

## RECYCLING FOR THE EARTH @ THE FARBER FARM

### Class Length:

1 hour 15 min or 2-hour 45 min

### Class Location:

Farber Farm learning center or red barn

### Class Size:

10 – 25 participants

### Class Age:

4<sup>th</sup> grade and up

### Materials:

- Newspaper
- Bowl(s)
- Water
- Blender(s)
- Iron(s)
- Mould(s) and deckle(s)
- Towels or paper towels
- Bin(s)
- Cardboard or construction paper for pizzas
- Clean bags of trash
- Milk cartons
- Paint and paint brushes or markers
- String
- Scissors
- Magazines

### Next Generation Science Standards:

**K-ESS3-C** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

**E-TS1-B** Developing possible solutions. Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solution to other people. (secondary to K-ESS3-C)

**4-ESS3-1** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. Over time, peoples' needs and wants change, as do their demand for new and improved technologies. Knowledge of relevant scientific concepts and research findings are important in engineering.

**4-ESS3** Energy and fuels that humans use are derived from natural resources and their use affects the environment in multiple ways. Some resources are renewable, and others

are not.

**5-LS2-1** Develop a model to describe phenomena.

**Purpose:**

To have students really understand the meanings behind "Reduce, Reuse, Recycle and Respond," They should also understand the savings and impact on our earth that the 4 "R's" create. Students will explore creative ways of reusing materials, waste and recycling concepts for home and classroom. Students will be exposed to land, water and air preservation and conservation. Recycled papermaking and trashy pizza making will be done by all. Composting techniques may be discussed.

**OVERVIEW:**

10-15-minute overview on the 4 R's and their impact on our GREEN earth. In short, we will be doing activities and sharing ideas on things that we can do to help keep our earth as green as possible, for as long as possible.

**Reduce:** Reducing waster requires foresight. It requires us to think about the items we purchase and the activities we participate in and to consider the amount of solid waste related to those items and activities. Reducing activities include water conservation (be aware and reduce water used to brush teeth, dishes, clothes, toilet tank displacer, anything in the home), energy conservation (national light bulb initiative, turning off appliances and lights when not in use), reuse containers, purchase items that have reusable and/or minimum packaging.

**Reuse:** This draws on our creativity as well as our foresight when selecting purchases. Glass and plastic containers for food, use cloth napkins or towels instead of paper, milk cartons for birdfeeders (make a great gift), reuse water bottles, instead of buying new, purchase refillable pens and pencils, reuse boxes. Reuse items by repairing them, donating to charity or community groups or selling them. Reusing items is even better than recycling because the item does not need to be reprocessed before it can be used again.

**Recycle:** This is becoming a common occurrence and easier to carry out as the number of offices and curbside recycling programs increases across the county. Ideas for activities include: set up recycling centers at home and school for glass, plastic, metal, paper, composting, batteries (other household cleaners/paints). See attached materials for recycling statistics.

**Benefits of recycling:**

- Conserves resources
- Prevents emissions of many greenhouse gases and water pollutants
- Saves energy
- Supplies valuable raw materials to industry

- Creates jobs
- Stimulates the development of greener technologies
- Reduces the need for new landfills and incinerators

**Resources saved per ton (2000 lbs) of paper recycled:**

17 trees  
275 pounds of sulfur  
350 pounds of limestone  
9,000 lbs of steam  
60,000 gal. Of water  
225 kilowatt hours  
3.3 cubic yard of landfill space

**Respond:** This requires that we let both manufacturers and public officials know that we, as a society, and as individuals, are concerned about our environment and the preservation of natural resources. This can be done directly through letter writing programs to public officials and manufacturers. You can choose to be aware of your purchasing choices and cut down on certain items. Starting small, getting a bin to recycle all plastic, metal and paper at home.

**Composting:** Composting is a great way to alleviate some food waste. When we throw away food scrapes it goes into landfills, which contribute to greenhouse gases which is methane and is 23 times as potent as carbon dioxide emissions! A good way to reduce food waste is by saving our scrapes and turning them into soil! At the farm, we save our veggie scrapes, weeds, and leaves and pile them up and turn them into soil thanks to microorganisms that break down the matter. Families can have small compost piles at home easily. There is also an awesome machine called a food scrap recycler that you can keep in the kitchen. It's simple, dump your scraps in, turn it on, and in 1 day you have a fertilizer that you can apply to gardens or save for later use.

**In summary:**

Each year in the United States more landfills close than open. New landfills are limited by regulations, public concern and lack of suitable sites. Trash disposal is an ever-growing concern with few easy answers. The best solution and the one advocated by the EPA, is called source reduction, or reducing both the toxicity and amount of waste as close to its generation point as possible.

Too often we don't know the effects that waste products have on ourselves, or future generations. We do know that we cannot sustain our wasteful practices forever. Hazardous wastes are the result of a one-way system in which the end products of resources and energy inputs can't be reused, recycled, or returned to nature. We talk about taking care of waste from the creation of waste to its disposal. Why not consider a circular cycle of taking care of waste from cradle to cradle, treating "waste" as a responsibility and a valuable resource???

## **ACTIVITY:**

### **Recycling paper and beyond (to eternity)**

All students will participate in papermaking from recycled newspapers. Students will also discover various decomposition rates and creative ways to recycle magazines and other household and school-wide materials.

#### **Papermaking from old newspapers:**

- Tear newspaper into small squares, thumb nail size.
- Place into tub of water until 1-part paper to 2 parts water.
- Soak paper until edges are well frayed.
- Pour into blender and chop paper until a watery paste.
- Pour back into tub and place the frame even sides into the tub.
- Submerge frame and move around until an even layer of paper sits over the frame.
- Slowly and evenly lift frame out clearing excess paper of the tape to make edges.
- Lay a sheet of newspaper, followed by a board over the frame then turn over so the board is lying flat on the table.
- Sponge excess water through the wire then leave for 10-15 minutes.
- Slowly peel the paper and newspaper from the frame the paper and newspaper on the board.
- Iron on top of newspaper, short hard presses until water on top of the newspaper has evaporated.
- Slowly peel away newspaper from paper. You may have to help start the edge.
- Leave paper on the board to dry, gently iron over paper.

## **WRAP UP:**

Reduce, reuse, recycle and respond and keep the earth as green as possible for as long as possible.

Ask students:

1. What are some ways you can reduce the amount of waste you produce in your life?
2. What are some things you think you can and will want to reuse at home?
3. What are some items you will start to recycle?
4. What is one good way that we can respond to our situations and make a change?

## **OTHER POTENTIAL ACTIVITIES AND GAMES:**

### **Trashy Pizza:**

All students will participate in creating a trashy pizza that they can take home for dinner. Please see attached art lesson for details. This activity and associated discussion will take approximately 20 minutes to 1 hour, depending on whether the trash decomposition

(ingredient containers) is used. This will introduce students to the time to decompose various familiar items, amounts of waste generated daily and potential recycling and creative reuse ideas.

#### **Bird feeders made from old milk cartons**

- Cut 1 or 2 round holes, 3 inches from the bottom of the container.
- Wash the carton thoroughly and dry, then tie a piece of twine or string to the handle to hang.
- Decorate your feeder how you like it.
- Fill with bird seed and hang from a tree branch (at home).

#### **Creative critters made from old milk cartons**

Allow students to make creations out of old milk cartons or bottles. Give them paint and markers and scissors.