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ABSTRACT

This curriculum guide is designed to help teachers in the middle grades facilitate student understanding of the social and environmental implications and limitations of technological development. The nine activities offer students opportunities to explore social issues arising from the science and technology of the production and management of solid waste. A teacher introduction presents the four components to this solid waste curriculum cited as generally recognized for exploring a science/technology/society (STS) issue: (1) the problem; (2) knowledge; (3) thought; and (4) action. Within this section the art of discussion, informed conversation, reflective conversation, and rules of etiquette for classroom discussions is presented. A section containing a review and teacher exercise for how to analyze STS issues for points of view includes the concept of "circle of concern," cited as a valuable visual aid for stimulating students' thought and discussion beyond their own concerns. The appendices offer additional information on thought-promoting techniques, a reference list, order forms, and an evaluation form. (MCO)

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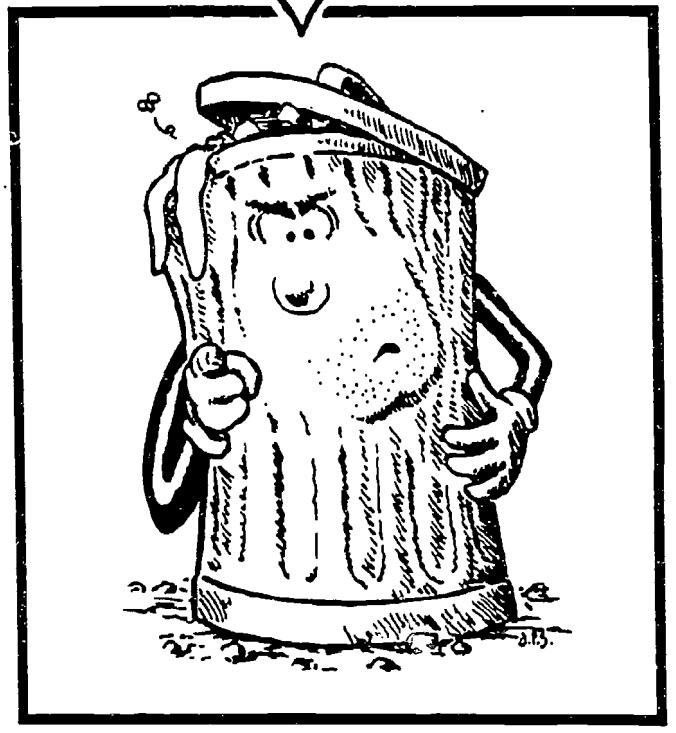
# Actions Speak!



(louder than words)

## The Social and Environmental Impact of Solid Waste

Thomas T. Peters
Janet L. Wissmann

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(louder than words)

The Social and Environmental Impact of Solid Waste

by

Thomas T. Peters
Janet L. Wissmann

Prepared For:

ILLINOIS DEPARTMENT OF ENERGY AND NATURAL RESOURCES
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Jim Edgar, Governor
State of Illinois

John S. Moore, Director
Illinois Department of
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# INTRODUCTION FOR TEACHERS

Science has a value dimension any time it induces conflicts in our thinking, modifies the culture, or makes demands on society, and this is most of the time. While science does not directly impose values, it creates conditions which demand the reinterpretation of old values or the formation of new ones. It embodies the moral revolution of our time. Witness the value disturbances which revolve around nuclear fission, DDT, and genetic engineering. The problem is one of developing a system of values and ethical consideration by which scientific achievements and technological innovations serve the common good. This is the new reformation in science teaching.

Paul De Hart Hurd, 1975

## Science Instruction In Illinois

Science, as defined by the Illinois State Board of Education's Goals for Learning in Science, is: the quest for objective truth. It provides a conceptual framework for the understanding of natural phenomena and their causes and effects. The purposes of the study of science are to develop students who are scientifically literate, recognize that **science is not value-free, are capable of making ethical judgments regarding science and social issues**, and understand that technological growth is an outcome of scientific enterprise. (ISBE, 1986, p. 3)

As a result of their schooling, students will have a working knowledge of:

- the concepts and basic vocabulary of biological, physical and environmental sciences and their application to life and work in contemporary society (Learning Goal One);
- **the social and environmental implications and limitations of technological development** (Learning Goal Two);
- the principles of scientific research and their application in simple research projects (Learning Goal Three);
- the processes, techniques, methods, equipment and available technology of science (Learning Goal Four). (ISBE, 1986, p.3)

**Actions Speak!** is a curriculum guide designed with the State of Illinois Learning Goals for Science in mind. In particular, it is our intent to help teachers in the middle grades (6-8) to address Illinois State Learning Goal Two.

**Actions Speak!** offers students opportunities to explore social issues arising from the science and technology of the production and management (some would say mismanagement) of solid waste — TRASH!

**What is a Science/Technology/Society Curriculum?**

It is generally recognized that there are four components to a curriculum designed to explore a Science/ Technology/Society (S/T/S) issue. These are:

1 ) Problem: A true S/T/S issue is a real disagreement involving real people. It is significant at a societal level and involves science/technology. The problem defies solution but requires resolution. (Ramsey and Hungerford, 1988)

2) Knowledge: Because an S/T/S issue involves a scientific component, to address such an issue requires familiarity with a factual base (i.e., the results of scientific experiments, cost studies, opinion surveys).

3) Thought: Because an S/T/S issue involves real people who interpret facts in different ways, to address such issues requires critical and reflective thought as to just what the facts really mean.

4) Action: Because an S/T/S issue requires resolution, to address such issues requires doing something that is consistent with how one interprets the facts.

## SOLID WASTE IN ILLINOIS

**Problem:** All over America, communities are having problems disposing of their trash. When the garbage hauler picks up your trash, the garbage doesn't miraculously disappear. It has to go somewhere. In most Illinois communities, it is hauled to a regional landfill. Other communities rid themselves of solid waste by burning it in incinerators. In some places, each individual household is responsible for the management of the waste it produces.

The problem is that each of us generates a tremendous amount of waste every day, and we are running out of places to put it. In 1989, the average Illinois resident is responsible for about 6.9 lbs. of waste each day. That's 2,500 lbs. of garbage each year per person. Much of this waste could be reused or recycled. (Better yet, the amount generated in the first place could be significantly reduced if consumers chose products that required less packaging.)

In 1988, the Illinois legislature passed a law that requires each county in Illinois to study the volume and types of waste generated within the county, determine what can be recycled, and recommend disposal methods for the rest. The law requires each county to work towards recycling at least 25 percent of its waste. This law, as well as the closing of filled-up landfills, is forcing communities to discover for themselves that recycling can slow the filling of local landfills and can be an economically competitive alternative to waste hauling.

But laws alone cannot resolve solid waste problems if citizens do not understand the reasons behind the problems, and are not willing to modify their lifestyles accordingly. Attitudes that lead to successful change begin with the ability to value things such as, clean water, clean air, open spaces, trees, native vegetation, and wildlife.

## Use of *Actions Speak!*

This guide provides activities meant to help students develop attitudes for addressing environmental issues such as solid waste production and disposal. We hope that by addressing the various ethical problems as portrayed in the activities, students will develop an interest in applying their own efforts in dealing with environmental problems and, more importantly, will develop lifestyles that have a less negative impact on the earth.

We have tried to make the activities as "active" as possible, primarily through methods such as role-playing and writing. You will find that many of the classroom activities rely heavily on discussion of readings. However, we encourage you and your students to take action beyond the classroom walls, and we will provide suggestions as to actions you might take.

### The Art of Discussion

Leading a **discussion** is a teaching art that requires practice and patience. Unlike recitation, in which the purpose is to ask students to provide the correct answer as quickly as possible to a fact-oriented question, the purpose of a discussion is to engage students in **informed, reflective conversation** about questions for which there are no easy or "right" answers. Discussion often leads to a call to **do something**. Let's take a closer look at what is really a discussion.

**Knowledge—*Informed Conversation:*** Perhaps you've heard a humorous quip that goes something like this, "Don't trouble me with the facts; my mind is already made up!" Most of us would not purchase a new automobile without gathering many facts about it (price, horsepower, cargo space, gas mileage, and so on.) Nor would we buy it without taking a test drive (to gain first-hand information on subjective matters like ride comfort, handling, looks, and, of course, to whiff that new-car smell). Yet we often make decisions on complex social issues based on hearsay, opinion and rumor. Could it be that we feel these issues are beyond our understanding?

There is no doubt that issues such as the handling of our solid waste are indeed complex. However, we believe that they can be understood more fully by adults and school children through the gathering and sorting of facts and through personal, subjective experiences.

We have provided some background information and commentaries within the body of each activity In your discussions with your students, you usually will want to use not only this information, but also information available from a wide variety of sources, including your local news media and solid waste experts. While we cannot provide subjective experiences with solid waste, you will find that they are quite easy for you to arrange. We will provide a number of suggestions for sources of information and for experiences with solid waste (see Appendices A and B).

> - The schools do not need to be asked to teach more and more content, but to teach less in order to teach it better. (AAAS, 1989)

**Thought—Reflective Conversation:** Next time you have the opportunity, watch a few talk shows like Donahue, Geraldo, or the Oprah Winfrey Show (or, better yet, news discussion shows like Nightline.) These shows purport to be forums of discussion on complex social issues (well, at least issues that will attract a TV audience.) As you are watching, keep the following questions in mind:

- Does the moderator (and the audience) give people time to formulate responses to complex questions?

- Does the moderator (and the audience and the other panelists) give persons asked questions time to respond without interruption?

- Does everyone on the panel get a fair chance to speak? (In other words, do they all get about the same number of turns to speak or respond to another speaker? And, further, how does the moderator involve members of the audience?)

- How does the moderator (and the audience and the other panelists) treat the responses of speakers with whom he/she personally disagrees?

- How does the moderator handle conflict? (While a discussion that degenerates into a fistfight may be great for TV ratings, it is not likely to produce meaningful reflection on the part of the panelists or the audience.

Discussion is not the same as argument. In a discussion, all sides speak and listen. In an argument, all sides speak but there is little, if any, listening. In an argument, volume and force tend to rule the day. In a discussion, logic and critical reflection rule. (See Appendix A for a variety of classroom-tested techniques designed to promote students' thought on complex issues.)

This exercise is not meant to suggest that you moderate a classroom discussion like Geraldo or Phil or Oprah or Ted (although there are some merits to the "talk show" panelist format in a crowded classroom). Rather, the purpose is to develop a sense of what is referred to as **etiquette**: the unspoken yet well-understood **rules by which the activity in question is played out**. Successful talk show moderators are experts in the art of etiquette—and etiquette is an art—that takes practice and patience to perfect.

Successful etiquette on talk shows and in classrooms comes in all sorts of forms. But note this—what is successful etiquette for one form of teaching will not likely work as well for some other form. In particular, the etiquette of recitation or lecture or seatwork will not lend itself well to quality discussion. Reflective thought requires its own special environment. We strongly recommend that you apply cooperative learning techniques as a first step in developing a positive discussion etiquette in your classroom (see Johnson, Johnson, Holubec, and Roy, 1984).

**Rules of Etiquette for Classroom Discussions**

Taylor (1980) offers a few simple "rules of etiquette" for reflective thinking in elementary arithmetic classrooms, which we believe apply quite nicely as a beginning point for developing your own art of discussion etiquette. We have altered the rules slightly to fit the subject matter of *Actions Speak!*.

1. Speak in your turn.

2. Raise your hand to be recognized. (The teacher must be judicious here about calling on people and involving as many students as possible.)

3. Be patient; allow others plenty of time to figure things out. (The teacher must learn patience, also. While talk show moderators may wish to avoid using precious air time with silence, a pause to think and reflect on a complex question is both appropriate, and necessary, in the classroom.)

4. The teacher must couch her/his questions in a manner that:

   a. reduces or eliminates the potential embarrassment of answering the question or asking a question about the question;

   b. allows children a chance to join in a group response (Occasionally use questions such as "How many think that...?" or "How many have ever...?" Accept multiple ideas for the resolution of a single issues. "What are ways in which you might reduce the amount of solid waste you generate in a typical trip to the mall?"); and

   c. provides students with an opportunity to hold their own ideas in secret. Even in a classroom where a successful discussion etiquette has been established, where students can disagree without being disagreeable, some students may find it difficult to share some of their ideas. They ought not be forced to do so.

**Action—*Doing Something:*** An understanding of environmental problems is an extremely important outcome of discussion and other activities designed to explore the issues of solid waste management. Also desirable, we believe, are an attitude and lifestyle that help bring about resolution to these same environmental problems. Throughout this guide we will offer you and your students suggestions for meaningful activities in which the students can do their own part to help resolve this complex problem.

## A Note on Consensus-Building

It is not the purpose of the activities of this guide to cause all students to claim to believe certain "truths" about solid waste management. There is, indeed, quite a variety of possible resolutions that communities and individuals might reasonably undertake. What "plays in Peoria" might not be acceptable in Alton or in Park Forest. Individual actions that one student may willingly undertake may be entirely inappropriate to another. In fact, some students may come to the conclusion that their best action is no action at all.

We personally believe that there is a need for change in the way we produce and handle solid waste. We further believe that individuals can make an important difference in improving our environment.

There are, however, persons who believe that concerns about solid wastes and other environmental issues are much ado about nothing. These individuals argue that, in time, new technologies will exist that can turn today's mountains of trash into tomorrow's treasure (see Burko, 1987 or Kleiman, 1990, as examples). Or they point to the vastness of the universe and human ingenuity and boldly claim that humankind's dependence solely on "spaceship earth" for its sustenance will soon be at an end (see Simon, 1981). Or, for various reasons, such people believe that the world is soon coming to an end and there is little point in worrying about a few trash heaps.

Others suggest that, while solid waste management is really a problem, an individual can do little to make any significant difference (see, for example, Beck, 1990 or Raspberry, 1990.)

These persons often offer credible rationales for their positions based on the same factual and experiential base we have used to make contrary conclusions. You may find that some of your students respond to this guide in ways different from those you personally find to be desirable.

We repeat, ***it is not the purpose of the activities of this guide to cause all students to claim to believe certain "truths" about solid waste management.*** Rather, we believe that students ought to become familiar with ways to analyze rationally complex social issues, draw their own well-thought conclusions, and act in a manner consistent with that which they claim to believe.

## A Note on Evaluating Student Performance

It is not desirable to assign a grade to students' values, especially if grades are used in an attempt to force students to "tow the line"—to say they believe as someone in authority wishes they would believe. This is neither fair nor ethical. It is, however, desirable for you, the teacher, to act as a benevolent "devil's advocate." Ask: "What about...?" "Have you considered...?"

We recommend that grades be awarded on a contract basis. Satisfactory completion of some number of required lessons and activities can ensure a student a satisfactory grade. An additional number of activities and/or actions based on careful thought can be placed in the contract of students desiring grades beyond satisfactory. Only you know your school setting and your students' abilities. Thus, only you can determine how best to assign grades to students' work on these activities.

# Analyzing S/T/S Issues—Exercises for Teachers

**Points of View**

To make meaning from facts is to assign these facts some value. In science, a fact is simply any information gathered through the use of our senses or through the use of tools designed to enhance our senses. For example, I can use a simple measuring device, a thermometer, to gather facts about the environment around me. I can boldly state that at such and such place, at such and such time, my thermometer measured the temperature to be 83 degrees Fahrenheit. But what value is there to that fact? I might well say, "And, boy, is that hot!" On the other hand, you could stand right next to me, read 83 degrees on the same thermometer, and exclaim. "What a pleasant day!"

When we start to assign value to facts about our lifestyles (for example, the fact that approximately 5 pounds of trash are produced per day per each of the roughly 250,000,000 persons in America) we quickly arrive at a complex social issue. What value is there to this fact?

People express the value they assign to facts by their actions and inactions. Think about any of the choices you've made today. "What will I eat for breakfast (or will I even eat breakfast)?" "When will I leave for school?" "Will I grade this stack of homework papers today?" And so on. To make such decisions you must choose from among competing facts. Your choice will reflect those facts that you most value, at least at that moment.

How do we assign value to facts? What are the weights that come to make one option "weigh out" over the others? Those who study the act of valuing, including C. Benjamin Cox, a professor of Social Studies Education at the University of Illinois-Urbana, offer nine categories of points of view common to all cultures. These points of view, which we have altered to some extent, provide the "weight" behind decisions between competing actions suggested by analyzing various facts.

Let's review these various points of view by taking a shopping trip to purchase (or maybe not purchase) a car.

## Points of view to weigh while car shopping or making any other complex decision:

1. "GOLDEN RULE": a preference for the "well-being" of self and/or others (e.g., personal integrity, trustworthiness, benevolence, fairness).

   *Car shopper's example: I'll buy the car from "Honest Joe" because I trust him. I think he'll be fair with me.*

2. LEGAL: a preference for that which the "law" allows (the U.S. Constitution, state or municipal statutes, school rules, and so on.)

   *Car shopper's example: I won't buy that car because the federally required emissions equipment has been removed.*

3. POLITICAL: a preference for that which a particular group/person finds acceptable (e.g., friends, fellow teachers, PTA, department head).

   *Car shopper's example: I'll buy that Oldsmobile because the superintendent of schools has one just like it. I need to get on his good side.*

4. ECONOMIC: a preference for a gain in resources (e.g., time, money, material goods).

   *Car shopper's example: I'll buy that Ford Escort because it gets much better gas mileage than the Oldsmobile.*

5. AESTHETIC: a preference for that which appeals to the senses (i.e., sight, sound, smell, touch, taste).

   *Car shopper's example: I'll buy that bright red Mustang because I look so good in it and, boy, is it fast. What fun!*

6. INTELLECTUAL: a preference for that which appeals to reason/logic (i.e., facts, formulas, theories, models, scientific studies, expert opinions).

   *Car shopper's example: I'll buy the Volvo because it has the best safety index of all cars tested in head-on collisions with a fixed barrier at 30 mph.*

7. RELIGIOUS: a preference for that which is allowed by belief/faith.

   *Car shopper's example: I am Amish and my religious beliefs do not allow me to own or use modern machinery like cars. I won't buy a car at all.*

8. SOCIAL: a preference for the mores and customs of a culture, society, community.

   *Car shopper's example: In America, the car is THE customary mode of travel. It is an expression of our freedom and individuality. I'll buy the convertible, put the top down, and explore the open road!*

9. PRUDENTIAL: a preference for that which is practical, convenient, or useful.

   *Car shopper's example: I'll buy that Dodge mini-van. It's got loads of room for the kids, and the dog, and groceries.*

**Points of View (continued)**

Are you getting the idea? Your homework for this exercise is to look through a few magazines or newspapers to find ads for automobiles, watch a few TV automobile commercials, or visit a car dealer and let the salesman give you his pitch for a few cars.

What point(s) of view does each ad or sales pitch use to get you to "weigh" your decision in favor of its product?

Which points of view have the greatest and least appeal to you? (Now you are getting into an exploration of your own valuing system, at least for cars. We hope you'll explore your own valuing of solid waste management as well!)

**Why Recognize Different Points of View?**

These nine points of view may provide you and your students with one powerful tool for analysis of S/T/S issues. Exploring a number of points of view, we believe, offers students the potential to see beyond their own points of view, to understand those of others though they may not agree with them.

Throughout the lessons that follow, we will provide suggestions for the use of this method of issue analysis. Only you know your students and their capabilities to understand and apply the ideas. Use them as you see fit.

**The Circle of Concern**

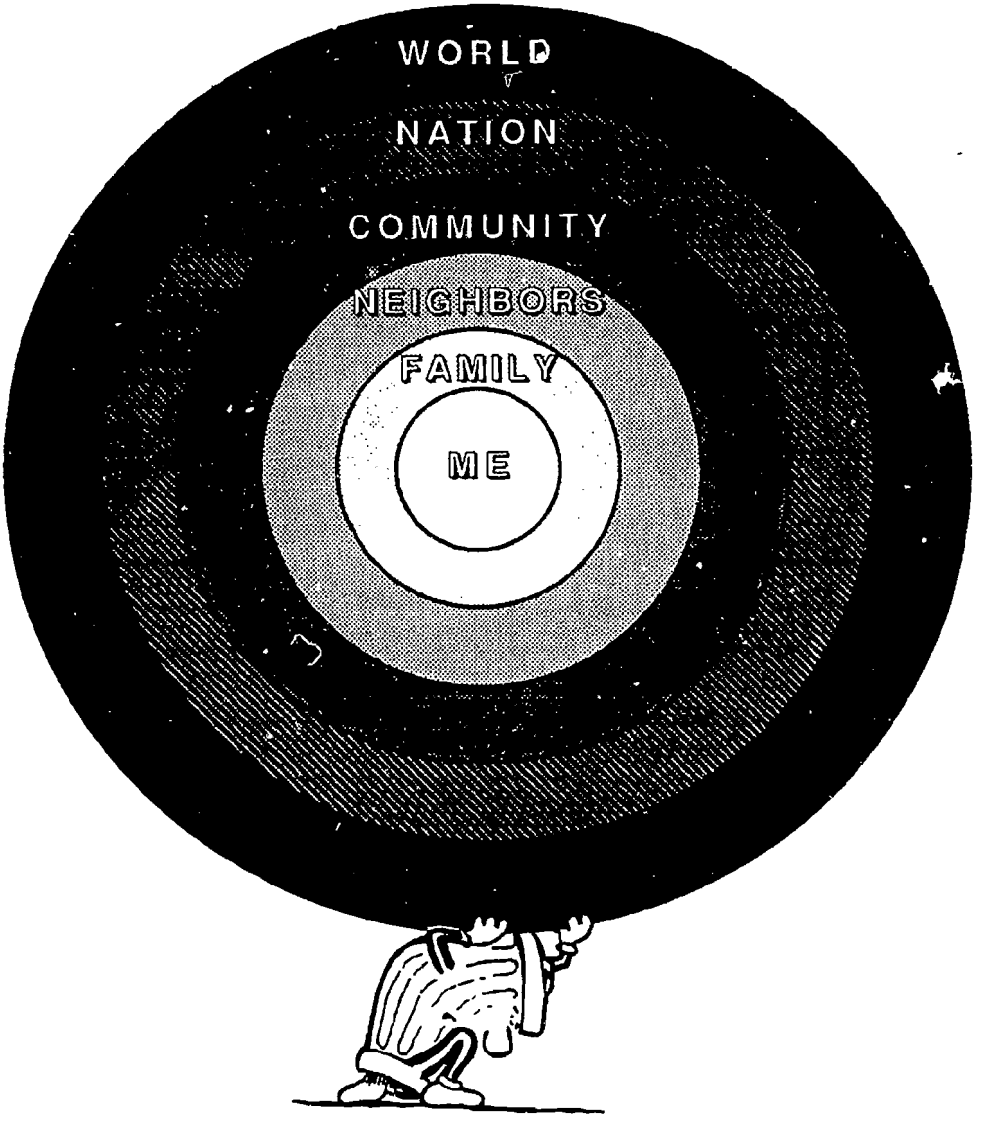
In examining points of view in the previous exercise, the underlying question we explored was this: "How do I decide what I do for my own benefit?" That's a beginning! Still, over 5 billion people live on this planet, about 250 million live in the United States, some 11.5 million live in Illinois. How many people live in your city, town, or community? How many friends and relatives do you have? How many are there in your family?

Decisions that each one of us makes for our own benefit may have far-reaching consequences on the lives of other people (see, for example, Moore, 1990). Paul Erlich, a professor of population studies at Stanford University, claims that each American child has an impact on the environment equivalent to that of 20 children to 100 children in poor countries (Associated Press, 1990). Thus, in the examination of S/T/S issues we ought also look at how others might benefit, or be harmed, by possible resolutions we offer for such problems.

"The Circle of Concern" (Figure I) represents a progression of concern from the center (self) outward modified from descriptions of children's "moral development" made by Boyd and Kohlberg of Harvard University, 1984.

## Figure 1.

# The Circle of Concerns



**The Circles (from center out):**

1. **ME:** A concern only with one's own possible gains or losses in resources, health, status, freedom, fun, and so on.

2. **FAMILY:** A concern with one's own gains or losses and those of a few persons (likely close family or friends) on which one depends for meeting personal needs.

3. **NEIGHBORS:** A concern extending beyond those on whom one depends to those who may do one some immediate good. These persons may include classmates, teachers, neighbors and others one is likely to encounter on a somewhat regular basis.

4. **COMMUNITY:** A concern for others one may never have met, but with whom one shares some recognizable common bond. (The bond may be one of religion, race, politics, economics, or membership in a special-interest group like a trade union or professional organization or even a sports team fan club.)

5. **NATION:** A concern (likely in the abstract, though perhaps expressed through some concrete actions) for all those who live lives essentially like one's own. (For example, one might express concern for the "future of America's children," like so many of us teachers are fond of doing. Or, the geographic borders may flex a bit to include all those who live in western democracies, or the "free world," or to include "all those who value life, liberty, and the pursuit of happiness.")

6. **WORLD:** A concern (likely in the abstract, though perhaps expressed through some concrete actions) for all persons everywhere regardless of race, religion, economic condition, political views, and such.

*(It is unlikely that those children whose worlds end at the mall parking lot or the video game screen even will be able to locate other states or nations on a map, much less empathize with their inhabitants. Teachers, you have your work cut out for you. To help students grow in their concerns, you must first help them become aware of the world in which they live. You can help with explorations in geography, social studies and history that are relevant to today's social issues.)*

Development of concern beyond ourselves, like physical and mental development, takes time and effort and a certain readiness. You will likely find that the majority of your students can comfortably handle discussion of issues at the second, third, and even fourth circles. Given opportunities to explore complex social issues, children can include in the Circle more and more "others" for whom they express concern. They can begin to see how their own actions affect others more removed from themselves.

Teachers report that "The Circle of Concern" is a valuable visual aid for stimulating students' thought and discussion beyond their own concerns. As a general rule of thumb, students ought to be encouraged to look one circle beyond the level at which they commonly respond to an issue. (The student concerned with only "me, myself, and I" should be asked about his family or a best friend. The student already concerned about what goes on in his or her community should be encouraged to explore how one community's decisions affect the lives of people around the state or nation.) Feel free to reproduce and or modify the Circle to fit your own classroom needs.

**An Exercise for You**

Recall what you ate for the last meal you consumed. Now think of as many people or groups of people as you can who in some way were involved in making your meal possible. Write your answers/ideas down on a separate sheet of paper.

Here are a few questions to help you evaluate the ideas you wrote down. Did you remember that the meal had to be paid for? If you paid for it, a lot of other taxpayers in your school district had to work to pay their taxes, from which your salary comes. Who grew the various plant products that went into your meal or into the stomachs of animals that became your meal? Where do these people live? Who processed the plants and/or animals into food products? How did these products get from where they were made to where you bought them? Where did the energy come from to grow, process, and deliver? Who advertised these to get you to buy them? What did you do with any trash produced in making the meal? Who takes care of that and where does it go? Boggles the mind, doesn't it? And other things are certainly still left out.

**Putting "Self" and "Others" Together!**

As you may have realized by now, the same points of view you use to weigh various factors involved in resolving a complex problem may have been applied by countless other people whose lives are affected by the same problem. You may share concern with these people and they with you. You may share concern for them, but they not for you. They may share concern for you, but you not for them. So how does anything ever get done?

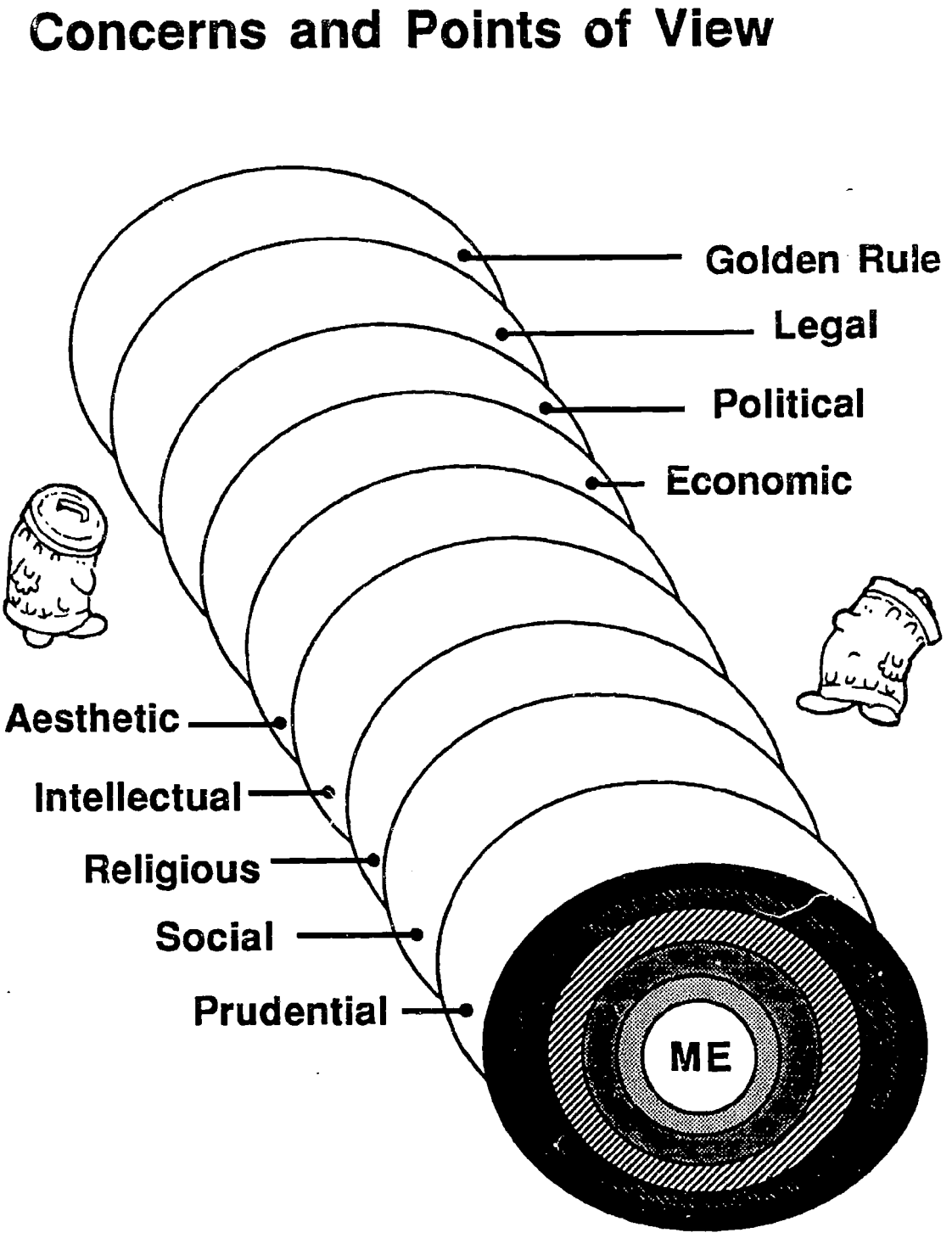
Thomas Jefferson believed that in a democracy with a "free marketplace of ideas," the best idea would win out over all others in time. But what makes an idea **best** ? A somewhat jaundiced view would hold that best is what appeals to the **right** people who have the power to act on it (technocracy). We prefer a more optimistic view of the best as that which appeals to the **most** people who have given careful thought to an idea and are willing to act on it (democracy).

If we put together our two tools for analysis of complex social issues, "Points of View" and the "Circle of Concern," we get a picture of the larger puzzle of resolving problems (Figure 2).

Unravel Figure 2 and we get a "Concerns Matrix" (Figure 3) in which we can visualize all possible ways in which any individual might respond to a complex social issue. (There are 54 in all; we don't call them **complex** social issues for nothing.)

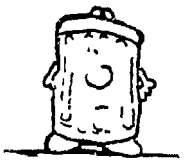
This matrix is not offered as a worksheet to keep students busy. Rather, we make it available to you to copy or modify in ways that it will be of help to you in your classroom with your students.

Figure 2.


Concerns and Points of View
Golden Rule
Legal
Political
Economic
Aesthetic
Intellectual
Religious
Social
Prudential
ME

## Figure 3.

# Concerns Matrix



CONCERNS

| POINTS OF VIEW | Me | Family | Neighbors | Community | Nation | World |
|---|---|---|---|---|---|---|
| Golden Rule | | | | | | |
| Legal | | | | | | |
| Political | | | | | | |
| Economic | | | | | | |
| Aesthetic | | | | | | |
| Intellectual | | | | | | |
| Religious | | | | | | |
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| Prudential | | | | | | |

**Discussion Analysis Tool**

One such use is a tool for analyzing statements made by others about some complex social issue. See, for example, the *Chicago Tribune* article "A World Apart," on page 17 of this Introduction. It is quite easy to identify statements made about the complex social issue of protecting the environment.

> Jerry Newport on recycling: "That's the garbageman's job ...They get paid good money."
> David Evans on air conditioning: "I like comfort ...This is America."

It is a bit less easy to classify these statements into one of the 54 matrix slots. However, any attempts to do so are bound to promote discussion. Where on the matrix do you think these statements belong?

> (This author would classify the above statements in the following way:
> Jerry Newport: **Me X ECONOMIC**
> David Evans: **Me X AESTHETIC and SOCIAL**)

**Research Focusing Tool**

Another possible use for the "Concerns Matrix" is as a tool to focus student research into complex issues.

Take, for example, the response square **Family X ECONOMIC.** An appropriate assignment might be for each student to find out how much garbage her/his own family produces in a week, what method of disposal the family uses, and how much it costs in time and money to handle this waste production. (Do you know this information for your own family?) You might then compare costs in various ways using a data base made from student findings in a number of classes. How do costs compare for different methods of waste management? How do costs compare for those who do recycle and those who don't?

Or, take the response square marked **Community X AESTHETIC.** A group of students may be assigned to survey members of a defined community as to how they feel about the local landfill, incinerator, or recycling center in terms of how it looks or smells or the noises made. Students might take photos and tape recordings at the site or make videotape recordings. Results of the survey could lead to an action project to beautify the site if the community finds it lacking in appeal.

Get the idea? Use your talents and creativity to make up your own investigations! Send them to us and let us know how they worked.

### Time

One other dimension ought also be included in any analysis designed to produce possible resolutions to complex social issues; this dimension is time. Very often, as we weigh competing points of view to decide what action we will take to resolve a problem, we overlook the possibility of long-term consequences for ourselves and others and focus only on what we prefer right now.

(Perhaps you know a student who puts off doing school work to engage in more pleasant occupations? We'll bet you know a teacher who puts off checking homework papers again and again to do more appealing things. Soon the stack of papers grows so large that the teacher has little hope of providing any meaningful feedback to students about their work.)

If you have read any "environmentalist" literature, you have likely come across the phrase "to the seventh generation." This refers to a practice among native American tribes of deciding important issues with an eye toward how their proposed resolution would affect not only those in the tribe at that point in time, but also those in each of seven generations to come.

Perhaps in the "low-tech," slowly changing world of native Americans (in the days before the arrival of European settlers) it was easier to predict with some accuracy how decisions would affect future generations. In today's America, where the only constant is change, predicting the future impact of decisions is somewhat tricky. That, in itself, is hardly an excuse to avoid hard thought about tomorrow.

As you seek to expand the circles of your students' concern, it is well worth remembering the others who will come after us: our children's children and their children and so on. One's sense of time and place in history develops over time and through opportunities to explore that sense. We do not offer any such opportunities in this curriculum as of yet. We trust that creative teachers can, and will, develop such activities and will share them with us. Got any good ideas? Let us know!

### Other Sources of Lessons

This guide has been written with another solid waste publication in mind. *The Land We Depend On* is an excellent source of activities meant to teach students about solid waste, landfills, plastics, etc., and we strongly suggest its use (see order form in Appendix C). We also suggest the use of other sources of activities and information regarding plastics such as: *Plastics in Perspective* and *Solid Waste: From Problems to Solutions, A Teacher's Handbook* (see order form in Appendix C). Actions Speak! attempts to go one step further by presenting ethical problems that must be addressed by our waste-producing society—of which you and your students are part.

Chicago Tribune, Friday April 20, 1990

# A world apart

By Barbara Brotman

And now, for an opposing point of view.

One hates to cast a pall over the green-tinged aura of environmental correctness occasioned by Sunday's Earth Day Observation, but the fact is that not everyone is getting with the program.

To be frank, some Citizens of the Water Planet, as Jacques Cousteau recently addressed readers of a fundraising letter, do not really care about Mother Earth.

This is how Jerry Newport, a Bridgeport resident who works making wire for welders, describes how he deals with household waste:

"I just throw it in the garbage. The garbageman takes it away."

He is no litterbug, he emphasizes. He just considers separating his garbage for recycling a bother.

"That's the garbageman's job," he said. "They get paid good money. Let them go through the garbage. I'm not going to keep three different garbage cans in my house."

David Evans, a Chicago police officer, is less concerned about global warming than personal warming, and so uses his car's air conditioning freely.

Unconcerned about the unit's chlorofluorocarbons leaking into the atmosphere and poking holes in the ozone layer, he had it on the other day in his family car when the high temperature was 61 degrees.

"I like comfort," he said. "This is Ame ica."

Alan Morgan, of the Canaryville neighborhood, used disposable plates, not china dishes, for an Easter supper for 32 relatives and their numerous children.

"What are you, crazy?" he said of the china option. "Are you nuts?"

He also uses chemical weed killer on his lawn. "If the plants are happy, I'm happy," he said

Frank LaFranco, a doctor from Lake Forest, uses air conditioning without hesitation, hires a lawn service that uses chemicals, drives as much as he likes and does not recycle.

"I don't recognize myself as being part of the problem," he said.

The possibility exists that Earth Day will come and go with little apprcciable effect on some people's individual habits.

"I like comfort. This is America."

David Evans of the Southwest Side, who engages in "no recycling whatsoever"

"What are you crazy? Are you nuts?"

Alan Morgan of Canaryville, on why he used disposable plates rather than china for an Easter Supper for 32

"If Earth Day is only April 22, 1990, folks haven't gotten the point," said Sarah Pines, regional executive director of Greenpeace in the Midwest. "For us, every day is Earth Day."

The first Earth Day in 1970 prompted major and lasting political, social and personal changes reflecting concern for the environment, said Glen Paulson, research professor of environmental engineering at the Illinois Institute of Technology and one of the creators of the first Earth Day.

"The creation of the Environmental Protection Agency by (President Richard) Nixon probably would not have happened as fast without Earth Day," he said. "I'm convinced that passage of landmark legislation in the Clean Air Act of 1970 and the Water Pollution Control Act of 1972 wouldn't have happened as quickly or been as extensive without the momentum generated by Earth Day."

Ecological awareness is considerably higher than it was in 1970, and Paulson expects the 1990 version to have at least as great an effect as the original.

Political and social changes are more important than individual adjustments, Pines added.

Greenpeace has issued a list of 10 things people should do after Earth Day, including demanding that government and business place a high priority on environmental concerns. And even the greenest-minded consumers have trouble remaining entirely environmentally pure. Food at grocery stores is not generally packaged in reusable containers. No newspaper in the Chicago area is printed on 100 percent recycled paper.

Disposable razors and ballpoint pens are enticingly convenient. And day care centers generally insist on using disposable diapers instead of cloth.

Some professional ecologists themselves have environmental skeletons in their closets.

"I used disposable diapers, and felt guilty every time I did it," said Joan Bradford, and official with the Office of Solid Waste and Renewable Resources of the Department of Energy and Natural Resources, which oversees the state's recycling effort.

She recycles glass, aluminum cans and newspapers, brings her lunch in reusable containers and has installed a low-flow shower head in her home. "We have to live what we preach," she said.

But when it came to diapers for her sons, now 4 and 5, she used disposables, which do not decompose in landfills and make up 2 percent of the nation's garbage.

"It was convenient," she said.

Indeed, Susan Catania, an ecology-mined former state representative and mother of seven daughters, said that disposable diapers were essential to her political life.

"I would not have been able to serve in the Illinois House of Representatives without them," she said. Catania had three daughters in diapers while she held office. She used cloth diapers at home, which she washed at home, but used disposables in Springfield and when traveling with her babies.

"If we have the brains to do things, I think we should be out doing them, not home doing diapers," she said.

Nonetheless, environmental activists would be pleased if everyone took a personal interest in not adding to landfills or polluting air and water.

It is here that they encounter human frailty, as defined in Edmund Grach's explanation of why he and his wife, who live on the Southwest Side, do not recycle.

"We're lazy," said Grach, a clerk at a law firm.

"Only people in Hollywood can say all these nice things about recycling", said David Evans. He personally engages in "no recycling whatsoever," and uses the kind of garbage bags that "you put in the ground and it's still there."

"They don't make it easy for us to recycle," he said.

Jerry Newport works with lead dust that so chokes the air that he wears an oxygen mask. His personal contact with toxic substances notwithstanding, he has no intention of changing his life after Earth Day and taking over what he sees as the garbage collector's job.

"I eat, sleep and go to work," he said. "I work 10 hours a day, five days a week, and every four months I have to have my blood checked for lead poisoning."

Chicago Tribune, Friday, April 20, 1990
Permission to Reprint Pending

# *ACTIONS SPEAK!* ACTIVITIES

## MAKING A STATEMENT

**Objective:**

To discriminate between statements of value and statements of fact. To develop the concept of point of view.

**Materials:**

none

**Grouping:**

Students may work either individually or in cooperative learning groups.

**Teacher:**

Lead your students in activities and discussion to gain *knowledge* about facts and values.

**Values and Facts:**

Ask your students to finish the following sentences, either on paper or orally in class:

My favorite kind of food is _____.

The nicest person I know is _____.

I don't like it when _____.

My favorite sport is _____.

I enjoy going to _____.

Explain to your students that every day, everyone makes statements such as these that express a preference for or against persons, places, objects, or actions. These expressions of preference are known as *value statements*. In order to make such a statement, we make some type of personal judgment about the *quality* of a person, place, object, or action. Qualities are typically expressed as good, bad, better, worst, cute, boring, nice, awesome, beautiful, gross, should, should not, and so on.

On the other hand, people often make statements that compare things but are not value statements, such as:

"Plain pizza costs less than pizza with sausage."

"Julie is older than Vickie."

"Chess is a less physically active game than football."

These statements are not value statements because they can be proven or disproven to virtually everyone's satisfaction. They are statements of *fact*.

**Thought:**

Read each of the following statements to your students and ask them to determine which are value statements and which are statements of fact (answers are in parentheses). If cooperative learning groups are employed, each group can discuss and reach consensus for each statement and later share their decisions with the entire class.

**Value or Fact?**

1. Pepsi tastes better than Coke. (value statement)
2. It is hotter today than yesterday. (statement of fact)
3. Oak trees are beautiful. (value statement)
4. Baseball players earn too much money. (value statement)
5. The temperature in May is more enjoyable than the temperature in February. (value statement)
6. My neighbors throw away too many things. (value statement)
7. Forty-five dollars is a lot to spend on jeans. (value statement)
8. Soft drinks have more calories than water. (statement of fact)
9. Burning leaves smell awful. (value statement)
10. Those trees must be at least 100 years old. (statement of fact)
11. My family throws away much more garbage than my neighbors do. (statement of fact)

**Teacher:**

Lead your students in activities and discussion to gain Knowledge about points of view.

**Points of View:**

Explain to students that "Why?" is always an important question to consider when hearing or reading a value statement made by someone else. Have your students review the value statements they completed at the beginning of this exercise and tell why they made the statements they did. They should answer:

"My favorite kind of food is _____ because _____."

or

"I enjoy going to _____ because _____."

Each of the reasons a student gives for a value statement he or she makes can be called a point of view. Points of view can be different for different people. For example, Tim likes homemade pizza because it tastes great. Tim's mom likes homemade pizza because it's a wholesome, healthy meal. Tim's dad likes it because it's inexpensive. Each of these people has different reasons for liking pizza. Each makes his/her value statement about pizza based on his/her own point of view.

(Recall the exercise on Points of View in the **INTRODUCTION FOR TEACHERS**. This is a good spot to introduce students to the nine points of view if you feel this analysis tool is appropriate for your students.)

Students can offer more than one reason for a value statement. As an example, A student who says her grandfather is the nicest person she knows may say this because her grandfather loves her (**GOLDEN RULE**); because he gives her gifts (**ECONOMIC**); because they have fun together at the park (**AESTHETIC**); and because he is nice to her friends, too (**POLITICAL**). A student may prefer plain jeans over ice-washed jeans not only because they are cheaper (**ECONOMIC**), but also because he thinks they look better on him (**AESTHETIC**). Ask students which of the value statements they made at the beginning of this exercise have more than one reason behind them?

Have each student again complete the five value statements at the beginning of this exercise, but this time as he/she thinks some other person would complete them. For example, the student may choose to answer a statement as his/her mother or father, best friend, brother/sister, teacher, or other significant person might respond. (i.e., "My mother's best friend is_____," "The nicest person my teacher knows is_____," and so on.) Ask the students, "What reason(s) would this person give for this value statement?" and "How are these reasons different from the reasons you gave earlier?"

(Recall the exercise on "The Circles of Concern" in the **INTRODUCTION FOR TEACHERS**. This is a good spot to introduce the Circle if you feel this analysis tool is appropriate for our students.)

**Action:**

Ask students to collect articles about environmentally oriented issues from newspapers, magazines, or other sources. (A videotape of a political figure's speech, a news report, or a documentary works well, too. Advertisements are an exceptionally good medium to explore for identifying statements of fact, value, and value passed off as fact.)

Ask student groups to examine articles or videos to identify statements of fact and value made about the issue.

Groups can share and discuss their findings with the entire class. Groups may also develop their own Value vs. Fact quiz using the statements they identify from their sources.

## ACTIONS SPEAK FOR INDIVIDUALS AND COMMUNITIES

**Objective:**

To explore values.
To think about how our actions speak for our values.

**Materials:**

news article, "Mr. T Chops Away at Lake Forest's Fiber" (included)
map of Illinois (will be useful in other activities in this guide. A free map may by obtained from your local Drivers License Examination Station.)

**Grouping:**

We recommend that students work in small cooperative learning groups.

**Teacher:**

Read the paragraphs below to your students to introduce them to the *Problem*.

You've probably heard the old saying that "Actions speak louder than words." When it comes to making value statements, this old saw is quite true. It's often easy to say "I value something," but your actions, if not consistent with your stated values, will prove otherwise.

As an example, if I say to you, "We must think about whether 'newer' products that are disposable are really better than the old kinds. We can no longer irresponsibly create products which we'll just throw away after they're used." You, on hearing me say that, will assume I try not to buy disposable things if there's another option. However, if I say this while shopping for a disposable camera or razors, or diapers, you would likely doubt my sincerity. My actions would give away my true values.

It is appropriate that we let our actions speak our values and not just our words. When it comes to our environment, both you and I have a direct, everyday impact, not so much in what we say, but rather in what we do.

America is a land of communities. People have come together as groups with shared common interests and settled in various places. They formed villages, towns and cities. There is often an unspoken set of values by which the community expects its members to abide.

Lake Forest, Illinois, is a well-to-do suburb north of Chicago on the shores of Lake Michigan. (Ask your students to find Lake Forest on a map of Illinois.) The following story appeared in the *Chicago Tribune* on May 22, 1987. You'll probably recognize the member of this community on which this story centers.

Have your students read the article on page 27, "Mr. T Chops Away at Lake Forest's Fiber."

**Knowledge and Thought:**

To answer the discussion questions below, we recommend that students be allowed to gather appropriate information and discuss their findings in small cooperative learning groups. Then, each group can share its information and ideas with the class as a whole.

*(Teacher note: students can brainstorm, conduct surveys of community residents, and/ or examine the local newspaper to learn about common interests in their community. Your students may want to contact students who live in Lake Forest by letter to learn firsthand about what this community is like. This might make for a great language arts lesson!)*

1. Your classroom is a community. What sorts of shared common interests do people in your classroom have?
2. The town in which you live is a community. What sorts of shared common interests do people in your community have?
3. Lake Forest is a community. What sorts of shared common interests do people who live in Lake Forest have?
4. How did Mr. T's actions demonstrate the value he placed on trees?
5. What did other members of the community have to say about Mr. T's actions? (Find the statements made by neighbors and others in the article).
6. What kind of values do other members of the community place on the trees?
7. It is true that Mr. T owned the land where he cut down the tree. But do you think that any one can really own nature?
8. Is the environment (the trees and other plants, the animals, the air, the water) ours to do with as we please? What responsibility, if any, do you think we have to preserve and protect these things?

**Action:**

Student actions might include:

1. Writing to various environmental organizations to learn about each group's interests. Some local groups may have speakers and/or field trips available. Remember, organizations are communities with common interests, too.

2. Organizing a tree survey of their own community to learn how many and what kinds of trees there are. Perhaps, this survey might extend to a plan to raise funds to buy and plant more trees or establish a school wildlife sanctuary.

3. A visit to a meeting of the community's governing body to learn how decisions are made about environmental (or any other sort of) issues.

# Mr. T chops away at Lake Forest's fiber

By George Papajohn and Steve Johnson

The sound of one tree falling in exclusive, genteel Lake Forest echoes in the very souls of residents. So the sound of trees, numerous trees, falling on Mr. T's generous estate rumbles like an earthquake.

Armed with a chain saw and, it is said, suffering from a mean allergy, the star of TV's "The A-Team" has been dropping trees on his Lake Forest estate for two weeks now.

This episode of "The Tree Team," however, is not receiving high ratings in the TV star's gold-leaf neighborhood. Angry neighbors and distraught city officials agree that Mr. T has every right to do what he pleases with his property, but they nonetheless are in mourning.

"Anyone who has come to Lake Forest appreciates that it's part of the name of the town," said Ald. Mary Barb Johnson, who has received many complaints about the tree cutting. "That precious commodity is part of Lake Forest."

Lake Forest officials point proudly to seven straight "Tree City, U.S.A." awards from the National Arbor Day Foundation and requirements that developers preserve existing trees and plant new ones in parkways.

"It seems at times that there may be an over emphasis, but it's not true," Johnson said.

Thursday's Lake Forest News/Voice was emphatic. "The massacre of Mr. T's trees,' shouted a headline. "It is an arrogant, insensitive action which may still be incomplete," pronounced a News/Voice editorial.

It was a 9-year-old neighbor Hans Pusch who reported that his muscular neighbor is allergic to trees. This information, he said, was related to him by Mr. T's brother, who also gave Hans an autographed picture of the "The A-Team" hero. The News/Voice also reported the brother's explanation.

When Mr. T, who grew up as Lawrence Tero in the Robert Taylor Homes on the South Side, moved in the Armour mansion in Lake Forest on the North Shore last year, there were some raised eyebrows but only mild concern.

He quickly won over the neighborhood kids, including Hans, who says he has 10 autographs on his bedroom wall.

"He's so nice," said one mother in the neighborhood. "The children in the neighborhood are relentless in trying to see him, and he's always patient and always nice."

If residents of the turn-of-the-century Vine-Oakwood neighborhood, which is listed in the National Register of Historic Places, were worried about Hollywood-style bashes or macho roughhousing, their fears quickly subsided.

Mr. T, they say, is as reclusive as the other celebrities and wealthy executives who live there.

In fact, even Mr. T's encounters with Lake Forest's restrictive zoning laws didn't raise a fuss. When pressed by the Building Review Board in January, he agreed to forsake two large decorative T's planned for his five-car garage.

Earlier this spring, when he put up a 6-foot-tall stockade fence and began painting it white, the city admonished him that this was forbidden by local ordinance. The very next day the white paint on the fence was sandblasted off. Now local officials are considering an ordinance restricting the removal of trees on private property.

Thursday, Mr. T's estate, which neighbors estimate at 4 to 7 acres, looked as if it had been ravaged by an army of beavers.

"I was just dumbfounded," said Betsy Kitzerow, a neighbor. " I just could not believe somebody could be that destructive to something that took God maybe 60 years to grow. And they're gone. Just gone."

Tree debris was everywhere. At least 100 trees, of all sizes and varieties, had been chopped down. About 10 of the 30 still standing were marked by an ax, apparently next on the Mr. T hit list.

Finished with his day's labor, Mr. T chatted amiably with some children at the electronically operated gates to his entrance road. An older man and a young woman were with him; a chain saw rested in a wheelbarrow.

A boy riding by on a bicycle, however, yelled, "Save the Trees." Another laughed at his own cleverness: "Mr. Tree."

Mr. T who turned 35 Thursday, would not answer questions about his trees. Although he had clowned and waved earlier for a newspaper photographer, he ordered a reporter off his property.

Nearby, Walter Proth, a retired landscaper who worked on the Armour estate for 15 years until 1980, snapped photos of his own.

Inside their homes, Mr. T's neighbors were happy to hear the chain saw silenced for the night. They contemplated Mr. T and the meaning of trees.

"In my mind, it's the American dream for a guy to make it big and become a star," said one homeowner. "That's fine for me. The problem is when a person apparently really enjoys taking down trees, and that's what they're doing."

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## A SHOPPER'S POINT OF VIEW

**Objective:**

To develop the concept of points of view.
To explore how and why consumers make choices.
To explore the consequences of consumer decisions.
To act in a manner consistent with one's values.

**Materials:**

a single grocery item packaged in three to four different ways
(We have found that soft drinks work well for a number of reasons. First, most students purchase them. Second, they come in a wide array of packaging: aluminum cans, bimetal cans, plastic bottles, disposable glass bottles, returnable bottles, and a host of containers from fast-food outlets. Third, they are fairly inexpensive to purchase.)
sales papers from local grocery stores (Students can collect these.)
advertisements for the item from various sources (Students can collect these.)

**Grouping:**

We recommend cooperative learning groups for this activity.

**Teacher:**

Tell the students that they will be taking an imaginary trip to the grocery store. They are working as consumer researchers to determine why people choose one sort of packaging over another when they purchase a certain grocery product.

*(Teacher note: A real trip to the grocery store to do a real customer survey is a desirable activity if you can arrange the particulars!)*

**Problem:**

Choices consumers make when purchasing products may have long-lasting effects on the quality of our environment due to the way in which the product is packaged.

**Knowledge:**

Display the product in its different forms of packaging and allow students time (about 15 minutes to 20 minutes) to brainstorm. They should try to come up with as many reasons as possible to explain why people (including themselves, their friends, and their families) would choose to buy or not buy the item in each type of packaging. Encourage them to use the sales papers to find prices and the advertisements to get ideas as to how the item is marketed by its producer. Why do they want us to buy it?

Ask students in each group to share some of their ideas with the class. You might want to make a chart on the chalk board or on an overhead to display students' ideas. Ask them to distinguish between statements of value and fact.

You will likely find that the very same reasons are given to explain the purchase of each different packaging. (In other words, when it comes to determining what is convenient, economical, good for the environment, popular, etc., one size or style does not fit all.)

(Recall the exercise on "Points of View" in the INTRODUCTION FOR TEACHERS. This is a good spot to introduce the nine points of view if you feel this analysis tool is appropriate for your students. You may want to classify the reasons the students give by point of view if you are using this analysis tool.)

**Thought Options:**

Any number of thought-promoting activities might be appropriate for students to undertake. Using the soda pop example, students might:

1. Develop a Comparative Ranking Scale for the different varieties of the grocery item (see Appendix A). Have the students return to their groups to rank each packaging from most environmentally sound to least so. To do so, students will need to come to agreement as to what they believe the term environmentally sound really means (see Definition exercise in APPENDIX A).

2. Consider options available in your community for the disposal and the reduction, recycling, or reuse of each type of container. (Contact your local recycling center, waste hauler, or other solid waste expert.) Students may want to study carefully the packaging and advertisements for the product to determine if the manufacturer encourages recycling or reuse of the packaging.

3. Conduct research to determine how much energy is used to produce the product and the packaging and to transport it from the point of manufacture to the stores in your community.

4. Calculate the volume or mass of packaging produced per unit of product. Consider a 12-pack of soda in aluminum cans packaged in a cardboard box vs. a 2-liter plastic bottle. How do these compare in terms of volume of packaging per liter of soda? (Lots of math here for those of you who teach across disciplines!)

5. Determine how much of each type of packaging ends up as litter along roadsides in your community.

**Action Options:**

Any number of actions might be appropriate for students to undertake. Using the soda pop example, students might:

1. Write to the corporation requesting that it encourage recycling/reuse of packaging in its advertisements and/or on the packaging.

2. Develop and implement a plan to reduce the amount of packaging purchased/increase in recycling/reuse of packaging in the family's groceries.

3. Develop and implement a plan to recycle/reuse packaging in student lunches at school.

4. Develop and implement a plan to adopt a stretch of roadway and keep it free of litter.

5. Write to state and local legislators in support of legislation to reduce packaging, increase recycling, put deposits on all beverage containers, etc.

## SHOPPERS' WORLD

**Objective:**

To be aware of the pressures on Americans to be consumers.

**Materials:**

student-provided packaging materials

**Grouping:**

Students work individually at home and in class.

**Teacher:**

Read the paragraphs below to your students to introduce them to the Problem and to provide some background Knowledge.

We live in a material world. We are, in fact, surrounded by material. The modern world supplies us with many goods that we purchase and consume. There is much property to be had ... and sometimes we think we need it all!

We are bombarded by advertising. On an average day, we are exposed to as many as 1,600 commercial messages. What are some of the ways we receive these commercials? (television, magazines, newspapers, radio, billboards, junk mail—even grocery store shopping carts and movie theaters!) Buy this, try that, own your own, have it your way, you deserve a break today. The average supermarket carries some 18,000 items from which we can choose. In Illinois alone, there are about 1,200 shopping centers. This places us fifth in the nation (California is number one with 3,320 shopping centers).

Americans consume a lot. On a typical day in the USA, we:

- buy 50,000 new televisions
- spend $300 million on clothes
- buy 38,000 Ken and Barbie dolls
- buy 9 million greeting cards
- buy 35 million paper clips
- eat 815 billion calories of food, including 5,000 tons of candy, 75 acres of pizza, and 3 million gallons of ice cream
- burn 313 million gallons of fuel while driving.

Consumption is not without cost. To produce all of these goods for purchase, we must:

- extract 18 million tons of raw materials from the earth on a daily basis. That's 150 pounds per person!
- produce 1.5 billion pounds of hazardous waste. That's 9 pounds per person!
- pump 365 million gallons of oil from the ground and import 147 million gallons of oil from other countries. Your allotment is 9 quarts per day.

The figures above come from the book written by Tom Parker entitled *In One Day*.

**Knowledge:**

Ask each student, with his/her parents' permission, to watch one hour of television on a Saturday morning or another time of day. Students should write down the names and types of all the products they see advertised during that hour (e.g., Sugar Pops cereal). Have students bring the lists to class. (If some of your students have access to videotape machines at home, then they may choose to tape the commercials and bring the tapes to class. In addition, you might videotape specific commercials for discussion in class. A good time to videotape commercials is during daytime soap operas—a lot of housekeeping products are advertised during this period.) Magazines aimed at a teen audience are also a good source of ads. Students can collect all the ads from one issue of their favorite magazine as an alternative to watching television.

As a variation for some of your students, or, better yet, in addition to the above television-watching assignment, ask them to go grocery shopping with their families. Either in the store or after the bags are brought home, the student should write down all the items that were purchased (at least for one shopping bag full of groceries) and describe how each was packaged (can, glass, plastic, etc.). Students should bring these lists to class.

Have each student choose one item from his/her TV advertisement list or from the shopping list. How was this item made? Is it food? Is it plastic? Metal? How is the item packaged? In a cardboard box? Plastic wrap? Perhaps there's polystyrene (polystyrene is a foam-like plastic) wrapped in plastic.

Keep the lists of advertisements and grocery items for future activities.

Another variation (especially for older students) is to ask students to keep track of all the purchases they make over a given time period. If possible, they should save all of the packaging from their purchases—records, CDs, cosmetics, clothing, and so on. They may also want to keep a data table of the mass and volume of their purchases. Even the records, CDs, cosmetics, and clothing eventually become solid waste. Further, the students may want to keep track of the amount of time they spend shopping or or socializing in or near stores.

**Action:**

Student actions might include:

1. Writing to the manufacturer of a recently purchased product to express her/his own values about how the product was packaged or to request information about the company's efforts (if any) to reduce its production and distribution of packaging material.

2. Exploring opportunities in the community that provide an alternative to shopping as a social activity. These might include membership in organizations, volunteer work, or visiting nature areas.

# GARBAGE DUMPS — NOT IN MY BACKYARD!

**Objective:**

To learn where garbage goes in your community and other communities.
To understand different points of view about where garbage should go.

**Materials:**

news articles (included):
"Waste Problem Gains Attention Because of Crisis"
"Living Next to a Landfill"
"They Want Garbage"
landfill picture (included)
map of Illinois (not included)

**Grouping:**

We recommend that students work in small cooperative learning groups.

**Teacher:**

NIMBY — Not In My BackYard

Read the paragraphs below to introduce students to the Problem and provide some background *Knowledge*.

We take plenty out of the earth in our quest to produce and consume, and the earth has supplied us with an abundance of these raw materials. We also give the earth something back—garbage! Americans dispose of approximately 180 million tons of waste from their homes in a year. Your share works out to about 5 pounds a day. Can you believe that you throw out that much?

Not long ago, the news media gave lots of attention to a garbage barge from a town named Islip (eye'-slip) in the state of New York. Everything started out as usual; the people in the town had "thrown out" their garbage each week, and the garbage truck picked it up. So far, this seems normal, right? But where did the garbage truck take all that garbage? Six million pounds of the garbage was put onto the barge to be shipped away. But where is "away"? Six states and two countries rejected the garbage. The barge had no place to dispose of its load.

Have students read the article on page 40, entitled "*Waste Problem Gains Attention Because of Crisis.*"

Where does all our garbage go? Everything has to go somewhere, right?

**Thought:**

Ask student groups to discuss ways in which they, or people they know, dispose of their trash. (You may want to assign students to gather this information individually a few days before you begin this lesson.)

Make a list (on the chalkboard or overhead) of the different ways people dispose of their garbage. Include not only the methods that are used by your students' families, but also the methods used by their relatives and friends who live in different parts of the state or country. Discuss how where we live has a bearing on how we dispose of our garbage. For example, persons living in cities and towns probably have their garbage hauled away to a landfill or incinerator. Persons living in rural areas often don't have garbage pick-up; instead, they burn their burnable wastes and bury or dispose of the non-burnables somewhere on their own property.

On page 44 is a map of the Chicago area showing the locations of existing landfills and proposed ones. If you live in this area, chances are your garbage goes to one of these landfills. If you live in a town or city anywhere else in the state, then your garbage most likely is trucked to a landfill near where you live. (Teachers: if you know where your local landfill or incinerator is, help your students find it on the Chicago-area map or on an Illinois map.)

Draw the landfill picture (provided) on the blackboard to describe what a landfill looks like, or pass around copies of the drawing to each student learning group. Better yet, go on a field trip to look at a landfill or incinerator. Your students can make a mini-landfill in your classroom as described in the Illinois EPA publication, *The Land We Depend On* (order form for that publication is in Appendix C). Another possibility is to shoot some videotape footage (with permission, of course) at the local landfill or incinerator. This will capture the sights and sounds if not the smell. The idea is to help your students realize what it is like to have all that garbage (much of it smelly!) concentrated in one place.

**Teacher:**

**Traveling Trash**

Read the paragraph below to introduce students to the Problem and provide some background *Knowledge*.

Just as the garbage barge from New York found it difficult to find a place that was willing to take its load, many towns are already having the same problems finding new places to dispose of their garbage. Nobody wants everyone else's garbage dumped in his/her own backyard. Yet, many regional landfills are nearly filled to the top and new places to dispose of garbage must be found.

Ask your students to read the article on page 41, "Living Next to a Landfill," which appeared in the *Daily Journal*, a newspaper in DuPage County, Illinois (a county just west of Chicago—you may want to help students find this area, and the towns named below, on a map), in February 1988.

Ask one or two students to write the following headlines on the blackboard. They are from various local papers in the DuPage County area during January and February, 1988.

- "Not Here! Carol Stream Landfill Idea Is Criticized"
- "I Definitely Don't Want a Landfill Here"
- "New Dumps Banned on Forest Land"
- "No Landfill Near My Home, Residents Tell DuPage"
- "Glendale Heights Opposes Landfill Plan"
- "Say No To Landfills in DuPage"
- "Residents Blast Landfill Site"
- "Residents Trash Dump Site"
- "Mayor Forming Coalition to Battle Plan for Dump Near Bloomingdale"

Ask student groups to respond to these questions:

- Judging by the headlines, how do the people feel about landfills?
- How would you feel if a landfill were to open a few houses away from where you live? Why would you feel this way?

Have students read the newspaper editorial on page 42, "They Want Garbage," which appeared in *Press Publications*, July 1988. (You may want to help students to locate Flora on a map.) Also, have them discuss the questions that follow:

- Would shipping garbage to Flora be a solution for people who live in DuPage County?
- If you lived in DuPage County, why might this sound like a good idea?
- Speaking as a DuPage County resident, are there any reasons why this might be a bad idea?

**Role Playing:**

Ask the students to imagine that they are residents of Flora. Some students may be people living in town and some may be farmers living outside of town. Have each student group write a letter to the editor of the local Flora newspaper (*The Daily Clay County Advocate Press*) to express how the group feels about garbage coming to Flora from DuPage County.

**Role Playing:**

Hold a town meeting where half of your students, role-playing as residents of Flora and the surrounding county, take varying stands on this garbage issue. The other half of your students will play the roles of residents of DuPage County.

*(Teacher note: role-playing is always more effective if students are able to step into the circle of some other person's concern. To enhance the opportunity for successful role-playing, it is very helpful to learn about the people whose roles your students will take. Thus, we recommend that your students learn about Flora and DuPage County and their people before playing the roles. Also, if your school has a drama program, many of the role-playing activities in this guide can serve as a basis for a skit or play to be presented to others in the student body and the community.)*

**Teacher:**

**Up in Smoke—Incineration**

Read the paragraphs below to introduce students to the Problem and provide some background *Knowledge.*

If you've taken a trip to your local landfill, you've probably found it to be a rather unpleasant place. Perhaps that's why, in a recent survey, over half the Americans polled believed that burning of trash (incineration) was the best way to dispose of it. Fewer people favored burial of trash. We claim we value our land. We don't want to use it for disposing of wastes, especially if it is near where we live, go to school, or play. Burning our trash saves lots of land space and can provide energy for our homes and workplaces, but there are problems with incineration, too. Burning trash can cause air pollution, and the ashes left over must still be disposed of somewhere. Some environmental groups, such as the Sierra Club, believe that when we incinerate our trash instead of burying it, we are simply exchanging one form of disposing of solid waste (landfills) for another (air pollution).

Though Americans may prefer incineration to landfills, the headlines that follow suggest that Americans prefer landfills to be far away. The headlines express not-in-my-backyard feelings, not only toward landfills, but also toward the burning of trash.

- "Anti-Incineration Resolutions OK'd"
- "Residents Still Fear Incinerator"
- "Incinerator Debate Goes On"
- "Board Votes Against Incinerator"
- "Board Says No to Incinerator in DuPage"
- "Leaf Burning Might Be Banned"

Ask student groups to discuss reasons why people don't want incinerators near where they live.

See Appendix B for a list of news articles concerning landfills, incineration and other possible garbage disposal methods. You may want to make some of these available to students or have students track them down to provide further information to promote quality discussion.

Where are we to put all our garbage? Everything has to go somewhere.

**A Projection Exercise:**

Have student groups suppose that their neighborhood landfill (or wherever else the garbage hauler takes their garbage) will close in six months. Each group must come up with a plan to handle the garbage from your community. (It is highly possible that your community is really facing this problem. If so, we strongly recommend that your class become informed as to actual proposals being made. Each group might then pick a proposal and learn about it.)

As a class, discuss the ways of handling garbage that your students (or your community leaders) suggest.

Among urban students, there may be suggestions about taking the garbage out of the neighborhood and disposing of it (perhaps in vacant lots, roadside ditches, or in the "country"), or suggestions of burning it (or of starting a landfill if the incinerator is to close down) or allowing it to pile up in plastic bags in the backyard.

Encourage the students to consider the interests of other people in other communities. (This is an appropriate point to apply the Circle of Concern if you are inclined to use it.) For instance, what if they lived in the country and someone from the city dumped his/her garbage in front of their house (or vice versa )? How would they feel?

Remind students that their proposals must be acceptable to the majority of the community and as best as possible should resolve the problem for a long period of time. (Students should be encouraged to consider economic and logistical feasibility, practicality, convenience, aesthetics ... and other components of the nine points of view analysis used to weigh decisions.)

Have student groups present their proposals at a mock community government meeting (or at the real thing if you get involved in a real issue). Students from other classes may be invited to serve as concerned citizens. Given some background information ahead of time, students can ask questions and challenge the claims made by each group as it seeks to have its proposal approved. A vote may be taken after all groups make their presentations. Or students may first be given the opportunity to alter their proposals based on citizen comments. (Why not get your colleagues in the social studies department involved?)

# Waste problem gains attention because of crisis

NEW YORK (AP) — Some people laughed about the scow of New York garbage being rejected by six states and two countries.

However, experts on waste disposal say the barge is a serious omen.

"This barge is a warning: 'Hey people, there is a crisis in this country and we've got to do something about it,'" said Bill Taormina, a director of Anaheim Disposal, a collection company in California.

The 3,000 tons of floating garbage left Islip, N.Y., March 22. The load was rejected by North Carolina, Alabama, Mississippi, Louisiana, Texas, Florida, Mexico and Belize before being accepted by the owner of a small Bahamian island.

The "barge to nowhere" has drawn public attention to the problem of where to put garbage.

AMERICANS GENERATE about 220 million tons of garbage each year and bury 95 percent of the total in landfills, according to the National Solid Wastes Management Association, a trade group.

But about one-quarter of the nation's cities have less than five years' space left in landfills, according to Combustion Engineering, a Connecticut-based supplier of garbage-burning electric plants.

"Will Americans wake up next week and see every flat surface covered ankle-deep in orange peels? The answer is no," said Sheila Prindiville, director of the solid waste program for the waste industry group. "Will it happen locally? The answer is yes, and it's happening now."

A U.S. Environmental Protection Agency survey found trouble in all states except Kansas, Nevada and the Dakotas.

Public opposition to landfills was cited as a major reason for the shortfall.

The Islip barge is "a very good dramatization of the NIMBY syndrome: Not In My Back Yard," said Fitzhugh Green, an EPA official.

If something isn't done quickly, mobile, unwanted garbage will become more common, experts say.

Islip authorities were forced to ship commercial garbage elsewhere because New York state closed the Long Island town's dump to protect drinking water.

TAORMINA'S COMPANY is a transfer station, a relatively new idea. Trash collectors, unwilling to make frequent, lengthy trips to a dump, pay transfer operators to take it off their hands.

After removing metal, paper and glass for recycling, Taormina's firm packs the refuse into giant trailers and takes it to the dump. He chargers $15 a ton, $9 more than the nearest landfill. The company takes in 2,000 tons daily, 1,100 tons more than he originally anticipated.

Taormina also plans to build a garbage-burning power plant.

"What happens when we run out of space? The barge is a perfect example," he said.

Recycling, garbage-fueled power plants and incinerators are some methods recommended by the industry. Producing less garbage also may be necessary.

"We're a consumer culture and we keep cranking it out," said Arthur Purcell, head of the Resource Policy Institute, a non-profit group.

Purcell likened the garbage crisis to the energy crisis of the 1970s. He believes Americans can become more efficient in their handling of garbage.

Champaign-Urbana News Gazette, May 7, 1987. Permission to reprint pending.

# Living next to a landfill

## Occasional 'musty' smells, worries about the possibility of toxic waste

By Maureen McKinney
Journal Staff

In the summertime, Dianne and David Bruno look out their patio window and see trees and a small, rolling hill.

But it's winter now and the trees have no shielding leaves. Dianne points to garbage trucks pulling into an access road behind her townhouse. "In the summer, when the trees are full you can't see the trucks. The hill blocks us from the landfill. It's private so it's really kind of nice," says Dianne who is pregnant with the couple's first child.

Occasionally, Diane says, during the warm months a "musty" smell will hang in the air.

The neighbor directly behind the Bruno townhouse at 4453 Bell Lane in Hanover Park is Mallard Lake Landfill. The Brunos, who are in their early 30s, say they were fully aware they would be living behind a dump before they moved into the house in July.

The small subdivision of two-unit townhouses situated just behind the landfill to the west is populated mainly by young families like the Brunos. Resting near the front doors of a few of the homes are signs announcing the birth of a new baby.

Nine months after their move, the Brunos say they believe they made the right choice.

"The only thing I worry about," says Dianne, "is that you hear about other landfills having toxic waste."

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SCHICK AVENUE divides the landfill from the Mallard Lake Estates subdivision. Unlike the townhouses across the street, these are hardly starter homes. Rather, they are spacious one acre estates on which 2,600- to 3,600-square-foot homes rest on streets with names like Mallard, Ring Neck, Pintail, Widgeon and Canvasback. The homes are in the $229,000 to $250,000 range. They too are in the shadow of the landfill.

Marilyn Menconi has lived in the subdivision for about a year. "The area has worked out very well for us," she says. "The people here are very nice."

Her husband liked the area which he had driven through because of his work. And the Menconis wanted lots of land.

"We wanted to find something with more land. The one-acre was at a very reasonable price," she says. She says there have been no problems other than Schick being dirty because of the truck traffic.

But she says she and her neighbors are looking forward to Mallard Lake "being closed so our homes will be worth what they are worth."

***

THE SUBDIVISIONS closest to Mallard Lake cropped up after the landfill was opened. The average age of the homes in the area is seven to nine years. The first loads of garbage from all across the country were dumped in 1975.

Now, as the county wrestles with the issues revolving around the need for another landfill or incinerator, residents and community leaders are rushing to mount Not in My Backyard campaigns.

Daily Journal, February 22, 1988. Permission to reprint pending.

# They want garbage

People of DuPage County, most of whom are extremely resistant to the idea of being encroached on by commercial or residential developments, roads, and of course, garbage, are finding that not everybody is so wary of change.

A group of residents from the southeastern part of the county, which has been targeted as a site for an incinerator, is struggling to persuade DuPage leaders to see its viewpoint that the area near Argonne National Laboratory is not an appropriate site for garbage incineration. But unlike many other NIMBY (Not in My Back Yard) groups, this one has done some homework and has ostensibly come up with an alternate site within Illinois.

Has anyone ever heard of Flora?

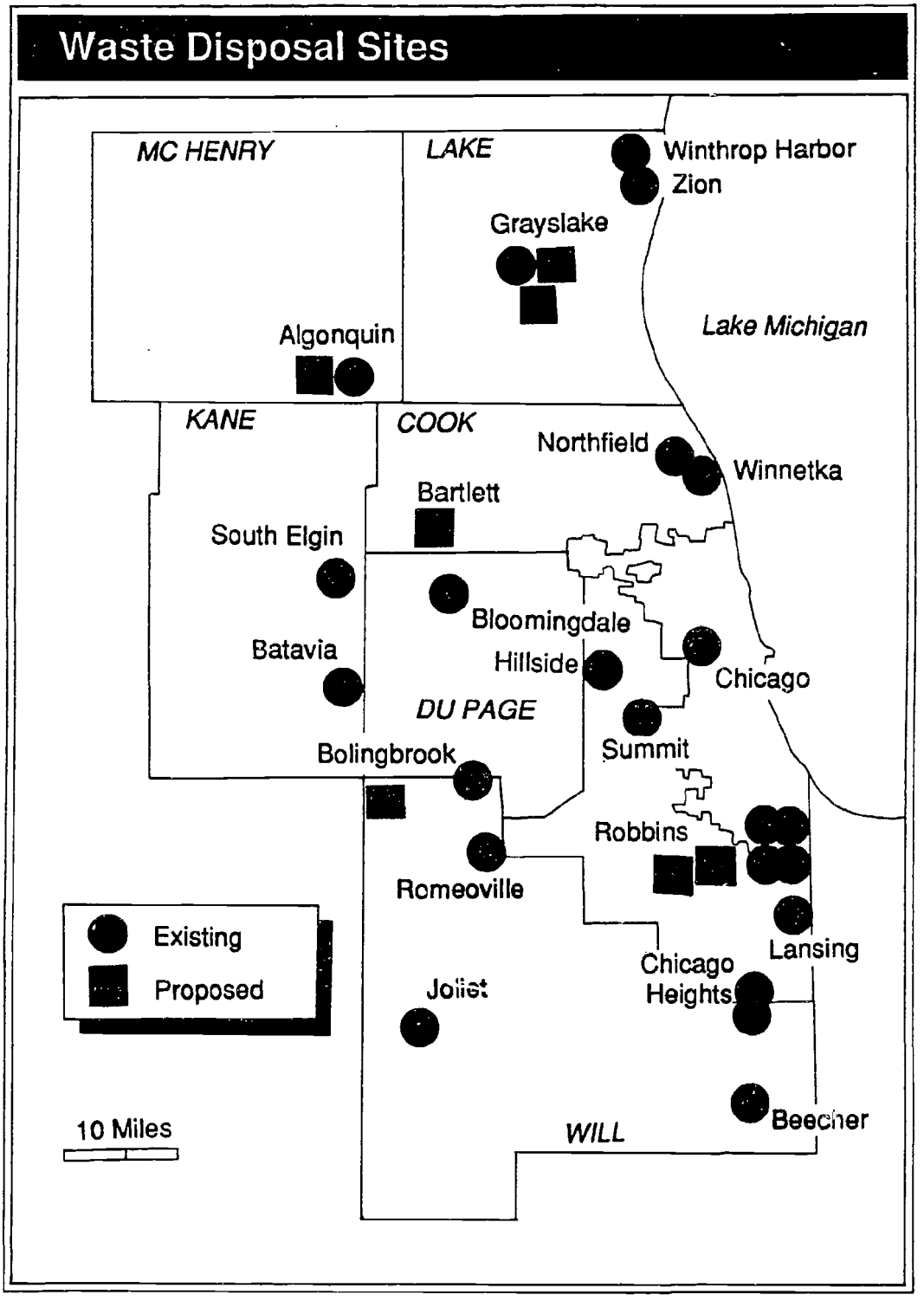
Flora is a community of approximately 5,000 people, about 110 miles down I-57. It's 50 miles east of St. Louis, and the biggest city in the area is Effingham, which boasts a population of a little more than 10,000.

It's a natural site for a garbage incinerator, the southeast DuPage residents say, one the economically depressed area would welcome, for it would bring jobs, revenue and financial incentives. Flora lies within Clay County, populated by about 15,000 people spread out over 600 square miles; DuPage's population, meanwhile, totals about 800,000, comparatively wedged in within its 332 square miles.

Should Flora residents remain receptive to helping DuPage County rid itself of ever increasing amounts of trash, and should denizens of this area be willing to pay more to transport it there than it would cost to dispose of it here, as most county officials believe is the case, this would be one phase of the garbage solution for which we have been searching.

We congratulate this particular NIMBY group for its desire and ability to propose and alternative to its back yard. Whether it's a viable one has yet to be determined, but we trust our county leaders will study it with the same diligence that the information was gathered and proposed and not automatically reject the plan because it was not offered from within the county's planning

Press Publications, July 6, 1988. Permission to reprint pending.



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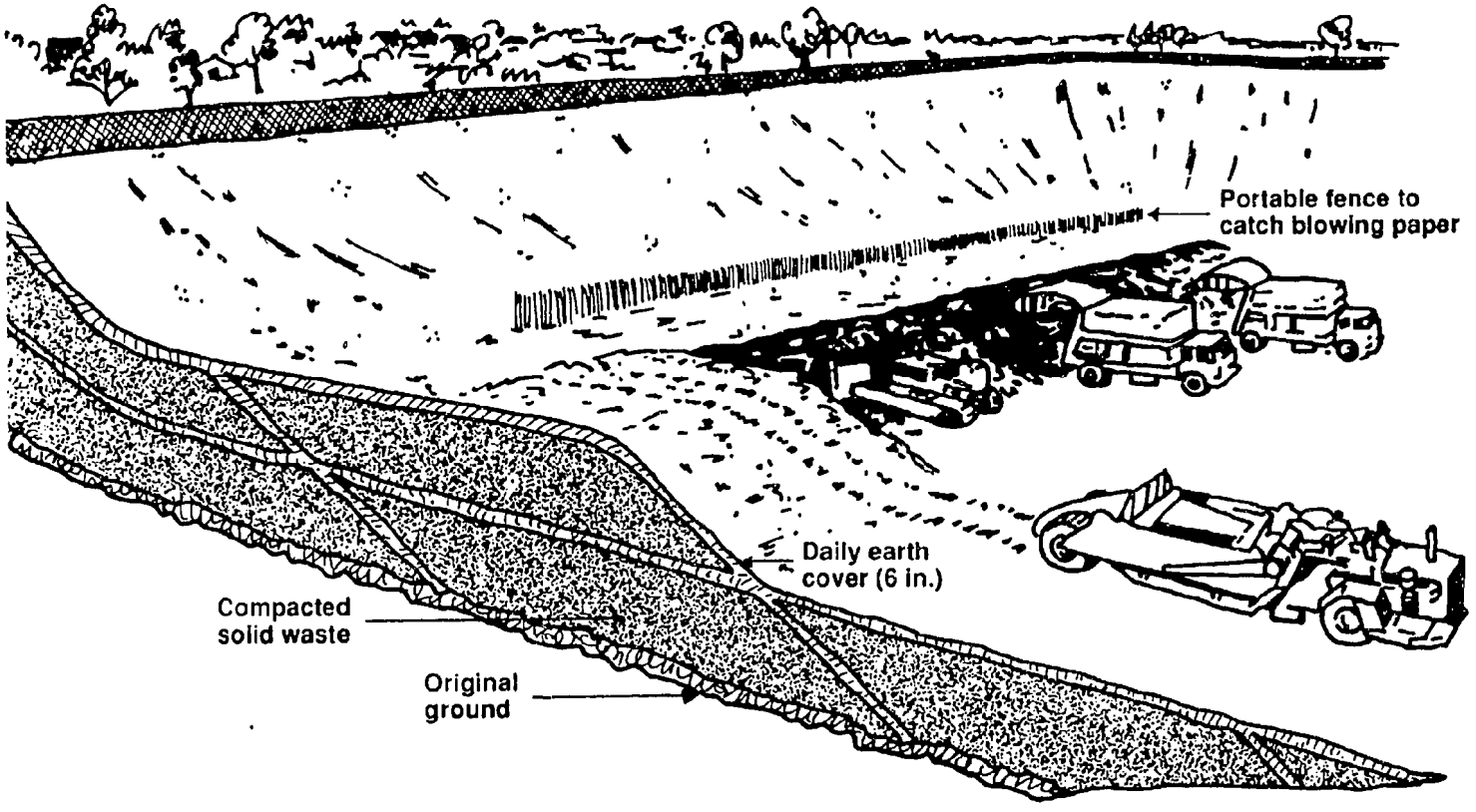
# SANITARY LANDFILL



# JUST THROW IT AWAY!

**Objective:**

To compare disposable items with reusable ones.

**Materials:**

disposable items
packaging from these items and/or advertisements for these items. (Students can collect these.)

**Grouping:**

We recommend that students work in small cooperative learning groups.

**Teacher:**

Below you will find an assortment of related mini-activities designed to gather **Knowledge** and promote **Thought**. The activities focus on common disposable items.

**Pitchable Plastics**

Read the paragraphs below to introduce students to the **Problem** and provide some background **Knowledge**.

Modern technology has given us inexpensive packaging, dinnerware, pens, shavers, diapers, and more. Best of all, after you've used these things, you just THROW THEM AWAY! Disposables are everywhere. There are even disposable contact lenses and cameras. Use it, throw it away, and buy another. Convenient, isn't it? OR IS IT?

According to one newspaper article in the *Chicago Tribune*, **each year** Americans throw away 45 billion paper cups; 21 billion plastic cups, containers, and bowls; 15 billion paper plates; 18 billion plastic lids; 16 billion disposable diapers; 1.6 billion pens; 348 million lighters. That adds up to 3 pounds to 5 pounds of disposable things each day for each person.

Disposables: According to researchers at the University of Arizona who study garbage, the average American family throws away 1,800 plastic items in a year.

Plastic, like all other materials that we just throw away, creates rather troublesome garbage problems. Plastic is not biodegradable (although it may be mixed with substances that are). Bacteria and molds, which break down substances like paper, food, and grass clippings, have little effect on plastics. Plastic cannot be digested by animals or plants. Weathering from sun and rain do not decompose plastics either. Weathering effects only break big pieces of plastic into smaller pieces of plastic. Bury a plastic soda bottle in your back yard today. Have your grandchildren dig it up in 100 years. It'll still look pretty much the same.

We must also point out that, contrary to what most people think, almost nothing is biodegraded in a modern sanitary landfill— not plastics, not metals, not glass, not paper, not food, not yard wastes. It all just sits there for years and years.

Then there's burning. Plastic, which is made from petroleum, can pollute the air with toxic chemicals when it is burned. And when some plastics such as polystyrene are made at the factory, air pollutants called CFCs may be produced. Have you ever dropped a polystyrene cup into a campfire or charcoal grill to watch it melt? Remember how it smells? Where does the polystyrene go? Everything has to go somewhere.

On a more positive note, many manufacturers of polystyrene items have reduced or eliminated the use of CFCs from their manufacturing processes because of concerns about ozone depletion.

*(Teacher note: for activities that provide an in-depth look at plastics and waste, see* Plastics in Perspective.

You will find an order form for this publication in Appendix C.)

Ask students to go back to the lists that they made while watching television advertisements or while shopping with their families (see **Shopper's World**). Have each group check its lists for items that are made to be thrown away after use (for example, plastic forks). Also check for items that are packaged in throw-away containers (e.g., liquid laundry detergent in a plastic bottle). Groups should report findings to the whole class.

Is there another version of the product that is reusable or comes in a refillable container? (This may require a research trip to the store or some good group brainstorming.)

How do the reusable and disposable versions compare? Which is better? Why? (Students ought to consider cost, availability, how well the product does its intended job, and, of course, long-term consequences. Everything has to go somewhere!)

### Diapers—A Disposable Dilemma

Have your students bring to class empty boxes from various brands of disposable diapers. The students also should find advertisements for disposable diapers, cloth diapers and diaper services.

Have student groups read the information on the disposable diaper boxes and in the ads for this product. Who wrote this information? What points of view does the diaper company have?

Show your students the newspaper ad on page 48. It appeared in the *Champaign-Urbana News Gazette* in September 1989. They should also examine other ads for diaper services that they have found. Who wrote these advertisements? What points of view do the diaper services have?

**Role-Playing:**

Tell students that they are about to become advertising executives. Have the whole class choose a single product for the advertising campaign. They can vote on items from the list they made earlier (or you may want to assign a single product).

Half of the groups should be assigned to create ads for the disposable item, the other half to design ads for a reusable version of the same product. Make posters, bulletin boards, "newspapers," banners, radio and TV ads, etc.

Arrange a visit to another classroom and allow your students to "campaign" for their product. Ask the students from the other class to vote for their choice after all the presentations are made. Ask the voters to write a paragraph listing the facts or values that convinced them to vote the way they did. (Teachers: this is a great communications activity for the students who are voting.)

After the votes are counted and collected, notify the voters that their local landfill just closed and they will have to figure out how to dispose of their garbage by themselves for at least the next year! (If you live in an area where there is not garbage service, you might tell them that a new law has been passed requiring that all garbage be disposed at a state-certified facility. The nearest such facility is 40 miles away.) Take another vote. Ask for verbal or written reasons from those students who changed their votes.

Back in your classroom, discuss the vote results with your students.

- What reasons did the voters give for choosing the winning product on the first vote?
- Did the voters change their minds after the announcement about the landfill closing? Why or why not?

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# JUST THROW THE WRAPPER AWAY

**Objective:**

To become aware of packaging materials for common household products.

**Materials:**

news article, "Recycling Made Easy: When You See Pink, Don't Throw It Out" (included)

**Grouping:**

Students may work as individuals or in groups for any of the activities that follow.

**Teacher:**

Below you will find an assortment of related mini-activities designed to gather **Knowledge** and promote **Thought**. These activities focus on product packaging. Use as many of these as you see fit.

**Product Packaging**

Ask your students to choose a specific type of product to study at the grocery store. Examples include salad dressings, fruit juices, soda, peanut butter, laundry detergents, eggs, milk, and yogurt.

Each student should note the various ways that the product is packaged and the various sizes of packaging offered. For example, milk is available in plastic and cardboard containers in pint, quart, half-gallon and gallon sizes. Laundry detergents are available in cardboard boxes and in plastic bottles in all sorts of sizes.

Have your students read the newspaper article on page 52, *"Recycling made easy:* When You See Pink, Don't Throw It Out." *(NOTE: A whole lot of information is available on the pros and cons of various types of packaging. You may want to have students do a bit of research to dig up some of this. See Appendix B for possible sources.)* Also have them complete the discussion questions below. You may have them write out their answers or discuss their answers in a group or with the whole class.

- Do you think one kind of packaging for your product is better than another? Why?
- What other factors besides packaging are important when making a decision on what product to buy? Why?
- If you had a choice, which packaging and size of the product would you buy? Why?

**Take-Home Wrappers—Bags (or sacks if you live downstate)**

Some grocery stores offer a choice between paper bags and plastic bags at the checkout counter. Most department stores offer only plastic bags. Help students devise a plan to survey the stores in their community. They might consider finding the following information:

- Of what materials are the bags made? Is there any recycled material in them?
- Are these bags recyclable? If so, is there a place in the community where they can be recycled?
- How many bags does the store give away in a week or month or year? How much is that in mass, volume, dollars?
- Does the store offer a choice of bags? If so, which do customers seem to prefer? Why?
- Are the bags reusable? If so, for what do people reuse them?

Various environmental groups and some grocery stores sell reusable tote bags that are usually made of canvas.

- Where in your community can they be purchased? What do they cost?
- Do stores report that people are using these bags? (Students may wish to interview persons who use these bags to find out about why the people made this choice and how it affects their shopping habits.)

## Fast-Food Wrappers

In the past, many fast-food restaurants sold their hamburgers in biodegradable *paper* wrappers and their drinks in waxed paper cups. Then, around the late 1970s, several fast-food restaurants began packaging their sandwiches in foam containers or foiled paper. Their drinks often come in special give-away plastic cups or squeeze bottles.

There is much debate about the impact of fast-food wrappers on landfills in specific and the environment in general. In fact, most of the major fast-food restaurants now publish and distribute environmental policy statements. (Encourage students to collect these when they eat out at fast-food restaurants and share them with the class.) Help students devise a plan to survey the fast-food restaurants in their community. The students might consider finding the following information:

- Of what materials are the food and drink wrappers made? Why were these materials chosen? Is there any recycled material in the wrappers?
- Are these wrappers recyclable? If so, is there a place in the community where they can be recycled?
- How many wrappers does the store give away in a week or month or year? How much is that in mass, volume, dollars?
- What meals (a sandwich, a side order, and a drink) require the most wrapping? Which meals require the least?
- Do people ever refuse to order something on the menu just because of how it was packaged?

# Recycling made easy: When you see pink, don't throw it out

By The News-Gazette

Starting today, shoppers at Jerry's IGA store, 312 W. Kirby Ave., C, will have a clear-cut choice on products that are--and are not-- environmentally safe and recyclable.

A system of using day-glo pink tags with blue symbols to mark products that are recyclable, have the least waste packaging and do not contain harmful chemicals was unveiled at a press conference this morning at the store.

Store manager Eric Auth said that the programs required neither price increases nor the rearranging of store shelves. The focus will be on whether shoppers will consider the environmental impact of the products they buy.

SIGNS AND HANDOUTS will inform customers about the comparison of products according to their environmental re-usefulness and safety.

John Thompson, director of the Central States Education Center, said he proposed in February the concept to Vic Buraglio, owner of Jerry's.

Between March and late last week, Central States and put together the program, identifying products that could be labeled for environmentally conscious shoppers.

Central States is a nonprofit organization that does public education and lobbying on behalf of environmental issues.

The model grocery store is a part of Central State's proposed model community program, in which less waste is generated and more waste is recycled. Thompson said the program was developed as a way small cities and communities could take control of their solid waste problems.

Thompson said he hopes the model community program can be expanded to include other grocery stores, copy shops, service stations, schools and churches.

Joe Schwartz of Central States said the labeling and product education programs at Jerry's on Kirby Avenue is an experiment in a "model grocery store."

"What we're hoping to do is start the model, expand the model and then make that the standard," said Schwartz.

ABOUT 400 OF THE store's 17,000 products are labeled, said Thompson. He said more of the products will be labeled as the experiment continues.

Schwartz said products in reusable or recyclable packaging that are sold in bulk will generally get the recyclable and least waste packaging stickers, while household products with no dangerous chemicals will get the "safer earth product" seal.

The all-time winner so far is the 64-ounce box of baking soda, which bears all three seals, he said.

Grocery stores are prisoners to the packaging developed by the product manufacturers, said Buraglio, who is also president of six other IGA stores in Illinois.

"Unfortunately, we're the last ones to handle the product," he said. "We don't have much to say to the producers about the packaging. Often they'll come to us and say, we're switching from one kind of packaging to another next week."

Buraglio said educating consumers on environmental issues is a matter of taking his personal beliefs into the marketplace.

"I don't think if a person wasn't committed to it personally, it would help their business," said Buraglio. "I don't think they'd do it right."

The Jerry's IGA stores in Champaign are noted for their "golden goat" machines, which take loads of aluminum cans and pay for them. Jerry's customers also use only paper bags and the bags are often printed with advertisements for the Champaign and Urbana curbside recycling programs.

Buraglio said his stores also recycle waste paper and office paper through the Community Recycling Center in Champaign.

The product labeling is being tried at the Kirby Avenue store first before it's considered for other stores, said Thompson.

The News Gazette, August 28, 1989. Used with permission.

# RECYCLING

**Objective:**

To be aware of everyday items that are recyclable.

**Materials:**

product packaging (Students may collect and supply.)

**Grouping:**

Students may work as individuals or in cooperative learning groups

**Teacher:**

The paragraphs below provide a minimum of background Knowledge about recyclable materials. If time and rescurces allow, we suggest that you encourage your students to learn more about the manufacture, use, and recycling of each of the materials listed below.

Not all of the disposables we consume need to be disposed of in a landfill. With a little effort (and maybe a little less convenience), many items we throw away can be reused over and over again.

**Aluminum**—This metal is commonly found in everyone's house. It's found in things thrown away every day, such as soda cans and aluminum foil. It's also found in window frames, storm doors, lawn furniture, and pots and pans.

In one day, Americans make 33 million pounds of aluminum, which is made from a rock called bauxite. Bauxite must first be mined from the land, and then treated at very hot temperatures to make aluminum. A lot of coal or oil (which also must be mined) is burned to turn bauxite into pure aluminum metal.

One way to burn much less coal or oil is to recycle aluminum metal found in cans. One estimate puts the waste of energy in not recycling an aluminum can as being equal to filling half the can with gasoline and then dumping it on the ground. In other words, one recycled can is worth the same energy as 6 ounces of gas.

How many aluminum cans do you or your family throw out in a week? How much energy did you toss in the trash?

Examine empty aluminum soda cans from home or from the lunchroom at school. Chances are, they will say "All Aluminum," "Pure Aluminum," "Please Recycle," or "Recycle" somewhere on the cans. Why?

**Glass**—No-deposit, no-return bottles and jars are very common. Glass is made from common materials such as sand that must be mined from the land. And a lot of energy (oil and coal again) must be burned to make the glass from sand. Glass is not biodegradable; it will still be around almost forever, even if it ends up in a landfill somewhere. However, like aluminum, glass can be recycled. When glass is recycled, it's broken into small pieces, melted, and shaped into new containers. It still takes coal or oil energy to provide the heat to melt the glass, but quite a bit less than that required to make glass from scratch.

Glass containers of some types can be *reused over and over again* before they are recycled. Perhaps the most common of these reusable glass containers is the returnable glass bottle for soda pop. This sort of packaging, once common for other liquids (milk, for example), is harder and harder to find in stores.

How many glass jars or bottles do you or your family throw out in a week?

**Paper**—Paper is made from trees. Even though paper is quite biodegradable, it typically does not degrade when put into a landfill. Think about all the trees that were cut down to make that paper. Think about the gasoline used by the men and women who used chain saws to cut down the trees, and about the gasoline needed to run the huge trucks that take the trees to the paper factory. Then there's the pollution that occurs when the factory makes paper.

If you recycle your paper garbage, you'll save trees.

What does recycled paper look like? Some newspapers and magazines are printed on recycled paper. A good number of greeting cards (like birthday cards) are printed on recycled paper. Many of our boxed foods, such as cereal, are packaged in recycled cardboard.

Go to the store and look for recycled paper products. Write down the statement or symbol on the product or its container which indicates that the item is indeed made of recycled paper. Write to companies that make products out of recycled paper and tell them how you feel about their products. You might also ask the company representatives for some reasons why they make their products out of recycled paper.

**Biomass**—Grass clippings, leaves, eggshells, coffee grounds, fruits and vegetables that have spoiled all make their way into the trash. Americans eat 170 million eggs each day and 400,000 bushels of bananas. That's a lot of biodegradable eggshells and peels! Almost all biodegradable items at home are recyclable as COMPOST.

Compost is a mixture of biodegradable items and soil. Gardeners have known for hundreds of years that compost is great for adding to their gardens. This natural fertilizer can be used instead of chemical fertilizers. And think of all that natural fertilizer being thrown out in your trash, only to end up in a landfill somewhere! Ask a neighbor or family member who gardens for some reasons why he/she does or doesn't have a compost pile.

Recently, the state of Illinois passed a law designed to keep large biomass items such as grass clippings, leaves, tree trunks and branches out of landfills. Other states have passed such legislation as well. Instead of just throwing biomass into landfills where it will not biodegrade, communities have had to devise plans to convert these items into compost. How do your school and community dispose of their solid biomass wastes?

## RECYCLING INCENTIVES

**Objective:**

To explore reasons why people do and do not recycle.

**Materials:**

newspaper article, "Pick your trash and bag $1,000" (included)

**Grouping:**

We recommend that students work in small cooperative learning groups.

**Teacher:**

**The Trash Man Cometh!**

Ask students to read the newspaper article on page 61, *"Pick your trash and bag $1,000,"* as an introduction to the *Problem* to provide some background *Knowledge*.

Ask the following of your students:

- If a "Trashman," such as the one in *The Register Star* article came to their community, would they or their families recycle?
- Under what conditions? (There's lots of potential for a math lesson here. What would be the odds of winning money in your community if a trashman selected one home per week for seven weeks? To answer this question, your class will need to learn roughly how many homes are in the community and what percentage of the households recycle.)

Suppose a "Trashman" paid money to schools that had no recyclable materials in their garbage? Would students be willing to recycle at school? Under what conditions?

The visits of "Trashman" in Rockford resulted in a few more households recycling, at least for a short while. Apparently, some people hoped that their garbage would be picked by the "Trashman." If they had not thrown out their newspapers or aluminum cans, they might have won $1,000. (This is an ECONOMIC point of view.)

Ask your students if they or their families save aluminum, newspapers, or other materials to sell to recycling firms. Ask those students who said yes to estimate how much money they earn by recycling. Ask them to describe to their classmates what they recycle and how the materials are prepared. How much time and effort does it take for them to recycle? Do they save money on their garbage pickup as well?

All too often, if we don't have to pay for something while we do it, we tend to assume it is free. Take throwing away trash. There are lots of places where we can throw things away for free, aren't there? Ask students to keep track of all the different places where they throw away trash over the course of a week or so. Are they ever asked to throw it away?

Ask the students to suppose they have gone to the mall and buy some tapes or CDs. Ask:

- If you unwrap the tapes or CDs at the mall and leave the trash behind, do you have to pay to throw it away?
- If you throw the wrappers out the car window on the way home, do you pay?
- If you throw the wrappers in the family trash can, do you pay?
- What does it cost to make solid waste go *away*?

Ask students to gather information about how much it costs to haul garbage to the local landfill or incinerator. What do their families pay? What do local businesses pay? What does the school pay? What do the various governmental agencies (parks, library, city hall, etc.) pay? How do garbage haulers set their rates? Have the rates changed in recent years?

In many communities, as landfills become full, garbage must be hauled farther and farther to make it go *away*. Greater hauling distances mean greater costs.

The cost of building a new landfill or incinerator is tremendous. Scientists must be paid to do studies to identify acceptable sites, hearings must be held, land must be purchased, safety and environmental precautions must be addressed, and so on. Everybody in a community pays these costs through higher taxes, special fees, or increased garbage hauling costs.

From an economic point of view, the money saved by a community in prolonging the life of a landfill can be a much more significant incentive to encourage recycling than money won by a few individuals who recycle. What would the cost be to your community to build a landfill or incinerator?

**Teacher:**

**Why Recycle Anything?**

You may wish to have different groups within the class perform some or all of the variations below.

**Role-Playing:**

Ask all your student to imagine that they live in the same neighborhood and that those sitting next to them are their next-door neighbors. There is a voluntary recycling program in their town: once a week a truck comes around to pick up newspapers, aluminum cans, bottles, and yard wastes (grass clippings, leaves, etc.) for recycling. Each homeowner simply needs to separate his or her garbage and to place the recyclables in four different bags near the curb the night before.

***Variation 1***

You value recycling, and you put out your recyclables by the curb every week. Your next-door neighbor refuses to recycle anything. Write him/her a letter to try to convince him/her to recycle. "Deliver" the letter to the person in the desk behind you.

Now, you are the neighbor who does not recycle. Read the letter you've just received from your neighbor, and write a reply. Tell your neighbor why you do not recycle.

***Variation 2***

Your neighbor steals your aluminum cans from your bag by the curb each week, and sells them for cash at the recycling center. You decide to bring up this topic at the next town meeting. Other students in your group can role-play as the mayor, the community recycling manager, and other persons from your community. The neighbor who steals your aluminum cans should also be played by a classmate.

*Variation 3*

Your town is running out of landfill space, and the price of garbage pickup is going to double next month because the haulers will now have to go to a landfill much farther away. Therefore, everyone's taxes will go up next month in order to pay for the extra garbage fees. But YOU recycle much of your garbage, and you feel a tax hike is unfair, because many of your neighbors don't recycle. Hold a town meeting where you suggest mandatory recycling be adopted by your town. Other students in your group can role-play as other members of the community, including some opponents of recycling.

***Variation 4***

Your neighborhood's garbage haulers will not accept any bags of garbage that contain aluminum cans, newspapers, or glass bottles. Your next-door neighbor won't separate his/her recyclables from the rest of his/her garbage, so the neighbor's garbage is piling up outside because the haulers won't take it. It's beginning to smell and you have tried asking your neighbor to cooperate and get rid of the garbage, but he/she won't. Therefore you decide to take your neighbor to "The People's Court." Ask for volunteers to play the role of judge, bailiff, and neighbor. You may also have lawyers played by other members of your group, and you may have witnesses for both sides.

**Taking Another Look:**

Should we only recycle because there's a chance for ECONOMIC gain, or are there other points of view to encourage recycling?

Students might explore the kinds of incentives people sometimes need to recycle. In Rockford, the monetary reward from the "Trashman" worked for some people for a short while. In some states and counties, recycling of certain materials is the law. Some people voluntarily recycle because they value a cleaner environment. Others do it because their friends and neighbors do. Even religious groups are preaching the value of preserving the earth's environment.

**Action:**

Students may want to develop a survey instrument to find out who recycles in their own community and why they do it and/or who does not recycle and what it would take to get them to do it. With this information, they can develop campaigns to encourage recycling in their community. (Don't forget, there are nine points of view that can be tapped as incentives for recycling, source reduction, and reuse!)

Other student actions might include:

1. Designing and implementing a plan to recycle one (or more) solid waste material(s) from home and/or school.

*(Teacher note: we wholeheartedly endorse school recycling projects! This is an activity that requires the time, efforts, and cooperation of many students and school personnel. Teachers and students who jump into such activities expecting great monetary returns on their investment of effort are often disappointed. The simple fact is that recycling will not likely bring your school or students a monetary windfall. We recommend that students contact local recycling firms to gather information about what materials are purchased, how materials must be prepared, and how much each type of material is worth. Realistic expectations will keep a recycling program running. Don't forget source reduction and reuse of materials around the school as well!)*

2. Learning about products manufactured from reused or recycled materials. Devise a plan of action to encourage your school and/or community groups to purchase these products.

3. Volunteering to assist with efforts at the local recycling center.

4. Forming a group to assist in the planning and implementation of "environmentally friendly" school or community events. (There are many ways to reduce, reuse, and recycle at school dances, sports events, and science fairs and at events sponsored by community organizations, church groups, and clubs. All it usually takes are a few well-informed people and a little "elbow grease." Further, everyone will enjoy the event!)

# Pick your trash and bag $1,000

By Chuck Sweeny
The Register Star

The Trashman cometh - in a yellow and red polka-dot garbage truck - to a curbside near you.

Oh, yes . . . he'll be dressed as a bum, accompanied by his faithful, accountant companion, Jim, who wears a three-piece suit. The trashmobile will blast out a trash rap tune on its loudspeaker.

And if yours is the lucky garbage confiscated by the pair, you could win $1,000!

What's more, this trashy game could go on forever!

No, it's not a scene from a Second City comedy routine; it's real life, and it's happening in Rockford, starting May 19.

That's when Todd "Trashman" Cratty and CPA Jim Millikin begin prowling high streets and back alleys in search of garbage so perfect it merits a cash reward in the city's Cash for Trash game.

"Jim and I will go out each week in our trashmobile, and promptly at 5:55 a.m. take the garbage from an address selected randomly by computer," Trashman Cratty said Monday.

The garbage will be sifted under Millikin's watchful eye, and if he certifies it pure, the winner will be announced at the Monday night City Council meeting. If Millikin deems the garbage ineligible, the next week's prize is $2,000, and $1,000 is added for each winnerless week.

To qualify to win, trash doesn't have to contain "right stuff" like Saks Fifth Avenue labels or empty caviar jars.

It just can't have any "wrong stuff" - aluminum cans or newsprint.

Trash bags or garbage cans should be labeled by marker pen or paint so Millikin and the Trashman can certify the refuse belongs to the correct household.

Any homeowner who receives a water bill and is a city resident is automatically included in the computer list. Renters in buildings of up to four families also may register by sending a post card to the city's Public Works Department, 425 E. State St.

The city's offbeat game, believed first in the nation, is supposed to do what ecological altruism didn't - motivate people to separate aluminum cans and newsprint from their trash. About 55,000 households pay $56 a year to have their trash collected under city contract. Each family generates nearly a ton of trash, which must be buried in the rapidly filling Pagel Pit landfill.

The city's reasoning is simple. If more trash is recycled, less has to be dumped in the landfill. The city could save up to $70,000 a year in dumping fees if 5,000 tons of newsprint are recycled, and the six-to eight year remaining life of current landfills could be lengthened.

And, "Separation can help to make future incineration of garbage more practical," said Jack Cratty, Trashman's dad and the Rockford advertising man who dreamed up the game.

Incineration can reduce by 90 percent the amount of combustible solid waste that must be dumped in a landfill. But in most incineration systems, metals, plastics, glass and newsprint must be removed first.

"If separation can be encouraged as a voluntary act by residents at curbside, it is a far less expensive approach than separation at the site of the incinerator," Cratty said.

But even in a "mass burn" incinerator where nothing is recycled, problems develop when newsprint and aluminum are burned, said Tom Tullock of Rockford's Public Works Department.

"Aluminum raises havoc, because it melts at 1,100 degrees. The incinerator burns at 1,800 degrees, so the aluminum melts into the workings. And big batches of newsprint cause flashes of high heat. Besides it's more valuable to recycle those things," Tullock said.

Recycled newsprint fetches about $20 a ton, and aluminum brings about 1 cent a pound, he said.

The city has a newsprint recycling program, but participation has dwindled to about 400 tons a year.

"We'd like to get it up to 3,000 to 5,000 tons a year," said Gary Marzorati, an official of Winnebago Reclamation Service, Inc., which owns Pagel Pit.

Money earned from recycling will be used to sustain the Cash for Trash winnings fund so the game can continue indefinitely.

As it is, the games is a seven-week pilot project. If not enough people participate, the game will end, Trashman warned.

"Aluminum cans should be bagged separately, and newspapers should be put in a grocery bag and tied lengthways and crossways with twine," Trashman said.

But people can still play Cash for Trash and donate aluminum cans and newspapers to charity drives or recycle them on their own, he said.

No tax money will be used, Mayor John McNamara said. The $90,000 being spent to promote the game comes from a dumping fee charged by the city to Winnebago Reclamation and Laidlaw Waste Systems Inc., which collect the garbage.

The Register Star. Used with permission.

# APPENDIX A

## THOUGHT-PROMOTING TECHNIQUES

### I. Concept Mapping

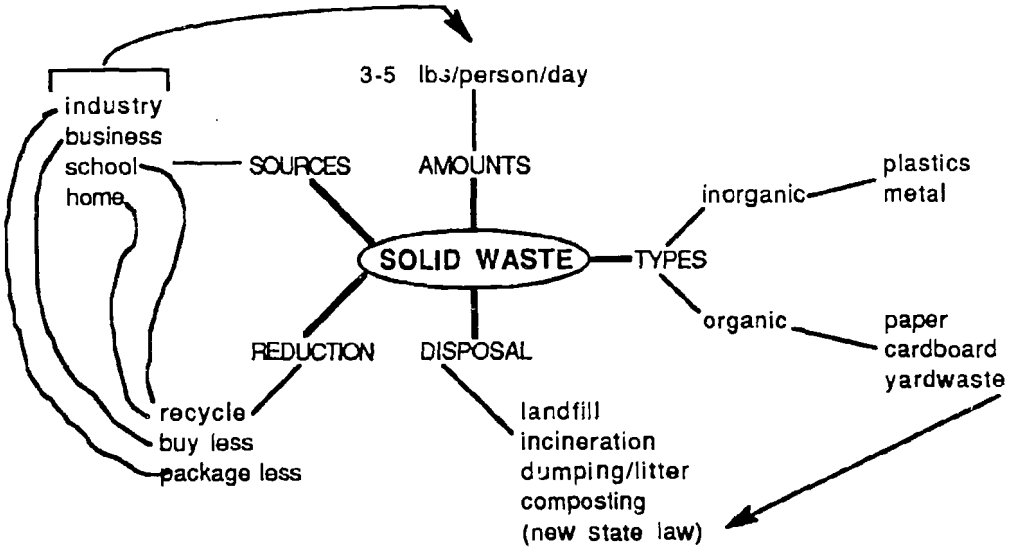
As you and your students begin to gather information about a complex social issue, such as solid waste management, you may find that you soon become overwhelmed with information and ideas. It is easy to become buried in "mountains" of data that are higher and more entangled than any landfill. One way to untangle knots of data (or at least to appreciate just how entangled they are) is to develop a "pictorial" way to look at information and relationships between information. We call these "pictures" concept or semantic maps.

Below you will find an example of a very simple map showing one person's interpretation of some of the relationships between some of the "big ideas" of solid waste management.

Note the inclusion of general categories (SOURCES, DISPOSAL, AMOUNTS) and specific items that the creator of this map sees as fitting into the categories (industry, business, school, home).

Note also the lines and arrows connecting various categories and ideas. (The line from industry/ business/school/home to 3-5 lbs/person/day stands for information. It is this much trash that is created as a result of one person's activities at home, in school or work, and in purchasing goods and services.) Think of a concept map as a free-form outline!

**Solid Waste Concept Map**




Consider having individual students or cooperative learning groups draw concept maps to show their understanding of complex social issues both at the beginning of a study and as the study nears its end. You might want students to share verbal/written explanations of their maps with fellow classmates.

## II. Valuing Tools (individual/group/class)

> We probably create the beginnings of values in situations with which we have become involved. Much as the painter is engaged in the continuing process of creation, so when we speak or when we remain silent, when we act or decline to act, we too may be initiating the creation of values. As we are confronted with our choices, as we ponder them, as we incorporate meanings into our lives, we are adding zest to living.
>
> (Louis E. Raths, 1957)

### A) Comparitive Ranking Scale:

The Comparative Ranking Scale is designed to cause respondents to rank ideas, points of view, or possible actions as they compare to each other. (This is unlike the Likert Scale, which allows the respondent to rate several or all of the statements in the same way ... all "Strongly Agree," for example.)

Note that the scale itself allows only the ranking. This may tell *what* respondents prefer, but it does not explain *why*! Respondents should be encouraged to explain how they arrived at their ranking. Remember points of view!!!

## Action Plans for Solid Waste Management in Anytown, IL.

Our landfill is filling up. Current estimates are that there will no longer be room for any more trash in the year 1992. Unless solid waste production can be reduced by a significant amount, we will have to begin shipping our waste to the Big Muddy Landfill in Garbagedale. Your trash hauling costs will increase by 50 percent to 75 percent.

The city council of Anytown is discussing the following five options for reducing the amount of solid waste sent to our community's landfill. As a concerned citizen, you can express your preference for an action plan to handle these wastes by completing this survey.

Rank from most preferred (5) to least preferred (1) the following action plans for reducing solid wastes in our community:

___ voluntary curbside recycling of plastic and newspapers
___ build a trash-sorting station to remove recyclables from the waste stream
___ ban on the sale of certain products in nonrecyclable packaging
___ deposits on all glass and aluminum beverage containers
___ mandatory curbside recycling of plastics and newspapers

Please use the space below to explain your ranking. What do you like and/or dislike about each of the proposed action plans?

Remember also that knowledge is one of the four key components of an S/T/S study. To get an informed ranking using a Comparative Ranking Scale requires that respondents be "educated." They ought to have some base of information about each of the options. What will it cost? Who supports it? How much work will be involved for the individual and others? What are the projected benefits or difficulties over the long term? (In other words, points of view, circles of concern, and time!)

**B) Likert Scale:**

You are probably familiar with this valuing tool although you may never have heard it referred to by the name of its creator. A Likert Scale is, very simply, any survey questionnaire that asks respondents to evaluate a statement by choosing from among a limited number of responses (either evaluative words or ranking numbers).

Following is an example of the beginnings of a Likert Scale survey on mandatory recycling. Note that the statements to be evaluated correspond to three of the nine points of view used in weighing decisions (see words in parentheses). Also note that "Maybe" is not among the choices for evaluative responses. Giving respondants a choice that allows the ready option of making no decision is not conducive to promoting thought. Rather, space is provided for comments so that respondents can qualify or expand upon their decisions if they feel they need to do so.

With your assistance, your students can construct Likert Scales and carry out surveys of appropriate populations. For example, a more complete version of the survey below might be used to answer the questions, "What do eighth graders at Jefferson Middle School think of mandatory recycling in the classroom and cafeteria?" or "What do homeowners in Berwyn, Illinois, think about mandatory recycling of household wastes?"

# Mandatory Recycling—A Point-of-View Survey

Many environmental groups, community leaders, politicians and other concerned citizens believe that the recycling of_____ should be made mandatory in the community of _____.

Below you will find statements that these groups and leaders have made to argue for mandatory recycling. Please read each of the statements on the left and place an "X" in the column on the right that best fits your response. Please use the space provided below each of the statements if you wish to comment about your choice. Space is provided at the end of the survey if you wish to make comments about the idea of mandatory recycling.

| | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|---|---|---|---|
| 1 ) Recycling should be mandatory because landfills are ugly. (aesthetic)<br><br>COMMENTS: | | | | |
| 2 ) Recycling should be mandatory because the cost of garbage service is rising. (economic)<br><br>COMMENTS: | | | | |
| 3 ) Recycling should be mandatory because a law will ensure that everyone reduces waste production. (legal)<br><br>COMMENTS: | | | | |

C) **Osgood Semantic Differential Scale:**
This scale is designed to allow respondents to develop a description of a person, place, object, or action by choosing between pairs of subjective words with opposite meanings. The ranking scale below might be used as a starting point for a class discussion of the environmental quality of the class' own school yard.

## School Yard Semantic Differential Scale

Tour the school yard keeping eyes, ears, and nose open for sensations that are common to this environment. Use the scale below to rate your school yard environment by circling the number that best expresses your evaluation.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Happy | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Sad |
| Clean | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Dirty |
| Natural | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Artificial |
| Pretty | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Ugly |
| Fun | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Boring |
| Wild | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Tame |

**D) Inventory:**

An inventory is, simply, a list of ideas taken from the stc ahouse of one or many minds. Making an inventory list can be used as a brainstorming activity. It may also be used, as in the example below, to organize information gathered from research activities.

## Recycling Inventory

Read the following articles about yard waste recycling: Cook (1989), Buursma (1990), and Karwath (1990). (See References, p. 77, for further information.)

Divide a sheet of paper in half by drawing a line lengthwise. On one side, write all of the things people say are good about yard waste recycling programs. On the other side, write all the things that people say are bad about yard waste recycling programs. Include your sources.

| Good | Bad |
|---|---|
| could save farmers money (Cook) | mass compost sites may be unsafe (Karwath) |
| save landfill space | need storage space—NIMBY (Karwath) |
| clippings can be good fertilizer (Karwath) | |
| can make money selling composted materials (Buursma) | |
| can save communities' money (Buursma) | |

**E) Allocation Exercise:**

Allocation exercises allow students to represent ideas, intentions, or actions in the form of a picture. The picture is typically a pie chart. (There's math in this exercise, too!)

The sample activity supplied below is a pictorial pledge to do something in the future. This allocation activity could be complemented quite nicely with another pie chart made from data collected when the student actually takes action. An appropriate measure might be amount (by mass or volume) of materials recycled over a nine-week period. (In the case of an action to not purchase something, like fast food packaged in throw away containers, you'll need to help students devise good estimating techniques for determining how much solid waste they did not generate by their action.)

## The Personal Commitment Pie

Assume that the circle below represents all of your actions to reduce the amount of solid waste you produce.

List under "The Slices" all the actions you are willing to take. Cut the pie into fractions. A fraction should represent the percentage of your total action that you are willing to devote to an individual action. Be prepared to explain your choices.

The Slices

Recycle Al cans

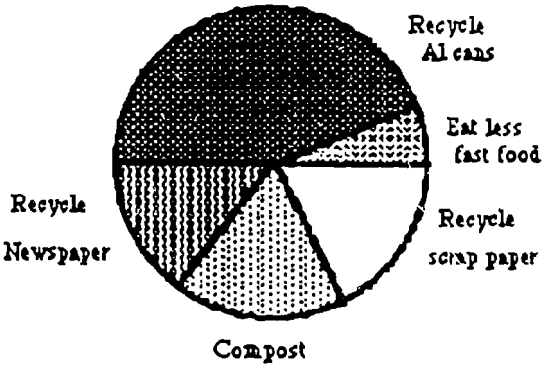
Recycle scrap paper at school

Recycle newspaper at home

Compost yard waste at home

Eat less fast food

Personal Action Pie




Explanation of my Action Plan:

F) **Projection Exercise:**
Projection exercises allow students to speculate and make predictions about life in the future—their future. While projecting to the "seventh generation" is a difficult concept to grasp for middle-grade children (and most of us adults, too), they can quite readily imagine a future time 5, 10, or even 20 years beyond today.

In essence, all science fiction novels are projection exercises. Surely there are science fiction stories appropriate to middle-graders that focus on environmental themes. (At this writing, we don't know of any to recommend. We'll bet you or your students do! Why not share these with us?)

## Projections in Waste Management—The Year 2000

You have now completed gathering a vast amount of information about managing solid waste in the year 1990. Imagine that 10 years have gone by and that your are now a well-informed, successful young adult. Think of what your life might be like. Especially think about ways in which you will have to manage the trash you produce as you go about your daily life from home to workplace to recreation to dining out, etc.

G) **Definition Exercise:**
Too often, we ask students to memorize textbook definitions of a set of scientific vocabulary words. Students dutifully commit these to memory—at least for the test that follows. Though it is a much more time-consuming task, we suggest that students be offered the opportunity to define at least some words or terms based on their own experiences and understandings. This sort of exercise is particularly of value as a group "brainstorming" activity and works best for words or terms with a subjective quality. That is to say, words or terms for which there is no one "right" definition (though there may be several accepted definitions or even a legal definition). Some samples are offered below.

## Definitions

As a group, develop a definition for the terms:

*Environmentally responsible lifestyle*

*Quality of life*

*Safe for the Environment*

*Green Consumer*

*Garbage*

*Environmentalist*

*Organic*

H) **Siskel & Ebert Exercise:** This sort of exercise, also known as a critique, allows a pair or small group of students to read the same book or news article, watch the same movie or TV show, or listen to the same song and compare and contrast their analysis of a particular work of the popular media. Quite a number of books and magazines available at your local bookseller (and your local library as well) focus on environmental themes. Further, environmental specials frequently appear on television—particularly PBS and the Discover Channel—but don't rule out the environmentally oriented action shows and cartoons on network and cable TV. You may also want to check with the manager of your local video rental store to find environmentally oriented movie selections. Many artists in the music industry have begun to perform songs with an environmental message. Your students probably know who these performers are. You might also consider newspaper editorial cartoons and the comic strip page as a source for items with a message that may be subject to critique.

## At The Bookstore —

As a pair, read *The Lorax* by Dr. Seuss. Discuss your reactions with each other and then report your evaluation to the class. You may:

- agree with each other from the same points of view
  (two thumbs up or two thumbs down)

- agree with each other from different points of view
  (two thumbs up or two thumbs down)

- disagree from the same points of view
  (one thumb up and one down)

- disagree from different points of view
  (one thumb up and one down)

# APPENDIX B

## *ACTIONS SPEAK!* REFERENCE LIST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# APPENDIX C

## SOLID WASTE CURRICULUM GUIDES ORDER FORMS

### *The Land We Depend On*
Order Blank

Please send me a copy of *The Land We Depend On*

Name_____

School/Agency_____

Address_____

Grade or Subject Taught_____

Please note that *The Land We Depend On* is available as long as supplies last. Orders will be filled on a first-come, first-served basis. Send this coupon to:
Gloria Ferguson, IEPA, 2200 Churchill Road, Springfield, IL 62794-9276.

### *Plastics in Perspective*
Order Blank

Please send me a copy of *Plastics in Perspective*

Name_____

School/Agency_____

Address_____

Grade or Subject Taught_____

Please note that Plastics in Perspective is available as long as supplies last.
Orders will be filled on a first-come, first-served basis. Send this coupon to:
Illinois Department of Energy and Natural Resources, Information Clearinghouse,
325 W. Adams Street, Room 300, Springfield, Illinois 62704-1892

# SOLID WASTE CURRICULUM GUIDES
# ORDER FORMS

## *Solid Waste: From Problems to Solutions, A Teacher's Handbook*
Order Blank

Please send me a copy of *Solid Waste: From Problems to Solution, A Teacher's Handbook*

Name_____

School/Agency_____

Address_____

Grade or Subject Taught_____

Please note that *Solid Waste: From Problems to Solutions, A Teacher's Handbook* is available as long as supplies last. Orders will be filled on a first-come, first-served basis. Send this coupon to:
Illinois Department of Energy and Natural Resources, Information Clearinghouse,
325 W. Adams Street, Roorn 300, Springfield, Illinois 62704-1892

## *Solid Waste Video Guide*
Order Blank

Please send me a copy of *Solid Waste Video Guide*

Name_____

School/Agency_____

Address_____

Grade or Subject Taught_____

Please note that *Solid Waste Video Guide* is available as long as supplies last. Orders will be filled on a first-come, first-served basis. Send this coupon to:
Illinois Department of Energy and Natural Resources, Information Clearinghouse,
325 W. Adams Street, Room 300, Springfield, Illinois 62704-1892.

# APPENDIX D

## AN OPPORTUNITY FOR TEACHER ACTION
## EVALUATION FORM

Now that you and your students have completed the your exploration of solid waste issues, we would appreciate your comments and suggestions as to how to improve Actions Speak! Also, if you or your students develop activities or discover resources appropriate for sharing, please contact the authors in care of the address given at the bottom of the evaluation.

### Evaluation

Your comments can help us to improve the quality of our educational materials. Please fill out and return this form. Thank you!

1. Title of curriculum unit evaluated _____

2. User's name _____

3. Work Address _____

_____ area code and phone (_____) _____

4. Materials were used with: Grade Level _____

other: _____

5. In which areas of study were you able to use these materials? science_____social studies _____ language arts_____other_____

6. Number of students who used the materials _____

7. Would you use this material again?_____ _____

8. Did you encounter any problems using these materials? Please comment _____

9. Do you have any suggestions for additions to this unit? Please comment _____

10. How did you find out about these materials?_____

11. Other comments _____

Please return to: Office of Recycling and Waste Reduction, School Education Unit, Illinois Department of Energy and Natural Resources, 325 W. Adams Street, Room 300, Springfield, Illinois 62704-1892