

sylvania indicates that these costs are approximately \$55,000 for a 30-acre site. Of course, these costs can vary considerably depending on the terrain, location, and size. Converted to a 10-acre site, the sanitary landfill development costs are estimated at about \$18,000. These cost figures exclude the acquisition cost for land and operating equipment. The equipment costs are estimated to average \$35,000 to \$40,000 per site, considering all sites in the country.

The current cost for suitable refuse collection equipment is estimated as follows:

Regular compactor trucks: 10 to 20 cubic yards; \$10,000 to \$13,000 each.

Heavy duty compactor trucks: 24 to 28 cubic yards; \$15,000 to \$20,000 each.

Trailers: 30 to 80 cubic yards; \$25,000 to \$30,000 each.

Compactor truck with detachable container and hoisting unit: \$15,000 to \$30,000.

Trailers are used in connection with transfer stations where the refuse is transferred from the smaller collection trucks to the trailers. Transfer stations reduce hauling costs if the hauling distances are great. However, according to a 1964 APWA survey on refuse collection practices, less than 4 percent of the U.S. refuse collection agencies use transfer stations at the present time.

(b) *Typical Maintenance and Operation Expenses for Collection and Disposal Facilities*

The operation and maintenance costs of incinerators vary widely depending upon the plant capacity, efficiency of operations, local wages, the type of refuse burned, the degree of burning, the number of shifts worked per day, and the type of plant; that is, whether it is mechanized or requires manual stoking. Variations in incinerator operating and maintenance costs are reported to range from \$0.50 to more than \$7 per ton of refuse burned. Based on data from 60 incinerator operations, it is estimated that, excluding amortization cost, average maintenance and operation costs range from \$2.90 to \$3.60 per ton of refuse burned. The annual maintenance costs are reported to amount to about 5 percent of the total capital cost or approximately 10 to 15 percent of the total annual cost of incinerator plant operation.

The operation and maintenance costs for sanitary landfills, too, vary widely. They depend mainly upon the soil conditions, availability of cover material, the type of equipment used, local wages, operations efficiency, and the size of the operation. A cost range of \$1 to \$1.50 per ton of refuse is frequently reported. A survey made for this report on the operating cost of 50 sanitary landfill operations suggests that the average operating and maintenance cost is about \$1.10 per ton of compacted refuse deposited. By contrast, the cost of disposal in open dumps/modified landfills ranges from \$0.05 to \$0.25 per ton. This cost comparison of the various disposal methods indicates why there are so many open dumps in this country and why many supposedly sanitary landfills are not operated as such.

Collection accounts for the bulk of refuse removal costs. Ranging from \$5 to \$25 per ton, collection costs are commonly estimated to make up 65 to 80 percent of total disposal cost. The transportation