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# Going Green:
# Merging Environmental Education and Language Instruction

Content-based instruction (CBI) is well respected not only for its commitment to language learning, but also for its dedication to content learning. CBI, generally, helps students develop both language and content knowledge, thus eliminating the typical separation between language and subject matter classes. CBI accomplishes such goals because, among other benefits, it (1) lends itself to integrated skills instruction; (2) provides opportunities for extended input, meaningful output, and feedback; (3) nurtures critical thinking skills; (4) allows learners to develop expertise on interesting topics; and (5) facilitates the learning of thematically organized materials. Furthermore, CBI supports project-based learning, during which students gain control over their learning and develop autonomy and motivation (Bigelow, Ranney, and Hebble 2005; Stoller 2002, 2006; Tessema 2005).

CBI has been translated into practice in many ways at elementary school, secondary school, and university preparatory program levels. Some CBI models, such as immersion, focus mainly on content learning, while others emphasize language learning. (See Snow 2001 for CBI models.) In this article, we endorse a model that uses themes as springboards for language improvement, accompanied by the added benefit of content learning, though to differing degrees depending on the instructional setting. The themes that teachers choose to integrate into their language classrooms may reflect serious issues (e.g., elections, civic responsibility) or more lighthearted subjects (e.g., the Olympics, video games). Other themes may focus on global events (e.g., natural disasters, globalization) or on students' communities (e.g., local holidays, respected leaders). When using content as a vehicle for English instruction, language teachers provide students the opportunity to not only develop language skills, but also to become more informed citizens, both

locally and globally. After teachers select the themes that form the backbone of their curricula, they can ask students to identify topics of interest within the overarching theme (Stoller and Grabe 1997), thereby creating a more learner-centered classroom and giving students more control of their learning.

## Understanding the need for environmental education

While countless themes can spark the interests of language learners (and teachers), one of the most critical issues affecting people globally is the environmental degradation of the planet. Themes such as global warming, deforestation, and water pollution are regularly featured in the news, thereby raising our awareness of the troubled state of Mother Earth. When educational institutions—from elementary schools to university-based English foundation programs—recognize the value of environmental education, language teachers will be in a unique position to promote environmental awareness while teaching English (Dianna Sanchez, personal communication, January 2010).

Many of today's educators understand the importance of protecting our planet; others, however, might be skeptical about introducing environmental awareness in the classroom because of its political overtones and controversies. Moreover, language professionals generally do not see themselves as science teachers, nor do they, like the general public, always completely understand the environmental issues plaguing the planet (Brown 1991; Cotton 2006). Additionally, many educators wish to remain neutral about environmental topics and withhold their personal opinions from their students. However, Brown (1991) argues that one of our goals as teachers should be helping our students "become informed about as many issues as possible that intrinsically affect their lives" (4).

English language teaching professionals have seen how English contributes to their students' education, economic status, and competitiveness. We have also seen firsthand how globalization has made nations more interconnected and interdependent. In the late 1980s, in response to the changing world, important topics including human rights and peace education were embraced by teachers around the globe and introduced into language classrooms (Brown 1991). Today, issues related to the environment (e.g., global warming, air pollution, biodiversity) are interlinked with fundamental human rights. In some parts of the world, people's basic rights are already being diminished because of food and water scarcities, home and job loss, and intensifying diseases, all of which affect the peace and security of individuals and their communities (Schuchard and Weston 2009). To illustrate in even more concrete terms, Oxfam International (www.oxfam.org) states that today's insufficient rains and disappearing glaciers already affect millions of lives around the world. As water supplies decrease, successful food production declines, thus resulting in hunger. Oxfam predicts that future climate change will further undermine basic human rights. We are likely to see floods and rising sea levels cause displacement or death among populations living in coastal areas. Moreover, lack of water supplies will reduce sanitation efforts, resulting in the spread of illnesses. These are just a few issues that illustrate why global climate change represents one theme of potential interest to language learners.

Of possibly greater interest to student populations might be local environmental issues that can be brought to life in the language classroom. They include desertification in North Africa, acid rain in Eastern Europe, air pollution in Asia, soil erosion in South America, mud flows in Indonesia, overconsumption in the United States, and radiation exposure in Japan, to name just a few possible themes that could be used as springboards for language and content learning.

With the number of challenges that our planet faces today, raising students' environmental awareness and teaching them about grassroots movements that they could engage in have never seemed as pertinent or necessary as they do now. By integrating environmental education into the language classroom, educators can (1) heighten students' interest in contemporary issues that might directly influence their futures; (2) teach students how to contribute to a healthier, more sustainable world; and (3) promote language learning and meaningful communication.

The results of several studies, synthesized by the U.S. National Environmental Education

Foundation (NEEF, www.neefusa.org), further support such educational agendas by suggesting that environmental education can improve students' academic achievement in science, reading, and writing and foster students' critical thinking skills, motivation, and attitudes about learning (Paterson 2010). Although these findings stem from first language classrooms, they suggest that integrating environmental education into second or foreign language instruction can deliver or be accompanied by additional advantages for our students.

The NEEF describes three levels of environmental education: (1) environmental awareness—that is, general familiarity with key environmental issues; (2) personal conduct knowledge, which translates awareness into action to preserve the environment; and (3) environmental literacy, which enables students to learn underlying principles and gain skills for carrying out their own hands-on projects (Paterson 2010). Of course, to provide learners with a heightened understanding of environmental topics and maximize the benefits of CBI, language educators need to familiarize themselves with the environmental issues that become the focus of their classrooms and examine available instructional materials that can be used to achieve content- and language-learning goals.

## Locating and developing environmental resources for the language classroom

After teachers commit to integrating environmental education into the language classroom, the subsequent steps of gathering materials and lesson planning may seem daunting. However, locating instructional materials to support environmental education is no longer as difficult as it used to be. Jacobs and Goatly (2000) report that only two percent of activities published in English-language textbooks between 1990 and 2000 include environmental content. Recently, though, as concerns for the environment have increased worldwide, it has become easier to find instructional materials for the language classroom. Many language textbooks now include chapters on environmental topics. Furthermore, teachers can use the Internet, where available, to find environment-related resources that can be adapted to meet their students' content- and language-learning needs.

Even in 1995, Tchudi and Starnes listed multiple sources of information (e.g., textbooks, videos, documentaries) about environmental problems that could be used to promote environmental education. In 1998 Jacobs et al. presented 15 easily adaptable environmental lessons for the language classroom. More recently, Lie, Jacobs, and Amy (2002) co-edited a language-teacher resource that includes lessons aimed at improving Indonesian university students' language abilities while also increasing their level of "environmental awareness, understanding, concern, skills, and participation" (vii) in protecting the local environment. For example, one lesson centers on the protection of local coral reefs (Pakasi 2002), and another focuses on the degradation and preservation of a local UNESCO World Heritage site (Tabiati 2002). Parallel lessons and research could be developed for other national contexts.

To help time-pressed language educators gather information and materials about environmental topics, we have compiled a list of "green" resources—including environmental curricula, songs, videos, graded readers, and art projects—at www.greeneslresources. weebly.com. Some of the materials on the website can be used without modification; others will likely need adaptation to meet the needs of particular student groups. Finally, in this article, we showcase three sample activities that teachers can adapt—taking into consideration their own students' language abilities, ages, and background knowledge, and the language emphases of the classroom—to integrate language and "green" content learning:

- Activity No. 1 (Appendix 1) involves a classroom scavenger hunt, during which students practice reading and speaking while learning about a variety of environmental topics.
- Activity No. 2 (Appendix 2) highlights a group paragraph-writing task that recycles green content introduced through reading and/or listening activities.
- Activity No. 3 (Appendix 3) revolves around a song that reinforces the importance of the three "Rs": Reduce-Reuse-Recycle.

## Implementing environmental education

The incorporation of environmental topics into the language classroom promotes content

learning, language learning (including the development of discrete skills and the integration of skills in project work), and personal responsibility inside and outside the classroom. In the sections that follow, we briefly discuss how environmental topics can be used to promote language learning and personal responsibility.

**Discrete-skills instruction**

Despite the fact that CBI lends itself so well to integrated-skills instruction, environmental topics can still be used to teach discrete skills. For example, to practice grammar, Brown (1991) suggests integrating simple facts about the environment into exercises that focus on imperatives (e.g., *Don't waste* water), verb tenses (e.g., Polluted rivers *are making* people sick), and Wh– questions (e.g., *What* happens to our trash?). Environmental texts can be downloaded from websites, including the National Audubon Society (www.audubon.org) and the Sierra Club (www.sierraclub.org), and used for skimming, scanning, and note-taking practice in reading classrooms (Gambee and Klausman 1992). Similar texts may be used to promote critical thinking skills, as intermediate and advanced learners learn to distinguish fact from opinion, recognize bias, and provide oral responses to potentially controversial information. Statistics and numerical data about "green" topics can be used in dictations to help students practice numbers, as shown in this question-and-answer dictation example:

Question: What percentage of cell phones was recycled or reused between 1999 and 2003?
Answer: Less than one percent; 2.5 million phones were collected to be recycled or reused.

Similarly, writing teachers can use "green" texts to guide students in analyzing paragraph patterns, essay types, and writing styles. Moreover, error identification exercises focusing on, for example, punctuation, capitalization, or sentence structure can center on environmental topics.

**Integrated-skills instruction through project work**

Environmental awareness can be raised and language skills improved when students engage in process- and product-oriented projects that oblige skill integration and connections between what students are learning in the classroom and their lives outside of it (Jacobs 1993). Environmental topics can come to life through a variety of reading and writing projects that involve (1) researching topics of interest and writing academic papers; (2) writing and illustrating children's books or comic strips; (3) creating posters, brochures, or bulletin board displays; and (4) writing stories or opinion pieces for the school newspaper (Brown 1991). Additionally, listening and speaking projects may involve students in debating an important environmental topic, giving a persuasive presentation that encourages classmates to engage in more earth-friendly habits, and engaging in role plays that explore provocative environmental topics.

**Promoting personal responsibility**

In addition to promoting language and content learning, environmental topics give educators the opportunity to help students understand how changes in daily behaviors can benefit Mother Nature. Teachers can organize field trips to local recycling centers, if they exist, to learn how important recycling is, how the process works, and what items can and cannot be recycled. Invited guest speakers—both native and non-native English speakers—can educate students about local environmental issues and help students understand what can be done to make a difference. Prior to such activities, the theme and pertinent vocabulary can be introduced and students can prepare questions to ask the speakers. During field trips and guest speaker presentations, students can take notes. Afterwards, they can prepare an oral or written response in which they explain both what they learned and what they can do to be more environmentally responsible.

**Connecting classroom learning with real-world actions**

Environmentally friendly actions (inside and outside the classroom) naturally lend themselves to meaningful language use. While it may not appear that reducing waste promotes language practice, classroom discussions about the importance of "green" habits lead to authentic communication and, at the

same time, increase the likelihood that students will put their newly acquired knowledge into practice. For example, before encouraging students (and other teachers) to print homework assignments and handouts on both sides of the paper, teachers can introduce the topic of conservation and the importance of saving trees as part of a speaking-listening activity; the topic can be further exploited as part of an elaborated project. Other daily habits that students (and teachers) can be encouraged to embrace include (1) turning off classroom/computer lab lights when not in use, (2) using reusable beverage containers instead of disposable plastic water bottles or coffee cups, and (3) submitting homework assignments digitally, whenever possible.

Role plays can also be used to link classroom learning with personal responsibility. Carefully crafted role-play activities highlight topics of relevance to students and their communities and (1) give students opportunities to demonstrate their knowledge of environmental topics, (2) motivate students to discuss and express opinions on controversial issues, (3) encourage students to connect what they have learned about the environment to their daily lives, and (4) help students determine when it might be appropriate to take action and possibly persuade schoolmates, family members, and their communities to be more environmentally responsible. (To see an example of a role-play activity devised for this purpose, go to www.greeneslresources. weebly.com, click on "Ready-to-go Activities," scroll down, and then download the role-play activity.)

## Conclusion

Language teachers have many opportunities to heighten students' awareness about the environmental problems plaguing the planet while remaining committed to improving students' English skills. In addition to supporting meaningful language instruction, such theme-based instruction encourages students to think critically, provides them with real-world knowledge, increases motivation, and promotes learner autonomy.

Given teachers' busy schedules, some may feel hesitant about developing and incorporating environmental education into their already jam-packed curricula. Optimistically, however, we believe the ideas, activities, and resources provided here allow educators to adapt information and incorporate activities that are best suited for their own learners and specific teaching contexts. Teachers should not feel obligated to revamp their entire curricula in an effort to bring environmental awareness into their classrooms. Instead, they can begin by developing a single activity that builds upon established language-learning objectives and incorporates information about a local environmental issue. Later, those committed to "going green" can develop additional materials that support project work or even an entire theme-based unit that promotes environmental education.

There are no rules that dictate exactly how educators should incorporate environmental awareness into the language classroom. The only requirements are that educators (1) recognize the importance of raising students' environmental awareness, (2) encourage their students to take personal responsibility for protecting the earth, and (3) understand the value of CBI for promoting students' language and content learning. The take-home message is that "going green" has many advantages.

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# Appendix 1  Activity No. 1: A Scavenger Hunt

*Going Green:…* • **Staci Hauschild, Elena Poltavtchenko, and Fredricka L. Stoller**

**Primary language focus:** Reading and speaking

**Approximate time:** 20–25 minutes

**Purpose**

- Introduce students to a variety of environmental topics in a short amount of time
- Give students purposeful scanning practice
- Provide students with opportunities to discuss environmental topics
- Facilitate group work and meaningful communication

**Pre-class preparation**

- Compile facts and figures about environmental topics of potential interest to students (see www.greeneslresources.weebly.com).
- Collect free materials that might be of value for the scavenger hunt (see www.greeneslresources.weebly.com).
- Collect or create visual displays (e.g., posters) with environmental information. (See the end of Appendix 1 for information on creating and printing posters.)
- Prepare a list of approximately 20 scavenger hunt questions. The answer to every question should be found on the posters. (See the "Example scavenger hunt questions and answers for three EPA posters" below.)
- Place posters around the classroom, ideally on classroom walls, before class begins.

**Materials needed**

- Visual displays about environmental topics
- Scavenger hunt questions, either written on the board, displayed on an overhead projector, or copied for each student
- A copy of scavenger hunt answers
- Tape or tacks to mount posters on walls

**Procedures**

1. Assign students to groups of three to four.
2. Explain directions. (Tell students that they are going to participate in a scavenger hunt. Explain that a scavenger hunt is a game in which teams work together to find as much information as possible in a short amount of time.)
3. Distribute scavenger hunt questions to each student, or direct students' attention to the questions written on the board or displayed on an overhead projector.
4. As a class, read the questions aloud and discuss vocabulary, as needed.
5. Have student groups divide scavenger hunt questions evenly among themselves.
6. Tell students that they have a designated amount of time (e.g., 7 minutes) to move around the classroom and find as many answers as possible.
7. When the allotted time begins, have students quickly look for their subset of answers on the wall posters and write down answers.
8. When the time is up, have students return to their groups and share answers.
9. Compare scavenger hunt answers as a class.
10. In groups, have participants discuss the answers that were the most interesting and/or surprising.
11. As a class, ask students to share the most interesting information they learned and the answers that were most interesting and/or surprising.
12. Ask students to identify the environmental topics that they are most interested in learning more about.

***Extension activity:*** Implement a text-based activity that allows students to read about the topic(s) that they learned about during the scavenger hunt. Basing the activity on local environmental problems and possible solutions is ideal.

**Example scavenger hunt questions and answers for three EPA posters**

Poster 1: The Life Cycle of a CD or DVD (www.epa.gov/wastes/education/pdfs/finalposter.pdf)

1. Q: How many pounds of CDs become obsolete every month?
   A: 100,000 pounds

2. Q: What can people do with unwanted CDs?
   A: Sell them, donate them to school libraries, or trade them with friends

Poster 2: The Life Cycle of a Soccer Ball (www.epa.gov/wastes/education/pdfs/life-soccer.pdf)

3. Q: Why is it difficult to recycle a soccer ball?
   A: Because of glue, stitching, and print on the ball

4. Q: Which four natural resources are used to manufacture soccer balls?
   A: Crude oil, natural latex rubber, glue, and cotton

Poster 3: The Life Cycle of a Cell Phone (www.epa.gov/wastes/education/pdfs/life-cell.pdf)

5. Q: What percentage of cell phones was recycled or reused between 1999 and 2003?
   A: Less than one percent; 2.5 million phones were collected to be recycled or reused

6. Q: By 2005, how many tons of waste accounted for discarded cell phones?
   A: 65,000 tons

***Creating posters:*** The three Environmental Protection Agency (EPA) posters noted here can be accessed on the Internet, as indicated. In their original format, the colorful two-sided posters are rather large. The front side explains the life cycle of products from the moment consumers purchase them until consumers discard them. The back side of the posters includes class activities and additional websites of potential interest to teachers and students. To view the posters on the Web, viewers might need to change the magnification percentage in the tool bar from the default percentage to a larger percentage. In this way, the information-packed posters can be easily read on a computer screen and information can be transferred to teacher-made posters. Teachers who want to print the original posters and post them on classroom walls will need to print the posters in parts and then connect the pieces of the poster together (see printing instructions below). With entire posters mounted on the wall, students can cluster around them to read and discuss the content easily.

***Printing instructions:*** Go to www.greeneslresources.weebly.com. On the home page, click on "Multi-Purpose Websites," then "Environmental Programs and Curricula." Download the printing instructions under the "Environmental Protection Agency (EPA)" heading.

# Appendix 2 Activity No. 2: Round-Robin Group Paragraph Writing

*Going Green:…* • **Staci Hauschild, Elena Poltavtchenko, and Fredricka L. Stoller**

**Language focus:** Writing

**Approximate time:** 25 minutes

**Purpose**
- Give students opportunities to write about previously learned information
- Provide students with practice in writing coherent paragraphs

**Pre-class preparation**
- Configure groups of 4–6 students, depending on class size.
- Create sets of 4–6 topic sentences about the environment, with each topic sentence at the top of a separate sheet of paper. There should be a different topic sentence for each group member. Topic sentences should relate to information that students previously learned in class. (See end of Appendix 2 for example topic sentences.)

**Materials needed**
Sheets of paper with topic sentences (one topic sentence per sheet with a different topic sentence for each group member)

**Procedures**
1. Put students into pre-determined groups.
2. Tell students that, as a group, they are going to write paragraphs about various environmental topics that they have already learned about in class.
3. Write the key words (in bold) for each step on the board and explain the activity:
   a. **Read** the first sentence on your paper.
   b. **Add** one sentence to the paragraph that develops the topic.
   c. **Pass** your paper to the left.
   d. **Read** the sentences on your paper and **add** one additional sentence to the growing paragraph. The new sentence should relate to the previous sentences and further explain the topic.
   e. **Stop** when your original paper comes back to you.
4. Distribute one sheet of paper (with a single topic sentence) to each student. Tell students to begin.
5. After all of the paragraphs have been completed, have students read their paragraphs aloud to each other. While student groups are working, write the topics on the board (e.g., mobile phones, seabirds and mammals, global warming, going green, trash).
6. Elicit ideas from each group about the different topics. Clarify misinformation, when appropriate. Encourage students to write down new ideas so that they can use them in future activities.

*Extension activities:* This round-robin writing activity can be used as a precursor to one that allows beginner students to practice using transitions, editing, or varying sentence types. It may also be used as a brainstorming activity from which intermediate or advanced students conduct research to write more extended texts or design a poster or brochure about an environmental topic of interest.

## Activity No. 2:
## Round-Robin Group Paragraph Writing *(continued)*

*Going Green:…* • **Staci Hauschild, Elena Poltavtchenko, and Fredricka L. Stoller**

**Example topic sentences**

1. Before consumers buy a new mobile phone, there are a few things they should know.
2. You may be surprised to learn that approximately 1 billion seabirds and mammals die each year after eating plastic bags.
3. Until two weeks ago, I didn't know a lot about the problems caused by global warming.
4. Going "green" isn't as difficult as some people might think.
5. Although some environmental topics may be considered controversial, many of these issues affect our future.
6. Most people don't think about what happens to their trash after they throw it out.

Elements of this activity stem from ideas presented in Grabe and Kaplan (1996).

## Appendix 3    Activity No. 3: Song about the Environment

*Going Green:…* • **Staci Hauschild, Elena Poltavtchenko, and Fredricka L. Stoller**

**Language focus:** Listening

**Approximate time:** 25 minutes

**Purpose**
- Increase students' interest in environmental topics through music
- Teach or review vocabulary related to the environment
- Give students practice in listening for details

**Pre-class preparation**
- Print a copy of the lyrics to "3Rs" (Reduce-Reuse-Recycle) (available at www.greenesl resources.weebly.com; click on "Songs and Videos," then download the "3Rs" lyrics).
- Download a copy of the song from a music downloading site or find a "3Rs" video on YouTube, www.youtube.com.
- Create a cloze version of the song.

**Materials needed**
- "3Rs" song
- Equipment to play the song or show the video properly
- One copy of the song's lyrics (answer key)
- Cloze version of the song written on the board, displayed on an overhead projector, or given to each student

**Procedures**
1. Distribute the cloze activity to students, write it on the board, or display it on an overhead projector.
2. Direct students' attention to the title of the song and explain that the title refers to a common environmental phrase and that they will understand what each "R" refers to after listening to the song. (If this song is being used as a vocabulary review, ask students what the "3Rs" refer to.)

3. Have students read the cloze version of the lyrics silently while the song is played once.
4. **Ask:** "What is this song about?" Briefly discuss.
5. Play the song again while students try to fill in the missing words.
6. Have students check their answers with a classmate by reading aloud sections of the lyrics without showing their written work to each other.
7. Correct the activity as a class and play the song again, encouraging students to sing along.
8. **Ask:** "What are the three important words that start with 'R'?"
9. **Ask:** "What do the words *reduce, reuse,* and *recycle* mean?" or "Do you remember what the words *reduce, reuse,* and *recycle* mean?"
10. Write definitions for each word on the board (see Appendix 4).
11. Direct students to the parts of the song that best explain each "R" word. Discuss the following questions, which can be written on the board, displayed on an overhead projector, or copied on the other side of the students' song lyrics page. (While students may not know the answers to the following questions about reducing, reusing, and recycling or understand why these concepts are important, the discussion will encourage them to think about the topic.)

    a. What does the singer suggest that we bring with us when we go to the market? How does bringing our own shopping bags to the market help reduce waste? Why is it important to reduce the number of shopping bags we use?

    b. What does the singer suggest we do before we buy new clothes? Why should we wear used clothing? Why is it important to reuse items like clothes?

    c. What does the singer suggest doing if we have trash to throw away? Why shouldn't we throw away many of the things that we don't need anymore? Why is it important to recycle?

12. **Ask:** "Do you think that people in our school or community already follow the "3Rs" in their daily lives? Why or why not?" Elicit examples from students to help support their answers.

*Extension activities:* To further explore the "3Rs," provide students with information or have them conduct their own research about why reducing, reusing, and recycling are important. Issues to consider include (1) how using plastic bags or buying bottled water negatively affects the environment, (2) how various household items can be reused, (3) how trash can be recycled at local recycling centers, if available, and (4) how trash can be repurposed to create, for example, jewelry, games, and decorative paper. Supplementary information to support these topics can be found at www.greeneslresouces.weebly.com. Facts about waste reduction can be found under "Multi-Purpose Websites"; videos about consumerism and bottled water can be found under "Songs and Videos"; ideas for art projects can be found under "Green Art Projects."

See Jacobs (1993) for a detailed four-part lesson focused on another song with an environmental theme.

**Glossary of Common Environmental Terms**

*Going Green:…* • Staci Hauschild, Elena Poltavtchenko, and Fredricka L. Stoller

**climate**—the weather during a long period of time

**(to) conserve**—to use wisely; to save

**ecosystem**—a community of living things in a specific area

**endangered species**—plants or animals that could die soon because there are only a few alive today

**energy**—source of power (e.g., fossil fuel, electricity, the sun)

**environment**—the air, water, and living things surrounding and affecting each other

**fossil fuels**—energy resources, like coal, petroleum, and natural gas, that cannot be replaced after people use them

**global warming**—an increase in the average temperature of the earth

**ozone layer**—the air that protects the earth from the sun

**(to) pollute**—to make air, water, or land dirty

**(to) protect**—to save from harm or loss

**(to) recycle**—to use all or part of something in another way

**(to) reduce**—to use less of something

**renewable resources**—materials or resources (e.g., wind, sun) that can be replaced faster than humans use them. Wood may be considered renewable if used in a sustainable manner.

**(to) reuse**—to use something again, usually for a different purpose

**sustainable**—the ability to last for a long time if used properly

**waste**—material that remains after it has been used

**(to) waste**—to use without thinking or caring

Additional environmental terms can be found at www.epa.gov/glossary.