WASTE GARDEN

Contact Information
Athens-Clarke County Recycling Division
Program Education Specialist
706.613.3512
www.acc-recyle.org

Grades
2

Objectives
Students will be able to: 1) observe and evaluate differing rates of decomposition of various waste materials; and 2) describe a sanitary landfill and explain its use.

Method
Students "plant" waste items in soil and compare their differing rates of decomposition.

Materials
Newspaper, shoe boxes, aluminum foil, soil from outdoors, spray water bottle, lettuce, baby food jars, aluminum pie pan, twigs, margarine tub lids, notebook paper

Vocabulary
Biodegrade, waste, sanitary landfill

Procedure
1. Discuss with students how things change over time. Materials BIODEGRADE or break down when they are exposed to soil, moisture, and air. Some things break down or biodegrade slowly, like brick, and some things break down faster, like wood.

2. Define WASTE as things we are done using and would like to throw away. Ask students for examples of waste. Explain how most waste in the United States is disposed of in SANITARY LANDFILLS. A landfill is basically a hole in the ground where waste is buried; the hole is usually lined with some type of plastic liner. The waste that is dumped at the landfill each day is covered with a layer of soil to keep things clean (thus the word sanitary). Tell students you are going to find out how much waste biodegrades in a landfill by making mini-landfills. In small groups, they will be planting "waste" gardens.

3. Divide students into groups of 3-4. For each group assemble a set of waste materials to represent the major categories of waste. Students can help by bringing these materials from home. Each group should have the following sample waste materials: a baby food jar (glass), a twig (yard waste), and 1-2" pieces of: lettuce (food waste), an aluminum pie pan (metal), a margarine tub lid (plastic), and notebook paper (paper). Keep one set of waste materials in an empty shoe box for later comparison. Each group should also have some newspaper, a shoe box, some aluminum foil and soil from outdoors (enough to fill the box three-quarters full; do not use potting soil because it is sterile and does not contain bacteria needed for biodegradation.

4. Have students plant their waste gardens. First have them spread out newspaper in their work area. Next, line the bottom of the shoe box with aluminum foil to trap moisture that will be applied to the waste garden. Fill the shoe box one-third full of soil. Plant the waste items on top of the soil. Make sure all waste items are in contact with the soil. Continue to fill the shoe box with soil until it is three-quarters full. Mist the surface of the waste garden by spritzing it with water. Leave the lid off and put in a warm place. Continue to keep the soil moist.

5. Every 10-14 days, unearth one waste garden. To reduce the mess, do not mist garden with water for two days prior to the unearthing. As a class, observe how the waste materials have changed by comparing them to the set that was not buried.
   Make observations on the following:
   SIZE: Is it still in pone piece (is the one piece smaller) or is it broken up into smaller pieces?
   SHAPE: Is it still in the original shape (square or other)?
   TEXTURE: Is it stiff or limp?
   COLOR: Has the color changed?

6. Rank the six waste items from most biodegradable (those breaking down the most) to least biodegradable. Does the ranking change as you unearth each waste garden? It was originally thought that biodegradation occurred at a normal rate in landfills. However, new research indicates that biodegradation is greatly slowed in landfills. For example, in one study a newspaper that was dug up after 30 years was still readable. Ask students what it will mean if trash does not biodegrade easily in landfills (we will be living with our trash for a <u>long</u> time).

Source: Waste In Place, 1990 Keep America Beautiful, Inc.