On T.R.A.C.K.S.

Teaching Resource Activities and Conservation to Kansas Students

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Going Green

INSIDE...

Don't Miss Our Next Issue:

Climate Change

What is "Going Green?"

It seems like you can't go anywhere today without hearing the phrase, "climate change", or "global warming" or "carbon footprint" or any other of a host of terms that can be confounding. The fashionable "color" with Hollywood this year is green, as in "going green." What does it all mean?

Going green means doing things that are good for the environment or that can help make it better. Some of us are greener than others. Some green ideas include recycling, walking or riding a bike instead of driving, turning off lights to save energy, using reusable shopping bags, and turning off the water while you brush your teeth.

Green is also choosing the product that will have less of an impact on the environment than another. Buying recycled paper products or organic produce are a few examples. Downsizing to a hybrid car might be another. There is no product that is perfect or has zero impact on the environment. Making a conscious choice to choose what will have less of an impact is what "green" is all about. Going green is a good thing.

Why go green? A simple question with a very simple answer--to save our home!. Everyone on planet Earth shares the resources of this planet and it is the source of all life. By saving our environment, we preserve our own health, not to mention that of future generations. And, if preventing bad health isn't a good motivator, I don't know what is! Sometimes making the right choices is harder than you might think or it may certainly be the "unpopular" choice or an inconvenient one but, as Kermit the Frog often lamented, "It's not easy being green!" but it can be done!

How can schools and classrooms "*go green"* is the focus of this issue of On TRACKS. Health benefits are high on the list for reasons to adopt a green lifestyle but even more compelling reasons center around saving our children from what Richard Louv calls the "nature-deficit disorder". Kansas is moving ahead in this area with the formation of Kansans for Children in Nature The KCN will promote outdoor learning experiences and environmental education for the young people of Kansas and provide ongoing support for these endeavors.

The issues facing us today are not simple. The science may be straighforward but the ability to deal with the issues involves economics, politics, markets, bias, and everything else under the sun. There are solutions that start with each one of us, the individual consumer. So, read through the following pages to better understand the environmental problems facing our time and learn how we can all be part of the solution.

School Green Team Guide

Every day each Kansan produces an average of more than 5 lbs of trash - that's 3.2 million tons total each year. Over 40% of this waste is paper and a significant amount of it is produced by schools. Not surprisingly, the main material thrown away by schools is paper. It often makes up at least quarter of the waste they produce. Likewise, according to the EPA, over 26 million tons of food waste is produced each year in the U.S., much of which comes from school cafeterias. We think of products as being disposable, but whether this material is burned, moved, or buried, it must go somewhere to be managed by someone. As landfill space becomes scarcer, it is essential that we reduce the amount of waste we produce. Schools have the opportunity to serve as models of waste reduction and centers of community education, as students who practice waste reduction and conservation at school are more likely to practice these behaviors at home.

The Benefits:

Enhance Student Understanding Using a Real Life Application

Creating a school waste reduction program is a hands-on, real-world learning experience. Students can apply their math, science, social studies and communication skills. Use the Classroom Connections handout (see contact at the end of this article) for more information on how you can incorporate your Green Team program into lesson planning.

Save and Earn Money for Your School

It costs money to dispose of trash. A school that practices waste reduction, reuse and recycling is going to save money on their waste disposal costs. Additionally, schools can generate revenue from the sale of recycled materials, such as paper and aluminum.

Help the Environment

Conserve Energy: By recycling or reducing at the source, a school can indirectly conserve energy. The steps in supplying recycled materials to industry, (collection, processing and transportation), use less energy than the steps in supplying raw materials to industry, (extraction, refining, and transportation). Additional energy savings associated with recycling occur in the manufacturing process, when products are made from already processed material versus from scratch using raw materials. For instance, making an aluminum can from recycled material requires only about 5% of the energy that would be needed to produce the can from raw aluminum ore. The amount of energy saved from this one can is enough to power a TV for 3 hours.

Prevent Pollution: When less energy is used to make products, fewer fossil fuels are burned and less green house gas, mercury, and other harmful chemicals are emitted into the atmosphere to pollute our air, water, soil.

Recycling also prevents the pollution that comes from landfills. As it decomposes, garbage produces methane gas, a potent greenhouse gas. By diverting material from landfills, recycling can reduce methane emissions. The material decomposing in landfills also produces leachate. Leachate is a liquid formed when water percolates through the garbage in a landfill. It can contain metals, bacteria, and toxins that sometimes end up in our soil and water.

Recycling prevents pollution in yet another way by reducing the number of trees that are cut down to make products. Trees help clean the air by absorbing carbon dioxide. With more trees standing, more carbon is absorbed from the air.

Preserve Natural Resources: Recycling allows us to use natural resources more than once, reducing the need to chop down, extract, process, refine and transport natural resources such as timber, petroleum, and mineral ores. Glass, for example, never wears out. It can be recycled over and over again. By supplying industry with recycled materials, rather than virgin resources, recycling also pre-

serves biodiversity by slowing the destruction of forests, wetlands, rivers and other places essential to wildlife. Additionally, other detrimental impacts, such as the soil erosion associated with logging and mining, are lessened.

Conserve Landfill Space: As more and more garbage is produced, landfills are filling up. They are expensive to build and no one wants one in their backyard. By throwing away less, schools can help lessen the need for new landfills and extend the lives of existing landfills.

Getting Started

Gain Support: To create a successful waste reduction program, you will need the "buy-in" or support of your school's administration. Your school's PTO is also a great place to start. With their commitment, you are in a better position to create a successful program.

Form Your Team: A Green Team is simply a group of people dedicated to promoting waste reduction, recycling, and responsible purchasing in their school or workplace. Try to involve everyone including custodial staff, cooks, maintenance workers, faculty, students, and parents. The team will be charged with: setting goals, gathering and analyzing information relevant to the design and implementation of the program; promoting the program to staff and students and educating them about how they can participate; monitoring the progress of the program and periodically reporting to administration about its status.

Choose a Coordinator: To help get things started, appoint a team coordinator. Select one or two leader(s) who are committed to your program. This leader(s) should oversee the program, and act as the liaison between the staff, administration, and the recycling and waste vendor(s).

Set Preliminary Goals: Start small. Although there are a lot of great ideas out there, don't try to do everything at once. Begin your program with simple projects that have a relatively high likelihood of success. This will help you gain additional support and credibility. You can then expand your program little by little.

Involve the Students: Student participation will help generate enthusiasm for the program. Without students embracing responsibility and receiving recognition for maintaining and improving programs year after year, the program can fade. Try to involve the students in every possible aspect of planning, implementing, and maintaining your program. Incorporate these aspects into classroom lessons. A Student Environmental Club is also a great way to organize and draw in students year after year.

Get to Know Your Waste

It's important to know what materials make up your waste so that you can develop a plan to reduce it. A waste assessment can help you identify what wastes your school produces, establish a baseline for measuring progress and evaluating your waste diversion programs, and decide which wastes to target for reduction first. You will know what wastes are produced in the greatest volume and those that have the greatest toxicity. Follow these steps to determine what makes up your waste, how much your school is throwing away, and how much it is costing you.

Obtain Your Waste Disposal Records

Contact your trash collector to obtain your monthly disposal invoices. These invoices can help you answer the following questions: How are you being charged, by the pull or by weight? How much are you paying each month? How much are you throwing away? By obtaining back invoices you can put together a picture of your yearly waste disposal charges and/or weights/amounts. This will also give you a base line from which you can track your future progress. Don't be afraid to call your trash collector with questions. These invoices can be confusing.

Walk Through Your School

A walkthrough of your school is necessary to learn where trash is coming from and where it ends up. A walkthrough can also help you determine what waste is being thrown away and help you identify reduction opportunities and potential savings. Use the School Walkthrough form (see contact at the end of this article) to record your findings. You will want to plan the walkthrough for a time when garbage bins and dumpsters are full. You may want to contact your janitorial and/or building maintenance staff for assistance.

RENEGOTIATE YOUR WASTE DISPOSAL CONTRACT

Once your school is recycling and generating less trash, talk to your waste hauler about renegotiating your waste-hauling contract. Ask to be charged by weight instead of frequency of pick-up. If this is not possible, request a smaller trash container or less frequent pick-ups. The idea is that your disposal fees decrease as the amount of waste decreases.

Consider Conducting a Waste Characterization Audit

A waste characterization audit should help you determine what materials make up your waste. There are two options for conducting a waste characterization audit. Either way, the goal is to find out what types of waste and how much of them are being thrown out. The first option involves estimating waste types and amounts by conducting a visual survey of individual waste receptacles. This can be accomplished during the school walkthrough. The second option is the most accurate and consists of actually sampling and weighing the building's wastes. The audit can be conducted at anytime of the day, but before garbage and recycling receptacles are emptied. You want to make sure that you are measuring exactly one day's worth of waste. So it may be helpful to obtain the assistance of custodial and/or building maintenance staff in conducting this phase of the audit. This can also make for a very interesting science and/or math project for older students.

GO FOR IT

The Waste Reduction Hierarchy consists of four main components to help your school handle and minimize waste. The hierarchy encourages waste reduction and reuse, then recycling, and, as a last resort, disposal. By practicing these steps in order, your school can maximize its waste diversion.

Reducing

Waste reduction means consuming and throwing away less. Because it actually prevents the generation of waste in the first place, it is the most preferred method of waste management and goes a long way toward protecting the environment. It includes: purchasing durable, long-lasting goods; seeking products and packaging that are as toxin free as possible; buying products that use less packaging. Reusing items -- by repairing them, donating them or selling them -- also reduces waste.

Reusing

Reusing products, when possible, is also better than recycling because the item does not need to be reprocessed before it can be used again. This can include practices as simple as using durable coffee mugs or reusing packing materials and office supplies, such as file folders and envelopes. You will also want to consider materials exchange programs and donation options. See contact at the end of this article for waste reduction and reuse ideas.

Recycling

Recycling turns materials that would otherwise become waste into valuable resources. In addition, it generates a host of environmental, financial, and social benefits. Materials like glass, metal, plastics, and paper are collected, separated, and sent to facilities that can process them into new materials or products. Common materials that can be recycled include paper, cardboard, scrap metals, wood, electronics, and beverage containers. Follow these steps to set up a recycling program.

1. Decide What Materials You Will Recycle:
Start with the basics: paper, cardboard, aluminum and plastic bottles. Commercial pick up for these materials may be available. Other materials to consider are newspapers, magazines, batteries, printer cartridges, electronics, food waste, and yard trimmings.

2. Find Recycling Centers/Service Providers:
For paper, cardboard, plastics, and other materials, you may need a hauler. These companies provide containers and establish a regular pick up schedule to meet your needs. In most cases, service providers collect materials for free and may even pay you for your materials. Remember that your school can earn revenue from your recycled products, so shop around to make sure you are getting the best deal. If pickup services are not available, another option is to take your recyclables to a drop-off center. Drop-off centers can also help you expand your program because they often accept items that cannot be picked up. See the recycling directory to locate a center or service provider near you. **www.kansasbirp.com/centerdirectory.asp**

3.Purchase and Place Your Receptacles
Recycling receptacles can be purchased on-line and at most major retail and office supply stores. See

our website **http://www.kansas-greenteams.org/** for special deals for schools. Choose the correct size of receptacles for the volume your office generates and the correct type for different materials. Place containers in strategic locations, and make sure they are labeled clearly. You may want to consider the following:
A. A good rule of thumb is a recycling receptacle for every trashcan.
B. Provide bins for paper recycling in every classroom.
C. Place larger containers for paper near printers, copiers, in offices and computer labs.
D. Locate receptacles for plastic bottles, aluminum cans, and magazines, in break rooms, cafeterias, or other central locations.
E. Place containers for recyclable materials in shops, labs, and cafeterias.

4. Coordinate Collection/Transportation:
Coordinate collection of recyclables with the recycling service provider, janitorial crew, and/or staff. You may also want to consider involving your students. If you decide to rely on your janitorial crew for this, the next time your schools janitorial contract comes up for bid, be sure to include collection/removal of recycling as part of the contractor's normal duties. Addendums can also be worked into existing contracts. In most cases, this can be done for little or no increase in cost. Considering that your janitorial contractor will be collecting the same amount of material and if receptacles are located close to the trash cans, the additional amount of time and effort required will be minmal. Everything your school buys affects the environment, but some choices are better than others. Your school can use its purchasing power to help protect the environment and set a good example for others. When purchasing products and services, keep these considerations in mind:

Take a Second Look at Your Purchasing

Buy Durable Products - Instead of purchasing disposable items, purchase items that will last a long time, such as rechargeable batteries. Also, choose products with a longer life and extend that life span through repair and reconditioning, which might also include upgrading.
Avoid Excess Packaging - Look for products that have less packaging or buy in bulk. You will have less to throw away. You can also purchase items with packaging that can be reused or recycled.
Buy Recycled - By purchasing recycled content products, you are helping to "close the loop" by providing markets for recovered materials. Recycled content products come in many shapes, sizes and forms including: paper and office supplies; carpeting; construction materials; toner cartridges; vehicle fluids; pens and pencils; landscaping materials; furniture; retread tires; clothing; and many other items.
Buy Energy Efficient - Energy efficient choices for items such as computers and lighting can help

your school save on utilitiy costs and cut back on green house gas emissions. Choose items that are Energy Star certified.

Choose Products that Prevent Pollution - Choose cleaning products, paints, and other chemical products that are less toxic and biodegradable.

Kicking-Off Your Program

Once you have your basic program up and running you will want to post or circulate an announcement, to help ensure staff participation. You should include information about the new procedures or policies being adopted and how it will benefit your school. You should also include your coordinator's contact information. Mention that innovative ideas and solutions from staff and students are welcome. Provide literature explaining the benefits of recycling. (Your recycling service provider may be able to supply educational materials). And to bring the students in, you should consider having a special event or party to kick-off your program. This will make it fun and exciting for the students and really draw attention to your program. See the appendix for a list of kick-off ideas.

Educate Your Students and Staff

As the team begins to implement the waste reduction program, it is crucial that all staff and students be informed about the program and the importance of their cooperation and involvement. One of the first steps in educating staff and students is to create a school recycling guide. Use a variety of methods to reach your target audience, such as staff meetings, school newsletters, morning announcements, signs and posters, assemblies, and special events.

Keep It Going

Track and Record Progress

It's important to monitor and evaluate your program to ensure its continued success. Track the amount of materials you are recycling and throwing away. To demonstrate its cost-effectiveness you should track any income generated by the program as well as the school's savings in disposal costs and purchasing expenditures.

Keep Students and Staff Informed and Invoved

Provide regular updates to staff and students about the program and seek their input. They will be encouraged to know that by doing their part they are helping to make a difference. Continual communication and recognition are crucial to the long-term success of your program. Submit articles for your school newsletter, add update information to your morning announcements and assemblies, and put up flyers.

Advertise Your Success

Use your tracking data to demonstrate your program's success to administration, staff, students, and the public. Take advantage of tools and resources to convert hard-to-understand measurements, such as kilowatt-hours or tons of waste, into vivid equivalents - numbers of cars removed from the road or numbers of trees saved. This can also be an excellent classroom project for math and science students. Check the following websites for conversion tools:
http://www.nerc.org/documents/environmental_benefits_calculator.html and www.environmentaldefense.org/papercalculator/

Go Above and Beyond

Once you have your basic recycling, waste reduction, and purchasing programs up and running, don't stop there. Continue to expand your Green Team efforts by exploring other areas of responsible stewardship practices. Some of the issues that other green teams have dealt with include: energy efficiency programs, fluorescent bulb recycling, environmentally preferable cleaners and janitorial services, food scrap composting, green landscaping, and carpooling.

Contact Us

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Green Your School

earth day network

Flip the switch!

- Have students patrol to check that lights are off in vacant rooms

- Have students make signs or stickers such as "Flip the switch when leaving!" as a reminder to turn off lights

- Have students experiment by turning off certain lights (or all) to assess comfort in various lighting (often natural light is preferred)

- Move lamps away from less frequented areas and spaces with natural lighting, i.e: windows

- Use CFLs or LED bulbs and have students compute the energy savings

-Have students perform an energy audit. Learn how to at www.earthday.net

Monitor those monitors

- Set computers to enter the "sleep" mode when inactive; avoid screen savers

- Have students turn off monitors that won't be used in subsequent classes and turn off computers when the day ends. Have students patrol to check monitors and computers are off when not needed

- Use Energy Star equipment. Have students compute potential savings for Energy Star equipment and present the findings to administrators

- Use non-vampire electrical equipment. Purchase Smart Power Strips at www.chooserenewables.com

Some like it hot (or cool)

- Use fans

- Keep air vents clear and up-to-date

- 78 degrees for cooling and 68 for heating

- Get programmable thermostats installed to reduce cooling and heating when rooms are vacant

- Close classroom doors to trap heat in

- Work with custodians to fix drafty rooms; ensure that furnace filters are cleaned often

- Find leaks by having students make "draft-meters" from pencils and plastic wrap

- Have students make "insulation snakes" for the bottom of windows and doors & translucent window quilts

Recycle!

- Conserve paper by using both sides of a page in your notebooks, buy recycled paper, and make sure there is a paper recycling bin in every classroom

- Have students start a recycling program for the school. If you already have one, have them evaluate the current program to find new ways to reduce waste and conserve more materials

- Collect used printer, fax, and copier cartridges to recycle; often programs will supply monetary rewards

Out with the old...

-Recycle old appliances & maintain others

-Have students study electricity consumption with a watt meter to reveal outdated appliances

Daily dose of green

-Have students write down one way to help the Earth. Take them to the principal and start a daily Help the Earth PA announcement

-Organize to have healthy food served at your school and reduce the availability of junk food, sodas, and other unhealthy options, as well as choosing reusable utensils, trays, and dishes in the cafeteria

- Encourage all to walk, bike, or carpool to school

Involving older students...

-Talk to the principal and maintenance staff! Oftentimes, more knowledge and potential for change is available from your school's staff than anyone else. Inquire about non-toxic cleaning products and recyclable materials. Find out what pesticides or chemicals are sprayed on school grounds

-Examine your school's air quality and ventilation, or investigate the possibility of creating a green roof for your school.

Join efforts!

- Remember when you get the whole school involved, energy savings accumulate!

- Have students make hallway signs to publicize energy expenses and savings as a means of growing support for conservation efforts; publicize outside of school to encourage other schools to go green

- Ask administrators to invest a percentage of money saved from energy efficiency transformations on new energy-saving technology

Be Earth smart!

-Educate on environmental issues across the curriculum. Encourage teachers to include environmental themes and lessons into daily learning routines, such as inviting **experts** to speak and watching **documentaries** in class. Find free lesson plans at www.earthday.org

-Organize Earth Day events for your school on April22nd to better educate your school, and your community on environmental problems and solutions. Find info at www.earthday.org

Have fun!

- Organize a clean-up day for your school and the surrounding area. Beautification projects such as tree plantings are quick solutions to many common problems

- Have students take a fieldtrip to the roof and make it green! Plant an herb garden and teach about the importance of implementing green roofs. Later, teach biology lessons there or hold an art class. For more info visit www.earthday.net

- Have a contest to monitor the amount of trash each class creates after lunch (the same can be done with recycling). Keep a graph for about a week to see which class overall disposes the least amount of trash (or recycles the most)

- Analyze Walt Whitman's poem "This Compost" to understand how compost works and how it connects to the cycle of life; then make compost for your school's green roof, garden, or surrounding area

For more information...

Visit www.earthday.org or contact EDN's Education Department at education@earthday.org

Energy Olympics

adapted from a program by Jamie Hubert at St. Francis State Park in MO

This program aims to teach about energy conservation and recycling in a fun and engaging way. Participants are divided into two teams. Teams will work their way through various challenges to earn energy points. The team that saves the most energy points at the end wins. After each challenge, a discussion will follow to explain how much energy can be saved, what the environmental imparts are, etc.

Challenge #1-Light Me Up!

Materials:

4 pieces of plywood (2'x4', 3/8"or 1/2" thick)
2 piano hinges, 2' long or two sets of 3" hinges
4 sections of small link chain, approx. 1' each*
24-48 wood screws, 3/8" long
24 clear soda bottles (small, 10 oz size?)
24 green soda bottles (small, 10 oz?)
2 cardboard boxes
*optional

Preparation:

Connect the front and back sections of plywood together with the piano hinge at the top, creating an A frame. Add chains to the front and back sides to keep them from sliding apart on smooth surfaces. Use screws to attach the lids of 12 bottles in a grid pattern on the front of the A frame. You may need to add a second screw to each lid to keep it from spinning. Screw the clear bottles onto the lids. These represent incandescent light bulbs. A box of 12 green bottles (no lids) will be sitting in the box next to the board, representing compact fluorescent bulbs.

Activity:

Teams will line up for this relay race. If the team has more than 12 people, let them pick the 12 who will participate in this challenge. Explain to them that the first challenge will be to change out all their "incandescent light bulbs" with "compact fluorescent light bulbs" (CFLs).

At the whistle, the first member on each team runs to the end of the playing field where the plywood board has the "light bulbs". The team member will unscrew a clear bottle, grab a green bottle from the box, and screw it into the place of the clear bottle. The team member runs back and tags the next person in line. Repeat until all "bulbs" have been replaced with green "CFLs". Team to finish first gets 1,287 energy points.

Reason: Each CFL saves 107 lbs of CO_2 each year from getting into the atmosphere. 107x 12 bulbs =1,287.

Discussion:

Switching from incandescent light bulbs to CFLs is a simple, effective way every person can make a difference right now to reduce energy use at home and prevent greenhouse gas emissions that contribute to global climate change. Lighting accounts for close to 20% of the average home's electrical bill, so this is an easy way to save money, too. CFLs use two-thirds less energy than incandescent light bulbs and last up to 10 times longer.

If every home in America replaced just ONE incandescent light bulb with a CFL, in one year it would save enough energy to light more than 3 million homes and prevent greenhouse gas emissions equivalent to those of more than 7.5 million cars.

The single greatest source of greenhouse gases in the United States are power plants--half our electricity comes from coal-fired plants. One bulb swapped out: enough electricity saved to turn off two entire power plants--or skip building the next two.

Challenge #2-Recycling Relay Race

Materials:

2 sets of 4 cardboard boxes marked paper, plastic, aluminum cans, and non-recyclable

2 bags of mixed recyclables and non-recyclables (include aluminum foil, non-recyclable plastics, etc.)

Preparation:

Place the recycling "bins" at the end of the playing field. The bag of mixed "trash" will be at the team's starting line. To make the challenge even, have the same types and number of items in each bag.

Activity:

Teams will line up at the starting line. At the whistle, start a stop-watch and the first team member will grab an item from the bag and race to the bins and place the item into the appropriate bin. They race back and tag the next person in line, and so on, until all items are sorted. Record their time. After the first team finishes, have the other team keep racing to finish their sorting. Check to see if the teams sorted properly. If any items were not in the appropriate bin, add a 5 second penalty to their time. The team that finishes first may lose if they receive enough penalty points. The team with the lowest time is awarded 1,000 energy points. **Reason: This represents the 1,000 lbs of CO2 a year that is saved by reducing waste in the home by 25% by recycling, buying reusable items, and composting.**

Enrichment activity: Have teams do the "How Many Years To Disappear?" worksheet (http://www.eia.doe.gov/kids/classactivities/LandfillPrimaryJuly2003.pdf) before doing the race, so they can see just how long these recyclables will sit in a landfill.

Discussion:

The U.S. generates 232 MILLION tons of trash every year. That is 4.5 lbs per person per day! Most of this goes to landfills. That is a lot of garbage! Some things that get thrown into the landfill will sit there for a long time.(See "How Many Years" worksheet) Also, we use a lot of electricity and oil (plastics) to produce these items. Instead of wasting it, we can recycle it! Recycling is easy to do, and can have huge impacts on energy savings.

For example, if you recycle 50 lbs of paper, you will save enough energy to power a home for a day. For every ton of paper recycled, it saves 17 trees. The energy saved when we recycle just one glass bottle will light a light bulb for 4 hours. An aluminum can recycled is enough to run a TV for 3 hours.

Americans use 80 BILLION aluminum cans every YEAR! We throw away enough aluminum in 3 months to completely rebuild our commercial air fleet! There is no limit to the amount of times that aluminum cans can be recycled. It can be recycled and back out on the shelf in just 60 days. Plus, many recycling centers will give you money for your recycled aluminum. Aluminum foil can't be recycled for this game because our recycling center doesn't take it. Even though it is just as recyclable as cans, foil tends to get very dirty with charred BBQ sauce and other food. But don't despair-you can buy recycled foil. There are 100% recycled brands out there, and the recycling process uses just 5% of the energy it takes to make the non-recycled foil.

Americans use 2.5 million plastic bottles every HOUR, and most of them are thrown away! Plastic bags and other plastic garbage thrown in the ocean kill as many as a million sea creatures every year. The good news is that recycling plastic is very efficient. It saves twice as much energy as burning it in an incinerator. There are different kinds of plastics, some of which your recycling center may not take. Look for the recycling symbol on the container. Each has a number code that shows what type of plastic it is. Resist the temptation to slip plastics that recyclers don't want into the recycling bin. Once you know what kinds of plastics your recycler wants, you should follow the wash and squash rule-rinse the container and squash it. You may leave the paper labels on the container, but throw away the plastic caps. Plastic caps are usually made from a different type of plastic than the container and cannot be easily recycled.

Challenge #3-Fill 'er Up!

Materials:
Aluminum cans (at least 60)
2 large cardboard boxes

Preparation:
Give each team a large amount of cans.

Activity:
Every team member will participate in this challenge. (Background: For every aluminum can recycled, the energy saved is the equivalent to 1/2 gallon of gasoline. Don't tell them this ahead of time). Recycling cans can actually help us save gasoline, because it takes gasoline to transport the aluminum from the mine to the factory that makes the cans. Together, the team must decide how many cans they will have to recycle in order to fill up the 20 gal. tank on your vehicle. You can either have them count out that many cans and place them in the box, or give them a small dry erase board to put their answer on and have them reveal it.

First team to correctly guess wins the points. Winners are awarded 400 energy points.
Reason: If every aluminum can recycled saves 1/2 gallom of gas, then 40 cans must be recycled to fill up the 20 gallon gas tank. Points are awarded based on the amount of CO2 that is saved. 1 gallon of gas puts out 19 lbs of CO2. So 20 gallon tank=380 lbs. An additional 20 lbs of CO2 is saved by recycling the 2 lbs of aluminum cans originally given to the students. (30 cans = 1 lb).

Discussion:
Aluminum doesn't occur naturally in the earth's crust, it has to be extracted from its ore - bauxite - which is mined and then 'smelted' in a very energy-intensive process.

The aluminum recycling process uses only 5% of the energy needed compared to the smelting process, and reduces the need to mine bauxite.

We know that the price of gasoline is going up, and that oil is a nonrenewable resource. Any way that we can cut the amount of gasoline that we use is going to save us money.

Remember from the recycling game that in the U.S. alone, we use 80 BILLION aluminum cans. That would equal 40 billion gallons of gasoline we could save in this country alone!

Challenge #3-"Water" You Doing?

Materials:

1 kiddie pool or other large container filled with water
2 measuring cups (or use larger containers to make the activity quicker)
2 five gallon buckets

Preparation:

Fill kiddie pool with water and place at the end of the playing field. Place empty five gallon buckets and measuring cups at starting line.

Activity:

The first person in line will run to the kiddie pool with his/her measuring cup, fill it with water, then run back and dump it into the bucket. Then the next person in line will go. The first team to fill their bucket to the top wins. Winner is awarded 350 energy points.

Reason: Installing a low-flow showerhead will save hot water and 350 lbs. of CO2/year (based on an electric water heater - gas heaters are more efficient, and tankless are even better).

Discussion:

By using a low flow showerhead, you can save 5 gallons of hot water every 2 minutes. If a person showers every day for 6 minutes, that is 15 gallons per day x 365 days/year = 5,475 gallons! Other ways to reduce your hot water consumption and CO2 include washing clothes in cold or warm water instead of hot (saves 500 lbs. of CO2/year), and washing only full loads of dirty dishes without the heat dry setting (saves 200 lbs./year). 5 gallons is also the amount of water saved every DAY just by turning off the water while we brush our teeth. Repair dripping faucets by replacing washers. If your faucet is dripping at the rate of one drop per second, you can waste 2,700 gallons per year which will add to the cost of the water bill.

Of all the water on the planet, only 1% is in the form of usable, fresh water. 97% of the water on Earth is saltwater, 2% is locked up in glaciers, which leaves just 1% for us to use. We have to do what we can to save water and keep water clean. And of course, by saving water, you save on your utility bills!

Challenge #5-Save A Ton

(Based on "Saving A Ton of CO2" activity from Project Learning Tree)

Materials:

Plywood boards covered in felt or magnetic dry-erase boards
Laminated cards with energy saving tips
Dry-erase board or paper for adding points for each team

Preparation:

Use the Save a Ton worksheet (page 23) to create the laminated cards. Tape to it the amount of carbon dioxide saved, so that it can be lifted up to show the amount. Attach Velcro or magnets to the back, depending on which kind of board is used. Place a set of cards on the left side of each felt board.

Activity:

Teams will quietly work together and choose the top 5 (out of 12) energy saving action that they think will save the most energy (similar to Family Feud game show). They will move their choices to the right side of the board (which should be empty). Tell them not to peek at the numbers. Once they have made their choices, go through each energy saver and reveal their savings. Keep a running tally on the dry erase board. Team that saves the most energy wins the challenge. Make sure to show the savings for the cards they did not choose. Both teams are awarded the points for the amount of CO2 they saved.

Discussion:

For every ton of carbon dioxide saved, you will save $100 on your utility bills. So you not only keep greenhouse gases from getting into the atmosphere, but you save money, too!

After all challenges are completed, add each teams points to determine the Energy Saving Champions and award their prizes. Everyone ends up a winner if we all do our part to reduce our carbon footprint!

PLT Student Page

Saving a Ton of CO_2

Keeping a ton of CO2 from getting into the atmosphere each year will also mean saving at least $100 on your utility bill! Decide which of the following energy-saving actions you can take. (To convert pounds to kilograms, multiply by .454.)

Energy-Saving Action	Possible Annual CO2 Savings	Pounds of CO2 You'll Save Each Year
Electricity Simplicity Replace a 100-watt incandescent bulb with a 27-watt compact fluorescent bulb.	142 pounds per bulb	
Replace a 75-watt incandescent bulb with an 18-watt compact fluorescent bulb.	107 pounds per bulb	
Turn lights out when we leave the room.	107 pounds per room	
Getting into Hot Water Give your water heater a warm-up jacket of insulation to make it more efficient.	Electric: 534 pounds Oil: 320 pounds Gas: 231 pounds	
Cool the hot-water heater down by 10 degrees (but not below 120° Fahrenheit).	Electric: 587 pounds Oil: 356 pounds Gas: 258 pounds	
Make your hot water go further with low-flow showerheads.	Electric: 819 pounds Oil: 498 pounds Gas: 356 pounds	
Chill out your washing machine by doing four out of five laundry loads in cold water.	Electric: 409 pounds Oil: 249 pounds Gas: 178 pounds	
Turning Over a New Leaf Plant a tree on the south or west side of your home to provide cooling shade.	133 pounds per tree	
Home Is Where the Heat Is Turn down our thermostat one degree this winter.	Electric: 365 pounds Oil: 222 pounds Gas: 160 pounds	
Turn down the heating system 10 degrees when you're in bed at night.	Electric: 1,842 pounds Oil: 1,121 pounds Gas: 801 pounds	
Turn up the air conditioner thermostat a single degree this summer.	196 pounds	
Plug leaks around windows and doors with weather stripping—and close the curtains and shades at night.	Electric: 1,424 pounds Oil: 890 pounds Gas: 623 pounds	
Get Annual Tune-Ups Tune up air conditioner.	196 pounds	
Tune up furnace.	Electric: 917 Oil: 579 pounds Gas: 400 pounds	
Drive Less Find ways to combine trips, take public transportation, walk or ride a bike instead of driving. To calculate gallons of gas you will save: _____ fewer miles driven ÷ _____ miles per gallon the vehicle uses = gallons of gas saved.	19.6 pounds per gallon of gas	
TOTAL CO2 YOU WILL SAVE:		

Kansas Green Schools Program

What is the Kansas Green Schools Program (KGSP)?
The KSGP is a partnership between the Kansas Department of Health & Environment (KDHE) and the Kansas Association for Conservation and Environmental Education (KACEE). Our purpose is to increase environmental literacy and promote environmental stewardship in Kansas. Our program involves providing grant resources for green projects and environmental education curriculum for schools. To get started all a school has to do is join the Kansas Green Schools Network.

What are the benefits of joining the KGSP Network?
- It's free!
- Joining the network allows us to send you regular updates on what other types of projects are going on in Kansas schools and allows you to share your activities with others
- The minute we know about grant funding availability we let you know how to apply for it

What kind of projects are eligible for KGSP grants?
Projects that address air quality, climate change, solid waste reduction, recycling and water quality in K - 12 schools are eligible for KGSP funding. Specific projects include but are not limited to:
- Field trips focusing on environmental education
- Professional development
- Waste or purchasing audits
- Recycling containers
- Energy efficiency, renewable energy, greenspace
- Indoor air quality and school bus retrofits
- Water monitoring projects
- Partner with Watershed Restoration and Protection Strategy (WRAPS) projects to implement community projects

KANSAS
GreenSchools
www.konsasgreenschools.org

What can I expect in the way of guidance and support?
The Kansas Green Schools Program provides guidance on joining the network, project selection and grant document submission. Communication continues throughout the project with support from program managers and partners. Finally, trainings offered through KACEE provide guidance on integrating the environmental curriculum component of your project and delivering it to your students.

What is a Kansas Green School Award?
Your school does not need to be a KGSP grant recipient to receive a Kansas Green School Award. Take a look around your school. What green projects are you already doing that teach your students about environmental stewardship? How are your students benefiting from environmental education? Join the network and find out when and how to nominate your school. These awards are our way of saying "thank you" for all that you do.

Interested?
Visit our Web site:
www.kansasgreenschools.org

Or e-mail our Program Manager, Shari Wilson
at: **swilson@KACEE.org**

GREEN SCHOOL RESOURCES

Kansas Green Schools Program - www.kansasgreenschools.org

Green Schools Initiative — www.greenschools.net

Facing the Future — www.facingthefuture.org

Center for Ecoliteracy — www.ecoliteracy.org

Cloud Institute for Sustainability Education — www.sustainabilityed.org

Rethinking School Lunch — www.rethinkingschoollunch.org

California School Garden Network — www.csgn.org

Healthy Schools Network — www.healthyschools.org

Healthy Schools Campaign — www.healthyschoolscampaign.org

Ecological Footprint Quiz — www.myfootprint.org

SchoolNeutral carbon emissions calculator- www.earthteam.net/Gwcampaign/calculate.html

It's Easy to Be Green-
www.nais.org/ismagazinearticlePrint.cfm?print=Y&ItemNumber=150664

Earth 911-www.earth911.com

www.nerc.org/documents/environmental_benefits_calculator.html

www.environmentaldefense.org/papercalculator/

Kansas Green Schools Waste Management Grant Applications Now Open

$4,500

Online applications are now being accepted for projects related to recycling, composting, environmental education professional development, and waste management and purchasing audits, among other projects. Any public or private K-12 school that is registered on the Kansas Green Schools Network (easy to do and free) may apply for up to $4,500 in grant funds. Matching funds or in-kind services are required. Go to **http://www.kansasgreenschools.org/grants** for grant guidelines and the online application form.

Do Something Growth Grants and Seed Grants

Grants up to $500 are available for community projects at **http://www.dosomething.org/grants.** These grants are received are reveiwed regularly so there is no deadline for application.

Climate Change Resources

Free materials and resources regarding climate change are offered by the Cool the Earth Program at **www.cooltheearth.org**. The materials are for grades K-8. One such "free" material is Green Teacher. It is a magazine that helps youth educators enhance environmental and global education inside and outside of schools.

Fifty pages of ideas and activities, four times a year.
Each issue contains:

* Ideas for rethinking education in light of environmental and global challenges.
* Practical articles and ready-to-use activities for various age levels from 6-18.
* Resource reviews: evaluations of dozens of new books, kits, games and other green resources.

National Environmental Education Foundation
Knowledge to live by

GREEN PRIZE
IN PUBLIC EDUCATION

The National Environmental Education Foundation, with major support from the NEA Foundation and in partnership with EarthEcho International, will recognize and celebrate an outstanding K-12 public school that has successfully taken on the challenge of becoming a green school through the **Green Prize in Public Education**.

The **Green Prize in Public Education** will award $10,000 to a public school that has successfully implemented school-wide greening that is innovative, sustainable and replicable. School greening initiatives, whether they involve integrating environmental education across disciplines and grades, installing school gardens, improving energy conservation or organizing recycling projects, must involve and benefit students, teachers and other school and community members. Two merit awards of $5,000 each will also be awarded to schools that demonstrate this kind of success. Awarded funds will be used to help winning schools further their exemplary school-wide greening efforts.

Find out if your school is eligible and apply now!

Applications are due **February 15, 2011**.

Kansans for Children in Nature

Governor Kathleen Sebelius signed an Executive Order on 13 April 2009 establishing the Kansas Coalition for Children and Nature. The Coalition is charged with identifying barriers and recommending ways to get more kids outside. Ten Convening Organizations lead the Coalition, and three Working Groups have been formed. If you would like to be involved, please contact one of the Working Group Leaders:

Environmental Education: Laura Downey, **ldowney@kacee.org**

Outdoor Experiences and Recreation: Doug Vance, **doug@krpa.org**

Health: Shari L. Wilson, **swilson@kacee.org**

The group is now known as Kansans for Children in Nature.

KCN
KANSANS FOR CHILDREN IN NATURE

On TRACKS is published by the Kansas Department of Wildlife & Parks several times during the school year.

The purpose of On TRACKS is to disseminate information and educational resources pertaining to the natural, historic, and cultural resources of the prairie, emphasizing Kansas ecology. Information is presented from the perspective of current scientific theory.

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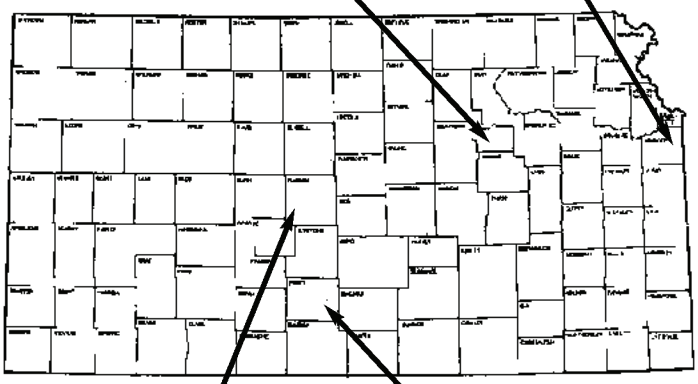

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