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Activity One



Reduce Your Garden Waste

Do you have a garden at your home, school, or neighborhood? In this activity, you will make a plan to reduce the waste from your garden.

1. First, MAKE A LIST of all the types of waste your garden makes. Some types of waste that gardens often create include:

- unused plant parts
- fertilizers, pesticides, herbicides that get washed into the environment by rain
- empty containers of fertilizers, pesticides, and herbicides – don't forget, these are hazardous waste items!
- empty plastic plant containers and seed starters
- old plant markers
- broken stakes and other equipment
- old gloves and rags

Take a look around your garden to find any other types of waste.

2. For each type of waste on your list, WRITE AN ACTION PLAN to reduce that waste.

Be creative! There are different ways to reduce waste. Some types of waste can be reduced by using less of a product. Other types of waste can be reduced by turning them into useful products. Reusing, recycling, and composting can be other ways to reduce some types of waste.

You may need to do some research to learn more about ways to reduce some types of waste. For example, if you would like to use less fertilizer, you could research the methods organic farmers use to make sure their plants get enough nutrients. Or, if you would like to make paper out of unused plant parts, you could research the steps of papermaking.

3. Once you have a plan for each type of waste in your garden, write the steps of your plan in a SPECIAL NOTEBOOK that you use only for your garden. Keeping a garden notebook is useful for keeping track of your plan during the year. Write notes to describe what worked and what didn't work. Next year, you can evaluate your plan and make changes.

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Activity Two



Bio-economical Costs of Mining Aluminum vs. Recycling Aluminum

You learned about the problems of mining waste, and about the bio-economics of resource use. In this activity, you will EVALUATE the bio-economical costs of mining aluminum versus recycling aluminum.

Step 1

Use the Internet or library resources to find out more about the **costs** and **profits** of the **aluminum mining industry**. Ask the following questions:

- What are the costs to mining companies of mining aluminum?
- Do these costs include managing mining waste? Does it include future waste management, such as cleaning up the mine site after the mine shuts down?
- Do companies or governments have insurance or savings to cover any risks of waste, such as contamination of drinking water supplies?
- Does mining aluminum make profits greater than the costs to the companies?
- Do companies get money from governments or other organizations to help with mining costs?
- Do mining profits relate to where aluminum deposits are located, or how easy they are to reach?
- At what point in the life of a mine does the company's cost become greater than the profits? Do mining operations shut down at this time?

Step 2

Use the Internet or library resources to find out more about the **costs** and **profits** of the **aluminum recycling industry**. Ask the following questions:

- What are the costs of recycling aluminum?
- Does recycling aluminum make profits greater than the costs to the companies and governments that run recycling plants?
- Do companies and governments get money to help with recycling costs, other than from the sale of recycled aluminum?

Step 3

Use all of the information you gathered to WRITE A REPORT comparing the bio-economical costs of mining aluminum and recycling aluminum. In your report, evaluate the differences in costs now, and also in the future.

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Activity Three



Contain an Oil Spill

A lot was learned about oil spills after the Exxon Valdez crash. Now, companies and other groups develop and use many different technologies to stop oil slicks from spreading after an oil spill. This practice is called oil spill **containment**. They also develop methods for cleaning up oil spills. In this activity, you will MAKE A MODEL of one of the technologies for containing or cleaning an oil spill.

Step 1

Using the Internet or library resources, **research new technologies for oil spill containment and clean-up**. You may use literature from companies, governments, environmental or other citizen groups.

Step 2

Choose a technology to model for your class. Decide what type of model will best suit the technology you chose. You might use a diorama or other three-dimensional model made of materials such as clay, paper, and paint.

Other technologies can be demonstrated using a model oil spill. To make a model oil spill, fill a wide basin with water. Place a few ounces of cooking oil into a paper cup, and add a few drops of food coloring. Mix until the food coloring evenly colors the oil. When you add the oil to the water, it will spread out on top like an oil slick. Try to contain or clean the oil using materials or methods similar to the technology you have researched. Try this a few times at home before demonstrating for the class. You will need to do some trial-and-error experiments to find the best amount of oil to use, and the best way to model your technology.

Step 3

Present your model to your class. Be sure to explain each of the following:

- How your technology was developed
- What materials your technology uses
- Whether your technology has already been used to clean an oil spill at sea

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Activity Four



“Near-Miss with Space Junk!” Television News Report

Imagine that you are a news reporter for your local TV news channel. In groups of three or four, you will create a news report on a near-miss between a space mission and space junk.

BEFORE YOU BEGIN

Do you regularly watch the news? If not, spend some time in the evening watching different news programs. Think about how the news reporters are presenting their stories. What tone of voice do they use? What kinds of information do they present? How do they use visuals to help viewers understand the story?

DO YOUR RESEARCH

Astronauts on shuttles and space stations have had several near-misses with space junk in the past few years. Together as a team, research **one** of these incidents. Look on the Internet or through periodical files for old news reports about the near-miss.

WRITE YOUR NEWS REPORT

Based on your research, put together a 5- to 10-minute news report. Be sure to include the following in your report:

- An introduction, which gives an overview of the information you will present
- WHEN the near-miss happened
- WHERE the near-miss happened
- WHO were the astronauts involved
- WHAT the astronauts were doing in space
- HOW the astronauts avoided a collision with the space junk
- A summary, which explains why space junk is a continuing problem, and what might be done to address the problem

PRESENT YOUR REPORT

If you have access to a video camera, film your news report. Then, show the film in class. If you do not have a video camera, set up a table in your classroom and give your presentation live. Be sure to practice a few times first!

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Activity Five



Write a Natural Disaster Waste Management Plan

Imagine that you are on a government panel to plan how to manage waste during the next natural disaster in your region. Work with a small group to write a plan.

RESEARCH THE PROBLEM

First, **evaluate** the most likely problems caused by natural disasters in your area. Ask yourselves the following questions:

- What natural disasters are most likely to happen in your area?
- What waste management problems usually happen as a result of those types of natural disasters?

WRITE THE PLAN

Brainstorm a list of ideas about how each type of waste can be handled. Ask yourselves the following questions:

- What types of waste are most important to handle first? How will you move people into the disaster area to handle the waste? What precautions will people need to take?
- What types of waste are most dangerous? Where are hazardous wastes usually disposed of in your area? Can these facilities handle a large amount of hazardous waste after a disaster?
- How can solid wastes be sorted and disposed? Can anything be recycled, reused, or composted?
- What groups can help manage the different types of waste?

Write your ideas as a set of action steps. Action steps start with a verb, and would result in a specific action. For example, "Create a group of trained disaster waste managers to call immediately after a disaster."

Present your action plan to your class. Ask the class to play the role of concerned citizens, and invite them to comment on your plan after you present it.

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Activity Six



Agricultural Waste in the Mediterranean

The **Mediterranean Sea** is a body of water that is almost entirely surrounded by land. Many African and European countries have shores on the Mediterranean. The Mediterranean is an important resource for people in the area. It supplies fish and other seafood. It has beautiful beaches, and brings in many visitors.

Agricultural waste has been building up in the Mediterranean Sea. The waste comes from many different countries, and all of the countries must work together to reduce this waste and protect their shared resource. In this activity, you will work together as a class to learn about what different Mediterranean countries are doing to solve the problem.

RESEARCH THE PROBLEM

With a partner, choose **one** Mediterranean country to research. Each team in the class should choose a different country. Using the Internet or library resources, find out:

- What types of agriculture are important in your country
- What methods of growing crops are used in your country
- What are the main agricultural waste products of your country
- How the Mediterranean is used by people in your country
- How people in your country are affected by agricultural waste pollution in the Mediterranean
- Your country's plan to reduce agricultural waste

PRESENT YOUR FINDINGS

Display a **map** of the Mediterranean in your class. Mark your country's location on the map. For your presentation, **CREATE SLIDE SHOW** with images that go along with each of the questions above. Write a short narration for each of the questions, to read when showing each slide.

HOLD A SUMMIT

A summit is a meeting of representatives from different countries, usually held to discuss a common problem. After each group has made a presentation about their country, sit in a circle to **DISCUSS THE PROBLEMS AND SOLUTIONS** of agricultural waste in the Mediterranean from the point of view of your countries.