



Hazardous Waste Report

2004-2005

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Farkas Berkowitz & Company

Hazardous Waste Industry Review

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Preface

We are pleased to present this report on the hazardous waste industry, including the results of our third annual survey of industry participants. We extend our thanks to the many firms who responded to our request for data and who shared their insights on the current state of the industry with us.

We gratefully acknowledge the financial support provided for this undertaking by American Ecology, Envirite, Heritage Environmental Services, Philip Services Corporation, and Ross Environmental Services.

Farkas Berkowitz & Company is a management consulting firm serving clients in the hazardous waste, water and wastewater, and engineering and construction industries. We assist our clients with:

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We invite you to visit our website at <http://www.farkasberkowitz.com>.

We welcome your comments and questions on this report, as well as your suggestions for next year's survey. Please contact Joan Berkowitz at 202-833-7530, extension 6006 or at berkowitz@farkasberkowitz.com.

Executive Summary

The hazardous waste industry, as we define it, includes the business activities of firms permitted to treat or dispose of hazardous wastes generated by others – wastes that are either regulated as hazardous under federal, state, or provincial law; or considered to be hazardous by the generator. Market size did not change significantly from 2003, but our estimate is higher because of our broader definition of the industry. We estimate the size of the market in the U.S. and Canada at \$3.5 billion in 2004. The difference from 2003 is a refinement of our analysis, including the addition of Envirocare of Utah and the field services activities of Heritage and Onyx Industrial Services. Clean Harbors is the dominant firm in the industry with 2004 revenues of \$643 million and a market share of 19 percent. Sixteen firms with revenues of \$30-\$500 million have a collective market share of 69 percent. Approximately 105 firms, each with revenues less than \$30 million constitute the remaining 12 percent of the market.

Firms in the industry treated or disposed of 10.7 million tons of waste in 2004, an increase of 5 percent from 2003. The increase was not shared equally among technologies or firms. Landfill increased 7.7 percent to 5.06 million tons. Deepwell injection increased 5 percent to 0.45 million tons. Aqueous waste treatment increased 3.8 percent to 2.31 million tons. Cement kiln burning increased 0.5 percent to 1.01 million tons. Incineration also increased 0.5 percent to 0.72 million tons. Fuels blending increased 1.7 percent to 0.94 million tons, and solvent recovery increased 11 percent to 0.27 million tons.

Treatment and disposal of wastes at commercial hazardous waste facilities is not a growth industry. Volumes increased in 2004, but prices were generally flat to declining. Some firms have grown more rapidly than the market as a whole, typically by acquisition or diversification into related areas. Several acquisitions occurred in 2004, but none as large as Clean Harbors' acquisition of CSD at the

end of 2002. Finally, many firms have branched out from their base business of collecting wastes and treating or disposing of them in their own facilities into applying their core competencies at the sites of waste generation.

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Chapter 1 Hazardous Waste Industry in the News

A few new developments in the hazardous waste industry over the past year caught our attention.

Clean Harbors' Stock Increases in Value

Clean Harbors leads the industry in size and diversity of service offerings. Yet Clean Harbors' stock was trading at only around \$9 per share in July 2004. A year later, the stock price had increased almost 170 percent to around \$24 per share. As this report went into final editing, the stock price had increased further to around \$33 per share. We would not even venture a guess as to the reasons for the rise, but even the staunchest competitors, of which there are many, have reason to cheer. After all, consider the alternative. A failure would be bad news, indeed, for the entire industry.

We are also pleased to report that Clean Harbors has been added to the Russell 2000 and Russell 3000 Indexes, giving the company and the industry it leads greater visibility.

Stablex Canada Changes Hands and Brings a New Entrant to the Industry

Privately owned Stablex Canada has been acquired by Marsulex, a publicly traded firm on the Toronto Stock Exchange. Stablex has a single treatment and disposal facility in Blainville outside of Quebec. As the name implies, all wastes received are stabilized prior to landfill. Marsulex purchased the operation for \$C73 million, over 1.9 times 2004 revenues. We doubt that the transaction went unnoticed by other firms in the industry, and we expect a few of those to be put on the block in the next year.

New Owners Acquire Former US Liquids Assets

US Liquids (USL) managed to avoid filing for bankruptcy, but had sold all of its assets and deregistered its common stock prior to April 2004. EQ acquired the assets of USL's operations in Michigan, Florida, Georgia, and North Carolina in February 2004 for \$12.2 million. The Detroit, Michigan facility provides wastewater treatment and solidification, and has direct rail access. The Tampa, Florida facility is a treatment, storage, and disposal facility (TSDF). The facility in Augusta, Georgia is a non-hazardous wastewater treatment plant. The facility in Winston-Salem, North Carolina operates a fleet of mobile solvent recovery vehicles that serve the eastern half of the United States.

Perma-Fix acquired the assets of USL's operations in Maryland and Pennsylvania for \$3.2 million. USL Environmental Services in Baltimore, Maryland (formerly A&A Environmental) provides emergency response, vacuuming, hazardous and non-hazardous waste removal, and ship cleaning services. USL of Pennsylvania (formerly EMAX) transports drums and bulk loads, cleans tanks, and treats wastewater.

Hazardous Waste Firms Rationalize Business Activities

Times change, markets change and yesterday's business model may not be optimum under today's conditions. A few hazardous waste firms are beginning to look dispassionately at each of their services, processes, and markets with an eye toward answering three questions:

- If we were not already doing this, would we go into it now?
- If yes, would we be doing it the same way?
- If no, what action should we take?

Several examples illustrate the results of such an examination.

Heritage sold its environmental engineering and consulting unit to KERAMIDA Environmental. The unit was not synergistic with Heritage's core business and

diverted management attention that could be applied more productively elsewhere.

Heritage has also consolidated its treatment plant operations. Facilities in Charlotte, North Carolina and Lemont, Illinois no longer do fuels blending, but serve as transfer stations for wastes to be treated at other Heritage facilities.

Onyx Environmental is no longer doing fuels blending at its Morrow, Georgia facility because competition from cement kilns has increased in the southeast market. The Morrow, Georgia facility continues to serve as a transfer station.

Perma-Fix elected to discontinue treatment operations at its Detroit, Michigan plant. There were two fires at the plant in 2003 and market conditions did not justify the costs of repair.

Permitted Facilities Execute Emergency and Contingency Plans Effectively

RCRA regulations require hazardous waste facilities to have emergency and contingency plans to be put into effect in the event of an accident. Regulatory requirements and best practices are also designed to prevent accidents to the extent possible. However, accidents do occur, albeit rarely, and emergency and contingency plans are designed to prevent or minimize damages.

- July 2004: Fire at American Ecology's facility in Robstown, Texas;
- January 2005: Fire in one of two waste storage areas at the Teris incinerator in El Dorado, Arkansas (formerly ENSCO);
- August 2005: Explosion and fire at EQ's resource recovery plant in Romulus, Ohio ; and
- August 2005: Explosion and fire at the Von Roll/Heritage incinerator in East Liverpool, Ohio.

In every instance, plant employees and local emergency personnel acted according to plan. There were no fatalities but there will undoubtedly be law suits.

Chapter 2

Introduction

The hazardous waste industry, as we define it, includes the business activities of firms permitted to treat or dispose of hazardous wastes generated by others – wastes that are either regulated as hazardous under federal, state, or provincial law; or considered to be hazardous by the generator.

This report presents our perspective on the state of the industry in 2004-2005 and its future prospects. Chapter 3 presents data on market size and growth, segmented by type of service – combustion, land disposal, fuels blending and solvent recovery, aqueous waste treatment, and field services. Chapter 4 discusses competition. Chapter 5 summarizes information on the financial performance of the dwindling number of publicly traded firms in the industry, and Chapter 6 presents our views on the outlook for the industry.

We base our analysis on a survey of 21 of the largest firms in the industry, interviews with their top management and other market observers, reports to the Securities and Exchange Commission (SEC), press releases, and interviews with buyers of hazardous waste management services. Exhibit 1 profiles the survey population.

The 21 firms that participated in the survey own or operate 111 facilities that treated or disposed of approximately 76 percent of the wastes transported to commercial hazardous waste facilities in 2004. Five firms operate the ten incineration facilities in the survey population. These facilities account for over 80 percent of all wastes burned at commercial hazardous waste incinerators. Nine firms operate the 21 hazardous waste landfills in the survey population. These facilities disposed of 96 percent of all wastes sent to commercial hazardous waste landfills. Six firms operate the ten solvent recovery facilities in the survey

population. These facilities treated approximately 20 percent of all wastes sent to commercial hazardous waste facilities for solvent recovery. Nine firms operate the 32 fuels blending facilities in the survey population. These facilities account for close to 50 percent of the wastes sent to commercial hazardous waste fuel blenders. Seven firms operate the 27 aqueous waste treatment facilities in the survey population. These facilities received over 50 percent of all wastes sent to commercial hazardous waste facilities for aqueous treatment. Four firms operate the ten cement kilns in the survey population. These facilities account for close to 70 percent of the hazardous wastes burned in cement kilns in 2004.

**Exhibit 1
Survey Population**

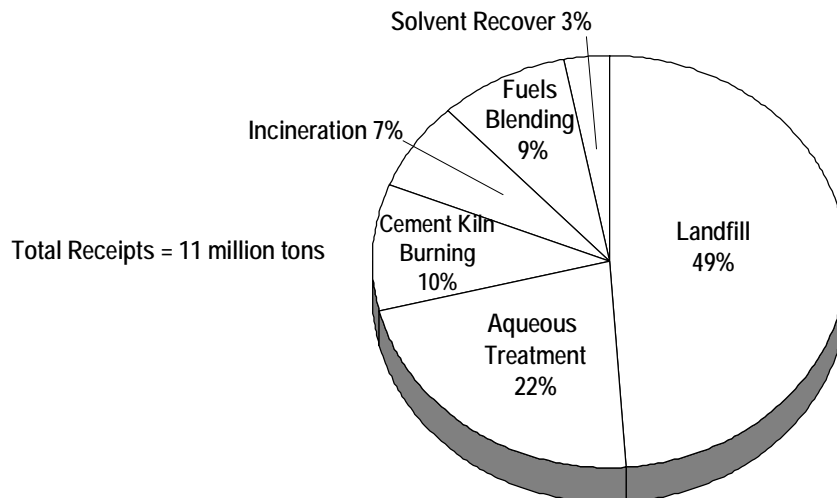
Type of Facility	Number Surveyed	Percent of Total Receipts
Incineration	10	82%
Landfill	21	96%
Solvent Recovery	10	22%
Fuels Blending	32	49%
Aqueous Treatment	27	51%
Cement Kiln Combustion	10	66%
Deepwell Injection	1	25%
TOTAL	111	76%

Source: Farkas Berkowitz & Company

Some firms operate more than one type of facility or more than one facility of the same type. Almost all firms engage in some form of brokerage. A firm that specializes in fuels blending, for example, will seek out customers that generate waste suitable for fuels blending at its own facilities. The firm will also accept other types of wastes and arrange for treatment or disposal at facilities owned and operated by others.

The total quantity of waste received for treatment and disposal by hazardous waste firms in the U.S. and Canada in 2004 was approximately 11 million tons. Exhibit 2 shows the distribution of waste received by management method.

**Exhibit 2:
Distribution of Wastes Received by
Commercial Hazardous Waste Facilities (2004)**



Source: Farkas Berkowitz & Company

Exhibit 3 shows changes in waste volumes and prices in 2004 compared to 2003. Incineration and cement kiln volumes increased a little over 1 percent. Fuels blending volumes decreased less than 1 percent. Landfill volumes increased 14 percent, following declines in 2002 and 2003. Incidental wastes increased 17 percent and process wastes 9.5 percent. Solvent recovery volumes increased 29 percent, probably because of increased prices for petroleum-based products which made recovery more attractive. Aqueous waste treatment volumes increased close to 8 percent.

**Exhibit 3
Volume and Prices in 2004 Compared to 2003**

Segment	Change from 2003			
	Volume	Price - # reporting		
		Increase	No change	Decrease
Incineration	+0.5 %	3	1	1
Landfill	+7 %	1	4	3
Aqueous Waste Treatment	+4 %	3	3	2
Fuels Blending	+2 %	1	1	7
Solvent Recovery	+11 %	3	3	1
Cement Kiln Burning	+0.5 %			4

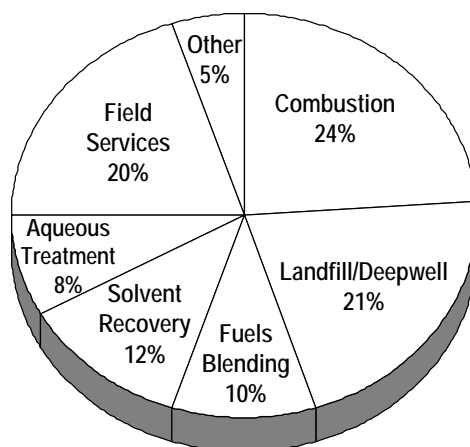
Source: Farkas Berkowitz & Company

Incineration prices increased somewhat on average. Landfill prices decreased slightly. Prices for aqueous waste treatment were mixed. Fuels blending prices decreased on average. Solvent recovery prices increased somewhat. Prices for burning in cement kilns decreased for the second year in a row. The results suggest that firms were only partially successful in imposing surcharges for the increased cost of fuel for transportation.

Chapter 3 Market Size and Growth

The size of the hazardous waste market in the U.S. and Canada was approximately \$3.5 billion in 2004. The market did not grow significantly in 2004, but we have revised our 2003 estimate upward based on a refined analysis of available data, and by inclusion of Envirocare of Utah, Heritage-Crystal Clean, and Onyx Industrial Services. Exhibit 4 shows market distribution segmented by type of service.

Exhibit 4
Distribution of \$3.5 Billion Market
by Type of Service



Source: Farkas Berkowitz & Company

Combustion accounts for 24 percent of the market. Of that, 17 percent is burning of wastes in commercial hazardous waste incinerators and 7 percent is burning of hazardous wastes in cement kilns to recover energy and material value. Our estimate does not include waste-to-energy (W-T-E) plants or tipping fees paid to cement kilns for burning of non-hazardous wastes such as spent tires.

The two most common methods for treating hazardous waste solvents are fuels blending and solvent recovery. Fuels blending accounts for 10 percent of the market, net of tipping fees paid to cement kilns. Fuels blenders prepare mixtures of solid and liquid hazardous wastes of suitable viscosity and BTU content for

introduction into cement kilns as substitutes for virgin fuels. Solvent recovery accounts for 12 percent of the market and includes purification of solvents, mainly mineral spirits in association with Safety-Kleen's parts-washer business, as well as purification of solvents for return to the generator or for resale on the open market.

Aqueous treatment at commercial hazardous waste facilities accounted for 8 percent of the market. The work horses of the segment are acid and base neutralization, heavy metals precipitation, chromium reduction/precipitation, cyanide oxidation, oil-water separation, and physical/chemical/biological treatment to destroy, detoxify, or remove harmful organic constituents of the waste. Our estimate does not include the many aqueous wastes that are treated at commercial facilities not permitted to accept hazardous wastes.

Land disposal accounted for 21 percent of the market in 2004. Of that, 20 percent was landfill and 1 percent was deep well injection. While we consider deep well injection to be a form of land disposal, it is used primarily for final disposal of aqueous wastes, often following pretreatment.

Field services, sometimes called technical services or on-site services, accounted for 20 percent of the market. The remaining 5 percent of the market includes brokers, such as Ashland Environmental, the ChemCare division of Univar, and specialty treatment or recovery firms such as Inmetco and Horsehead which recover metals from solid and hazardous wastes by high temperature processes.

Incineration

Supply and demand are beginning to come into balance for commercial hazardous waste incineration. Overall capacity utilization (wastes received as a percentage of practical capacity) was 93 percent for the surveyed facilities in

2004, up from 92 percent in 2003. Capacity utilization for individual facilities in 2004 ranged from 80 to over 100 percent.

We estimate that commercial incinerators took in 725,000 tons of waste in 2004, an increase of 0.5 percent from 2003. Exhibit 5 provides a breakdown by facility.

Practical capacity for the surveyed facilities in 2004 was unchanged from 2003. Capacity utilization increased for five of the facilities surveyed, decreased for three, and was unchanged for two. Although overall capacity utilization increased from 92 percent to 93 percent, median capacity utilization decreased from 93 percent to 87 percent.

Practical capacity is the maximum quantity of waste that can be burned in a year taking into account scheduled downtime for maintenance and repairs. We express practical capacity in tons in Exhibit 5. Incinerator capacity would be more properly expressed in terms of BTU content (heat capacity), because capacity utilization actually depends upon the heat capacity of the mix of wastes burned.

Manufacturing process wastes received for incineration decreased slightly from 79.6 percent in 2003 to 79.4 percent in 2004 for the facilities that provided data for both years. Incidental wastes received increased correspondingly.

**Exhibit 5
Commercial Hazardous Waste
Incinerator Receipts (2004 vs. 2003)**

Company Name	Facility	Practical Capacity (Tons)		Wastes Received (Tons)			Capacity Utilization		Company Share of Total Wastes Received 2004	
		2003	2004	2003	2004	Growth 2003 – 2004	2003	2004	Tons	Percent
Heritage	East Liverpool, OH	60,000	60,000	43,900	48,250	10%	73%	80%	48,250	6.7%
Ross	Grafton, OH	75,000	75,000	65,433	64,512	-1%	87%	86%	64,512	8.9%
Onyx	Port Arthur, TX	55,000	60,000	53,000	56,000	6%	96%	93%		
	Sauget, il	30,000	25,000	30,000	26,000	-13%	100%	104%	82,000	11.3%
Clean Harbors	Kimball, NB	55,000	55,000	44,000	44,800	2%	80%	81%		
	Aragonite, UT	65,000	65,000	55,000	55,000	0%	85%	85%		
	Deer Park, TX	120,000	120,000	120,000	126,000	5%	100%	105%		
	Mercier, QUE	73,000	73,000	68,000	72,000	6%	93%	99%		
	Sarnia, ONT	105,000	105,000	98,000	91,000	-7%	93%	87%	388,800	53.6%
Earth Tech	Swan Hills, ABTA			11,000	11,000	0%			11,000	1.5%
Subtotal							92%	93%		
	SUB-TOTAL (survey)	638,000	638,000	588,333	594,562		93%	87%	594,562	
Teris				133,000	130,340					18.0%
	TOTAL			721,333	724,902					100.0%

Source: Farkas Berkowitz & Company

Drummed wastes for incineration decreased from 24 percent of total waste receipts in 2003 to 22 percent in 2004 for the facilities that provided data for both years. Pumpable wastes (liquids and slurries) received have been constant at 68 percent of the total since 2002. The numbers include the Clean Harbors incinerators in Ontario and Quebec that accept only pumpable wastes in bulk.

Exhibit 6 compares average incineration prices in 2004 and 2003 for different types of wastes. Prices are net of transportation. Average prices declined for every waste category except drummed non-halogenated liquids. However, the range from lowest to highest price is very large for every category. Many factors

affect pricing, including BTU value, halogen content, impurities, and compatibility with other wastes.

Exhibit 6
Average Commercial Incinerator Prices
(May 2004 vs. July 2003)

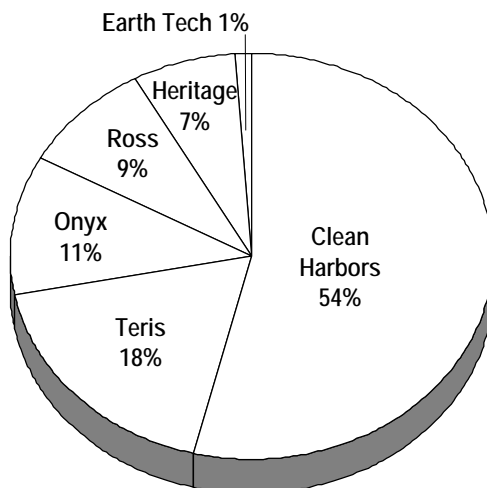
Waste Category	Average Prices		Change	Units*
	May 2004	July 2003		
Drummed halogen liquid organics	\$206	\$208	-1.0%	Per drum
Drummed non-halogen liquids	\$120	\$105	+14.3%	Per drum
Bulk non-halogen liquids	\$0.96	\$1.02	-5.9%	Per gallon
Lab Packs	\$1.91	\$1.92	-0.5%	Per pound
Drummed pumpable sludges	\$278	\$333	-16.5%	Per drum
Bulk pumpable sludges	\$621	\$643	-3.4%	Per ton
Bulk contaminated soils	\$522	\$532	-1.9%	Per ton
Aerosols	\$0.92	\$1.37	-32.8%	Per pound

* A 55-gallon drum contains approximately 0.25 tons of waste.

Source: Environmental Technology Council, Hazardous Waste Resource Center, <http://www.etc.org/costsurvey6.cfm> and Farkas Berkowitz & Company.

Exhibit 7 shows the distribution by company of the tons of wastes received for incineration in 2004.

Exhibit 7
Shares of the Incineration Market by Company (2004)



Source: Farkas Berkowitz & Company

Cement Kilns

Approximately one million tons of hazardous waste were burned in cement kilns in the U.S. and Canada in 2004, essentially unchanged from 2003. For the surveyed firms as a group, hazardous waste receipts increased 1.4 percent in 2004. Receipts decreased for six of the kilns that reported data for both years and increased for four, resulting in a median decline in waste receipts of 1.3 percent. Exhibit 8 provides a breakdown by facility.

All firms that responded to the survey reported price declines in 2004. The increase in the price of fossil fuel during the year resulted in a higher demand for hazardous waste as supplemental fuel and a willingness to accept lower tipping fees.

Exhibit 8
Performance of Cement Kilns
Burning Hazardous Waste (2003 vs. 2004)

Company Name	Facility	Practical Capacity (Tons)		Wastes Received (Tons)		Growth 2003 - 2004	Capacity Utilization	
		2003	2004	2003	2004		2003	2004
Giant	Bath, PA	75,000	75,000	65,468	67,147	2.6%	87%	90%
	Harleyville, SC	150,000	150,000	127,206	126,677	-0.4%	85%	84%
	Arvonnia, VA	22,000	27,000	21,000	27,000	28.6%	95%	100%
	Cascade, VA	7,000	6,000	7,000	6,000	-14.3%	100%	100%
Essroc Cement	Logansport, IN	89,583	87,500	78,026	68,667	-12.0%	87%	78%
Holcim	Clarksville, MO			73,800	72,169	-2.2%		
	Holly Hill, SC			25,400	58,220	129.2%		
	Artesia, MS			58,900	49,558	-15.9%		
Systech	Paulding, OH	125,000	125,000	120,417	107,917	-10.4%	96%	86%
	Fredonia, KS	91,667	91,667	78,333	81,250	3.7%	85%	89%
SUB-TOTAL (Survey)				655,550	664,605	1.4%		
Other*				348,000	343,476			
TOTAL				1,003,550	1,008,081	0.5%		

* Ash Grove Cement in Foireman, AR and Chanute, KS; Lone Star Cement in Cape Girardeau, MO and Greencastle, IN; Continental Cement in Hannibal, MO; TXI in Midlothian, TX; St. Lawrence Cement, ONT

Source: Farkas Berkowitz & Company

All of the cement kilns that responded to the survey have instituted changes to comply with the Maximally Achievable Control Technology (MACT) standards under the Clean Air Act that are expected to be finalized in 2006. Giant closed its manufacturing facility in Cascade, Virginia in 2005 rather than making the changes that would have been necessary to comply with the new MACT standards. CP Recycling brought the Essroc kiln in Logansport, Indiana into compliance with the new standards by instituting operational changes rather than installing additional air pollution control equipment.

Landfill Disposal

Approximately five million tons of wastes were disposed of at commercial hazardous waste landfills in 2004, an increase of close to 7 percent over 2003. Exhibit 9 provides a breakdown by facility.

For the surveyed firms as a group, waste receipts increased 7.4 percent. Half the facilities that provided data for both 2003 and 2004 reported increased volumes and half reported decreased volumes, resulting in a median decrease of 0.7 percent.

Of the 20 facilities that provided data for both years, ten saw volumes increase by 2 percent to over 1,000 percent in 2004 compared to 2003. The other ten saw volume declines of 4 to 59 percent. The largest increase was at Clean Harbor's landfill in Deer Trail, Colorado which involved incidental wastes from a single remediation-related project.

Exhibit 9
Commercial Hazardous Waste
Landfill Performance – 2003 vs. 2004

Company Name	Facility	Wastes Received* (Tons)		Growth 2003 - 2004
		2003	2004	
American Ecology	Robstown	86,000	63,000	-26.7%
	Beatty	78,000	145,000	85.9%
	Grandview, ID	396,000	381,000	-3.8%
EQ/Wayne Disposal	Belleville, MI	112,000	135,000	20.5%
Stablex Canada	Blainville, QUE	169,000	156,000	-7.7%
Clean Harbors	Buttonwillow, CA	215,000	345,000	60.5%
	Deer Trail, CO	800	11,000	1275.0%
	Grassy Mountain, UT	66,000	106,000	60.6%
	Lone Mountain, OK	75,000	71,000	-5.3%
	Westmoreland, CA	10,000	4,800	-52.0%
	Ryley, ALBTA	100,000	41,000	-59.0%
	Sarnia, ONT	175,000	262,000	49.7%
Waste Management	Model City, NY	244,000	211,000	-13.5%
	Arlington, OR	85,000	100,000	17.6%
	Emelle, AL	135,000	123,000	-8.9%
	Lake Charles, LA	210,000	200,000	-4.8%
	Kettleman, CA	1,400,000	1,300,000	-7.1%
Envirocare	Clive, UT	687,000	703,000	2.3%
Heritage	Roachdale, IN	102,075	276,492	170.9%
Waste Control Specialists	Andrews County, TX	18,496	52,669	184.8%
Peoria Disposal	Pottstown, IL	122,000	155,000	27.0%
Subtotal (Survey)		4,486,371	4,841,961	7.9%
Other**				
Envirosafe of Ohio	Oregon, OH	210,000	214,200	
TOTAL		4,696,371	5,056,161	7.7%

* Numbers have been rounded

** Wastes received in 2004 are estimates based on the median change for all firms.

Source: Farkas Berkowitz & Company

Quantities of incidental wastes received exceeded quantities of manufacturing process wastes received in both 2003 and 2004. The percentage of incidental wastes – wastes from site remediation, spill cleanups, and cleaning and maintenance activities – increased from 60 percent in 2003 to 62 percent in 2004. The percentage of process wastes decreased correspondingly. Processing

wastes generally provide a continuous revenue stream, unless the manufacturing plant closes or shifts operations overseas. Incidental wastes tend to be one-time events that result in variable revenue. Landfills are high fixed-cost operations. The resultant operating leverage is particularly advantageous if fixed costs can be covered by a steady, predictable load of process wastes. Then a larger fraction of the revenue from one-time event business contributes to profits.

For the 16 facilities that received waste generated in the U.S. and that provided data for both years, the percentage of wastes landfilled that were regulated as hazardous under federal RCRA regulations increased less than 1 percent from 50.5 percent in 2003 to 51.1 percent in 2004. Wastes received at Clean Harbors' landfills in Alberta and Ontario comes mainly from generators in Canada. In contrast, Stablex Canada's facility in Quebec receives a significant amount of waste generated in the U.S.

Commercial landfill prices vary by type of waste, containerization, and treatment requirements (generally stabilization/solidification) prior to landfill. Exhibit 10 shows the results of surveys conducted by the Environmental Technology Council in May 2004 and July 2003. On average, prices were fairly stable. The largest increase was for bulk wastes that did not require further treatment. The largest decrease was for debris.

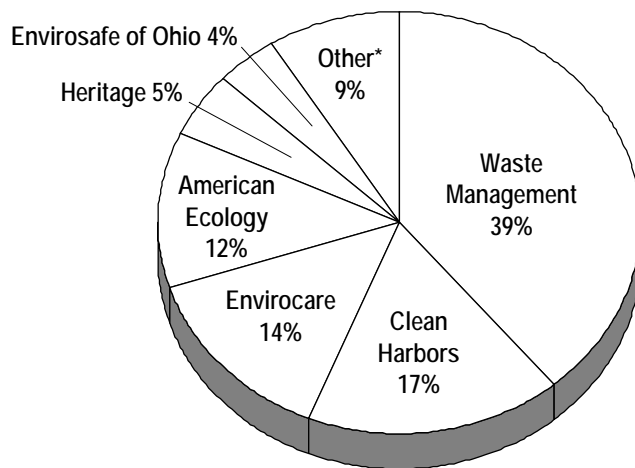
Exhibit 10
Average Commercial Landfill Prices
(May 2004 vs. July 2003)

Waste Category	Average Prices		Change	Units
	May 2004	July 2003		
Debris	\$194	\$206	-5.8%	Per ton
Bulk with treatment	\$133	\$133	0%	Per ton
Bulk without treatment	\$90	\$76	+18.4%	Per ton
Drummed with treatment	\$175	\$174	+0.6%	Per drum
Drummed without treatment	\$100	\$100	0	Per drum
Soil treated and landfilled	\$135	\$134	+0.7%	Per ton
Soil direct to landfill	\$70	\$71	-1.4%	Per ton

Source: Environmental Technology Council, Hazardous Waste Resource Center, www.etc.org/costsurvey6.cfm

The commercial hazardous waste landfill market is fairly concentrated as shown in Exhibit 11.

Exhibit 11
Shares of the Hazardous Waste Landfill Market by Company (2004)



* Other: EQ, Stablex Canada, Peoria Disposal, Waste Control Specialists
Source: Farkas Berkowitz & Company

The market share distribution differs from that in our previous report due to the inclusion of Envirocare of Utah in this year's report. Waste Management remains the market share leader with 39 percent of the market by weight. Clean Harbors is second, with 17 percent of the market. Envirocare, which is permitted for low level radioactive and mixed wastes, has a 14 percent market share. American Ecology has 12 percent. Heritage and Enviro-safe of Ohio have a combined market share of 9 percent. Four firms control the remaining 9 percent of the market. Those firms are EQ/Wayne Disposal and Stablex Canada, each with 3 percent market share, Peoria Disposal with a 2 percent share, and Waste Control Specialists with a 1 percent share.

Deepwell Injection

We are aware of only four commercial deepwell injection facilities that currently treat and dispose of hazardous wastes. Two, located in Corpus Christi and Deer Park, Texas, are owned and operated by Texas Molecular. Texas Molecular

acquired some of the assets of GNI when that firm went into bankruptcy. One, located in Plaquemine, Louisiana, was acquired by Clean Harbors as part of their acquisition of CSD. Another, located in Vickery, Ohio, is owned and operated by Waste Management.

Waste Management's facility in Vickery received 26.9 million gallons of aqueous wastes in 2004, an increase of 7 percent over 2003. The percentage of hazardous wastes received decreased from 94 percent in 2003 to 91 percent in 2004. In both years, process wastes were 96 percent of the total and incidental wastes only 4 percent. Prices increased slightly.

We estimate that the total quantity of waste received for deepwell injection at permitted hazardous waste facilities was 108 million gallons in 2004. Clean Harbors describes their Plaquemine facility under the heading of "aqueous treatment" on their website.

Fuels Blending and Solvent Recovery

Fuels blending and solvent recovery are the two most common methods for treatment of spent solvents. Fuels blending is the more versatile of the two since both solids and liquids can be blended together to form a mixture suitable for burning in cement kilns or industrial boilers. Recovery of solvents for their material value is more limited in the wastes that can be treated. Some firms do both while others only do fuels blending as shown in Exhibit 12.

Fuels Blending. For the surveyed firms as a group, wastes received for fuels blending decreased slightly from 111 million gallons in 2003 to 110 million gallons in 2004. Waste receipts increased at sixteen fuels blending facilities that provided data for both years and decreased for 16, resulting in a median decrease of 2 percent. Onyx no longer does fuels blending in Morrow, Georgia. That facility was converted to a collection and transfer station in 2004. PCI sold

its fuels blending facility in Rancho Cordova, California to General Environmental Management (GEM) in 2004; GEM is using the plant as a collection and transfer station.

Prices for fuels blending were generally down, reflecting increased competition from cement kilns that have begun to market directly to generators. Historically, cement kilns that burned hazardous waste relied on fuel blenders for sourcing, mixing, and blending waste-derived fuels. Most also outsourced the management of those fuels for introduction to the kiln. More recently, some of the cement kilns that continue to burn hazardous wastes have taken all of those functions in house.

The total quantity of hazardous waste blended into fuels in 2004 was approximately 225 million gallons, an increase of 1.7 percent over 2003. The increase was due, to a significant extent, to Safety-Kleen's stepped-up marketing effort following its emergence from bankruptcy in December 2003, three-and-a-half years after having entered into Chapter 11.

Average capacity utilization for the 16 facilities that provided data increased from 52 percent in 2003 to 53 percent in 2004. For the same facilities, capacity utilization ranged from 24 percent to 82 percent.

**Exhibit 12
Fuels Blending and Solvent Recovery (2003 and 2004)**

Company Name	Facility	Fuels Blending					Solvent Recovery				
		Capacity		Receipts		Growth 2003 - 2004	Capacity		Receipts		Growth 2003 - 2004
		(million gallons)					(million gallons)				
		2003	2004	2003	2004		2003	2004	2003	2004	
EQ	Resource Recovery	N/A	N/A	1.9	3.9	106.3%			2.2	3.3	49.5%
Giant	Sumter, SC			23.8	25.2	5.9%			1.2	1.3	8.3%
	Attalla, AL			8.1	8.4	3.7%					
Philip	Avalon, TX	8.4	8.4	5.0	6.9	37.0%					
	Bayshore, NY	0.3	0.3	0.1	0.1	4.2%					
	Birmingham, AL	2.0	2.0	0.9	1.2	30.4%	3.0	3.0	0.7	0.7	3.9%
	Detroit, MI	56.0	56.0	11.9	13.2	10.9%	6.0	6.0	3.2	3.8	18.8%
	Houston, TX	0.9	0.9	0.4	0.7	74.9%					
	Inglewood, CA	1.3	1.3	0.8	0.6	-24.8%	1.4	1.4	0.2	0.2	-6.7%
	Kansas City, MO	2.7	2.7	0.9	0.7	-18.9%					
	Tacoma, WA	1.4	1.6	1.2	1.4	18.6%					
	Barrie, ONT	3.6	3.6	2.9	2.6	-10.6%					
	Etobicoke, ONT	2.3	2.3	1.0	0.6	-40.5%					
Perma-Fix	Valdosta, GA			1.4	1.0	-28.6%					
PCI	East Chicago, IN	12.5	12.5	7.9	7.3	-7.0%					
	Millington, TN	6.0	6.0	3.1	3.2	2.1%					
	Rancho Cordova			0.0	0.0	-100.0%					
Heritage	Indianapolis, IN			1.7	1.8	10.9%					
	Kansas City, MO			0.8	0.5	-41.0%					
Ecoflo	Greensboro, NC	3.4	3.4	1.3	1.1	-15.4%					
Onyx	Azusa, CA	10.0	12.0	5.2	4.4	-15.3%	5.0	2.5	1.1	1.3	11.2%
	Henderson, CO	10.0	3.0	2.9	1.4	-51.6%	2.0	2.0	0.8	0.6	-22.1%
	Morrow, GA	5.5		0.9	0.0	-1.00					
	West Carrollton, OH	9.0	9.0	7.1	6.1	-13.2%	2.3	3.5	1.5	3.0	95.5%
Clean Harbors	Baltimore, MD			7.2	4.1	-43.1%					
	Braintree, MA			2.1	1.4	-33.3%			0.1	0.0	-100.0%
	Chicago, IL			2.2	1.6	-27.3%					
	Bartow, FL			0.6	0.9	50.0%			0.1	0.2	100.0%
	Cincinnati, OH			3.0	4.0	33.3%					
	Mississauga, ONT			3.0	3.7	23.3%					
	San Jose, CA			1.1	1.4	27.3%					
Thorold, ONT			0.3	0.7	133.3%						
SUB-TOTAL (survey)				110.7	110.2	-0.4%			11.1	14.3	29.0%
Safety-Kleen*				22.0	28.3				20.9	21.5	
Other ^{(1), (2)}				89.0	86.9				25.7	28.2	
TOTAL				221.7	225.4	1.7%			57.6	64.0	11.0%

* Quantities for 2004 are estimates.

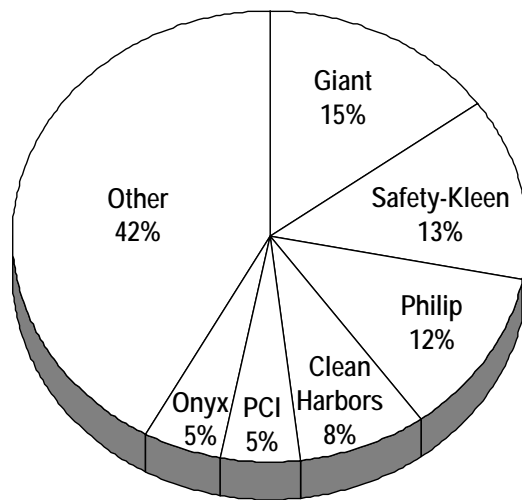
(1) Fuels Blending estimate based on 50 non-reporting facilities, assuming receipts per facility equal to the median for surveyed facilities in 2003 of 1.8 million gallons and growth rate in 2004 equal to the median of the surveyed facilities.

(2) Solvent Recovery estimate based on 27 non-reporting facilities, assuming receipts per facility equal to the median for surveyed facilities of million gallons in 2003 and growth rate in 2004 equal to the median of the surveyed facilities.

Source: Farkas Berkowitz & Company

The market is highly fragmented. The three top firms, Giant, Safety-Kleen, and Philip Services have a combined market share of 40 percent, as shown in Exhibit 13.

Exhibit 13
Shares of the Fuels Blending Market
by Company (2004)



Source: Farkas Berkowitz & Company

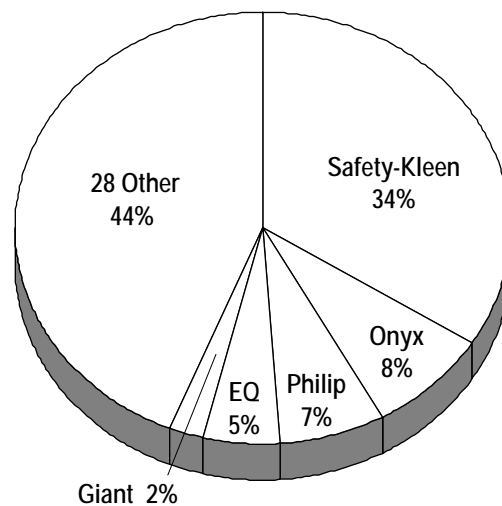
Giant Resource Recovery, Inc. (GRR!) is a wholly-owned subsidiary of Giant Cement Holdings, Inc. (GCHI). GCHI was acquired by Cementos Portland of Spain in December 1999. Prior to the acquisition, GCHI made a commitment to the fuels blending and solvent recovery business by acquisition of Oldover's fuel blending operation and M&M Chemical in 1998, and Omni-Southeastern Chemical in 1999. Cementos Portland has honored that commitment and also launched GRR Aerosols in 2002 to blend liquids and gases from aerosol cans into fuels for cement kilns.

Solvent Recovery. For the surveyed firms as a group, wastes received for solvent recovery increased 29 percent from 11 million gallons in 2003 to 14 million gallons in 2004 for the ten facilities that provided data for both years. Volumes increased for seven facilities and decreased for three, resulting in a median increase of close to 10 percent. Prices were generally higher, following the trend of increased prices for virgin solvents.

The total quantity of spent solvents treated for recovery of material value in 2004 was 64 million gallons, an increase of around 11 percent over 2003. Exhibit 13, presented earlier in this report, provides a breakdown by facility.

Safety-Kleen, continues to command over a third of the solvent recovery market. The remainder of the market is highly fragmented as shown in Exhibit 14.

Exhibit 14
Shares of the Solvent Recovery Market by Company (2004)



Source: Farkas Berkowitz & Company

Solvent recovery is an integral part of Safety-Kleen's parts-washer service. Safety-Kleen pioneered that service and has been the dominant competitor for over 30 years. The other more traditional solvent recovery firms receive spent

solvents from generators and purify them either for return to the original generator (tolling) or for resale. Heritage-Crystal Clean, the number-two firm in parts-washer services, replaces spent solvent with virgin solvent and transfers the spent solvent for use as an ingredient in an unnamed manufacturing process.

Average capacity utilization for the six facilities that provided the information increased from 36 percent in 2003 to 44 percent in 2004.

Aqueous Waste Treatment

For the surveyed firms as a group, wastes received for aqueous treatment at the facilities that provided data for both years increased around 8 percent from 263 million gallons in 2003 to 284 million gallons in 2004. Waste receipts increased at 13 facilities, decreased at 12, and were unchanged at two. The median was unchanged. Prices were mixed. Three firms reported increases, two reported decreases, and three reported no change.

We estimate that approximately 564 million gallons of aqueous wastes were treated at permitted commercial hazardous waste facilities in 2004, an increase of around 4 percent over 2003. We think that the DuPont facility in Deepwater, New Jersey accounts for over 20 percent of the total. Exhibit 15 provides a breakdown by facility.

Twenty-seven aqueous waste treatment facilities reported the mix of hazardous and non-hazardous wastes treated. The group as a whole treated 259 million gallons of aqueous wastes in 2003 and 278 million gallons in 2004. In both years, only 33 percent of the wastes received were regulated as hazardous under RCRA.

Capacity utilization for the 13 facilities that reported data for both years increased only slightly from 36.2 percent in 2003 to 36.7 percent in 2004.

Exhibit 15
Performance of RCRA-Permitted
Aqueous Treatment Facilities (2003 and 2004)

Company Name	Facility	Capacity (Million Gallons)		Wastes Received (Million Gallons)		Growth 2003 - 2004	Utilization	
		2003	2004	2003	2004		2003	2004
EQ	Resource Recovery	N/A	N/A	65.0	47.5	-26.9%		
	EQ Detroit	N/A	1.4	N/A	34.6			
Philip	Tacoma	18.3	18.3	1.3	1.8	42.4%	6.8%	9.7%
	Fernley, NV	3.9	3.9	0.6	0.5	-11.9%	14.6%	12.9%
	Kent, WA	21.0	21.0	4.4	4.3	-2.3%	21.0%	20.5%
	Hatfield, PA	13.0	13.0	3.6	4.8	33.3%	27.7%	36.9%
	Fort Erie, ONT	13.7	13.7	2.6	1.8	-31.8%	19.3%	13.1%
	Etobicoke	10.0	10.0	9.2	9.2	-0.2%	92.2%	92.0%
	Branford, ONT	62.6	62.6	15.4	18.5	19.7%	24.6%	29.5%
Perma-Fix	Dayton, OH	78.8	78.8	21.0	13.9	-33.7%	26.7%	17.7%
	Ft. Lauderdale, FL	N/A	N/A	2.8	4.5	57.0%		
	Tulsa, OK	27.0	27.0	12.0	17.2	43.3%	44.5%	63.8%
Heritage	Indianapolis, IN	84.0	84.0	20.4	17.8	-12.9%	24.3%	21.1%
Envirite	Harvey, IL	12.0	12.0	7.5	7.6	0.8%	62.6%	63.1%
	Canton, OH	12.5	12.5	6.9	5.3	-23.1%	55.4%	42.6%
	York, PA	12.0	12.0	6.2	6.5	5.4%	51.3%	54.1%
Onyx	Azusa, CA	N/A	N/A	3.1	2.5	-19.7%		
Clean Harbors	Bristol, CT	N/A	N/A	3.0	3.5	16.7%		
	Chicago, IL	N/A	N/A	12.0	9.7	-19.2%		
	Baltimore, MD	N/A	N/A	6.0	6.5	8.3%		
	Cincinnati, OH	N/A	N/A	2.0	2.0	0.0%		
	Cleveland, OH	N/A	N/A	18.0	18.0	0.0%		
	San Jose, CA	N/A	N/A	3.8	3.5	-7.9%		
	Los Angeles, CA	N/A	N/A	0.4	0.5	25.0%		
	Antioch, TN	N/A	N/A	2.0	0.0	-100.0%		
	Guelph, ONT	N/A	N/A	4.4	5.8	31.8%		
	Chattanooga, TN	N/A	N/A	21.0	22.0	4.8%		
	Plaquemine, LA	N/A	N/A	8.6	13.8	60.5%		
SUB-TOTAL (survey)				263.35	283.60	7.7%		
DuPont (estimate)				120	120			
Other*				150	150			
TOTAL				533.35	553.60	3.8%		

Source: Farkas Berkowitz & Company

Aqueous hazardous wastes have not been included in the EPA's biennial reporting system (BRS) since 1987. One exception is hazardous wastes managed by deepwell injection. If the influent to a wastewater treatment plant is

hazardous under RCRA, and the effluent is under the control of the Clean Water Act, then the treatment unit is exempt from RCRA regulations.

Since December 2003, commercial facilities that treat aqueous industrial wastes have been subject to the Centralized Waste Treatment Standards. The regulations were promulgated under the Clean Water Act and are identical for facilities that treat hazardous wastes, nonhazardous wastes, or a combination. A centralized (i.e. commercial) wastewater treatment facility that has an NPDES permit or is subject to pretreatment standards can treat hazardous wastes without a RCRA permit, but cannot store them. The wastes can be placed in tanks that are part of the treatment system, but cannot be stored in drums, for example. Some states, however, do not recognize the exemption.

Field Services

We use the term field services in this report to encompass services provided at the site of waste generation by firms with a base business in hazardous waste. Such services include lab-packing, comprehensive on-site waste management or even total chemical management, industrial cleaning and maintenance, remediation, and emergency spill response. Many firms outside of the hazardous waste industry provide similar types of services, but most avoid taking possession of the wastes.

Hazardous waste firms that have diversified into one or more types of field services include Philip Services Corporation (PSC), Clean Harbors, EQ – The Environmental Quality Company, and Onyx North America. The first three have field services divisions. Onyx North America has four operating subsidiaries. Onyx Environmental Services engages mainly in treatment and disposal at facilities permitted for hazardous waste, and Onyx Industrial Services focuses on what we are calling field services for purposes of this report. Onyx North America's other two subsidiaries are Onyx Waste Services for collection and

disposal of municipal solid waste, and Montenay Power that owns and operates waste-to-energy plants.

Lab-packing services are offered by most incineration firms. Laboratories and research institutions generate small quantities of a large number of waste types that can be shipped more safely and economically when suitably packed in 55-gallon drums. Although each waste is also in its own closed container, the materials in the packed drum should be chemically compatible to avoid accident in the event of breakage.

Industrial cleaning and maintenance is a highly fragmented market. Estimates of market size vary from \$4 billion to over \$50 billion depending on what services are included. Market participants include engineering construction (E&C) firms, mechanical and electrical contractors, general contractors, and firms providing a variety of hydroblasting, vacuuming, chemical cleaning, and sandblasting services. Firms with a base business in hazardous waste treatment and disposal currently have a very small market share.

The remediation market, apart from Department of Energy facilities, has been declining more slowly than Farkas Berkowitz & Company had expected. Nonetheless, all of the legacy sites that the U.S. has the appetite to clean up will inevitably be cleaned up eventually. Dozens of engineering consulting firms still provide remediation services. An advantage that hazardous waste treatment and disposal firms may have is willingness to take possession of the wastes. Of course, if the remedial action results in the generation of hazardous wastes for off-site treatment and disposal, firms in that business will benefit.

The need for emergency response is perpetual, but unpredictable. As OHM proved, emergency response is not a reliable source of revenue for a firm that is expected to generate a profit. If an incident calls for treatment or removal of

contaminated solids or water, emergency response can augment revenues and earnings.

Chapter 4 Competition

The hazardous waste management industry remained highly competitive in 2004. Although additional facilities closed or ceased to accept hazardous waste, overcapacity still exists in fuels blending and solvent recovery. Average capacity utilization was over 90 percent for incineration facilities in 2003 and 2004, but only slightly over 50 percent for fuels blending facilities, and around 40 percent for solvent recovery facilities.

Exhibit 16 shows our estimate of the distribution of the market among competitors. Clean Harbors, with 2004 revenues of \$643 million, has a 19 percent share of the overall market. As explained earlier, we have expanded our definition of the market from 2003 by inclusion of Onyx Industrial Services, Heritage – Crystal Clean, and Envirocare of Utah.

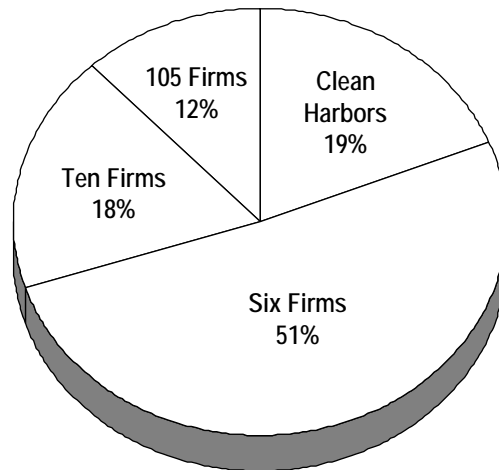
Six firms, each with annual revenues of \$200 – \$500 million account for 51 percent of the market. These firms are Philip Industrial Services, Onyx Environmental Services combined with Onyx Industrial Services, Heritage Environmental including Crystal Clean, Safety-Kleen, Waste Management Inc., and Envirocare of Utah.

Ten firms, each with annual revenues of \$30 – \$150 million, commanded a collective 18 percent market share in 2004. We believe those firms are American Ecology, Ashland Environmental, ChemCare division of Univar, DuPont Environmental Treatment, EQ, Giant Resource Recovery, Perma-Fix, Pollution Control Industries, Stablex Canada, and Teris N.A.

Approximately 105 firms, each with annual revenues less than \$30 million make up the remaining 12 percent of the market.

Our previous Hazardous Waste Industry Review for 2003-2004 includes brief profiles of the top firms.

Exhibit 16
Distribution of \$3.5 Billion
Hazardous Waste Management Market
Among Competitors in 2004



Source: Farkas Berkowitz & Company

Each firm in the industry approaches the market differently. Firms other than Clean Harbors provide a limited range of services, although most broker wastes that they are unable to treat in their own facilities. Exhibit 17 summarizes the internal service capabilities of the 21 firms that responded to our survey.

The treatment methods are not generally interchangeable. Land disposal restrictions limit the types of wastes that can be landfilled. Virtually all combustible wastes can be handled by incineration, and some must be incinerated under current regulations. Combustible solvent wastes with material value can be recovered for reuse or resale. Combustible wastes with significant fuel value can be blended for burning in cement kilns. Aqueous wastes, even those containing organics, cannot generally be treated economically by either incinerators or cement kilns because of the large amount of energy required to evaporate the water. Many aqueous wastes are permitted for treatment by deep

well injection, a form of land disposal. However, deep well injection is falling out of favor, due largely to vocal public objection to the practice. The most common aqueous treatment technologies are neutralization, precipitation, cyanide oxidation, and chromium reduction/precipitation. However, many other physical/chemical/biological treatment methods are used commercially.

**Exhibit 17
Internal Service Capability of Survey Respondents**

	Incineration	Cement Kiln	FB*	SR**	Land Disposal	Deepwell	Aqueous Treatment	Field Services	Other
Clean Harbors	X		X	X	X		X	X	X
Heritage	X-		X		X		X	X	X
Onyx	X		X	X			X	X	
Philip			X	X			X	X	X
WMI					X	X			
American Ecology					X				
Stablex Canada					X				
Peoria Disposal					X				
EQ			X	X	X		X	X	X
Envirite							X	X	X
Ecoflo			X						
ROSS	X								
CP Recycling		X							
Giant Resource Recovery		X	X	X					
Pollution Control Industries			X						X
Systech		X							
Perma-Fix					X				
Holcim		X							
Envirocare					X				
Waste Control Specialists					X				
Earth Tech	X								

* Fuels Blending

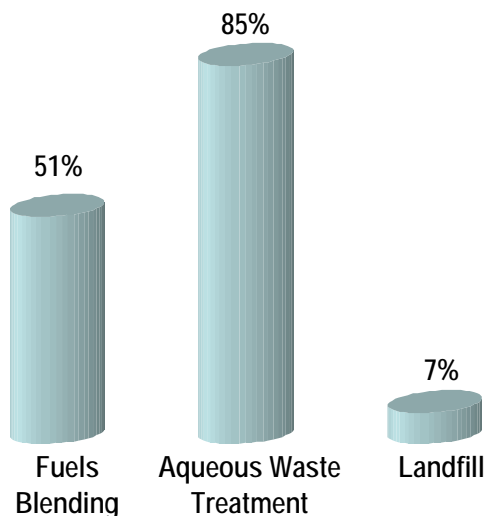
** Solvent Recovery

Source: Farkas Berkowitz & Company

Commercial facilities incur both transportation costs and treatment/disposal costs. The latter vary by technology, and also vary for different types of wastes treated by the same technology. The higher the transportation costs as a percentage of total costs, the more likely it is that the market will become localized, other things being equal. We define a facility that serves a local market

as one that receives wastes for treatment or disposal from generators located within a 100 mile radius of the facility. Exhibit 18 shows the results reported by our survey population for three treatment/disposal technologies. The percentages given are medians for the facilities that responded within each category.

Exhibit 18
Wastes Received from Local Generators
Percentage of Waste Transported 100 Miles



Source: Farkas Berkowitz & Company

Landfill is largely a national market, with the median facility receiving 93 percent of its wastes from outside of a 100 mile radius. Fuels blending is more localized with the median facility receiving 49 percent of its wastes from outside of a 100 mile radius. Aqueous waste treatment is the most localized of the three markets. The median facility received only 15 percent of its wastes from outside of a 100 mile radius in 2004.

Chapter 5 Financial Performance of Publicly Traded Firms

The number of firms that publicly report revenues and operating income (earnings before interest and taxes) for their hazardous waste business units has been shrinking constantly since 1990, the year of peak growth for the hazardous waste management industry. The following six firms are the only ones that reported financial results for their U.S. and Canadian hazardous waste operations in 2004.

- American Ecology,
- Bennett Environmental,
- Clean Harbors,
- Veridium (formerly KBF Pollution Management),
- Perma-Fix, and
- Valhi/Waste Control Specialists.

Exhibit 19 displays revenues, EBIT margins (earnings before interest and taxes as a percentage of revenue), and growth in 2004 for each of these firms.

Exhibit 19 Financial Results for Publicly Reporting Hazardous Waste Treatment and Disposal Firms (2004)

Firm	Revenues (\$ Millions)	EBIT Margin	Growth
Clean Harbors	643.2	6%	5%
Perma-Fix	83.7	Negative	-1.4%
Bennett Environmental	25.3	Negative	-64%
American Ecology	54.2	24%	-4.9%
Valhi/Waste Control Specialists	8.9	Negative	117%
Veridium	13.2	Negative	1.5%

* Canadian dollars

Source: Securities and Exchange Commission 10K Filings

We are not presenting a composite index because each of the firms participates in different segments of the industry and is pursuing a different business model.

General Environmental Management (GEM) became a publicly traded company in February 2005 by a reverse merger with Ultronics. Ultronics was publicly traded, but its sole mission was to investigate firms interested in merging. GEM is the surviving corporation, but did not report revenues and operating income for 2004.

For Clean Harbors, 2004 is the second year that reflects the full effect of the acquisition of Safety-Kleen's Chemical Services Division (CSD). Clean Harbors acquired CSD early in the fourth quarter of 2002. Revenues in 2004 are 2.6 times higher than revenues in 2001, the last full year prior to the acquisition. Operating margins increased from less than 2 percent in 2003 to more than 5 percent in 2004, but have not yet recovered to the 7 percent operating margin reported for 2001.

Veridium (formerly KBF) has based its business on its proprietary Selective Separation Technology, a wastewater treatment process that separates a wide range of metals from liquid wastes. KBF lacked the sales and logistics systems for bringing wastes into its facility and for selling the recovered metals. To compensate for those deficiencies, as we noted in last year's report, the company formed Veridium in September 2003 by acquisition and consolidation of the Environmental Services Division of R.M. Jones, Enviro-Safe Corporation (unrelated to Enviro-safe of Ohio), KBF Pollution Management, American Metals Recovery Corporation, New World Recycling, and Metal Recovery Transportation Corporation. The company had never been profitable and is not yet. The audit report for 2004 includes a going concern qualification and notes a working capital deficiency.

In April 2005, GreenShift acquired a majority equity stake in Veridium. GreenShift is a business development company whose CEO, Kevin Kreisler, was CEO of Veridium from 2002 to January 2005 when he became chairman. A business development company is a publicly traded equity firm. GreenShift has

an equity interest in ten or so firms, including Veridium, that “facilitate efficient use of natural resources and catalyze transformation of environmental change.”

For the publicly traded firms that report complete income statement and balance sheet information, the first quarter of 2005 was mixed. Exhibit 20 summarizes financial results for the three months ending March 31, 2005 compared to the same period in 2004 for Clean Harbors, Veridium, Perma-Fix, American Ecology, and Bennett. (Waste Control Specialists is a division of Valhi, a publicly traded firm for which the parent company only reports revenue and operating income.)

Exhibit 20
Financial Results for Publicly Traded Firms
(First Quarter of 2005 vs. 2004)

Parameters	Clean Harbors		Veridium		Perma-Fix		American Ecology		Bennett	
	Three months ending March 31		Three months ending March 31		Three months ending March 31		Three months ending March 31		Three months ending March 31	
	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004
Revenues (\$ millions)	165.0	142.8	4.0	3.1	21.6	16.8	12.6	13.9	3.9	8.9
EBIT Margin	4%	3%	Negative	3%	3%	Negative	11%	25%	Negative	Negative
Current Assets (\$ millions)	211.4		3.6		33.2		29.8		30.0	
Current Liabilities (\$ millions)	156.4		6.2		32.8		12.6		9.2	
Long-term Debt (\$ millions)	148.2		0.33		13.9		2.4		1.5	
Equity (\$ millions)	16.9		1.0		42.2		52.7		76.5	
Growth	16%		28%		29%		(9%)		(56%)	
Debt/(Debt + Equity)	90%		24%		25%		4%		2%	
Current Ratio	1.4		0.6		1.0		2.4		3.3	

Source: Securities and Exchange Commission Filings

Revenues increased for Clean Harbors, Veridium (albeit from a very small base), and Perma-Fix, and decreased for American Ecology and Bennett. Operating margin increased for Clean Harbors and Perma-Fix, decreased for American

Ecology, and went into the red for Veridium and Bennett. Clean Harbors and Perma-Fix are the only publicly traded firms that reported increases in both revenue and operating margin.

Clean Harbors is organized around two divisions – Technical Services and Site Services. Technical Services includes the traditional off-site treatment and disposal of wastes at permitted hazardous waste management facilities. Site Services includes industrial cleaning and maintenance, remediation, decontamination, and emergency response services. Exhibit 21 shows the distribution of revenues between the two divisions in 2003, 2004, and the first quarter of 2005.

**Exhibit 21
Divisional Breakdown of Clean Harbors’
Financial Results (\$ Millions)**

Division	Three Months ending:		2004		2003	
	3/31/05	3/31/04	Revenue	EBITDA	Revenue	EBITDA
	Revenue	Revenue	Revenue	EBITDA	Revenue	EBITDA
Technical Services	\$107	\$101	\$445	\$98	\$423	\$49
Site Services	\$58	\$42	\$199	\$21	\$188	\$15

Source: Farkas Berkowitz & Company

Technical Services grew 5.2 percent in 2004 compared to 2003, and 5.3 percent in the first quarter of 2005 compared to the first quarter of 2004. Site Services grew 5.7 percent in 2004 and close to 40 percent in the first quarter of 2005. Emergency response accounted for 11 percent of Site Services revenue in 2003, 5.5 percent in 2004, and 20 percent in the first quarter of 2005. Without emergency response projects, Site Services would have grown 12.3 percent in 2004 and 11.7 percent in the first quarter of 2005, more than twice the rate of growth of Technical Services. EBITDA margins (earnings before interest, taxes and depreciation as a percentage of revenue) were 22 percent for Technical Services and 11 percent for Site Services in 2004. Assuming that total depreciation of \$23.1 million is split between Technical Services and Site

Services in the same ratio as assets (\$253 million for Technical Services and \$11 million for Site Services), we estimate operating margins (earnings before interest and taxes as a percentage of revenue) of 17 percent for Technical Services and 10 percent for Site Services in 2004. We expect the demand for technical services to remain fairly stable, but we think there is more room for growth in site services.

Chapter 6 Outlook

Traditional hazardous waste treatment and disposal, what Alan McKim, CEO of Clean Harbors, describes as “pick it up and put it down,” is not a growth market. It is also not a declining market, and hence provides a relatively stable base from which individual firms can grow by acquisition or diversification.

Base business revenues depend to a large extent on the volume of manufacturing wastes available for off-site treatment and disposal at permitted hazardous waste facilities, and the price that customers are willing to pay for the service. Manufacturing waste volumes are a function of the state of the economy, the quantity of waste generated per unit of production, and the degree to which manufacturing activities are transferred to plants outside of the U.S. We do not expect major growth over the next three to five years in the traditional U.S. manufacturing industries that generate the largest quantities of hazardous waste.

In the face of global competition, manufacturers of commodity products are working to reduce costs. The impact on the hazardous waste industry could be positive or negative. The impact would be negative if more aggressive pollution prevention or waste minimization initiatives resulted in generation of less waste per unit of production. The impact could be positive if the smaller quantities of waste produced were more difficult to handle, or if non-core but essential waste management activities were outsourced. Harry Lamberton, national manager of business development and business planning for Waste Management is quoted in *Environmental Business Journal* (Volume XVIII, Number 7/8, 2005) as having observed, “In many cases, customers have reduced the volume of wastes they generate to such a significant degree that it doesn’t make sense to maintain on-site facilities. There is also the recognition that on-site treatment is not their core business.”

We noted in last year's report that movement of manufacturing overseas meant increased one-time event business for hazardous waste firms, but also, of course, loss of a steady stream of manufacturing wastes. We think that security considerations may slow the closure and export of existing manufacturing plants, but that new plants may be sited in developing countries, particularly India and China. According to the World Bank, the U.S. accounted for 23.8 percent of the world's manufacturing output in 2004, barely changed from an average annual output of 24.8 percent since 1982. According to the Census Bureau, the manufacturers remaining in the U.S. are firms employing fewer than 1,000 people. Those firms, rather than the very largest manufacturers, may represent the best opportunity for hazardous waste firms.

Waste generated from remediation projects, industrial cleaning and maintenance, and spill response augments the more predictable volumes from manufacturing processing. In a weak economy, firms tend to delay remediation and industrial cleaning and maintenance to the extent possible. As the economy strengthens, those activities tend to be resumed. Spill response can generate one-time event wastes for treatment and disposal at permitted hazardous waste facilities. While accidents do happen, they cannot be relied upon as a steady source of revenue.

The outlook for pricing remains uncertain and is likely to remain so as long as the industry is plagued with overcapacity. Even for incineration, where supply and demand are coming into balance, prices increased for three firms, remained unchanged for one, and decreased for one in 2004. For every other sector, the number of firms reporting unchanged or decreased prices exceeded the number reporting increased prices. At the same time, higher fuel prices increased transportation costs.

The hazardous waste industry cannot count on any significant help from the EPA. In 2005, the Agency proposed adding several wastes from dyestuffs and pigment production to the list of hazardous wastes. But what they gave with one

hand, they took away with the other by allowing those wastes to be disposed of in Subtitle D nonhazardous waste landfills that meet certain specifications, and not requiring that they go to Subtitle C hazardous waste landfills or incinerators. This is only the most recent example of a regulatory approach that EPA calls “contingent management.” The intent is to relieve generators of the stigma of having their wastes classified as hazardous and to reduce disposal costs. The effect may be to create the Superfund sites of the future.

With increased waste volume unlikely, and little expectation for increased prices, cost control takes on major importance for sustaining profitability in the base business. Individual firms could grow by acquisition and they might be able to increase margins in so doing if they were able to achieve economies of scale.

The more likely route of growth is diversification. The possibilities are limitless as the following examples illustrate. Clean Harbors, Philip Services, Onyx North America, and EQ, among others are offering industrial cleaning and maintenance services. Heritage created an Interactive Service that currently manages all by-products for ten customers, and the hazardous waste component comprises less than 10 percent of the total. EQ developed a specialty service for managing deicing fluids at airports. Perma-Fix formed a Nuclear Services Division in 2000 to pursue the DOE market. In 2004, nuclear accounted for \$46.2 million in revenue with an operating margin of 13.3 percent, while the base hazardous waste business generated \$39.9 million in revenue with an operating loss.

General Environmental Management (GEM), a relative newcomer to the industry, is exploiting information technology to consolidate small brokers that operate under RCRA’s ten-day exemption.



Hazardous Waste Report

2004-2005

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