

DISPOSAL COSTS FOR TREATED WOOD AS HAZARDOUS VERSUS NON-HAZARDOUS WASTE

9 July 2003

Costs associated with disposal of used treated wood under the current regulatory conditions are estimated to provide a basis for comparison. Costs associated with disposal of used treated wood are estimated assuming it is regulated as a non-RCRA hazardous waste. Increased costs are then calculated on a unit cost per ton basis.

Treated wood is now disposed in municipal waste landfills. The CalEPA Integrated Waste Management Board (CalEPA 2002) estimated unit costs of disposal on a tipping fee survey. The weighted average fee for landfills based on compact (not loose) waste rate of \$14.54 per cubic yard is used. Since wood waste has a low density (as compared to something like soil), the rate is adjusted for wood density of 26 pounds per cubic foot. The current disposal tipping fee is calculated to be \$41.42 per ton. Adding estimated typical charges of \$10.00 per ton for collection and \$10.00 for local transportation, the total cost for non-hazardous waste disposal is about \$61 per ton. These costs are summarized in the following table.

There are only three hazardous waste landfills in California, Chemical Waste Management at Kettleman City and Clean Harbors at Buttonwillow and Westmoreland. Cost estimates are based on telephone contacts by this author with the facilities contacts, published information, and professional judgment. Hazardous waste disposal costs include the facility fee, state tax, local tax, generator fees, transportation, and handling costs to separate the treated wood from other non-hazardous waste or debris. These costs would be approximately as follows:

- Facility Disposal Fee—The fee charged by the disposal company to accept the waste. The actual tipping fee is the higher of \$50 per ton or \$50 per cubic yard. For lower density materials, the charge is \$50 per cubic yard. For wood waste at 26 pounds per cubic foot, this equates to \$142.45 per ton.
- Taxes—California charges a tax of \$16.51 per ton for non-RCRA hazardous waste disposal in the state. Additionally, the county in which the disposal facility operates charges a 10% tax on the disposal fee amount, or \$14.25 per ton.
- Generator Fees—Each person or company that generates hazardous waste in quantities of 5 or more tons per year must pay a generator fee to the State. The fee varies depending on the annual total waste generated. For example, in the 5 to 25 ton range, about one truck load, the fee is \$163. If this were a single 14-ton load, the fee adds \$11.64 per ton. Other ranges and costs include 50 to 250 tons for \$3,262, 500 to 1000 tons for \$32,620, and over 2000 tons for \$65,240. A representative cost of \$40/ton is used in this paper.
- Transportation—Hazardous waste must be transported using a hazardous waste manifest and by permitted vehicles. This paper assumes a typical rate of \$3.75 per loaded mile, 200 mile average haul distance, and 40 cubic yards per load at 26 pounds per cubic foot for wood waste, the rate is \$53.42 per ton. This cost will vary based on the actual transport distance. Some

examples; from Los Angeles the distance would be about 120 miles and the transport cost would be about \$32 per ton, for San Francisco 270 miles and \$72 per ton, for Redding 430 miles and \$115 per ton.

- Separation and Handling—Regulations on generators of hazardous waste are onerous, resulting in added costs to the people and organizations that generate the waste. For treated wood, procedures and equipment would need to be put into place to separate the treated wood from other wastes, store it separately, and arrange for permitted transport to hazardous waste disposal facilities. \$25 per ton is estimated as the average cost. This equates to \$8.75 per cubic yard. The actual cost would likely be higher.
- Total Cost—The above costs result in a total cost of over \$291 per ton of treated wood non-RCRA hazardous waste disposed.

The average added cost per ton for regulating treated wood waste as hazardous waste is approximately \$230 per ton compared to current practice. The added cost will vary by location based on local tipping fees, distance to non-hazardous and hazardous landfills, and local transportation costs. For selected cities in California, the increase in total disposal costs to dispose of treated wood as hazardous instead of non-hazardous is estimated to be as follows:

Redding	\$299/ton	Los Angeles	\$222/ton
San Francisco	\$262/ton	San Diego	\$255/ton
Stockton	\$253/ton		

Cost data and calculation results are shown the following table.

Stephen T. Smith
 AquAeTer, Inc.
 (406)449-6216
stephentsmith@earthlink.net

TREATED WOOD WASTE DISPOSAL COST EVALUATION

CONSTANTS AND CONVERSION FACTORS

Wood Density	26	lb/cf	26	lb/cf
	0.351	ton/cy	26000	lb/1000cf
Truckload of waste wood	40	cy/load	13	ton/1000cf
	14.04	ton/load		
Transport to HW landfill	125	miles LA to Buttonwillow		
	175	miles LA to Kettleman		
	270	miles SF to Buttonwillow		
	220	miles SF to Kettleman		
	197.5	miles average		
	200	miles assumed typical		
	14.25	loaded mile/ton typical		

NON HAZARDOUS WASTE DISPOSAL COST

Tipping Fee (CA weighted ave for landfills, 2000 survey) per ton	\$41.42
Collection	\$10.00
Transportation	\$10.00
Total Unit Cost per ton	\$61.42

\$35.14 /ton -or-	Choose the
\$14.54 /c.y.	higher value

NON-RCRA HAZARDOUS WASTE DISPOSAL COST

Facility Tipping Fee	\$142.45	/ton
CA Disposal Tax	\$16.51	
County Disposal Tax (10%)	\$14.25	
Generator Fees (Taxes)	\$40.00	
Added Transportation Cost	\$53.42	
Separation/Handling	\$25.00	
Total Unit Cost	\$291.62	

\$50.00 /cy or	Choose the
\$50.00 /ton	higher value

\$3.75	/loaded mile
--------	--------------

ADDED COST DUE TO NON-RCRA HAZARDOUS WASTE REGULATION

Unit cost increase (\$/ton)	\$230.20
-----------------------------	----------

DISPOSAL COSTS COMPARED BY LOCATION

Location	Redding	San Francisco	Stockton	Los Angeles	San Diego
Distance to Class II or C&D Landfill	10	25	20	25	25
Est. Non-Hazardous Disposal Rate	\$54	\$48	\$47	\$48	\$48
Distance to Class I Landfill	430	270	230	120	244
Est. Hazardous Disposal Rate	\$353.06	\$310.32	\$299.64	\$270.26	\$303.38
Increase for Hazardous Disposal	\$298.96	\$262.22	\$252.87	\$222.15	\$255.27