



BLACKFORD COUNTY 4-H



# RECYCLING

Green Awareness



Please Save this book –  
use it each year you are in This Level

**Level C: Grades 7-9**

**Level D: Grades 10-12**

**Blackford County  
Recycling Project  
Revised October 2011**

Adapted from: Elkhart County Recycling Project Manual  
and Franklin County Recycling Manual.

## 4-H RECYCLING PROJECT

### *Green Awareness*



### Completion

Complete 3 activities per year. All activities must be chosen from the manual. Turn manual and a record sheet & check sheet (new each year) into your club leader or the Extension Office by the announced date.

### Exhibit

Select from either an article or a poster. The article must have a large index card or ½ sheet of paper attached to the project explaining the following:

1. **What is the project that you have made?**
2. **What is it made from?**
3. **Of those items – which were recycled and which did you purchase for this project?**
4. **How much time did it take to make your project?**
5. **What was the total cost of materials for your project?**
6. **How are you going to use your project?**

#### **Level C (7th - 9th Grade) Exhibit one of the following:**

1. Recycle an article by making it into something else you can use. Large index card (approx. 8 ½" by 5 ½") should be attached to the project with the exhibit questions answered.
- OR**
2. Prepare a poster (22" x 28") following poster requirements, showing something you learned about recycling. This may be a topic from the activities you completed or another recycling topic.

#### **Level D (10th - 12th Grade) Exhibit one of the following:**

1. Recycle an article by making it into something else you can use. Large index card (approx. 8 ½" by 5 ½") should be attached to the project with the exhibit questions answered.
- OR**
2. Prepare a poster (22" x 28") following poster requirements, showing something you learned about recycling. This may be a topic from the activities you completed or another recycling topic.

## **RECYCLING**

Recycling is frequently in the news. We are told that it is the responsible thing to do.

Recycling conserves natural resources, saves energy and reduces the amount of trash going to landfills. Conserving our natural resources doesn't mean not using them, it means using them wisely and sparingly. Recycling involves collecting reusable materials that have been thrown away, processing and distributing them for reuse. In most cases it takes less energy to prepare materials for reuse than to produce new items. Natural resources, such as trees, water, metal ores and oil are conserved through recycling. Materials from these natural resources are recycled and used again. Almost everything can be recycled in some way. Major groupings include paper, aluminum, glass, organic materials and plastics.

To make it easier on recycling centers, they appreciate separating recyclables before arrival. This is easily done in bags or boxes. The following is a list of accepted recyclables and how to sort and prepare them in Blackford County.

### **Cardboard**

- Corrugated Cardboard Boxes should be broken down and flattened.

### **Other Paper Products**

- Paperboard (cereal boxes): Boxes should be broken down and flattened.
- Newspaper: Must be dry and bundled. Please do not use paper or plastic bags.
- Mixed Paper: Office, computer paper, junk mail. Keep dry.
- Magazines: Materials including magazines, and unwanted phone books. Must be kept dry and bundled.



### **Plastic Bottles/ Metals and Aluminum/ Glass**

- PETE or #1 Bottles: Soft drink, soda bottles, etc. Please rinse.
- HDPE or #2 Bottles: Milk and Juice jugs, detergent and bleach containers. Please rinse.
- Aluminum: Soft drink and other beverage cans. Please rinse and separate from metal cans.
- Steel/Tin: Cans from food, soup, vegetables, etc. Please wash.
- Scrap Metal: Remove gas tanks, fuels, batteries from appliances. No wire fencing.
- Glass Bottles: All glass food and beverage bottles: clear, green brown. Please rinse.

### **Batteries (Considered Hazardous Waste in Blackford County)**

- Car Batteries: Must not be cracked. Cells must be capped.
- Rechargeable Batteries: Rechargeable batteries are accepted. Please no alkaline batteries (alkaline batteries can go in the regular trash) .

## Other Notes

- Pop Tabs: Be sure to collect your pop tabs...different groups collect them and donate them to the Ronald McDonald house to be recycled. The money earned helps families of sick children stay close by while they are hospitalized. Schools, Kiwanis Clubs and Extension Homemakers Clubs are just a few of the groups that support this effort.
- Product Labels: Schools get money for educational supplies from Campbell Soup labels (also found on many other products, check [labelsforeducation.com](http://labelsforeducation.com) for a complete list) as well as "Box Tops for Education" found on many cereals and other products (check [boxtops4education.com](http://boxtops4education.com) for a complete list of participating products.) Save these for your local schools!

### These are some items that DO NOT belong in the recycling bin.

- **Pizza Boxes**: The oil from the pizza can contaminate the cardboard, making it impossible to process into clean paper.
- **Napkins & Paper Towels**: It's not the paper but they are often used to clean up food, cleaning products and other hazardous waste.
- **Sticky Notes**: Their size, color and the adhesive tape make them better in the trash.
- **Plastic Caps**: Curbside programs will not recycle them.
- **Wet Paper**: Paper fibers that have been exposed to water are shorter and therefore less valuable to paper mills.

## HAZARDOUS WASTE

A **hazardous waste** is waste that poses substantial or potential threats to public health or the environment and generally exhibits one or more of these characteristics:



- Ignitable: Ignitable wastes can create fires under certain conditions, and are spontaneously combustible. Examples include **waste oils and used solvents**.
- Corrosive: Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers. Examples include **Battery acid**.
- Reactive: Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include **lithium-sulfur batteries, compact fluorescent light bulbs and explosives**.
- Toxic: Toxic wastes are those containing concentrations of certain substances in excess of regulatory thresholds which are expected to cause injury or illness to human health. Examples include **medicines**.

These wastes may be found in different physical states such as gaseous, liquids, or solids. Furthermore, a hazardous waste is a special type of waste because it cannot be disposed of by common means like other by-products of our everyday lives. Blackford County sponsors a Hazardous Waste collection the first Saturday of each month from 8 am-3 pm at the Blackford County Correctional Facility, 26861 CR 26, Blackford. Call 574-293-2269 for more information.

## **REMEMBER THE 5 R'S**

Reduce the amount of waste we produce.

- Buy only what you need
- Buy economy size or bulk packaging
- Avoid disposable products
- Bring your own bags to the grocery store
- Choose boxes with gray interior (recycled paperboard)
- Look for recycle symbol or the words "made from recycled materials" when shopping
- Choose products packaged in recyclable materials
- When possible, choose product packaging that is easiest to recycle (such as glass instead of plastic)

Reuse as much as possible.

- Use products that are made to be used many times, such as cloth diapers, cloth napkins, sponges, towels and rags, dishes, rechargeable batteries, etc.
- Use the blank back sides of paper for scratch paper
- Purchase used goods at second hand stores, garage sales, auctions, antique shops and flea markets

Reject over packaging and environmentally hazardous products.

- Avoid over-packaged goods
- Avoid non-recyclable packaging and containers
- Choose non-aerosol spray containers
- Avoid disposable products

Repair broken items instead of replacing them.

- Mend clothes
- Repair broken appliances
- Make repairs promptly, before damage progresses
- Service vehicles regularly to maintain good condition

Recycle the products that are recyclable.

- Identify the recycling centers in your community
- Identify the garages and service stations that will accept and recycle used motor oil
- Identify local businesses (doctors, dentists, nursing homes, libraries daycares, etc.) that accept used magazines
- Donate used clothing, furniture, etc.
- Have a neighborhood or family garage sale annually to recycle unwanted items
- Trade in old appliances and vehicles when possible
- Be familiar with recyclable materials: glass, aluminum, newspaper, etc.

## **PRE-CYCLE SHOPPING LIST**

When you pre-cycle you choose to buy products that are friendly to the environment.

- Bring reusable shopping bags to the store with you
- Buy Large quantities. This uses less packaging
- Buy products with the least amount of packaging. Items in multiple containers waste resources
- Buy products packaged in recycled packaging
- Don't buy disposable items
- Buy less paper napkins or paper towels –or none at all. Use cloth
- Read labels for ingredients. Stay away from harmful chemicals
- Buy long life items (batteries and light bulbs). This saves on packaging
- Don't purchase Styrofoam packaging on meats and such. This takes too long to break down in landfills
- Buy items packaged in cardboard, aluminum, steel, glass or plastic containers stamped 1 or 2. These plastics are easier to recycle

## **TRUE RECYCLING**

If you want to be a “true recycler” it is also important to buy goods that are made from and packaged in recycled materials when possible.

Here are some common recycling symbols to look for:



This symbol indicates that the item is recyclable.



This symbol indicates that the product or packaging is made from recycled materials.



### **DID YOU KNOW?**

By recycling 1 ton of paper you save:

- 17 trees
- 463 gallons of oil
- 3.06 cubic yards of landfill space
- 6953 gallons of water
- 587 pounds of air pollution
- 4077 Kilowatt hours of energy

## ACTIVITY 1: OIL AND WATER

In our recent past, we have heard many reports about the environmental damage caused by oil spills in our oceans, rivers, and other waterways. Many people do research to try to find new ways to clean up an oil spill. This activity is designed to help you learn about what happens when oil is mixed with water, and to get you to think of ways you might try to get the oil out of the water. You may want to take notes and/or photographs to record what happens in each step of your activity.

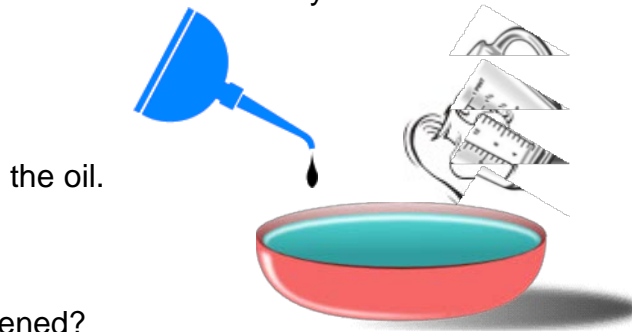
Vegetable oil will give you the same results and simulate what happens when there is an oil spill in the environment. The waste from this activity can be disposed of in the trash. If you used motor oil, it would be a hazardous waste and require special handling.

Materials:

Glass jar or bowl	Water
Vegetable oil	Spoon or stir stick
Other materials of your choice	

What will you do?

1. Fill jar or bowl  $\frac{3}{4}$  full with water.
2. Put several drops of oil in the water.
3. Observe what happens.
4. Mix the oil into the water.
5. Observe what happens.
6. Try to get the oil off of and out of the water and jar or bowl. Experiment with different materials of your choice to see what does the best job of removing



What happened?

Did the oil and water mix together? \_\_\_\_\_

Describe how it looked. \_\_\_\_\_

What did you use to remove the oil?  
From the water? \_\_\_\_\_

From the jar or bowl? \_\_\_\_\_

What do you think would happen to animals caught in an oil spill? \_\_\_\_\_



## ACTIVITY 2: OIL AND PLANTS

Many scientists are concerned about the effects of the oil on the plant life in the areas where there has been an oil spill. This experiment is designed to help you understand what happens when oil is put on plants. You may want to take notes and/or photographs to record what happens during the experiment.

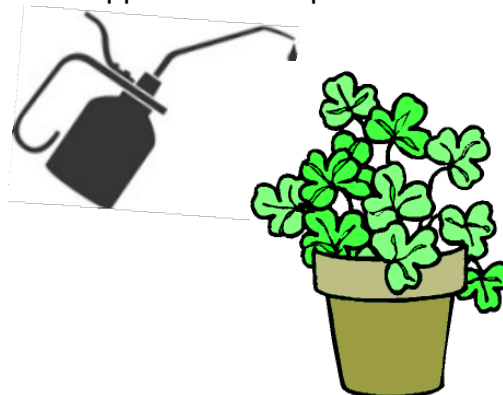
Vegetable oil will give you the same results and simulate what happens when there is an oil spill in the environment. The waste from this activity can be disposed of in the trash. If you used motor oil, it would be a hazardous waste and require special handling.

Materials:

Flower pot  
Soil  
Growing weed to transplant  
Water  
Vegetable oil  
Camera and film

What will you do?

1. Transplant a weed into flower pot.
2. Water your transplanted weed every few days for about a week or two before continuing with the activity.
3. Take a photograph of the weed.
4. Put several drops of oil on the weed.
5. Observe and photograph what happens.
6. Check the plant again in a few hours.
7. Observe and photograph what has happened to the plant.
8. Check the plant again in a few days.
9. Observe and photograph what has happened to the plant.



What did you find?

Describe what happened to the plant. \_\_\_\_\_

What did the oil do to the plant to cause the results? \_\_\_\_\_

### ACTIVITY 3: OIL AND SOIL

Recent oil spills and the emphasis on recycling have created interest and concern over ways to clean up spills and properly dispose of oil without hurting our environment. In this activity, you will try to find ways to remove oil from soil. You may want to take notes and/or photographs to record what happens in the different steps of your activity.

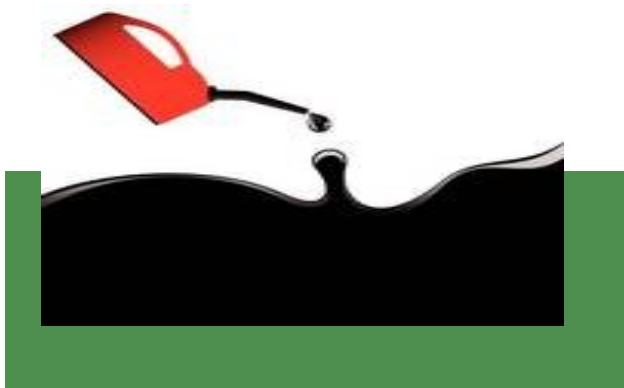
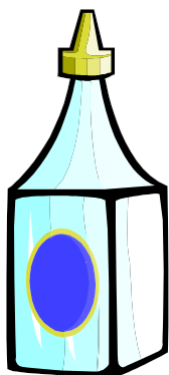
Vegetable oil will give you the same results and simulate what happens when there is an oil spill in the environment. The waste from this activity can be disposed of in the trash. If you used motor oil, it would be a hazardous waste and require special handling.

#### Materials

- Box or pan
- Dry soil
- Vegetable oil
- Other materials of your choice

#### What will you do?

1. Fill box or pan  $\frac{3}{4}$  full with soil.
2. Put several drops of oil on the soil.
3. Observe what happens.
4. Try to get the oil out and off of the soil. Experiment with different materials of your choice to see what works the best in removing the oil from the soil.



What did you find?

What happened to the oil and the soil? \_\_\_\_\_  
\_\_\_\_\_

Were you able to remove the oil from the soil? \_\_\_\_\_ How? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## ACTIVITY 4: MAKE A MINI LANDFILL

In this activity, you will learn about landfills and how they work. You will also learn about how articles decompose, as well as what types of items decompose faster. You may want to record your results in a notebook and/or take photographs of the activity as it progresses.

Materials:

4 large glass jars or buckets

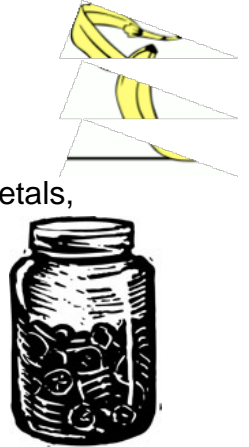
Miscellaneous solid waste (examples: lettuce leaf, banana peel, flower petals, glass, paper, foil, plastic bag, etc.)

Crayon or marker

Water

Soil

Masking tape or paper label



What you will do:

1. Fill each jar about half full of soil.
2. Place one item of waste in each jar on top of soil.
3. Cover the item with additional soil.
4. Dampen soil with water.
5. Classify each waste item as organic, renewable resource/recyclable, non-renewable resource/recyclable, non-renewable resource/hard to recycle.
6. Label each jar with the date, waste item buried and type of item (organic, etc.).
7. Place jars out of direct sun and away from people.
8. Guess what will happen to the solid waste item in each jar. Write these predictions down.
9. Stir soil occasionally and keep soil damp with water.
10. In three weeks, examine jars for the condition of the buried solid waste item.

What did you find?

Describe what you found when checked the buried items after three weeks?

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Describe what you learned from the activity in terms of the importance of recycling some items, the effects on our environment from not recycling, etc.

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Describe any other observations you made from this activity \_\_\_\_\_

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## ACTIVITY 5: PAPER RECYCLING

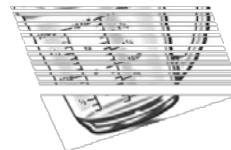
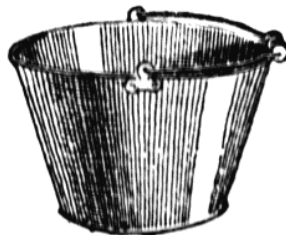
Paper, originally invented by the Chinese, is a thin tissue made of wood or other fiber. The individual fibers are separated by beating or pulping, and put on a mold suspended in water. The water is drained from the paper mold, leaving the interwoven fibers. When these fibers are dried and pressed, they become paper.

Each of us uses a variety of paper products every day. American offices throw away enough paper to build a wall 12 feet high stretching from Los Angeles to New York City. 75,000 trees are used to produce the paper for the Sunday edition of the New York Times, yet only 30% of the newspapers are recycled in the United States. Recycling paper not only saves trees (which help clean our air), but has other benefits as well. Producing one ton of paper from recycled paper instead of virgin pulp uses half as much energy and water, produces three-quarters less air pollution and one-third less water pollution, saves 17 pulp trees, and creates five times as many jobs as producing paper from virgin pulp.

In this activity, you will learn to recycle different types of paper to make your own paper. You may want to take photographs of the different stages in your recycling process.

Materials:

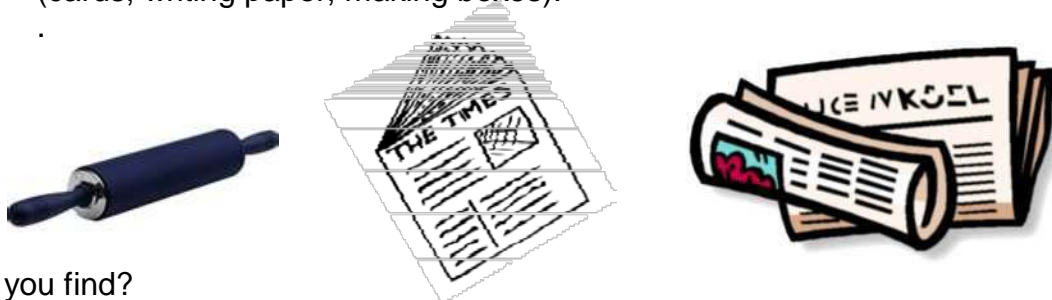
Wire screen pieces (at least 10" x 13")	Cornstarch
Measuring cup	Wooden spoon
Blender	Water
Rolling pin	Felt (optional)
Wax paper	
Bucket, large bowl, or other large container	
Old paper (newspapers, notebook paper, construction paper, etc.)	
Bowl (large enough to hold at least one quart of liquid)	



What you will do:

1. Put some water in the bucket or other container.
2. Cut or tear one type of paper into small pieces and place in container to soak for several hours.

3. Prepare your paper mold (screen) by placing layers of newspaper on a hard, flat surface. Place screen on top of the layers of paper. Tear off a piece of wax paper a little larger than your screen. Set it aside.
4. After paper has soaked, make a starch suspension by combining one cup of cornstarch with two cups of water. Mix thoroughly before using.
5. Drain excess water from the shredded paper.
6. Put three tablespoons of starch suspension in the blender and add the drained, shredded paper.
7. Blend at high speed until the mixture looks like thick soup. You may need to add more starch suspension if it is really thick. You may need to stop the blender and stir the paper mixture often with a wooden spoon.
8. Quickly pour the mixture onto your prepared screen, spreading it quickly and evenly.
9. To remove excess water, place wax paper on top of the spread mixture and roll over it gently with a rolling pin. Repeat this step until paper is relatively thin and smooth (You will not want to make your paper too thin as it will tear easily.).
10. Carefully peel off wax paper. Move screen and replace wet newspapers (underneath screen) with dry ones (saving wet ones to shred and make more paper). Replace screen and allow paper to continue to dry for about an hour (or until you can peel it gently off screen without damaging it).
11. Remove your recycled paper from screen and place it on a dry, flat surface. Allow it to dry overnight.
12. Repeat the activity using different types of paper. You may also want to activity with different proportions of starch.
13. After your recycled paper has dried, experiment with different uses of it (cards, writing paper, making boxes).



What did you find?

What did you observe when doing this activity? \_\_\_\_\_  
 \_\_\_\_\_

Did you have any problems making the paper? \_\_\_\_\_  
 \_\_\_\_\_

How did you use your paper? \_\_\_\_\_  
 \_\_\_\_\_

For a smoother textured paper, allow the mixture to drain on the screen. Remove the wet newspapers from underneath the screen. Then cover the recycled mixture with felt. Turn the screen over (so the felt is on the bottom) and carefully peel screen away from paper. Cover the paper with another piece of screen away from paper. Cover the paper with another piece of felt. Then roll it with a rolling pin. Remove felt carefully and allow paper to dry overnight.

## **ACTIVITY 6: COMPOST COLUMN**

According to epa.gov, yard trimmings and food residuals together make up 23% of the U.S. waste stream. The best way to help this number decrease is by composting.

Composting is how nature recycles. It is the breakdown of organic materials, such as food or yard waste, into soil. Bacteria, yeasts and fungi are the organisms responsible for the decomposition of these materials. Compost is great for your garden or yard, and it's easy to do. There are many different composting bins on the market, or you could build one yourself out of scrap materials (another great way to recycle.)

### **What to Compost - The IN List**

- Animal manure
- Cardboard rolls
- Clean paper
- Coffee grounds and filters
- Cotton rags
- Dryer and vacuum cleaner lint
- Eggshells
- Fireplace ashes
- Fruits and vegetables
- Grass clippings
- Hair and fur



- Hay and straw
- Houseplants
- Leaves
- Nut shells
- Sawdust
- Shredded newspaper
- Tea bags
- Wood chips
- Wool rags
- Yard trimmings

### **What Not to Compost - The OUT List**

#### **Leave Out/Reason Why**

- Black walnut tree leaves or twigs  
Releases substances that might be harmful to other plants
- Coal or charcoal ash  
Might contain substances harmful to plants
- Dairy products (e.g., butter, egg yolks, milk, sour cream, yogurt)  
Create odor problems and attract pests such as rodents and flies
- Diseased or insect-ridden plants  
Diseases or insects might survive and be transferred back to other plants
- Fats, grease, lard, or oils  
Create odor problems and attract pests such as rodents and flies
- Meat or fish bones and scraps  
Create odor problems and attract pests such as rodents and flies
- Pet wastes (e.g., dog or cat feces, soiled cat litter)  
Might contain parasites, bacteria, germs, pathogens, and viruses harmful to humans
- Yard trimmings treated with chemical pesticides  
Might kill beneficial composting organisms



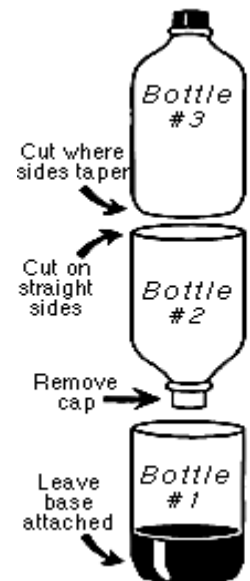
The composting process is depends on many different factors, such as the amount of moisture and air, temperature, light, source of bacteria and fungi, and the nature of the rotting material. For example, under ordinary circumstances, a soft banana peel will rot much faster than a piece of wood. However, old banana peels kept in a dark freezer will decompose much slower than a piece of wood in a warm, moist environment.

The presence or absence of air (oxygen) is one of the most important factors in composting. Modern landfills seal garbage deep in the earth, excluding air and moisture and preventing microorganisms from working. Composting allows air and moisture to speed up the natural biodegradation process.

**Activity:** Make a composting column to see the biodegradation process first hand!

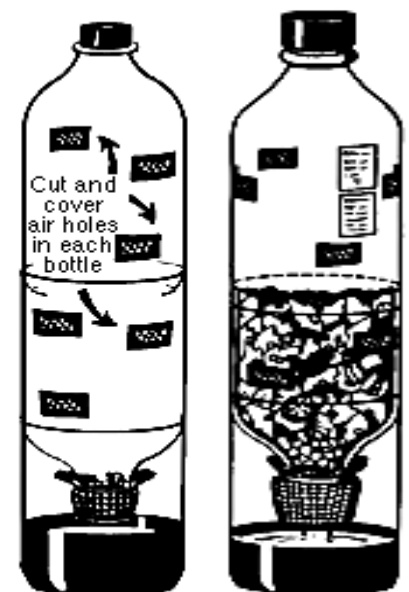
Materials:

- Three 2-liter plastic pop bottles, rinsed with labels removed.
- Permanent Marker
- Craft Knife
- Scissors
- Clear Tape and Electrical or Duct Tape
- Netting, nylon or other mesh fabric
- Rubber Band
- Two Cups Garden Soil plus: Organic material for composting, such as food scraps, leaves, newspapers and grass clippings
- Thermometer
- Measuring Cup
- Microscope



What will you do?

1. Remove the labels from all three bottles. Cut them and assemble as illustrated.
2. Cut out 3-4 windows (air holes) in the top 2 bottles, the approximate diameter of your thumb. Cover windows with nylon stocking or mesh material and tape to hold firmly.
3. Place nylon stocking over middle bottle opening and secure with a rubber band.
4. Place soil in the middle bottle. Bury vegetable or fruit scraps, grass, newspaper, etc. in the soil. (Note: the smaller the pieces, the faster they will decompose.)
5. Add just enough water to moisten the soil and allow a few drops to drain into the bottom of the column.
6. Replace the top bottle making sure the windows remain uncovered to allow air flow in and out of the compost column.
7. During monitoring, keep soil moist by recycling the compost water from the bottom to the top bottle.
8. Occasionally turn the soil with a spoon.
9. Record your observations on the chart on the next page.







## ACTIVITY 7: KEEP TRACK OF YOUR TRASH

In this activity, you will learn about ways to reduce the amount of trash your family throws away. You will also learn about what types of things you can recycle. After this activity is over, try to get your family to try some of the recycling you have learned.

Materials:

Your family's trash for one week  
Boxes  
Bathroom scales

What you will do:

1. Collect and save your family's trash for a period of one week. As you collect it, rinse out the bottles, cans and jars, and put food waste in a sealed container.
2. At the end of the week, use the scales to weigh the trash you have collected.
3. Record the weight in the notebook.
4. Using the boxes, sort the trash by like items --- glass, aluminum cans, plastic containers, metal containers, newspapers and all other trash.
5. Re-weigh the sorted boxes of trash, one at a time.
6. Record these weights.
7. Subtract the weight of the box of "all other trash" from the weight you recorded for the total of all of the trash collected for the week.

Example:            *10.8 lbs.*        *Total*  
                          *- 2.5 lbs.*        *All other trash*  
                          *8.3 lbs.*         *Recyclable trash*

8. Calculate and record the percentages of each type of trash you collected. To do this, divide the weight of each separate type of trash, as sorted in the boxes, by the weight of all of the trash collected.

What did you find?

What type of trash do you have the most of? -----

How much could your family reduce the amount of trash they throw away if they recycled the glass items \_\_\_\_\_ aluminum cans \_\_\_\_\_ plastic containers \_\_\_\_\_, metal containers \_\_\_\_\_ newspapers \_\_\_\_\_

Calculate your answer in pounds and then in percentages. \_\_\_\_\_

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Discuss your findings with your family. Work together to suggest ways to begin some recycling in your home.

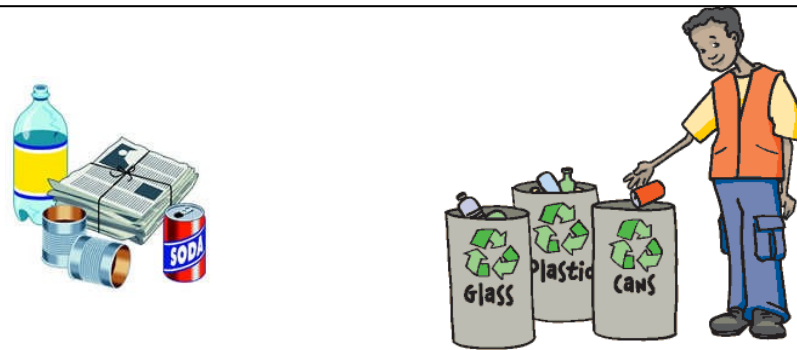
Did you make any changes as a result of this activity? \_\_\_\_\_

**Try the activity again after your family has made some recycling changes.**

Try sorting your trash for recycling a second time after your family has made some changes to their recycling habits. Sort your trash for one week again. At the end of the week, weigh the trash that you will not be recycling.

Did you get the same results \_\_\_\_\_?

Compare this figure to the total of all the trash you collected at the beginning of this activity \_\_\_\_\_



**ACTIVITY 8: PLANNING & SET UP A HOME RECYCLING CENTER**

Successful recycling requires a workable set-up for sorting recyclables in the home. We have many things to do with the little bit of free time most of us have, so we do not want to spend a lot of time on our recycling each day. We need a home recycling center that is easy to use.

To get a recycling program going at home you need to ask yourself several questions. What kinds of things are recyclable in your community? Where are the recycling centers? What types of things do they accept? What preparation of items needs to be done before items will be accepted?

Once you have answered those questions, you are ready to plan your recycling center. Think of a room at home where you could get permission to set up a recycling center (garage, basement, mudroom, utility room, etc.). Remember, it should be close to the place where cans, bottles and newspapers are used in the first place so it will be easy to use. Discuss your ideas with your family. This will help you to plan an area they will all use. It will also help get them ready to begin recycling.

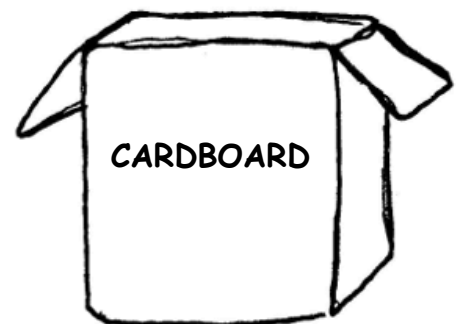
Make a list of all the items you will recycle. This will help you to plan for the space and items you will need. You may use garbage cans, boxes, bags, etc., to sort items. You will need to discuss any planned purchases with your parents (garbage cans, can crusher, etc.).



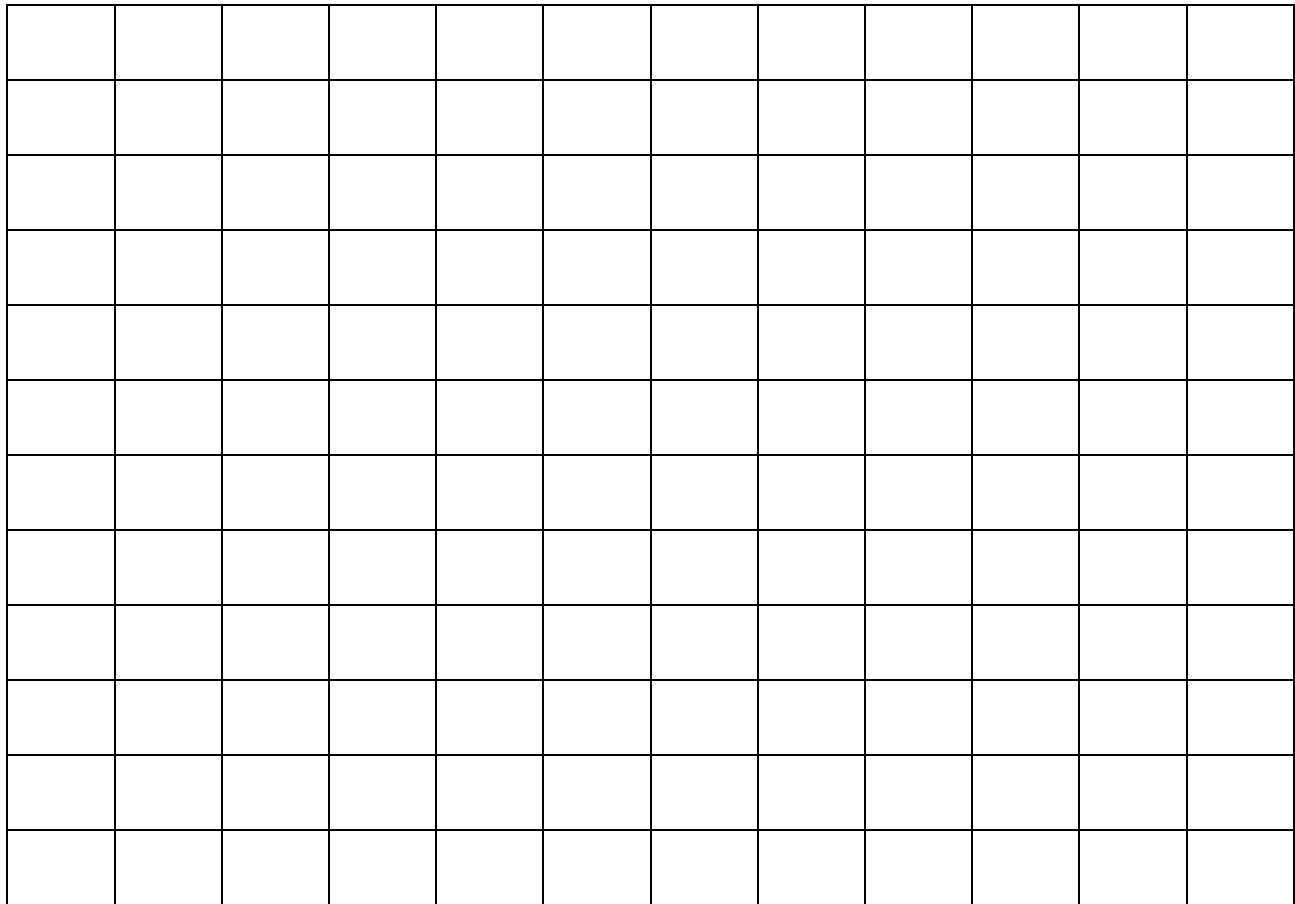
Use the grid on the following page (or one of your own) to make a floor plan for the “recycling center.” Measure the room or area, your sorting bins or boxes, etc., to get your plans to scale. You can cut out construction paper templates (small scale representations) of the items to be located in your center. Be sure to include items already in the area (furniture, tools, appliances, etc.). Tape or place these templates on the grid to check for fit, and experiment with moving them around to create the simplest floor plan. Discuss your finished floor plan with your family. Make any revisions that are needed.

Label the items in your floor plan. You may want to include wall space for mounting instructions for preparing materials, your local recycling collection sites, hours of operation, etc.

Show how you planned your home recycling center, your completed floor plan, problems, etc. Be sure to label all items in your center.



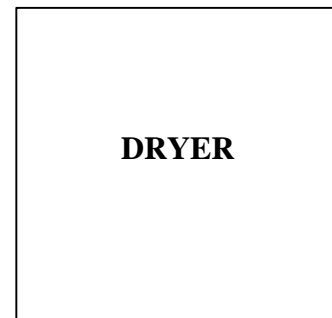
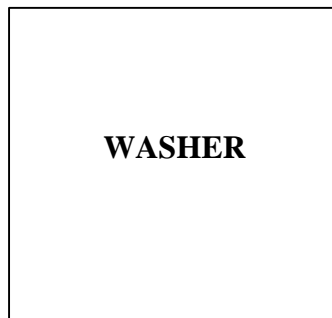
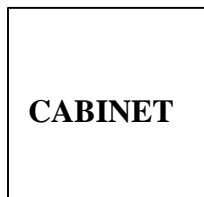
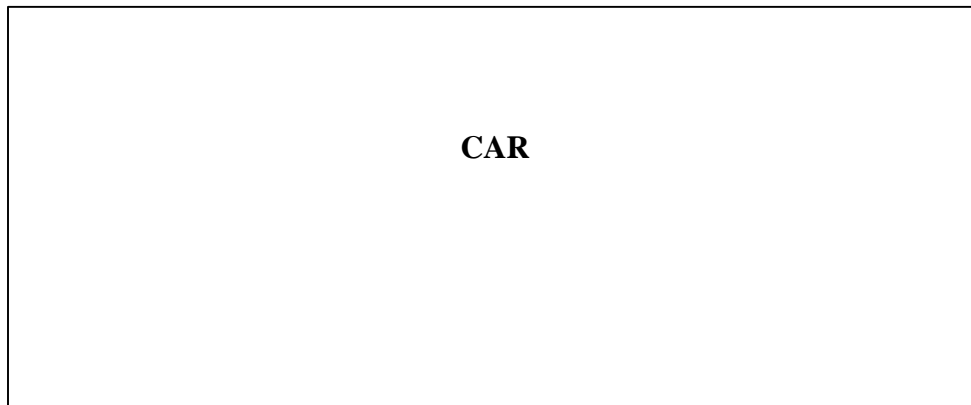
Set up a recycling center in your garage, basement, mudroom, utility room, etc. Use the graph below and the drafting objects on the following page to make a floor plan. Arrange the things in the room to make your recycling center easy to work in. The graph may be adjusted to fit the size of room you are using, or the scale may be changed. This graph is for a 12 foot by 12 foot room. Scale is  $\frac{1}{2}$  inch = 1 foot.



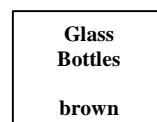
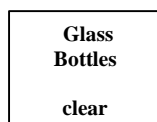
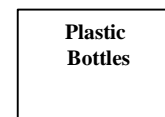
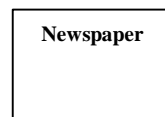
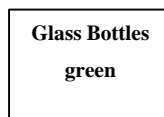
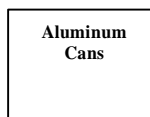
Recycling one ton (about 2,000 pounds) of paper saves 17 trees, two barrels of oil (enough to run the average car 1,260 miles) , 4.100 kilowatts of energy ( enough power for the average home for 6 months), 3.2 cubic yards of landfill space, and 60 pounds of pollution.

## DRAFTING OBJECTS (Scale: ½ inch = 1 foot)

Here are a few objects to cut out and use in your floor plan. Create other objects to fit the particular room that you are using. Remember to keep to scale. For example, if your family car measures 10 feet by 5 feet, it would measure 5 inches by 2 ½ inches on the floor plan; 10 x ½ inch = 5 inches. 5 x ½ inch = 2 ½ inches. After playing with the floor plan, paste the objects onto the graph. Now put it into reality!



Recycling Containers:



## ACTIVITY 9: WHAT IS YOUR CARBON FOOTPRINT?

Your Carbon Footprint is your impact on the environment. This is measured in the units of carbon dioxide you release through your activities. Increased emissions of CO<sub>2</sub> into the air leads to global warming, acid rain and other negative effects on the earth. Calculate your family's carbon footprint.

### 1. Does your family drive a traditional gas powered car?

If your family has a car or cars that use traditional gasoline and are not considered energy efficient, then your family car or cars will have an average gas mileage of 13 - 20 miles per gallon of gasoline. If your family car is an energy-efficient car or a hybrid, on average it can travel longer distances per tank of gas. Most energy-efficient cars or hybrids can travel 30 - 40 miles per gallon of gasoline.

$$\frac{\text{_____}}{\# \text{ of cars}} \times \frac{\text{_____}}{\text{miles driven per month}} \times 12 \text{ months per year} \div \frac{\text{_____}}{\text{miles per gallon}} \times 22 \text{ lbs. CO}_2 \text{ per gallon} = \underline{\hspace{2cm}}$$

### 2. Does your family ride the bus or use the metro/train to travel?

$$\frac{\text{_____}}{\# \text{ of family Members}} \times \frac{\text{_____}}{\text{miles traveled per day}} \times \frac{\text{_____}}{\text{days travelled per week}} \times \frac{52}{\text{weeks per year}} \times 0.5 \text{ lbs. CO}_2 \text{ per mile} = \underline{\hspace{2cm}}$$

### 3. Did your family travel by airplane this year?

$$\frac{\text{_____}}{\text{miles traveled per year}} \times 0.9 \text{ lbs. CO}_2 \text{ per mile} = \underline{\hspace{2cm}}$$

### 4. Electricity

If you look at your family's electricity bill you will find the amount of kWh of electricity your family used during the month. The average U.S. family uses between 500 and 900 kWh of electricity per month.

$$\frac{\text{_____}}{\text{kWh used one month}} \times 12 \text{ months per year} \times 0.5 \text{ lbs. CO}_2 \text{ per kWh} = \underline{\hspace{2cm}}$$

### 6. Using Gas or Electricity for Heat

Most people use gas or electricity to heat their homes. If your family uses gas to heat your home, looking at your family's gas bill will help you determine the exact number of Therms your family used during the month. The average US family that uses gas in their home uses 20-30 Therms during the summer and 50-80 Therms during the winter per month. Choose a number for either summer or winter gas use.

$$\frac{\text{_____}}{\text{Therms Per month}} \times 12 \text{ months per year} \times 0.5 \text{ lbs. CO}_2 \text{ per Therm} = \underline{\hspace{2cm}}$$

There are other activities that also release CO<sub>2</sub> into the air such as using propane gas for heat or to barbeque. Weather and length of days also affects the amount of heat and energy you use so this varies from month to month. This activity gives you an idea of your carbon footprint.

Add up all your numbers.

**Total Pounds CO<sub>2</sub> from your family in one year** \_\_\_\_\_

### **Things to Think About**

How can you reduce your family's carbon footprint? \_\_\_\_\_

What are things you can do to help reduce CO<sub>2</sub> or your carbon footprint? \_\_\_\_\_

\_\_\_\_\_

If we do not reduce CO<sub>2</sub> levels, what will happen to the weather, people, plants, and water on earth? \_\_\_\_\_

\_\_\_\_\_

**The following activities allow you to learn about recycling different things.  
Report in your notebook or prepare a poster on what you learned.**

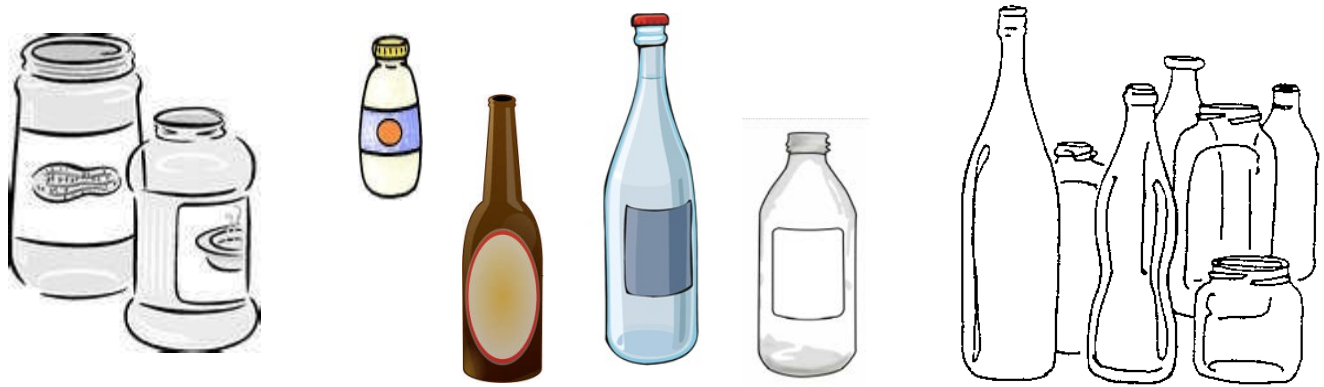
### **ACTIVITY 10: GLASS RECYCLING**

Glass is used for many purposes in our homes, such as window panes, mirrors, jars, drinking glasses, eyeglasses and light bulbs. At the present time, the only glass we recycle is the type of glass used for bottles and jars. This is called container glass. We should not take broken mirrors or window panes to be recycled. If these non-container types of glass are mixed in with bottles and jars, it could cause an accident at the glass factory. This is because different kinds of glass have different melting characteristics.

Glass is made of the elements silicon and oxygen, the two most common elements in the Earth's crust. Sand is melted to produce glass. The different colors of glass are caused by small amounts of elements other than silicon and oxygen.

Container glass is 100% recyclable. It can be used over and over again. Each bottle that is recycled means one less shovelful of sand that must be mined, transported to a factory and heated at high temperatures to melt and mold. Glass factories in the Midwest use approximately 30% recycled glass to manufacture new bottles and jars. There are at least five of these glass manufacturing plants in Indiana.

Containers with deposits, like some beverage containers, are even more environmentally sound than recyclable glass. They don't have to be re-melted each time around, which uses up energy. They are washed and reused until they get broken or chipped. Then they can be recycled by the glass manufacturers. Check your local supermarket concerning what reusable products they offer and what recycling or reuse procedures they have.



## Glass Manufacturing Plants in Indiana



**Recycling Works, Inc.**  
 605 Mason Street  
 P O Box 1492  
 Blackford, IN  
 46515 (574) 293-3751

**Anchor Glass Container**  
 603 East North Street  
 Winchester, IN 47394  
 (765) 584-6101

**Anchor Glass Container**  
 Foster-Forbes Glass Division  
 200 W Belleview Dr  
 Lawrenceburg, IN 47025  
 (812) 537-1655

**Owens-Brockway Glass, Inc.**  
 2481 South Brookside Road  
 Lapel, IN 46051  
 (765) 534-3121

**Verallia US Glass Corporation**  
 524 East Center Street  
 P O Box 205  
 Dunkirk, IN 47336  
 (765) 768-7891

Report on something you have learned about glass recycling and manufacturing.

**Suggestions** (You may use these or your own ideas.):

- Contact one (or more) of the glass manufacturing plants in the state and request information on glass recycling, how much recycled glass they use, the cost or savings to them for using the recycled materials, etc. You may even be able to arrange a tour of their facility. Show what your investigations turned up.
- Report on how to prepare glass for recycling, and/or the glass recycling process from store shelf back to store shelf.



## ACTIVITY 11: RECYCLING PLASTICS

Think of all of the plastic products you use each day. Plastic is everywhere and in many different forms and types. There are at least 49 different types of plastic that we use in this country. Recycling technology is slowly catching up with this number, but currently only a few types of plastic can be recycled easily. Since the majority of plastics will not decompose naturally (current research has produced some corn and soy-based plastics that are biodegradable), it is very important that we learn to recycle the plastics we use.

One major problem with recycling plastics is the correct separation of different types. To help meet this need, the Society for Plastics Industry came up with a numbering system. The numbers range from 1 to 7 and are enclosed in a triangle by three arrows. The symbol can usually be found embossed on the bottom of a plastic container. The lower the number, the more recyclable the material. The most recyclable are 1's and 2's. The type of plastic found in two liter bottles is a 1, and plastic milk jugs are 2's. The least recyclable of all are the 7's, which are usually multi-layered materials like those found in squeezable ketchup bottles. An Indiana law went into effect in January 1990 requiring this numbering system on all plastics in the state.

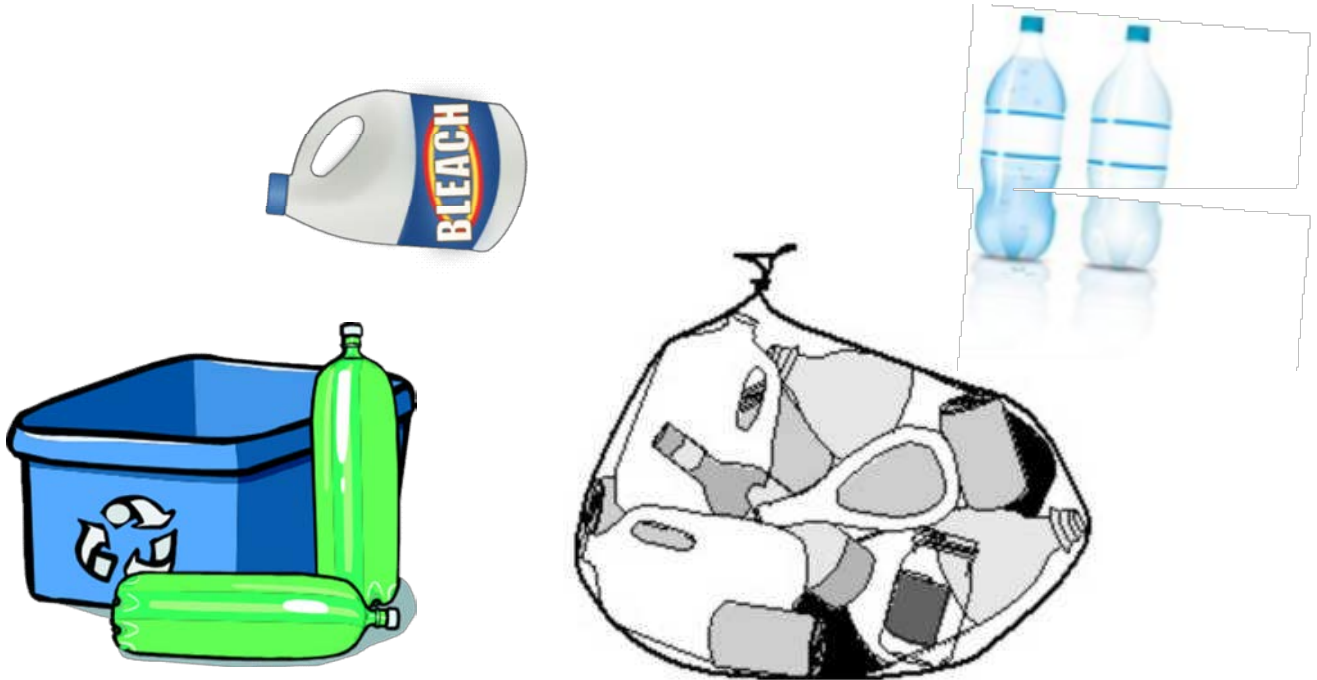


Recycling plastic is very important, but there are other things we can do to reduce the amount of plastic going into our landfills. Even plastic that is recycled can only be reused and recycled very few times, especially if it is a more difficult type to recycle. Then it becomes non-recyclable and probably goes into a landfill. Future technology may change this. To help decrease this, you should choose lower numbered plastic products whenever possible. An even better choice would be to choose glass packaging (for food items, etc.). Glass containers can be recycled over and over again. If you do not want to give up the convenience of your squeeze bottles or other plastic items, keep the ones you have now and refill them. You will be able to purchase your products in glass containers and still have the convenience of plastic.

Report on something you have learned about recycling plastics. Identify items that are packaged in each number category. Many recycling centers only accept number 1 or 2 for recycling.

**Suggestions** (You may use these or your own ideas.):

- Locate recycling centers or collection sites in your area, or in the county. Make a list of these, the hours of operation and any requirements for preparing the materials to be recycled. Identify how to properly identify and sort different types of plastic.
- Trace the recycling process of plastics from store shelf back to store shelf.
- Show some alternatives to some plastic use. You may want to include cost comparisons, savings (money, resources, etc.) and product life.



The average family consumes 182 gallons of soda, 29 gallons of juice, 104 gallons of milk and 26 gallons of bottled water a year. That is a lot of containers that can all be recycled.

It takes 250 years for one plastic cup to decompose.

Americans use 2.5 million plastic bottles every hour.

If there is no symbol on a plastic item, it is considered recyclable generically.

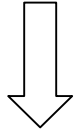
Plastic bags and other plastic garbage thrown into the ocean kill as many as 1,000,000 sea creatures a year. The Great Pacific Garbage Patch is twice the size of Texas and is floating somewhere between San Francisco and Hawaii. It is 80% plastic and weighs 3.5 million tons.

**EASIER TO RECYCLE**



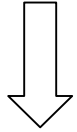
PETE

Soft drink bottles  
Oven safe trays



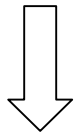
HDPE

Milk jugs  
Heavy duty trash bags



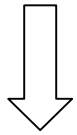
V

Credit cards  
Garden hoses  
Food wrap  
Cooking oil bottles



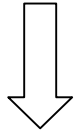
LDPE

Diaper backing  
Milk jug lids



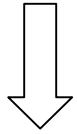
PP

Straws  
Dairy tubs

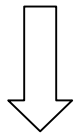


PS

Fast food packaging  
Plastic silverware  
Compact disc (CD) cases



Layered multi-material: Squeezable  
containers



**HARDER TO RECYCLE**

## **ACTIVITY 12: RECYCLING USED MOTOR OIL**



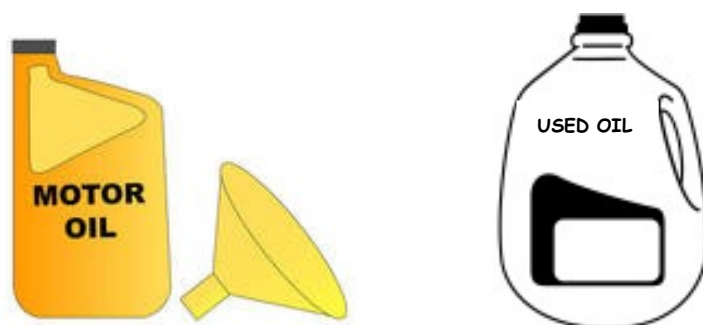
About 60% of all Americans change their automobile's motor oil themselves. In the past, most people would dump it on the ground or put oil in containers along with other trash for the landfill. They didn't know that putting oil into the ground could be harmful later.

Now we know that oil dumped on the ground or put into a landfill is forced by gravity to seep slowly into the soil and rock. Eventually the oil may pollute the groundwater. Since oil contains benzene, lead and other heavy metals that can be harmful to our health, we need to do all we can to prevent oil from seeping into our wells.

Recycling used oil has other benefits, aside from keeping our water safer. Recycling and refining (cleaning up) one gallon of used oil gives us 2 ½ quarts of clean lubricating oil. It takes 42 gallons of crude oil to give us the same 2 ½ quarts of useable oil.

### **How to recycle oil:**

- Thoroughly clean a closed, rigid container such as a plastic milk bottle. Be sure to get all of the old liquid out and the container well rinsed.
- Put used oil into cleaned container.
- Call local gas stations and lubrication shops until you find one that will take your used oil. (They usually put it into a storage tank until another company pumps it into a truck and takes it to a refinery.)



### **Did you know...?**

The Exxon Valdez oil spill poured approximately 12 million gallons of oil (enough oil for 9.6 million cars) into Prince William Sound in Alaska. Each year Americans pour 35 times that amount (more than 400 million gallons, or enough for 320 million cars) of used oil on the ground and into landfills.

Showing something you have learned about recycling used motor oil.

**Suggestions** (You may use these or your own ideas):

- Locate the gas stations and lubrication shops in your community or in the entire county that will accept used motor oil for recycling. Prepare a list including any special requirements each has for accepting the oil. Report on your findings, including the list, how to recycle oil, benefits of recycling, etc.
- Prepare a report detailing how to recycle oil, benefits of recycling and a comparison of savings or costs in recycling oil in terms of natural resources, time, money, etc.



### **OTHER THINGS TO THINK ABOUT**

Electronic Waste has become a growing problem with the increasing number of electronic devices. What do we do with the old televisions, computers, ipods and cell phones as we trade up to newer devices.

Recycling just one million cell phones saves enough energy to power over 1,940 U.S. households with electricity for one year.

It takes 500 years for an aluminum can to decay. Aluminum cans are not the only aluminum that can be recycled. Try recycling storm door and window frames as well as car components and lawn furniture.

In addition to keeping our water supply clean and safe, what things can you do to reduce the amount of water you use? Why is this important?

Americans have dumped over 9 million tons of just about anything made of cloth into landfills nationwide. Try donating your old clothes to a charitable organization instead of sending them to the landfill.

## GLOSSARY

**Acid Rain** – When harmful gases from cars and power plants are released into the air and fall back to the Earth with rain or snow

**Adverse Impact** – Unfavorable effect

**Air Pollution**- The existence in the air of substances in concentrations that are determined unacceptable. Contaminants in the air we breathe come mainly from manufacturing industries, electric power plants, automobiles, buses, and trucks.

**Alternate Energy**- Usually environmentally friendly, this is energy from uncommon sources such as wind power, or solar energy, not fossil fuels.

**Alternate Fuels**- Similar to alternative energy. Not fossil fuels, but different transportation fuels like natural gas, methanol, bio fuels and electricity.

**Annual Consumption**-Refers to the amount of electricity used by a consumer in one year and is typically measured in kilowatt hours (kWh). The information is available on your electric bill.

**Atmosphere** – The layer of gases surrounding the Earth; another word for air

**Biodegradable** – Anything that eventually decomposes and becomes part of the Earth again, like paper or apple cores

**Blackwater**- The wastewater generated by toilets. Not suitable for consumption

**Boycott** – To refuse to buy something that was produced or caught in a harmful way

**Buyback Centers**- Locations where consumers can drop off recyclables and receive payment for them.

**Carbon Dioxide** – A gas produced when animals (including people) breathe out, or any material containing carbon is burned.

**Carbon Footprint**- A measure of your impact on the environment in terms of the greenhouse gasses produced, measured in units of carbon dioxide.

**Chlorofluorocarbons (CFC's)** – Gases used in refrigerators, fire extinguishers, air conditioners and plastic foam, that cause damage to the ozone layer

**Climate Change**- A change in the temperature and weather patterns due to human activity like burning fossil fuels.

**Compact Fluorescent Lamp (CFL)** – Also known as compact fluorescent light bulb it's a type of fluorescent lamp designed to replace an incandescent lamp. Compared to incandescent lights of the same luminous flux, CFL's use less energy and have a longer rated life.

**Compost** – A natural soil fertilizer and conditioner made from a mixture of plant and other organic wastes, decomposed under controlled conditions

**Conservation** – The wise use of the resources of the environment

**Contaminant**-Any item or material that reduces the quality of paper for recycling or makes it unrecyclable, such as metal, foil, glass, plastic, stickiness, food, hazardous waste, carbon paper, waxed boxes and synthetic fabrics. Collecting paper co-mingled with other recyclables may increase contaminants.

**Conventional Fuels**- Finite resources that cannot be replenished once they are extracted and used.

**Consumer** – One who purchases goods and/or services; a customer

**Decompose** – To rot or decay; to break down matter through chemical change (by bacteria or fungi) into natural substances

**Ecology** – The study of organisms and their environments **Ecosystem** –

A community of plants and animals living together **Endangered Species** –

Animals and plants in danger of becoming extinct

**Energy** – Usable power such as heat or electricity and the resources for producing such power

**Environment** – All the surroundings of an organism, including other living things, climate, air, water and soil

**Extinct** – When animals and plants die out and are gone from the Earth forever

**Fertilizer** – Any material put on or in the soil that improves plant growth

**Fossil Fuels** – Fuels like coal, oil and natural gas that were formed from plants and animals buried millions of years ago

**Garbage** – Food waste

**Geothermal** The use of the energy from natural steam (from the natural heat of the Earth) to produce electricity

**Global Warming** – An increase in the Earth's temperature, caused by a buildup of "greenhouse gases" in the atmosphere.

**Green Power**- Renewable energy resources such as solar, wind, geothermal, biogas, and low impact hydro generate green power.

**Greenhouse Effect** – When gases from factories, electric power plants and cars trap the sun's heat and warm up the Earth

**Groundwater** – The supply of fresh water found beneath the Earth's surface often used for supplying wells and springs; water that has seeped into the soil and collected in underground spaces; 90% of the world's drinkable water

**Habitat** – An area that provides an animal or plant with food, water, shelter and living space

**Hazardous Waste** – Discarded material (trash) that is harmful to health and/or dangerous

**Incineration** – Destruction of certain types of solid or liquid waste by controlled burning at high temperatures

**Kilowatt-hour**- A kilowatt hour is a standard metric measurement for electricity.

**Landfill** – Disposal sites for non-hazardous solid waste which is spread in layers, compacted to the smallest practical volume and covered with material at the end of each operating day; a place where garbage is compacted and buried underground

**Leachate** – A liquid that results from water collecting contaminants as it trickles through wastes, agricultural pesticides or fertilizers

**Methane** – A colorless, nonpoisonous, flammable gas created by rotting of certain organic compounds when oxygen is not present

**Natural** – What occurs in nature, such as trees, water, air and soil

**Non-renewable Resource** – A natural resource that, because of its scarcity and the great length of time it takes to form or its rapid depletion, is considered limited in amount (examples: coal, copper, petroleum)

**Organic** – Made up of plant or animal materials

**Organism** – Any living thing

**Oxygen** – A gas that makes up about 21% of the Earth's atmosphere; all living things need it to survive

**Oxygen Cycle**- The recycling of oxygen-containing gasses between plants and animals

**Ozone Layer** – A layer of gas high in the sky which protects us from the harmful ultraviolet (UV) rays of the sun that cause skin cancer and crop damage



**Packaging** – The sealed wrapping of a product, covering wrapper or container

- **Essential Packaging** – The product wrapping and sealing necessary for safe and sanitary consumption
- **Modern Packaging** – The excessive use of plastic and/or shrink wrap to improve the appearance in order to promote the sale to the consumer
- **Natural Packaging** – The product covering provided by nature (examples: banana peel, eggshell, nutshell)
- **Older Packaging** – The minimum packaging of a product or buying in bulk

**Pollution** – The impure condition caused by contamination

**Pollutants** – Man-made wastes that lower the quality of the environment by contaminating it

**Post Consumer Material**- Any household or commercial product which has served its original, intended use

**Precycle** – To refuse to buy things that can't be reused or recycled (such as polystyrene foam cups, containers, etc.) or things that are over packaged

**Recycle** – To use over and over again

**Recycling** – A system which includes the separation, collection, processing, remanufacture and the eventual resale or reuse of materials which would otherwise be disposed of as municipal waste

**Reforestation**-Planting of forests on lands that have previously contained forests but had been converted to some other use

**Renewable Resource** – A naturally occurring supply of something that does not get used up, like wind power or solar energy

**Repair**- To fix

**Resource** – A supply of something that meets a need

**Resource Recovery** - Producing energy from solid waste through burning, with the removal of some recyclable materials as a result

**Reuse**- Use something another time

**Sanitary Landfill**- A solid waste disposal site that protects the environment from leachate

**Sewage** – Solid and liquid wastes from bathtubs, toilets and sinks

**Solar Energy** – Energy that comes from the sun

**Smog** – Air pollution (often seen as a dark brown haze) that comes from cars and factories

**Solid Waste** – Unwanted, discarded material that doesn't contain enough liquid to flow freely

**Sustainability-** Environmental sustainability is the ability to maintain the qualities that are valued in the physical environment

**Synthetic** – Man-made from other sources; not found in nature (example: plastic)

**Threatened Species** – Plants and animals that still exist in some places, but have died out elsewhere

**Thriftcycle-** This term means to shop at a thrift store, buying used items

**Toxic** – Poisonous; dangerous to health or environment

**Toxic Waste** – Discarded materials, such as some chemicals or mixtures that may produce a risk or danger to health or the environment

**Trash** – Discarded items

**Water Cycle-** The recycling of water between the earth and the atmosphere

**Waste Water** – Discarded water carrying dissolved or floating solids from homes, farms, businesses or industries



# Recycling Resources

## Websites

*There are many resources on the web that can help you learn about recycling. Here are a few.*

<http://www.afn.org>  
<http://www.sprintrecycling.com>  
<http://www.dosomething.org/tipsandtools>  
<http://www.planetpals.com>  
<http://www.ecy.wa.gov/programs/swfa/kidspage>  
<http://earth911.org/recycling>  
<http://www.recycling-guide.org.uk>  
<http://www.greenplanet4kids.com>  
<http://www.thestoryofstuff.com>

## Books

*There are many books that can help you learn about recycling. Here are a few.*

50 Simple Things Kids Can Do to Recycle by The Earthworks Group  
*Loaded with ideas to try at home, school, or anywhere!*

Be A Friend to Trees by Patricia Lauber  
*Explains why trees are a valuable natural resource and what we need to do to protect them. Offers ideas on ways kids can help save trees.*

The Big Book for Our Planet by Ann Durell, ed.  
*Over forty of the best-loved children's authors and illustrators pool their talents in a single volume to honor the Earth.*

Captain Eco and the Fate of the Earth by Jonathon Porritt  
*Captain Eco and friends set off on a mission to save the Earth. Captain Eco explains the environmental dangers facing our planet. Written like a comic strip.*

Recycle: A Handbook For Kids by Gail Gibbons  
*This book provides information for children about how to separate different types of materials and how they are recycled into other products.*

Earth Book for Kids: Activities to Help Heal the Environment by Linda Schwartz  
*Filled with ideas for arts and crafts projects, experiments, and experiences that encourage children to enjoy and heal the environment.*



## Blackford County Recycling Project Scorecard

Name: \_\_\_\_\_ Placing \_\_\_\_\_  
 Level: \_\_\_\_\_ Grade: \_\_\_\_\_

<b>Project or Poster</b>	<b>Excellent</b>	<b>Good</b>	<b>Needs Improvement</b>
Creativity			
Choice of materials (Subject of Poster)			
Workmanship			

### **Notebook**

Completeness Record sheets, Solid Waste Checklist			
Activity Reports Correct number Complete Report			
Project/Poster Description			
Neatness			

75% of the score will be on the recycled product or poster.  
 25% of the score will be on the notebook: completeness of activity reports, description of the project and neatness. Consider using photographs of the recycled item before and after, as well as the work in progress.

### **Project Hints:**

- Projects will be judged based on originality, creativity, and the exhibitor's use of discarded, recyclable materials.
- Projects will score higher if recycled into useable items that will remain out of the landfill.
- 4-H'ers should take note that new items purchased specifically for this exhibit defeats the goal of recycling.