

Making a modern landfill

Grades: Elementary, Middle

Time: 35 minutes

Overview

Students explore where non-recyclable garbage goes. They learn about modern sanitary landfills and their impact on the environment by creating their own mini-landfills. (Observation time can be weeks or months.)

Materials

Transparent plastic container (large plastic bottle with cap or see-through plastic box with lid so you can watch the progress of what's inside your mini-landfill.)

- . Scissors
- . Soil
- . Plastic wrap
- . Gravel or fish tank rocks (1 cup)
- . Non-recyclable garbage (such as used napkins, plastic wrap, etc.)
- . Water
- . Plastic tape
- . Observation journal/s

Procedure

If you use a bottle or jug, cut the bottle in half, keep the top portion and cap. If it's a plastic box, make sure it can be made airtight.

Put in a 3-4cm layer of soil, which is like the ground under all landfills.

Spread the plastic wrap over the soil. This represents the clay or plastic liner found in a sanitary landfill that keeps the leachate from leaking out from the landfill into the groundwater. Add a layer of gravel. This represents the gravel found in landfills.

Evenly spread some of the waste items collected onto the gravel. Bulldozers spread the waste this way in a real landfill. Make sure some of the waste items are close to the transparent containers sides so you can watch the decomposition process.

Add a layer of soil.

Alternate waste and soil layers three times each.

Replace the top portion of the bottle, securing it tightly with tape. If you are using a plastic container, put the top back on.

Make sure the container's top is airtight. This keeps it from smelling.

Occasionally sprinkle water on the landfill surface.

Every 2-3 days, unscrew the cap (or open the lid if you're using a container) for a few moments to let air in and to water lightly (to represent rainwater). Be careful not to spill any of the contents!

Observe what happens over the course of 4 weeks, or a term (or longer if you can).

Excavate to investigate which materials have decomposed, which haven't, and how well it might compare to an actual landfill site. You could organize a visit to the during a topic of work on waste, and compare your experimental observations with what happens on a larger scale. Discuss the type of items we put in bins at home and school and their reaction in landfill.