

## PERSPECTIVE

## Speaking of Solid Waste

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Through my affiliation with NAEP, I was contacted via e-mail by a student, asking to interview me for a speech she was preparing. The student is enrolled in the Computer Information Systems program at a Community College. For her Speech class (you remember your undergraduate speech class) she chose to make a persuasive speech on "Practicing Intelligent Waste Management". What follows are her questions and my replies.

*Question: What is your opinion of our waste management dilemma?*

The disposal capacity dilemma of the 70's and 80's has been transformed to a public policy and economic dilemma in the 90's and beyond. Modern, well-run landfills represent a much smaller risk to the environment than the dumps they replaced, and the state of regulation of these landfills should help reduce the likelihood of future problems. Today's dilemma for some communities is whether or not waste from outside their area, even outside the state, should be disposed of in the large landfills that have been developed. For those communities without a landfill, the dilemmas include the question of where to send their waste; the challenges of siting transfer or transport facilities in their own communities, if they are needed; and how much the cost of transportation to a remote disposal site will be, compared to siting and developing a landfill in their community.

*Question: What can people do in their everyday lives to make a difference?*

Being responsible recyclers and informed consumers are the two ways that people can make a real difference. If your community has a recycling program, use it. Know what materials are acceptable and try to avoid putting unacceptable materials in the recycling bin. Contamination is one issue that can significantly effect the value of materials being recycled, and control of con-

tamination is directly in the hands of the people putting the items in the bin.

An informed consumer will purchase items so that there is less waste from packaging, or the packaging and the product are recyclable, and the quantity purchased will not spoil or go bad before it is used. Many of these choices simply make you a smart shopper, and in the process they will contribute to the recycling effort

*Question: What does the future hold, in relation to our waste management?*

Large regional landfills will probably be the way we dispose of waste for some time to come. Recycling programs will continue, but with a watchful eye on the markets for the materials collected, so that the recycling programs can be assured that they will be successful in selling the raw materials they produce.

There is some interest in changing landfill technology at the present time. The current way of doing things is called a "dry tomb" landfill. Basically, waste is packed in tight and water is kept out. This keeps the generation of gas and leachate (the liquid that results from rain seeping through a landfill) at a minimum, which provides some protection to the environment. The disadvantage of a dry tomb is that the waste takes a very long time, decades, perhaps even a hundred years or more, to decompose.

Some experiments are now being done with a new approach, called the bioreactor. This technology seeks to manage the amount of moisture and air going into the landfill, capture the gas coming out, and speed the process of decomposition. This could enable landfill sites to be reclaimed and reused, instead of having to site new landfills.

*Question: What are some of the city and state costs of waste management? Ways of reducing these costs?*

Collection is, and will remain one of the biggest costs of waste management. Improvements in collection vehicle technology and competitive pressures in the marketplace for providing collection services will be the forces that keep these costs in check. The same is true for transport of

waste to remote disposal sites, be it by truck, rail, or barge.

Disposal costs will vary from place to place, depending on how much disposal capacity is available in the region. As with collection services, the competitive market will be one of the means to reduce costs.

For governments that operate their own collection and disposal systems, the quest for increased efficiency in operations is much the same as in the private sector. Operational and personnel costs are a large component of any solid waste system cost, and cost reduction through improved efficiency is a significant issue.

If a government operates its own disposal facilities, vigilance in assuring environmental compliance can help reduce the long-term liabilities, and therefore long-term costs of operating those facilities. Modern facilities have to be monitored and cared for, for up to thirty years after they are closed. Sound operations today can reduce tomorrow's monitoring or cleanup costs.

*Question: What are some of the environmental hazards of waste management (e.g., pollution)?*

The biggest hazard from waste management is one that people typically don't think about or appreciate. That is the risk of injury or illness to the solid waste collection personnel. Recent work done at the University of Miami has shown that solid waste and recycling workers have much higher injury rates than previously thought, and constitute one of the highest hazard occupations identified. People need to be aware of that when they try to jam a hundred pounds of junk in one garbage can, or throw a container of pesticide or solvent in the trash.

The landfills that are designed and operated in compliance with today's regulatory requirements probably represent less of an environmental hazard than most people would think. They have liner systems to capture and dispose of leachate, rather than letting it contaminate groundwater. They have systems to collect and manage landfill gas. They have groundwater moni-

toring networks to assure that if there are any problems they can be identified and managed quickly. Today's landfills are designed to be capped and properly closed, and regulations now require that landfills closed today have to be monitored for a minimum of thirty years after closure, in the same way they are monitored when they are operating. Operators of landfills must now show they have the financial assets to properly operate, close and care for the landfill.

Two of the environmental risks from waste management are probably older landfills, and illegal disposal. Landfills that were closed in the 60's and 70's may not have had the same level of controls as today. While it is not the case for all sites, some of the older landfills are essentially "orphan" sites, with no site management or monitoring to determine if problems exist, and their locations have been forgotten. In these cases, the lack of information may be hiding potential problems.

Illegal and improper disposal may be one of the bigger risks. Some people just don't realize the impact of their actions, and may dispose of wastes like used oil improperly. But, there are people out there willing to jeopardize the health and safety of others for their own economic gain. Whether it's construction and demolition debris in the woods, or chemicals down the sewer or the storm drain, there are people, criminals actually, who will damage the environment for a buck. And as the costs of proper disposal increase, the incentive for people of a criminal nature to exploit the system for their own gain can increase. The challenge is that these are the people who operate outside the system. They get no permits, do no monitoring, file no reports. By the time their activities are discovered, the damage has probably been done.

*Question: How quickly are landfills reaching their maximum capacity?*

Not as quickly as most people would suspect. In the 1980's, there was a perceived "crisis" in solid waste, with a fear that we were running out of capacity for disposal. This was due in part to a misunderstanding of the numbers. At that time, quite a few smaller community landfills

(dumps, actually) were closing due to new regulatory requirements. These small landfills were being replaced by fewer, but much larger facilities. One regional site might replace ten small sites, and provide much more capacity, but the perception developed that since ten sites were closing, a capacity crisis was developing.

Depending upon the part of the country you consider, it could be argued that a glut of disposal capacity exists. Some of these large sites have decades or more of capacity available, and they are seeking waste to fill that capacity. This has led to some developments recently concerning the long distance transport of waste, from the Northeast to the Midwest or Mid-Atlantic States, or from parts of the West Coast to the desert Southwest. One state has even proposed a moratorium on new landfills, because there is a concern that too much capacity has already been approved, and will attract out of state waste.

While there may be some shortages of disposal capacity on a local basis, it does not appear that the existing capacity for landfill disposal throughout the country will be exhausted any time soon.

*Question: How often are waste-to-energy facilities used?*

Waste-to-energy has been pursued as an option in several areas of the country. The objective of waste-to-energy facilities is to reduce the dependence on landfill, or extend the life of a landfill, by reducing the volume of waste through combustion. The higher cost of combusting waste in a waste-to-energy facility is offset in part by the conservation of landfill capacity. Energy recovery is an additional benefit. In Florida, the state I am most familiar with, there is a significant amount of waste-to-energy capacity. The State goal for waste management is based on "one-thirds". Recycle one-third, combust one-third, and landfill one-third. Florida has the largest waste-to-energy capacity of any of the states, based in part on the goal of reducing the dependence upon landfill in a state with high water tables and drinking water systems dependent upon groundwater.

It is unlikely than many new waste-to-energy facilities will be built in the United

States in the near future, for several reasons. The amount of landfill capacity available and the cost of disposal will make new waste-to-energy facilities less attractive economically. In the early 1990's, changes in the way communities can manage the waste generated within their borders, a concept known as "flow control", have made it more difficult to finance the capital expenditure necessary to build new waste-to-energy facilities. The risks and obstacles associated with trying to build a new waste-to-energy facility are so great that new ones probably won't be built. But many of the currently operating units will likely continue to run for their useful life.

*Question: How should people dispose of their household hazardous waste?*

The first thing people should do is try to produce as little household hazardous waste as possible. This means buying only enough of a chemical as necessary to do the job, using up the chemicals they buy, or finding someone else who may be able to use any leftover materials.

Some of the most common household hazardous waste components can be recycled. Used oil and automotive batteries have some of the highest recycling rates for any wastes produced, and many auto parts stores and gas stations may take these items.

Leftover latex (water-based) paint can be dried up and disposed of in the regular trash. If a lot of paint is left in the can, adding sand, soil or kitty litter can help dry it up.

Read the labels on other items carefully. Some things may be disposed of in a sewer system, if they are diluted with water. The label may tell you if this is an option. If the label says it can't be disposed of in the regular trash, contact your local government, either city hall or the fire department, to see if there are any programs in your area to take the household hazardous materials. Unfortunately these programs are not available everywhere.

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