

## Grounds crew

By Scott Powers  
*Dispatch Environment Reporter*

**W**hen construction crews building the new baseball stadium in Cleveland found dirt contaminated by toxic chemicals in late 1992, they faced the challenge of cleaning up the property without disrupting a tight schedule.

The crews had unearthed two unexpected underground storage tanks, and both were leaking. The tanks contaminated the dirt with benzene, toluene, ethylbenzene, xylene and TPH — all regulated as hazardous wastes.

### Lambda Bioremediation Systems cleaning up in hazardous waste management

Enter Lambda Bioremediation Systems, 2824 Fisher Rd., a small but expanding environmental company that specializes in making contamination go away without a great deal of digging, hauling or heavy equipment.

So, by the time Cleveland Indians right fielder Wayne Kirby singled in the winning run in the 11th inning, opening Jacobs Field with a victory April 4, President Clinton and 41,458 other fans attending had no reason to worry that the field might be toxic. Lambda had long since done its job.

Bioremediation — using bacteria and other microbes to “eat” hydrocarbon-based contamination — is growing as a preferred method of cleanup.

But the procedure has inherent problems that do not necessarily make it easier or cheaper than more traditional methods of dealing with hazardous wastes.

In most bioremediation projects, companies either import foreign bacteria or pump the ground full of oxygen and nutrients to stimulate existing bacteria. Frequently the dirt must be fully excavated, aerated and either placed in cells on site or transported to storage areas off site.

Lambda cuts site disruptions by using a process that company President Jo Davison said she developed through 23 years of research, and now guards carefully.



Michael D. Kennedy/Photos for The Dispatch

Lambda Bioremediation President Jo Davison examines a slide of bacteria devouring an oil blob which appears as a brown patch on the television monitor.



Jo Davison displays a bowl of sludge that has been decomposed by bacteria.

Lambda takes soil samples from the contaminated site, isolates a key combination of existing microbes, cultures them to create super-enhanced populations and then returns them to the site. The microbes eat hydrocarbons until there is nothing left to eat, and then they starve back to natural levels. The process usually takes six months.

Because the lab does not use microbes that are foreign to the soil, microbiological contamination is not an issue. Permits usually are not needed. Digging and disruption are minimal. Pumps do not run continually to enrich the soil.

“We were looking for a nondestructive solution,”

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said Mark K. Horton, of Gateway Economic Development Corp., which developed Jacobs Field. "We had, because of our fast track, decided to go with Lambda's approach. It would allow us to put the injection wells in, pour concrete around the wells and keep going with construction."

Also, the cost was about half of that charged by other companies.

Davison said she began developing the technology as a doctoral candidate in environmental sciences at West Virginia University.

When she and another microbiologist, Susan F. Jones, launched Lambda five years ago, they did so with complete confidence in their process and with the knowledge that a huge market existed, even though they had very little business background.

This year they added a marketing office and have doubled their business, obtained a long-sought expansion loan and developed a partnership with a Centerville, Ohio, company.

Until recently, Lambda has had trouble attracting capital, partly because Davison and Jones, the sole owners, refuse to accept outside investors or divulge to skeptical lenders precisely how their process works.

That changed this month when Huntington National Bank extended the company's first commercial loan. Also, Lambda signed a "teaming agreement" with Kelchner Environmental of Centerville. Kelchner has experience with more traditional remediation processes — the ones that usually involve excavation equipment. The agreement gives both companies more flexibility to handle complex jobs, Davison said.

The loan is allowing Lambda to move to a larger, brighter, better-equipped location this week, with four times the amount of office and laboratory space.

The company has met with skepticism not only from financial institutions but from clients, who frequently withheld payment for 30 days to see if the process was really working. Usually, 30 days is all that

is needed to show significant drops in contamination levels.

Part of the company's problem, Davison said, has been that everyone at Lambda had science backgrounds. No one was terribly savvy or interested in the business side.

Davison said Lambda's level of business had remained constant for the past several years, less than \$500,000 in annual sales. Now, the company has more than \$1 million in contracts and is turning down jobs, she said.

Lambda has five employees and will be hiring more soon.

"This business started very slowly because of the new technology, and this year it has taken off and just mushroomed," Davison said. "That's why we had to make the major investment" to expand.

*Lambda's approach of super-enhancing native microbe populations in a lab is rare, if not unique.*

Lambda's market is national in scope. Its customers have included a country club in Portland, Maine; the site of a drugstore in Kentucky, and projects in Michigan, New Mexico and elsewhere.

David Glass, a Needham, Mass., consultant who specializes in marketing and technology assessments for bioremediation, estimated that national sales in the bioremediation market were in the range of \$100 million to \$150 million last year, and they should grow to \$250 million by 1995.

Glass said the industry is led by five or six companies, each of which has sales in the range of \$5 million to \$10 million. There may be as many as 200 smaller outfits, "depending on whom you count," he said.

Though the field is growing, bioremediation is still used in only a small percentage of environmental cleanups. Glass said estimates of annual environmental cleanup sales range between \$4 billion and \$12 billion.

"It is simply not applicable to every site," Glass said.

Glass said Lambda's approach of superenhancing native microbe populations in a lab is rare, if not unique. But, he added, "From a scientific point of view, it is probably the best way to go."