pressed, recycled paper will be left. This paper is textured. If it has not been bleached, its many tiny bits of subtle color make it attractive.

8. Help students use the recycled paper for art work, as a backing for mounted leaves, to make greeting cards or for other purposes.

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The following ideas are ways families can become more actively involved in caring for our environment. The eight coupons can be distributed as weekly assignments for students and their families, as part of their study on the environment. Teachers may want to have the students bring in the results of the family assignments to share with the rest of the class.

Activity #1: 
**Exercise for Clean Air**

Get out and exercise for the family and the environment. As a family, discuss how many times a day or week the family requires transportation to and from various places. Make a list of these places and how you get there. Now, discuss alternative types of transportation you could use. Some of these might be: ride your bikes to the store, school, train station, etc.; walk instead of drive; carpool to school and to work; take public transportation; etc. Make a family effort this week to change your transportation habits and keep a list of how you did this.

Activity #2: 
**Exercise for Clean Air**

Clear your home this week of all hazardous household materials. As a family, clean out those closets, cabinets, your garage and basement of all old and/or unlabeled hazardous household materials. Things like paint cans, oven cleaner, old batteries, weed killer, drain opener, toilet-bowl cleaner, oil cans, paint thinner, cleaning chemicals, etc. should be sorted, labeled, stored in a safe place, and/or disposed of through your city’s hazardous waste disposal program. Make a list of all of the hazardous household materials you found and what you did with each one.

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Activity #3:
Recycle It!

This is recycle week. When grocery shopping this week, make an effort to buy only those products that are in recyclable containers. Be sure to look for the recycling symbol on the containers. If you don’t already have them, set up recycling bins in your home for plastic items, aluminum, glass, and newspapers. Find out where you can take your recyclable items if you don’t have a service that picks them up for you. Report back to class what you recycle at home and how you recycle it.

Activity #4:
Lights Out!

This is energy efficiency week. As a family, decide on three things the entire family can do to conserve energy this week. They may be things like turning lights off when not in the room, adjusting thermostats and being more aware of how you use household appliances. Create an energy conservation contract for the family to follow this week and make a list of how many different ways you can do things differently around the house to conserve energy.

Activity #5:
Water, Water Everywhere!

This is water conservation week. Discuss as a family and write down the many ways your family uses water every day. Be sure to include dishwashers, laundry, baths, cooking, etc. Review this list as a family and decide on five ways the family can conserve water this week. Write your results down at the end of the week.

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Activity #3: 
Clean-Up Hike

Collect the family and head out for the nearest bike path, park, forest preserve, beach, etc. for a bike ride or walk with the family. Be sure to bring plastic trash bags with you. As you hike or ride, look around you and stop to pick up litter and trash left behind by others. Think about a prize for the family member who collects the most litter. Tell others where you went and what you did.

Activity #4: 
Ecological Picnic

Take a picnic with the family—an ecological picnic! Agree on a place that the entire family would like to go for a picnic. Plan your picnic using a minimum of disposable items. Make a list of the kinds of things you can take on your picnic that would create the least amount of trash. Was there anything you chose not to bring?

Activity #5: 
The Office

Mom and Dad and possibly other family members may work in an office. As a family, or with a parent, visit the office and make a list of ways the office is helping care for our environment. You may be able to offer suggestions on changes that can be made that are environmentally friendly such as: white paper recycling, recyclable foam coffee cups, aluminum soda can recycling bins, recycling copy machine ink cartridges, etc. Make a list of what you find and your suggestions.
Abiotic - non-living. (Contrast biotic.)

Acid Rain - a complex chemical and atmospheric phenomenon that occurs when emissions of sulfur and nitrogen compounds and other substances are transformed by chemical processes in the atmosphere, often far from the original sources, and then deposited on earth in either wet or dry form. The wet forms (precipitation) are popularly called "acid rain" and fall as rain, snow, or fog. The dry forms are acidic gases or particulates.

Acidic Solution - any liquid solution that has more hydrogen ions (H+) than hydroxide ions (OH-); any liquid solution with a pH less than 7.

Agricultural Waste - poultry and livestock manure, and residual materials in liquid or solid form generated from the production and marketing of poultry, livestock, furbearing animals, and their products. Also includes grain, vegetable, and fruit harvest residue.

Air Pollution - one or more chemicals or substances in high enough concentrations in the air to harm humans, animals, vegetation, or materials. Such chemicals or physical conditions (such as excess heat or noise) are called air pollutants.

Air Quality Standards - the level of selected pollutants set by law that may not be exceeded in outside air. Used to determine the amount of pollutants that may be emitted by industry.

Algae - tiny, floating, aquatic plants that drift in the sunlit surface of the ocean and often give water a greenish color. These plants exist as producers at the bottom of many food chains.

Alternative - choices between two or more things.

Aluminum - a strong, light, silver metal made from bauxite ore that can be easily crushed.

Aquatic Ecosystem - any water-based ecosystem such as a river, pond, lake, or ocean.

Archaeologist - a scientist who studies the customs of past cultures by studying their material remains.

Asbestos - a mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. EPA has banned or severely restricted the use of asbestos in manufacturing and construction.

Assimilative Capacity - the ability of a natural body of water to receive wastewaters or toxic materials without harmful effects and without damage to aquatic life.

Atmosphere - the whole mass of air surrounding the earth.

Atoll - a type of coral reef that grows in the shape of a circle, enclosing or nearly enclosing a lagoon.

Bactericide - a pesticide used to control or destroy bacteria, typically in the home, schools, or on hospital equipment.

Barrier Reef - a type of coral reef that lies parallel to a beach shoreline and protects a lagoon.

Basic Solution - solution with more hydroxide ions (OH-) than hydrogen ions (H+); liquid solution with a pH greater than 7.

Bauxite - a clay-like material from which most aluminum is made.

Beach - an accumulation of loose sediments at the edge of a body of water. A beach includes the land that is reached by the highest tides and the zone near low tide.

Beach Ecosystem - the beach shoreline environment and all the living and non-living things that exist there and have relationships there.

Beach Shoreline - the place where the shore of land and the ocean meet.

Bioassay - a method of testing a material's effects on living organisms.

Biochemicals - chemicals that are either naturally occurring or identical to naturally occurring substances. Examples include hormones, pheromones, and enzymes. Biochemicals function as pesticides through non-toxic, non-lethal modes of actions. Biochemicals tend to be environmentally compatible and are thus important to Integrated Pest management programs.

Biodegradable - the ability of a substance to be broken down physically and/or chemically by microorganisms. For example, many chemicals, food scraps, cotton, wool, and paper are biodegradable; plastics and polyester generally are not.

Biodiversity - the number and variety of different organisms in the ecological complexes in which they naturally occur. Organisms are organized at many levels, ranging from complete ecosystems to the biochemical structures that are the molecular basis of heredity.

Biological - caused by, or affecting life or living organisms.

Biological Pesticides - certain microorganisms, including bacteria, fungi, viruses, and protozoa that are effective in controlling target pests. These agents usually do not have toxic effects on animals and people and do not leave toxic or persistent chemical residues in the environment.

Biome - large land (terrestrial) ecosystem such as a forest, grassland, or desert. (Contrast aquatic ecosystem.)

Bioremediation - the use of living organisms (e.g., bacteria) to clean up oil spills or remove other pollutants from soil, water, and wastewater.

Biosphere - the living and dead organisms found near the earth's surface in parts of the lithosphere and atmosphere.

Biota - all living organisms in a given area. The flora and fauna of a region.
**Biotic** - living. Living organisms make up the biotic parts of ecosystems.

**Canal** - a man-made waterway built for passage from one cause of ozone depletion and are also one of the major greenhouse gases. Chemicals such as CFCs.

**Carbon Dioxide (CO₂)** - an incombustible gas present in the atmosphere and formed during respiration. It is also an essential molecule in the process of photosynthesis.

**Carcinogenic** - capable of causing cancer. A suspected carcinogen is a substance that may cause cancer in humans or animals but for which the evidence is not conclusive.

**Chemical** - one of the millions of different elements and compounds found in the universe.

**Chemical Change** - interaction between chemical in which there is a change in the chemical composition of the elements or compounds involved.

**Chlorination** - adding chlorine to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results. Chlorine also is used almost universally in manufacturing processes, particularly for the plastics industry.

**Chlorofluorocarbons (CFCs)** - a family of chemicals commonly used in air conditioners and refrigerators as coolants and also as solvents and aerosol propellants. CFCs drift into the upper atmosphere where their chlorine components destroy ozone. CFCs are thought to be a major cause of the ozone hole over Antarctica.

**Chronic Effect** - an adverse effect on any living organism in which symptoms develop slowly over a long period of time or recur frequently.

**Clear Cut** - harvesting all the trees in one area at one time, a practice that destroys vital habitat and bio-diversity and encourages rainfall or snowmelt runoff, erosion, sedimentation of streams and lakes, and flooding.

**Climate** - general pattern of atmospheric or weather conditions, seasonal variations, and weather extremes in a region over a long period. At least 30 years.

**Climate Change** - this term is commonly used interchangeably with "global warming" and "the greenhouse effect," but is a more descriptive term. Climate change refers to the buildup of man-made gases in the atmosphere that trap the sun’s heat, causing changes in weather patterns on a global scale. The effects include changes in rainfall patterns, sea level rise, potential droughts, habitat loss, and heat stress.

**Cloning** - in biotechnology, obtaining a group of genetically identical cells from a single cell; making identical copies of a gene.

**Coastal Bogs** - are peatlands. The rate of decomposition of organic material is slower than the rate of production, as a result, dark-colored peat accumulates.

**Cobble Beach** - made up of stones ranging in size from a tennis ball to a volley-ball (64 to 265 mm).

**Commercial Waste** - all solid waste from businesses. This category includes, but is not limited to, solid waste originating in stores, markets, office buildings, restaurants, shopping centers, and theaters.

**Community** - populations of different plants and animals living and interacting in an area at a particular time.

**Compost** - decomposed organic material that is produced when bacteria in soil break down garbage and biodegradable trash, making organic fertilizer. Making compost requires turning and mixing and exposing the materials to air. Gardeners and farmers use compost for soil enrichment.

**Composting** - the process by which bacteria and other organisms break organic matter such as kitchen scraps, leaves, lawn clippings and manure into mineral and nutrient rich humus; used as a soil conditioner.

**Compound** - a substance containing two or more elements chemically combined.

**Concentration** - the relative amount of a substance mixed with another substance.

**Conservation** - preserving and renewing natural resources to assure their highest economic or social benefit over the longest period of time. Clean rivers and lakes, wilderness areas, a diverse wildlife population, healthy soil, and clean air are natural resources worth conserving for future generations.

**Consume** - to use, eat, exhaust, finish, use up.

**Consumer** - a person who buys goods or services for his or her own needs and not for resale or production of other goods for resale.

**Contamination** - the process by which something is made impure.

**Coral Reef** - a collective structure consisting of dead skeletal limestone that has accumulated over time and a result of the coral animals that cover the structure's surface. The coral reef structure is directly responsible for the production of much of the earth's fish and marineline.

**Coral Reef Ecology** - the study of the relationships between the living and non-living things that exist in and around the coral reef environment.

**Coral Reef Ecosystem** - a community of many different underwater plants, fish and other marinelife in a coral reef environment and the existing relationships among all the living and non-living things there.
Corrosive - a substance that eats or wears away materials gradually by chemical action.

Cullet - scrap glass that has been broken into tiny pieces.

Curbside Recycling Program - the process where recyclable materials are picked up from your home.

Decay - the breakdown of materials, chiefly by bacteria.

Decompose - to decay, rot, come apart, change form, break down.

Deep Well Injection - a process by which waste fluids are injected deep below the surface of the earth.

Defense Mechanism - a physical part of or a process in a plant or animal that helps protect it against attack or injury.

Deforestation - the removal of trees and vegetation from land; the most common cause of unnatural soil erosion.

Demolition Waste - waste building materials, dredging materials, tree stumps and rubble resulting from construction. These materials may contain lead, asbestos or other hazardous materials.

Dependent Relationship - a type of relationship in which one thing needs or relies on another for its continued existence.

Desertification - is a human-made problem: over-cultivation, improper irrigation, over-grazing and poor irrigation techniques all contribute to desertification.

Discharge - the release of any waste into the environment from a point source. Usually refers to the release of a liquid waste into a body of water through an outlet such as a pipe, but also refers to air emissions.

Disposal Facility - a landfill, incinerator, or other facility which receives waste for disposal. The facility may have one or many disposal methods available for use. Does not include wastewater treatment.

Disposal - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into the environment (land, surface water, ground water, and air).

Dissolved Oxygen (DO) - oxygen that is freely available in water to sustain the lives of fish and other aquatic organisms.

Diverse - of different kinds, types, or species.

Diversity - the state of having different kinds, types or species; the state of being diverse.

Dorsal Fin - the fin located on the back of a fish.

Dose - In terms of monitoring exposure levels, the amount of a toxic substance taken into the body over a given period of time.

Dose Response - How an organism’s response to a toxic substance changes as its overall exposure to the substance changes.

Dump - a land site where wastes are discarded in a disorderly or haphazard fashion without regard to protecting the environment. Uncontrolled dumping is an indiscriminate and illegal form of waste disposal. Problems associated with dumps include: disease-carrying organisms, pests, fires, air and water pollution.

Dunes - hills or ridges of sand that have been shaped by the wind. Dunes are formed wherever large quantities of dry sand are exposed to wind.

Ecological Balance - the fragile arrangement of living things, non-living things, food webs, and environmental conditions that allow for the continued success of an ecosystem.

Ecological Niche - description of all the physical, chemical, and biological factors that a species needs to survive, stay healthy, and reproduce in an ecosystem.

Ecology - study of the interactions of living organisms with each other and with their environment; study of the structure and functions of nature.

Ecosphere - collection of living and dead organisms interacting with one another and their nonliving environment, (energy and chemicals) throughout the world.

Ecosystem - community of organisms interacting with one another and with the chemical and physical factors making up their environment.

Element - a substance which cannot be broken down into simpler substances by ordinary (chemical) means.

Elimination - the act of getting rid of; the act of removing something.

Emergency Broadcasting System (EBS) - used to inform the public about an emergency and the protective actions to take.

Emission Standards - government standards that establish limits on discharges of pollutants into the environment (usually in reference to air).

Emission - the release or discharge of a substance into the environment. Generally refers to the release of gases or particulates into the air.

Endangered Species - animals, plants, birds, fish, or other living organisms threatened with extinction by man-made or natural changes in the environment.

Endothermic Reactions - a chemical change in which energy is taken in during the reaction.

Energy Recovery - to capture energy from waste through any of a variety of processes (e.g., burning). Many new technology incinerators are waste-to-energy recovery units.

Environment - all external conditions that affect an organism.
or other specified system during its lifetime (i.e. - air, water, plants, animals, land).

**Environmental Equity** - equal protection from environmental hazards for individuals, groups, or communities regardless of race, ethnicity, or economic status.

**Environmental Justice** - the fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population should be forced to shoulder a disproportionate share of exposure to the negative effects of pollution due to lack of political or economic strength.

**Erosion** - the wearing away of soil by wind or water, often intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

**Estuaries** - transition zones between a river and the sea. They are semi-enclosed by land and open directly unto the ocean. Inside an estuary the fresh water flowing into the estuary from nearby rivers and brooks dilutes the salt water.

**Estuary** - a complex ecosystem between a river and near-shore ocean waters where fresh and salt water mix. These brackish areas include bays, mouths of rivers, salt marshes, wetlands, and lagoons and are influenced by tides and currents. Estuaries provide valuable habitat for marine animals, birds, and other wildlife.

**Evolution** - the process of change in a certain direction.

**First Draw** - the water that comes out when a faucet in the kitchen or bathroom is first opened, which is likely to have the highest level of lead contamination from old plumbing solder and pipes.

**Fish Productivity** - the volume of fish or marine life that is produced by an area of a coral reef over a certain period of time.

**Food Chain** - series of organisms, each eating or decomposing the preceding one, with the exception of food producers, which obtain their food from abiotic sources.

**Fossil Fuels** - coal, oil, and other energy sources that formed over millions of years from the remains of ancient plants and animals. Fossil fuel use is a major cause of pollution.

**Fragile** - delicate or easily broken, damaged or destroyed.

**Freshwater** - water that does not contain salt, or is not saline.

**Freshwater Barrier Ponds** - located behind sand dunes. They begin as shallow depressions, which eventually become surrounded by sand dunes on one side and marsh vegetation on the other side. Over time, saltwater is replaced by freshwater.

**Freshwater Marsh** - forms in an area that is regularly submerged as a result of seasonal variations in the water level.

**Fugitive Emissions** - air pollutants released to the air other than those from stacks or vents; typically small releases from leaks in plant equipment such as valves, pump seals, flanges, sampling connections, etc.

**Fungicide** - a pesticide used to control or destroy fungi on food or grain crops.

**Garbage** - food waste (animal and vegetable) resulting from the handling, storage, packaging, sale, preparation, cooking, and serving of foods.

**Global Change** - examples: temperature, sea level, continents.

**Global Climate Change** - the predicted change in the earth's climate brought about by the accumulation of pollutants in the atmosphere. The effects of global climate change could include altered weather patterns and rising sea levels.

**Global Warming** - refers to the buildup of man-made gases in the atmosphere that trap the sun’s heat, causing changes in weather patterns on a global scale. The effects include changes in rainfall patterns, sea level rise, potential droughts, and habitat loss.

**Greenhouse Effect** - the buildup of man-made gases in the atmosphere that trap the sun’s heat, causing changes in weather patterns on a global scale. The effects include changes in rainfall patterns, sea level, potential droughts, and habitat loss.

**Ground Water** - water found below the surface of the land, usually in porous rock formations. Ground water is the source of water found in wells and springs and is used frequently for drinking.

**Habitat** - place or type of place where an organism or community of organisms lives and thrives.

**Hazardous Waste** - waste that causes special problems for living organisms because they are poisonous, explosive, corrosive, harbor disease, are radioactive or are dangerous for any other reason.

**HDPE (High Density Polyethylene)** - common name for the plastics used in soaps and milk bottles.

**Herbicide** - a pesticide designed to control or kill plants, weeds, or grasses. Almost 70% of all pesticide used by farmers and ranchers are herbicides. These chemicals have wide-ranging effects on non-target species (other than those the pesticide is meant to control).

**Household or Domestic Waste** - solid waste, composed of garbage and rubbish, which normally originates from residential, private households, or apartment buildings. Domestic waste may contain a significant amount of toxic or hazardous waste from improperly discarded pesticides, paints, batteries, and cleaners.

**Hydrocarbons** - chemicals that consist entirely of hydrogen and carbon. Hydrocarbons contribute to air pollution problems like smog.
Humus - an organic substance consisting of decayed food and plant matter that can be used as fertilizer.

Hydrosphere - all the earth’s liquid water (oceans, smaller bodies of fresh water, and underground aquifers), frozen water (polar ice caps, floating ice and frozen upper layer of soil known as permafrost), and small amounts of water vapor in the atmosphere.

Incineration - the destruction of solid, liquid, or gaseous wastes by controlled burning at high temperatures. Hazardous organic compounds are converted to ash, carbon dioxide, and water. Burning destroys organics, reduces the volume of waste, and vaporizes water and other liquids the wastes may contain.

Indicator Species - a species of plant or animal whose presence in an ecosystem is a sign that the ecosystem is healthy, or ecologically balanced.

Indigenous - a plant or animal natural to a particular surrounding.

Indoor Air - breathing air inside a habitable structure, often highly polluted because of lack of exchange with fresh oxygen from outdoors. Solvents, smoke, paints, furniture glues, carpet padding, and other synthetic chemicals trapped inside contribute to an often unhealthy environment.

Industrial Solid Waste - unwanted materials produced in or eliminated from an industrial operation and categorized under a variety of headings, such as liquid wastes, sludge, solid wastes, and hazardous wastes.

Inner Reef - the part of a barrier reef or atoll that faces the lagoon.

Inorganic - composed of materials that were never living plants or animals; most inorganic materials are not biodegradable.

Insecticide - a pesticide compound specifically used to kill or prevent the growth of insects.

Interaction - the result of one thing acting on another.

Interdependent Relationship - a type of relationship wherein both or all members of a relationship are dependent on one another.

Interrelated - related to each other

Intertidal - the shore area that lies between the low and the high tide mark.

Ion - a charged particle formed from an atom or atoms that have gained or lost one or more electrons.

Irradiated Food - food that has been briefly exposed to radioactivity (usually gamma rays) to kill insects, bacteria, and mold. Irradiated food can be stored without refrigeration or chemical preservatives and has a long “shelf life.”

Laminate - a material formed from a number of thin, individual sheets. The use of different materials in a laminate makes recycling difficult.

Landfill - a method for final disposal of solid waste on land. The refuse is spread and compacted and a cover of soil applied so that effects on the environment (including public health and safety) are minimized. Under current regulations, landfills are required to have liners and leachate treatment systems to prevent contamination of ground water and surface waters.


Leaching - a process whereby metallic compounds are washed by rainwater out of a source, such as a mine slagheap, and dispersed through the soil. Acid rain increases the risk of leaching.

Life Cycle - all phases in the life of a substance or species.

Lithosphere - the hard, outermost layer of the earth’s crust, containing our mountains and stocks of mineral resources. Volcanoes are found and geothermal energy can be exploited at locations where the crust is thin.

Litter - the highly visible portion of solid waste (usually packaging material) which is generated by the consumer and carelessly discarded outside of the regular garbage disposal system, as on the highways or in streets.

Living Requirements - a set of conditions that are needed in order for a plant or animal to live.

Marinelife - animals that live in the ocean including coral polyps, sea urchins, clams, shells, worms, crabs, octopuses, squid, etc.

Marshes - moderate the effect of varying water levels and reduce flooding by absorbing water and then slowly releasing it. Marshes reduce erosion of stream banks and lakeshores by providing a cushion against water flow and binding soil together.

Maximum Contaminant Level (MCL) - the maximum level of certain contaminants permitted in drinking water supplied by a public water system as set by EPA under the Federal Safe Drinking Water Act.

Mesosphere - the portion of the atmosphere from about 30 to 80 kilometers (20 to 50 miles), above the earth, characterized by a temperature range that decreases from 50°F to -130°F with increasing altitude.

Methane - a simple hydrocarbon which is the main component of natural gas. Methane acts as a greenhouse gas if released to the atmosphere.

Methanol - an alcohol also known as wood alcohol or wood spirit. Methanol can be used as an engine fuel.

Mineral Oil - produced from crude oil (fossil oil), the substance has a high boiling point and can be used as a lubricant.

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**Municipal Landfill** - disposers of domestic waste including garbage, paper, etc. This waste may include toxins that are used in the home, such as insect sprays and powders, engine oil, paints, solvents, and weed killers.

**Mutation** - a change in genetic material. A mutation can produce visible changes in an individual.

**Natural Resources** - examples include sun, wind, water, vegetation, metals and fossil fuels.

**Naturalist** - a scientist who studies plants and animals

**Nearshore** - stand on any seashore and look towards the horizon. What you see is an area called the nearshore. It's also known as the shallow subtidal. The nearshore is a part of all coastal ecosystems; it therefore extends over a wide geographic area.

**Nitrogen (N₂)** - a colorless, odorless, gaseous element, in a diatomic form, that constitutes close to 80% of the volume of the atmosphere and is present in combined forms in animal and vegetable tissues, especially in proteins.

**Non-Biodegradable** - not capable of being broken down by biological processes.

**Non-Degradable Substance** - a substance which cannot be broken down naturally into innocuous residual products.

**Non-Living Thing** - things that are not alive, or abiotic substances, such as soil, rocks or water.

**Nonpoint Pollution Sources** - urbanization, yard maintenance, animal keeping practices and agriculture are all nonpoint sources of water pollution.

**Non-Recyclable** - unable to be turned into new products by reprocessing.

**Non-Renewable Resources** - those resources that take a long time to be created such as coal, oil and minerals.

**Oil** - crude oil is a finite natural resource which is expected to last 40-100 years more at the current rate of consumption.

**Organic** - derived from living organisms.

**Organic Farming** - farming carried on in harmony with nature, for example by crop rotation and the use of natural fertilisers, without using chemicals such as commercial fertilisers or pesticides.

**Organically Grown** - food, feed crops, and livestock grown within a diversified, self-sustaining agro-ecosystem. Farmers build up nutrients in the soil using compost, instead of using synthetically derived fertilizers to increase productivity. They rotate crops, weed mechanically, and reduce their dependence on pesticides.

**Organism** - any living being, whether plant, mammal, bird, insect, reptile, fish, crustacean, aquatic or estuarine animal, or bacterium.

**Overfishing** - the harvest of fish or marinelife at a rate and volume that destroys the ocean's ability to provide such harvest in the future; the unsustainable harvest of fish and marinelife.

**Oxidant** - a substance containing oxygen that reacts chemically with other materials to produce new substances. Oxidants are the primary ingredients in smog.

**Oxidizing Atmosphere** - an atmosphere which contains oxygen gas (O₂) and converts elements into oxides or rust through chemical reactions.

**Oxygen (O₂)** - a colorless, odorless, gaseous element, in a diatomic form, constituting about 21% of the volume of the atmosphere and present in a combined state in nature. It is the supporter of combustion in air.

**Ozone (O₃)** - a chemical compound which, in the stratosphere, forms a layer protecting the earth from ultraviolet radiation from the sun.

**Ozone Layer** - Layer of gaseous ozone (O₃) in the stratosphere that protects life on earth by filtering out harmful ultraviolet radiation from the sun.

**Packaging** - a product's wrapping, sealing or container designed to protect and promote the product.

**Paleoenvironment** - environment of the past.

**Partner Ecosystems** - ecosystems that work together to maintain the diversity, productivity and ecological balance of other, nearby or connected ecosystems, or of the broader ecosystem of which they are a part.

**Periodic Table** - An arrangement of the chemical elements, according to their atomic numbers; vertical columns having similar properties and rows showing shifts in properties.

**Pesticide** - Substances intended to repel, kill, or control any species designated a "pest" including weeds, insects, rodents, fungi, bacteria, or other organisms.

**pH** - The measure of acidity or alkalinity of a chemical solution, from 0-14. Anything neutral, for example, has a pH of 7. Acids have a pH less than 7, bases (alkaline) greater than 7.

**Photosynthesis** - the process by which plant material is formed from water, nutrients and carbon dioxide using energy absorbed from sunlight.

**Physical Change** - Process that alters one or more physical properties of an element or compound without altering its chemical composition. Examples are changing the size and shape of a sample of matter (crushing ice and cutting aluminum foil) and changing a sample of matter from one physical state to another (boiling and freezing water).

**Physical Containment** - procedures or structures designed to reduce or prevent the release of viable organisms into an outside environment.
**Pioneer** - a person who is one of the first to do something or go somewhere.

**Plastic** - a product made from organic compounds such as petroleum, capable of being molded or cast into various shapes and films.

**Plume** - a concentration of contaminants in air, soil, or water usually extending from a distinct source.

**Point Pollution** - pollution that comes from a particular source, such as from a factory or sewage treatment plant. Nonpoint pollution, which doesn't come from a single, identifiable source, includes materials that wash off streets, lawns, farms and other surfaces.

**Pollution** - any substances in water, soil, or air that degrade the natural quality of the environment, offend the senses of sight, taste, or smell, or cause a health hazard. The usefulness of the natural resource is usually impaired by the presence of pollutants and contaminants.

**Pollution Prevention** - actively identifying equipment, processes, and activities which generate excessive wastes or use toxic chemicals and then making substitutions, alterations, or product improvements. Conserving energy and minimizing wastes are pollution prevention concepts used in manufacturing, sustainable agriculture, recycling, and clean air/clean water technologies.

**Precautionary Principle** - the principle of preventing potential environmental damage despite the absence of conclusive scientific evidence.

**Preservation** - the act of keeping things unchanged.

**Presorting** - the sorting of waste and residual products in accordance with clearly defined procedures for reuse, materials recycling, energy recovery and controlled landfill disposal. More efficient presorting is a global necessity.

**Primary Productivity** - the rate by which energy from light is utilized to produce organic matter, i.e., how fast plants grow.

**Public Water System** - any water system that regularly supplies piped water to the public for consumption, serving at least an average of 25 individuals per day for at least 60 days per year, or has at least 15 service connections.

**Quality of Life** - the character or nature of a person's, or animal's, existence.

**Radioactive Waste** - any waste that emits energy as rays, waves, or streams of energetic particles. Radioactive materials are often mixed with hazardous waste, usually from nuclear reactors, research institutions, or hospitals.

**Recycling** - reusing materials and objects in original or changed forms rather than discarding them as wastes.

**Reducing Atmosphere** - an atmosphere that does not contain free oxygen gas (O2) and where compounds chemically com-

**bining with hydrogen (H).**

**Relationship** - a connection or association between two or more things; the result of the interaction between two things, or one thing with another.

**Release** - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic substance.

**Renewable Resource** - a resource that can be replaced through natural processes if it is not overused or contaminated. I.e., water and trees are renewable resources.

**Residue** - what is left over; the remains. Usually small particles or film after a liquid has been removed.

**Resource Recovery** - the extraction of useful materials or energy from solid waste. Such materials can include paper, glass, and metals that can be reprocessed for re-use. Resource recovery also is employed in pollution prevention.

**Risk Assessment** - a process that analyzes the short- and long-term risks posed by certain technologies.

**Rocky Shores** - dominated by rocky substrate and show, to a greater or a lesser extent, some form of zonation or banding.

**Rural** - connected to a small town or countryside.

**Salt Marsh** - forms in a coastal area in a protected bay or estuary, and reduces erosion of the marine shore. Salt marshes are transition zones between the land and the sea. Salt marshes differ from fresh water marshes because of the regular influxes of salt water from the ocean.

**Sandy Beaches** - stretches of land covered by loose material, which are exposed to and shaped by waves and wind.

**Sanitary Water** - water discharged from restrooms, showers, food preparation facilities, or other nonindustrial operations; also known as "gray water."

**Secondary Productivity** - the rate of production of biomass (weight of living organisms) by heterotrophs (animals, bacteria, fungi).

**Sediment** - sands, silts, or soil mixed into, carried by, or deposited from water.

**Septic Tank** - an underground tank to collect wastes from homes that are not connected to a municipal sewer system. Waste goes from the home to the tank and is decomposed by bacteria. Solids and dead bacteria settle to the bottom as sludge while the liquid portion flows into the ground through drains. While properly placed and maintained septic systems can effectively treat domestic wastewater, others are a major source of ground water and surface water pollution.

**Smog** - dust, smoke, or chemical fumes that pollute the air and make hazy, unhealthy conditions (literally, the word is a blend
of smoke and fog). Automobile, truck, bus, and other vehicle exhausts are usually trapped close to the ground, obscuring visibility and contributing to a number of respiratory problems.

**Smog** - low-level ozone, soot, sulfur compounds, and other pollutants in the atmosphere that cause poor visibility and create hazardous conditions.

**Solar Wind** - the plasma ejected at high speeds from the surface of the sun.

**Solid Waste** - as defined under RCRA, any solid, semi-solid, liquid, or contained gaseous materials discarded from industrial, commercial, mining, or agricultural operations, and from community activities. Solid waste includes garbage, construction debris, commercial refuse, sludge from water supply or waste treatment plants, or air pollution control facilities, and other discarded materials.

**Solid Waste Management Facility** - any disposal or resource recovery system; any system, program, or facility for resource conservation; any facility for the treatment of solid wastes.

**Source Reduction** - the design, manufacture, purchase, or use of materials to reduce the amount or toxicity of garbage generated. Source reduction can help reduce waste disposal and handling charges because the costs of recycling, municipal composting, land filling, and combustion are avoided. Source reduction conserves resources and reduces pollution.

**Source Separation** - organizing materials by type (such as paper, metal, plastic, and glass) so that these items can be recycled instead of thrown away. For example, many of us separate these items from the rest of our household and office wastes. Industries also organize materials in this fashion.

**Species** - a group of related plants or animals that can interbreed to produce offspring.

**Stratosphere** - second layer of the atmosphere, extending from about 19 to 48 kilometers (12 to 30 miles) above the earth’s surface. It contains small amounts of gaseous ozone (O₃), which filters out about 99% of incoming harmful ultraviolet (UV) radiation.

**Surface Water** - all water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, seas, estuaries) and all springs, wells, or other collectors directly influenced by surface water.

**Survival** - the process of continuing to live; the continued existence of a species of plant or animal.

**Sustainable Agriculture** - environmentally friendly methods of farming that allow the production of crops or livestock without damage to the farm as an ecosystem, including effects on soil, water supplies, biodiversity, or other surrounding natural resources.

**Sustainable Development** - using resources in an efficient way and without destroying the basis of their productivity. For example, sustainable agricultural practices avoid the use of pesticides and chemical fertilizers that can pollute the soil and water.

**Symbiotic Relationship** - a relationship between two living things that live together for the benefit of both.

**Synergism** - the cooperative action of two or more organisms producing a greater total result than the sum of their independent effects; chemicals or muscles in synergy enhance the effectiveness of one another beyond what individually could have been produced.

**Tidal Mudflats** - associated with marine environments, especially in situations where tides expose a large expanse of shore. The shore must be a gentle sloping intertidal area, consisting primarily of fine sediments.

**Tidal Zone** - the area along the beach shoreline that is affected by the rise and fall of the tide.

**Topographical Painting** - a type of art which uses realistic and accurate detail to record a scene or particular place.

**Toxic** - a poisonous substance.

**Toxic Chemical** - substances that can cause severe illness, poisoning, birth defects, disease, or death when ingested, inhaled, or absorbed by living organisms.

**Toxic Cloud** - an airborne mass of gases, vapors, fumes, or aerosols of toxic materials.

**Troposphere** - innermost layer of the atmosphere. It contains about 95% of the earth’s air and extends about 11 miles (18km) above the earth’s surface. This portion of the atmosphere is characterized by decreasing temperatures with increasing altitude.

**Ubiquitous** - means present everywhere, or often seen.

**Unsustainable** - the present use, consumption or harvesting of natural resources that can not be continued into the future.

**Urban** - connected to a city, many people living in close quarters with businesses close by.

**Volatile** - any substance which evaporates quickly.

**Waste Water** - water used in domestic or industrial process and as a result contains pollution that has potentially harmful substances.

**Water Quality Standard (WQS)** - the combination of a designated use and the maximum concentration of an allowable pollutant which will protect that use for any given body of water.

**Weather** - short-term changes in the properties of the troposphere from place to place.

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Environmental Glossary

Wellhead Protection Area - a protected surface and subsurface zone surrounding a well or well field that supplies a public water system and through which contaminants could likely reach well water.

Wetlands - areas that are soaked or flooded by surface or ground water frequently enough or for sufficient duration to support plants, birds, animals, and aquatic life. Wetlands generally include swamps, marshes, bogs, estuaries, and other inland and coastal areas, and are Federally protected.

Wildlife Refuge - an area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Wood Treatment Facility - an industrial facility which treats lumber and other wood products for outdoor use.

Zonation - refers to the regular appearance of specific plants and animals at specific places along an intertidal area, the area that lies between the low and the high tide mark.
The “cleaning up” of our environment needs to be done one day and one community at a time. The EGBAR Foundation is an organization committed to restoring quality to the environment. Their goal is to make every day Earth Day somewhere in the world. The EGBAR Foundation invites all students who have participated in The EGBAR curriculum guide activities to enter the "CLEAN-UP CHALLENGE" STUDENT PROJECT CONTEST!

All students in grades 4-9 who have participated in The EGBAR Foundation environmental education program, "CLEAN-UP CHALLENGE", a curriculum guide for environmental education activities. There are no grade divisions. Students may enter through their school or community non-profit organizations. Whether you are a part of an after-school program or an organized sports club, we "challenge" you to enter!

Students are asked to identify something they think needs to be "cleaned up" or an idea they have for improving their community. This idea should be expressed as a project with the specific parameters identified on the EGBAR CLEAN-UP CHALLENGE CONTEST ENTRY FORM. These projects should be submitted by the students to the teacher/group leader who then selects one project to submit to The EGBAR Foundation. The entry must be properly labeled and legibly written or typed to qualify for judging. If the entry is more than one page, make sure each page has a label and/or identification information on the back and staple all pages together. Original entries become the property of The EGBAR Foundation.

All entries will be judged by the classroom teacher/group leader first, as noted. The winning classroom entry will then be judged by members of The EGBAR Foundation and finally by a panel of judges that have been selected by The EGBAR Foundation.

All entries will be judged on the following criteria:

- The maximum benefit to the environment.
- Originality / Practicality of implementing the project.
- A clear, concise, well-organized plan: including number of volunteers, budget and resources necessary to complete the project.

Who’s Eligible?

Entry Information

Judging

PRIZES!

The "CLEAN-UP CHALLENGE" student project contest is being held through The EGBAR Foundation website at www.egbar.org. This contest is open to all students, worldwide, who have participated in the activities and lessons of The EGBAR environmental curriculum guide. All students who enter this contest will receive an EGBAR sticker. The foundation will select the top 10 projects who enter. These winners will be considered the Worldwide Grand Prize Winners. This is a worldwide contest. Projects will be considered from countries outside the United States. Once we have selected your classroom / school / organization’s project you will receive the following:

- $10,000 for your project.
- A computer for your classroom/school/organization.
- A one year supply of Simple Green, the non-toxic, biodegradable, all-purpose cleaner to assist in your project “clean-up.”
- EGBAR stuffed animals for the members of your classroom / school/organization.
- A pizza party for your classroom/school/organization, complete with representatives of Simple Green and The EGBAR Foundation
- A special award ceremony hosted by "EGBAR" the foundation’s champion mascot of environmental awareness!
THE EGBAR CLEAN-UP CHALLENGE

STUDENT PROJECT CONTEST ENTRY FORM

THE CONTEST RULES

1. One (1) entry per student and one (1) entry per class.
2. Each entry must be properly labeled with name, address, school/organization, grade, phone numbers, and web address.
3. Each entry must be mailed, faxed, or emailed to The EGBAR Foundation.
4. Entries exceeding one page must be stapled together.
   All entries must be received by ____________ (see website for deadlines at www.egbar.org or call 1-800-EGBAR-55)
5. All prize winners will be notified within 1 week of the entry deadline date.
   Results may also be obtained on The EGBAR website.

Name _________________________________________________________________

Home Address___________________________________________________________

City _______________________________________State ________ Zip___________

Country ________________________________________________________________

Home Phone (include area code)__________________________________________

School/Organization Phone (include area code)____________________________

School/Organization Name________________________________________________

County/District ______________________________ Grade_____________________

Teacher/Group Leader's Name ____________________________________________

Name of Project________________________________________________________

E-Mail Address__________________________________________________________

Project Description: Be specific. What is being “cleaned-up?” (Example: a beach, park, school, neighborhood, creek.) What type of resources will you need to accomplish your project? How many volunteers? *Note: Use the back of this sheet for more space if necessary to describe your project.
The EGBAR FOUNDATION would like to thank the following for their contributions to this Environmental Awareness curriculum guide:

The California Coordinators of Newspaper In Education

The Lindsay Museum Watershed Watchers
Walnut Creek, California

The Take It Back Foundation and AT&T

Sandy Mather
Editor, Educational Consultant

Dr. Celia Henkens
Director, MBC / Duke University

John A. Todhunter, Ph.D.
President SRS International

“In the end, we will conserve only what we love, we will love only what we understand, and we will understand only what we are taught.”

Baba Dioum
- noted Senegalese conservationist