
▶ WASTE MINIMIZATION – GRADE 5

Big Ecological Idea #1:

The Earth is a closed system in terms of matter. This means that we don't get new matter and old matter does not leave the Earth. The same matter just keeps getting used over and over again. Matter cannot be created or destroyed – it can only be changed from one form to another. Everything we think we have thrown away is still with us in some form or other – there is no “away”!

- a) Products or wastes that can be reused or recycled should not be diluted, dispersed, mixed, burned or buried.
 - b) Saving materials from being wasted benefits the environment by reducing the need for
 - c) Reducing the need for new resources preserves forests, habitat, species, watersheds and air quality.
- extraction of new resources (from forests and mines) and energy use for their extraction and transportation.

Clustering of Expectations

SCIENCE & TECHNOLOGY—Understanding Matter and Energy: Properties of and Changes in Matter (2007)

- 1.1 evaluate the environmental impacts of processes that change one product into another product through physical or chemical changes
- 1.2 assess the social and environmental impact of using processes that rely on chemical changed to produce consumer products, taking different perspectives into account (*e.g., the perspectives of food manufacturers, consumers, landfill operators, people concerned about the environment*), and make a case for maintaining the current level of use of the product or for reducing it
- 3.2 identify properties of solids, liquids, and gasses (*e.g., solids have definite volume and hold their shape; liquids have definite volume but take the shape of their container or spread when they are not contained; gases have no definite volume and take the volume and shape of their container or spread when they are not contained*), and state examples of each

- 3.3 explain changes of state in matter (*e.g., evaporation, condensation, solidification, or freezing...*), and give examples of each
- 3.5 describe chemical changes in matter as changes that are irreversible (*e.g., ...when an egg is boiled it can never go back to being a raw egg*)
- 3.6 explain how changes of state involve the release of heat (*e.g., when water freezes it releases heat*) or the absorption of heat (*e.g., when an ice cube melts, it absorbs heat*)
- 3.7 identify indicators of a chemical change (*e.g., production of gas, change in colour, formation of precipitate*)
- 3.8 distinguish between a physical change and a chemical change (*e.g., a physical change can be reversed [ice to water to ice] whereas a chemical change creates new substance{s} [wood to smoke and ash]*)

Suggested Resource Websites

Wherever possible, the material from these websites has also been archived on the Ontario EcoSchools site at www.ontarioecoschools.org

THE ROTTEN TRUTH...ABOUT GARBAGE

An on-line in-depth look at how North Americans produce garbage ... and what they do with it. Divided into four major sections, this fascinating tour offers illustrated fact- and activity-filled resources on: What Is Garbage?, There is no "Away," Nature Recycles, and Making Choices. Based on American history and facts, but with much interest and insight that is applicable to Canada. (Association of Science-Technology Centres Inc. and the Smithsonian Institution Travelling Exhibition Service)

Big Ecological Idea #2:

Recycling and composting help redirect waste materials to appropriate new uses.

- a) We can make sure that everyday waste materials are recycled by putting them in the appropriate recycling box. Some communities separate their recyclables for pickup: paper, containers, organic waste and garden waste are collected in different coloured boxes. At school, we can protect the environment by recycling everything possible through the municipality's services, and composting food wastes.
- b) Materials that we recycle are sorted and sent to factories to be processed into new products. Materials that can be recycled in local programs should not be put into the garbage! Much of what we used to throw away contains valuable resources. An example is an aluminum pop can: when aluminum is melted down to make new cans, it saves 75% of the energy it would take to make aluminum from new minerals!

- c) Everyday materials such as paper, cardboard, newspaper, metals, glass and some plastics are examples of materials that are commonly being recycled by the curbside programs of municipalities across Ontario. Old clothing, synthetic and natural fibres, and computers may be collected by private recycling companies

for additional reductions in waste. Some communities have “Environment Days” where you can drop off Household Hazardous Waste (paints, batteries, toxic cleaning products, etc.) and often pick up free compost. (Check the municipal website to see if this is possible in your community.)

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Big Ecological Idea #3:

Choosing household products with care can ensure that their use or disposal does not put toxic ingredients into the environment.



EXPLOSIVE



CORROSIVE



FLAMMABLE



POISON

- a) Products that are labeled with danger symbols - explosive, corrosive, flammable or poison - can contain ingredients that are harmful to the environment. These harmful ingredients

may become dispersed or diluted, but remain harmful as they evaporate into the air we breathe or make their way into our watersheds.

- b) Whenever possible, it is environmentally preferable to purchase household products which are non-toxic (many previously toxic products have new “green” formulations designed to avoid harmful ingredients).
- c) Household products that are hazardous – paints, batteries, solvents, caustic cleaners, fluorescent lights – should be collected and brought to a hazardous waste drop site for disposal separate from other waste. (Check the Municipal website to see if this service exists.)

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