School-Age
Summer Mini Camp Curriculum
Grades K-7

Funding for this projects provided by Community POWER:
Partners in Waste Reduction and Education
2007-2208

Materials assembled by Louise Miller
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Bibliography

Materials in this curriculum have been assembled from the following sources:

"Waste Not" an Elementary curriculum by the Minnesota Environmental Protection Agency

"Family Fun Crafts" by Family Fun Magazine

"Nature Crafts for Kids" by Discovery Toys

"Animal Tracks" a curriculum by the National Wildlife Federation

Hand outs are provided by the Minnesota Pollution Control Agency: www.reduce.org.
How to Use this Curriculum:

This Curriculum is designed as a mini-camp to be taught over four consecutive one-hour periods. The lessons could be separated in anyway you see fit, i.e. once a week over four weeks, depending on how much time you have to devote to the topics.

The lessons are also divided by age group, but if you feel a different lesson addresses your group’s interest, they can be adapted. Most activities can be completed in one hour or less, however there are a few lessons, such as tracking your lunches, that may take several days to complete. Each lesson has a take home aspect, such as an informational hand-out for students to share with their families.

Please complete the student survey at the beginning of the program. Collect the surveys. After at least two weeks of completing the mini-camp, complete a follow-up survey with students. Label the surveys as “Pre” and “Post.” Send completed surveys to Louise Miller, Project Coordinator, 5604 Whited Ave. Minnetonka, MN 55345.

The original curriculum was created on single page copies, however whenever you copy the sheets for lessons or as hand-outs, please make two-sided copies in order to save paper. You may copy the hand-outs from the Pollution Control Agency or you may request originals free of charge at www.reduce.org.

Please direct any questions or comments about the curriculum to: louise_miller@hopkins.k12.mn.us

All survey materials must be turned in by July 30, 2008. For purposes of the grant, any photos of the mini-camps would be greatly appreciated. Send photos to the e-mail address above.

Thank You.
Summer School Survey

Number of students ____________  Grades ____________

1. Do you recycle at your home? (paper, cans, glass or plastic)

2. At home, I reuse the following items:
   Plastic containers
   Clothes
   Plastic Bags
   Paper Bags
   Boxes
   Food leftovers

3. How often does your family eat out?
   - Never
   - Once a Week
   - Twice a Week
   - More than twice

4. My Family buys these things in bulk (big amounts or extra large sizes)
   - Canned Goods
   - Toilet Paper or Paper Towels
   - Chips or Snacks
   - Other:

5. My parents have put out poison for bugs or pests in my home
   - Yes
   - No
   - I don’t know
Community Power
Summer 2008 School Age Mini Camp

1-2 Group

Day One
Your Weight in Garbage:
  Time Needed for the Activity: One Hour
  Materials Needed:
    Large Sheets of Paper
    Markers
    Information Sheets
      The Trash Creature Background
      Top 10 List
      Garbage Pizza
      Reduce Trash When You Shop
    Assorted objects to make into sculptures, clean trash items,
    Paper clips, foil balls, etc.

Review the Garbage Pizza sheet to show the percentages of garbage we produce.
Discuss with the group ways to try to reduce what you throw away. Put out the
trash materials and follow the directions of the Trash Creature activity to create a
sculpture. Send home the Reduce Trash When you Shop pamphlet.

Day Two
Zero Waste Lunch:
  Time Needed for the Activity: One Hour
  Materials Needed:
    Information Sheets
      Creating Less Trash at School pamphlet
      Start with your Own Lunch Activity
      Going Back to School Green pamphlet
      Examples of a No-Waste Lunch, containers, cloth napkins, silverware,
      reusable beverage bottles
      Tote Bags
      Permanent markers

Review the No-Waste Lunch contents with the students. Review the first part of the
Start with your Own Lunch Activity. Ask your students to examine their lunches.
Fill the tally sheets out for the next week. Decorate the tote bags to reuse again.
1-2 Group

Day Three
Reduce, Reuse, Recycle:
Time Needed for the Activity: One Hour
Materials Needed:
Information Sheets
    Three R's Relay
    Relay copy sheets
    Tips for Reducing Paper
    The Story of the Green Guardian
    Code of Honor Activity
    Markers
    Newspaper
    Paper Hat Directions


Day Four
How Toxic is Your Home?
Time Needed for the Activity: One Hour
Materials Needed:
    What Does the Label Say?
    Words of Warning Glossary
    Where are the Toxic Products in my Home?
    Supplies for Bug Kits
        Hand out about Reducing Pests
        Sandwich Bags
        Steel Wool
        Clothes Pins
        Duct Tape
        Toilet Paper Rolls
        Screen

Read through the glossary and the What Does the Label Say sheet. Bring in examples of household items to look over. Talk about alternatives. Make Bug Kits and discuss contents. Send home Reducing Toxins pamphlet.
3. The Trash Creature
Background
The raccoon (“mascot” of this chapter in the student book, Animal Tracks) is always exploring new places. It touches items with its sensitive paws to identify them and find out if they’re useful. Raccoons often find uses in things that people throw away. Creative reuse is a constructive way to help the environment. Artists and sculptors throughout the world are famous for finding new uses for cast-off items.

Subjects:
Art, Biology, Geography

Process Skills:
Hands-on manipulation, visualizing, planning, writing, creative thinking

Grades:
3–6

Cognitive Task Level:
Simple

Time for Activity:
One or two 50-minute class periods

Key Vocabulary:
Create, creature, continent, habitat, reuse

Intended Learning Outcomes:
Completing this activity will allow students to:
• Gain an appreciation of the “hidden value” of old or discarded items
• Develop their creative skills
• Consider animal needs and habitats.

By offering your students this fun activity, you are encouraging their natural creativity and setting a good example for reuse. As your students think of natural history information about their “trash creatures,” they learn about other animals. If they need help thinking of ideas, have a few animal books or field guides available for them.

Materials (Suggestions to inspire creativity)
- Paper clips
- Broken objects (except for broken glass)
- Pieces of packages
- Bottle tops
- Foil balls
- Rubber bands
- Strapping materials
- Packing peanuts
- Polystyrene meat trays
- Pieces of string
- Fabric scraps
- Glue, stapler, paints, glitter
- Handout
  • Trash creature description card

They can create any type of animal they wish, either real or fantasy, and they can decorate their trash creature with paints, glitter etc.

3. Cut the Trash creature description card so each student gets one. Have the students fill out the Trash creature description card. They must answer all the questions about their creature. If they need help thinking of ideas, have a few animal books or field guides available for them.

4. Create an art shelf in the classroom to display the finished trash creatures with their description cards. Invite other classes in. Have your students explain why they made their art using items that would otherwise have been thrown away, and how they thought up the information about their trash creatures.

Extensions/Modifications
- You may choose to do this activity after a visit to the zoo.
- For a simpler version of this activity, bring in polystyrene molds of shapes or animals from the hobby store. Let your students decorate the shapes with discarded materials or use them as the basis from which to add and build.
- More advanced students should first draw their art design on paper before they make it.
- Have your class work together on a life-sized trash creature. Poke holes in the bottom of aluminum cans and string them together to make legs or antennae. See how big an animal you can make.
Top 10
Easy Things You Can Do to Reduce and Reuse

1. Get your name off junk mail lists
   Fill out a junk mail reduction postcard. Add privacy statements to
   anything asking for your contact info.

2. Pack a no-waste lunch
   Use a reusable lunch box or bag and use reusable containers instead of
   food storage bags. Don't forget a cloth napkin.

3. Compost your kitchen scraps
   Food waste accounts for about 11% of the garbage thrown away.
   Compost your fruit and vegetable scraps, coffee grounds and egg shells.

4. Bring a reusable mug with you
   Have a latte every day? Bring a mug with you. Buy bottled water
   wherever you go? Bring water in a refillable jug.

5. Look for less packaging, avoid disposables
   Buy in bulk or choose products with less packaging. Look at a product
   and think about how much of what you are paying for will end up in the
   trash.

6. Borrow, rent & shop used first
   Before you run to the store to buy a new item think about how much you
   will use it. Could you borrow one from a friend or neighbor, rent it at a
   local store or purchase it used?

7. Buy well, buy once
   Well-designed and constructed products that are repairable will last
   longer, and usually save you money, even if they cost more initially.

8. Sell, giveaway or donate usable clothing and
   household goods

9. Green gift giving
   Avoid over-packaged, resource-consuming gifts. Consider making a gift,
   giving an "experience" or environmentally-friendly product.

10. Educate your friends and family about waste reduction
    and reuse!
Garbage Pizza

LEARNER OUTCOMES

Students will recognize the composition of waste generated in the United States.

Students will dramatize behavior changes that will make a difference when they recycle and reduce.

MATERIALS NEEDED

- Poster: “America's Garbage Pizza”
- Overhead transparency master America’s Garbage Pizza
- A paper copy of America’s Garbage Pizza for each student.

VOCABULARY

Solid waste: Garbage, refuse, and other discarded materials resulting from human activities; does not include hazardous waste, animal waste used as fertilizer, or sewage sludge.

Mixed municipal solid waste: Garbage, refuse and other solid waste from residential, commercial, industrial and community activities; does not include auto hulks, street sweepings, ash, construction debris, mining waste, sludges, tree and agricultural wastes, tires, lead acid batteries, vehicle fluids and filters and other materials that are not disposed of with household or business trash.

Recycling: Collecting, preparing and remanufacturing recyclable materials into new products that are purchased and used.

Generation: The act or process of producing waste.

Generator: Any person or organization that generates waste.

Waste: Solid waste, sewage sludge and hazardous waste.

Waste reduction or source reduction: Any activity that prevents generation of waste including:
  - Reusing a product in its original form.
  - Increasing the life span of a product by maintaining and repairing it.
  - Changing habits of buying and using products to generate less waste or reduce the toxicity of the waste.

Manufacturers also can practice source reduction by:
  - Reducing the amount of material or toxicity in a product or package.
  - Changing product design to make it easier to repair or more durable.

NOTE TO TEACHER: At the start of this lesson, you may wish to introduce the space alien characters No-More and See-More to your students, by sending home with them the Calendar/Activity Sheets.
In the waste pizza, each slice represents a major type of material. In Minnesota, your daily pizza weighs more than five pounds. Did you know there are 12,000 pounds of waste in the typical household trash can? Every day, Americans produce a large combination of garbage. Pizza Garbage America's
TEACHING STEPS

Before teaching the lesson, display the poster entitled "Garbage Pizza." Make a transparency of the master *America's Garbage Pizza*, and also a paper copy for each student.

1. Distribute to each student a copy of *America's Garbage Pizza*. Examine and discuss the pizza. The pizza represents composition (by weight) of municipal solid waste generated in one year in the United States. Identify items in the pizza that students throw away each day. Identify and list items in the pizza that can be recycled in their community.

   - What materials make up the garbage pizza? *(Answer: Paper, yard waste, metals, glass, plastics, other and food.)*
   - What material makes up the largest slice of the pizza? *(Answer: Paper.)*
   - How could we make a difference in how much waste is disposed by handling paper differently? *(Answer: Reduce the amount of paper used and recycle more paper.)*

2. In small groups have students list paper items they use at home and school. *(Answer: Newspapers, comic books, magazines, telephone books, computer paper, writing paper, cereal boxes, shoe boxes, bags, paper towels, napkins, etc.)*

3. In small groups have students brainstorm ideas about where and how they can change their behavior to make a difference by reducing the amount of paper used at home and school. Use the table "I will make a difference" as an example for collecting the information.

4. Have each group report to the class. The report may be done in a variety of formats such as stories, poems, television interviews, panel discussions or video documentaries.

### I will make a difference

<table>
<thead>
<tr>
<th>Where?</th>
<th>How?</th>
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EXTENSIONS

1. As individuals or small groups or as a class project, make a garbage pizza using items representing waste. Use peanut shells, vegetable leaves or orange peels for food waste. For glass use safety glass from an auto body shop.

2. Show one or more of the following videos.

### It's Up to All of Us

Length: 29 minutes  
Ages: Grades 3-7  
Examines the solid waste problem in Minnesota. A young boy learns the problems and responsibilities everyone has in preserving our natural resources and recycling. Shows the recycling process and encourages students to recycle. 1989.

### Protecting Our Environment: Reduce

Length: 5 minutes  
Ages: Grade 4+  
Concrete suggestions on how we can reduce what we throw away, starting with the way we shop; includes office paper. 1991.

### Wasting Waste

Length: 18 minutes  
Ages: Grades 2-6  
Addresses solid waste disposal in Minnesota and proposes the 3Rs as more responsible waste management. Can be copied.

ASSESSMENT

1. Use multiple-choice test at the end of the unit.

2. In small groups, have students construct and perform a short skit or play dramatizing behavior changes that will make a difference when they recycle and reduce paper waste.

MINNESOTA OFFICE OF WASTE MANAGEMENT

Revised December 1993
You probably don't go to the store saying, "I think I'll buy some garbage today." But depending on which products you choose, that is at least partly what you're doing. By purchasing stuff that's over-packaged, disposable, or of poor quality, your cash can soon end up as trash.

And we pay for this garbage again and again — when it's picked up by the garbage haulers, and through your taxes which help pay for things like recycling, landfilling, incineration, and clean-up.

Reducing the waste you create through your buying habits helps prevent the costs and hassle of trash. Read on to learn more about how you can make a difference through your shopping.

What can I do?

**Purchase products that are returnable, reusable, or refillable**

Purchase reusable and refillable containers to use in your home instead of disposable items. Think about ways to reuse items in your home. Look for ways to reduce the amount of trash you throw in the garbage by making good purchasing decisions and looking for ways to reduce.

**Example:** Avoid buying single-use items like paper or plastic plates, cups and disposable silverware. You will spend more money buying these types of items and throwing them away than you would if you used reusable tableware.

**Benefits:** Reusable items eliminate or reduce the number of disposable items thrown away and the costs of disposing of them.

**TO LEARN MORE**

[www.reduce.org](http://www.reduce.org)
Get the most out of what you buy

The things we buy today will eventually become waste in the future. Here are some questions to ask before you buy to protect your investment and prevent wasting time and money.

Is it reliable? Ask the “experts” — people or organizations who have tested or repaired the product you want to buy. Evaluate the repair history of that product. Compare warranties. A longer warranty often means that the manufacturer feels confident that it will last longer.

What does it really cost? The purchase price is not the same as the cost to use and maintain a product. The longer you own something, the less it costs over time.

Can I repair or upgrade it? Buying products that are easy to repair will make your initial investment last longer. Upgrading lets you have “state-of-the-art” equipment with less waste.

Purchase products in bulk or with the least amount of packaging

Buy what you need and buy products in bulk containers and concentrates with less packaging. Shop in the bulk aisle at the grocery store for things that you seem to be buying often and have long shelf lives such as detergents, dog food, pasta, cereal, cleaners, and paper products. Buying in bulk will decrease waste and the total cost. Watch out for individually wrapped items that are packaged together and sold as a bulk item. You will be getting a lot more packaging than you were counting on.

Example: Next time you go to the store, make a list of what you need. Then look for opportunities to buy in bulk or buy products that have less packaging. Look at a product and think about how much of what you are paying for will end up in the trash.

Benefits: Not only are you saving money, but you won’t have to go to the store as often. When you shop smart by buying things in bulk or in concentrate, you can reduce the amount of packaging headed to the trash.

Extending the life of your rechargeable devices

1. Read and follow the charging instructions provided with your product. Each charger utilizes a specific strategy to charge the battery.
2. Charge your new battery overnight (14–16 hours) before using it. This is called “initializing” and will enable you to obtain maximum battery capacity.
3. Let a discharged battery cool to room temperature before recharging. A warm battery will signal a thermal cut-off switch to stop the charging process prematurely, and the battery will not get a full charge.
4. Avoid recharging batteries when they are close to fully charged already. A discharged battery can be detected by a sharp drop in speed or power, or by a reduction in the number of power indicators.
5. Don’t return a fully charged battery to the charger for an “extra boost.” This can overcharge the cells and significantly shorten their life span.
6. Don’t use the charger as a stand. Only use the charger if your rechargeable appliance — phone, power tool or electric razor — needs to be fully recharged. Continuous charging will shorten battery life.

Source: Rechargeable Battery Recycling Corporation
Choose the least hazardous cleaning products

With so many choices of products to clean your house, it can be difficult to choose the best one. Instead of buying many different types of cleaners, use one general-purpose cleaner.

Buy cleaning products with the least dangerous signal word: caution, warning, danger or poison. Use the least dangerous product to do the job. You can also try home remedies such as vinegar and water to cut grease, and baking soda to scrub stains.

Apply the tape measure before the paint.

When buying paint for your home, measure first. Calculate the area to be painted (height x width = total square feet). One gallon of paint covers about 400 square feet. Read labels and choose the least hazardous paint, either low volatile organic compounds (VOC) or water-based paint, stains, finishes and paint stripper when possible. To prevent paint from drying out, cover the paint can with plastic wrap, replace the lid securely and store the paint upside down. Use stored paint for touch-up jobs or smaller projects, Blend similar colors for larger jobs or use as a primer when the finish is not critical.

Benefits: By buying only what you need, you will have less paint to store or dispose of and you'll save money up front by buying less paint in the first place.
Rent or borrow instead of buying

By renting equipment, you can avoid having to purchase items that you may only use a few times. Some of the most commonly rented items are trailers, lawn care equipment, tables and chairs, ladders, power tools, tents, and tree-trimming equipment. You could also borrow items from friends or family to avoid purchasing.

Example: Rent or borrow items for your family or neighborhood get-together. Churches and schools are great resources for tables and chairs, and tents can be rented from most party rental centers. Renting reusable dishware from banquet halls for events and gatherings can prevent waste from disposable cups, plates, and silverware.

Benefits: Renting items saves you money and time, plus it can reduce the amount of trash created by these events. Often the rental center will drop off and pick up the items for you.

To learn more about what you can do:

www.reduce.org

Your county solid waste office is a great resource for waste reduction materials, including local waste and environmental information, education resources, and speakers.
disposed of again, thus slowing down the entire team. The winning team is the one that properly disposes of all its items first.

6. The referee makes sure the item is properly disposed of in the trash or in the correct recycling bin. For each item correctly disposed of, the team gets one point. Continue until all the items have been properly placed in the correct containers.

Extensions/Modifications
- To further complicate the game, add other items that are more confusing. Call your local recycling center and find out if there is a guide to curbside recycling for your area.

3. Start With Your Own Lunch

Subjects:
Environmental Science, Math, Language Arts

Process Skills:
Observing, identifying, recording, making decisions, effecting personal change

Grades:
3–6

Cognitive Task Level:
Average

Time for Activity:
15 minutes after several lunch periods

Key Vocabulary:
Compost, landfill, packaging, recycle, reduce, replace, reuse, source reduction

Intended Learning Outcomes:
Completing this activity will allow students to:
- Take a survey of the items in their lunch boxes and observe what they're packaged in
- Consider less wasteful packaging alternatives
- Create bar graphs to see the difference they can make in the amount of waste they produce by making small simple changes.

Background
There is no “away.” The garbage we throw away actually goes to a sanitary landfill. Because we throw away so much garbage, our landfills are filling up at an alarming rate. Unnecessary waste comes from over-packaging, uneaten food, not reusing durable products like bags and containers and from not recycling containers that can be recycled. A look at the typical student lunch shows that everyone contributes to the garbage crisis.

In the past, people produced much less garbage. Thermoses carried drinks, bottles and cans were recycled, lunch boxes were reused and food waste was composted. We can still use these waste-reduction techniques today. The goal of this lesson is to practice source reduction in a small way. Even small changes can result in big changes in attitudes and awareness.

Materials
- Handout
  - My Lunch Tally Sheet
Procedure

1. Prepare an example of a lunch box filled with disposable items that produce unnecessary waste. Prepare a second one with examples of recyclable/reusable alternatives for the wasteful items. Use the “What Can I Replace It With?” section of the handout to get some ideas.

2. Tell your students to bring their lunch waste to class after lunch, including all leftover food, plastic bags, paper bags, dishes, beverage containers and napkins.

3. Hand out the My Lunch Tally Sheet for Day 1. Under “Items from my lunch” column, have them list every item that they would have thrown away, including uneaten food, napkins, plastic bags, beverage containers, plastic plates or boxes, apple cores, orange peels, etc. In order to have an effective experiment, every single item must be listed!

4. For each item listed, enter the appropriate check or response in the following six columns. For example, a plastic container could be reused, or perhaps is already being reused. A juice box is garbage and must go “away” to the landfill. Next time it could be replaced with something reusable, like a thermos, or recyclable, like an aluminum can or glass bottle.

5. Discuss with the students how they can create a garbage-free lunch. Use your sample lunch box to show them how you replaced disposable items with reusable and recyclable ones. Make an overhead transparency of the “What Can I Replace It With?” section of the handout and use this to help your students come up with their own ideas.

6. Discuss composting with your students. All food waste can be composted, except meats, cheese and very oily items, like a mayonnaise-slathered piece of bread. Your class may want to try starting a bucket of compost in the classroom to compost such food waste as fruits, vegetables and grains. See the “Owl Unit — Composting” for more ideas. Untouched food may be donated to a food bank.

7. Continue the experiment for at least three days. Students should replace disposable items with reusables, and reuse these items each day, indicating this on their tally sheets.

8. At the end of three days, have students tally up the totals in each column for each day. Have them draw a graph that shows these totals. The number of items thrown “away” should decrease and the number of items reused or recycled will increase over the period. The student will see that he or she made a big difference in the amount of garbage he or she produces.

9. Repeat this activity periodically throughout the school year.
Extensions/Modifications

- Make a large poster illustrating the results of this activity. Have it displayed in a prominent place in the school, encouraging other classes to reduce their lunch-time garbage. Or make a school-wide policy to reward students who have garbage-free lunches. Be sure the reward does not produce more garbage! A cloth lunch bag or extra recess time would be a suitable reward.
# My Lunch Tally Sheet

Name

<table>
<thead>
<tr>
<th>Day</th>
<th>Lunch Item</th>
<th>What material is it made from?</th>
<th>Disposable</th>
<th>Reusable</th>
<th>Recyclable</th>
<th>Is it reused from previous day?</th>
<th>Less wasteful alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Sample juice bottle</strong></td>
<td>plastic</td>
<td>✓</td>
<td></td>
<td>No</td>
<td>No</td>
<td>Thermos or glass bottle</td>
</tr>
</tbody>
</table>

**What can I replace it with?**

<table>
<thead>
<tr>
<th>Disposable Item</th>
<th>Replace with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper bag</td>
<td>Reusable bag or lunch box</td>
</tr>
<tr>
<td>Paper napkin</td>
<td>Cloth napkin</td>
</tr>
<tr>
<td>Disposable drink container</td>
<td>Thermos, recyclable glass or aluminum, reusable plastic</td>
</tr>
<tr>
<td>Plastic baggie</td>
<td>Rinse and reuse</td>
</tr>
<tr>
<td>Disposable box or plate</td>
<td>Reusable container, like reusable margarine tub or yogurt container</td>
</tr>
<tr>
<td>Individual packages (chips, raisins, cupcakes)</td>
<td>Buy in bulk. Less packaging and cheaper, too! Reuse the bag.</td>
</tr>
<tr>
<td>Uneaten food</td>
<td>Save for next day or donate to food bank</td>
</tr>
<tr>
<td>Food waste: Apple cores, banana peel, crackers, etc.</td>
<td>Compost</td>
</tr>
</tbody>
</table>
WHY PACK A WASTE-FREE LUNCH?

- LANDFILLS ACROSS NORTH AMERICA ARE REACHING CAPACITY—New landfills are built farther from the source of the waste, leading to increased disposal fees, truck traffic, air pollution, and wear and tear on local roads.

- INCINERATORS CREATE AIR POLLUTION—If your trash is incinerated, creating less trash will reduce the amount of harmful emissions in the air you breathe.

- CHILDREN LEARN TO CARE FOR THE PLANET—Packing a waste-free lunch is just one way that children can learn to REDUCE, REUSE, RECYCLE, AND COMPOST.

- SCHOOLS SAVE MONEY—Money normally spent on waste hauling can be used in the classroom instead.

HOW CAN I PACK A WASTE-FREE LUNCH?

- PACK LUNCHES IN THE EVENING and store them in the refrigerator overnight.

- MAXIMIZE LEFTOVERS. Prepare extra servings for dinner. Pack the leftovers in lunchboxes in the evening while you’re cleaning up.

- Stock your kitchen with FRESH FRUITS, VEGETABLES, WHOLE GRAINS, AND OTHER NUTRITIOUS FOODS.

- Keep NUTS AND DRIED FRUIT on hand.

- Buy from BULK BINS to reduce costs.

- Buy from a CSA (Community Supported Agriculture) program or FARMERS’ MARKET. Visit www.localharvest.org for locations near you.

- WRITE YOUR NAME ON ALL YOUR CONTAINERS before leaving the house.

WHAT'S A WASTE-FREE LUNCH?

- START WITH A REUSABLE LUNCHBOX, BACKPACK, OR BRIEF CASE—Avoid disposable plastic and paper bags.

- PACK YOUR FOOD IN REUSABLE CONTAINERS—Avoid plastic bags, plastic wrap, aluminum foil, and prepackaged foods whenever possible.

- INCLUDE A DRINK IN A REFILLABLE BOTTLE—Avoid single-use juice boxes, drink bottles, cans, and pouches whenever you can.

- ADD REUSABLE UTENSILS—Eliminate disposable utensils.

- USE A CLOTH NAPKIN—Eliminate paper napkins.
The Waste-free Lunchbox

Printing Instructions:

1) Print pages 2 and 3 back-to-back on size 8 1/2 X 11 paper.
2) Print on recycled paper made of at least 30% post-consumer content.
3) Fold the flyer in three vertically.
4) If you have any questions, please feel free to contact us
   by phone at: 831-457-0301
   by email at: info@obentec.com

For more info.on waste-free lunches, visit www.wastefreelunches.org.
ON THE GO?

Pack waste-free meals for:
- SCHOOL
- WORK
- AIR TRAVEL
- CAR TRIPS
- PLAY DATES
- THE PARK
- FAMILY OUTINGS
- FIELD TRIPS
- PICNICS
- DAY HIKES

REDUCE — Cut down on packaging and food waste by purchasing fresh produce and bulk bin items and reusing your bags.

REUSE — Pack lunch in reusable containers. Use a refillable drink bottle, a cloth napkin, and reusable utensils.

RECYCLE — Search out recycle bins instead of tossing recyclables in the trash. If you can’t find a recycle bin at work or school, take your recyclables home.

ROT — Start a compost pile at home, work, or school. If you’re low on space, opt for a worm bin.

WHAT CAN YOU DO?

Visit:
www.wastefreelunches.org

You’ll find:
- tips for implementing a waste-free lunch program
- waste-free lunch success stories
- strategies for reducing waste
- lunch waste statistics
- links to important waste-free lunch sites
- this free downloadable brochure

Visit:
www.laptoplunches.com

For:
- waste-free lunch kits
- nutritious lunch ideas
- tips for picky eaters
- creative lunch menus
- kid-friendly recipes
- school programs
- free e-newsletter subscription

A child taking a disposable lunch to school creates an average of 67 pounds of lunch waste annually.

The Waste-free Lunchbox

Obentec

TEL: 831-457-0301
EMAIL: info@obentec.com

Make YOUR lunches waste-free!
Creating less Trash at School

There are lots of ways that we can reduce waste at school. By thinking ahead and being creative, you can reduce your impact on the environment and save money at the same time.

What’s the problem?

Garbage follows us everywhere we go. We generate waste at home, work, and school. In fact in one week, the average Minnesotan throws away more than 40 pounds of garbage. The garbage generated in Minnesota in one year would fill four lanes of trucks, bumper-to-bumper, stretching from Albert Lea to International Falls. Even with our best efforts to recycle and compost, the amount of garbage keeps increasing every year.

What can I do?

Pack a no-waste lunch

A no-waste lunch is a meal that does not end up in the trash. You can buy food items in bulk then put them in reusable containers to carry to school.

Example: Use a reusable lunch box or bag and fill it with your lunch in reusable containers. You could also include a cloth napkin—don’t forget to bring it home so you can wash it and use it again. Another idea is to ask your school cafeteria to use items such as reusable trays, napkins, and silverware.

Benefits: You create less waste by using washable containers to pack your lunch. Packing your food in reusables is typically less expensive than buying food that comes in disposable containers.

Packaging amounts to 32 percent of Minnesota’s garbage. Typically, the more packaging a product has, the more expensive it is. You can save up to 50 percent of the cost of a product by buying the least packaged product.

The good news is that everyone can do something to reduce the amount of trash they throw away. Even while at school each of us can have a major impact on the amount of garbage produced in our state by becoming aware of how much we throw out and changing some of our habits when buying and using things.
Carry a few reusables

At the beginning of each school year, it seems as if we need to buy lots of supplies. When you go to the store, look for durable, long-lasting supplies.

**Example:** Refillable pens and pencils, a durable backpack, and a lunchbox are all great examples of products that can be used over and over again.

**Benefits:** Items that can be used more than once will reduce waste. If you take care of them, they will last a long time — and maybe you won’t have to buy new ones next year!

Take only as much food as you will eat

More than 20 percent of the food we buy gets thrown away. One way to figure out how much food you waste is to measure and track all the food you throw away from your lunch over a fixed period of time. Then you could brainstorm ways to reduce how much food you are throwing in the garbage.

**Example:** If you are bringing lunch from home, you can use an icepack so that it stays fresh until it is eaten. If you buy from the school cafeteria, only take a small portion of food; if you’re still hungry, go back for seconds!

**Benefits:** About 48 million tons of food are thrown away in the United States each year. By taking only what you can eat or sharing your extras with a friend, you are taking steps to waste less and save money.

Use less paper

Even though we recycle much of the paper we use, it is still a significant part of what we throw in the trash. Think about all of the paper you’ve thrown away that only had writing on one side. Those pieces of paper could have been used a second time, potentially cutting your paper use in half.

**Example:** Make room in your classroom or at home to put paper that has only been used on one side. Use that paper for notes, or feed the blank side into your printer for draft documents. You can also make scratch pads out of that single-sided paper by binding one side. Can you “go paperless?” Ask your teacher if you can hand in assignments on a computer disk or via e-mail instead.

**Benefits:** Because paper and packaging make up such a large part of our garbage, by using less paper you can reduce up to 40 percent of the trash that is thrown away.
Conduct a junk mail campaign

Another large source of paper that is thrown away every day is unsolicited mail. You can help your school office collect unsolicited mail and contact the companies to get off their lists.

Example: Make this into a project by measuring how much unsolicited mail your school receives in a week. Tear off the mailing labels and send them back to the mailer along with a note saying, “Please take us off your list.” After a few months, measure the unsolicited mail again. You can then determine how much waste has been eliminated; think about the staff time saved by not having to go through all of that unwanted mail.

Benefits: Decreasing junk mail not only saves paper and reduces paper waste, but takes less time to sort and recycle the mail each day.

Organize a school-wide rummage sale

Rummage sales are a great way to pass along items that you no longer want to someone who might need them. Instead of throwing your unwanted items away, they will be put to good use.

Example: Plan a class or school-wide rummage sale with your teacher. Collect donations for the sale. Sell used items such as clothes, furniture, and sporting goods at an end-of-the-year sale.

Benefits: Buying used items is not only cheaper, but someone else's trash might be your treasure!

Duluth School gets A's in Reduceology 101

Stowe Elementary School in Duluth instituted a waste reduction program in the school that focused on the cafeteria. They switched from disposables to reusables, started to separate recyclables, increased food ordering accuracy, and set up a vermiculture project (worm bins) to compost food waste.

In a second project, they created model service learning projects. The projects took what students learned within the classroom and applied it outside of the classroom for the benefit of the Stowe enrollment community. Projects included reseeding a bare field adjacent to the school, building a composting system for the zoo, helping control trail erosion along some park trails, and creating awareness of how drains link directly to the river by stenciling them. They also organized a community-based service learning project by creating a nature trail near the school.

Their most recent project focuses on alternative energy. Stowe School purchased solar panels, a wind turbine, and an inside meter to measure the energy created and the electricity used in the school's worm composting building. The school will teach students about energy generation and consumption for grades kindergarten through fifth grade.
Get informed and become more aware

Talk to your teacher about starting or joining an environmental group at school or look for ways to increase your awareness of natural surroundings and environmental issues.

**Example:** Set up a school waste reduction campaign with your environmental club. You could turn visits to nature areas and parks into service learning class projects.

**Benefits:** Being informed about environmental issues will give you the knowledge to help yourself and others become environmentally friendly. Connecting your activities with nature helps to increase appreciation and gives extra motivation to take actions to preserve and protect it.

To learn more about what you can do:

WWW.REDUCE.ORG

Attention educators:

www.seek.state.mn.us

SEEK: Sharing Environmental Education Activities

Minnesota's interactive directory of environmental education resources

- Thousands of EE resources
- Information about EE organizations
- Job postings, calendar, news
- A GreenPrint for Minnesota
- Environmental Literacy Scope and Sequence
- MN Report Card on Environmental Literacy

Your county solid waste office is a great resource for waste reduction materials, including local waste and environmental information, education resources, and speakers.
Not long ago, and not far away, in a land of great beauty and abundant natural resources, was the kingdom of Trashalot.

It was a tiny kingdom, but prosperous, and as it grew, the people of Trashalot created more and more garbage and waste, until it covered the landscape and choked the air and water.

The kingdom, once proud and pleasant, became a dark and gloomy place. All seemed hopeless.

Then a group of knights joined together, vowing to clean up the kingdom. Thus was born the **Order of the Green Guardians**, dedicated to the cause of reducing waste through action and education.

Working with the people of Trashalot, they restored the kingdom to its former glory. Then the Green Guardian knights set out to spread their message of hope to new lands throughout the world.

**THE MISSION OF THE GREEN GUARDIAN**

In my search for places in need of environmental assistance, I have come to the six-county, Minneapolis/St. Paul metro area.

Your community faces many of the same problems that befell my own kingdom. Currently, each person in the six-county metro area creates almost 7 pounds of garbage each day. And that amount keeps increasing.

People often think if they just do basic recycling (separating out plastic, aluminum cans and paper), that our waste problems will go away. But the truth is, recycling is only part of the solution. It is also critical that we adjust our **buying** habits to reduce the amount of unnecessary trash we produce in the first place, and to be super careful to **dispose** of items properly so we don't unknowingly allow toxic chemicals to poison our environment. Simply put, it is very important to know what to buy and know what to throw!

- **Know What To Buy**
amount of waste you bring home.

* Know What To Throw
  Click here to find out how various items should be properly disposed of and recycled.

JOIN MY NOBLE QUEST
Now that you have read my story, I challenge you to learn more about what you can do to protect the environmental health of your metro land.

Join me in helping all of us take responsibility for our purchasing and disposal choices. Only by following our "Code of Honor" can one truly become a Green Guardian.

THE GREEN GUARDIAN'S CODE OF HONOR:
  Responsibility - Be personally aware and accountable for your buying and disposal decisions in your daily lives, both at home and at work.

  Commitment - It takes only a little time, effort and advance thought to do what is right for the environment and the public good. Remember: it's the little things that make a big difference!

  Enlightenment - Teach others what you have learned to buy smarter and reduce waste in everyday life and let others know that my GreenGuardian.com website can help them whenever they have questions about what to buy and what to throw.

WELCOME TO THE NOBLE ORDER
OF THE GREEN GUARDIANS!

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THE GREEN GUARDIAN CODE OF HONOR

GreenGuardian.com
How To Read A Label

Household products that contain hazardous substances are required to carry warnings that inform people of the risks involved. The label should contain the following information listed below:

1. The brand and the common and/or chemical name. “Bleach” is a common name, while “sodium hypochlorite” is the chemical name for this common household product.

2. The product description or some clue about what it's meant to do. Laundry soap and paint remover are examples.

3. Words of warning.
   - “Caution” is used for mildly toxic substances
   - “Warning” is used on moderately toxic substances
   - “Danger” is used on highly toxic, flammable, or corrosive substances
   - “Poison” is used on all toxic substances

4. Instructions for safe use and any precautions. “Keep out of reach of children,” or “Use in well-ventilated area” are examples.

5. First-aid instructions in case the produce is misused or ingested. “Induce vomiting” is one example. Remember to call the Poison Hotline or 911 in an emergency.

6. Name, address and phone number of the manufacturer. If you would like more information about the product, call or write to the company.

Look at the label of a product and try to find all six categories. Write the answer in the space provided. Use the guide above to remember what each category means.

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand and common or chemical names</td>
<td>Product description</td>
<td>Warning words</td>
<td>Safety precautions</td>
<td>First aid instructions</td>
<td>Manufacturer's name, address or telephone number</td>
</tr>
<tr>
<td>Chlorine bleach, Sodium hypochlorite</td>
<td>Bleach</td>
<td>Danger: Corrosive — can burn skin</td>
<td>Keep out of reach of children</td>
<td>If in eyes, rinse with plenty of water for at least 15 minutes</td>
<td>The Chemical Company, Anytown, USA</td>
</tr>
</tbody>
</table>
Where Are The Toxic Products In My Home?

Name ________________________________

Toxic household products tend to appear in some rooms more than others. With an adult, conduct a survey of your home. Look in every room for household products that have labels with warning words, such as caution, toxic, danger or warning.

Using the list of rooms below, indicate how many toxic household products you found. If you can, be specific about the type of product you found. For example, the container may contain medicine, cleaning supplies, solvents or paint.

Kitchen ________________________________

Family room ____________________________

Living room ____________________________

Your bedroom __________________________

Parent's bedroom _________________________

Bathroom ______________________________

Garage _________________________________

Laundry room __________________________

What rooms have the highest number of toxic household products? __________________________
**Words of Warning Glossary**

**Biodegradable** — A material that is consumed by microscopic organisms and decomposed.

**Caution** — When seen on a product package, this word means it contains a slightly toxic substance.

**Chemical** — Complex substance, usually man-made.

**Corrosive** — A substance that burns eyes and skin. A strong corrosive can eat away other substances like metal or skin.

**Danger** — When seen on a product package, this word means it contains a very toxic substance that can be deadly when ingested, even in small amounts.

**Explosive** — A substance that blows up and makes a loud noise under certain conditions.

**Flammable** — Easily set on fire.

**Hazardous Wastes** — Substances that are thrown away and are dangerous to living things.

**Health** — Of body and mind.

**Ingest** — To swallow or eat.

**Lethal dose** — The amount of a toxic that causes death. The lethal dose varies depending on the age and size of the individual who ingests it.

**Poison** — A substance that causes harm when we inhale, eat or absorb it through our skin.

**Reuse** — To use again. This saves landfill space and reduces garbage problems.

**Solvents** — Liquids that dissolve solids. Water is the most common non-toxic solvent that we use. An example is salt dissolving in water.

**Toxic** — Poisonous; having the effect of a poison. (See *poison.*

**Warning** — When seen on a product package, this word means it contains a moderately toxic substance.
Reducing Pests in Your Home:
These simple things can reduce pests in your home
Without the use of pesticides

- Eat only in the kitchen
- (No food in bedrooms or
- on furniture)
- Place screen in sink to prevent fruit flies from hatching.
- Keep food in air tight containers.
- Use Chip clips or Clothes Pins to close bags
- Duct tape or seal any cracks
- or openings around water pipes.
- Remove and recycle cardboard boxes and store items in plastic containers.

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Building and remodeling

- When building or remodeling your home, ask for building materials and supplies that have the least amount of formaldehyde and other volatile organic compounds (VOCs), which have been shown to cause cancer or developmental problems.
- Choose no and low-VOC paints and varnishes when finishing walls, floors and furniture. Make sure you have proper ventilation.
- Ask for carpeting that meets standards for indoor air quality established by the Carpet and Rug Institute (www.carpet-rug.com). Once a carpet is installed, thoroughly air out the house for at least 48 hours.
- Use reclaimed cedar or redwood, which is naturally resistant to fungus and insects, or use recycled plastic lumber for decks and playground equipment. Ask at your home improvement store for vendors of these materials.
- Avoid using “green-treated” lumber which is treated with the toxic compound copper chromium arsenate (CCA). Never use it for eating surfaces on picnic tables, children’s play equipment, and never burn the lumber scraps! Clean up all scrap treated wood and sawdust and dispose of it properly.

For more detailed information about reducing your exposure to toxics around your home and for links to other useful web sites, go to www.reduce.org. You can also call the Minnesota Pollution Control Agency’s Education Clearinghouse at 1-800-877-6300.

Minnesota Pollution Control Agency

Minnesota Pollution Control Agency helps Minnesotans make informed decisions and take actions that conserve resources and prevent pollution and waste to benefit the environment, economy and society. Visit our web site: www.pca.state.mn.us.

Why reduce toxics?

From the foods we eat to how we maintain our yards and clean our homes, we can be exposed to chemicals in many ways. According to the U.S. Environmental Protection Agency (EPA), only a small fraction of the more than 75,000 registered chemicals have gone through complete testing for human health concerns. Some chemicals have immediate toxic effects. Others are toxic to our bodies only after repeated, long-term exposure.

Children are especially susceptible to the negative effects of chemicals, warns the EPA’s Office of Children’s Health Protection. Pound for pound, children breathe more air, drink more water, and eat more food, and when they play, they crawl and put things in their mouths. As a result, children have an increased chance of exposure to potential pollutants, and because children’s bodies are still developing, they may process these pollutants differently from adults. Nursing mothers and women who are pregnant or plan to become pregnant should also take precautions.
WHAT YOU CAN DO
Simple changes in our everyday routines can reduce our long-term exposure to low levels of potentially harmful substances—changes in how we choose the products we buy, changes in the way we clean our houses, changes in how we take care of our yard. These changes will not only make our homes safer, they may also save us money.

Consider these helpful ideas for reducing toxic exposures in your home.

Reducing toxics inside your house
Until recently, indoor air pollution has been largely ignored as a source of exposure to toxicity. But studies have shown that levels of harmful chemicals in indoor air may exceed the standards set by the EPA to protect us from harmful chemicals. You can avoid such levels in your home by buying and using products that are free of toxic chemicals whenever possible.

Choosing the products you buy
Whenever possible, buy products that are free of toxic chemicals. Alternatives are available. The market for nontoxic household products is growing in response to customer demand.

- When purchasing products, take a minute to carefully read the label. Look for products that appear to disclose all their ingredients. The words “caution,” “warning,” and “danger” indicate that the product’s ingredients are harmful. Choose the least hazardous product to do the job.

- Before you use a product, carefully read the directions and follow the instructions. Be sure to use the correct amount of a product. Remember, you won’t get twice the results by using twice as much.

- Select products (cleaners, shampoos, etc.) made from plant-based materials, such as citrus, seed, vegetable, or pine oils. By doing so, you are selecting products that are biodegradable and generally less toxic. These products provide the additional benefit of being made from renewable resources. Ask for plant-based products at your local grocery or retail store.

- Choose pump spray containers instead of aerosols. Pressurized aerosol products often produce a finer mist that is more easily inhaled. Aerosols also put unnecessary volatile organic chemicals into your indoor air when you use them.

- Ask for unbleached paper products or products bleached with hydrogen peroxide or oxygen, which produce less pollution during papermaking.

For yourself—bath, beauty, and hygiene products
- Avoid using antibacterial soaps. Antibacterial agents, while not directly harmful to you, contribute to the growing problem we face when bacteria mutate to strains that are more drug-resistant. Remember, however, that hand washing with any soap is still vital to maintaining good health.

- Purchase a mercury-free fever thermometer. Many effective alternatives are on the shelves at your local pharmacy. Broken mercury fever thermometers can be a source of toxic mercury levels in your home and discarded products containing mercury contribute to higher levels in the environment. Consult your county household hazardous waste program manager to learn where to take your old thermometer. (For information, see www.greenguardian.com/throw2_mercury.asp or www.moea.state.mn.us/hhw/programs.cfm.)
Avoid hidden sources of mercury by looking for thimerosal-free products.

Use eye drops, contact lens solutions, and nasal sprays and drops that are free of thimerosal or other mercury-containing preservatives.

Look for unscented and natural dyes in products to avoid potential allergic reactions.

Recipes for products using natural ingredients, such as baking soda, lemon juice, etc., can be found at www.carez.com/channels/lifestyle/home#55.

Keeping your house clean
Remove your shoes when you enter your house. Your shoes can track in harmful amounts of pesticides, lead, cadmium and other chemicals. Keeping a floor mat at your doors for people to wipe their feet on when they enter will also help.

Vacuum carpets and floors regularly. Children playing on your carpet may actually be more exposed to pesticides lodged in the carpet than from the outside, because pesticides break down less readily indoors than outdoors. Use a fine particulate filter, such as a HEPA filter, in your vacuum cleaner, if possible. Otherwise, the dust vacuumed up is redistributed into the air where it can be inhaled.

Single-ingredient, common household materials such as baking soda, vinegar, or plant-based soaps and detergents can often do the job on your carpet or other surfaces. Soap and water have been shown to keep surfaces as free of bacteria as antibacterial soaps do. If your carpet needs professional cleaning, enlist a carpet service that uses less-toxic cleaners that are low in VOCs and irritants.

Baking soda works well to clean sinks, tubs and toilets, and it freshens drains as well.

Vegetable oil with a little lemon juice will clean wood furniture.

Simmer a mixture of cloves and cinnamon or use vinegar and water as a safe and environmentally friendly air freshener.

Use vinegar and water in a pump spray bottle for cleaning mirrors and shining chrome. Vinegar or soap and water with drying rags or a squeegee work well for cleaning windows.

Use reusable unbleached cotton towels, rags, and non-scratch scrubbing sponges for all-purpose cleaning instead of bleached disposable paper products.

Use dishwasher detergents that are free of chlorine bleach and lowest in phosphates.

Use bathroom cleaners that are free of aerosol propellants and antibacterial agents.

What you eat
Choose organic fruits and vegetables for your family whenever possible. They have been shown to have less pesticide residue.

Rinse all fruits and vegetables to remove more of the residues and to ensure that fertilizer residues have been removed.

Don’t microwave foods in plastic containers. Chemicals from the plastic container can become absorbed by food during microwaving. Cover with waxed paper instead of plastic wrap to keep food from spattering.

Controlling pests
In order to survive, pests need food, water, and living space. Remove all food sources through good sanitation and storage habits (i.e., screw cap jars, zip lock bags, garbage pails with tight fitting lids). Block pest entrances to your kitchen by caulking holes, using door sweeps on the bottom of doors, and keeping window screens in good repair. Avoid placing chemical pesticides around your kitchen to kill indoor insect and rodent pests. For more information on controlling pests without the use of chemical pesticides, go to www.reduce.org, “reducing waste in the home,” then “reduce the need for pesticides.”

Replace toxic chemicals with some elbow grease: abrasive (green) and non-abrasive (blue) sponges, and cotton rags.

By cleaning with products like these, you can save money and avoid exposure to toxics chemicals.

Cleaning up and plugging holes is a good way to keep pests out of your house.

When storing winter clothing, use cedar blocks or bags of cedar chips hung with your clothes. Avoid mothballs that contain p-dichloro benzene or naphthalene, which are very toxic and also contribute to respiratory problems. Above: cedar scraps cut from lumber and wrapped in a mesh bag that once contained oranges.
Reducing toxics in the yard

- Mowing your grass to a height of about 3 1/2 inches is the single most important thing you can do to improve the health of your lawn. By keeping grass length longer, the roots grow deeper and can reach more water during dry periods. Longer grass also creates shade, making it harder for weeds to get established.
- If you use a lawn service, consider a service provider that uses less toxic alternatives.
- Test the soil to see what your soil needs. Apply only as much fertilizer as is needed. Soil test kits can be purchased at a lawn and garden store or through the University of Minnesota Extension Service: www.extension.umn.edu.
- Top dressing your lawn with a compost soil mix will reduce your lawn’s water needs and make it more resistant to drought and disease. You will need to fertilize less often, and when you do, you can use less fertilizer.
- Consider replacing parts of your yard with native perennials that lower maintenance and lessen the need for water and chemicals.

Phosphorus and Minnesota lawns
Fertilizers, grass clippings and leaves from lawns contribute to phosphorus in our lakes and rivers. Using lawn fertilizers that do not contain phosphorus (where the middle number is zero) and sweeping up grass clippings from streets and sidewalks are easy ways a homeowner can improve water quality.

New phosphorus ban
As of 2004, fertilizer containing phosphorus cannot be used on lawns without a soil test that shows it is needed. New lawns and gardening uses are exempt. Minnesota soils are naturally high in phosphorus, so our lawns don’t usually need any extra.

Avoid using no-pest strips. They contain pesticides that are released to the air in your home.
- Consult your veterinarian for nontoxic pest control products for use on pet pests such as fleas and ticks.
- Use nontoxic head lice treatments, including combing, enzyme-based treatments and mayonnaise or oil. See www.headlice.org for more information.

Doing the laundry
- Instead of more complicated detergents, try using a combination of washing soda and borax in your machine. These are usually as effective as more complex formulas and are also usually cheaper.
- When possible, hang clothes to dry outside to avoid using the dryer, which uses energy and depletes resources. In winter, fluff the clothes in the dryer, and then hang them indoors. You get the added benefit of increased humidity.
- Avoid bleach when possible. If whitening is needed, use non-chlorine bleach. These oxygen-based bleaches are often highly effective.
- Buy clothes that don’t need dry cleaning, or use an alternative to dry cleaning called “wet cleaning.” Clothes that have been dry cleaned emit perchlorethylene, a chemical that is a suspected carcinogen. The wet cleaning process uses water so there are no harmful gases emitted from the cleaned clothing. For a list of cleaners that use the wet cleaning process, go to www.mntap.umn.edu and search for “consumer dry cleaning”.

Keep bugs out of the house by first keeping bugs out of your food. Use tightly sealed reusable containers to store your food.

Try simple ingredients like borax, non-chlorine bleach and washing soda.

Avoid laundry cleaning products with chlorine.

Conventionally dry-cleaned clothes emit a possible carcinogen called perchlorethylene.
Community Power  
Summer 2008 School Age Mini Camp

5-7 Group

Day One
Dumpster Dive!
Time Needed for Activity: One Hour
Materials Needed:
- Composting Activity
- Reduce Trash When You Shop Pamphlet
- How to Compost Pamphlet
- Large Glass Jar
- Soil
- Paper Scraps
- Food Scraps
- Cheese Cloth
- Gravel
- Latex Gloves
- Plastic tarp
- Food items for Luscious Layered Landfill

Discuss with the group were our garbage goes. It is placed in landfills or incinerated. Although much of our garbage is biodegradable, only a small percentage is composted. Save the lunchroom trash for this activity. Dump the trash and spread it over the tarp. Have the students sort the trash into piles of biodegradable, reusable, recyclable and trash. (Students should wear gloves). Save some of the food items to put into the compost jar. To make the compost jar: Line the bottom of the jar with gravel. Layer food items and shredded paper in-between layers of soil. Pour about 1 cup of water into the jar and cover it with cheese cloth. Place it in a warm, dark place. Add water as needed to keep the soil damp (but not wet). Examine in one month. Build the luscious layered landfill and enjoy the treat!

Day Two
Zero Waste Lunch:
Time needed for the Activity: One Hour
Materials Needed:
- What is Packaging Really Made From?
- The Market Survey Packages Demonstration
- An Assortment of Packaged products
- Examples of a No-Waste Lunch-reusable containers, water bottles, Silverware, cloth napkins.
- Tote Bags
- Permanent markers
- Going Back to School Green pamphlet
5-7 Group

Read the What is Packaging Really Made From activity. Act out the Market Survey Packing demonstration and talk about the different ways company’s package products to make them seem more appealing. Talk about the amount of energy spent to ship products great distances. Discuss the paper vs. plastic problem. Paper takes more energy to make, but plastic uses oil resources and are more difficult to recycle. Reusable totes are the best. Decorate totes and send home the hand outs.

Day Three

Reduce, Reuse, Recycle
Time needed for activity: One Hour
Materials Needed:
  Big Foot CD
  Brown Construction Paper
  Paper towel and T. P. Rolls
  Junk Mail and Advertisements
  Glue and Masking Tape
  Information on how to Reduce Junk Mail

You will need to access a computer. Follow the steps on the CD to determine your Ecological Footprint. (There aren’t enough copies for an entire class, so work in groups). Decorate the paper tubes to look like a large tree. Attach the junk mail to the top to look like the leaves. Place a sign on the tree explaining how each one of us receives about 50 pounds of junk mail every year. Prepare the Junk mail information to take home.
Digging through the trash

This activity is designed to be completed in two class periods. The first day involves a preliminary introduction, Part One of *The Garbage Game*, and a follow-up discussion. Part Two of the game is optional and can be completed on the second day.

**Objectives**

Students will
- Gain an increased awareness of what happens to items that are thrown in the trash can.
- Demonstrate an understanding of the need for recycling, reusing, composting, and disposing of trash in landfills.
- Develop an awareness of the need to pre-cycle (to modify buying habits in order to minimize the nonrecyclable materials brought into the home.)
- Differentiate between biodegradable and nonbiodegradable, toxic and nontoxic, and recognize several common household items that fall into each of these categories.
- Describe the current problems with new laws governing landfill contaminants.
- Suggest methods for easing the nationwide landfill dilemma.

**Discussion**

Before playing the game, present the basic background information and terms necessary for students to play the game. Depending on your time constraints and students' prior experience, you can decide how much discussion is needed. Be sure to discuss where items go when they are thrown away, what happens to them in the landfill, whether they break down and/or seep down into the soil, and if so, what effects they have on the environment. Discuss the terms biodegradable and nonbiodegradable.

Also introduce the terms toxic and nontoxic in an environmental context. For example, animal wastes would be considered toxic if ingested, because they could contain pathogenic bacteria. But in an environmental context, animal wastes that biodegrade become part of the soil. If properly washed, foods grown in this soil are not toxic. If possible, you should also discuss the many problems with landfills today, and ask for suggestions of how to alleviate these problems.

**Advance preparation**

(For each group of three to six students)
- Reusable plastic container (such as a yogurt cup, margarine tub, or ice cream bucket)
- Sheet of category labels and trash item slips (See figure.)
- Paper clips

1. Cut the sheets of labels and trash slips along the dotted lines into individual slips of paper.
2. From each sheet, combine the “Recycle,” “Reuse,” “Landfill,” and “Compost” slips and paper clip each set together. These are the disposal alternative slips.
3. From each sheet, combine the “Biodegradable,” “Nonbiodegradable,” “Toxic,” and “Nontoxic” slips and paper clip each set together. These are the category slips.
4. The remaining slips are the trash item slips. Place one set of trash item slips, one set of disposal alternative slips, and one set of category slips into each container. (If using only Part One of the activity, omit the category slips.)
Luscious Layered Landfill

Minnesota Office of Environmental Assistance

Grade Level:
Grades 5 and up

Graduation Standards:
Learning Area 9: Resource Management. Manage resources for household, community, or government.

Duration:
30 – 60 minutes

Setting:
A long table is needed to set out the landfill layers. Can be either indoors or outdoors.

Summary:
Students will assemble an edible landfill, while learning the location and purpose of each of the layers of a landfill.

Objective:
Student will:
Learn what a landfill is and why proper management of solid waste is important.

Vocabulary:
Landfill
Leachate
Tipping fee

Materials Needed:
8 oz. clear, plastic cup
“Oreo” cookies
peanuts
“fruit roll-ups”
graham crackers
“Twizzlers” – red and black chocolate “jello” pudding
trash (variety of solid candy i.e. M&Ms, Skittles or trail mix.)
sprinkles
knife
rolling pin
blender (optional)
tupperware containers

Try this!
For a less wasteful landfill:
Create a landfill using ice cream cones in place of plastic cups.

Idea:
For a "healthier" landfill, try using grape nuts in place of peanuts, a variety of fruit for the "trash" and yogurt in place of pudding.

Background:
In this activity, students will assemble their own sanitary “landfill”. Start by asking if students know what happens to the garbage at their homes. Where does it go or what happens to it after it is thrown away. Explain that much of our waste is put into sanitary landfills.

Procedure: (Instruction sheets are attached.)
Prior to assembling the “landfills”, each layer of the landfill should be ready and labeled.

Preparation:
1. Separate Oreo cookies into halves – half with cookie and cream and the other half cookie only.
2. Crush Oreo cookies without cream with rolling pin or blender for bottom layer of soil. Place in tupperware container labeled “Soil”.
3. Place Oreo cookies with cream side up in tupperware labeled “Clay Layer”.
4. Cut fruit roll-ups into circles roughly the size of the bottom of the cup. Put in a tupperware and label “Plastic Liner”.
5. Crush graham crackers with rolling pin or in blender. Place in tupperware labeled “Sand”.
6. Label peanuts “Pebbles”.
7. Cut red Twizzler’s in half, cut off ends, and label “Leachate Pipe”.
8. Cut black Twizzler’s into four pieces, cut off ends and label “Methane Pipe”.
9. Put Trash candies in tupperware and label “Trash.” Right before beginning assembly, mix the “Trash” with the pudding. This more closely represents actual trash – a mix of wet and dry.
How to Compost your organic waste

Home composting is an easy way to turn much of the waste from your yard and kitchen into a rich material that you can use to improve your soil.

Composting: Break it down

1. Make a compost bin — or buy one.
2. Throw in your kitchen scraps and yard waste.
3. Mix it up with a shovel or pitchfork once in a while.

More details on back!

Why compost?

Home composting is a way for you to speed up the natural process of decomposition and return organic materials to the soil. Yard trimmings and food scraps make up nearly 1/6 of what the average household throws into the garbage.

Why throw this stuff away when it could be used in your yard and garden?

By composting, you can convert organic wastes — yard trimmings, leaves and many kinds of kitchen scraps — into a dark, crumbly mixture that can be used to improve the soil and reduce your use of fertilizer and water.

Composting Biology 101

Like a simple recipe, your compost pile needs the right mix of ingredients in order to produce the best results. The key materials are nitrogen-rich "greens," carbon-rich "browns," water and air.

**Greens** provide nitrogen, and act as a source of protein for the microbes. Examples of greens are green leaves, coffee grounds, tea bags, plant trimmings, raw fruit and vegetable scraps, and grass clippings.

**Browns** are a source of carbon, and provide energy for the microbes. Examples of browns are straw, sawdust, twigs, dried grasses, weeds and leaves, shredded newspaper.

Like all living things, the microbes in your compost pile need water and air to live. Water allows the microbes in your compost pile to grow and travel around in the pile to decompose materials. Turning your pile each week with a spade or pitchfork will provide air to aid decomposition and control odors.

To learn more...
Begin with the bin

Location, location, location. Pick a spot in your yard that’s at least partially shaded and at least 2 feet from a structure like your house or a fence. Other considerations:

- Convenient for you to add materials
- Access to water
- Good drainage

Containers. You can compost in a simple pile, but using a container or bin helps your compost pile retain heat and moisture and look neat. To get started, it’s easy to go with a single bin system. As materials are added and mixed together, the finished compost settles to the bottom of the bin.

Materials. Bins can be built from scrap lumber, old pallets, snow fence, chicken wire, or concrete blocks. Typically, several types of composting bins are sold at hardware or lawn and garden stores.

Size. A pile that is 1 cubic yard (3 feet high, 3 feet wide, 3 feet long) is big enough to retain heat and moisture, but small enough to be easily turned. Home compost piles shouldn’t be larger than 5’ x 5’ x 5’.

Adding the first materials

Lay a base. Start with a layer of browns, laying down 4 to 6 inches of twigs or other coarse carbons on the bottom of the pile for good air circulation.

Alternate greens and browns. Add layers of nitrogen and carbon materials. Make layers about 4 to 6 inches thick. Once you turn the pile the first time, these materials will get mixed together and compost more efficiently.

Water as you go. Your compost pile should be moist, kind of like a wrung-out sponge. Squeeze a handful of compost; if small beads of water appear between your fingers, you have enough water.

Your pile will get water from rain, as well as the moisture in the greens. If the pile gets too wet, you can turn it more frequently to dry it, or add more dry brown materials to soak up the excess moisture.

Turn it, turn it, turn it

Once you build your pile, the real composters get to work—bacteria, fungi and insects help break down the materials in your compost bin. As the organic materials decompose, your pile will get hot on the inside and you might see some steam. In about a week, your compost will be ready for turning.

Use a pitchfork or shovel to mix up the layers of green and brown and move materials toward the center of the pile. You can empty your bin and re-layer, or just work materials around inside the bin. Break up clumps of material and wet the pile as needed.

Repeat until it’s complete.
The composting process can be pretty quick in the summer months. Your compost pile may no longer heat up after just a few weeks. Look in your pile for finished compost—material that is dark and crumbly, fresh-smelling, and no longer looks like what you originally put into your bin.

Using finished compost

- Mix in compost to improve soil. In sandy soils, compost acts like a sponge, retaining water and nutrients where it can be reached by plant roots. In clay soils, compost makes the ground more porous, creating tiny holes and passageways that help soil drain more quickly.
- Spread compost on your lawn to help fill in low spots.
- Use as a mulch for landscaping and garden plants. Mulches cover the soil around plants, protecting the soil from erosion and the drying effects of wind and sun.
- Mix compost into pots for potted plants.

Visit reduce.org for more information on composting, including tutorials, plans for building your own compost bin, and links to composting Web sites.
3-4 Activity: Junk Mail Tree

The average American receives about 50 pounds of Junk Mail every year!

Create a Junk Mail Tree in your room to illustrate this problem!

Ask Students to bring in all their junk mail.

Create a trunk from catalogs. Roll up magazines for the branches. Tape together with masking tape. Bunch together letters and hang as the leaves. Display along with the address of how to reduce junk mail.

After the tree has been up for awhile, shred the parts up and donate to a pet shelter or vet office for pet bedding.
Reduce Junk Mail
Every American man, woman, and child receives an average of 40 pounds of junk mail per year. Even if junk doesn’t annoy you, consider the amount of... • Trees, water, and inks used to produce the junk mail • Fossil fuels used to carry the junk mail to you, and carry away your garbage/recycling • Problems associated with incinerating or landfilling the junk mail as garbage, or energy used to recycle it. You can change this!

You will need to do most of the steps listed below separately for each person in your household, and it may take several months before all your efforts will begin to significantly reduce your junk mail, but it will be worth it.

Mail Preference Service
Significantly reduce advertising mail by registering with the Direct Marketing Association’s “Mail Preference Service.” This service is now free and registers you with many of the biggest direct mail marketers in the country. Visit: http://www.dmachoice.org complete your registration on-line or print a mail-in copy. Send one for each person in your household.

Credit Card Offers – Opt-Out!
The nation’s major consumer credit bureaus established ways to help you get off lists for pre-approved credit card solicitations. "Opt-out" for two years or permanently. To get off permanently, you need to return a letter sent to you after you make the phone call. • Call 1-888-567-8688, or visit www.optoutprescreen.com.

Mail List Brokers
These two companies provide national lists for non-financial data.
• Call Experian at 1-800-228-4571 ext. 4633. After listening to a long message, leave your name, street address, city, state, zip, area code and phone.
• Call the Polk Company at 1-800-464-7655 and ask for the “opt-out” line and follow directions.
• Unwanted catalogs This free service stops unwanted catalogs: http://www.catalogchoice.org/

Weekly Coupon/Advertising Mailings
You can get off the mailing lists for common weekly/monthly coupon mailings.
• Call ADVO, Inc. at 1-888-241-6760 to stop getting “Mailbox Values” or “ShopWi$e.”
• Call Val-Pak (Cox Target Media) at 1-800-661-0959 and follow the instructions.
• Call the Star Tribune advertising line at (612) 673-7777 and ask to stop receiving their weekly “Twin Cities Values & Bargains” newspaper (Minneapolis and Western suburbs, primarily).

Contact Individual Companies/Organizations
Not all groups use the national mailing lists. If companies or charities have your name and address, you may continue to receive mail from them. However, you do have the right to be left alone, once you request it.
• Contact the company directly (by mail or telephone) and asked to be placed in their “do not mail” file. Sample language to use (you could create labels or notes with this message to send in until the mail stops): “Please remove my name from your marketing database. Do not sell, give away, rent, or trade my name and address to others. Thank you, [give full name and address].”
• Contact all your utilities and other service providers (e.g. Qwest) and request they do not share your personal information with others.
• Proactively request, every time you write down or tell someone your name/address, not to share it with others.

Do Not Call List While this list does not relate to junk mail, you may also want to register your phone number(s) with Minnesota’s Do Not Call list to stop annoying phone calls. Non-profit groups and political groups can still call you, but for-profit companies cannot. Call 1-800-921-4110.

Reduce Waste In Other Ways…
To learn about other important ways to reduce waste, visit www.greenguardian.com and www.reduce.org.

Revised January 2008. Please contact Erin Bowley (erin@erinb.org) if any information becomes outdated.
Household Chemicals

The Challenge
Some chemical products used in and around our homes and schools are harmful to our health and environment. They can enter the air, water and soil, and cause problems for humans and other animals. By becoming educated about what materials are toxic, and finding safe, effective alternatives, we can reduce our exposure to toxic chemicals and reduce their effect on the environment.

Did You Know?
• The average home contains more chemicals today than the average chemical laboratory did 100 years ago.
• Toxic chemicals dumped in landfills can leach into the groundwater. Chemicals sent to incinerators can end up in the air. Those flushed down the drain can end up in rivers and lakes, threatening plants and animals there.
• More than 21 million tons of soap and laundry detergent are used in the United States. Phosphate, a chemical used in some detergents, creates serious problems for the environment. Detergent companies are now removing phosphates from their products.
• Americans use nearly one billion gallons of motor oil each year. 350 million gallons of it are dumped into the environment. As little as one quart of motor oil contaminates 250,000 gallons of drinking water.
• Many non-toxic products clean just as well as their toxic counterparts, and cost less to buy. The acid in lemon juice is so strong it can clean aluminum. The broth from a boiled potato can remove some grease stains from clothing.

1. Words of Warning

**Subjects:**
Science, Environmental Science, Language Arts, Health

**Process Skills:**
Reading, writing, deciphering clues, organizing information, developing vocabulary

**Grades:**
4–8

**Cognitive Task Level:**
Average to difficult

**Time for Activity:**
20 to 30 minutes

**Intended Learning Outcomes:**
Completing this activity will allow students to:
- Learn the definitions of words associated with toxics
- Develop vocabulary skills about an important environmental issue
- Gain a greater understanding for the different levels of health concern associated with household chemicals.

**Background**
Today, more and more of our household products contain complex chemicals that are hazardous, or become hazardous when mixed with other products. These include such common items as chlorine bleach, nail polish, carpet cleaner, oven cleaner and used motor oil. These materials end up in our garbage cans and are then buried in our landfills or flushed into our sewage system. Health problems can result when even small quantities of these chemicals leak into the groundwater and into our drinking water.

This activity gives students an opportunity to develop their vocabulary and learn to spell and pronounce words that could affect their health and safety. It serves as an introduction to the other activities, because it provides valuable vocabulary meanings to words that students will be encountering in the other lessons. In particular, you can discuss with your students the different levels of toxicity and how they are identified by the words *warning*, *caution* and *danger*. This will help your students know what level of concern to have about different household products.

**Materials**
- Handouts:
  - Word Search
  - Glossary
  - Fill-In Worksheet

**Procedure**
1. Before you hand out the word search worksheet, you may choose to put the words on the board and review their meanings with your students. Ask students which words they already know. Have them guess at the meanings of some of the other words.

2. Hand out the word search and fill-in worksheets and the glossary. You may conduct this either as an in-class assignment or as a homework assignment. Depending on the class level, your students may need additional help with some of the words.

**Extensions/Modifications**
- You may elect to use only one portion of this activity to start the unit on household chemicals, and save the other portion as a follow-up.
- The *Words of Warning Fill-in Worksheet* can be used as a test for the unit.
- If you have ESL (English as a Second Language) students in your class, be sure they understand the meanings of the words in their own language.
- Invite a local hazardous waste specialist from the community to come to the class and explain his or her job and responsibilities.
Words of Warning Word Search

Name ____________________________

BPSOLVENTASRDU
XINGESTWLOPTAP
SROBVCFERDONQ
TOEDNKHYZXMG
YGEGEXPLOSIVE
VRZMGOTSCXR
REUSEXRXPOISON
TWYSHKXABDLR
FCAUIONDRYQME
HHJSTEUNPAWYG
EEXXFLEMMABLEH
AMDWNJLXMRFLOA
LIRWARNINGLEBL
TCXLGSNPYTWXD
HazardouslyZBO
XLMYTWLJGFDSWS
WSCORROSIVERP

Words:

Explosive
Warning
Lethal Dose
Corrosive
Danger
Flammable

Toxic
Caution
Hazardous
Poison
Reuse
Biodegradable

Health
Ingest
Chemical
Solvent

Animal Tracks Activity Guide
Words of Warning Fill-In Worksheet

Name ____________________________________________

Below are incomplete sentences. Find the words in the Words of Warning Glossary that answer the sentences correctly. Then find the words hidden in the Word Search.

1. To ____________________________________________ something means to swallow it.
2. Materials that are consumed by microscopic organisms and decomposed are ____________________________
3. A ____________________________________________ is a substance that can cause harm when we inhale, eat or absorb it.
4. A ____________________________________________ is another name for something that causes harm when we ingest it.
5. ____________________________ waste is something that is thrown away and that is harmful to living things or the environment.
6. The ____________________________ is the amount of a substance that causes death.
7. When something catches fire easily, it is ____________________________________________
8. A ____________________________________________ is a complex substance that is man-made.
9. Something that blows up is called an ____________________________
10. ____________________________ substances burn the skin and eyes.
11. When seen on a product package, this word means it contains a slightly toxic substance with a lethal dose for humans of one ounce or more: ____________________________
12. When the word "__________________________" appears on a package, it contains a moderately toxic substance that has a lethal dose to humans of one teaspoon to one ounce of the substance. Handle this product very carefully.
13. A product that is labeled with the word ____________________________ is very toxic and has a lethal dose for humans of a few drops to a teaspoon. You should never touch a substance like this.
14. The reason we learn about household chemicals is to stay in good ____________________________
15. It is possible to ____________________________ some of our household products so that we do not have to dispose of them in the garbage can after only one use.
16. A ____________________________________________ is a liquid that dissolves solids.
   Water is the most common one.
Words of Warning Glossary

Biodegradable — A material that is consumed by microscopic organisms and decomposed.

Caution — When seen on a product package, this word means it contains a slightly toxic substance.

Chemical — Complex substance, usually man-made.

Corrosive — A substance that burns eyes and skin. A strong corrosive can eat away other substances like metal or skin.

Danger — When seen on a product package, this word means it contains a very toxic substance that can be deadly when ingested, even in small amounts.

Explosive — A substance that blows up and makes a loud noise under certain conditions.

Flammable — Easily set on fire.

Hazardous Wastes — Substances that are thrown away and are dangerous to living things.

Health — Of body and mind.

Ingest — To swallow or eat.

Lethal dose — The amount of a toxic that causes death. The lethal dose varies depending on the age and size of the individual who ingests it.

Poison — A substance that causes harm when we inhale, eat or absorb it through our skin.

Reuse — To use again. This saves landfill space and reduces garbage problems.

Solvents — Liquids that dissolve solids. Water is the most common non-toxic solvent that we use. An example is salt dissolving in water.

Toxic — Poisonous; having the effect of a poison. (See poison.)

Warning — When seen on a product package, this word means it contains a moderately toxic substance.
Words of Warning Fill-In Worksheet

Teacher's Version

Below are incomplete sentences. Find the words in the *Words of Warning Glossary* that answer the sentences correctly. Then find the words hidden in the *Word Search*.

1. To **ingest** something means to swallow it.
2. Materials that are consumed by microscopic organisms and decomposed are **biodegradable**.
3. A **poison** is a substance that can cause harm when we inhale, eat or absorb it.
4. A **toxic** is another name for something that causes harm when we ingest it.
5. **Hazardous** waste is something that is thrown away and that is harmful to living things or the environment.
6. The **lethal dose** is the amount of a substance that causes death.
7. When something catches fire easily, it is **flammable**.
8. A **chemical** is a complex substance that is man-made.
9. Something that blows up is called an **explosive**.
10. **Corrosive** substances burn the skin and eyes.
11. When seen on a product package, this word means it contains a slightly toxic substance with a lethal dose for humans of one ounce or more: **Caution**.
12. When the word “**warning**” appears on a package, it contains a moderately toxic substance that has a lethal dose to humans of one teaspoon to one ounce of the substance. Handle this product very carefully.
13. A product that is labeled with the word **danger** is very toxic and has a lethal dose for humans of a few drops to a teaspoon. You should never touch a substance like this.
14. The reason we learn about household chemicals is to stay in **good health**.
15. It is possible to **reuse** some of our household products so that we do not have to dispose of them in the garbage can after only one use.
16. A **solvent** is a liquid that dissolves solids. Water is the most common one.

---

Words of Warning

Word Search

(*Teacher's version*)

```
RXSOLVENTXXIXDXX
XINGESTTXTXAX
XXOXXXXXXXOXNX
XXDXXXXXXXXGX
XXEXPLOSIVEXX
XXXXGXXXXRX
REUSEXXPOISON
XXXXXXAXXXXL
XCAUTIONXXXXXE
HXXXXXAXXXXT
EXEFLANDMADL
AMXXXXXXL
LIXWARNINOXXEL
TCXXXXXXXD
HAZARDOUSXX
XLSXXXXXXXS
XS CORROSIVEX
```

Words:

- Explosive
- Warning
- Lethal Dose
- Corrosive
- Danger
- Flammable
- Toxic
- Caution
- Hazardous
- Poison
- Reuse
- Biodegradable
- Health
- Ingest
- Chemical
- Solvent

---

Household Chemicals
Glossary of environmental terms

**Acid rain.** Caused by emissions from the burning of fossil fuels. When fuels such as coal, oil and natural gas are burned, many substances enter the atmosphere. Sulfur dioxide and nitrogen compounds, which contribute to air pollution, travel through the air and react with each other in sunlight to form secondary pollutants such as sulfuric acid and nitric acid. When rain contains these acids, it is called acid rain.

**Aluminum.** A silvery nonferrous metal found in the ore bauxite. It is used in making hard, light, corrosion-resistant materials.

**Aquifer.** A porous layer of underground rock that holds water.

**Ash.** The noncombustible solid residue of incineration.

**Ash monofill.** A specially constructed landfill used only for ash from waste-to-energy plants.

**Baler.** A machine that compacts waste materials, usually into rectangular bales. Balers often are used on newspaper, plastics and corrugated cardboard.

**Bioaccumulation.** Concentration of chemicals in the fatty tissues of living things that are eaten by other things so that the concentrations become ever greater.

**Biodegradable.** Material that can be broken down by microorganisms such as bacteria and fungi; includes most organic waste.

**Bottle bill.** A law in some states requiring deposits on beverage containers. Minnesota does not have a bottle bill.

**Bottom ash.** The unburnable ash residue remaining in an incinerator or energy recovery facility after the burnables have been incinerated.

**Brown goods.** Items that are typically used for audio, video, telecommunications, or computing purposes, including any item that contains a picture tube or cathode ray tube, or electronic circuitry and circuit boards.

**Buying in bulk.** The purchasing practice of buying large amounts of products at one time to avoid excess packaging and transportation costs.

**Cell.** An area in a landfill where solid waste is disposed of each day.

**CERCLA (Comprehensive Environmental Response, Liability and Compensation Act).** Passed by Congress in 1980 and usually referred to as Superfund, a fund to help pay for the management and cleanup of hazardous waste sites.

**Chlorofluorocarbons (CFCs).** A family of chemical compounds, some of which are volatile, nontoxic, and easily liquefied chemicals used in refrigeration, air conditioning, packaging, insulation or as solvents and aerosol propellants. CFCs are not destroyed in the lower atmosphere and rise readily into the upper layers, where their chlorine components destroy ozone. (See Ozone layer)

**Clean Air Act.** Originally passed in 1963 and amended in 1970 to give the Environmental Protection Agency (EPA) the responsibility of setting air quality standards for each pollutant.

**Commercial waste.** Waste material that originates in wholesale business establishments such as office buildings or stores.
Environment. All of the organic and inorganic components surrounding us, as well as the events, conditions and processes of their interactions.

**EPA.** The U.S. Environmental Protection Agency. Sets environmental protection and enforcement standards. Created in 1970; serves the entire country through 10 regional offices.

**Flammable.** Capable of igniting easily and burning quickly.

**Flexible packaging.** Packaging involving pliant materials such as foils, films, paper or flexible sheeting to form a container; for example, wraps, bags, labels and pouches.

**Fly ash.** Non-burnable residual particles from the burning process, carried by smoke, air and flue gas. When managed properly, fly ash is prevented from escaping by air pollution control devices such as scrubbers or precipitators.

**Garbage.** Another word for solid waste, particularly household waste.

**Ground water.** Water beneath the earth’s surface in porous rock and soils that supplies wells and springs.

**Hauling fee.** The fee a garbage or recyclables hauler charges to take material from one point to another.

**Hazardous waste.** Discarded solid, liquid or gaseous material that can harm people or the environment, and that requires special disposal.

**Household hazardous waste (HHW).** Household waste that exhibits one or more characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity).

**Household hazardous waste collection site.** A permanent or temporary location where individuals may bring household hazardous waste.

**Humus.** The rich soil resulting from composting.

**Ignitable.** Able to catch on fire or burn. One of the four hazardous waste characteristics. (See also toxic, reactive and corrosive.)

**Incineration.** The process of burning wastes under controlled conditions.

**Integrated waste management.** Coordinated use of a variety of waste management methods.

**Landfill.** A place designed and engineered to dispose of waste on land. Under federal law, modern landfills must have an impermeable liner to block the movement of leachate into ground water; a leachate collection system; gravel layers permitting the control of methane; and other features. Garbage is spread in layers, compacted and covered each day.

**Leachate.** Liquid formed when water percolates through the soil and garbage in a landfill; it contains waste, bacteria and other contaminants.

**Lead-acid battery.** Any battery that consists of lead and sulfuric acid, has a capacity of six volts or more and is used as a power source, such as a car battery.

**Litter.** Waste materials carelessly or intentionally discarded in an inappropriate place. Litter is waste out of place.

**Manufacture.** The making of goods by hand or machinery, usually on a large scale.

**Materials recovery facility (MRF).** Facility for the separation of commingled recyclables.

**Methane (CH₄).** A colorless, odorless, flammable gaseous hydrocarbon present in natural gas and formed by the decomposition of organic matter, such as in a landfill.

**Mixed waste.** Unsorted waste from businesses or homes.

**Municipal solid waste (MSW).** Garbage, refuse, and other discarded materials resulting from residential, commercial, industrial and community activities. Does not include hazardous waste, animal waste used as fertilizer, or sewage sludge.

**Natural resources.** Material such as minerals, trees, or water that are supplied by nature.

**NIMBY.** The “not in my backyard” response to building waste management facilities.
Refuse. A general term for solid waste materials, also called garbage or trash.

Refuse-derived fuel. A solid fuel made from municipal solid waste that has been processed to burn better.

Renewable resources. Resources normally replenished through natural processes. Examples are trees, grasses, wild animals, surface water in lakes and rivers, most ground water, air and soil.

Resource recovery. Recovery of materials or energy from garbage.

Returnable. Can be returned and refilled.

Reuse. To use a product more than once.

Solid waste. Garbage, refuse and other discarded materials resulting from human activities; does not include hazardous waste, animal waste used as fertilizer, or sewage sludge.

Solvent. A substance, usually liquid, that can dissolve another substance.

Source reduction. Any activity that reduces the amount or toxicity of waste.

Source separation. Separation of recyclables from garbage at the source by individuals and businesses.

Stewardship. Taking responsibility and caring for the Earth or any part of it. Includes responsibility in using resources and creating as little waste and pollution as possible.

Sustainable. Able to support or maintain economically without depleting or damaging resources.

Tipping fee. The amount charged to dispose of garbage at a landfill or incinerator.

Toxic. Poisonous; having the ability or property to produce harmful or lethal effects on humans or the environment. One of the four hazardous waste characteristics. (See also reactive, corrosive and ignitable.)

Transfer station. Intermediate facility at which municipal solid waste is transferred from collection vehicles into larger trucks or rail cars for transport to its final disposal destination.

Trash. Material considered worthless, unnecessary or offensive that is usually thrown away.

Vermicomposting. Use of red worms to compost organic waste.

Virgin material. Material extracted from natural resources.

Waste. Anything that is unwanted and is discarded.

Waste audit. An inventory of the amount and type of solid waste that is produced at a location.

Waste exchange. A system in which one person's waste becomes another's resource.

Waste stream. All the waste generated in an area or a facility.

Waste-to-energy facility. Municipal solid waste incinerator that converts heat from combustion into steam or electricity.

White goods. Used household appliance that have become waste (stoves, refrigerators, freezers, etc.)

Yard waste. Organic matter from mowing, pruning, weeding, etc.

Sources

The definitions in this list were compiled from the following curricula:

- “Action for a Cleaner Tomorrow,” South Carolina Department of Health and Environmental Control
- “Closing the Loop,” Chadbourne & Chadbourne, Inc.
- “Less Waste in the First Place,” Flexible Packaging Educational Foundation
- “Solid Waste Management Curriculum,” DuPont
Get Started: Recipes & Resources

Backyard Composting
Backyard composting is most appropriate for those who have a large quantity of organic material—typically yard wastes or fruit and vegetable scraps from the kitchen—and have a space outside large enough to accommodate the volume.

<table>
<thead>
<tr>
<th>Compost Recipe #1</th>
<th>3 parts dry leaves</th>
<th>2 parts fresh grass clippings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost Recipe #2</td>
<td>3 parts dry leaves</td>
<td>1 part fresh grass clippings</td>
</tr>
<tr>
<td></td>
<td>1 part food scraps</td>
<td></td>
</tr>
</tbody>
</table>

See other side for solutions to common backyard composting problems.

Resources
Backyard Composting Tutorial (Sarasota County, Florida): This site offers an excellent 20-minute tutorial that teaches you the details about composting: www.compostinfo.com


U.S. Composting Council: Links to composting resources of all kinds. www.compostingcouncil.org/section.cfm?id=10

City of Austin, Texas: Composting www.ci.austin.tx.us/sws/compost.htm

Montgomery, Jefferson, and Collin County Extension Horticulturists Slide Show to backyard composting. appie.horticulture.tamu.edu/earthknd/compost/compost.html

Complete Compost Guide: www.compostguide.com


Mastercomposter.com (New Zealand): www.mastercomposter.com

Backyard Compost (New Mexico State University, College of Agriculture and Home Economics): www.cahe.nmsu.edu/pubs/_h/h110.html

Vermiculture: Composting with Worms
Vermiculture, or worm composting, uses red worms (Eisenia fetida) to biologically decompose food waste.

Why worms?
Red worms are very effective at decomposing kitchen food wastes. A pound of worms can eat a half-pound of food waste in just a few days. They reproduce quickly and are not difficult to maintain. Worms are perfect for everyone, even apartment dwellers, because they do not take up a lot of space, do not require going outside in the winter, and can survive on a diet made up of kitchen scraps.

The basics
Materials needed for composting with worms:
1. container, no more than one foot deep (common sizes: 1' x 2' x 3' or 1' x 2' x 2')
2. bedding for the worms, such as peat moss, corrugated cardboard, shredded paper or newspaper, and dirt.
3. sand (just a handful)
4. water
5. worms (one pound of worms for every half-pound of food)
6. food scraps
7. hand trowel

Setting up the worm bin is easy. Prepare the bedding by placing your chosen material into the bin. Add about a 3:1 ratio of water to bedding. Place a handful of soil or sand into the bin. Put some vegetable waste or fruit scraps into the bin for the worms to eat. Worms aren't very fussy—rotten or bruised food won't turn them off—but do not give them meat or dairy. Finally, add the worms to the bin.

Once you have your bin, try not to disturb the worms too often. About once or twice each week, place new food into the bin and bury it for the worms to eat. While you are feeding the worms, fluff up the soil to make sure it doesn't get too compacted.

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Recycling Plastic: Complications & Limitations

Plastic is light, easy to store and transport, comes in an endless variety of textures and shapes and can hold almost anything. Those properties make it attractive to manufacturers and packagers, who use it for anything from ketchup bottles to disposable utensils. Unfortunately, plastic is much more difficult to recycle than materials like glass, aluminum or paper. Most plastic soon ends up in a landfill or incinerator. Despite promotion of plastic recycling, plastic production has outpaced recycling by five times over the past decade. While increased plastic recycling is one way to alleviate this problem, it has only limited potential to reduce the glut of plastic waste.

Resin Codes Don’t Equal Recyclability

Almost all plastic products are imprinted with a resin code — a small number enclosed by the “chasing arrows” symbol. This code can be misleading, since it is not intended to indicate that the plastic is recyclable. Rather, the resin code is used by the plastics industry to indicate the general type of chemical compound used to make the product.

The resin codes were adopted by the Society of the Plastics Industry (SPI) in 1988 to provide an industry-wide standard that would make it easier to identify and sort recyclable plastic. As the SPI points out on its website, “The code was not intended to be — nor was it ever promoted as — a guarantee to consumers that a given item bearing the code will be accepted for recycling in their community.”

Sorting Plastic: Thousands of Variations

Although there are only seven resin codes, there are actually thousands of different types of plastic. Different combinations of dyes and additives can be added to the basic resin to produce a desired color, shape and texture in the final product. These variations in the manufacturing process lead to different melting points and other properties within the same resin code. To be made into another product, plastic must be carefully sorted by type. Combining different types of plastic renders it useless for manufacturing.

The technology exists to recycle most kinds of plastic, but a lack of infrastructure prevents all but the most widespread kinds of plastic from being recycled. For recycling to work, communities must be able to cost-effectively collect and sort plastic, and businesses must be willing to accept the material for processing. Collection is expensive because plastic bottles are light yet bulky, making it hard to efficiently gather significant amounts of matching plastic. Only a few kinds of plastic have the supply and market conditions that make recycling feasible.
Zero Waste Event Planning Checklist

Ami Voeltz, Do It Green! Minnesota

www.doitgreen.org

Use this guide when planning any event from an office meeting to a large public event. To download this list online, visit doitgreen.org.

Event Planning Tips:
Plan ahead! Communicate your waste reduction goals to all involved

Use reused materials or materials with recycled content.

Provide reusable items instead of disposable items when offering food.

Use easily recyclable items.

Be sure recycling containers are clearly marked at your event.

Monitor recycling containers and trash cans during the event.

Reducing Waste

Planning
Purge mailing lists to eliminate invalid addresses or duplicate mailings.

Paper: Use backsides of paper for drafts, use paper with recycled content and print double-sided for all event materials.

Consider the following publicity efforts to reduce waste:
- print on recycled paper
- use a printer that offers soy or vegetable inks
- use websites to offer more information so the publicity piece uses less paper (also reduces postage costs!)
- print addresses directly onto envelopes avoiding address label waste
- use removable or erasable dates when making signs and posters to allow for reuse

- instead of direct mail, consider newspaper, newsletters or radio announcements
- publicize your event via e-mail and web sites

At the Event
Consider displaying the agenda or other lists enlarged on easels instead of printing sheets to hand out to each participant.

Use reusable name badge holders and collect them afterwards for reuse.

Use dry erase boards or chalkboards instead of flip chart paper.

Use centerpieces that are reusable or can be taken home, such as plants in pots.

Offer reusable or durable remembrances of the event instead of one time use or items with a short life. (i.e. travel mugs or recycled pads of paper instead of pens or plastic toys).

Food & Recycling Waste

Provide reusable items for serving and eating food such as silverware, glasses, mugs and plates and cloth napkins that can be washed instead of paper. If no kitchen is available, someone might be willing to take them home to wash instead.

If using paper for food serving and eating, consider offering plates, cups and silverware made of recycled content. For small events, a volunteer may be willing to take paperware home to compost—over time, paper products will break down in a backyard compost bin.

Compost food scraps. If it is a small event, see if you can find someone to take the organic material home afterwards. If it is a very large event, work with your waste or recycling hauler to get the materials to a commercial compost facility. If your city has curbside composting service (Wayzata, Orono, Minnetonka, Hutchinson, Burnsville, and soon in Saint Paul), put food scraps, paperware, and compostable products at the curb for composting.

Avoid plasticware. Plastic products are made from the petroleum and cannot be recycled or composted (only plastic bottles can be recycled). Paper products and compostable products also give you the option to compost.

If you use compostable products at your event, be sure you have a place to take them when the event is over. (There is very little, if any, benefit to disposing of compostable products, but there is a significant environmental benefit to composting.) Compostable products don't break down well in a backyard compost bin; they need to be taken to a commercial compost facility.
Request and offer clearly labeled recycling and compost bins and services for your event. Consider attaching samples of each waste item that will be generated at your event on a sign above the proper disposal container. Make a plan for where these materials will go once the event is over.

Serve bite-size or finger foods that require no utensils or choose entrées that can be served in large containers versus over-packaged box lunches (i.e. self serve pasta in a large bowl or party sub sandwiches).

If serving box lunches, ask if they can be wrapped and/or packaged in recyclable containers or wraps (i.e. foil is recyclable verses plastic wrappings).

Accurately estimate attendance when placing orders or confirming a catering order. Consider placing a pre-order with your caterer and confirming the total attendance a few days beforehand to provide a more accurate number.

Event Location:
Look for a convenient location near bus lines or mass transportation to avoid excess driving.

Offer directions to your location by bus or light rail to make it easier for participants to use mass transportation. Offer directions by car for those who have no other options.

Seek naturally-lighted meeting rooms to conserve energy.

Seek a location that already offers recycling services.

Caterer
Try to find and use a caterer that can offer reusable items for serving and eating food such as silverware, glasses, mugs and plates and cloth napkins that can be washed instead of paper.

Consider caterers that use local, seasonal and organic foods.

Low Waste Event Products List:
For additional resources, see the Resource Box.

Local office supply stores or copy centers usually offer 30% recycled or 100%
recycled papers for printers.

For recycled content or biodegradable plates/cups/silverware, try your local natural foods store at twincitiesfood.coop/locations.

For real dishes, visit your local resale shop for mismatched silverware, plates and cups.

Resource Box

On the Web!
Free party invitations

evite.com

Act Locally!
Paper Depot
Minneapolis, MN
612-333-0512

paperdepotinc.com

Eureka Recycling - 100% post-consumer recycled papers and compostable goods.
Zero waste
event recycling services.
St. Paul, MN

651-222-7678
eurekarecycling.org/bg_coop.cfm

Artstarts' Art Scraps - Ribbons, tiles, paper, envelopes, frames, glitter, etc.
St. Paul, MN
651-698-2787
http://artstart.org/reusestore.html

Ax Man - Material by the yard, hardware parts, art materials, office products and more.
St. Paul, Fridley & St. Louis Park, MN
ax-man.com

Twin Cities Free Market
twincitiesfreemarket.org

Minnesota Materials Exchange
612-624-1300
mnexchange.org
Nature's Cleaners

Abrasives — An abrasive removes dirt from a surface by scrubbing it off. Nature's abrasives include salt and baking soda. Combining abrasives with acids, like vinegar, creates a very powerful cleanser.

Acids — Acids react chemically with dirt and lift the dirt off a surface. Natural acids include lemon juice, vinegar and ammonia. Like all acids, use these products with care and avoid touching the eyes after use. Even natural acids can be harmful or painful if used without caution.

Pastes — Pastes are alkali, the opposite of an acid. Alkali pastes remove dirt chemically, by bonding with acidic dirt. Applying paste with a soft cloth and allowing it to sit for awhile is very effective. Common alkali pastes include those containing baking soda.

Make your own products!

Using the list below, try making products of your own, and try them in your home. All of these materials are available in the grocery store.

Alum — Cleans stains such as rust on porcelain and removes hard water spots. Very effective when mixed with vinegar or lemon juice.

Baking soda — A mild abrasive, baking soda also absorbs odors and deodorizes.

Borax — A natural mineral mined from the earth, Borax deodorizes and inhibits mold growth.

Chalk — A mild abrasive cleaner that also whitens.

Cream of Tartar — Cleans porcelain, drains and metal.

Pumice — An abrasive, pumice can be used on tough stains.

Salt — A mild abrasive that also inhibits bacteria.

Citrus — Natural acid solvent and cleaner. Removes mineral build-up, tarnish and grease. Also an excellent air freshener.

White vinegar — Cuts grease, removes mineral build-up and inhibits mold growth. Also freshens the air.
Bag 'em up: Plastic sacks losing appeal

They can be found in all oceans, as far north as Alaska and across Africa, where some call it the national flower.

At just a penny to make, the bag's cheap yet sturdy allure accounts for 80 percent of all bags used at supermarkets and convenience stores, according to the American Plastics Council.

Gauthier's supermarket plans to eliminate the bags this spring, offering customers either paper bags or a reusable bag for 99 cents.

Similar moves at the Wedge Co-op in Minneapolis and at Whole Foods locations nationwide will go into effect by Earth Day, on April 22. The Austin, Texas-based Whole Foods company said it will distribute 50,000 reusable shopping bags for free, and then charge 99 cents each.

The Wedge plans to sell a variety of reusable bags that cost 99 cents to $16.69, said a spokesman.

The war of the bags is a familiar one to most grocers, who have responded with solutions that run from recycling centers for plastic bags to refunds for returning used bags.

At Lund's and Byerly's, customers can choose from three bags, including paper, reusable or thin plastic. The thin plastic bags will be replaced in March with a biodegradeable plastic bag, said company spokesman Aaron Sorensen.

"If a plastic bag ended up on the street, it would degrade," he said.

The larger grocers, including Cub Foods and Rainbow, have so far resisted a complete plastic-bag ban, but have begun selling reusable tote bags for customers who want to break away from plastic. The stores also recycle plastic bags returned by customers, sending the bags to a company that turns them into decking and furniture.

29 billion to 100 billion

So how many bags are consumed? It depends on who you ask.

The global use of plastic bags amounts to 100 billion a year, according to the Film and Bag Federation, an industry trade group. Others say it's much higher, approaching 100 billion in the United States alone. The website Reusablebags.com has a running ticker of U.S. bag consumption which, as of last night, topped 29 billion.

A petroleum-based bag takes 1,000 years to degrade and doesn't truly biodegrade but simply breaks into smaller toxic particles, potentially washing back into the food stream. A South Dakota farmer sued when his cow swallowed a plastic bag and died. And at least five states and the cities of Chicago and New York require warning labels on thin film bags like those handed out at supermarkets — they can suffocate children.

Taxes on shoppers or the bag-producing companies have been imposed in Ireland and Taiwan.

The bags are banned in Bangladesh, some remote Alaskan villages and the city of San Francisco.

If other supermarkets join the few that plan to ban them this spring, people won't give up their bags overnight, said Gauthier of Mississippi Market.

"We're trying to promote people bringing in their own bags," she said. "It's a big change for people to get used to. It will take time."

Matt McKinney
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Darci Gauthier of Mississippi Market in St. Paul