We3 Bridging Document: Minnesota Pollution Control Agency
The Business of Recycling

Grades 8-12

Abstract

Students will discuss the information contained in the teachers background section of the activity and examine graphs which show the history of paper consumption and the amount of paper recycled. They will discuss the effect on the business of paper recycling of various real-life what-if questions.

Connection to State Science Standards (Grades 8-12)

Strand III – Earth and Space Science
Sub-Strand A – Earth Structure and Processes

Standard – The student will investigate the impact humans have on the environment.

Benchmark

1. The student will identify and research an environmental issue and evaluate its impact.

Activity

The Business of Recycling

To find activity, contact the Minn. Pollution Control Agency's resource center: www.pca.state.mn.us/about/library.html

Ask for the *WhataWaste* curriculum, secondary level. The activity is on pages 20-25. The introduction to solid waste in the same curriculum guide provides some good background information as well.

Materials

From the *WhataWaste* secondary curriculum:

- Transparency Master Graph – U.S. Paper Recycling
- Transparency Master Graph – U.S. Paper Recycling Rate

Key concepts/ideas

- Recycling is a way to solve some of our waste management problems.
- The definition of recycling is turning waste into new products.
- The three components of the recycling system are separation & collection, remanufacture, and purchase.
- The success of a recycling system is determined by the availability of raw materials from people recycling paper, the ability of manufacturers to adapt their technologies to recycling, state and local laws, and the market created by people buying recycled paper products.
- Changes in any of the components of the recycling system can effect the business of recycling.

Connection to Minnesota Environmental Literacy Scope and Sequence Benchmarks

- Social and natural systems are made of parts. (preK–2)
- Social and natural systems may not continue to function if some of their parts are missing. (preK–2)
- When the parts of social and natural systems are put together, they can do things they couldn't do by themselves. (preK–2)
- In social and natural systems that consist of many parts, the parts usually influence one another. (3-5)
- Social and natural systems may not function as well if parts are missing, damaged, mismatched, or misconnected. (3-5)
- Social and natural systems can include processes as well as things. (6-8)
- The output from a social or natural system can become the input to other parts of social and natural systems. (6-8)
- Social and natural systems are connected to each other and to other larger or smaller systems. (6-8)
- The interaction of social and natural systems can create properties that are different from either individual system. (9-12)
- Interaction between social and natural systems is defined by their boundaries, relation to other systems, and expected inputs and outputs. (9-12)
- Feedback of output from some parts of a managed social or natural system can be used to bring it closer to desired results. (9-12)
- It is not always possible to predict accurately the results of changing some part or connection between social and natural systems. (9-12)

For the full *Minnesota Environmental Literacy Scope and Sequence*, see www.seek.state.mn.us/eemn_c.cfm

Connection to State of Minnesota Environmental Education Goals

To view Minnesota State Statute § 115A.073, "Environmental education goals and plans," go to www.seek.state.mn.us/eemn_g.cfm and scroll down to Statute 115.073. It is the second statute listed on this page.

Background knowledge for teachers

Recycling Association of Minnesota

- *Curmudgeon's Guide to Recycling* www.recycleminnesota.org/htm/ReCurm.htm
- *Ollie Saves the Planet*, an interactive CD, introduces the concept of sustainability and asks users to reduce, reuse, recycle, and rethink their actions in the areas of waste, water, energy, air, and biodiversity. It does this within the context of local conditions and educational guidelines. (Ollie fits with several dozen Minnesota science standards for grades 1-8.) www.recycleminnesota.org/htm/ollie.htm
- Recycling facts and benefits www.recycleminnesota.org/htm/ReFacts.htm
- Recycled products kit for the classroom www.recycleminnesota.org/htm/ReKit.htm
- *Recycled Products Guide for Minnesota–Business Edition* www.recycleminnesota.org/images/RecProdBus.pdf
- *Recycled Products Guide for Minnesota–Consumer Edition* www.recycleminnesota.org/images/RecProdCon.pdf
- Educational materials www.recycleminnesota.org/htm/ReEd.htm

Paper Industry Association Council

www.paperrecycles.org/paper_environment/index.html

School Recycling, www.paperrecycles.org/school_recycling/index.html

Scholastic

Recycling Lesson Plans, http://teac her.scholastic.com/lessonplans/recycling/lesson1.htm

EPA

Report on Municipal Solid Waste and Recycling www.epa.gov/epaoswer/non-hw/muncpl/pubs/msw06.pdf

How to make this activity relevant to students' learning and lives

Students use paper every day and are familiar with recycling. Students can come to understand that they make choices every day, and their choices can have an effect. In the case of paper, they can choose both to recycle and to buy recycled paper products.

Related state agency K-12 outreach resources

- Eureka Recycling facts sheets www.eurekarecycling.org/inf_facts.cfm
- WhataWaste secondary curriculum. View additional activities and background information.
- WhataWaste primary curriculum, which contains a series of activities focused on waste management.

Assessment options

- **Standardized Assessment:** Use items in the Grade 10-12 Comprehension Check, in multiple choice format, requiring students to identify the three components of the recycling process and likely consequences of waste management and conservation practices on supply and demand for recycled resources and products.
- **Individualized Assessment:** Review each student's understanding of the three components of recycling, following discussion of Action Step 2 and contribution to discussion of waste management/conservation scenarios on recycling-related businesses (Action Step 3).
- **Cooperative Assessment:** Assess entire group's understanding of the three components and review performance of entire group in discussion of Action Step 3.
- **Alternative Evaluation Activity:** Assess group performance when students work together to create a mural, poster, poem, or other creative expression explaining the three components of the recycling process.

We save—Ideas for action

1. **Students may** choose to start or bolster a recycling program in their school. Part of this may include educational materials created to make other students aware of the reasons behind recycling and purchase of recycled products.
2. **Students may find out who buys** the supplies for the school, set up a meeting, and ask the school to buy recycled products. In preparation for this meeting, students can do research on such things as:
   - What paper items the school purchases.
   - What types of recycled paper products are available and where.
   - How recycled items compare to non-recycled products.
   - The differences in cost between recycled and non-recycled items.
   - Differences between various kinds of recycled paper items.