A recent pilot test of recycling in the town of East Hampton, New York, reveals that 73% of the town's regular garbage can be recycled. Regular garbage excludes bulky waste (like old refrigerators), yard waste, and household toxics. Actually, the pilot test shows 84% of each household's regular garbage can be recycled, but only 90% of the households in the town would be expected to participate in a recycling program, and 90% of 84% is 73%.

Still, 73% recycling demonstrates dramatically that recycling can solve the town's garbage problem much more cheaply than incineration or landfilling, and with much less environmental damage. The East Hampton pilot project demonstrated a technique called the Intensive Recycling System. A 285-page report on the pilot test, released last week, provides strong evidence that cost-conscious decision makers will now need to evaluate recycling seriously before adopting expensive and dirty technologies such as incineration.

East Hampton is a town of 15,000 people on eastern Long Island, where tourists flock in the summertime, swelling the town like a stuffed potato. One hundred volunteer households of year-round residents participated in the pilot study for 10 weeks during 1988. They separated their trash into four categories: (1) food waste and soiled paper; (2) paper/cardboard; (3) metal cans and glass bottles; (4) non-recyclables. In the case of the East Hampton pilot test, residents brought their separated trash to a recycling center, because they had always taken their own wastes to the town dump, but curbside pickup would have been a feasible alternative.

Category 1 wastes were composted and the compost sold; category 2 and 3 wastes were processed by a materials recovery facility (MRF) into marketable products: several grades of paper and cardboard; aluminum cans; tin cans; scrap metal; and color-sorted crushed glass, which is called cullet. Category 4 wastes, and misclassified wastes rejected during processing, were landfilled. (Plastics were included in category 4, the nonrecyclables. However, it is well known that certain plastics can be recycled, so refinement of the Intensive Recycling system should be able to achieve recycling of over 84% of household wastes.)

The food waste, together with yard waste and sludge from residential cesspools, produced marketable compost. The compost was tested for toxic metals; metals were "far below" recommended state and federal levels, according Tom Webster, a researcher on the pilot project.

Bottles and cans, and two thirds of the paper and cardboard, were shipped to a materials recovery facility (MRF) operated by Peter Carter (Resource Recovery Systems, Inc.), in Groton, CT. The composting operation and the MRF rejected only 2.4% of the trash sent to them, thus converting 97.6% into marketable goods.

The remaining 1/3 of the paper/cardboard wastes were landfilled because there was inadequate dumpster space available to the pilot project to allow shipment to the MRF, according to Jim Quigley, another project researcher. In a full-scale program, this 1/3 would also be recycled, further boosting the total fraction of materials recycled.

"In sum," says Dr. Barry Commoner, who led the study team, "the test showed that the participants efficiently classified the trash and that the composting operation and the materials recovery facility could effectively convert nearly all the separated trash into marketable products."

As part of the pilot study, Dr. Commoner's team looked at the feasibility and costs of a full-scale recycling program for the town, and for other towns. They concluded that the Intensive Recycling System would work in all communities (towns and sections of large cities) where the housing is largely one-to four-family buildings and where residents are accustomed to either a drop-off system (such as in East Hampton), or where curbside collection is practiced. About 65% of New York state's population lives in such communities. Even in New York City, the Intensive Recycling System would be suitable for large sections of Brooklyn and Queens, and all of Staten Island.

Where large multi-family residences (apartment houses and projects) are the dominant types of buildings, the Intensive Recycling System would work as soon as procedures are developed for collecting trash separated into the four categories. The study team believes this is feasible but has not studied in detail how to do it.

The Intensive Recycling System will work best when there are 100,000 people or so participating, which means that smaller communities should be organized into regional systems of at least that total size.

One key to success is high participation rates. In many locales, where voluntary recycling programs have been set up, only 10% of the population participates. Dr. Commoner's team strongly suggests that individuals, and trash haulers, be required to participate by local ordinance. They believe that, with an ordinance, participation of 90% could be routinely achieved.

A full-scale, year-round Intensive Recycling System for East Hampton is estimated to cost $127 per ton. Incineration costs for the same town would be $195 to $209 per ton, depending on the type of landfill required for the resulting ash. If the ash has to go to a hazardous waste landfill, the higher incineration costs would apply. Shipping the waste off Long Island for burial elsewhere would cost $179 per ton. Thus it is apparent that the Intensive Recycling System is about 35% cheaper than incineration and 30% cheaper than carrying the stuff off Long Island for burial elsewhere.

Environmental emissions from the composting operations and from the materials recovery facility were monitored. From these limited emissions data, and from other studies reported in the literature, the team made a preliminary comparison of environmental impacts incurred by the Intensive Recycling System vs. the environmental impacts avoided by substituting recycled materials for virgin raw materials. The net effect of recycling is a reduced environmental impact, the team concludes, though they add, "However, in many instances, especially with respect to toxic chemicals, the available data do not permit such comparisons, so the analysis is thus far incomplete."

Tom Webster told us he believes the recycling system has a clear advantage over incineration with regard to emissions of metals and particles. He said organic chemical emissions need to be studied properly for comparison purposes.

The report DEVELOPMENT AND PILOT TEST OF AN INTENSIVE MUNICIPAL SOLID WASTE RECYCLING SYSTEM FOR THE TOWN OF EAST HAMPTON was written by Barry Commoner, Michael Frisch, Hanns-Andre Pitot, James Quigley, Alex Stege, Deborah Wallace and Thomas Webster. It is available for $20.00 to non-profits; $30 to commercial organizations and government agencies; order from the Center for the Biology of Natural Systems (CBNS), Queens College, Flushing, NY 11367; phone (718) 670-4180.

--Peter Montague

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