

REDUCE. REUSE. RECYCLE.

KANSAS KIDS CAN!

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IN THIS ISSUE:

- 1 • Spoil Kansas Rotten... Compost Research! This issue's vocabulary words
- 2 • Try it! Create a Compost Column
- 3 • Nature's Recyclers
- 4 • Create Your Own Native Kansas Compostable Art!
- To Compost Or Not To Compost - That is the Question!
- Kansas Green Schools Network



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RESEARCH!

In this issue of Kansas Kids Can, you'll find some words you might not be familiar with. Take a minute to look up the following. These words will be highlighted in blue throughout this issue:

- ✓ Biodegradable
- ✓ Organic
- ✓ Inorganic
- ✓ Decomposition
- ✓ Humus
- ✓ Crustacean
- ✓ Omnivore
- ✓ Metamorphosis
- ✓ Microorganisms



It's fall in Kansas and the leaves are turning colors and falling to the ground. Maybe one of your jobs around the house is to rake up the leaves—but what do you do with them when you've got them all raked up? Do you put all the leaves in bags and send them off with the rest of your trash to be taken to the landfill? Why not recycle your leaves? Nature's way!

Leaves and anything else that at one time was a living organism, is considered **organic** and through natural processes will eventually decompose or break down. Scientists use the word **biodegradable** to describe **organic** substances that break down over time and are naturally recycled, becoming the building blocks for new life. Unfortunately, when leaves and other **biodegradable** substances wind up in our trash and landfills, they're often covered with other trash and eventually soil, which does not allow natural **decomposition** to occur as quickly. In addition, instead of becoming an important building block for new life as a part of the soil in gardens and yards, they just take up space in our landfills.

In fact, by some estimates, 30-40% of the trash that goes to our landfills here in Kansas is **biodegradable**. If we were able to keep that **organic** material from our trash cans, we could each keep about 500 to 600 pounds of trash a year from the landfill! But what are we supposed to do with that 500-600 pounds of trash? Let nature recycle it and help nature along by composting!

Composting is simply creating an environment for **organic** materials that is ideal for breakdown to occur. This involves the right combination of **organic** materials (brown stuff' like straw, hay, sticks, paper and cardboard and 'green stuff' like leaves, lawn clippings and kitchen scraps), air, **microorganisms** and moisture. When **organic** materials break down, they form **humus**, a dark, rich material that becomes an important part of soil. So, what is an ideal environment for **decomposition**? What will biodegrade or breakdown and what won't? Try making your own compost column and find out!



TRY IT!

Create a Compost Column!

To make your own compost column, first gather the following materials:

- ✓ 2 plastic 2-liter soda bottles
- ✓ Scissors
- ✓ Sharp knife
- ✓ Leaves, grass clippings, food waste (Note: All **organic** material will decompose, but you may want to avoid putting food waste like meat scraps, dairy products, bones, etc. into your compost column as they will create an odor as they decompose!)
- ✓ **Organic** materials that are not in their original form, like newspapers or paper, which are made from trees
- ✓ Scraps of **inorganic** materials like plastic bags, Styrofoam containers, etc.
- ✓ 1-2 cups of soil from your garden or yard
- ✓ Marking pen
- ✓ Old Nylons or cheese cloth
- ✓ Large rubber band
- ✓ Water
- ✓ Thermometer (optional)
- ✓ pH paper (optional)

To construct your Compost Column:

1 Remove the labels from your 2-liter bottles and take one of the 2-liter bottles and fill it with warm water. This will help to loosen the glue that is holding the base of the bottle in place—you should be able to pull off the base after a couple of minutes.

2 Using the bottle you've removed the base from, draw a line with your marking pen about 3-4 inches from the bottom. With a sharp knife, carefully poke several small holes on the sides of the bottle for air. Then poke a hole along the line and use your scissors to cut the bottom off your bottle.

3 Take your second 2-liter bottle and draw a line around the bottle about 6 inches from the top. Again, with a sharp knife, poke several small holes on the sides of the bottle for air. Then carefully poke a hole along the line and use your scissors to cut the top off the bottle.

4 Use the diagram to help you put together your compost column.

5 Fill your compost column with leaves, grass clippings, food waste, paper scraps (torn into pieces), soil from your garden and **inorganic** waste scraps (torn into pieces). NOTE: Do not pack the materials into the column!

6 Add enough water into your compost column to just moisten the materials in it—water should not be running out of the bottom!

7 Take a piece of old nylon or cheesecloth to cover the top, secure with a rubber band.

8 Keep the compost column moist by using the water that collects in the bottom to remoisten (you may have to add more) and observe! (NOTE: **Decomposition** isn't a fast process—you'll need to observe your compost column over a couple of months. But if you start your compost column now, you'll have some great **humus** by spring to add to your plants or garden!)

Questions to Ponder:

- Which items in your compost column do you think will decompose? Which won't? Why do you think this?

- Think about each of the items that you put into your compost column. Do you notice any changes in those items? What observations can you make (remember to use all your senses to observe, with the exception of taste)? What do you think is happening?

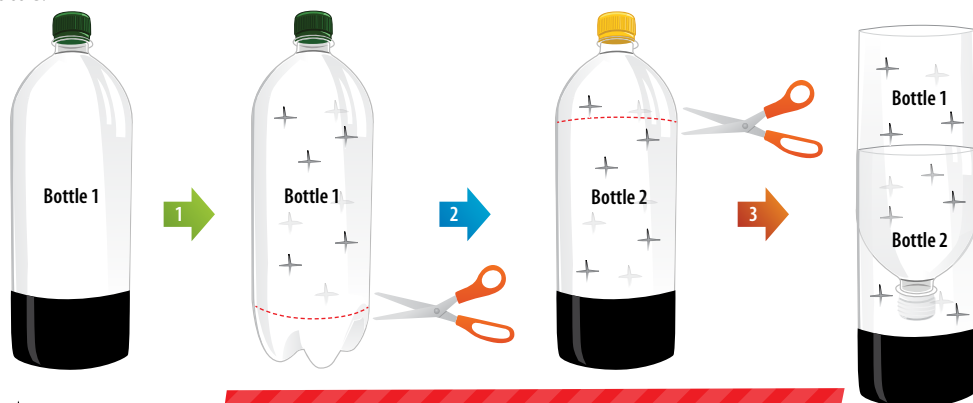
- What observations can you make about the volume of material in your compost column over time? What do you think would explain this?

- If you have pH paper (to test whether it is acidic or alkaline), test the water that collects in the bottom bottle—what did you find out? Test again in a few weeks. Are there any changes? What are some possible explanations for your results?

- If you have a thermometer, take temperature readings through one of the holes you punched when you start and then periodically take a temperature reading over time. Do you notice any changes? Why do you think that is?

- Why do you think you punched holes in the side of the column? What do you think would happen if there were not holes?

- Based on your observations, what do you think you need to do to create an environment in a compost bin that helps **decomposition** to occur?



✦ Holes poked with knife

CAUTION: Get an adult to help you cut the plastic bottle!

Are you ready to compost at home?

Composting isn't difficult to do, but it's important to make sure you have the right environment and materials in your compost pile for composting to take place. Be sure to get your parent's permission and do some research before you begin!

Find out more at: http://www.kdheks.gov/waste/publications/home_compost.pdf

Are you not sure you're ready to compost at home, but still want to get your leaves, yard waste and other materials out of the landfill?

Find a location that recycles/composts yard waste at: <http://www.kansasrecycles.org>

NATURE'S Recyclers

You might call them roly-polies or maybe you call them pill bugs—the little creatures we find here in Kansas in our yards and around buildings that will bunch into a little ball when they're touched and roll. They're not really bugs at all! They're **crustaceans** and related to shrimp, crabs and lobsters. They breathe through gills, but live on land, so they need moist areas to survive. Pill bugs do not go through **metamorphosis**, like a butterfly, so young pill bugs look just like adults, only smaller. They inhabit gardens and yards, living under brush, rocks, pots and stones and they're **omnivores**. An **omnivore** eats both plants and animals. But don't worry about your flowers and vegetables in your gardens with these little creatures around. Pill bugs are scavengers and only eat dead material, so they might munch on other dead insects or plants, but they won't eat your flowers or tomatoes. Pill bugs are important here in Kansas—they help to break down these dead **organic** materials and like composting, help to create important building blocks for new life!



Take some time to learn more about roly-polies and try the following:

1 Get an old container that has a flat bottom and clear sides at least a few inches tall—old food storage containers work well! All living things need air, so if you use a lid, be sure to create some holes in the lid to allow air to enter or cover the top of your container with a piece of cloth or old nylons.

2 Gather some roly-polies or pill bugs by looking under rocks, clay pots, stones, bricks or old piles of leaves or debris in your yard or garden.

3 Create a habitat for your pill bugs by putting some soil, some dead leaves, twigs, and stones into your container. Using a spray bottle, lightly mist the habitat. Mist the habitat every few days.

4 Pill bugs will eat dead leaves, especially maple leaves, but try small pieces of well cleaned lettuce, apples or potatoes and observe! Remove any items that become moldy.

5 Try some investigations of your pill bugs:

a. Take out a pill bug and put it on a white piece of paper. Observe and write down the characteristics of your pill bug. How many legs, does it have antennae, what color is it, how big is it, etc. Use a magnifying glass if you have one to see even more!

b. Does your pill bug prefer light, dark or have no preference? To explore, take 3-5 pill bugs from their habitat and put them on a paper plate. Make a small shelter on one side of the plate from a piece of old newspaper. Put the plate in a bright spot in a window or outside and observe your pill bugs. Do they stay

where they are? Do they move to a darker area? Do some stay and some move? Which do you think a pill bug prefers? How can you make sure the habitat you created for them is suitable for the light preferences of pill bugs?

c. Do pill bugs prefer dry or damp conditions? To explore, take 3-5 pill bugs from their habitat and put them on a paper plate. Take a paper towel and dampen it, fold it into a square and place it on one side of the plate. Observe your pill bugs. Do they stay where they are? Do they move to the dampened paper towel? Do some stay and some move? Which do you think a pill bug prefers? How can you make sure the habitat you created for them is suitable for the dry or damp preferences of pill bugs?

NOTE: When you have finished observing your pill bugs and no longer wish to keep them in their temporary habitat and care for them, return them to your garden, so they can continue to help break down dead plants and insects!

Create Your Own Native Kansas Compostable Art!

By now, you know that **organic** (living or once living) materials decompose. If you explore around your school or yard, you'll find lots of **organic** materials. You might find different kinds of leaves from plants, seeds and seed pods, pine cones, twigs, bark, grasses, etc. Gather these items and make some art that is compostable! Here's how:

1 Gather some **organic** materials, such as those listed above, from your yard or garden.

2 Create some "organic" glue, by mixing together flour and water to form a thick

paste—about the consistency of thick pancake batter.

3 Design your art—some ideas include: mice, mushrooms, birds, flowers, snakes, insects, turtles, squirrels, rabbits, etc. using your **organic** materials. Then take your **organic** glue to put your pieces together!

4 Place your compostable art in your yard or garden—when you're done with your art, throw it in your compost pile or leave it where it is to decompose!



TO COMPOST OR NOT TO COMPOST— THAT IS THE QUESTION!

TOUGH CHALLENGE:

If each person creates about 4 pounds of waste a day, how much waste, on average, does your family produce in a year?

TOUGHER CHALLENGE:

If 30% of that waste could be composted, in pounds, how much waste could your family compost in a year?

*Answer: 1. Multiply 4 pounds times the number of people in your family, then multiply that answer by 365 days. A family of four would create about 5,840 pounds of waste a year.
2. Multiply your family's result by 30% or 0.30. Using the example above, if your family composted, you would be able to compost 1,752 pounds of organic material a year!*

BECOME A PART OF THE KANSAS GREEN SCHOOLS NETWORK!

Schools all across Kansas are going green! They're making the commitment to make learning about the environment a part of their school days while making their schools more environmentally friendly. Find out what other schools are doing by clicking the tab, "Getting Started" and browsing the schools. It's easy and free to join.

TALK TO YOUR TEACHER TODAY about getting your school signed up. Go to www.kansasgreenschools.org and watch the website for more schools, information and ideas!

