

REDUCE. REUSE. RECYCLE.

# KANSAS KIDS CAN!

Earth Day 2011 - 25th Edition

www.kansasgreenschools.org

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## RESEARCH!

Here are some vocabulary words in this issue you may want to investigate:

- ✓ **Decompose**
- ✓ **Microbes**
- ✓ **Bacteria**
- ✓ **Cellulose**

## KIDS CAN MAKE A DIFFERENCE! THINKING CHALLENGE:

### TOUGH CHALLENGE:

How would you write out in numerals 500 billion?

### TOUGHER CHALLENGE:

Scientists often use scientific notation to write out either very big or very small numbers and while it might sound complicated, it's really not too tough! 1 Billion in scientific notation is  $1 \times 10^9$ . So if you write it out, it's a 1, followed by 9 zeros (see the small nine next to the 10?) How would you write 500 billion in scientific notation? Hint: Write it out as a number in the first question and then take the first number, multiplied by 10?

2,500 Billion =  $5 \times 10^{11}$

Answers: 1,500,000,000,000



Have you ever been outside and seen plastic shopping bags caught in fences, bushes, trees or power lines? Each time you go to the store, your family probably comes home with at least one of these plastic shopping bags. If you have gone to the grocery store, your family may come home with seven, eight, even ten or more bags. While we can find ways to reuse these bags, like lining home trash cans, it is estimated that there are 500 BILLION of these bags produced each year and they can take up to 1000 years to decompose or break down. You might be thinking, that's a lot of plastic bags—and you would be right. That's 73 bags a year for every man, woman and child in the world!

Daniel Burd, a 16 year old from Canada, probably wasn't thinking about the 500 billion plastic bags produced all over the world when he started thinking about his science fair project last year. But he was thinking about the mountain of bags that fell out on him every time he was doing his weekly chores around the house and opened the closet door. He started wondering what other people were doing with all these plastic shopping bags.

So he did a bit of reading and found out that plastic shopping bags take a very long time to decompose and he wondered if there was a way to speed up that process. He knew that bacteria (small, single celled organisms) helped to decompose lots of other things and wondered if he could use bacteria to decompose plastic shopping bags. So he designed an experiment, using common items around the house (yeast, tap water, soil and plastic shopping bags) and guess what? He found out that it worked! Bacteria did help to speed up the process of the plastic bags breaking down and after some minor improvements, found out that his plastic munching microbes (bacteria) would completely decompose a plastic shopping bag in just three months! That's a lot quicker than 1000 years!

This is exciting information—to find a natural way to help solve a big environmental problem and all this from a high school student. Daniel won the science fair, but more importantly, he saw a problem and used his knowledge and creativity to find a possible solution, like any good scientist. Makes you wonder, what solutions could you find if you put your mind to it?



# Kansas Kids ARE Making a Difference!

In August of 2008, the Kansas Green Schools Program was officially launched and there have been almost 400 schools sign up, many schools that were already doing great things! These schools are trying new ideas to make their school greener and learning about the environment while they do it. For instance, New York Elementary, a school with only 133 kids in Lawrence, got started with recycling in their school.

Nancy DeGarmo, the principal of New York Elementary, shared how the school began looking at ways to be greener.

*"It all started when Deffenbaugh came by and wanted to put a big yellow paper recycling bin in our back lot. I knew the kids, families and staff would be interested and so together we looked at how to make recycling work in our school."*

With the Student Council taking the lead, the principal, teachers, school staff and students developed a system to collect paper to recycle. The school maintenance staff gave them a barrel that the 5th grade students could use to go around to classrooms and collect the paper. Then the students dumped the paper into the special collection bin behind the school. Students encouraged teachers to make a special box to put the recycling in and mark it so that they would not disturb the class when they came by to pick up the paper for recycling. Students



*New York Elementary (Lawrence, KS) students Sophia Minder, Kieran Inbody and Jai Strecker pick up classroom recycling to take to the recycling bin located behind the school.*

even made a box by the copying machine so that extra copies or copies that had mistakes could easily be recycled.

*"It's important to get the students involved in figuring out how to make it work at your school. The kids are questioning—why do we do things the way we do? And the kids have an idea of doing things a better way, if we only listen to them!" says Principal Nancy DeGarmo.*

Because the school is small, the staff and students looked for other ways to recycle even more paper. Students wrote an article for a local newspaper and encouraged parents and other community members to save up their recyclable paper and bring it by the school. The principal also encouraged businesses and organizations who partner

with the school to bring their paper and recycle it using the schools bin. Last year, the school with only 133 kids recycled over 4 tons of paper, or 8000 pounds! Each ton of paper recycled saves 17 trees, 24,000 gallons of water, energy and landfill space. But the students at New York Elementary aren't done yet. As students started paying more attention to trash, they started to notice that they were using and throwing away a lot of plastic bottles each day. So, the Student Council is looking both at ways to start a plastic recycling program at the school, while also looking at ways to cut down on the number of plastic bottles being used in the first place. Students and staff are encouraged to use refillable water bottles at school. They also have a field day planned for the spring and have decided that they'll start using water coolers and recycled paper cups, rather than using water in bottles.

Want things do you do at your school? Tell us your story and look at what other schools are doing at [www.kansasgreenschools.org](http://www.kansasgreenschools.org).



# Kansas Kids CAN Make a Difference - Smart Choices

Everyday, we all make choices about the things we purchase and use. There are a lot of things that we consider when we make our choices. Think about the last time you went shopping for clothes. You might have thought about colors, styles, price, how the clothes fit and looked, the amount of time you had to look for the clothes and more. But how many times do you stop to think about what your choices might mean to the environment? Take this quiz and find out how well you're doing when it comes to making "greener" choices!

## 1. When our family goes to the grocery store we:

- Take our groceries home in the bags provided by the store and throw most of them away.
- Take our groceries home in the bags provided by the store and then reuse the bags at home.
- We bring our own shopping bags made of sturdy fabric each time we go to the store.

## 2. When I want to take water with me to school or another event, I:

- Purchase a bottle of water and throw the bottle in the trash.
- Purchase a bottle of water and throw the bottle in the recycling bin.
- Use a re-fillable water bottle that I bring from home.

## 3. When I bring a sack lunch to school, even if it's just for field trips:

- I purchase a pre-made lunch from the store and a box, bottle or can of water, juice or soda and throw the bags and wrappers in the trash.
- I pack my own lunch in a bag and use plastic bags or wrap for my sandwich and other lunch items that come from larger containers at home. I bring a box, bottle or can of water, juice or soda and recycle the containers that are recyclable.
- I use reusable containers for food and drink and utensils that can be washed and used again.

## 4. When I go to school, I:

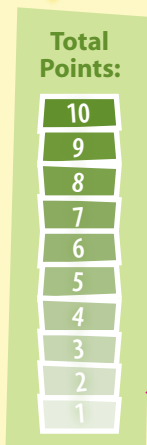
- Have a parent drive me to and from school.
- Carpool or take the bus.
- Walk or ride my bike to school.

## 5. When I leave a room or leave the house, I:

- Leave lights, TV, radio, games, computer, etc. running as I know I'll use them later and it's too much trouble to turn them all off.
- Turn off the light and if I have time, turn off anything else that is plugged in before leaving the room or my house.
- Turn off the lights and turn off and unplug or turn off a power strip for those items like game/computer chargers, which use electricity even though I am not using them.



## Score Yourself



For each question give yourself the following points:

a = 0 points      b = 1 point      c = 2 points

- Awesome!** You're really green! Challenge yourself to find even more ways to make a difference!
- Pretty good,** you've made an effort to go green! Can you do more?
- Not bad,** you're a little green—but you can go greener!

## ★ DID YOU KNOW? 🌱

A kid using non-reusable materials to pack lunch generates 67 pounds of waste per school year? That means that the average elementary school has about 18,760 pounds of lunch waste EACH year! (Source: wastefreelunches.org)





# CELEBRATE EARTH DAY!

## Kansas Kids Can Make Their Own Plantable Paper: Investigating Recycling

Recycling paper, taking our old used paper and making it into new paper, saves trees, water, energy and landfill space. When we recycle paper at home or school, the paper is taken to a recycling center and then sold to companies that manufacture recycled paper products. Did you know that you can make your own recycled paper? Try this activity and learn more about recycling while making a great earth day card or gift item for your family or friends! For great ideas of earth day activities that you can do with your family outside, go to [www.learnoutside.org](http://www.learnoutside.org) and click on "family activities."

### MATERIALS

- scrap paper and/or newspaper
- blender or wire whisk
- warm water
- a bucket
- a big square pan that's at least 3 inches deep
- a piece of window screen that fits inside the pan or create a screen by bending a wire hanger into a square and stretching an old pair of panty hose over the wire
- an iron or rolling pin
- a measuring cup
- dish towels
- optional: packet of seeds and/or food coloring

### PROCEDURES:

**1.** Tear the scrap paper into tiny pieces and soak them in a bucket of warm water (as warm as you can get it from the tap) for



about 30 minutes. Put a handful of the soaked paper into the blender and mix until mush. Or if using a whisk, beat the mixture until it is a creamy pulp—it should look and feel sort of like gray mushy oatmeal. Add a small amount of food coloring if you want to tint your paper.

- 2.** Pour the blended pulp into a measuring cup. Pour roughly an inch of water into the pan. Put the screen into the pan and pour one cup of the paper pulp onto the screen.
- 3.** Spread the pulp evenly in the water with your fingers. It should feel kind of mushy. Lift the screen slowly and let the water drain until there is no more water dripping.
- 4.** Lay the pulp-covered screen face down on a dish towel, rag or in between some newspaper. Lift the screen away, leaving the paper pulp on the cloth or newspaper. Make it "plantable" paper by sprinkling the paper with seeds at this point! It can be vegetable or flower seeds. Or, if you just want recycled paper, skip the seeds. Cover with another cloth or newspaper and get an adult to help you iron with a hot iron, or

use a rolling pin to flatten and press out excess moisture. Let the pulp dry for at least 24 hours.

- 5.** Once it's dry, use the newly made paper to create greeting cards for your friends and family. You can leave the paper in the shape it's in or cut it into different shapes. If you included seeds, make sure that you tell them that when they're through enjoying the card, to tear it into pieces and plant it in a pot or garden!

### HOW DOES IT WORK?

Paper is made from plant fibers called cellulose (plant cell lining) and most often comes from trees. These fibers bond together when they are soaked in water. When you take the used paper and soak it in water then blend or whisk it, you're creating clumps of cellulose fibers and the water helps it to bond together to make a new piece of paper! When companies recycle paper into new paper, they also use chemicals and machines to remove the inks and other impurities from the recycled paper and then use machines to make the paper thinner and uniform in shape. Since you don't use the chemicals and machines, your paper will be tinted from the inks on the paper you recycled and your paper won't be as thin, but it's still recycled paper and you can write on it and use it just like you would any other paper!