

# Solid Waste Management and Recycling

## GLOSSARY

### Composting

*A process by which organic materials, such as leaves, grass clippings, and food waste, slowly decay and convert to humus, organic matter that provides nutrients for plants and increases the soil's ability to retain water.*

### Half-life

*In physics, the time required for half the mass of a radioactive chemical to decay.*

### Household hazardous waste (HHW)

*Material used in or on homes that has the potential to directly or indirectly affect human health and the environment; includes flammable, corrosive, reactive, or toxic substances; e.g., antifreeze and oil-based paints.*

### Pollution prevention

*Eliminating/minimizing waste generation (at the source, if practicable, environmentally acceptable, and economically feasible) or engaging in environmentally sound on- and off-site recycling.*

### Solid waste

*Solid refuse material; e.g., garbage, yard clippings, street cleaning refuse, municipal and industrial sludge, commercial and industrial waste, animal waste.*

## BACKGROUND

Solid waste includes garbage, yard clippings, street-cleaning refuse, municipal and industrial sludge, solid commercial and industrial waste, and animal waste. National figures indicate that for each person, an average of 4.3 pounds of solid waste is generated daily. For Michigan, this translates to approximately 20,000 tons a day or 7.1 million tons a year. The U.S. Environmental Protection Agency projects that nationally, municipal solid waste alone will increase by 7 percent by 2000 and by 18 percent by 2010. Americans are generating more solid waste each year.

Industry experts believe that Michigan solid waste generation rates have declined; in fact, some counties estimate that as much as 30 percent of solid waste generated in their county is being diverted from disposal. Unfortunately, there are no data that make it possible to compare Michigan waste generation rates today with that of years past. There also are no data that indicate the percentage of the waste stream that is recycled, composted, incinerated, or landfilled. The only statistics available are on the amount of waste that is landfilled in the state, and the law requiring that these data be collected was passed only recently.

Over the past five years, the enactment of several significant laws has considerably reduced the amount of waste that Michigan sends to landfills. For example,

- yard waste no longer may be deposited in landfills; it now typically is sent to private contractors for composting or processing;
- tires may not be put in a landfill unless it is specifically certified as a scrap-tire collection center; and
- when buyers purchase certain products containing hazardous substances, such as wet-cell lead batteries, they are required to pay a deposit that is returned when the item is recycled.

In 1996 Public Act 359 amended the state Solid Waste Management Act (part 115 of the Michigan Natural Resources and Environmental Protection Act [NREPA]), requiring all landfills in Michigan to report to the state the amount of waste received from all sources and geographic locations. Thus, Michigan now can calculate—for the first time—how much waste is landfilled in any

given year. The figure for 1996 is 11 million tons—86.5 percent from within Michigan and 13.5 percent from elsewhere, including Canada and Illinois, Indiana, Minnesota, New Jersey, Ohio, Texas, Virginia, Wisconsin, Connecticut, and Georgia.

Of the out-of-state sources of solid waste, Canada sends the most; almost half—47 percent—of all solid waste coming into Michigan. Indiana and Ohio are next, with approximately 17 percent each. The imported waste goes to landfills in 14 counties; Wayne and Berrien receive the majority.

Currently, more than 100 solid waste disposal facilities operate in Michigan; among them are landfills, incinerators, and waste-processing facilities. The state imposes a rigorous licensure procedure, including requiring a facility to provide assurance that it has a plan for financial security and that the facility will continue to be maintained even after waste no longer is being received. Among the state's extensive landfill regulations are stipulations regarding location and standards governing design and leak detection. Although several landfills across the state have had problems with license renewal, the majority meet Michigan Department of Environmental Quality (MDEQ) certification standards.

### **Solid Waste Planning**

Public Act 641 of 1978—recodified in 1994 into part 115 of the NREPA—was commonly known as the state Solid Waste Management Planning Act. It requires counties to

- prepare a long-range plan—with input from a local planning committee representing such interested and affected parties as local units of government, citizen groups, and the waste-processing and -hauling industry—(1) predicting when its landfills (and other disposal facilities) will reach capacity and (2) advising as to how they will reduce waste through reuse and recycling programs; and
- update their plan every five years.

Also in 1994, P.A. 153 was enacted, requiring

- the MDEQ to give counties a standard format to use in submitting plans,
- reducing the time—from 20 years to 10—for which a county must have sufficient disposal capacity, and
- county boards of commissioners to prepare and certify an annual report to the MDEQ that presents an analysis and certification of solid waste disposal capacity available to the county.

The third provision of P.A. 153 is significant for two reasons: (1) It makes each county responsible for disposing of waste generated within its borders, unless the county has a specific agreement with another that has planned for imported waste, and (2) if the county fails to submit the report to the MDEQ or finds that it has less than five years' and six months' capacity remaining, it must begin to investigate ways to develop a new disposal facility.

Although P.A. 153 was enacted in 1994, the required county solid waste plan updates have been put on hold because the legislature has been considering changes in the program; the next round of updates now is due in November 1998. Unlike in the past, the state will provide no financial assistance to counties to help them update their plans. If a county declines to prepare a plan, the MDEQ will offer the opportunity to local units of government in the county; if they decline, the opportunity will pass to multi-county regional planning agencies (e.g., Southeast Michigan Council of Governments). If none accepts responsibility, the department will prepare the plan for the county, but this will put a county at a considerable disadvantage because the MDEQ will calculate the county's waste-disposal capacity without taking into account any of the benefits of local recycling or other waste-reduction programs. Fortunately, it appears that all counties and regional agencies intend to update their solid waste plan.

### **Solid Waste Management**

The MDEQ Waste Management Division administers solid waste regulations and programs in Michigan. The

division's responsibilities include (1) tracking the waste flow, (2) granting licenses to operate disposal facilities, (3) compiling information on the annual volume and sources of solid waste disposed in landfills, (4) processing applications for permits to construct new disposal sites, and (5) administering the annual solid waste administration fee, statewide solid waste management planning program, scrap tire program, and solid waste alternatives program (SWAP).

In 1986 the Clean Michigan Fund was created to support innovative solid waste management programs. The fund was administered by the Natural Resources Commission, which awarded more than 300 grants totaling \$22 million to communities, recycling groups, and businesses. In 1988 Michigan voters approved the \$800-million Quality of Life bond proposal, of which \$150 million was dedicated to such resource-recovery projects as developing and constructing composting and recycling facilities, closing unsafe landfills, developing markets for recycled products, developing reuse education programs, and examining waste-to-energy options. The resulting program was SWAP, and it essentially replaced the Clean Michigan Fund. SWAP grants continued through 1997 and still are being administered, but there are no funds available for new grants. Through a continuing joint effort, the MDEQ and the Michigan United Conservation Clubs maintain and distribute waste reduction/recycling education materials to teachers and interested municipalities.

### DISCUSSION

The MDEQ and solid waste industry representatives characterize SWAP as very successful because it has (1) helped expand the market for recycled goods and (2) assisted municipalities and counties in institutionalizing recycling and other waste-reduction programs. In fact, some counties now have permanent staff that run recycled-materials collection programs in coordination with local municipalities; others have purchased permanent collection centers and are funding ongoing public education about recycling. Growing citizen awareness about recycling's advantages has led in many communities to grass-roots demand for

local recycling services. The City of Detroit is the only major metropolitan area in the state that does not have a recycling program.

County and municipal household hazardous waste (HHW) collection programs have been successfully initiated in many locations throughout the state. Most HHW collection programs operate in highly populated areas, but not every city or county has one. The fact that HHW disposal costs have dropped significantly—from \$150 per household drop off (typically 55 to 60 pounds of materials) to \$30—has contributed to the popularity of HHW collection programs and in turn spurred growth in the recycled materials market. Another positive influence on this market is the rising value of some hazardous materials, such as battery cadmium. Such factors have increased the number of waste haulers and companies interested in recycled hazardous materials.

Public awareness of recycling continues to grow and with it people's interest in (1) purchasing products that are manufactured all or in part with recycled materials and (2) products that create minimum waste. As in any industry, markets and prices for recycled materials fluctuate, depending on availability, demand, and other factors. But despite price fluctuations, many individuals, government entities, and private corporations choose to purchase recycled materials, like paper, and recycle many products they use. Michigan state government's procurement policies now require recycled product wherever practical and economical, and a bill (HB 4373) introduced in 1997 would require entities obtaining grants, loans, or contracts from the state to comply with state-procurement policies for resources they need to fulfill the grant/loan/contract.

Although progress is being made in Michigan to reduce the waste stream, the *amount* of landfilled waste in the state remains roughly constant. Michigan landfills almost as much as it did several years ago, because there is sufficient capacity and no one can stop privately operated landfills from accepting out-of-state waste. In 1992 the U.S. Supreme Court ruled that Michigan's regulations permitting county solid waste

management plans to restrict importation of out-of-state waste to privately owned landfills were violating the commerce clause of the U.S. Constitution.

Both environmental groups and local governments have tried unsuccessfully to have the Supreme Court's decision negated. In 1997, SB 4 was introduced in the Michigan Legislature; if enacted it will prohibit out-of-state waste from being imported into Michigan, but the legislation cannot take effect unless (1) the Court reverses its ruling or (2) Congress enacts legislation that supplants the Court's decision. In the meantime, many local governments and citizens are protesting the inflow of out-of-state waste.

Other legislation and solid waste proposals of interest include HB 5284 and a proposal to expand the Michigan bottle bill. Among its other provisions, HB 5284 would streamline the county solid waste planning process by removing the requirement for MDEQ approval. County representatives are opposed; they fear they would lose their authority to control the waste stream in the future because they could not enforce (through county ordinances and so on) agreements with waste companies. Industry representatives support the bill; they see as burdensome the current requirements for intercounty solid waste planning (in which they are supposed to participate), especially in view of the fact that counties have no control over out-of-state waste.

As the 20th anniversary of the bottle bill's passage draws near, environmental and other citizen groups have initiated a proposal to expand its coverage to noncarbonated, single-serving beverage containers (typically containing iced tea, juice, or bottled water). Legislation has not yet been introduced, but if it is, debate may be contentious. The beverage industry has lobbied against the bottle bill since its inception and certainly will oppose expansion, claiming that the expense incurred in collecting and processing returned containers is onerous. Citizen groups, especially those that support recycling, cite the bottle bill as Michigan's biggest waste-reduction success and will push hard for its expansion.

### Other Hazardous Waste

In addition to household hazardous waste, there also are medical and low- and high-level radioactive wastes. Although these other hazardous wastes are "solid" (as opposed to gaseous or liquid), they are considered outside the common category of solid waste.

Low-level radioactive waste (LLRW) usually is defined as that with half-life (the time needed for half the mass of substance to decay) of 30 or fewer years, but there is a small LLRW category that is longer-lived. LLRW is produced by nuclear power generation, industrial manufacturing, medical treatment, and medical and scientific research. Disposing of it currently is not generating concern in Michigan because most generated here is exported and disposed of at a private facility in South Carolina. The private facility, Barnwell, reopened to LLRW across the country in 1995. Also in 1995, another facility, Envirocare, in Utah, began accepting large-volume shipments of soil and debris that are slightly contaminated with low-level radioactivity. These facilities have virtually eliminated the immediate need for Michigan to proceed with a plan to locate a permanent LLRW disposal facility within its borders. However, if the other states close their doors to LLRW waste from elsewhere, either plans for a permanent disposal in-state facility will need to be initiated, or LLRW generators will have to resume on-site storage, as they did prior to 1995.

High-level radioactive waste (HLRW) is defined by its high radioactivity concentration and its long half-life. Nuclear power plants generate HLRW mostly in the form of spent nuclear fuel, and its disposal is regulated by the U.S. Department of Energy. Approximately 26 percent of the state's electricity is generated by four nuclear-power plants. These plants have generated waste totaling more than 980 metric tons—2 million pounds plus; all temporarily is stored at nuclear plant sites within the state, because the federal government has not been able to establish a permanent storage/disposal site anywhere in the country.

## SOLID WASTE MANAGEMENT AND RECYCLING

### FOR ADDITIONAL INFORMATION

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