



Teacher Overview

MOBIUS Curriculum Objectives:

- To introduce students to solid waste management systems and the problems that arise when waste is not managed effectively
- To help students learn the cyclical nature of our environment
- To teach the New Three Rs of the solid waste disposal solution: **reduce, reuse, recycle.**
- To encourage students to participate in creative individual and community-wide solutions to the solid waste disposal problem

Subjects Addressed:

Science, Mathematics, Social Studies, Vocabulary Building

The world is facing an ever-increasing solid waste disposal problem. The amount of solid waste we produce is escalating. When improperly handled it poses a threat to our environment. But there are solutions to this problem if everyone participates.

The solid waste disposal problem is everyone's problem. Every person in North America contributes approximately three and one-half pounds of waste to the solid waste stream daily. United States residents generate more waste than any other country - 180 million tons (164 million metric tons) - and discard over 158 million tons (144 million metric tons) annually. But, the United States is not alone. According to the National Solid Wastes Management Association, Canadians produce nearly as much waste per capita as do U.S. citizens.

Currently there are two primary methods of waste disposal in the United States and Canada: burying it in sanitary landfills and burning it in incinerators. Some waste is put in the ocean, but the percentage is very small compared to the amount sent to landfills and waste-to-energy facilities. New requirements will soon ban the practice of ocean dumping in the United States. Sanitary landfills, which have replaced open dumps, have helped keep our environment safe; incinerators are now designed to burn cleanly and generate energy for municipalities and private utilities. But in many cases, landfills are filling up faster than communities anticipated; incinerators, while they significantly reduce the amount of waste in landfills, are comparatively more expensive and still require landfills for disposal of ash residue.



Solutions to the solid waste disposal problem can be found in an interrelated system. No single method will work. Among the integrated measures needed to solve the problem are the following:

- **Waste Reduction:** With an estimated 32% by weight and 30% by volume of U.S. trash comprised of packaging, consumers are encouraged to buy products using environmentally sound packaging. To influence marketers, look for and use products made from and packaged in recyclable materials. Good examples of recycled materials in packaging include breakfast cereal boxes, egg cartons, shoe boxes, beverage cans and glass jars. If a box is grey inside when you tear it, it's probably made of recycled paper.
- **Waste Reuse:** By reusing items instead of throwing them away, we find secondary uses for these materials. Examples include repairing appliances instead of buying new ones.
- **Composting:** Composting organic materials, such as yard waste, creates humus; rich, partially decomposed organic matter that can be used as a soil additive.
- **Recycling:** Recycling materials such as paper, metals, glass, tires and certain plastics can reduce the solid waste sent to landfills by up to 25%.
- **Resource Recovery:** Burning waste to produce useful energy. This is also referred to as waste-to-energy, or incineration.
- **Sanitary landfills:** There will always be waste that cannot be reduced, reused, or recycled. This volume can be disposed of safely in strictly regulated, well-engineered sanitary landfills.

Solutions to the solid waste disposal problem are both interrelated and complex. The MOBIUS Curriculum emphasizes recycling because of its many immediate, positive effects. Recycling reduces the waste stream and slows the use of raw materials. Recycling is one part of the solution in which every member of society can participate. Children can be effective leaders in the recycling movement as it

gains momentum over the next several years. Armed with the lessons found in this curriculum, children can take part in the solution and learn more about the scientific, historic, economic and civic aspects of the solid waste disposal problem.

Most important, recycling is a three-step process: separate, process

