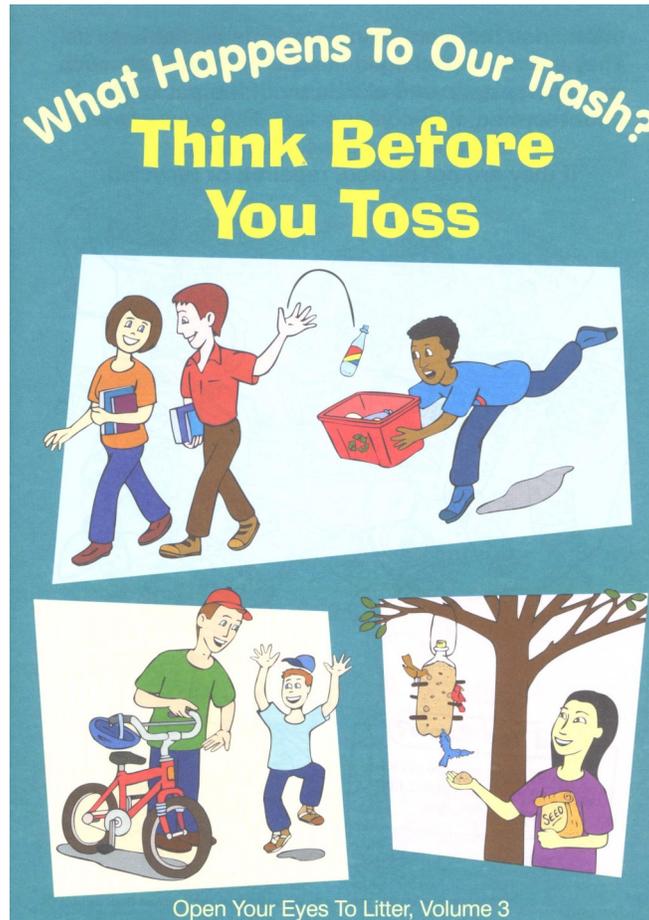


OPEN YOUR EYES TO LITTER—VOLUME 3

THINK BEFORE YOU TOSS

A TEACHER'S GUIDE

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Empowering Pennsylvanians to keep
our communities clean and *Beautiful.*

Produced with funding from the Pennsylvania Department of Environmental Protection.

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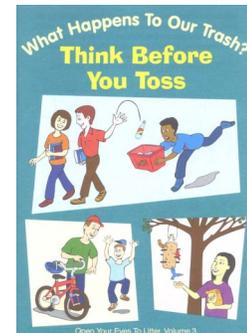
OPEN YOUR EYES TO LITTER—Vol. 3

What Happens To Our Trash? Think Before You Toss

OVERVIEW

This third volume of **OPEN YOUR EYES TO LITTER — *What Happens To Our Trash? - Think Before You Toss*** provides students and teachers with a look of the choices they have when disposing their own litter and wastes. Although this booklet can be used successfully on its own, we recommend that it be tied into a longer, multi-disciplinary theme involving many resources. This will help provide a larger context for discussion and activities. Some suggestions are:

- A **Litter/Recycling/Earth Month Theme**
- Tie it to an **Environmental Education** topic already in your curriculum—
 - **Renewable and Nonrenewable Resources**
 - **Environmental Health**
 - **Humans and the Environment**
- Use it as part of a **Science Theme** such as **Watershed Study**.
- Use it as a core for **Language Arts** topics such as **research, letter writing, essay writing, interview skills and public speaking**.
- This book provides many opportunities for **Technology/Computer** connections such as **Internet research, computer skills, website creation**, etc.
- **Home schooled** students could work alone or in groups to complete the suggested activities and field trips. This is a cross curriculum approach to learning which lends itself well to the home school process.
- Use in conjunction with activities related to earning **Scout badges**.
- Use as 2-3 week theme for **latchkey or after-school programs**.



Although this book was designed for use in grades 4-6, it can certainly provide successful results with some younger and many older age groups. Each page is the entry point for a variety of open-ended discussions to help students realize dealing with our waste is a problem, which gets more serious and complicated as our population increases. The goal of this book is to not only share our current situation, but to focus students on being part of the solution. Each one of us can make a difference. And collectively we can initiate positive change.

Our experience is that the more hands-on, real-life activities you involve your students in, the more they integrate their own personal connection with the environment and understand that one person can make a difference. If you live in an area that has a Keep Pennsylvania Beautiful affiliate, the folks there can be a valuable resource. Keep Pennsylvania Beau-

tiful offers support for anyone in a county where there is not an affiliate. Visit www.keppabeautiful.org for a list of affiliates.

If this booklet inspires your group or students to embark upon a cleanup or adoption, be sure to **emphasize common sense to students and build safety** into all activities. Encourage parents and volunteers to accompany students involved in research out in the community. Use gloves where necessary and don't have students go anywhere alone.

Suggested Strategies

Regardless of the age group with which you are working, we suggest beginning your Waste Disposal Study with a **K-W-L activity**. Using three large sheets of chart paper, label one, Things We **KNOW**, the next, Things We **WANT** to Know, and the third, Things We **LEARNED**. Use the first two lists at the very start of your theme. This will make you aware of the knowledge your students bring to this study, so that you aren't needlessly re-teaching and you learn which students have knowledge that they could present as a mini-lesson. (Or perhaps get their parents in as a speaker with expertise!) The second list helps you and the students focus on the specific questions they have and direction your children's research will take. This will be valuable information to use when locating resource materials, speakers and special projects. It can also be added to, as your theme progresses. The third list can be used as a culminating activity that brings together all the knowledge that each student, small group and speaker brought to the learning experience.

WEBBING - Another valuable technique which works well with all age groups, is to **create a Web at the beginning of your theme**. Draw a circle on chart paper or the blackboard and write your theme title in the middle. Encourage the children to brainstorm related topics or questions they have about the theme and add them as arms to the web. Use straight lines radiating out from the center circle with the related word in a circle, just like the one in the center. Group connected topics together as fingers off the arms, such as all science-oriented items, all creative art projects, and all research or social studies areas. This can be displayed and added to throughout your study. Guiding your children through this learning process helps them to make connections between topics and understand that real-life learning isn't separated into "courses."

Although there are specific activities suggested for certain pages in "Think Before You Toss," the primary learning strategy recommended here is **student research and sharing**. We have included a basic list of topics and encourage you to let students work in small groups or pairs to select a couple of topics that interest them (or the teacher may assign one and let students pick one) and prepare presentations to the rest of the class. In our research for both the book and the resources, the "things we learned along the way" were equally as important as the "topic" we were researching. There are lots of interesting facts about waste, waste disposal and recycling that kids find fascinating.

The **Resource List** is here to complement your own classroom's research and investigation. The Internet and municipal and state agencies are also invaluable resources.

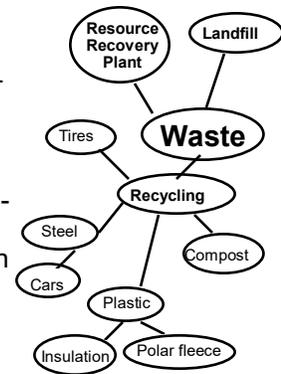
We suggest you use outside speakers and local experts whenever possible. People with real-life experience in dealing with our waste can help kids truly understand the impact of waste in our lives—environmentally, financially, and socially. Scrap metal dealers, landfill representatives, waste haulers, county recycling coordinators, transfer station managers, green builders, manufacturers who use recycled "raw" material, road adopters, farmers, waste water treatment plants, township officials, etc. can make a huge impression on our youth when they are asked to make a presentation.

TEACHING SUGGESTIONS

Things We **KNOW**

Things We **WANT**
to Know

Things We **LEARNED**



Where to Start

- We began our research into this project by viewing *The History Channel's* video - **Garbage**. It may be available through your library or via interlibrary loan, but can be ordered online at www.historychannel.com for \$24.95 plus shipping and handling. Go to the Store on their website and click in garbage as the keyword. Or call 1-888-423-1212. We suggest that you view this wonderful teaching tool and decide if it is appropriate for your class. It's a great starting point and gives lots of background information.
- We also recommend inviting one or two speakers into the classroom during this time. Your regional Department of Environmental Protection office or local Keep Pennsylvania Beautiful affiliate has speakers on a variety of relevant topics. Landfill managers, waste-to-energy plant operators, local government officials, waste haulers, farmers, waste water treatment plant operators, recycling coordinators, scrap metal dealers, etc. are also possibilities for speakers.
- **Think Before You Toss** is focused on grades 4-6. This is a great age to begin investigative/research skills. We recommend having pairs or small groups of students choose topics and go online to discover what they can about waste and other relevant topics. In addition to honing their computer/research skills, they will be finding out LOTS along the way that will complement this study. In researching this booklet, we discovered MANY interesting facts to share with each other. Students could create mini-reports and share what they learned with each other.

Suggested Research Topics

Landfill Archaeology		Resource Recovery Facility
Litter	Thrift Stores Goodwill Salvation Army	Pennsylvania Resources Council
Illegal Dumping	St. Vincent de Paul Rummage Sales	Adopt-A-Highway Programs
Tire Recycling		Keep Pennsylvania Beautiful
Tire Piles	Yard Sales	
West Nile Virus	Polar Fleece	Adopt-A-Forest Programs
Surface Water Pollution	Litter in Outer Space	Adopt-A-Beach Programs
Groundwater Pollution	Municipal Water and Sewage	Aluminum Can Recycling
Reduce Waste	Glass Recycling	Steel Can Recycling
Reuse Unwanted Items	Paper Recycling	Plastic Recycling
Recycle	Throw Away Society	
Compost	Litterbug	

SOCIAL STUDIES —

The book Rubbish! written by modern day landfill archaeologists, William Rathje & Cullen Murphy, is filled with eye-opening facts and lots of information gleaned from examining the things we throw away today. It can provide a wealth of facts and current “trash” knowledge that kids find meaningful to them.

Brainstorm a list — WHAT PACKAGING DO YOU USE?

Use 3-4 sheets of chart paper and brainstorm different activities that your students are involved in every day. Select several to be headings—one for each piece of paper. Activities like meals — such as Breakfast or Lunch (you could even have kids bring all their “throw-aways” back after lunch, clothes shopping, food shopping, buying a game or toy, etc.)

Now have them brainstorm all the packaging that comes with each item—such as individual boxes for cereal and pastries; store-bought boxed lunches; the tissue, pins, and plastic that come with new shirts; shoe boxes with tissue, plastic, and silica gel packets; individual bags of chips and cookies; foam trays and plastic around fruit, cardboard around footballs, etc.

Now talk with them about ways they and their family can reduce, reuse or recycle all this “throw-away” trash.

Lunch

Clothes Shopping

Help students to understand that when they “throw away” something it goes to either a landfill or a resource recovery facility. It takes a conscious effort or “thinking before you toss” for some of those items to be recycled, reused or composted.

WRITING — Form small groups and have students share how litter or illegal dumping has affected them or their environment in some way. Have students close their eyes and picture this littered or dumped scene or the incident where litter affected them. Use this as the starting point for a writing activity. Using the picture created in their mind, now guide students to use words to help someone SEE the littered area that affected them and FEEL their feelings about it. Putting what they SEE and FEEL into words can be very powerful. Emphasize descriptive words and sharing feelings. Encourage their creativity by using poetry, essay, or short story, etc.

Games

Have fun unscrambling the names of places we often find litter and trash.

Look at all the effects of people on the animals and buildings/businesses and environment in this picture. List as many situations as you can where this interaction could have been handled differently.

SOCIAL STUDIES—Problem Solving—Have students get into small groups of 2-3. Using these pages as a starting point, have

them list where THEY see litter and dumping to be a problem in their neighborhood, town, city, park or place where they play or visit. Share lists. Then have kids get back into their groups and make a list of WHY they think these things happen. Again, share lists. Next, have them brainstorm (in large or small group) WHO might be able to help them learn more about these problems and what groups or individuals are already working on them. This is a great time to invite in your local Department of Environmental Protection Agency Solid Waste Specialist, county Keep Pennsylvania Beautiful representative, township officials, county commissioners, a farmer, Fish & Boat Commission, Game Commission, parks department manager, or other people who deal with these issues.

COMMUNICATIONS SKILLS—Have students prepare for this activity by putting together a script of what they want to say when inviting the speaker in. How will they get connected to the correct person if they don't know their name? How will they stay pleasant and focused while being “shuffled about,” which often happens when locating someone you don't know. Practicing good “phone etiquette” now provides students with a valuable life skill.

After the date has been made, have students prepare a list of questions they would like to have answered and practice asking them. Think of some “follow up” questions. Encourage them to do as much research as possible so that they will be able to ask intelligent, relevant questions. A thoughtful thank you note as a follow-up will show your student's appreciation.

Page 7 See Activity— **Make an Electric Recycling or Litter IQ Board**
Page 20-21

These instructions can also be used to make a “light up” Litter IQ board similar to one used with recycling information.

RESEARCH AND WRITING—Have students research one of these items, or one of their choosing and discover how it's made (what raw materials are used), how long it's designed to last, what can be done with it when you're either finished with it or it's worn out its usefulness or doesn't work any more. Have students prepare an illustrated talk, showing the options for each item. See if others can add to the option list.

Page 8 Just as human actions can have a huge negative impact on the environment, they can also have an amazingly positive one as well.

RESEARCH—Have students ask parents and friends, and look in the local papers, yellow pages and library to find out what the opportunities are in their town to make a positive difference. Organizations which appreciate volunteers are local Keep Pennsylvania Beautiful affiliates, watershed associations, the PennDOT Adopt-A-Highway program, sportsmen's groups, county parks, etc. Find out if your class could get involved with a cleanup or adoption or a recycling project.

There has ALWAYS been an Earth Day for the students of today. Have them research the history of Earth Day, www.earthday.net. Find out what's happening in Pennsylvania and their own community by logging onto



www.dep.state.pa.us/earthdaycentral. Find out what's happening nationally by checking out www.earthday.net. Encourage students to get involved and make a difference in their school, home or community!!!

Keep America Beautiful (KAB) is the largest state-administered volunteer effort in the nation. Did you know that PennDOT spends about \$8.5 million annually in personnel and material costs to remove roadside litter? If you are interested in adopting a state maintained highway visit PennDOT's website at www.dot.state.pa.us, keyword "litter." There is also a litter quiz and links to the most up-to-date happenings.

Encourage students to learn more about the Keep Texas Beautiful effort by going to www.ktb.org. The slogan for the Texas cleanup effort is "Don't Mess With Texas." Have students try to find out what the cleanup slogans are for as many other states as they can.

Where do students see adopt-a-highway signs? Find out what the adoption options are in their community. Find out what the adoption options are in OTHER communities—adopt-a-beach, adopt-a-forest, adopt-a-park, etc.

Invite Keep Pennsylvania Beautiful staff to share their experience helping to organize local road adoptions or community cleanups of illegal dump sites. They have some programs especially designed for kids. The Fugitive Tire Program helps organized, pre-registered youth groups, such as Scouts, church groups and clubs, clean up trashed tires from their neighborhoods and roads, while learning about the environment and earning a bounty for each tire they capture. Similar groups can also clean up and adopt a road, street, or block that they care about for regular litter removal. Signs identifying the group and the adoption are placed at either end of the area and the group agrees to maintain it for at least two years. The Keep Pennsylvania Beautiful adoption program helps caring groups adopt most locally maintained roads and complements PennDOT's Adopt-A-Highway program which offers adoption of state-maintained roads.

Learn more about the Keep Pennsylvania Beautiful programs by logging on to www.keppabeautiful.org. Go to "About Us/ Affiliate Network" to find out if there is a Keep Pennsylvania Beautiful affiliate in your county. The folks who administer county activities have lots of educational materials for kids and adults alike and are available for presentations. Many affiliates have their activities listed so that if you wanted to participate, information on specific activities is available.



Page 9

Look at this pile of trash and make a list of the things that could be disposed of some place other than a landfill.

- | | |
|-------------|---|
| Ex. — tires | hard-to-recycle event |
| leaves | compost |
| stove | hard-to-recycle event or scrap metal dealer |
| clothing | Goodwill, Salvation Army, yard sale |
| computer | electronics recycling |

plastic bottles recycling
 cans recycling
 toys reuse (give away), yard sale, trade
 newspapers recycle

See Activity—**What is Recycling? Really...** Page 11
 This will help students do an inventory of their community to identify the materials that can be kept out of the landfill and discover what some of the other options are for dealing with solid waste.

Invite a scrap metal dealer into the classroom to talk about what he does with freon containing appliances (refrigerators and air conditioners, which often end up over a hillside) and where he buys and sells the metals he deals in.

See Box on Page 1—**Everything...Including the Kitchen Sink**

Page 10 Have you ever done any of these **REUSE** things?

WRITING—Think about a time when either YOU have done one of these activities that reuse something or SOMEONE ELSE has given you something they no longer needed that you have enjoyed. Write about it and share with your classmates.

Page 11 See Box on Page 1—**Recycling in My Community**
 See Activity—**Closing the Loop & the 3 Rs** Page 15

Page 12 Have students contact their municipal officials by phone or website e-mail to identify the landfill(s) where their trash is deposited. Does your area have a transfer station? See if you can get a landfill or transfer station employee to come and speak to your class about what goes on there, or better yet, take a field trip to visit one.
 Have kids go online and find out more about landfills, what laws there are governing them and what is allowed into them.
www.howstuffworks.com/landfill.htm is one place to start.

This is a great time for kids to see the reality of where their trash really goes after it is picked up. Having them see first hand, the sights, sounds and smells of this process will, hopefully, help them to understand just how important it is for them to **OWN the 3 Rs** in their lives.

Page 13 Having local experts come into the classroom and talk about how landfills are managed would help students understand the bigger picture of how this land is governed and the rules administering its use. Here's another good website, www.learner.org/exhibits/garbage/landfill. Look on the Department of Environmental Protection (DEP) website to find out where Pennsylvania disposes its trash. www.dep.state.pa.us then the keyword landfill site

Page 14 The DEP website (above) will also show you the location of Pennsylvania's resource recovery or waste-to-energy plants. If you are close enough to visit one, they are VERY fascinating to watch in operation. The DEP website listed above will give you this information.

Page 9

4.2.7. Renewable and Nonrenewable Resources

D. Describe the role of recycling and waste management.

- Identify materials that can be recycled in the community.

Page 9

4.3.7. Environmental Health

B. Describe how human actions affect the health of the environment.

- Identify residential and industrial sources of pollution and their effects on the environment.

4.8.7. Humans and the Environment

C. Explain how human activities may affect local, regional, and national environments.

- Explain how a particular human activity has changed the local area over the years.

Page 11

4.2.7. Renewable and Nonrenewable Resources

D. Describe the role of recycling and waste management.

- Identify materials that can be recycled in the community.
- Explain the process of closing the loop in recycling.
- Describe methods that could be used to reuse materials for new products.

See Box on Page 1—**Composting—What Happens to Leaves, Grass and Food Scraps?**

Page 15 The History Channel’s video — **Garbage** (mentioned in *Where to Start*) goes into detail about the trash in space. At the time the film was made, they noted that there were over 9,000 significant pieces of trash in space that needed to be monitored 24 hours a day. It takes a large investment in both manpower and equipment for our space program to maintain this constant surveillance.

Page 16 See if you can find all the words!

Page 17 See Box on Page 1—**Disposable Products—What Do They Really Cost?**
See Box on Page 1—**What’s in YOUR Trash? Classroom Waste Audit**

Page 18 See Box on Page 1—**Do The Right Thing....Recycle**
See Box on Page 1—**Why Are There Laws That Address Solid Waste?**

Learn about **Pennsylvania’s Recycling Law**. Log on to the Department of Environmental Protection’s website at www.dep.state.pa.us to find out lots more and locate recycling information.

Is your school mandated to recycle? (Call or write to your local municipality.)

Does your school have a recycling policy? (The DEP site can help.)

Is this mandate being implemented?

Does your community provide recycling opportunities for the residents?

Does your family recycle? What items? Could they do more?

Invite your county recycling coordinator to share information on local recycling laws and programs.

Discuss **closing the loop**—the **reduce, reuse, recycle and buy recycled** circle which helps us manage our waste.

SCIENCE —Learn about nature’s recyclers. Worm bins are available to schools for learning about vermiculture and what wonderful recyclers worms are. Watching these little critters turn lunch scraps and newspaper into valuable planting medium is like magic. Some science catalogs offer bins at a very reasonable cost or try the science/environmental education department of a local college. They are also available through Worm World at www.wormworld.com or your local recycling coordinator. They often have materials available to share with teachers. **It’s amazing what is out there if you just ask!**

Introduce the concept of **watersheds** to your students. Whenever rain falls, snow melts, or people put something on or into the ground, eventually it drains into the nearest creek or stream, which flows into a river, which then flows into the ocean. Help them to understand the impact humans have on the plants and animals in a watershed. To learn more about Pennsylvania’s watershed asso-

Page 14

4.2.7. Renewable and Nonrenewable Resources

D. Describe the role of recycling and waste management.

- Compare the decomposition rates of different organic materials.

Page 17

4.2.7. Renewable and Nonrenewable Resources

D. Describe the role of recycling and waste management.

- Evaluate the costs and benefits of disposable products.

Page 18

4.2.7. Renewable and Nonrenewable Resources

D. Describe the role of recycling and waste management.

- Identify materials that can be recycled in the community.
- Describe methods that could be used to reuse materials for new products.

4.9.7. Environmental Laws and Regulations

A. Explain the role of environmental laws and regulations.

- Identify and explain environmental laws and regulations
- Explain the role of local and state agencies in enforcing environmental laws and regulations.

ciations (POWR) log onto
www.pawatersheds.org.

Pgs. 19-20 These are real kids making a real difference in their world. Work with your students to identify problems in their community where they might be able to make a difference. One place to start is in your school. Use the information gathered in the Community Inventory listed in the resources, to help your students find out where the trash goes in their area. If there is not a recycling program currently in place, start small and implement one — a single item at a time.

Page 21 **SOCIAL STUDIES** — The immigrants who came to the United States over the years were used to conserving, reusing, mending, and fixing their belongings. Not everyone today mends, fixes, composts, or reuses. Share “trash treasures” that your children’s families have found or been given and then either reused or repaired. Help children to understand that just because something is broken or they don’t want it anymore, it doesn’t have to go into the trash. Entire agencies exist to find good uses for items others don’t want or need any longer – Goodwill, The Salvation Army, church rummage sales, consignment shops, second-hand stores, yard sales, and flea markets. Non-profit groups collect unused food from restaurants and transport it to soup kitchens and food pantries to feed hungry people.

One man’s trash is another man’s treasure.

Organize a class or school flea market. Collect items no longer wanted (with parent’s permission!), price (decide on something reasonable – everything less than \$1) and have a fundraiser for your class project, school library, or to pay for a special theme-related presenter. Some schools do this monthly to give different classes the experience and responsibility of organizing, working on, and receiving the \$ from these events.

Organize a **SWAP**. Collect items of similar value, such as used books or games, and for every item you bring in, you may take a “new” one home.

RESEARCH - Find out what your school or classroom does with its waste, such as paper, boxes, books, food, desks, chairs and trash. Is there a way your class could have a positive impact on this?

If you have a PA CleanWays chapter in your county, ask to use the Litter IQ Board, an interactive electronic display board that creates litter awareness, in your classroom or school for a week or so.

Page 22 Use the questions on this page to help find out how your community deals with its waste. The websites will help you learn more about the 3 Rs. Encourage students to write or email us with comments, questions or to share the choices they’re making to reduce, reuse and recycle in their homes and schools.



What is Recycling ? Really....

Pennsylvania Department of Education
Academic Standards for Environment and Ecology
4.2.7 Renewable and Nonrenewable Resources
D. Describe the role of recycling and waste management.

- Identify materials that can be recycled in the community.

Other Academic Areas:

Reading, Writing, Speaking and Listening
Science and Technology

Recommended Grade Level: Intermediate

Objectives:

The purpose of these activities is for students to understand the role of recycling and waste management in their community. This will allow students to make knowledgeable disposal choices and support informed decisions about waste management at school and home.

Students will:

1. Conduct a community investigation to discover what the options are for dealing with trash in their community.
2. Become knowledgeable about the laws, municipal agencies, private companies and coordinators who manage solid waste issues in their community.
3. Based on their community investigation, students will create a list of additional questions for local experts to answer when invited into their classroom.
4. Students will visit a transfer station, waste-to-energy facility or landfill in their community to learn first hand what the waste handling process looks like and how it is managed.

Materials:

1. Enclosed Community Investigation
2. Chart paper for brainstorming
3. Phone access & phone book
4. Access to the Internet (if possible)
5. Transportation for field trip

Activity, Step 1—Initial Brainstorming (Use a Web format)

1. Using the chart paper, write the word trash in the center and put a circle around it.
2. Ask students to brainstorm the kinds of trash they produce. (i.e. paper, food scraps, plastic, metal, tires, magazines, etc.) Draw a line out from the center circle and write each category of trash in another circle.
3. Now, brainstorm where they think that trash SHOULD go. Write their ideas in additional circles radiating out from the 'kinds of trash' circles.

Activity, Step 2—Community Investigation

1. Before you begin, hand out the Community Investigation and ask students to read through it. See if they have ideas on what some of the answers are. They could pencil them in and then do research when they actually begin the investigation to see if they are accurate.
2. Have them make a list of who they need to contact and brainstorm questions so that they won't have to call them back.
3. Once they complete the Community Investigation, make a list of additional questions or things to find out about. Invite local experts in to be interviewed or do it over the phone.
4. Visit part or all of the waste disposal process in your community. Take a field trip to the transfer station, waste to energy facility or landfill to see what this process looks like and how it is managed.



Community Investigation

Where Does My Trash Go?

1. Does my community have mandated (required by law) waste pickup? Yes
 No

2. Who are the waste haulers in my community? *(Use chart below and include addresses and phone numbers; you might need them later.)*



Indicate whether they are:

Local haulers,

Municipal employees *(work for the municipality)*, or are they part of a large

National (or regional) waste hauler.

Do they offer curbside recycling as part of their services?



Identify Waste Haulers

Name Recycle?	Address	Phone	L, M or N	Y or N
• _____	_____	_____	_____	_____
• _____	_____	_____	_____	_____
• _____	_____	_____	_____	_____
• _____	_____	_____	_____	_____
• _____	_____	_____	_____	_____

3. Is my community mandated to have a recycling program? Yes No

4. Does my county have a designated recycling coordinator? *(Name, address, telephone #.)*



Community Investigation: Continued

5. What does my community collect for recycling? (i.e., *Paper, glass, plastic, aluminum and steel cans, newspaper, magazines. Municipalities are usually only mandated to recycle three items; some recycle more.*)

6. Is there a permanent drop off recycling location and/or annual one-day community collection of hard to recycle items at various locations throughout the community? (*Appliances, batteries, Christmas trees, bulky waste, tires, electronics, etc.*)

7. Where does the hauler take the recycled items? Where are they sent from there?



plastic



glass



aluminum



steel cans



paper

corrugated cardboard



appliances



batteries



tires



Christmas trees



leaves/yard waste



Community Investigation: Continued

8. Do the recycled items generate money? Does it cover the recycling costs?

9. Does my community collect leaves and/or other organic material and compost them?

Yes No

10. Find out where the trash goes after it is picked up:

- Does it first go to a transfer station?
- To which landfill(s) or waste-to-energy plants?
- The cost per ton?
- What they take and don't take. (*tires, metal, paint, leaves, brush, construction waste, household hazardous waste, computers, etc.*)



Transfer Station, Landfill or Waste-to-Energy Plant	Cost per ton	Exceptions (Items they do not take)
--	--------------	--

11. If your county has a waste-to-energy plant, where does the burned ash go? Are there any special regulations about handling it?

12. How does my community handle the items that are NOT accepted by the landfill or waste-to-energy plant? Any special collections?



13. ~~How many years of landfill space are remaining at landfills used by my county? How has the county planned for additional capacity after that time?~~

14. If your county has a local solid waste authority, find out who serves on it, when they meet, and the issues they are working on. Attend some meetings and ask your county recycling coordinator or solid waste coordinator how your county plans for solid waste disposal and recycling.



15. Research which businesses, industry, government agencies and colleges in your community recycle and what they recycle.

Community Investigation: Continued

16. Public schools must recycle if they are in a community. But not all of them do. Find out if YOUR school recycles paper, aluminum cans, or plastic. If your school doesn't recycle, see what you can do to help start a recycling project for even one item.

17. Find out what other organizations (non-profit, youth, watershed groups, environmental, business clubs, etc.) have special collections, support recycling or help communities manage waste.





Closing the Loop & the 3 Rs

**Pennsylvania Department of Education
Academic Standards for Environment and Ecology
4.2.7 Renewable and Nonrenewable Resources**

D. Describe the role of recycling and waste management.

- Explain the process of closing the loop in recycling.
- Describe methods that could be used to reuse materials for new products.

Other Academic Areas:

Reading, Writing, Speaking and Listening
Science and Technology

Recommended Grade Level: Intermediate

Objectives:

The purpose of these activities is for students to understand and explain the process of closing the loop in recycling. They will research and be able to describe methods that could be used to reuse materials for new products.

Students will:

1. Research and investigate recycling and the meaning of three chasing arrows in the recycling symbol. When finished they will be able to explain it to others.
2. Students will create a game that will help friends and family learn about recycling.
3. Research and investigate methods that could be used to reuse materials for new products.

Materials:

1. Resources and Student Page
2. Access to the Internet for research (Website Resource Guide)
3. Materials to make a 'light up' board and directions: thin board or heavy paper, mini light bulb, 2 extension cords, scissors, electrical tape, duct tape, brass fasteners, 2 batteries, markers, pictures of used and reused items (clip art, magazines or hand drawn), and 2 brass rods.

Activity, Step 1

1. Decide whether students will work individually or with partners. Have them research recycling and the recycling symbol.
2. Have students create a visual that illustrates the recycling symbol and have them practice explaining it to each other in preparation to explain it to other students and family.

Activity, Step 2

1. Have students, alone or with partners, complete the Student Page.
2. Discuss their findings: were they surprised by anything they found out, are there any recyclers nearby, will they change any of their disposal habits?

Activity, Step 3

1. Using the directions for making a 'light up' board, have students create a learning game using the materials listed above. Put pictures of used items on the left side and how they could be reused on the right. When the player makes a correct match, with the brass rods, the light bulb lights up.
2. Share the game with family, classmates or younger students.

Closing the Loop & the 3 R's



1. Find out what the three chasing arrows of the recycling symbol stand for.
2. What does it mean to 'close the loop' in recycling?
(Use the website resource guide)
Check out www.dep.state.pa.us (keyword "Buy Recycled")
3. List 6 things you can do to reduce waste.
4. List 6 things you can do to reuse waste.
5. List 3-5 things that can be done to recycle besides separating your bottles, cans and plastics for collection.
6. List 3-5 things you can do to help folks learn how to buy recycled items, including items that are made in Pennsylvania.
7. List 3-5 things you can do to reduce the number of newspapers you use.
8. How can you tell if something is **able to be** recycled or is **made out of** recycled materials?

Student Page Answers - Activity 3

1. The three chasing arrows create a symbol for recycling because each arrow represents a step in the recycling process.
 - The first arrow represents you, the consumer, putting your recyclables out at the curb or taking them to a drop-off center to be recycled.
 - The second arrow represents those materials being made into new items.
 - The third arrow represents you, the consumer, buying products made from recycled materials and completes the recycling “loop”.
2. **“Closing the loop”** in recycling means buying recycled products. This is important because buying recycled creates markets for recycled materials and a demand for materials with recycled content. If we did not buy items with recycled content, recycling would cease to exist. The “loop” needs to stay “active” in order for us to conserve natural resources, energy, clean air, water, landfill space and money.
3. **Reduce** the amount and toxicity of waste you throw away:
 - Buy fewer new products.
 - Buy only amounts of paint and household cleaners and garden products that you actually need.
 - Share items with friends, co-workers, and neighbors (e.g. specialty tools) or rent them.
 - Buy food in bulk (or large packages).
 - Buy durable, repairable products. Avoid paper plates and plastic silverware.
 - Reduce purchases of non-recyclable items (polystyrene, juice boxes etc.).
 - Buy items with minimum packaging.
 - Bring your own shopping bags.
 - Bring your own mug.
 - Share a magazine subscription or book with a friend.
 - Use your library instead of buying books, magazines and newspapers.
 - Request “no bag” for small purchases.
 - Use cloth napkins, kitchen towels and sponges instead those made of paper.

To get off existing mailing lists, write or call the companies directly. Many companies have toll-free numbers and postage-paid envelopes. You can also refuse unwanted mail by writing “Refused, Return to Sender” across the unopened envelope and drop it in the mailbox without any additional postage. Reduce junk mail by writing The Direct Marketing Association at 6 East 43rd St., PO Box 3861, Grand Central Station, New York, NY 10163, and ask to be eliminated from any new mailing lists.

4. **Reuse** your containers and products - repair what is broken or give it to someone who can repair it.
 - Reuse plastic and paper bags.
 - Donate ribbon pieces, egg cartons, etc., to preschools for arts & crafts projects.
 - Take your magazines to your doctor's office or hospital waiting rooms to share them.
 - Use comics for wrapping paper.
 - Line your garden beds with seven layers of old newspapers, then apply mulch.
 - Create mini-greenhouses for your plants from used milk jugs or soda bottles.
 - Plant seeds in used beverage containers and watch them grow.
 - Wear hand-me-down clothes.
 - Use tattered T-shirts and other clothing for car polishing and cleaning rags.
 - Save your favorite old clothing and make a quilt or have one made for you.

- Return wire coat hangers to the dry cleaners.
- Donate usable furniture and clothing to thrift shops or have a yard sale.
- Make double-sided copies when using copier machines.

5. **Recycle** as much as possible and buy products with recycled content:

- Recycle paper, newspapers, plastic containers, metal, aluminum beverage cans, glass, motor oil, batteries, and anti-freeze.
- Recycle your used appliances and vehicles at your local scrap dealer's yard.
- Recycle tires at local collection events, if available, or ask your county recycling coordinator where you can recycle them.
- Recycle ink and toner cartridges at the store where you purchased them, or send back to the manufacturer. Some counties have local collection events for these items. Some counties have e-cycling events for used computers, monitors and printers.
- Request recycled paper for photocopying.
- Ask your bank, phone, gas and power companies to use recycled paper for their bills, notices, and statements.

Ask your school to use recycled paper and participate in your local curbside program or take your recyclables to drop-off locations. To learn about your nearest locations for recycling, go to www.1800cleanup.org and type in your zip code.

6. **How to Buy Recycled:**

- Look for products that contain recycled content and purchase them to close the loop on recycling. If you're not "buying recycled," you're not recycling.
- Shop at businesses offering recyclable or biodegradable products or packaging.
- At the grocery store, check for environmental symbols on the labels of cereal, cookie and cracker boxes and laundry detergent and cleaners for containers using recycled content.
- Purchase recycled paper stationery and office paper.
- Check out the Pennsylvania Recycled Products Manufacturers' list on the PA Department of Environmental Protection website at www.dep.state.pa.us by typing in "buy recycled" into the "direct links" window and learn where you can get products like these made in Pennsylvania: Office supplies, building materials, electronics, recreation, clothing and accessories, lawn and garden items, agricultural items and many others.
- Automotive supplies including batteries, recycled motor oil, and even automobile carpet
- Bottles and containers made by Owens-Brockway which recycles glass or high-density polyethylene (HDPE) milk jugs and laundry detergent bottles made into new containers by Graham Packaging Company in York.
- Building materials like plastic lumber for picnic tables, fences, and decks made from milk jugs; insulation made from newspapers; and even ceiling tiles made by Armstrong World Industries of Marietta from old newspapers and phone books! Carlisle Tire and Wheel Company makes playground surfacing and mats from tires!
- Cans and metals are recycled by such companies as the U.S. Steel - Edgar Thompson Works in Braddock.
- In Dillsburg, clothing and accessories, like rag rugs are made from old clothing. Plastic soda bottles are turned into clothing by firms like Good Heavens of Narbareth and Performance Sports Apparel of Reading.
- Yard wastes are made into compost and mulch by a number of companies, and the Henry Molded Products Company of Lebanon makes flower and nursery pots from old newspapers and mixed office paper.
- Such companies as Sonoco of Downingtown, making paper tubs and packaging partitions from old corrugated cardboard and newspapers create packaging materials.

- Paper and office supplies are recycled and remanufactured by such firms as Greenline Paper Company of York making new office paper from old office paper; American Thermoplastic Company of Pittsburgh making loose-leaf binders from used polyvinyl chloride (PVC); ink cartridges are refilled, and even office furniture becomes new again thanks to Pennsylvania companies.
- Recycling and refuse containers are made from milk jugs and detergent bottles you place in your curbside bin by Rehrig Pacific Company of Erie and Windsor Barrel Works of Kempton.
- For further information about recycling, contact your municipal or county recycling coordinator or solid waste authority. The Pennsylvania Department of Environmental Protection also has recycling information on its website at www.dep.state.pa.us.
- To get a list of recycled products made in Pennsylvania, contact the Pennsylvania Resources Council at www.prc.org.

7. **Newspapers**

- Go to the library or other public place to read them.
- Share a subscription with someone else.
- Read it on-line.
- Only get the Sunday paper if you don't have time to read all the weekday ones.
- Use them for wrapping paper (comics are colorful).
- Use them in your garden as mulch between rows and around plants.
- Leave them at a drop off spot for a farmer to pick up and shred for animal bedding.

8. **Able to be Recycled or Made out of Recycled Materials**

- Look on the tags or label.
- Contact the manufacturer.

Able to be recycled



Made from recycled



Make An Electric Recycling Board

1. On a large piece of heavy cardboard or wallboard, draw or paste pictures of **trash that can be recycled (used)** on the left side of the board and **what that item can be recycled into (reused)** on the right side of the board.
2. Under each picture **make a small hole** (for the brass fasteners.) Also make holes at the top of the board (for the light bulb) and at the bottom left and right hand corners (for the extension cords.)
3. **Insert a brass fastener** into each hole that is under the picture.
4. On the back of the chart, **connect the prongs** of the fasteners in pairs with a piece of extension cord split in half (wire exposed to wrap around fastener.) **Cut the extension cord** to lengths needed to connect the old product (used) with the correct recycled product (reused).
5. At the top center of the front of the board, **attach a small light bulb** through the hole and secure with electrical tape.
6. On the back of the board, use duct tape to **attach two batteries** to the board. (positive end to negative end)
7. Next, take another piece of old extension cord cut in half and with duct tape **attach** one end of one piece of extension cord (with wire exposed) to the **right side** of the battery pairs. **Attach** one end of the other piece of extension cord (wire exposed) to the **left end** of the battery pairs (with wire exposed.)
8. At the location of the light bulb, **expose the wire of the extension cord**. Make sure the wire touches the metal on the base of the light bulb. **Secure with electrical tape** making sure all the exposed wire is covered.
9. From the back of the board, **tape the excess of the 2 extension cords** around the edge of the chart and through holes at the bottom so they come out the front.
10. **Wrap the exposed wire end of each extension cord around the end of a brass rod**. Secure with electrical tape making sure to wrap each rod with enough electrical tape to hold on to. Leave the end of the brass rod exposed. When using the Electric Recycling Board, hold the brass rods by the ends covered in electrical tape. **DO NOT** touch the brass rods.
11. When one rod is touched to the brass fastener under the item to be recycled and the other to what it can be made into, the light bulb will turn on. Keep trying until you get the correct answer!



Look on our website www.keppabeautiful.org to find out how to contact the Keep Pennsylvania Beautiful affiliate in your area. Invite the representative to speak to your class about littering, illegal dumping, and other topics dealing with solid waste, recycling, and community stewardship.