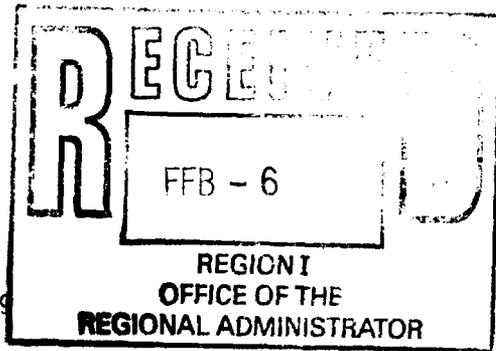


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February 3, 1989

AVX Corporation
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Great Neck, NY 11021
(516) 829-8500

Charles A. Dill
President

Mr. Frank Ciavattieri
New England Region
U.S. Environmental Protection Agency
John F. Kennedy Federal Building
Boston, MA 02203-2311

Re: New Bedford Harbor

Dear Frank:

I was not able to attend the last meeting with EPA on January 18, but Joan Prager of AVX, as well as our lawyers and consultants, were in attendance. Speaking on behalf of AVX (the only party for whom I can speak), we considered both this meeting and the earlier January meeting fruitful.

After discussion with our people about these meetings, however, I am concerned that the feasibility study is emerging in a way that could unnecessarily eliminate from further consideration some of the remediation alternatives which may be the most cost-effective while meeting all other regulatory requirements, including protection of human health and the environment and reduction of toxicity, mobility or volume. In light of the mandate that the FS focus primarily on technical feasibility, environmental impact, and cost of each option, rather than the comparative cost of all the various alternatives in conjunction with other factors, the FS must remain flexible and include all feasible options until economic logic can be applied -- presumably in the process leading to the Record of Decision.

The options which we understand you are considering are based on some mix of two general approaches:

1. Removal of the more heavily contaminated material from the harbor bottom through excavation of the "hot spots," and
2. Remediating the remaining areas with elevated PCB concentrations, particularly in the upper estuary, with capping now under consideration as well as other remedial alternatives.

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Within these general approaches, AVX feels there are five key questions which should remain open until the EPA has evaluated, in addition to the technical and environmental issues, the economics and cost/benefit relationships of the various options. Specifically, we feel the feasibility study should remain flexible on the following points:

1. The level of PCB concentration that defines "hot spot":

- In the remediation selected by the EPA and Outboard Marine Corporation in Waukegan Harbor, 10,000 ppm was the level above which excavated "hot spot" material was treated. In New Bedford, the EPA is proposing to treat all "hot spot" material over 4,000 ppm.

2. Containment versus treatment of the excavated "hot spot" material:

- As we now understand it, the EPA is proposing only treatment options which cost between \$12 and \$18 million.
- The EPA must also look at containment of the removed material in a CDF cell -- because it is much less expensive than treatment, and can be done in a way that can be monitored -- with permanence.

3. Biodegradation as a viable long-term consideration:

- Biodegradation, if proven, could have major cost reduction impact on harbor remediation.
- Significant evaluation of biodegradation has been undertaken and preliminary results are encouraging, as attested by the attached articles showing that other EPA regions in the State of New York are actively pursuing biodegradation as a key remedial component at several sites. Although the EPA's position is that more tests for even longer time periods are required to verify the effectiveness of biodegradation as a remedy, the option of containing rather than treating the "hot spot" material would be consistent with a "wait and see" approach to biodegradation. Treatment of the contained "hot spot" material can be retained as an option for future consideration if biodegradation does not prove to be an effective remedy.

4. Toxicity of PCBs:

- The containment approach to the "hot spot" material would also be consistent with a "wait and see" approach to the issue of whether PCBs are in fact toxic. From the experts we have interviewed and the literature and tests we have reviewed, we do not believe that present assumptions about PCB toxicity, which appear to be driving clean up analyses in the harbor, are well founded, and feel that further studies will verify this position. Nevertheless, AVX is cooperating with the EPA because we recognize that Congress decided that PCBs were toxic, and the process by which such a Congressional and political point of view can be changed is a very slow one. We also recognize that decisions on the toxicity of PCBs may involve other agency personnel, and not be within the scope of the Region I EPA charter. Nevertheless, permanent and monitored containment of the removed "hot spot" material, with major savings over the treatment options, is responsive to the various political and technical positions on PCBs -- however PCBs are ultimately rated as to toxicity.

5. Adequate cap thickness:

- Cap thickness relates to a number of factors, but a very important factor is the level of PPM under the cap -- the lower the level of PPM after removal of the "hot spot", the thinner the cap that is required.
- We feel that final decision on cap thickness must therefore be related to final decision on the PPM level defining the "hot spot".
- Application of conservative "safety" factors to the cap thickness question must be accompanied by application of appropriate cost considerations.

A preliminary look at the economics of the case reinforces AVX's position that the EPA stay flexible in the FS on all five of the above issues. To the extent the EPA hopes to negotiate rather than litigate to recover some part of the eventual

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remediation cost, economic considerations are important and merit serious consideration. While AVX will not voluntarily participate in a remediation approach that includes unnecessary expense from a cost/benefit standpoint, it is willing to look hard at, and seeks to negotiate towards, fairly sharing in a remedial solution that makes sense from a cost-benefit viewpoint, at the same time it protects the public health and environment.

We will be happy to discuss all of these points at our next scheduled meeting in March or anytime at your convenience.

Sincerely,

Charles Dill

Charles A. Dill

CAD/sn
cc: Michael Deland
Paul Keough

'Super' Microbes Offer Way To Treat Hazardous Waste

By AMAL KUMAR NAJ

Staff Reporter of THE WALL STREET JOURNAL

Industrial cleaning crews and university researchers are turning to "superbugs" to neutralize America's hazardous wastes and spills.

Detox Industries Inc. in Sugar Land, Texas, has developed specialized microbes to eat polychlorinated biphenyls, or PCBs, a substance found in much industrial waste. BioTrol Inc., Chaska, Minn., has developed a patented strain of bacteria to break down pentachlorophenol compounds, or PCPs, toxic wood-treating chemicals that are among the most common of hazardous wastes. Scientists at Colorado State University are genetically engineering microorganisms that devour even such toxic metals as mercury, lead, and arsenic.

Room for Growth

Microbes have been used for decades to treat municipal sewage, but loosing them to break down highly toxic substances into harmless byproducts is a recent innovation. The shift has been prompted by the high cost of chemical treatment and public opposition to incinerators.

"When we formed our company two years ago, we couldn't get anybody to take us seriously," says Boyd Burton, president of BioTrol. "Now that has changed."

About 50 companies with annual revenues totaling roughly \$20 million now offer "bioremedies," says Douglas Shooter, hazardous-waste consultant at Arthur D. Little Inc., a management-consulting firm in Cambridge, Mass. He expects those revenues to rise to between \$300 million and \$500 million yearly by the mid-1990s.

Microbiologists say treating the most formidable toxins will require genetic engineering of microbes. For now, however, thousands of different bug types that occur naturally in soil and water are capable of acquiring a taste for specific toxins.

In Grayling, Mich., Hunter Biosciences Inc., a subsidiary of Hunter Environmental Services Inc. of Southport, Conn., has released specially developed microbes in a site where soil and ground water are contaminated by diesel fuel. The microbes, developed from strains at the site, were "enriched" with various nutrients in the company's laboratories so that they could break down a high concentration of the contaminants.

Jason Caplan, president of Hunter Biosciences, says his company's work will take six to 12 months and cost \$350,000. In

contrast, conventional treatment would have taken 10 to 20 years and cost \$500,000 to \$1 million, he says.

Detox Industries has a contract to treat PCBs at two sites, including one owned by General Motors Corp. in Massena, N.Y. Thomas A. Dardas, Detox's president, says the company's microbes will metabolize the PCBs into water, carbon dioxide and cell protoplasm. When the bugs finish their job, they will starve and become food for other local organisms, Mr. Dardas says.

BioTrol isolated 45 different microbes that eat PCPs, then selected the most ravenous. The company says it is using the result, its patented Flavo bacteria, in four commercial cleanups and four pilot projects. BioTrol injects a single bacterium—taken from its stock in a freezer—into contaminated water inside a temperature-controlled chamber. The bacterium converts almost all of the PCPs into water, carbon dioxide and harmless salts, reducing them to 100 parts per billion from 100,000 parts per billion.

Unlike pesticides and organic chemicals, toxic metals pose a formidable challenge for microbiologists. The metals are stable and hard to destroy, and they easily poison microbes. Donald Klein of Colorado State University says he and some colleagues are subjecting microbes to heavy metals and isolating those that survive. These microbes, he says, can change the chemical state of a toxic metal, reducing arsenic, for instance, to its harmless, elemental form, called arsine.

Genetic Transplants?

Mr. Klein says commercialization of this technology is still some years away. He says he is currently isolating genetic information in those microbes for transplant into other types of organisms with other useful characteristics.

The University of Cincinnati, using a \$3.4 million grant from the National Institute of Environmental Health Sciences, is isolating genes from rats, mice and even humans to make better superbugs. Certain animal genes control bodily processes for destroying toxic substances. "A number of classes of these genes can be engineered in another organism to attack specific toxic substances," says Roy Albert, the head of the university's Kettering Environmental Health Institute. "In the future, you will see a lot of waste-management companies that would look like drugstores, with a lot of bottles on the shelf, each for a specific type of waste material."

cc Proffer (Feb 84)
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The New York Times/David Jennings

Part of a section of the Hudson River, known as the Thomson Island Pool, near Fort Edward, N.Y. The section is eventually to have 300,000 cubic yards of PCB-contaminated sediment dredged out.

Hudson PCB Removal Stalled Again

By PHILIP S. GUTIS
 Special to The New York Times

ALBANY, Jan. 16 — Removal of PCB's from the Hudson River, delayed for more than a decade, has been stalled once again by a state panel's rejection of a plan to bury soil dredged from the river on an upstate dairy farm.

Despite the delay, the State Environmental Conservation Commissioner, Thomas C. Jorling, reaffirmed the state's commitment to dredge the river and outlined an expanded program that he said would eventually remove not only contaminated soil from the bottom of the river but also some from the riverbanks.

Mr. Jorling, who said the expanded program would delay dredging for about two years, also ordered his staff to prepare another site as a hazardous-waste landfill to accept the PCB-tainted soil from the expanded program.

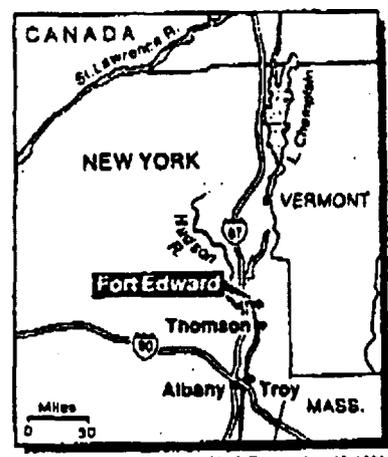
'Hot Spot' of Contamination

The new site, which had previously been considered by state officials, will be prepared to handle more than the 360,000 cubic yards of badly contaminated sediment from the Thomson Island Pool, a section of the Hudson that is considered a "hot spot" of contamination from PCB's, or polychlorinated biphenyls.

The new site, Mr. Jorling said, may also be used to destroy the PCB's permanently rather than just bury them in a landfill if the state moves ahead with dredging the river.

Environmentalists were disheartened by the decision, announced last week at a news conference by Mr. Jorling, who served as the chairman of an eight-member Hazardous Waste Facility Siting Board that had voted unanimously against a plan to put a landfill on a dairy farm in Fort Edward in Washington County.

"For 10 years, the state has been



The New York Times/Jan. 17, 1989

The PCB's are in the Hudson River near Fort Edward.

talking about a possible remediation project," said Bridget Barclay, the environmental director of the Hudson River Sloop Clearwater, a nonprofit education and advocacy organization. "What we really need are dredges in the river getting the PCB's out of the system."

Health Advisories on Fish

The question of how to remove PCB's from the Hudson has vexed state officials since 1975, when state and Federal scientists discovered that the river had been badly contaminated with the chemical. PCB's have caused cancer in laboratory animals and are known to make people ill. State officials have either banned the consumption or issued health advisories on 19 species of Hudson River fish, which they said were contaminated with PCB's.

After more than a decade of planning, state environmental officials said late last year that they had devised a plan that could serve as a national model on how to take PCB's from the

environment. But enormous local opposition had arisen to their choice of a dairy farm in Fort Edward for the landfill.

Instead of the dairy farm, Mr. Jorling said the siting board had chosen to reconsider a former farm, also in Fort Edward, that had previously been rejected for the landfill because of local zoning laws.

State law has since been changed, however, and siting boards can now ignore local zoning laws in placing hazardous-waste operations. "The site is now available," the Commissioner said. "There is no legal impediment to its use."

Local Opposition

The plan is likely to continue to meet local opposition, however. Sharon Ruggi, a board member of a Washington County environmental group called CEASE — Citizen Environmentalists Against Sludge Encapsulation, said at the news conference that "no acceptable site for this project."

"It is an unacceptable project and therefore there is no acceptable site," said Mrs. Ruggi, the daughter-in-law of Amelia Ruggi, who owns the dairy farm that the state had planned to use for the landfill.

Mr. Jorling suggested that concerns about the project might be moot. In his statement, he ordered his staff to work with the General Electric Company, which originally dumped the PCB's into the Hudson, and any other organizations to evaluate whether the PCB's were biodegrading in the river and thus should not be disturbed.

In an interview, Mr. Jorling said environmental officials planned to "seriously evaluate the theory of biodegradation." "It is clear that the only thing driving this technology is the momentum of our project," he said. "It is driving many people to invest in alternatives to dredging and encapsulation."