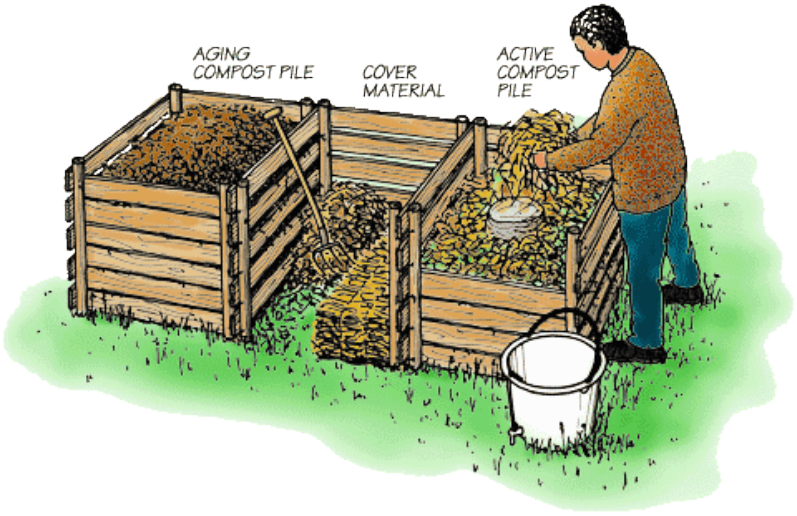
Updated March 2015

Recycling

COMPOSTING



Level 2 (Grades 6-8)

COMPOSTING

Yard trimming and food wastes account for a large percentage of our current waste. Because of the volume of these items and the fact that they can easily be recycled, many landfills do not accept organic materials. The same materials can be directed away from landfills and composted into a nutrient-rich soil supplement for yards, gardens, and farms. Farmers have been using this concept for many years in the disposal of animal waste and bedding. Many homeowners currently practice composting, but apartment dwellers and businesses usually do not have these options available to them.

YARD WASTE

The ideal mixture for composting combines carbon-rich materials, such as dry leaves and straw, with nitrogen-rich, such as green grass clippings, and certain kitchen wastes. Soil must be added to these materials to introduce the necessary microorganisms to the pile. To make the compost decompose (rot) faster, the compost pile should be exposed to the air and kept moist during dry weather. Materials should not be compacted; covering piles during heavy rains is recommended. Ideally, green material, dry material, and soil should be alternated in layers. Sides of the pile can be left unsupported or held back by cinder-block or chicken wire walls with holes that allow air to pass through. These walls should be arranged to allow materials to be added and to turn the pile. Chop or shred big items before adding them to the pile. The thicker or denser the piece, the longer it takes to decompose. Meat, bones, and cheese should be avoided, as they take a long time to decompose and attract animals to the site. Horse and cow manure will add greater amounts of nitrogen to the compost. Because they harbor disease, dog and cat droppings should not be used in compost intended for use in food gardens. If the compost generates odors or draws flies, it could be too wet or contain undesirable materials. If an ammonia odor is noticed, compensate for excess nitrogen by adding carbon-rich materials such as dry leaves, straw or sawdust. An ammonia smell can also result from too much alkalinity, which can be reduced by add acids such as coffee grounds or oak leaves. Depending on the attention the pile receives, compost could be ready within weeks or months. It is ready for use when it has a dark look, crumbly texture and earthy smell.

MUNICIPAL WASTES

A few municipalities in Indiana are composting yard wastes, such as grass clippings and leaves. Composting of food wastes is rare, primarily because of separation problems. When food wastes are mixed with other household wastes, the resulting compost may

contain unspecified, possibly dangerous amounts of pathologic constituents or heavy metals.

ADVANTAGES OF COMPOSTING

Compost material enriches the soil and plants. Composting can be done safely in your back yard and maintained by periodically using the humus. Composting saves space in landfills by reusing organic materials. In fact, many landfills now refuse to take yard waste because of the ease of composting and the fact that organic materials can take up a lot of landfill space.

DISADVANTAGES OF COMPOSTING

Some organic materials take a long time to decompose and businesses and some city and apartment dwellers do not have yard space available. Composting is limited to organic material only.

SEVEN STEPS TO SIMPLE AND EASY COMPOST

1. Location – Choose a level, well drained area with good exposure to the sun to help provide needed heat. Choose a spot convenient to you or your garden.
2. Choosing a bin - You may build or buy a bin or choose not to use a bin. You can purchase a ready-made composter or build your own. Compost bins can be round or square, make of cement, blocks, boards, bricks, chicken wire, or almost any other building material except pressure treated lumber. Cover the bin to keep rain from water-logging the pile and slowing the compost process. Build it at least 36 inches square, but not more than 4 feet high to prevent compressing.
3. Ventilate the bin – Make sure the bin you build or buy has adequate venting in its sides and bottom to allow air to penetrate the pile, so that the aerobic (oxygen/air loving) bacteria and fungi that are doing the composting can get enough oxygen to do their work. If you don't have adequate ventilation, have too much water, or don't turn your compost often, your bin or pile will become anaerobic. Anaerobic organisms don't need air, but they work more slowly and responsible for odors in above ground composting when not enough air is present. Build your bin open to the earth to ensure the microorganisms from the ground can interact with the compost. You may want or need more than one bin. Use extra bins to hold finished compost or store a supply of shredded leaves or grass clippings for mixing.
4. What to compost – Feed your compost pile a balanced diet. You can compost almost any vegetation that was once alive and is now dead such as leaves, grass clippings, and vegetable peelings. Composting is best when you mix two parts

leaves with one part grass. This may vary with your type of grass and leaves, so experiment to see which mixture creates the most heat in your bin. If you don't have grass, try adding three cups of vegetable and fruit peelings or waste to each cubic foot of shredded leaves or try adding a little fertilizer. When the pile gets warmer, you've achieved the right mix. If you don't have leaves to mix, shredded newspaper, straw, or plant stalks can be substituted at the same ratios. Fresh cut grass is high in nitrogen and is over two-thirds water, which if composted by itself can create odors and a gooey mess caused by an anaerobic reaction (without air). You can use manure from horses, cows, or any other plant-eating animal. Prime your bin with soil or old compost. Always add some soil or old compost to get the system started. The existing soil or compost you've made contains the aerobic and anaerobic micro-organisms that convert your wastes into compost. Shredded materials and smaller pieces will make your composting work better.

5. What not to compost – Don't compost treated grass. The pesticides and herbicides will endanger you garden plants and pets when you use your compost. Don't put meats or fats in the compost. Meat attracts rodents, creates odors, and may contain harmful bacteria. Fat slow the composting process.
6. Maintaining your compost – Turn and water until it's done. Keep the compost damp. Water is essential for proper composting. Once you have properly mixed you high carbon and high nitrogen products together you must add water to maintain the consistency of a wrung out sponge. Compost that is too dry stops decomposition and the heat. Compost that is too wet causes the pile to smell from anaerobic decomposition. Compost heats up when it's working. The compost process generates heat when the materials are properly mixed, moisture is properly maintained, and the mixture is ventilated and turned regularly. Compost can get as hot as 160 degrees Fahrenheit in the middle, which helps to kill weed seeds and other unwanted products. Position the composter in the sun whenever possible to help this process even more. You may need to add water more frequently if your composter is in a warm location. Composting requires air. Venting on the sides and bottom of the composter aids in the process. Turning your pile every two to seven days accelerates the process and ensures more uniform decomposition. If you compost is clumped and gooey you need more air, so turn it more often or add more ventilation and possibly more high carbon materials like leaves or sawdust NEVER use sawdust from treated wood. You may be able to use your compost in as little as two weeks. Four to six weeks is average, if you have the right moisture and you the

turn the compost about every other day. Turning adds air and makes the process faster with more uniform results. After the pile heats up in a few days, it will slowly cool, heating up again when you turn it. Your compost is ready when no more heat is generated after turning, and it is a dark, crumbly texture with few signs of the original materials left in it.

7. Using your compost – There are dozens of uses for compost. Till in into your garden for humus, fertilizer, and water retention. Use it as potting soil for plants. Side dress plants and vegetables. Use it as mulch. Use the compost when seeding the lawn or garden. Use it as a soil conditioner for clay or sandy soil. Soak it in warm water to make a compost tea, a good liquid plant fertilizer. Use compost tea at a one to three ratio of compost to water.

COMPOSTING WITHOUT A BIN

Mulching with a small layer of shredded leaves or grass clippings is an attractive and simple alternative to bin composting. Simply place small amounts of shredded leaves or grass around the base of plants, flowers, trees, and hedges to control weeds retain moisture, and slowly compost, adding valuable, long term nutrients to the soil. When using leaves only, add a small amount of nitrogen fertilizer or nitrogen-rich materials, such as grass clippings, to aid in composting. Keep your piles only a few inches high for proper composting. Water immediately to start the compost process and to keep the mulch in place. Months after you start the compost, work the remaining mulch into the soil with a rake or hoe and repeat the mulching/composting process season after season. Don't pile mulch against the stalk, but around the base of your plants and shrubs. Build your garden with shredded leaves. Till your shredded leaves directly into your garden before winter to enrich the soil for spring planting. Shredded leaves will compost into moisture retaining nutrient enriching leaf mold. Never use fresh grass or leaves treated with herbicides or pesticides.

COMMOM MISTAKES TO AVOID

Always cover the pile. Sunlight kills bacteria. It's important to keep sunlight out of a compost pile. Use a lid to cover bins and thick, black plastic to cover compost piles and chicken wire bins. Black plastic absorbs heat and keeps sunlight out. A compost bin needs adequate venting through its sides and bottom to allow air to penetrate the pile. Inadequate ventilation slows down the heating process of the compost pile and causes bad odors. Don't over ventilate or your compost pile won't retain the necessary heat. Never compost grass clippings that have been treated with pesticides or herbicides. Don't compost weeds. Don't compost meat or cooking fats in the compost. Only compost products that are high in carbon like leaves and sawdust and nitrogen like grass

clippings, and vegetable peelings. Smaller pieces compost better than large pieces. Shredding speeds up the breakdown of the pile. Turn your pile every two to seven days. Turning your pile twice a week is recommended. Do not overwater or underwater. If a compost pile is too dry, it won't heat up and decompose. If it is too wet, it will smell and become gooey. A good rule is to keep the pile as wet as a damp sponge.

CREATING A HOME RECYCLING CENTER

1. Track your family's waste. Make a list of the things you are going to recycle.
2. Discuss with your family the best location for your recycling center. It may be near the kitchen where many of the recyclables are generated or it may be in the mudroom, utility room, closet, under the kitchen sink, back porch, or the garage. You don't have to store all your recyclables in one place. Store them wherever is the most convenient. One idea is to have a recycling container wherever there is a trash can. It is easier to make the right choice if containers are conveniently located.
3. Storage containers can be commercial bins, paper bags, laundry baskets, or cardboard boxes. Containers with handles make them easier to transport when full. Containers should be washable or easy to replace. If you don't have curbside recycling pick up, make sure your containers fit in your car.
4. Share your plans with your family. It may be helpful to put a list of acceptable recyclables near the bin or on the family bulletin board or the refrigerator.
5. Give your family a couple weeks to adjust to the recycling habit. Old habits are hard to break, but stick with it. Your future could depend on it.
6. Evaluate your plan. Are there changes that could be made to improve it? Could it be more convenient? Are there items that you're not recycling that could be? Did your family participate in the recycling efforts? Do they have suggestions to make it easier for your family to recycle?

PACKAGING

The first packages were created over 10,000 years ago and were born out of necessity; simply as containers for food and water. They probably consisted of storage vessels made from coconut or sea shells, wooden bowls, or animal skin pouches. The next packages were probably made from pottery and showed up around 6,000 B.C. Glass also was an early form of packaging. It was first used in Egypt and Babylon around 2,500 B.C. Tin and steel became popular during World War II. The current shift of needs and technology offers us a variety of packaging, mainly made from paper, paperboard, cardboard, or plastic products. These types of packaging are less expensive and easier to produce. They are also lighter which helps reduce

the shipping costs. Americans' lifestyles as a people on the "go" demanded convenience in packaging which resulted in packaging in single served meals and drink products.

Nearly $1 out of every $10 we spend for food and beverages pays for packaging. Packaging comprises 50% of the volume of household trash. About half of the nation's paper is used solely to decorate consumer products. We need to reduce packaging in order to save natural resources and reduce waste. We also need to work toward more environmentally sound packaging that is reusable, recycled, recyclable, and biodegradable. Besides using natural resources, packaging increases the cost of items we purchase. Most packaging is designed to be thrown away immediately. What you are getting for your money is cleverly designed garbage. When shopping, look for containers like plastic bottles and aluminum cans that can be recycled. Buy in bulk when you can. This reduces excessive amounts of packaging to discard. Avoid purchasing items that can only be used once like disposable razors or flashlights.

A new and exciting was to control packaging pollution is to look for packaging that is made from synthetic or plant derived biodegradable polyesters. These types of plastics have been specially designed to break down rapidly to water and carbon dioxide in certain conditions when appropriate microbes are applied. Therefore, instead of taking hundreds of years for these products to decompose, they may break down in as little as 12 weeks. While this may sound like an ideal solution to our packaging problem, it still faces one major setback. Biodegradable packaging is more expensive to produce than traditional paper and plastic. The benefit of low-cost disposal or recycling has yet to overwhelm the initial cost factor of synthetic biodegradable polyesters and some plant derived ones as well.

Packaging is not all bad. Some packaging is designed to preserve the foods we eat. Food wastes comparison studies from the United States and Mexico, where very little food is processed or packaged, show the average household in Mexico City discards 40 percent more refuse each day than the average U.S. household. Packaging is also designed to prevent breakage of items in transport. The use of cardboard, foam, and film packaging helps prevent damage of products that must be shipped by truck, train, plane, or ship. The packaging hold items secure in their cartons and cushion them against fall, shifts, and bumps. Prior to leaving the factory, these items are stacked on pallets and wrapped with a sheet of self-clinging stretch wrap. This very strong, yet thin, film stabilizes the load, keeping it from shifting and falling. Fewer falls mean reduced damage and breakage, keeping both waste and related disposal costs to a minimum.

Bottled water costs between $1 and $4 per gallon and 90% of the cost is in the bottle, lid, and label.

Factoring in packaging and transportation, drinking bottled water costs up to ten times more than putting gas in your car.

PRECYCLING

One way to combat over-packaging is to become an environmentally conscious shopper. This can greatly reduce the amount of solid waste that needs to be recycled. Although the word precycle is probably unfamiliar to most of us, the concept is not. The major idea behind precycling is to encourage consumers to purchase goods based on the reusable/recyclable value, their impact on the environment, the amount of recycled materials they contain and the negative effects they may have on society. This can be accomplished as simply as looking for the recyclable symbol (chasing arrows) on a container before purchasing a product and rejecting that product if the container cannot be recycled.

Precycling practices include purchasing reusable items instead of disposable items such as using metal kitchen utensils instead of purchasing disposable ones. For businesses it may include avoiding envelopes with plastic windows. Not only are these expensive, but they are particularly difficult to recycle. Investing in coffee mugs for employees and visitors is a preferable option to disposable cups.

RECYCLING IN JACKSON COUNTY

Humans depend on the environment for their survival and can affect the environment negatively or positively. Humans consume products and affect how many resources are available for their use. The result of those products is waste. Those waste products can be handled in one of only a few ways; it can be sent to a landfill, burned in an incinerator, or recycled. While each one of these solutions has its own advantages and disadvantages, we will focus on recycling in this project.

The easiest way to reduce the amount of trash sent to landfills is not to create it in the first place. Attention to what we buy and how much trash we generate is the easiest way to save natural resources and preserve landfill space. The next step is to recycle any items that are accepted in local recycling programs.

What can be recycled varies from community to community because of facilities or lack of facilities nearby that can process various types of recyclable materials.

Most people think of plastics, metal, and paper when they recycle, however there are other items that can be recycled through special programs. Eye glasses, cell phones, batteries, hazardous household wastes, oil, mercury-containing items, ink jet cartridges, toner, pharmaceuticals, tires, appliances and even clothes can be recycled through special programs.

Some communities have curbside recycling programs sponsored by their local town and cities. These programs provide recycling pick up at the front of their homes on specific days. Other residents can deliver their recycling to collection centers.

Contact the Jackson County Solid Waste Management District (358-4277) to find the recycling opportunities in your neighborhood.

Preparing recyclable items:

- **Cardboard** and paperboard (light cardboard like cereal boxes) should be folded flat. Pizza boxes or other containers that contain food residue should not be included in recycling. Wax covered boxes such as juice cartons can not be recycled.
- **Office paper**, newspaper, magazines, file folders, unsolicitated (junk) mail and construction paper can be recycled. Laminated or plastic coated paper can not be recycled.

- **Plastic** bottles should be rinsed. Lids are not recyclable and should be discarded. Labels do not have to be removed. Containers that held motor oil, meat packaging, food wrap, and most product packaging can not be recycled.
- **Metal food cans** should be rinsed. Labels do not have to be removed. Lids from food cans are recyclable.
- **Aluminum** cans and bottles should be rinsed.
- **Glass** jars should be rinsed and lids removed. Labels do not have to be removed. Window glass and ceramic glass are not recyclable. Not all programs in Jackson County accept glass. Check the requirements for your program.

Please do not add trash or any container with food residue to your recycling. These types of containers contaminate the recycling stream and ruin everyone's effort to recycle.

WHAT WE CAN DO

Recycling is not the answer to all our environmental problems, but it is a start. Recycling can become a part of everyday life, at work, school, and home. As time goes by, we will be able to recycle more and throw away less. Each individual contribution will make a difference to saving our natural resources and preserving landfill space.

RECYCLING REQUIREMENTS

Note: All Levels - Choose one. Exhibit topics cannot be repeated. Posters should follow requirements for posters as defined in this requirement book under the miscellaneous section. Reports should be a maximum of two pages.

Reports can be either hand written in ink or typed, however, the work must be that of the 4-H'er. For information about action demonstrations, please see your adult leader or a Junior Leader. Complete a record sheet.

Grades 6-8 (Choose one. With the exception of #1, exhibit topics cannot be repeated.)

1. Make a useful or decorative object from items normally thrown away. Exhibit should not exceed 2' X 2' X 2' and must include a written explanation of the article, what was used to make it and how it will be used. It should also include a list of involved costs. The project should be age appropriate.

2. Construct a compost bin and start a composting program in your home. Make a poster or write a report telling about your project. Be sure to include photos. Report should be no longer than four pages including pictures.

3. A poster, report or power point on one of the following topics:

A. Identifying and reducing excessive packaging.

B. Starting a recycling program in your home.

C. Disposable vs. durable items

D. Nonrenewable and renewable resources

E. Decomposition of waste

4. Write and record a radio message (30 – 60 seconds) to promote recycling. Submit audio and written script.

5. Action Demonstration