

Environmental education

Toolkit

for Early Childhood and Family Education



Hennepin County
Environmental Services
612-348-3777

Reducing waste and recycling is making Hennepin a COOL **county**.

Environmental education

Toolkit

for Early Childhood and Family Education

Credits

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Hennepin County works with community partners to promote environmental stewardship. Hennepin County Environmental Services' mission is to protect the environment and conserve resources for future generations.
www.hennepin.us/environment.

Community POWER is a grant program funded by the Solid Waste Management Coordinating Board (SWMCB). The SWMCB is a joint powers board comprised of two county commissioners from the counties of Anoka, Carver, Dakota, Hennepin, Ramsey and Washington. The program partners with community groups to engage local citizens in waste and toxicity reduction.
RethinkRecycling.com/grants

For additional copies:

This toolkit may be downloaded for free at RethinkRecycling.com/ECFEtoolkit.

Organizations located in Hennepin County may order a printed version of the toolkit by contacting Hennepin County at 612-348-4168.

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Getting Started

Introduction

Good stewardship of the environment and wise management of our resources are personal and community responsibilities that have a place in Early Childhood Family Education (ECFE).

Decisions we make everyday in the products we buy and use, how we take care of our home and yard, and in our transportation choices affect the environment. Families no longer spend hours in the kitchen preparing meals; instead, prepackaged foods and fast food containers contribute to the seven pounds of garbage that the average person creates daily. Electronics have revolutionized our lifestyles, yet they contain hazardous elements that require proper recycling and disposal. Today's cleaning products are made for faster and easier scrubbing in

our homes, but these products may contain toxic ingredients that could be harming our children's health. Keeping our yards looking great can require lots of fertilizer and pesticides that can affect the quality of nearby lakes and rivers. Driving from one activity to another is a part of our daily routines, but the energy we consume contributes to climate change. By making changes to our daily routines, we can live more sustainably and take care of the environment for our children.

Background: Connecting ECFE and environmental education

In 2005, Independent School District 197's Early Childhood Family Education program (serving West St. Paul, Mendota Heights, and Eagan, Minnesota) identified a need to build awareness in families of global issues that contribute to concerns they have in their everyday parenting. With the assistance of a Community POWER (Partners On Waste Education and Reduction) grant through the Solid Waste Management Coordinating Board, this program developed curriculum based on being better stewards of the earth with a focus on waste and toxicity reduction. This was a new subject area for both families and staff, and the learning that occurred for both groups was significant.

The lesson plans that were developed, implemented and are shared in this toolkit were extremely well received by the families. Evaluations indicated that not only did the information directly change family practices, but that parents wanted more information on the topics. Staff became so involved in the issues that they made changes in program procedures and practices.

Several other ECFE programs in the Twin Cities metropolitan area have subsequently integrated waste and toxicity reduction education into their programs, including the Forest Lake Family Center. Forest Lake built on ISD 197's work by expanding the information to include building visual-spatial skills and added special events for families. Leaders from ISD 197 and Forest Lake collaborated to share their lesson plans in this toolkit.

Community engaged parents

Building parents' awareness and encouraging their participation in public issues such as environmental topics is a goal of ECFE. The Community Engaged Parent Education model (e.g. "ECFE Around the Block") maintains that comprehensive parent education attends to both the person and public dimension of parenting. Parent educators can develop the capacity of parents for citizen deliberation and civic action on public issues related to children's well-being. Public dimensions of parenting can include neighborhood, community, culture, politics and the environment. Public issues can be woven into everyday parent education in the classroom to support public action in partnership with parents. Parents can be encouraged to "think beyond their front door."

Appropriate for adult learners

Because parent education is the heart of ECFE, this environmental curriculum is based on basic principles of how parents learn in groups.

- Parents can learn. Learning can take place at any time in life, regardless of age.
- Parent group education provides the basis for parents to develop new ways of thinking and behaving.
- Each parent learns in his or her own way. Each will learn at a different rate, with a different style, and to a different depth.
- Parents want to learn. They are especially interested in issues that affect the growth and development of their children.



Using these lessons

- Within each topic, a variety of activities and discussion questions are presented to engage parents and help them see the relationship of the content to their children.
- The lesson plans encourage active participation and allow parent educators to choose the format that will work best with their group.
- There is flexibility within the lesson plans so that teaching ideas and activities can be placed in lessons wherever they fit best: background/preparation, parent-child activities, check-in, topic introduction, content or home application.
- Resources from Hennepin County (including existing handouts, websites, learning trunks and presenters) will support you in teaching these concepts.
- Encourage parents to try new environmentally friendly behaviors at home and to share with each other what they have tried and learned.

Lessons integrated with the Minnesota's Parent Education Core Curriculum

The Minnesota's Parent Education Core Curriculum Framework and Indicators developed by the state of Minnesota's ECFE curriculum committee addresses content areas related to community or public dimensions, including the environment. The lesson plans created for this publication are based on the Parent Education Core Curriculum. The suggested activities support ECFE Indicators, such as those listed below.

1. Domain:

Culture and Community

2. Component:

Family Support and Community Involvement

3. Category:

Community Involvement and Social Change

4. Indicator:

“Parents support their child’s development when they support practices that enhance the well-being of all children and families in the community.”

1. Domain:

Culture and Community

2. Component:

Societal and Global Forces

3. Category:

Environment

4. Indicator:

“Parents support their child’s development when they support and work to create healthier environments for the well-being of all children and families.”

1. Domain:

Early Childhood Development

2. Component:

Cognitive Development

3. Category:

Social System Understanding

4. Indicator:

“Parents support their children’s development when they teach their children to share responsibility in taking care of their environment.”

Teaching families about

Reducing Waste



Resources

Essential background reading

If you plan to teach others about this issue, please become familiar with the information provided in the background section.

Web resources

- www.hennepin.us/reducewaste Find more tips on how to reduce waste.
- www.hennepin.us/choosetoreuse An online list of over 500 businesses and organizations that trade, repair, buy, resell or accept donations of unwanted household goods and clothing.
- www.hennepin.us/junkmail Find out how to reduce junk mail.
- RethinkRecycling.com Your go-to guide for waste and recycling in the Twin Cities.
- www.reduce.org Minnesota Pollution Control Agency's website for waste reduction tips, including ideas on how to reduce junk mail.
- www.twincitiesfreemarket.org A free online exchange for household items.

Handout print resources

Samples can be found in the Appendix

From Hennepin County

- *Donation Opportunities Guide*
- *Greening Your Celebrations*
- *Hold the Mail*
- *Too Much Packaging is a Waste*
- *How to Pack a No-Waste Lunch* bookmark
- “Remember Your Bag” window cling
- Choose to Reuse directory magnet
- **To order:**
Order literature online for no charge at www.hennepin.us/literatureorderform or call 612-348-4168.

From the Minnesota Pollution Control Agency

- *Reducing Waste at Home, Work or School* (each are separate pieces)
- *Reduce Trash When You Shop*
- *How to Compost Your Organic Waste*
- **To order:**
Request literature by e-mail: resourcecenter.pca@state.mn.us or call 651-757-2120. PDF versions can also be downloaded at www.reduce.org under “educational toolbox.”

Video

- Introductory video – *Waste: What's the Problem*
Use this short video, found in the Appendix, as an introduction to waste issues. It is also available online at www.hennepin.us/environmentaleducation.

Activity kits

- **Packaging Waste Reduction Learning Trunk**

This kit is provided, on a loan basis, as a waste education tool for food and beverage packaging. It demonstrates the differences in cost and packaging waste when purchasing single-serve items versus those packaged in bulk or concentrate. It also addresses packaging recyclability. Contact Hennepin County Environmental Services for more details, 612-348-4168 or visit www.hennepin.us/environmentaleducation.

Activity kits, cont'd on the next page

– Greening Your Celebrations

Learning Trunk

This kit helps illustrate ideas for giving more environmentally friendly gifts and hosting greener parties. This kit illustrates many ideas from the *Greening Your Celebrations* brochure. The kit includes examples of greener gift ideas, examples of reusable or less waste gift wrapping, and examples of less waste or reusable party supplies.

Background

Households in Minnesota are creating and throwing away more waste than ever. From junk mail to excess paint to food scraps – it takes a lot of time and money to deal with all of the garbage. You probably do not go to the store saying, “I think I’ll buy some garbage today.” But depending on which products you choose, that might be what you’re doing. By purchasing items that are overly packaged, disposable or of poor quality, your cash can soon end up as trash.

Let’s talk about how we can reduce waste at home and when we shop. This is good for the environment and can save money!



Easy things to reduce waste: Pack a no-waste lunch.

Waste facts

- Each person in the Twin Cities metro area generates seven pounds of waste each day, that’s enough to fill the Metrodome 11 times every year!
- Nearly 30 percent of our trash is packaging. Much of it is cardboard that can be reused or recycled.
- Every year an average household receives more than 100 pounds of unwanted, unsolicited mail.
- Food waste accounts for 11 percent of the garbage we throw away. Much of this waste can be avoided or put to better use by composting.
- Every year, Hennepin County residents throw away 32 million pounds of reusable goods. That’s enough stuff to fill shopping carts lined up from Minneapolis to Milwaukee.

Top ten easy things you can do to reduce waste

1. **Get your name off junk mail lists.** Go to www.hennepin.us/reducewaste to find ways to get off junk mail lists. Add privacy statements to anything asking for your contact information.
2. **Pack a no-waste lunch.** Use a reusable lunch box or bag and reusable containers instead of plastic bags or disposable containers. Don’t forget a cloth napkin.
3. **Compost your kitchen scraps.** You can compost your fruit and vegetable scraps, coffee grounds and egg shells in a backyard compost bin.
4. **Bring a reusable mug with you.** Have a latte every day? Bring a reusable mug with you to the coffee shop. Buy water every day? Use a refillable bottle.
5. **Look for less packaging and avoid disposables.** At the grocery store, buy in bulk and bring bags or containers to fill. Choose products with the least packaging over individually wrapped items. You’ll save money, too.
6. **Borrow, rent and 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, give away or donate usable clothing and household goods.** Donate reusable items to a local thrift store. Check the Choose to Reuse Directory at www.hennepin.us/choosetoreuse for options.
9. **Give green gifts.** Avoid over-packaged, resource consuming gifts that will need batteries or electricity. Consider making a gift, sharing an experience or giving an environmentally friendly product.
10. **Educate yourself, friends and family about waste reduction and reuse.** For details on the ideas presented above, visit RethinkRecycling.com, reduce.org and www.hennepin.us/reducewaste, and spread the word!

Integrated daily lesson plan: Reducing waste

Lesson objectives

1. Participants will learn strategies so their families create less waste and save money when making purchases and other decisions.
2. Participants will assess their typical purchasing practices and other habits to determine the influence of packaging on the creation of waste.

Minnesota's Parent Education Core Curriculum framework and indicators

Domain– Culture and Community

- Environment
- Community Involvement and Social Change

Indicator– Parents support their children's development when they:

- Participate in discussions about social and community issues
- Support practices that enhance the well-being of all children and families in the community
- Understand the impact of environmental influences such as clean water, chemical-free foods and clean air.
- Support and work to create healthier environments for the well-being of all children and families.

Child Development Links:

- Approaches to Learning (Curiosity, Imagination and Invention)
- Creativity and the Arts (Creating, Evaluating)
- Cognitive Development (Scientific Thinking and Problem Solving, Mathematical and Logical Thinking)
- Physical and Motor Development (Fine Motor Development)

Easy things to reduce waste:
Compost your kitchen scraps.



Pack a no-waste lunch.

Parent-child interaction activities

Choose one or more activities for the early childhood classroom based on your group and time.

Parent-child Activity #1 Litter song

This is a song to the tune of *London Bridge is Falling Down*:

- Let's look for litter and pick it up,
- Pick it up, pick it up.
- Let's look for litter and pick it up,
- We'll help our earth stay clean.

Families can sing the song and help children practice picking up items from the floor and throwing them away.

Suggested supplies:

- Any clean items of “garbage” or recycling
- Trash can or recycling bin

Parent-child Activity #2: Make your own gift wrap/ bags/cards

Instead of spending money on new wrapping paper, gift bags or cards that can't be recycled, help parents and children make their own.

Friends and grandparents will enjoy receiving something made by hand.

- Decorate plain newsprint, brown craft paper, boxes, grocery bags or old cardstock using stencils, collage, crayons or markers (these papers can be recycled later).
- Use old gift wrap, newspapers, fabric or wallpaper scraps to make a gift bag. Search “make your own gift bag” on the internet for pattern ideas.

Suggested supplies:

- Supplies listed above, plus scissors, paint or glue if needed.

Parent-child Activity #3: Shaker bottle

Parents and children will create a toy out of disposable packaging. For example, with infants and toddlers, create sensory bottles out of pop and/or bottled water containers. Use empty bottles with lids. Have a variety of objects set out in bowls such as pompoms, feathers, Q-tips, etc. Parents and children can put items into water bottle. Hot glue or duct tape lid on. Have parents inspect the bottle frequently.

Suggested supplies:

- Empty pop and/or bottled water containers (could ask parents to bring from home)
- Items to put in empty bottles, such as pompoms, feathers, Q-tips
- Hot glue or duct tape

Parent-child Activity #4: Cookie/brownie mix gift containers

Using small, plastic coffee containers, have children mix dry ingredients for cookies and brownies. Put mix into the coffee can. Decorate a strip of recycled paper to go around the can and hang a cookie cutter with ribbon from the can with a recipe to make a great gift.

Suggested supplies:

- Dry ingredients for cookies or brownies
- Empty plastic jars or coffee cans
- Recycled paper, ribbon, cookie cutter for decoration
- Recipes printed on paper

Parent-child Activity #5: Sensory table

Put clean, plastic lids from containers such as water bottles, pop bottles, juice bottles, milk jugs, etc into sensory table. Let children sort and play with them.

Suggested supplies:

- Clean plastic lids from containers (could ask parents to bring from home).

Parent-child Activity #6: Make new crayons from broken ones

Instead of throwing away broken crayons, parents and children can make new ones together. An oven is needed for this activity:

- Peel all paper off broken crayons
- Preheat oven to 275 degrees F.
- Spray large or small muffin tins with cooking spray
- Fill tins with crayons (solid or mixed colors)
- Bake for 7 - 14 minutes
- While still warm, use a toothpick to swirl colors if desired
- Cool completely, then pop out of tins

Parent observation question:

Observe your child creating toys/games/activities from discarded items versus a purchased toy. What is your child's reaction to toys made from reused items versus a purchased toy? (Parents might observe that children can learn and have fun with simple household objects just as much as a purchased toy.)

Adult lesson

Choose one or more activities based on your group and time.

Guided check-in/ discussion starter

Ask parents about the above parent observation question: What is your child's reaction to toys made from reused items versus a purchased toy?

View the short video, *Waste: What's the Problem*, on waste and toxicity reduction found in the Appendix or online at www.hennepin.us/environmentaleducation.



Create reusable shopping bags. This activity could also be used as a parent-child activity.

Activities: Content and teaching methods

Activity #1: Wise Up About Waste quiz

Have participants take the *Wise-Up About Waste!* quiz. It is designed to teach people about waste issues and how much they already know about waste reduction.

Suggested supplies:

- *Wise Up About Waste* quiz (see Appendix)

Discussion starter: What did you learn about yourself after taking the quiz? (Now set quiz aside until the end of the lesson.)

Activity #2: Compare waste and cost savings of overly packaged products

Set out food items that are overly packaged alongside the same items that could be purchased in larger quantities or bulk, e.g. goldfish crackers, raisins, animal crackers, juice boxes/pouches. Compare the price and packaging differences between the two. Discuss the options for purchasing foods in larger quantities or in bulk.

Suggested supplies:

- Examples of food items that are overly packaged and similar foods with less packaging
- List of prices
- Handout: *Too Much Packaging Is A Waste*
- Handout: *Reduce Trash When You Shop*

Additional resource:

- **Packaging Waste Reduction Learning Trunk**

See page 7 for a description of this trunk.

Discussion starters: Was anyone already buying in bulk to save money or reduce waste? What were you already buying in bulk? Was anyone surprised by the difference in the prices? In addition to avoiding overly packaged products, what else can we do when shopping to reduce waste? (One answer: take reusable bags for carrying groceries home.)

Activity #3: Create reusable shopping bags

(Can also be used as a parent-child activity.)

Pass out plain reusable bags as well as baskets of reusable art scraps, markers, glitter, etc. to decorate the bags. As parents are decorating their reusable bags, discuss the major influences on how we decide what to buy and how can we change our purchasing habits to reduce waste.

Suggested supplies:

- Reusable bags made from canvas, cotton, recycled plastic, etc.
- Markers
- Glue, glitter
- Art scraps such as yarn, ribbon, fabric.
- Handout: “Remember Your Bag” window cling

Discussion starters: Does anyone in our class already bring reusable bags when shopping? What motivated you to start bringing reusable bags? Where did you get the bags? If you are not bringing a bag with you when shopping, what is holding you back? How can people overcome those barriers?

Activity #4: Reducing junk mail

The average American household receives more than 500 pieces of advertising mail each year. Share the handout on reducing junk mail and discuss what people have tried to do to reduce junk mail. Discuss how nearly all mail can be recycled (e.g., all paper can be recycled, and CDs that come in the mail can be recycled at drop-offs like Best Buy.)

Suggested supplies:

- Handout: *Hold the Mail*

Discussion starters: About how much unwanted mail do you get every day or every week? What have you already done to reduce the amount of unwanted mail you receive? Why do our names and even our children's names end up on so many lists? (One answer: Direct marketing is cost effective for businesses).

Activity #5: Buying used first

Each year, 32 million pounds of usable clothing and household goods – enough to fill shopping carts from Minneapolis to Milwaukee – are thrown away by Hennepin County residents. Share the *Donation Opportunities brochure*. If internet access is available, demonstrate how to use Hennepin County's *Choose To Reuse Directory*, available at www.hennepin.us/choosetoreuse, and the Twin Cities Free Market www.twincitiesfree market.org. Discuss how parents have donated items they don't need, and creative ways to buy or get used items.

Suggested supplies:

- Handout: *Donation Opportunities brochure*
- Computer with internet access.

Discussion starters: In your experience, what are some of the best items to get secondhand? Why? In our community, what are some good sources for getting used items? Have you ever experimented and tried not to buy any new items (besides food, toiletries, etc.) for a week or month? What are some benefits of buying used items and donating old items? When your child outgrows or no longer plays with a toy, game or puzzle, what do you do with it?

Activity #6: Reducing waste during celebrations and birthday parties

(Can also be used as a parent-child activity.)

On an average day, a typical Minnesotan creates seven pounds of waste. But from Thanksgiving to New Year's Day, household waste increases by more than 25 percent. Share the *Greening Your Celebrations brochure*. Depending on time of year that the lesson is taught, share ideas about homemade Halloween costumes using items from thrift stores, homemade holiday gifts, and creative ways to wrap gifts. Discuss ways to make your next birthday party a low-waste event (see party planning tips in the *Greening Your Celebrations brochure* and consider doing children's activities and parent-child activities from this toolkit at the party).

Suggested supplies:

- Handout: *Greening Your Celebrations*
- Examples of thrift store costumes
- Old greeting cards to be cut and reused, old gift wrap or other materials to be made into gift bags, cloth to sew gift bags, etc. See Additional Educational Resources for information about ArtStart's ArtScraps Store.
- Additional resource– *Greening Your Celebrations Learning Trunk*. See page 8 for a description of this trunk.

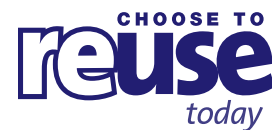
Discussion starters: Why do we tend to become more wasteful around holidays? What are some creative ways you have reduced waste when giving or wrapping gifts? What can we teach our children about holidays and reducing waste?

Activity #7: Reducing waste in ECFE program operations

Discuss ways that waste can be reduced in the operations of the ECFE program, such as using ceramic mugs instead of disposable cups or bringing snacks with minimal packaging. Brainstorm with parents the changes that could be made and commit to make one or more changes as a group. See "Environmental Resources for Internal Operations" section (pg. 51) for additional ideas.

Summary/closure and home application:

- Have participants review their score on the *Wise-Up About Waste!* quiz. Ask participants to commit to one or more ways to reduce waste in the next week and practice those activities.
- Parents could fill out a pledge card describing what they plan to do and post the card in a visible spot (e.g., on the refrigerator) at home as a reminder. See sample pledge card in the Appendix.



Each September, Choose to Reuse coupon books for discounts in October and November are available free from Hennepin County. Call 612-348-4787 to request copies to distribute.

Teaching families about

Recycling

Resources

Essential background reading

Learn about recycling systems in the communities where your families live. You'll need this to share how families can get bins, what can be recycled, and how materials need to be sorted. Visit *RethinkRecycling.com*.

- Hennepin County's *Residential Curbside Recycling Guide* (see Appendix)

Recycling promotion materials

- Solid Waste Management Coordinating Board's Rethink Recycling Toolkit. This toolkit has articles, images and advertising to promote recycling. Visit www.swmcb.org/rethink_recycling_toolkit

Web resources

- *RethinkRecycling.com*
Your go-to guide for waste and recycling in the Twin Cities.
- www.hennepin.us/recycling
Links to city recycling contacts, recycling drop-off centers and tips for apartment and condominium recycling.
- www.recyclemoreminnesota.org
The Minnesota Pollution Control Agency's website for statewide recycling information.
- www.recycleminnesota.org
The Recycling Association of Minnesota's website offers posters, educational DVDs and other resources for educators.

Handout print resources

Samples can be found in the Appendix. Contact your city for specific recycling information. Contact information for city recycling programs can be found www.hennepin.us/recycling or go to *RethinkRecycling.com*.

From Hennepin County

- *Residential Curbside Recycling Guide*
- *Recycling chart activity for kids*
- *Recycling guide in Spanish "Manual de Reciclaje"*
- **To order:**
Order literature online at www.hennepin.us/literature_orderform or call 612-348-4168.

Resources, cont'd on the next page

Video

- **Introductory video--**
Waste: What's the Problem
Use the short video found in the Appendix as an introduction to waste issues. This video is also available online at www.hennepin.us/environmentaleducation.

Learning trunks

- **Reduce, Reuse, Recycle Learning Trunk**
The learning trunk includes activity ideas, books and DVDs for pre-K through grade 12.
- **Recycled Products Learning Trunk**
This trunk demonstrates the importance of completing the loop by purchasing goods made from recycled content. It includes example products, activity guides, books, posters, DVDs and videos.
- **Recycling Sorting Activity**
The activity includes materials that can and cannot be recycled.

Contact Hennepin County Environmental Services to check out a learning trunk at 612-348-4168 or visit www.hennepin.us/environmentaleducation.



Examples of materials included in the learning trunks.

Background

Residents and businesses in the Twin Cities area recycle more than 1.3 million tons of waste each year. That's about 43 percent of the garbage we generate. Curbside recycling is simple and convenient and is something your children can help you do.

Your recycling duties are not over when you place your bin at the curb. To close the recycling loop, recyclables must be made into new products. To make recycling work, people must purchase items with recycled content such as notebooks, copy paper, trash bags and door mats. Look on a product's label for the words "this item is made from recycled materials" or "made from reclaimed materials."

Recycling facts

- About one-third of what we throw away at home could have been recycled through curbside programs. There is still more to recycle.
- Our recycling rate in Minnesota has not significantly increased since 1998.
- About 20 percent of Minnesota's household garbage is recyclable paper.
- Twin Cities metro area residents recycle almost 1 million pounds of paper every single day.
- Recycling paper doesn't just save trees! Production of recycled paper uses 80 percent less water, 65 percent less energy and produces 95 percent less air pollution than paper production using raw materials.
- A newspaper is recycled and back in circulation in less than four weeks.
- Nationally, only one out of every five plastic bottles is recycled.
- Recycling one aluminum can saves enough energy to power a TV or computer for three hours.
- Recycling one glass jar saves enough electricity to light a conventional 60-watt bulb for four hours or an 11-watt compact fluorescent bulb for 20 hours.
- It takes 95 percent less energy to make aluminum from recycled material than it does to make it from scratch. Making new products from recycled steel results in a 60 percent energy savings, using recycled plastic results in a 70 percent energy savings, and using recycled glass results in a 40 percent energy savings.
- Five plastic soda bottles yield enough fiber for one extra large T-shirt, one square foot of carpet or enough fiber fill for one ski jacket.
- Recycling reduces greenhouse gases. In one year, recycling in Minnesota reduces emissions equal to taking 1.2 million cars off the road.

Dos and don'ts of recycling

Recycle the old recycling rules.

Curbside recycling programs have expanded over the years. You can recycle more items than you think and your collection method may have changed.

Take a few minutes to reacquaint yourself with your community's recycling program. Visit www.hennepin.us/recycling or go to RethinkRecycling.com for links to your community's recycling information.



All of these materials are recyclable.

- **Do recycle more paper:** for example mail, office and school papers, magazines, newspaper inserts, phone books, cereal boxes, and shoe boxes. Don't forget your plastic bottles, glass bottles and jars, and metal cans.

- **Don't recycle** yogurt containers, margarine tubs, styrofoam, food-soiled paper, wax paper, glassware and ceramics.

- **Think about where you generate recycling at home**—it's not just in the kitchen. Place recycling containers where you read your mail, pay your bills and use the computer.

- **Recycle when you are on the go.** Look for recycling bins at work, school, shopping centers or parks. If you don't see recycling, let managers know that recycling is important to you.

- **Close the loop, buy recycled.** All the paper, plastic, metals and glass that you've been recycling are made into all sorts of everyday products and packages that are available on the market now. Items labeled "post-consumer content" are made from the materials you recycle at home.

Items commonly made out of recycled materials (and what they are made from):

- Glass food jars, including baby food jars (glass)
- Pop cans (aluminum)
- Metal food cans (steel)
- Rubber welcome mats (tire rubber)
- Newspaper (mixed paper)
- Plastic lumber (plastic bottles)
- Checks (office paper)
- Copy paper (office paper)
- Greeting cards - Shoebox at Hallmark, Recycled Paper Greetings Inc. available at Target and other stores (office paper)
- Carpet (plastic bottles)
- Fleece (plastic bottles)
- Cardboard boxes (cardboard, boxboard)



All of these paper materials are recyclable.



Integrated daily lesson plan: Recycling

Lesson objectives

1. Participants will learn which items can be recycled.
2. Participants will learn how recycling saves natural resources and reduces global warming.



Minnesota's Parent Education Core Curriculum framework and indicators

Domain— Culture and Community

- Environment
- Community Involvement and Social Change

Indicator— Parents support their children's development when they:

- Participate in discussions about social and community issues.
- Support practices that enhance the well-being of all children and families in the community.
- Understand the impact of environmental influences such as clean water, chemical-free foods and clean air.
- Support and work to create healthier environments for the well-being of all children and families.

Child Development Links:

- Physical and Motor Development (Fine Motor Development)
- Approaches to Learning (Curiosity, Imagination and Invention)

Parent-child interaction activities (for adults and preschoolers)

Choose one or more activities to use in early childhood classroom based on your group and time.

Note: Activity #1 (Sorting) is the best parent-child activity option for very young children. Adapt the complexity of the activity based on the ages in your group.



Parent-child Activity #1: Sorting game

Each community determines how recyclables need to be sorted (or not sorted) to be put out at the curb.

Check *RethinkRecycling.com* or call your city to learn how to sort materials for recycling in your community.

Use this activity to help children practice sorting. Set up four boxes – one for paper, one for cans, one for plastic bottles, and one for items that cannot be recycled (note that glass bottle are also recyclable, but not safe for a pre-school activity). As parent-child activity, have families sort cans, plastics, paper and trash (non-recyclables) into labeled bins. Parents can start by asking the children where they think the item goes. Encourage parents to talk with their children about the importance of recycling. For example, discuss how recycled items are turned into new things or how recycling creates less garbage.

Suggested supplies:

- Items that can be recycled: office paper, newspaper, cardboard, plastic bottles, aluminum cans.
- Trash (items that cannot be recycled): plastic candy wrappers, broken toys, styrofoam cups, etc.
- Handout: *Residential Curbside Recycling Guide* (see Appendix)

Discussion starter: As parents and children are doing the sorting activity, encourage parents to ask their pre-school age children: Why is it important to sort these things? Let children answer but also have parents explain that the recycling truck takes recycling away to a place where the materials are made into something new. You could have examples of items made with recycled content to show them (see list in the Introduction).

Parent-child Activity #2: Make a recycling chart

Parents help their children cut out photos from magazines or draw pictures of the items that can be recycled in their community. Paste the pictures onto a blank piece of paper or the blank *Recycling Chart* in the Appendix and post the recycling chart in the kitchen or near the garbage/recycling area.

Suggested supplies:

- Handout: *Residential Curbside Recycling Guide*
- Copies of blank *Recycling Chart* (see Appendix) or blank pieces of paper
- Magazines with kitchen/housewares photos
- Glue
- Crayons
- Scissors

Parent-child Activity #3: Make a trash art mural

Using colorful, clean trash items that cannot be recycled, make a wall mural together as a class (or individual art projects). Consider a theme like a rainbow, a garden, undersea landscape, etc. and help children identify colors, textures, patterns. Discuss the many small packaging items we use and discard every day. Ask parents for their creative ideas to avoid these items in the future.

Suggested supplies:

- Butcher paper or newsprint, glue or tape, scissors.
- Clean, colorful items that cannot be recycled, for example, food/snack wrappers, plastic straws, used wrapping paper. See the *Residential Curbside Recycling Guide* for a full list. Planning ahead, share the Guide in advance and ask families to bring non-recyclable items from home.

Parent-child Activity #4: Make a recycling “monster”

Using two paper grocery bags, parents and children can create a recycling “monster” (or other type of animal) that is hungry for everything you recycle – cans, paper, milk jugs and more! The monster can serve as a receptacle in the home for recycling. To make:

1. Use two same-size brown grocery bags. Cut a large oval in the bottom of one of bags. Slide it upside-down over the other bag, so the oval is on top. The oval will be your monster’s mouth.
2. Decorate the bag with fabric scraps, crayons or other materials to make the monster’s eyes, nose, hair, teeth, etc.
3. When the monster is full, pull off the decorated bag, put the recycling out for curbside collection, and replace the inside bag.
4. Adding a pipe cleaner handle will make removing the top bag easier.

You can make more than one monster if your community requires you to sort your recycling.

Suggested supplies:

- 2 paper bags (grocery bag or similar)
- Pipe cleaners (for handles)
- Fabric scraps, old greeting cards, bottle tops or any other materials to decorate your monster— See Additional Educational Resources (pg. 29) for information about ArtStart’s ArtScraps Store.
- Glue
- Scissors



Adult lesson

Choose one or more activities to use based on your group and time.

Guided check-in/ discussion starter

View the short video, *Waste: What’s the Problem*, on waste and toxicity reduction found in this toolkit.

Check in with parents regarding their child’s interest in the parent/child activity. Ask how many families recycle and how many involve their children in recycling? Explain that children need lots of explanation about why and what happens to recycling. As you were doing the recycling activity in the children’s classroom, what kinds of things did you and your child talk about? What questions did they have?

Activities: Content and teaching methods

Activity #1: What can and can’t be recycled?

Put two items at each person’s spot before the group starts. Go around table and ask each person to identify if the item is recyclable or not. Examples could be plastic milk jugs, plastic yogurt tubs, glass bottles, frozen food boxes, mail, shredded paper, etc. (see the *Residential Curbside Recycling Guide* for lists of what can and cannot be recycled). Alternatively, construct a bag of trash from a typical home (or from specific rooms in a home, e.g., kitchen, bathroom, office). Share the bag and contents and ask small groups to identify what can be recycled or reused. Share the *Residential Curbside Recycling Guide*.

Activity #1, cont’d on pg. 18

Suggested supplies:

- Handout: *Residential Curbside Recycling Guide*
- Items that can and cannot be recycled

Discussion starter: Ask the group what other kinds of things they recycle or think can be recycled. List on board. Ask how parents organize the recycling area in their home. What are creative ways to make recycling work in small spaces or to make the recycling area more attractive?

Activity #2: Children’s book reading—*The Lorax*

Read the children’s book *The Lorax* by Dr. Seuss, and use the discussion starters below. *The Lorax* could also be used as a closing activity.

Suggested supplies:

- Dr. Seuss, *The Lorax*
- See the Children’s Book List in the “Additional education resources” section (pg. 49) for additional waste reduction and recycling books to be used for this activity.

Discussion starters: Ask parents how this book relates to recycling. How does it relate to the real world? What happens when something is taken from the earth and not replaced? Why should we be concerned about this?

Activity #3: What’s in your trash can?

Pass out the *Trash Checklist* (see Appendix) and ask parents to check off what they threw away in the past week. Tally a group score. Identify the most common things that the group threw out. Form smaller groups and give each one a bag of “typical” household trash. Ask the groups to discuss how the items could be recycled, reused, avoided or composted. Share creative ideas with the large group.

Suggested supplies:

- Copies of the *Trash Checklist* for each parent
- Bags containing typical household trash items

Discussion starters: Which items could have been recycled, reused, avoided or composted? If we go through the *Trash Checklist* again next week, what would you like to avoid having in your trash?

Activity #4: Recycling facts

Review the facts found in the Introduction to Recycling. Post the facts on individual notecards/post-its around the room. Ask parents to walk around the room, read the facts and choose one that was new or interesting to them. Ask each parent to share the fact with the group and their thoughts about it.

Suggested supplies:

- Facts found in the introduction to this section

Discussion starters: Which facts surprised you the most?

Activity #5: Recycling and global warming

Share or present the one-page handout referenced below on how recycling helps mitigate global warming. Use the discussion starters below with the group.

Suggested supplies:

- Article 9: *Recycling Mitigates Global Warming* from the SWMCB Rethink Recycling Toolkit. (See Appendix or www.swmcb.org/rethink_recycling_toolkit)

Discussion starters: Were you already aware of the different ways recycling can help prevent global warming? Did anything about the article surprise you? Using the examples from the article about the different ways recycling helps prevent global warming, what other things can be done, in addition to recycling, that will have similar outcomes for the natural world?

Summary/closure and home application:

If some families do not have a recycling bin or do not know the recycling system in their municipality, give them the contact information they need to get started (information is available on the *RethinkRecycling.com* website) and ask them to start recycling at home.

Ask all parents to share out loud at least one new item they will start recycling. How can they involve the children?

Teaching families about

Toxicity Reduction

Resources

Essential background reading

- The toxicity reduction *Background* section
- Hennepin County handouts (see Appendix)
 - *Household Hazardous Waste Problem Materials Guide*
 - *Drop-off Facilities* brochure
 - *Non-Toxic Cleaning Recipes*

Additional background information

(see Appendix)

- Minnesota Pollution Control Agency's
 - *Reduce the Need for Pesticides and Herbicides*
 - *How to Grow a Healthy, No-Waste Lawn and Garden*

Web resources

- www.hennepin.us/dropoffs
Hennepin County offers two drop-off facilities for residents to properly dispose of household hazardous wastes for no charge. The Brooklyn Park and Bloomington facilities are open year-round. For more information, call 612-348-3777.
- www.hennepin.us, search: a to z guide
Hennepin County's A to Z How-To-Get-Rid-of-It Guide is an online resource with information on how to dispose of over 400 common household items.
- RethinkRecycling.com
Your go-to guide for waste and recycling in the Twin Cities.
- reduce.org
Tips on how to reduce toxicity at home.

Handout print resources

Samples can be found in the Appendix

From Hennepin County

- *How to Identify Hazardous Products* factsheet
- *Ways to Reduce Harmful Chemicals in Your Home* factsheet
- *Household Hazardous Waste and Problem Materials Guide* (Also Available In Spanish)
- *Fluorescent Light Bulbs: Buy Them, Use Them, Recycle Them*
- *Mercury and Mercury-Containing Products*
- *Household Batteries: Recycling and Disposal Information*
- *Drop-Off Facilities* brochure
- *Earth-Friendly Home Landscaping Guide*
- *Non-Toxic Cleaning Recipes*
- **To order:** Order literature online at www.hennepin.us/literatureorderform or call 612-348-4168.

From the Minnesota Pollution Control Agency

- *Reduce the Need for Pesticides and Herbicides*
- *How to Grow a Healthy, No-Waste Lawn and Garden*
- **To order:** Request literature by email at resourcecenter.pca@state.mn.us or call 651-757-2120. PDF versions can also be downloaded at www.reduce.org under educational toolbox.

Learning trunks

- **Household Hazardous Waste Learning Trunk**

The Household Hazardous Waste Learning Trunk helps educators explain the importance of proper use, storage, disposal, and safety information of household hazardous products.

The trunk includes sample products for label reading activity, photos of similar-looking hazardous and non-hazardous products to illustrate the importance of proper storage, and activities, lesson plans and project ideas.

Learn more about the learning trunk and how to check it out at www.hennepin.us/environmentaleducation or by calling 612-348-4168.

Video

- **Are you exposing your children to a toxic brew?**

This video explores the toxicity of common household products. It is a good introduction to the topic of toxicity reduction and the importance of label reading. This video can be checked out by calling Hennepin County at 612-348-4168.

Background

What are household hazardous products and where do you find them? How do chemicals enter your body? How do we identify hazardous products and what can we do to decrease toxic chemicals in our homes? Let's discuss how to create safer home environments for our children and ourselves.

From the water we drink to 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, 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. Pound for pound, children breathe more air, drink more water and eat more food than adults. When children play, they crawl and put things in their mouths. As a result, children have an increased chance of exposure to pollutants, and because children's bodies are still developing, they may process these pollutants differently from adults.

We use household hazardous products every day in cleaning and fixing our homes, maintaining our cars and taking care of our lawns. Look at labels to distinguish household hazardous products from other products used in and around the home. A household hazardous product has one

or more of these words (often called "signal" words) on the label: caution, warning, danger or poison. These products can be found in kitchens, laundry rooms, basements, garages or storage areas. Examples of household hazardous wastes include acids, aerosol cans with product remaining, antifreeze, drain cleaner, driveway sealer, items that contain mercury (e.g., thermometers, thermostats and compact fluorescent bulbs), motor oil, oil filters, oven cleaner, paint and stains, paint thinner, paint stripper, pesticides, pool chemicals and wood preservatives.

The *How to Identify Hazardous Products* factsheet also contains the following information that can be handed out to parents.

Signal words

Signal words explain how toxic or hazardous a product is. Signal words are required by law on the labels of hazardous products.

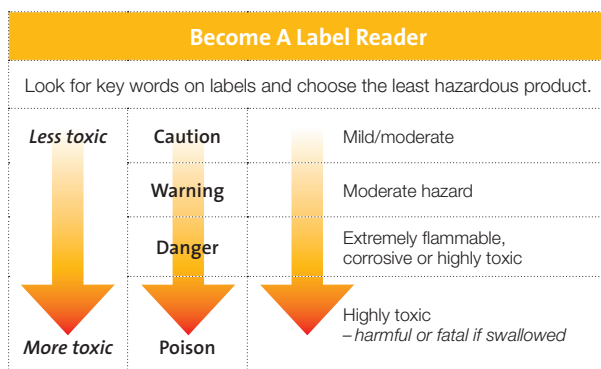
- **Caution**— mildly to moderately hazardous (not fatal if swallowed but the product may irritate the skin or make a person sick)
- **Warning**— moderately hazardous
- **Danger**— extremely hazardous, i.e., extremely flammable, corrosive or highly toxic
- **Poison**— highly toxic (harmful or fatal if swallowed)

Characteristic words

Characteristic words indicate the type of hazard posed by a product and are usually found after the signal word on the label. The following terms are characteristic words:

- **Flammable/Combustible:** This means that the product can easily catch fire and support a flame.

- **Corrosive:** The words "corrosive," "acid," "caustic," "lye," "alkaline," or "causes burns to the skin" mean that the product can burn the skin or eyes. This material can also eat away other materials with which it comes into contact.
- **Toxic:** The words "poison" or "harmful if swallowed" mean that the product is poisonous and can be harmful or fatal if swallowed, inhaled, or absorbed through the skin.
- **Reactive:** The words "do not mix with..." or "store separately from other products" mean that the product may react violently or produce toxic gas if combined with other substances. Examples include certain types of drain cleaners, oven cleaners or other products containing bleach, ammonia or lye.



Exposure pathways

Household hazardous products can be harmful not only to the environment but also to humans and animals. The ways that chemicals enter the body are called exposure pathways. The four exposure pathways are:

1. **Contact:** Many chemicals can cause harm by getting on your skin, in your eyes or in your nose or throat. They can irritate or burn the exposed areas. Many labels say “avoid skin contact,” “wear rubber gloves” or “wash hands after use” to warn people about possible injuries.
2. **Absorption:** Absorption occurs when a substance enters your body through the pores in your skin.
3. **Ingestion:** When you eat or drink something, you ingest it. From the stomach or intestines, the poisons can enter the bloodstream and be carried to all parts of the body. Some harmful chemicals can stay in the body for a long time.
4. **Inhalation:** You can breathe in harmful vapors or fumes when liquids evaporate. You can also breathe in the harmful mist from aerosol sprays. From the nose or mouth, the vapors go into the lungs and then into the bloodstream. Labels may say “use only in adequate ventilation.”

Storing products properly can help prevent accidents and extend a product’s life.

- Keep products out of reach of children and animals.
- Store all hazardous products on high shelves or in locked cabinets away from food items.
- Make sure the lids and caps are tightly sealed and childproofed.
- Store corrosive, flammable, reactive and poisonous products on separate shelves in an area where they will keep dry.
- Store products (like latex paint) that say “prevent freezing” indoors.
- Never mix chemicals together, such as bleach and ammonia.
- Keep products away from heat, sparks, flames or other sources of ignition.
- Do not buy more than you need.
- Keep products in their original containers and make sure the label is legible.
- For long-term storage, place waterproof transparent tape over product labels to prevent them from falling off.

How to properly dispose of household hazardous waste

Improper disposal of household hazardous waste, such as throwing it in the garbage or pouring it down the drain, could harm your family or garbage hauler. Improper disposal may also contaminate the air, water and soil.

To address the household hazardous waste disposal issue, counties operate household hazardous waste collection sites where residents can safely dispose of household hazardous products, often free of charge.

Visit RethinkRecycling.com to find disposal options and more information on county household hazardous waste drop-off sites. Hennepin County offers two drop-off facilities for residents to properly dispose of household hazardous wastes for no charge. These facilities, located in Brooklyn Park and Bloomington, are open year-round. For more information, visit www.hennepin.us/dropoffs or call 612-348-3777.





Use pump spray products instead of aerosols.



Remove your shoes at the entrance to your home.

Ways to reduce harmful chemicals in your home

You can make simple changes to reduce exposure to toxic chemicals at home by considering the following options.

- **If you have household chemicals that you don't want or need, dispose of them.** Give usable products to a friend or neighbor who will use them up. If products are unusable or you don't know someone who can use them, take them to your county's household hazardous waste drop-off site to be disposed of properly. Visit RethinkRecycling.com for information on acceptable wastes and collection sites.
- **If you have a mercury thermometer in your home, take it to your county's household hazardous waste drop-off site.** The drop-off sites accept fever and kitchen thermometers that contain mercury. If you need to use a thermometer, use a mercury-free alternative such as an alcohol or digital thermometer.
- **Remove your shoes at the entrance to your home.** Your shoes can track in pollutants from outside. Keep a floor mat at the entrance for visitors.
- **Use a fabric shower curtain instead of a vinyl one.** Vinyl shower curtains or liners release odors and chemical gases into the air. Use a shower curtain made of canvas, hemp or polyester instead.
- **Avoid chemical air fresheners.** To freshen the air, open the windows or simmer a mixture of cloves and cinnamon in water.
- **Avoid laundry and dishwasher products that contain chlorine or chlorine bleach (sodium hypochlorite).** If whitening is needed, use a non-chlorine bleach with oxygen or hydrogen peroxide.
- **Avoid the chemicals used in dry cleaning.** Clothes that have been dry cleaned release perchlorethylene (perc) gas, a chemical that is suspected to cause cancer. Air out clothes that have been dry cleaned before bringing them into your home. Better yet, buy clothes that don't need dry cleaning or have clothes cleaned by an alternative cleaning process (green cleaning) that does not result in the release of perc.
- **Use pump spray products instead of aerosols.** Aerosols put unnecessary chemicals in indoor air when you use them in the house, and the mist produced by a pressurized aerosol can is finer and more easily inhaled than the mist from a pump spray.
- **Buy fewer household chemicals.** Use multipurpose cleaners to avoid buying many specialty cleaners. Use single-ingredient products (baking soda, white vinegar, lemon juice, salt) that serve several functions. Make your own cleaners (see *Non-toxic Cleaning Recipes*). Sometimes muscle can replace chemicals. Try to dislodge a clog in a drain with a mechanical "snake." Scrub sink stains with an abrasive sponge. Use a dandelion digger instead of weed killer.

Visit RethinkRecycling.com to find disposal options and more information on county household hazardous waste drop-off sites.

Integrated daily lesson plan: Toxicity reduction

Lesson objectives

1. Parents will learn to identify household hazardous products and describe where they can be found in the home.
2. Parents will be able to read and analyze product labels for safe use.
3. Parents will identify ways to reduce toxic chemicals in the home.

Minnesota's Parent Education Core Curriculum framework and indicators

Domain– Culture and Community

- Environment
- Community Involvement and Social Change

Indicator– Parents support their children's development when they:

- Understand the impact of home hazards
- Support and work to create healthy environments for the well-being of all children and families
- Understand the impact of environmental influences such as clean water, chemical-free foods and clean air.

Child Development Links:

- Cognitive Development (Mathematical and Logical Thinking)
- Creativity and the Arts (Creating)

Parent-child interaction activities

Activity 1: Grow grass seeds

Grow grass seeds together and talk about the chemicals that are often used on lawns and gardens.

To prepare seeds: Put potting soil in a container. Sprinkle grass seeds into the soil, cover loosely with more soil, water using a spray bottle, and put in a sunny location in the classroom. A fun twist: using a stick or pencil, scratch the child's name or first initial into the soil, drop seeds into the scratching, and the grass will grow in the shape of the name.

Suggested supplies:

- One large, shallow wooden or plastic box or planting tray for all families to share or individual containers such as old yogurt containers or cut-off plastic bottles.
- Potting soil
- Grass seeds
- Sticks or pencils (optional)
- Handout: *Earth-Friendly Home Landscaping Guide*
- Handout: *Reduce the Need for Pesticides and Herbicides*

Discussion starter: Ask parents what kinds of chemical products (e.g. pesticides, herbicides, fertilizers) they currently use to care for their lawn or garden. Share information about less toxic gardening and lawn care.



Adult lessons

Choose one or more activities to use, based on your group and time.

Guided check-in/ discussion starter

One week prior to class presentation, participants should make a list of common household products that they use in the home in order to complete Activity #2.

Have participants complete the *Chemicals in the Home* quiz (see Appendix). Have parents set quiz aside until later. At the end of lesson, review answers to the quiz.

View the short video, *Waste: What's the Problem*, on waste and toxicity reduction found in this toolkit. See the Appendix for a PowerPoint presentation that could be shown to give additional background information on household hazardous waste and toxicity reduction.



Children are especially susceptible to the negative effects of chemicals.

Activities: Content and teaching methods

Activity #1: Products we use

Ask parents to list household products they use in the kitchen, bathroom, floors, woodwork, windows, yard, garden, etc. Write list on board. Using list generated by parents, share household hazardous waste information.

- According to the U.S. Environmental Protection Agency, 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. Pound for pound, children breathe more air, drink more water, and eat more food than adults. Because children's bodies are still developing, they may process these pollutants differently from adults.
- We use household hazardous products every day in cleaning and fixing our homes, maintaining our cars and taking care of our lawns. To distinguish household hazardous products from other products used in and around the home, you can look at the labels. A household hazardous product has one or more of these words (often called "signal" words) on the label: caution, warning, danger or poison.

- According to the US Environmental Protection Agency, the average American home has accumulated as much as 100 pounds of household hazardous waste.
- Electronics are one of the fastest growing waste streams. Experts estimate that the average household is storing two to three old televisions and computers. TVs and computer monitors can contain two to eight pounds of lead as well as other hazardous substances. They should be taken to a county drop-off facility, recycling event or private recycling service. Visit RethinkRecycling.com for recycling options.

Suggested supplies:

- White board or flipchart paper

Discussion starter: How often do you check the ingredients in the materials your child's playthings are made of or in the cleaning products you use where your children play?

Activity #2: Label reading

Have parents divide into pairs and give each pair two examples of household/yard/garden products (these could be examples of the products parents mentioned that they use from the week before).

Give each person a copy of the *How to Identify Hazardous Products* factsheet and briefly review.

Give each pair a copy of the *Label Activity Sheet* (see Appendix) and have them read the labels and fill in the sheet. Have pairs share the information they found on one product with the large group.

Pass out handout *Ways to Reduce Harmful Chemicals in Your Home* and discuss what parents can do.

Suggested supplies:

- Common household products that parents identify that they use, e.g., window cleaner, disinfectant wipes, bleach, paint, lawn and garden items, etc.
- *Label Activity Sheet* and *Home Hazardous Product Survey*
- Handout: *How to Identify Hazardous Products* factsheet
- Handout: *Ways to Reduce Harmful Chemicals in Your Home* factsheet
- Handout: *Drop-off Facilities* brochure



Reading labels is the only way to identify how hazardous a product is.

Discussion starter: Have you read labels on products in the past? If yes, what were you looking for? In the past, did you consider the products you use harmful? What are some easy first steps you'll do to reduce harmful chemicals in your home?

Discussion wrap up: Have parents take home and complete the *Home Hazardous Products Checklist* (see Appendix). Encourage them to bring it back the following week to discuss and compare. Also hand out the *Drop-off Facilities* brochure to encourage them to properly dispose of hazardous products.

Activity #3: Household Hazardous Waste Learning Trunk

This learning trunk can be borrowed from Hennepin County and will help educators explain the importance of proper use, storage, disposal, and safety information of household hazardous products. The trunk also offers activities and lesson plans to help various groups identify household hazardous products and read product labels, learn how hazardous products can affect their health and identify signal words to determine the least hazardous product. Contact Hennepin County Environmental Services at 612-348-4168 for more details or visit www.hennepin.us/environmentaleducation.

Activity #4: Techno trash

Electronic waste (or e-waste) such as old cell phones and TVs need to be handled in special ways to make sure the heavy metals they contain do not get into our water, soil or air. Have parents take the E-Waste IQ Quiz. Using the *Household Hazardous Waste and Problem Materials Guide*, set examples of problem materials around the room and ask parents what they think should be done with them, then share answers from the guide. Visit the following link for the E-Waste IQ Quiz and additional information on how electronics from the United States affect other parts of the world:

<http://ngm.nationalgeographic.com/ngm/2008-01/high-tech-trash/carroll-text.html>

Suggested supplies:

- E-Waste IQ Quiz
- Handout: *Household Hazardous Waste and Problem Materials Guide*
- Handout: *Fluorescent Light Bulbs: Buy them, use them, recycle them.*
- Handout: *Mercury and Mercury-Containing Products*
- Handout: *Household Batteries: Recycling and Disposal Information*
- Examples of problem materials from the guide, such as cell phones, batteries, compact fluorescent bulbs, etc.



Activity #5: Make a non-toxic cleaner

Provide each participant with a plastic spray bottle and the recipe for the non-toxic, general household cleaner. Together, make the spray for each parent to take home. Discuss price and safety issues in using this kind of product compared to others.

Hand out the *Non-Toxic Cleaning Recipes* list for other products.

Suggested supplies:

- Ingredients for non-toxic cleaner
- 32 oz. spray bottles
- Measuring cups and spoons
- Handout: *Non-Toxic Cleaning Recipes*
- Labels printed with the recipe and clear packing tape to secure label to the bottle and waterproof it.
- Non-toxic cleaner recipe for 32 oz. bottle
 - 1/2 c. white vinegar
 - 3 1/2 c. hot water
 - 1 tbsp. liquid dish soap
 - Essential oil (A few drops are optional. Be advised some of these are flammable and hazardous and may be a problem for people with chemical sensitivities, allergies or asthma)
- Directions: In 32 oz. spray bottle, add vinegar, fill with hot water. Add essential oil if desired. Add dish soap last.

Discussion starter: Does anyone already make their own non-toxic cleaning products? Where did you get the recipe? How effective are the products? Have you saved money? Keep in mind that it is important to use recipes from a safe source, such as the Minnesota Pollution Control Agency and to be careful when mixing any products.

Activity #6: Video: Are you exposing your children to a toxic brew in your home?

This video may be borrowed from Hennepin County by calling 612-348-4168. Discuss the video's information, how products are used and the hazards.

Note about the video: This video was produced in Canada. The narrator references laws about product labeling. Please note these apply to Canada only. In the U.S., the Environmental Protection Agency regulates pesticides, the Consumer Product Safety Commission regulates non-pesticide hazardous products, and the Food and Drug Administration regulates cosmetics and personal care products. For the most part, these agencies do not regulate what goes into the products but what information must appear on the labels.

Summary/closure and home application:

Go back to the *Chemicals in the Home* quiz and ask: What things did you already know? What was new information to you? What surprised you? What questions do you still have?

Changes in our everyday routines can reduce our long-term exposure to potentially harmful substances. Changes can be in:

- How we choose the products we buy.
- How we clean our houses.
- How we take care of our yards.

These changes can make our homes safer and may also save us money.

Help families identify ways that they can reduce toxic chemicals in their home by utilizing the handout: *How to Reduce Harmful Chemicals in Your Home*. Ask parents to try one of the suggested activities in the next week. Also hand out the *Drop-off Facilities* brochure to encourage parents to properly dispose of hazardous products.

Teaching families about

Energy Conservation & Climate Change

Resources

Essential background reading

If you plan to teach others about this issue, please become familiar with this information provided in the background section.

Additional background information

You may want to understand these details to lead some of the activities described in this section.

“Low Carbon Diet: A 30 Day Program to Lose 5000 Pounds” by David Gershon – a fun workbook for the whole family with step-by-step activities to reduce household emissions.

“Save Energy, Save Money” by The Family Handyman – a great technical guide to home efficiency improvements, including tuning equipment, weatherstripping and air sealing, and insulation.

Web resources

- www.hennepin.us/coolcounty
Hennepin County has information on what residents can do to reduce their impact on climate change.
- www.hennepin.us, search: solar
Hennepin County has a solar array on the roof of the county Public Works Facility. View an online monitoring tool that has data about energy generated and avoided greenhouse gas emissions.
- www.mnenergychallenge.org
This free, on-line resource helps individuals calculate their carbon footprint.
- www.epa.gov/cleanenergy/energy-resources/calculator.html
Use the EPA’s Greenhouse Gas Equivalencies Calculator to see the real-world impact of carbon dioxide emissions.
- www.epa.gov/climatechange/kids/cc.html
Kid-friendly information on what climate change is and how kids can make a difference. Also includes activities for children and educators.
- www.energy.state.mn.us
The state Office of Energy Security has information on energy efficiency and renewable energy.
- www.climate.gov
The National Oceanic and Atmospheric Administration (NOAA) website offers a background on climate change, resources for educators, and data and research.
- www.globalchange.gov
The U.S. Global Change Research Program integrates federal research on climate change.

Web resources, cont'd on next page

- www.ipcc.ch
The International Panel on Climate Change issues a peer reviewed report on climate change every six years.
- www.leg.state.mn.us/lrl/links/energy.asp
The Minnesota Legislative Reference Library provides a list of web resources on energy issues, including issues related to climate change.

Handout print resources

Samples can be found in the Appendix

From Hennepin County

- *Making Hennepin a Cool County*

To order: Order literature online at www.hennepin.us/literatureorderform or call 612-348-4168.

From the Office of Energy Security, MN Department of Commerce

- *10 Ways to Save Energy*
- Numerous Home Energy Guides providing detailed instructions on energy conservation actions, including: Home insulation, Home heating and Attic air leaks.

To order: Order copies by calling 651-296-5175. PDF versions can also be downloaded at www.energy.mn.gov

Background

Anyone who takes an interest in observing nature over time can see signs that the climate is changing. Plants are blooming earlier in the spring, the ice out date on lakes is occurring earlier in the year, and animal ranges are shifting.

Climate change is not a new phenomenon. Many factors, including fluctuations in the Earth's orbit, varying energy from the sun, volcanic activity and changes in ocean circulation, cause the climate to change gradually over time.

However, the rapid rate at which the climate has been changing for the past fifty years is unusual. Up until the 1960s, climate models that only account for natural forces could explain the observed variations in the Earth's climate. Since the 1960s, climate models that only take into account natural forces have increasingly diverged from the observed climate. The difference – an overall warming of the Earth – is explained by the increase in the concentration of greenhouse gases in the atmosphere, which is almost certainly the result of human activity.

We need to reduce the amount of greenhouse gases humans are putting into the atmosphere to provide more time for adaptive strategies to be adopted and to avoid significant disruptions to the environment and the economy.

How do increases in greenhouse gas emissions contribute to climate change?

Increasing levels of greenhouse gases, such as carbon dioxide, in the atmosphere are warming the planet. Like windows in a greenhouse, greenhouse gases trap the sun's heat and insulate the planet. In addition, deforestation and changing agricultural patterns are reducing the rate at which carbon dioxide can be removed from the atmosphere. Typically, carbon dioxide and other greenhouse gases are removed from the atmosphere by plants, whose leaves absorb the gases.

Carbon dioxide emissions from humans come primarily from the burning of fossil fuels, such as gasoline and diesel used to fuel vehicles and coal burned to generate electricity. Minnesota's carbon dioxide emissions have increased 37 percent over the past 20 years, according to the Minnesota Pollution Control Agency (MPCA).

How do my actions produce greenhouse gas emissions?

As we go about our daily routines, the fossil fuels we use directly and indirectly produce greenhouse gas emissions. The two largest contributors to our carbon dioxide emissions are the fuel burned in our personal vehicles and the energy used in our homes.

The average Minnesota family generates 51,900 pounds of carbon dioxide annually through the energy used in their home and transportation, according to the Minnesota Energy Challenge.

What does climate change mean for Minnesota?

Climate change is already noticeable. Animal and plant habitats are shifting, weather patterns are changing, and severe storms and droughts are becoming more common.

Minnesota has warmed an average of 1 degree Fahrenheit during the past century according to the MPCA. Precipitation has increased by 20 percent since 1990 in parts of Minnesota, especially southern Minnesota. If temperature readings and precipitation continue to increase within the next century, Minnesota might soon feel and look more like Missouri.

Other impacts of climate change in Minnesota include the following.

Changes in ecosystems

Changes in the climate alter the plant and animal species that can survive a certain area. This has an impact on some of the unique ecosystems and wildlife species that are currently found in Minnesota.

- Areas of the state that are forested will decline by as much as 50 - 70 percent, replaced by grasslands and savannas. The unique northwoods of pine and aspen will be replaced by forests of oak and other trees.
- Reduction in the size and number of prairies due to possible drying. Minnesota prairies are the most important breeding ground for North American waterfowl as well as countless species of birds and insects. Prairies are also home to some endangered plant species.
- Temperature and moisture patterns will change faster than plant and animal communities can adapt. This will result in the extinction of numerous plant and animal species

in the next 100 years. Loss of habitat for cold-loving creatures such as trout and moose would cause the decline of these species in Minnesota.

- Some pests, diseases, and invasive species may be able to extend their range into Minnesota.

Water resources stressed

- Increased lake evaporation in the summer and decreased length of ice cover in the winter will reduce lake levels and degrade water quality.
- Reduced groundwater resources, a large source of drinking water, may be reduced due to drop in stream flow and lake levels.
- The temperature of lakes is rising, which severely stresses the plants and animals in aquatic habitats.
- Reduced water levels in Great Lakes will reduce the carrying capacity of the large lake freighters, impacting commerce.

More extreme weather

- Weather patterns will become more extreme. The overall frequency of both flooding and droughts will increase.
- Infrastructure for runoff and water management, such as storm sewers, is likely undersized and will need updates to deal with increases in heavy rainfall and flash flooding.
- Increase in heat waves and extremely hot summer days will result in an increase in the incidence of heat-related illness and death. Hotter summers will increase demand for indoor cooling.
- Increased frequency of poor air quality (smoggy) days in summer.
- Milder winters with less snow will decrease opportunities for winter recreation. Milder winters will also affect animal hibernation patterns, stressing food supplies and habitats.

Global impacts of climate change

Despite these changes, Minnesota will be less negatively impacted by climate change than many other areas of the country and the world. Minnesota may actually see some potential benefits, such as warmer nighttime temperatures in winter that would reduce heating costs and a longer growing season that would increase agricultural production (in years without drought). However, the effects of rapid climate change in other parts of the world will impact Minnesota.

- Changing weather patterns will stress existing infrastructure, such as storm sewers, roads, bridges, water storage and aqueducts. New infrastructure demands throughout the U.S. will create greater demand for government services.
- Rising oceans will displace coastal populations in the U.S. and around the world.
- Global water resources and agricultural production will be disrupted, leading to shortages and price spikes.

For more information about the effects of climate change in Minnesota, visit the MPCA's website at www.pca.state.mn.us/climatechange.



What's the difference between weather and climate?

Weather describes whatever is happening outdoors in a given place at a given time. Weather includes daily changes in precipitation, barometric pressure, temperature, and wind conditions in a specific location.

Climate describes the total of all weather occurring over a long period of time in a given place. This includes average weather conditions, regular weather sequences (like winter, spring, summer and fall), and special weather events (such as tornadoes and floods).

How do I reduce my impact on climate change?

The first step to reducing your impact is to understand how you contribute greenhouse gas emissions. The largest sources of carbon dioxide emissions from the daily routine of most people are the cars they drive and the energy used to heat and cool their homes.

The best way to reduce greenhouse gas emissions is to reduce the amount of energy you use. You can do this by driving less, using energy more efficiently in your home and recycling. By reducing the energy you consume in your daily routine, you can reduce your personal greenhouse gas emissions and possibly save money.

Visit www.hennepin.us/coolcount for more information on saving energy and reducing your personal greenhouse gas emissions.

Calculate your carbon footprint

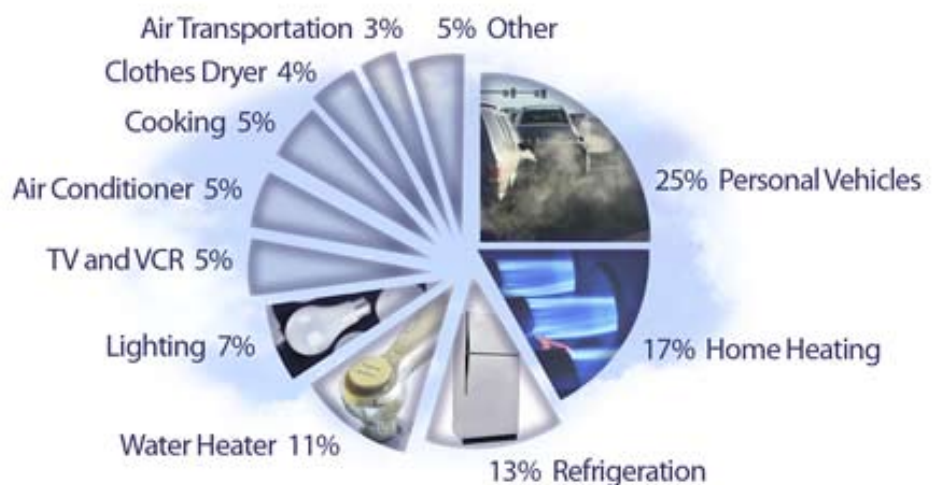
A carbon footprint is the amount of carbon dioxide that an individual or household puts into the atmosphere every year. There are many resources available to help you calculate your personal carbon footprint. These resources will also help you identify actions to take to reduce your impact. Join the Minnesota Energy Challenge at www.mnenergychallenge.org or use the EPA's Personal Emissions Calculator at www.epa.gov/climatechange/emissions/ind_calculator.html.

Drive Less

- Walk, ride a bike, carpool or take public transit instead of driving. When you need a car, consider using a car sharing program such as HourCar (www.hourcar.org) or Zipcar (www.zipcar.com).
- For your commute, start with leaving your car at home just one day a week. When you run errands, consider biking or walking for shorter trips.
- When you do drive, make the most of your fuel economy. Drive the speed limit and idle less. Except when in traffic, turn your engine off if you must wait for more than 30 seconds.
- Plan your errands so you can take care of them in one trip to reduce the overall miles you drive.
- Keep up on your car's maintenance. Keep the tires adequately inflated, the engine tuned and the oil and air filters changed regularly. A well-maintained car is more fuel efficient than one with dirty filters or poorly working parts.
- Visit www.hennepin.us/coolcounty for links to bike maps, Metro Transit (bus and lightrail), and other green transportation ideas.

Carbon Dioxide Emissions

from an average Minnesotan's personal energy use.



Source: Minnesota Pollution Control Agency

Reduce energy used in home heating and cooling

Improving the efficiency of how we heat and cool our homes saves money and reduces our personal greenhouse gas emissions. Home heating and cooling accounts for almost a quarter of the average Minnesota's carbon dioxide emissions.

- Audit your home's energy use. Conducting a home energy audit can identify places where your home is using energy inefficiently and prescribe ways to improve heat retention. Contact your utility to hire a professional energy auditor, or conduct your own informal energy audit. Visit www.energystar.gov, search: "home energy yardstick", for information on conducting your own energy audit.
- Turn your thermostat a degree or two down in the winter and up in the summer, and install a programmable thermostat. A programmable thermostat can control your furnace, air conditioner, air exchanger and humidifier, and it will pay for itself in no time.
- Seal air leaks. An enormous amount of energy is wasted when indoor air escapes through leaks in attics, walls, windows and doors. Use the caulking and weatherstripping guide from the Minnesota Department of Commerce to help you properly seal air leaks, available at www.energy.state.mn.us, search: "air leaks."

- Keep up on maintenance. Water heaters, air conditioners, furnaces, gas fireplaces and ventilation systems should be inspected and tuned to keep them operating efficiently and safely. Mechanical system inspections should be done annually, and furnace filters should be changed every month.
- Add insulation. The easiest and most cost-effective way to insulate is by adding insulation to an attic. If you have less than six or seven inches of insulation, you could probably benefit by adding more.

Install compact fluorescent light bulbs

Install compact fluorescent light bulbs (CFLs), especially in your most-used lighting fixtures. CFLs are up to 66 percent more efficient and last up to 10 times longer than standard incandescent bulbs. Make sure you purchase ENERGY STAR-rated CFLs. CFLs contain a small amount of mercury and must be disposed of properly at a county drop-off facility or hardware store with a drop-off program.

Turn off and unplug appliances and electronics

Turning off and unplugging electronics and appliances when they are not in use will save a surprising amount of energy. As much as 40 percent of the energy used to power appliances is consumed while they are turned off. Many appliances enter "passive standby" mode when they are turned off, which allows the appliances to start up quickly when switched on. Other appliances continuously use energy to power clock devices.

- Unplugging appliances and electronics will ensure that they are not consuming energy when switched off. Use power strips to conveniently shut off multiple appliances or electronics.

- You can figure how much energy your appliances use by checking out an energy meter from a Hennepin County Library.
- Purchase energy efficient appliances and electronics by looking for the ENERGY STAR label.

Use your refrigerator efficiently

- Don't keep your refrigerator or freezer too cold. Recommended temperatures are 37 - 40 degrees Fahrenheit for the fresh food compartment of the refrigerator and 5 degrees Fahrenheit for the freezer section. If you have a separate freezer for long-term storage, it should be kept at zero degrees Fahrenheit.
- Make sure your refrigerator door seals are airtight. Test them by closing the door over a piece of paper or a dollar bill so it's half in and half out of the refrigerator. If you can pull the paper or bill out easily, the latch may need adjustment, or the seal may need replacing.
- Cover liquids and wrap foods stored in the refrigerator. Uncovered foods release moisture and make the compressor work harder.
- Regularly defrost manual-defrost refrigerators and freezers. Frost buildup decreases the unit's energy efficiency. Don't allow frost to build up more than one-quarter of an inch.
- Look for the ENERGY STAR label when buying a new refrigerator. Select a new refrigerator that is the right size for your household. Top freezer models are more energy efficient than side-by-side models. Features like icemakers and water dispensers, though convenient, increase energy use.

Turn down your water heater

- Turn your water heater's thermostat to the lowest setting that is comfortable for you and your family. For most people, 120 degrees Fahrenheit is sufficient and safe.
- Switch to a low-flow showerhead. It will use about six gallons less water per minute. Taking shorter showers saves even more energy.
- Wash clothes in cold water. Clothes will last longer, and colors will stay brighter. Line-drying clothes saves even more energy.
- Insulate your water heater tank. Adding insulation can reduce the heat lost while your water heater is in standby mode by 25-45 percent. Check your warranty first.



Eat local. Support local, sustainable and organic farmers by purchasing their products directly.

Reduce, reuse and recycle

Using less, reusing and recycling can reduce greenhouse gases. When we use less, we reduce the amount of energy needed to extract, transport and process raw materials to manufacture products. Recycling also saves energy because making goods from recycled materials requires less energy than making goods from raw materials. See the Reducing Waste and Recycling chapters of this toolkit for ideas.

Eat local

On average, an American meal travels 1,500 miles to reach the dinner table. Purchasing foods grown locally can reduce the distance your food travels and the amount of fossil fuels used.

- Support local, sustainable and organic farmers by purchasing their products directly or through farmer's markets, community supported agriculture farms (CSAs), food co-ops, natural food stores and local grocers.
- Eat foods that are in season for our region.
- Patronize restaurants that buy from local farmers.
- Bring your own container for leftovers.

Purchase renewable energy

- Many utility providers offer customers an option to purchase renewable energy, usually for an additional charge.
- Learn about home installations of renewable energy at www.energy.state.mn.us.

Quick facts & statistics

The tips below can be printed, posted on your website, sent in e-mail messages, or used in other ways to gently remind your community of the importance of conserving energy.

- U.S. carbon dioxide emissions increased more than 20 percent from 1990 to 2007. (Environmental Protection Agency 2009 U.S. Greenhouse Gas Inventory Report)
- Only 20 percent of homes built before 1980 are considered well-insulated by the U.S. Department of Energy.
- Adequate insulation can cut home energy bills by up to 30 percent while increasing indoor comfort. (U.S. Department of Energy)
- Video game consoles like the Xbox, PlayStation and Wii are consuming more than \$1 billion of electricity annually. (Natural Resources Defense Council)
- If all office computers and monitors in the U.S. were set to sleep when not being used, the country could save more than 44 billion kilowatt-hours and avoid GHG emissions equivalent to those from five million cars each year. (Source: U.S. EPA's new Low Carbon IT Campaign)
- It takes 3,000 to 6,300 gallons of water to power one 60-watt incandescent light bulb for 12 hours per day over the course of a year. (Source: Virginia Tech study, www.vwrrc.vt.edu/watercooler/watercooler_apr08.html)
- As much as 40 percent of the energy used to power appliances is consumed while they are turned off.
- Recycling one aluminum can saves enough energy to power a TV or computer for three hours.

- Recycling an aluminum can is equivalent to saving six ounces of gasoline.
- An ENERGY STAR-qualified compact fluorescent light bulb will save about \$30 over its lifetime and pay for itself in about 6 months. It uses 75 percent less energy and lasts about 10 times longer than an incandescent bulb.
(www.energystar.gov)
- If you adjust your thermostat one degree (down in winter, up in summer) for 16 hours a day, you can save two percent on your fuel bill. (Minnesota Office of Energy Security)

Integrated daily lesson plan: Energy conservation

Lesson Objectives:

1. Participants will be motivated to reduce their “environmental footprint” and reduce their energy consumption through a variety of means.
2. Participants will assess their habits and make long-term changes in their energy consumption.
3. Children will be introduced to the concept of weather and understand that there are variations in weather and that weather affects many living (and non-living) things in different ways.

Minnesota’s Parent Education Core Curriculum Framework and Indicators

1. Domain

- Cognitive development
- Mathematical and logical thinking
- Scientific thinking and problem solving

2. Indicator – Parents support development of their children’s cognitive development when they:

- Provide opportunities for children to explore numbers, measurement, and patterns using household materials and experiences.
- Provide time and opportunities for children to explore nature.
- Discuss people, objects and events that have been observed indoors and outdoors.
- Encourage children to ask questions and find answers through active exploration of home materials.
- Discuss how people affect the environment.
- Explore and talk about land, water and other features in the community.

3. Child Development Links:

- Approaches to Learning (Curiosity, Imagination and Invention)
- Creativity and the Arts (Creating, Evaluating)
- Cognitive Development (Scientific Thinking and Problem Solving, Mathematical and Logical Thinking)
- Physical and Motor Development (Fine Motor Development)

1. Domain

- Culture and Community
- Environment
- Community Involvement and Social Change

2. Indicator – Parents support development of their children’s cognitive development when they:

- Support practices that enhance the well-being of all children and families in the community
- Understand the impact of environmental influences such as clean water, chemical-free foods and clean air.
- Support and work to create healthier environments for the well-being of all children and families

3. Child Development Links:

- Approaches to Learning (Curiosity, Imagination and Invention)
- Creativity and the Arts (Creating, Evaluating)
- Cognitive Development (Scientific Thinking and Problem Solving, Mathematical and Logical Thinking)
- Physical and Motor Development (Fine Motor Development)

Parent-child interaction activities

Choose one or more activities for your classroom based on your group's interest and time.

Note: It may not be appropriate to discuss climate change with pre-schoolers. Discussions about more tangible things, such as weather, the effects of weather on plants and animals will be more meaningful and relevant, and lay a foundation for later understanding of climate and energy issues.

Parent-Child Activity #1: Make a crown for Earth Day

Parents and children will make “crowns” out of construction paper or recycled thin cardboard. The crowns may be decorated with nature-themed stamps or stickers, natural objects such as feathers, dried flowers and grasses, leaves, or even sand. Children may also draw their favorite thing from nature on the crown.

Suggested Supplies:

- Thin cardboard boxes (such as cereal boxes) or construction paper
- Pipe cleaners (to fasten crowns)
- Items to put on crowns, such as dried grasses, leaves or flowers
- Nature-themed stamps or stickers
- Crayons or paint

Parent-Child activity #2: Plant trees

Adults and children plant trees together. Trees help reduce the effects of global warming by removing carbon dioxide from the air. They also provide shade and have a natural cooling effect. They provide habitat for birds. Visit www.treetrust.org and www.dnr.state.mn.us for information on low-cost, native tree species your group can plant together.

Suggested supplies:

- Gardening gloves and shovels
- Trowels or children's shovels
- Mulch

Parent-Child Activity #3: Create your own windsock

You can create your own windsock by cutting a small hole in the bottom of a plastic grocery bag then attaching the bag to a long dowel using twist ties. It will puff up with air and move as the wind blows. Bags may be decorated with stickers, ribbons or paint.

Suggested supplies:

- Empty, clean plastic shopping bags
- Tempera paint or markers
- Stickers
- Scraps of colorful ribbon
- Twist ties
- ½” diameter wooden dowels

Parent-Child Activity #4: Weather collage

Choose magazine pictures or photographs that depict different types of weather. Encourage children to sort and organize the pictures, then make a class mural or individual collages of weather images.

Suggested supplies:

- Old magazines
- Scissors
- tape





Parent-Child Activity #5: Taking the temperature

Take the children outdoors to a location that has both sun and shade. Allow the children to feel different areas and note that they are warmer or cooler depending on the amount of sunlight received. Place an ice cube in a sunny location and a shady location and compare what happens. Record the children's observations. You may wish to bring a thermometer outside to measure the temperature in each location.

Suggested supplies:

- Thermometer
- Ice cubes

Parent Observation Question:

What words are your children using to describe the weather? What can they tell you about weather and its effect on things? What are some different ways that we experience weather? (It can feel hot or cold, or windy. We can fly kites or carry umbrellas depending on the weather. It can affect plants and animals too.)

Adult Lessons

Guided Check-in/Discussion starter:

How does your child react to different types of weather? Do you talk about the weather?

4. Discuss some of the points in this chapter about climate change and the effect that greenhouse gases have on weather patterns.
5. Do you think it is important to discuss climate change with your children? Why or why not?

Activity #1: Take the Minnesota Energy Challenge

www.mnenergychallenge.org

This free, on-line resource helps households calculate their carbon footprint and identify actions you can take to reduce it. When you commit to simple changes, the online system tells you how much carbon dioxide and money you will save. You can create a team for your organization and see how your actions compare to similar teams.

The website also has free, online toolkits for communities, educators, or congregations to involve your group (neighborhood, block, school, etc.) in taking the Challenge together and tracking your changes.

Suggested supplies:

- Laptop computers with internet connection

Discussion starter:

What did you learn about yourself and your family's habits after taking the challenge? What surprised you?

Activity #2: Conduct a home energy audit

A home energy audit can help you understand how you use energy in your home and identify ways you can save energy. Have members of your group audit their home energy use and set goals for the changes they plan to make. Members can help each other with projects like weatherizing windows or sealing air leaks. There are many resources available to help with home energy audits and identifying energy-saving actions.

Your utility provider may have online tools to help you conduct your own energy audit. Your utility provider would also have professional energy auditors that can conduct energy audits.

- ENERGY STAR Home Energy Yardstick, www.energystar.gov, search: "energy yardstick"
- U.S. Department of Energy, www.energysavers.gov, search: "home energy audit"
- Home Energy Saver, www.hes.lbl.gov

Suggested supplies:

- Any of the resources listed above.
- Examples of weatherizing materials such as caulk, weatherstripping, plastic for windows, etc.

Discussion starter:

Do you winterize your home when the seasons change? Why or why not? What barriers stand in your way? How can winterizing your home help your children?

Activity #3: Map your route

Request free copies of the Hennepin County Road & Bike Map by calling 612-596-0352, or find it on-line at www.hennepin.us, search: bike map. Visit Metro Transit at www.metrotransit.org or call 612-373-3333 for bus and light rail maps. Bring these materials to the next meeting of your group and help people who are unfamiliar with bike trails and public transportation find options for getting to and from work, school, or other places they frequently drive. Visit www.bikewalktwincities.org for other resources and ideas.

Suggested Supplies:

- Hardcopies of the Hennepin County Road & Bike Map and Metro Transit Bus and Light Rail Maps, or access to the internet.

Discussion starter:

How familiar are you to nearby bike trails and public transportation routes? What trips could you walk, bike or take public transportation? Are there any barriers that are stopping you? How could you overcome those barriers?

Activity #4: Learn about your utility bill

Paying bills may not be any fun, but you can learn a lot of your home energy consumption from your utility bill. Have members bring in their utility bill and analyze the information on it. Compare the energy consumption among group members. Analyze how energy consumption changes during different times of the year. Consider tracking your group member's energy consumption over time. Discuss what factors affect energy use and encourage members to share what steps they've taken to reduce energy consumption.

Supplies:

- Utility bills

Discussion starter:

Did you learn anything new from this exercise? Many people don't even look at their bills (other than the amount due!) –what did this exercise change for you?

Activity #5: Learn about electricity consumption

Learn about appliance and electronic electricity consumption by using an energy meter.

Energy meters can help you identify high energy use appliances and electronics in your home, determine how much it costs to use appliances and identify “energy vampires” – appliances that use energy when switched off. Borrow or buy energy meters and allow group members to take them home for a week and then share their findings. Have members of your group assess the electricity use of appliances and discuss ways to reduce energy consumption.

Suggested Supplies:

- Energy meters

Energy meters are available for check-out at Hennepin County libraries. Visit www.hennepin.us/coolcounty or www.hclib.org for more information.

Energy meters can be purchased for about \$25. Check at hardware stores or search online.

Discussion starter:

What appliance or electronic used the most energy in your home? What appliances or electronic items do you leave on all the time? Why? Were you surprised by anything? How can we reduce the amount of energy consumed by appliances and electronics?



Energy meters can help you identify high energy-use appliances and electronics in your home.

Activity #6: Book/movie club

Read books or essays that deal with energy efficiency and environmental issues, such as the movie *Inconvenient Truth* or the books *Animal, Vegetable, Miracle* or *Omnivore's Dilemma*. Read books from different points of view. Discuss reactions to the information. Commit to make one or more energy-saving change based on what you learned (decided as a group or individually). Write down your commitments and share them with the group.

Suggested supplies:

- Books or essays for group

Discussion starter:

What did you like or dislike about this book? How did it change your perspective on the topic? How did it affect your perspective as a parent? Why is it important to consider these ideas as a parent? Do you feel differently about these issues than you did before having children? Why or why not?

Activity #7: Try a clothesline

Clothes dryers are typically one of the top three energy-using appliances in the home. By air drying your clothes on the line or on drying racks, you can save energy and money. An average family spends \$80 to \$120 per year drying clothes. Inexpensive and durable clotheslines may be made from heavy duty rope or found at secondhand stores. Encourage parents to air dry clothes. A calculator to determine how much energy could be saved by air drying clothes for each family is available at www.laundrylist.org. Discuss other ways to save energy when doing laundry. For example, washing clothes in cold water or using the dryer automatic dryness sensors.

Supplies:

- Clotheslines for group members and hardware to install/mount them

Discussion starter:

Do you use the clothesline? Why or why not? How do you feel about using a clothesline (some people will really like the idea, others will be averse)? Studies show that when people see others acting in certain ways, they are more likely to change their own behavior. Do you think you might influence others by simply using a clothesline? What message does it send?

Activity #8: Local foods potluck

Host a meal or a potluck focused on local foods – foods grown within 100, 200, or 300 miles of the Twin Cities. Award prizes for the “most local” dishes or most creative uses of local ingredients. Encourage your group members to bring their own dishware to this event. Try hosting a similar event during three or four different times of year, when the local (seasonal) foods vary. Provide your group with information on farmer’s markets or CSA (Community Supported Agriculture) programs. For more information, visit the Minnesota Grown Directory at www.minnesotagrown.com.

Suggested supplies:

- Minnesota Grown Directory
- Reusable dishware

Discussion starters:

Growing seasons vary widely. In countries such as Mexico, the growing season is much longer than it is here in Minnesota. In parts of Asia or India, it may be shorter. How does this affect a culture’s food choices? Did you ever think about how far food travels from farm to plate? Do you like the idea of eating locally? How might it benefit your family to join a CSA or try to eat locally?

Summary/Closure and Home Application

Have participants calculate their energy footprint again using the MN Energy Challenge calculator. What has changed? What other behavior changes can be made? What was the biggest challenge? The easiest behavior change?

Teaching families about

Protecting Water Resources

Essential background reading

If you plan to teach others about this issue, please become familiar with the information provided in the background section.

Resources

Web resources

- www.hennepin.us/naturalresources
Information on water quality topics, watersheds in Hennepin County, volunteer monitoring programs and actions you can take to protect water resources.
- www.dnr.state.mn.us/waters
The Minnesota Department of Natural Resources offers background information on a variety of water topics and data and maps of water resources.
- www.dnr.state.mn.us/projectwet/index.html
www.projectwet.org
Project WET (Water Education for Teachers) is an international, interdisciplinary water science and education program for formal and non-formal educators of K-12 students.
- www.CleanWaterMN.org
Offers information and educational resources on stormwater pollution prevention.
- www.BlueThumb.org
Information for Twin Cities residents on water friendly yard and garden practices, such as planting native plants, installing a rain garden, and using a rainbarrel.
- www.worldwatermonitoringday.org
You and your group can use the resources from World Water Monitoring Day to conduct water tests and learn about water quality issues like temperature, turbidity, pH, and dissolved oxygen content.
- www.epa.gov/owow/weatherchannel/whatyoucando.html
Information from the U.S. Environmental Protection Agency on what you can do to protect water quality.
- www.epa.gov/OW
The U.S. Environmental Protection Agency Office of Water has background information on water topics and educational resources.
- www.pca.state.mn.us/water
The Minnesota Pollution Control Agency has information on water pollution and protecting water quality.

Handout print resources

Samples can be found in the Appendix

From Hennepin County

Order free literature online at www.hennepin.us/literatureorderform or call 612-348-4168.

- *Earth Friendly Landscaping Guide*
- *Ten Things You Can Do to Improve Minnesota’s Lakes, Rivers and Streams.*
- *Hennepin County Landowner Guide*—A guide to help residents that own at least a few acres of property care for the natural resources on their land.

Water Quality Newsletter Articles—Use the articles, available at www.hennepin.us/environmentaleducation in your newsletter or on your website. The topics include: Five easy things you can do to protect water quality, Adopt a storm drain, Earth-friendly lawn care tips, and Rain gardens.

Educational displays

“Your Street Connects To Lakes and Rivers” Display

Reserve Hennepin County’s interactive display that demonstrates residential (“non-point”) sources of water pollution in a simple and effective manner. Individuals place “pollution balls” down the storm drain and follow as they enter the nearby lake or stream. It is great to use at local neighborhood events, watershed festivals, or in individual classrooms. To reserve this interactive display please call Hennepin County Environmental Services at 612-348-4168.

Stormwater education exhibits

WaterShed Partners’ stormwater education exhibit items are available to be checked out. For a description of the items, visit www.hamline.edu/education/environment/cgee/Watershed/Exhibit/index.html

Tours

Visit an eco-yard. Hennepin County maintains two eco-yards where residents can learn about environmentally friendly, sustainable landscaping. Visit www.hennepin.us, search: eco-yards, to learn more.



Speakers and workshops

- Hennepin County Environmental Services staff and Master Naturalist volunteers are available to give presentations on water quality topics. Contact Mary Karius at mary.karius@co.hennepin.mn.us or 612-596-9129 or Stacey Lijewski at stacey.lijewski@co.hennepin.mn.us or 612-348-9938.
- Hennepin County Master Gardeners are available to give presentations, host workshops or teach classes on a variety of landscaping topics. Visit www.hcmg.umn.edu for more information.

Background

Minnesota is known for its abundance of water resources. Hennepin County has about 200 lakes, three major rivers – the Mississippi, Minnesota and Crow – and numerous streams, ponds and wetlands. Protecting the health of streams, rivers, lakes and wetlands is important for water quality, recreation, wildlife and tourism.

The quality of water resources in Minnesota is threatened by increasing development and pollution. When it rains, the stormwater that runs off driveways, lawns, houses and parking lots can carry pollutants such as oil, paint and chemicals down storm sewers and into nearby lakes, streams and rivers.

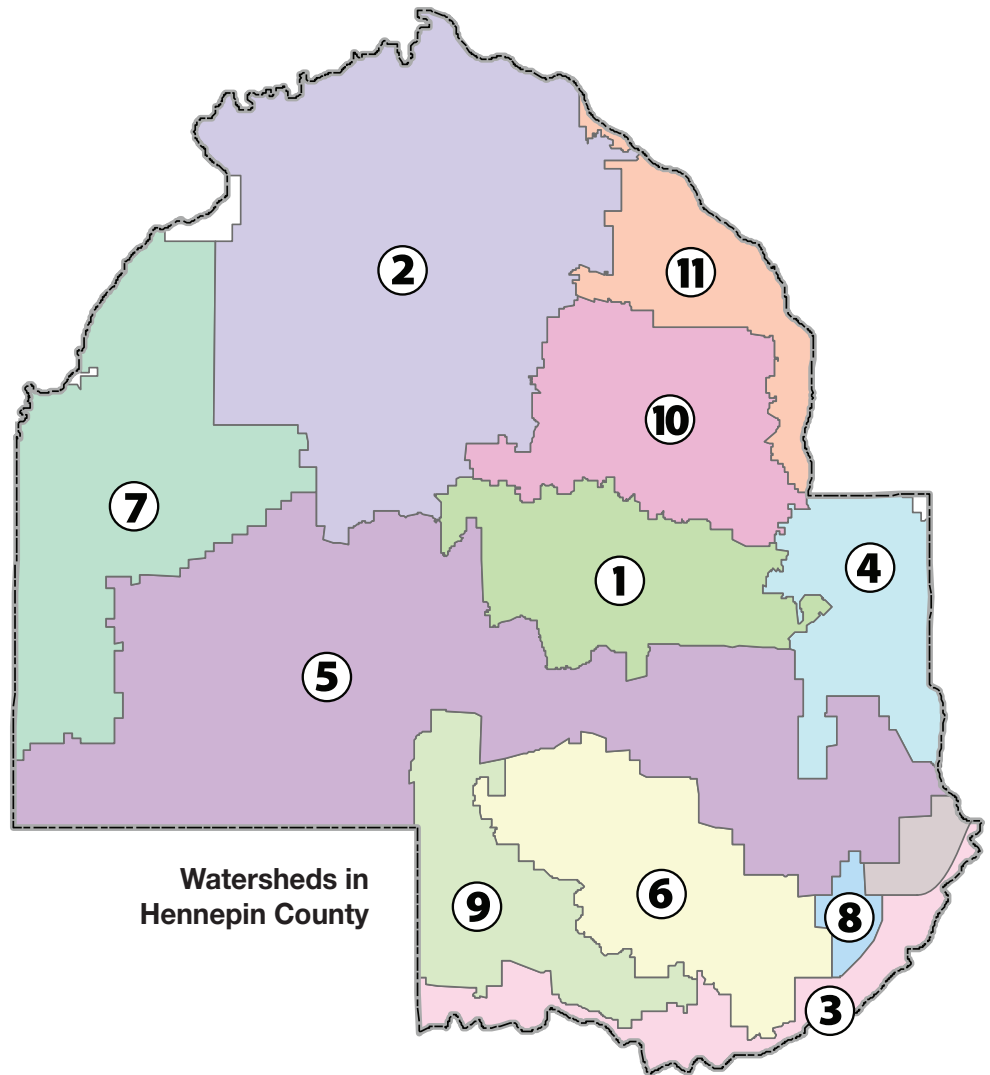
There are a variety of steps that individuals can take to reduce runoff and protect water resources. In this Toolkit, you’ll have access to activities, ideas and resources to help the families you work with protect our water resources.

Determine your watershed

A watershed is an area of land that catches any form of water, including rain, snow or other precipitation, and drains to a common lake, river or stream. Water resources are all connected, and actions taken to protect or pollute water will impact the quality of lakes, rivers or wetlands downstream.

Water resources are managed by either a watershed district or watershed management organization, which are special units of local government that work together to solve and prevent water-related problems. Watershed organizations regulate land-disturbing activities, perform capital improvement projects and provide environmental education related to water issues.

The watershed organization where your neighborhood, school or organization is located can provide you with information and environmental education projects related to local water resources. Use the watershed map to determine your watershed and its website. Contact Hennepin County at 612-596-9129 if you need assistance determining your watershed.



Watersheds in Hennepin County

1. Bassett Creek Watershed Management Commission, www.bassettcreekwmo.org
2. Elm Creek Watershed Management Commission, www.elmcreekwatershed.org
3. Lower Minnesota River Watershed District, www.watersheddistrict.org
4. Middle Mississippi River Watershed Management Organization, www.mwmo.org
5. Minnehaha Creek Watershed District, www.minnehahacreek.org
6. Nine Mile Creek Watershed District, www.ninemilecreek.org
7. Pioneer-Sarah Creek Watershed Management Commission, www.pioneersarahcreek.org
8. Richfield-Bloomington Watershed Management Organization, www.rbwmo.com
9. Riley Purgatory Bluff Creek Watershed Commission, www.rileywd.org
10. Shingle Creek Watershed Management Commission, www.shinglecreek.org
11. West Mississippi River Watershed Management Commission, www.shinglecreek.org

Steps you can take to improve Minnesota's lakes, rivers and streams

1. **Use your runoff.** You can keep water in your yard and reduce runoff by directing downspouts onto your lawn or garden or into a rain barrel. Rainwater is free and naturally soft, and can be used to water your lawn or garden.
2. **Don't rake grass clippings and leaves into the street.** Leave them on your lawn, use them for compost, or bag them up. Grass clippings and leaves left in the street end up in the storm sewer, where they are carried to nearby lakes and streams. Clippings and leaves contain phosphorus and other nutrients that feed algae and other aquatic plants. This can cause excess algae growth that can negatively impact other plants and wildlife and can be unsafe for pets.
3. **Scoop the poop.** Grab a bag when you grab the leash and pick up after your pets. Pet waste left on the ground can be washed into lakes and rivers with rainwater and runoff. Pet waste contains bacteria that can cause illness in humans and animals.
4. **Use chemicals wisely.** Read and follow the label instructions when using herbicides and pesticides. Use the minimum amount needed to control the problem. If you can, consider using alternative or natural remedies to control weeds and pests, or remove the problem by hand.
5. **Fertilize smart.** Sweep up any fertilizer that spills onto hard surfaces. Excess fertilizer washes away into nearby lakes or streams where it can feed algae, causing rapid growth known as algae blooms. Algae blooms stress fish and wildlife and make swimming and fishing unpleasant or impossible.
6. **Keep a healthy lawn.** A healthy, vigorous lawn needs less watering, fewer chemicals and less maintenance. Aerate your lawn periodically to loosen the soil. Seed bare patches to prevent erosion and soil loss. Mow at a higher setting. Grass mowed to a height of 2 ½ to 3 inches develops deeper, healthier roots and has a competitive advantage over weeds.
7. **Plant a rain garden.** Rain gardens are depressions planted with a diverse mix of native wildflowers and grasses designed to collect rainwater and allow it to soak into the soil. This will reduce the water running off your property into storm sewers.
8. **Replace turf with native plants.** Swap some of your high-maintenance lawn for low-maintenance native ground cover, plants or grasses. Many native plants develop deeper root structures than turf grass, which reduces runoff by allowing for better water infiltration.
9. **Reduce your footprint.** Replace some pavement - such as a walk, patio or driveway - with pavers or pervious pavement. The porous surface will allow water to seep through.
10. **Adopt a storm drain.** Keep neighborhood storm drains free of leaves, seeds and grass clippings. Storm drains are directly connected to the nearest body of water. Water running into storm drains can carry with it anything dumped nearby including leaves, grass clippings, soil, oil, paint and chemicals.

For more information on these steps, visit www.hennepin.us/environment.



Use your runoff.



Replace turf with native plants.

Replace some pavement - such as a walk, patio or driveway - with pavers or pervious pavement.



Quick facts & statistics

The tips below can be printed, posted on your website, sent in e-mail messages, or used in other ways to gently remind your community of the importance of conserving water.

- Minnesota has 90,000 miles of shoreline. That's more than California, Florida and Hawaii combined.
- Minnesota had 18.6 million acres of wetlands in 1850. In 2003, Minnesota had 9.3 million acres of wetlands. (Minnesota DNR, www.dnr.state.mn.us/faq/mnfacts/water.html)
- Water acts as a natural insulator to regulate the earth's temperature
- Only one percent of the Earth's water is available for drinking. The oceans hold 97 percent of the Earth's water; only three percent is fresh water. Of the three percent that is fresh water, two percent is currently frozen, leaving one percent as available drinking water.
- It is possible to drink water that was on Earth during the dinosaur era.
- Because of impervious surfaces like pavement and rooftops, a typical city block generates more than five times more runoff than a woodland area of the same size. (U.S. EPA, www.epa.gov/npdes/pubs/nps_urban-facts_final.pdf)
- On average, a person uses about 80 - 100 gallons of water a day. The largest uses of household water is to flush the toilet and for showers and baths. (U.S. Geological Survey, ga.water.usgs.gov/edu/qahome.html)
- A five minute shower takes 10 to 25 gallons of water. A full bath requires about 70 gallons. (EPA WaterSense, www.epa.gov/watersense)
- A toilet from 1992 or earlier uses at least 3.5 gallons of water per flush. Newer toilets with the EPA WaterSense label use less than 1.3 gallons per flush. (EPA WaterSense, www.epa.gov/watersense)

Minnesota's Parent Education Core Curriculum Framework and Indicators

Domain—Cognitive Development

- Mathematical and Logical Thinking
- Scientific Thinking and Problem Solving

Indicator—Parents support development of their children's cognitive development when they:

- Provide opportunities for children to explore numbers, measurement, and patterns using household materials and experiences.
- Provide time and opportunities for children to explore nature.
- Discuss people, objects, and events that have been observed indoors and outdoors.
- Encourage children to ask questions and find answers through active exploration of home materials.
- Discuss how people affect the environment.
- Explore and talk about land, water, and the other features in the community.

Child Development Links:

- Approaches to Learning (Curiosity, Imagination and Invention)
- Creativity and the Arts (Creating, Evaluating)
- Cognitive Development (Scientific Thinking and Problem Solving, Mathematical and Logical Thinking)
- Physical and Motor Development (Fine Motor Development)

Domain—Culture and Community

- Environment
- Community Involvement and Social Change

Indicator—Parents support their children's development when they:

- Support practices that enhance the well-being of all children and families in the community
- Understand the impact of environmental influences such as clean water, chemical-free foods and clean air.
- Support and work to create healthier environments for the well-being of all children and families

Child Development Links:

- Approaches to Learning (Curiosity, Imagination, and Invention)
- Creativity and the Arts (Creating, Evaluating)
- Cognitive Development (Scientific Thinking and Problem Solving, Mathematical and Logical Thinking)
- Physical and Motor Development (Fine Motor Development)

Integrated daily lesson plan: Water quality

Lesson Objectives:

- Participants will learn strategies to help their family reduce water use.
- Participants will assess their typical behavior to determine their impact on water quality.
- Participants will change their behavior to help their family improve water quality in their watershed.
- Children will explore water using a variety of means and senses.
- Children will understand that many living things depend on healthy water.
- Children will understand that their bodies are mostly water, and that we need water to survive.



Parent/child interaction activities

Choose one or more activities for the children in your class based on the groups interest and time.

Parent/Child Activity #1: How Much Rain?

Invest in a few rain gauges and place them outside near windows. After a rainstorm, check the gauges to determine how much water fell.

Suggested Supplies:

- Rain gauge

Parent/child activity #2: Sandbox watershed

Allow the children in your program to create hills and mountains in the sand play area. Then, use a hose with a sprinkler attachment or a watering can to “rain” on the sandbox. Watch how the water creates rivers and streams through the sand and collects at the lowest point.

Suggested Supplies:

- Sand table or sandbox
- Hose or watering cans with sprinkler heads

Parent/child activity #3: Absorb or runoff?

Place the suggested materials on a table along with one empty dishpan and one dishpan full of water. Fill a plastic cup with water. Invite a child to pour some of the water onto a sponge and another small amount onto a wooden block. The sponge represents how a wetland absorbs rainfall and the block represents

how impervious surfaces such as driveways and parking lots create runoff. Then ask her to describe what happens to the water. Explain how the sponge “absorbs” water. Squeeze the sponge over the empty dishpan. What happens? Now do the same thing again, this time pouring water over the wooden block. Ask the children to describe why they use a paper towel or a sponge instead of a wooden block to clean up spilled juice or water.

Suggested Supplies:

- 2 dishpans
- Sponges
- Wooden blocks
- Paper towels
- Eye dropper
- Plastic cup

Parent/child activity#4: Wax paper puddles

Ask parents to tape a sheet of wax paper and a paper towel onto a table or countertop. Using a spoon, the child can drop some water onto both. Parents can ask her to describe what happens. Which material absorbs the water? Explain that a paper towel is more like the ground, which is absorbent. The water can flow into the soil. A piece of wax paper is like a parking lot or other road, it is not absorbent therefore the water simply runs off, collecting chemicals and other substances from the pavement as it goes.

Suggested supplies:

- Wax paper
- Paper towels
- Spoons

**Parent/child activity #5:
Water water inside me**

Trace the outline of each child on butcher paper. Draw or color three fourths of the child’s body blue to depict the percent of water found in the human body (about 80 percent for young children!)

**Parent/child activity #6:
Where does the water go?**

Use a local map to show children how rivers, streams, and lakes are depicted. Allow children to “follow the blue lines” to trace the path of water into the nearest lake or river. Help them find their street and the nearest body of water.

Suggested Supplies:

- Local maps

**Parent/child activity # 7:
Watery worlds**

Have the children draw fish and plants on paper with crayons. Next, mix a few drops of blue food coloring in water or dilute blue tempera paint and encourage the children to paint their favorite streams, rivers or lakes. The wax will “resist” the paint.

Supplies:

- Crayons
- Paper
- Blue food coloring or blue tempera paint
- paint brushes

**Parent/child activity#8
Salt and ice**

Provide each child with an ice cube (freeze a small “treasure” inside such as a small toy, for extra fun) and a paper plate. Children can watch the ice melt slowly. Encourage them to sprinkle salt on the ice and notice that it melts more quickly. This is one reason our roads are sprinkled with salt in the winter. However, the salt then runs off into our lakes and streams, which is harmful to wildlife.

Supplies:

- Ice cubes
- Trays or bowls
- Containers of salt



**Parent/child activity #9
Moving water**

Fill the cups half full with water and food coloring. Allow each child to place one celery stick into the water. Check the celery later that day or the next day to see how the water has traveled up the stem. What happens to plants when there are chemicals in the water?

Supplies:

- Cups
- Food coloring
- Water
- Celery sticks

**Parent/child activity #10
Sensory table**

At circle time, invite each child to share his/her favorite thing about water. Place replicas of water-loving animals (fish, turtles, ducks, frogs, etc) in your sensory table and discuss the importance of clean water.

Suggested Supplies:

- Animal replicas

Parent Observation Question:

Talk with your child about water. Does he/she seem to understand where water comes from? Where it goes? Why is water important for living things?

Adult lessons

Guided check-in/ Discussion starter:

Ask parents the same questions about water. How do humans impact water, both in positive and negative ways?

Activities

Note that many of the activities in the Toxicity Reduction chapter also help improve water quality. By reducing our use of toxic household products and learning to properly dispose of them, we help keep chemicals out of our water, too.

Activity #1: Where in the Watershed?

Learn about the watershed where you live. Use the watershed map in the Appendix to identify the lakes, streams and rivers in your watershed. Analyze how the water resources are connected. Have your group think about how the water that falls on the property of your home, school, or organization travels to nearby lakes, streams and rivers.

Read about what individuals and families can do to conserve water and reduce pollution in the Background Section of this chapter. Encourage people to choose changes they want to make and write these on their watershed picture. Display the picture on the refrigerator or another “public” place. Plan for a fun celebration of clean water once goals/changes are met, such as a day at the beach, at the sledding hill, or on the water in a canoe, kayak or paddleboat.

Suggested Supplies:

- Construction or butcher paper
- Markers, paint or crayons
- Ruler
- Images cut from magazines.
- Watershed map from the Appendix

Discussion starter: What watershed do you live in? Did you know this prior to this activity? Why is it important for families to know what watershed they live in? How can the behavior of families living in one watershed affect the families in another watershed?

Activity #2: Volunteer to monitor water quality

In the Wetland Health Evaluation Program, volunteers obtain water quality data and biological communities to assess the overall health of wetlands. Work includes collecting and identifying insects and plants and completing data sheets.

The program runs from April to August. For more information, call Mary Karius at 612-596-9129, e-mail mary.karius@co.hennepin.mn.us or visit www.hennepin.us, search: volunteer monitoring.



Activity #3: Maintain your drain—keep your block litter-free

Runoff from driveways, lawns, houses and parking lots can carry pollutants such as oil, paint and chemicals down storm sewers and into nearby lakes, streams and rivers. Monitoring storm drains can help keep leaves, grass, litter and other items from getting washed into lakes and streams.

Collect everything from the gutter in front of your house, school, or organization during a specific time period. Children should be closely supervised, wear gloves, and should only pick up what they recognize and know is safe to touch. Analyze what you found, and ask where it might have come from. Organize volunteers to adopt a block/area to keep free of litter on a regular basis. Share what you are doing and why with neighbors in the area.

Suggested Supplies:

- Clear plastic bags
- Protective gloves

Discussion starter:

Were you surprised by the amount you collected? What was the strangest item you found? The largest? How do you think this stuff winds up in the gutters? Do you think this activity has an impact?

Activity #4: Build or buy a rain barrel

Rain barrels can be placed under a roof downspout to collect storm-water runoff that can be used for watering your lawn and gardens. This reduces runoff that can carry pollutants into streams and rivers. Rain barrels can be purchased at local hardware stores or through special sales organized by government agencies or non-profit organizations.

You can also build your own rain barrel. Community groups can purchase the supplies and offer free or low-cost workshops for residents who want to build a rain barrel. For instructions on constructing a rain barrel or for more information on rain barrel sales, visit www.hennepin.us, search: rain barrels.

Suggested Supplies:

- Depends on the style of barrel to be built; see the link referenced above.

Discussion starter:

Would you use a rain barrel? Why or why not? How has using a rain barrel affected your family's water use?



Activity #5: Alter your home water use

Close the hose

Letting the garden hose run faster or longer than necessary while we water the lawn or wash the car becomes a careless and wasteful habit. A half-inch garden hose under normal water pressure pours out more than 600 gallons of water per hour and a three-fourths inch hose delivers almost 1,900 gallons in the same length of time. If left on overnight, one garden hose can easily waste twice as much water as the average family uses in a month.

Irrigate wisely

Have you ever seen a neighbor water their lawn during an afternoon thunderstorm? Watch the weather and irrigate only during the cooler parts of the day (early morning or late evening). How do you know if your lawn requires water? Try the step test. If you walk across your lawn and the grass does not spring back up, then it's time to water. Most grass varieties require minimal watering (1/4 - 1/2 inches, once or twice a week)

Don't let it run

Many of us have the bad habit of letting the faucet run while waiting for a warm shower, a cold drink and while brushing our teeth. Keeping a pitcher of water in the refrigerator or turning the faucet off while we brush our teeth can save several gallons of water each day! Simply think of ways you can use less water to accomplish the same purpose *before* you turn on the tap.

Discussion starter:

Were you aware of how much water is used by these common behaviors? Will it be difficult to change your behavior with regard to water use? Why or why not?

Activity #6: Garden for your watershed

Many gardens and yards require a huge amount of water. Native plants and grasses require much less water than others, and often require less maintenance overall. Review copies of the *Guide to Earth-Friendly Home Landscaping* and discuss how you could change your gardening/yard to be more earth-friendly and require less water and fertilizer.

Suggested supplies:

– Hand out: Hennepin County’s *Guide to Earth-Friendly Home Landscaping*

Activity #7: Rain garden

Discuss rain gardens and the value of planting gardens that absorb stormwater runoff. Have the group look at pictures of rain gardens. Invite a speaker or Master Gardener to your class to discuss rain gardens. View the video www.metroblooms.org/raingarden_video.php to see how rain gardens are constructed. Visit an eco-yard to learn about rain garden construction.

Discussion starters:

Does your family garden? How might you change your gardening practices to conserve water and improve water quality? Have you ever seen a rain garden? Aside from water quality, what are some other benefits to using native plants and rain gardens?

Ideas

Greening your events

The following are some simple ways to make all of your events, gatherings and meetings as green as possible. For more information, see the *Greening Your Celebrations* handout in the Appendix.

- Plan ahead! Communicate your waste reduction goals to all involved.
- Try to limit paper use and handouts. Send electronic invites. Use a laptop and projector for meeting materials and make materials available electronically. Print handouts double-sided.
- Provide information on public transit and biking to your event. Encourage carpooling.
- Provide reusable dishware when offering food. Provide reusable mugs and cups, or encourage attendees to bring their own. If you must use disposable items, look for items that are recyclable.
- Make recycling easy by ensuring that recycling containers are clearly marked and readily available. Consider composting food scraps and food-soiled paper. Monitoring recycling containers and trash cans at events helps ensure that sure all waste ends up in the right place and can be an opportunity to educate attendees.
 - Hennepin County has portable recycling containers available to rent for free for events. Visit www.hennepin.us/recycleonthego for more information.
 - The City of Minneapolis offers container rental for events held in Minneapolis. The city has containers available for the collection of garbage, recycling and organics that they will deliver and pick up for a fee.

For more information on planning greener events and meetings, see the *ZeroWaste Event Planning Checklist* from Do It Green! Minnesota, available at www.doitgreen.org/article/goods/event-checklist, and check out the information available on www.mngreengatherings.org.

Host a special event during April (Earth Month)

Plan an event or information table for Earth Day, April 22.

Un-scary Halloween Party

If your program has a Halloween or fall party, invite your city recycling coordinator to come and share information (to find them, visit RethinkRecycling.com). You can also request free pencils made from recycled materials.

PJ party

Host a Friday night PJ party with a storyteller. The theme could be “stories around the campfire.” As a parent/child activity, make camping vests from brown paper grocery bags and decorate with cutouts from old wallpaper books or other scrap materials.

Nature center field trip

Encourage your children to get outside and experience nature by visiting a nature center. Invite parents to make it a family event. For ideas, visit the Three Rivers Park District website at www.threeriversparkdistrict.org or check your city for other local nature areas.

Garage sale

Host an ECFE garage sale and encourage parents to sell and buy children’s items. Consider including an information table about environmental topics at the event.

Green fair

Organize a resource fair of area community resources and services such as city recycling coordinators, Minnesota Extension Service Master Gardeners to demonstrate and discuss composting, non-profit thrift stores, vendors of eco-products, etc. Have activities that involve children, such as making toys and playing games with “trash.”

Thrift store style show/toy exchange

Working with local thrift stores, have parent/child couples dress up in thrift store outfits. Have audience members guess the cost of the items. Have each child in attendance bring a donated toy for an on-site toy exchange. As families leave, each child can choose a “new” reused toy.

Fundraiser

Sell *Blue Sky Guide* coupon books that offer coupons from local green businesses as a fundraiser. Visit www.ecometro.com/twincities/fundraise.aspx for more information.

Additional educational

Resources

Speakers, presenters and workshops

Use these resources when planning events for your group. Availability and details may change, so be sure to confirm the details directly with the person or location listed.

Hennepin County Environmental Services Staff

Hennepin County staff is available to provide presentations or staff booths on a variety of environmental topics including waste reduction, recycling, toxicity reduction, water conservation and energy efficiency. For more information, call 612-348-6848 or e-mail DESmail@co.hennepin.mn.us.

City Recycling Coordinators

Invite your city recycling coordinator to share information at your event. Visit RethinkRecycling.com to find contact information.

Artstart and Artscraps

Bring your class or group to ArtScraps for 60 minutes of art making with reused scrap materials. Programs are suitable for ages 5 and up and fees vary. Visit www.artstart.org or call 651-698-ARTS for more information.

Master Gardeners, University of Minnesota Extension

Hennepin County Master Gardeners do workshops and demonstrations, teach classes, answer questions and more. Fees are based on your group's ability to pay. Call the Gardening Hotline at 612-596-2118 for questions on lawn care, composting, and other earth-friendly landscaping issues. For information on scheduling speakers, contact Terry Straub at 612-596-2130, e-mail Strau097@umn.edu, or visit www.mg.umn.edu.

Minnesota Pollution Control Agency's Learning Resource Center & Library

The MPCA provides information and assistance on a variety of environmental topics including waste reduction, hazardous waste, composting, junk mail, water and energy. The library has more than 400 video titles on a wide variety of environmental topics. Videos can be borrowed for a two-week loan at no charge. The library offers learning trunks on recycling, waste reduction, and more. Resources are provided at no charge. For more information, visit www.pca.state.mn.us, search resource center, or call 651-757-2120.

Prairie Ecology Bus Center

This state-of-the-art school, mobile scientific laboratory, and classroom designed to educate school children and adults about the environmental and natural sciences. Suitable for 3rd to 5th grade. Some fees may be required. For more information, call Chrystal Dunker at 507-662-5064, e-mail ecologybus@ecologybus.org, or visit www.ecologybus.org.

Science Museum of Minnesota

The Science Museum will come to your location to present information on a variety of science topics. Call to find out about specific programs available. Programs are suitable for ages 4 and up. For more information, call Jen Powers at 651-221-4748, e-mail jpowers@smm.org, or visit www.smm.org.

Resources in other languages

Hennepin County offers several print resources in other languages, including Spanish, Hmong, and Somali. To learn more about the multicultural resources the county offers, contact Anita Urvina Davis, multicultural education coordinator, at anita.urvina@co.hennepin.mn.us or 612-348-6848.

Environmental education curriculum book list

Toddlers and Young Preschoolers (Board Books)

- *Choose to Reuse*
by Miriam Latimer, Preschool
- *My Bag and Me!*
by Karen Farmer, Preschool
- *Big Earth, Little Me*
by Thom Wiley, Preschool
- *Don't Throw That Away!*
by Laura Bergen, Preschool

All Preschool to 2nd Grade

- *It's Earth Day!*
By Mercer Mayer
- ages 4-8
- *Charlie and Lola: We are Extremely Very Good Recyclers*
by Lauren Child
- ages 4-8
- *Cleaning Up Litter*
by Charlotte Guillain
- ages 4-8
- *Curious George Plants a Tree*
by Margret & H.A. Rey
- ages 4-8
- *Easy to Be Green: Simple Activities You Can Do to Save the Earth*
by Ellie O'Ryan
- ages 4-8
- *Ecoart!: Earth-Friendly Art and Craft Experiences for 3-To 9-Year-Olds*
by Laurie Carlson
- *Grover's 10 Terrific Ways to Help Our Wonderful World*
by Anna Ross
- ages 4-8
- *I Can Save the Earth!: One Little Monster Learns to Reduce, Reuse, and Recycle*
by Alison Inches
- ages 4-8
- *Michael Recycle*
by Ellie Bethel, Alexandra Colombo
- ages 4-8
- *Michael Recycle Meets Litterbug Doug*
by Ellie Bethel, Alexandra Colombo
- ages 4-8

- *My Big Green Teacher: Recycling*
by Michelle Y. Glennon
- ages 4-8
- *Now We Know About Recycling*
by Michael Goldsmith
- ages 4-8
- *Recycle That!*
by Fay Robinson
- ages 4-8
- *Reusing and Recycling*
by Charlotte Guillain
- ages 4-8
- *The Adventures of a Plastic Bottle: A Story About Recycling*
by Alison Inches
- ages 4-8
- *The Dumpster Diver*
by Janet S. Wong, David Roberts
PreSchool-Grade 2
- *The Great Trash Bash*
by Loreen Leedy
- ages 4-8
- *The Three R's: Reuse, Reduce, Recycle*
by Nuria Roca, Rosa M. Curto
- ages 4-8
- *Why Should I Recycle?*
by Jen Green, Mike Gordon
- ages 4-8
- *Waste and Recycling*
by Jen Green
- ages 4-8
- *What Happens at a Recycling Center?*
by Kathleen Phol
- ages 4-8
- *Where Does Garbage Go?*
by Isaac Asimov
- ages 4-8

Resources for parents and teachers:

- *Beyond Ecophobia*
by David Sobel
- *Cradle to Cradle: Remaking the Way We Make Things*
by William McDonough
- *Last Child in the Woods*
by Richard Louv
- *Stuff: The Secret Lives of Everyday Things*
by Alan Thein Durning and John C. Ryan

Resources

for Internal Operations

When ECFE programs begin to educate others about waste reduction, they may also want to look at internal operations and make changes to reduce waste and improve recycling efforts. The following tips and resources can help you implement these changes.

Reduce

- Preventing waste from being generated in the first place is an easy and effective way to lower disposal costs. Look for creative ways in your day-to-day operations to reduce waste.
- Avoid unnecessary printing and make double-sided printouts and copies. Start a paper reduction campaign in your office.
- Use e-mail for communications and consider using e-newsletters to reduce paper use.
- Check documents carefully before printing and edit drafts on the computer.
- Reuse scrap paper for notepads.
- Use a small fax transmission sticker instead of using a large cover sheet.
- Use reusable cups and dishware for meetings. Encourage attendees to bring their own reusable coffee mug.
- Encourage employees to pack lunches in reusable containers. Provide a microwave, refrigerator, area for dishwashing and dishware to make this easier.
- Use non-hazardous or less-hazardous cleaning supplies.

Reuse

- Set up a system in your office for reusing office supplies and equipment, such as a central storage area or online database.
- Consider donating office equipment and materials that your business no longer needs. Go to RethinkRecycling.com/business and look under donating opportunities for options.
- When shipping items, reuse packaging materials or use shredded paper.
- Use reusable nametags at meetings.

Recycle

- Make sure your organization is recycling as much as possible – office paper, newspapers and magazines, cardboard, plastic bottles, metal cans and glass are all recyclable.
- Make sure recycling containers are clearly labeled and readily available. Posters and labels are available from Hennepin County for recycling programs. Go to www.hennepin.us, search: recycling resources.

Recycle, cont'd on next page

Recycle, cont'd from previous page

- To encourage recycling, eliminate trash bins in individual offices; put them in the break room and common areas instead.
- Start an organics recycling program. Organic waste – food waste and food-soiled paper – can be recycled into compost, a valuable resource used in landscaping and road construction projects. Visit www.hennepin.us, search: organics, for more information.

Develop a green purchasing program

- Purchase environmentally preferable office supplies and equipment. Environmentally preferable products contain recycled content, are sustainably harvested, are made with less toxic materials, or conserve energy or water. Visit www.epa.gov/epp for more information.
- Purchase printers with double-sided printing capabilities. Purchase refillable toner cartridges.
- Buy office supplies in bulk.
- Purchase recycled-content office paper. Set a standard for recycled-content paper used in your organization.
- Encourage suppliers to ship materials in returnable or reusable containers.

Keep hazardous materials out of the trash

Certain supplies and products that may be used in your business, such as electronics, cleaners, fluorescent light bulbs, appliances, cleaning supplies and paint, contain hazardous or toxic materials and must not be placed in the trash. Go to www.hennepin.us/businesshazardouswaste for information on proper disposal.

Energy efficiency and renewable energy

Electricity production results in significant greenhouse gas emissions and air pollution. Conserving energy and improving energy efficiency can reduce your organizations impact on the environment and save money.

- Turn off lights in unoccupied offices and restrooms. Install motion sensors for lights.
- Convert to energy efficient lighting and purchase energy efficient office equipment.
- Turn off copiers, lights and computers at night.
- Carpool, take public transit or bike to events and meetings. Offer incentives for employees that do this.
- Have your heating and cooling system audited for energy efficiency.
- Buy renewable energy. Some businesses have installed solar panels or wind turbines to meet their energy needs. You also may be able to purchase renewable energy from your utility provider.
- Understand and manage your organization's greenhouse gas emissions by preparing a greenhouse gas inventory and setting long-term emission reduction targets. The Environmental Protection Agency offers a Climate Leaders program that provides technical assistance and recognition for organizations taking steps to reduce emissions. Go to www.epa.gov/climateleaders for more information.
- Utility providers offer a variety of tools and incentives to help organizations conserve energy and improve energy efficiency.



Resources for Businesses, Schools and Organizations

Waste reduction and recycling

Hennepin County Business Waste Reduction Program

www.hennepin.us/businesswaste

612-348-3777

Hennepin County offers free web information, phone assistance, and links to other resources to help business save money by reducing waste.

Resourceful Waste Management Guide

rethinkrecycling.com/businesses

This resource provides information on how to reduce, reuse, recycle or properly dispose of just about anything your company uses. The website also has a step-by-step guide to help your business develop and maintain a waste management program.

Hennepin County drop-off facilities – recycling only

www.hennepin.us/dropoffs

612-348-3777

Small business may self-haul recyclables to drop-off facilities in Brooklyn Park and Bloomington free of charge. Larger quantities of recyclables should be delivered directly to a recycling company. Hazardous waste is not accepted from businesses at these facilities.

Minnesota Materials Exchange

www.mnexchange.org

612-624-1300

This free service connects businesses and organizations that have quality reusable goods they no longer need to those that can use them. Find low-cost or free materials, save money on disposal, and find new markets for surplus materials.

Minnesota’s Sustainable Healthy Schools program

www.healthyschools.state.mn.us

Resources for parents and educators including a “Guide for Change,” “Assessment Tool for Change,” and success stories.

Minnesota Technical Assistance Program—MnTAP

mntap.umn.edu

612-624-1300

A free, non-regulatory program that provides businesses and organizations with company-specific, cost-saving solutions to manage waste and improve energy efficiency.

Minnesota Retired Engineer Technical Assistance Program (ReTAP)

www.pca.state.mn.us, search: retap

612-624-1300

ReTAP provides free, confidential, non-regulatory pollution prevention, waste reduction and energy conservation assistance to Minnesota businesses, industries and institutions.

Minnesota Waste Wise

www.mnwastewise.org

651-292-4681

A private, non-profit, member-supported organization affiliated with the Minnesota Chamber of Commerce that helps businesses and organizations reduce waste and save money.

Eureka Recycling

www.eurekarecycling.org/bg_coop.cfm

651-222-7678

Eureka Recycling offers a cooperative purchasing program for recycled paper and compostable products.

Energy efficiency and renewable energy

Hennepin County Cool County Initiative

www.hennepin.us/coolcounty

612-348-3777

Hennepin County has committed to reducing greenhouse gas emissions from county operations. Find out what the county is doing and what residents and businesses can do to reduce emissions.

Minnesota Office of Energy Security

www.energy.state.mn.us

651-296-5175

Information about energy efficiency and renewable energy.

Center for Energy and the Environment – Commercial Lighting Program

www.mncee.org/programs_bldgs_facilities/commercial_lighting

612-335-3487

Offers energy audits and rebate for small businesses that retrofit their existing lighting system with more energy efficient lighting

CenterPoint Energy

www.centerpointenergy.com/services/naturalgas/business

Offer free Custom Energy Analysis in which an auditor inspects a business' natural gas use to help manage energy costs.

Database of State Incentives for Renewables and Efficiencies

www.diirusa.org

A comprehensive source of information on state, local, federal and utility incentives that promote renewable energy and energy efficiency.

ENERGY STAR

www.energystar.gov

Offers information on energy efficient products and practices.

U.S. Department of Energy

www.energysavers.gov/your_workplace

Information for businesses about implementing energy efficiency programs and utilizing renewable energy.

Xcel Energy

www.xcelenergy.com/minnesota/business

1-800-481-4700

Offers a variety of resources and programs on energy efficiency and utilizing renewable energy.

Evaluation Questions



Evaluation questions for behavior change

Please see the following questions. You will choose questions from this list to ask of the people who participated in your project. The “respondents” are the people who learned about waste reduction and/or toxicity reduction because of your efforts.

About the questions

The first part of each question (asking the respondent to consider how frequently they make waste reducing choices), reminds the respondent what they learned through your project. The second part of the question (asking if they changed their behavior because of your program), is what we are keeping track of to determine if your efforts had an impact on their behavior.

Choosing the right questions to ask

Only those questions that relate to the content of what people learned through your Community POWER project should be used. If some of the questions do not relate to your project, remove those from your survey or questionnaire.

When to administer the questions

These questions should be administered only after a person participates in your program or goes through an educational experience that you organized, and enough time has passed so that they could implement what they learned in their daily life. We estimate the questions should be asked two to six months after the person learns about the issues.

How to administer the questions

In the past, grantees have used the questions in written surveys, on-line surveys, or in an interview format (over the phone or in person). If the people who participated in your project attend a follow-up meeting or event, that is a great time to administer the questions. You could also mail surveys with a stamped return envelope.

Customizing the questions/survey

This word document can be downloaded from www.RethinkRecycling.com/ECFEtoolkit. The name of your program, project, or workshop can be inserted throughout the questions. Other language of the questions should not be altered. These questions can be inserted into an existing survey or accompany other questions you design. It can be useful to ask the respondent's level of experience with the program (days or hours or participation, for example) as well as other background information.

Questions?

Please contact Patty Born Selly at patty@domware.com or 612-501-5179 with any questions, or to discuss how to overcome challenges in using the questions.

Appendix

Activity supplies:

- “Waste: “What’s the Problem” video
- Wise-Up About Waste quiz
- Recycling Chart
- Chemicals in the Home quiz
- Label Reading Activity
- Rethink Recycling article: Recycling mitigates global warming
- Home Hazardous Products Survey
- “Household Hazardous Waste” PowerPoint presentation
- Trash Checklist
- Watershed Map

These resources are also available online at RethinkRecycling.com/EFCEtoolkit

Handouts from Hennepin County:

- Hold the Mail
- Too Much Packaging is a Waste
- Donation Opportunities
- Greening Your Celebrations
- How to Pack a No-waste Lunch bookmark
- Remember Your Bags window clings
- Choose to Reuse Directory magnet
- A to Z Guide magnet
- Residential Curbside Recycling Guide
(also available in Spanish)
- Household Hazardous Waste and Problem Materials Guide (also available in Spanish)
- How to Identify Hazardous Products
- Ways to Reduce Harmful Chemicals in your Home
- Non-Toxic Cleaning Recipes
- Fluorescent Light Bulbs: Buy them, use them, recycle them
- Mercury and Mercury-Containing Products
- Household Batteries: Recycling and Disposal Information
- Drop-off Facilities brochure
- Earth-Friendly Home Landscaping Guide
- Ten Easy Things to do to Protect Water Quality
- Cool County Brochure
- Landowner Guide

Order literature online at www.hennepin.us/literatureorderform or call 612-348-4168

Handouts from the Minnesota Pollution Control Agency:

- Reducing waste at home, at work, at school
- Reduce Trash When You Shop
- How to Compost Your Organic Waste
- Reduce the Need for Pesticides and Herbicides
- How to Grow a Healthy, No-waste Lawn and Garden

*Order literature by e-mail at resourcecenter.pca@state.mn.us or call 651-757-2120.
PDF versions can also be downloaded at reduce.org*