A CASE FOR INCINERATING WASTE

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Waste is what we have used and have no further use for. Incinerating waste, I believe, is a better environmental solution than landfilling.

Waste occurs naturally only in a limited sense. Feces are generally considered to be an animal's waste, but they provide energy for other parts of the ecosystem, which readily accommodate them. Humans appropriate and discard major material flows beyond what is required for their metabolism, and beyond what local ecosystems can handle.

The first objective of a waste management system should be to reduce material flows and thus potential waste. When the cost of managing waste is high, which is often the case with incineration, it encourages a reduction in the flow of material.

The second objective should be reuse of materials, which includes recycling. Because it is more costly, incineration can facilitate recycling. It also contributes directly when ferrous materials are readily extracted from ash.

Data back up the compatibility of incineration and recycling. In 2002, the median recycling rate in US states where there was some incineration was 29 per cent; whereas in states with no incineration, it was 10 per cent.[1]

In many places, combustion of materials with energy recovery is regarded as reuse, leaving what is sent to landfill as the only true waste. European Union directives require the avoidance of landfill for all but non-combustible waste. Denmark is closest to the ideal: in 2003, 60 percent of household waste was incinerated, 31 percent was otherwise reused (recycled), and 6 percent was landfilled.[2]

Reasons to avoid landfilling include its high environmental cost and impacts on human health. A 1999 Ontario government study suggested that the cancer risk from living near a landfill was about 100 times that of living near an incinerator. Differences for other health risks were less dramatic, but risks were still higher for landfill than incineration.[3] A 2005 study for New York City had similar findings, noting too that the longer trucking distances associated with landfill present additional health risks.[4]

Landfills also produce methane, a potent greenhouse gas. As a result, a landfill's contribution to global warming is between 45 and 115 times greater than incineration on a per-tonne-of-waste basis, depending on the extent of methane collection in the landfill.[5]

But the strongest criticisms levelled against incineration arise from its history of releasing dioxins and furans. In 1987, incinerators produced 63 per cent of dioxin/furan releases in the US. In 2002, they produced one per cent, a decline from 8,877 to 12 grams.[6]

Technological improvements to waste incineration with regard to the release of dioxins and furans—and a number of other pollutants—are so advanced that concentrations of these compounds may in some cases fall below levels in ambient air. Then, incinerators actually clean air rather than pollute it.

Flaring or other combustion of landfill gases can result in dioxin emissions. However, trucking is the main source of dioxins associated with landfill. Dioxin emissions from the trucks carrying Toronto's waste to a Michigan landfill site are several times what would result from incinerating the waste.[7]

The politics of incineration are unusual. In Toronto, opinion polls consistently show support for incineration exceeds 75 per cent.[8] A 2006 survey, suggested that "nine in 10 residents believe burning waste to produce electricity could be a viable solution [to the garbage crisis]".[9] Of these, 60 per cent said they would support having an incinerator in their own neighbourhood.[10] Nevertheless, Toronto City Council has consistently opposed incineration.

Toronto Mayor David Miller characterizes incineration as "expensive, polluting and damaging to recycling efforts" in comparison with landfill. He could be right on the first point, but his second and third points are not consistent with available data. There is doubt even on the first point. The tipping fee in 2004 at the 850-tonne/day incinerator in Syracuse, NY, was $62.50 per tonne.[11] It would likely be lower if the plant were larger and its bottom ash could be sold as aggregate—as permitted in Europe and some US states—and possibly below the $55 per tonne Toronto was paying to landfill its waste ($35 for trucking and $20 for landfilling).

I would argue, however, that high costs for incineration and landfill can be a good thing if they reduce material flows, and encourage and even subsidize recycling.

Notes

1 Based on data in Kaufman SM, Goldstein N, Millrath K, Themelis NJ, The State of Garbage in America. *Biocycle*, January 2004.

2 From page 445 of EEA, *The European Environment State and Outlook*. Copenhagen: European Environment Agency, 2004. Recent action by the Europe Parliament may lead to the reclassification of incineration as 'disposal'. See Anon., European Parliament Adopts Strict Waste Reduction Law, *World Wire*, February 13, 2007, http://www.ens-newswire.com/ens/feb2007/2007-02-13-01.asp (Accessed February 15, 2007).

3 MoE, *Environmental Risks of Municipal Non-Hazardous Waste Landfilling and Incineration*, Toronto: Ontario Ministry of Environment, 1999.

[4] Moy P, *A Health Risk Comparison of Landfill Disposal and Waste-to-Energy (WTE) Treatment of Municipal Solid Waste in New York City (NYC)*. MPH Thesis Paper, Columbia University School of Public Health; June 2005, at http://www.seas.columbia.edu/earth/wtert/sofos/Moy_ms_thesis.pdf (Accessed February 7, 2007)

[5] Eschenroeder A, Greenhouse Gas Dynamics of Municipal Solid Waste Alternatives; *Journal of the Air & Waste Management Association*, 51, 1423-1427 (2001).

[6] Deriziotis P, *Substance and Perceptions of Environmental Impacts of Dioxin Emissions*. MS Thesis, Columbia University; May 200, at http://www.seas.columbia.edu/earth/wtert/sofos/Deriziotis_thesis_final.pdf (Accessed February 7, 2007).

[7] This assumes: (i) 40-tonne loads; (ii) 1,000-km return travel distance; (iii) 0.5 ng/vkm TEQ emissions; (iv) 4.72 ng/t from incineration (Table 4 of the source in Note 4).

[8] Lu V, Voters opposed to airport link, Poll; Star finds 53% of residents reject airport bridge; 70% support incineration to deal with garbage. *Toronto Star*, October 13, 2003, and Lewington J, Poll finds support for incinerating trash; residents' views at odds with politicians'. *Globe and Mail* November 10, 2005.

[9] Byers J, 91% approve burning trash. *Toronto Star*, October 31, 2006.

[10] Gillespie K, A burning issue heats up. *Toronto Star*, November 13, 2006.

[11] This assumes tipping fee revenue of US$16.9 million and throughout of 350,000 short tons, based on information in the 2004 budget and 2003 *Annual Report* at http://www.ocrra.org (Accessed February 7, 2007). Dollar amounts in the text are in Canadian dollars.