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GENERAL ELECTRIC COMPANY • RESEARCH AND DEVELOPMENT CENTER • P.O. BOX 8 • SCHENECTADY, NEW YORK 12301 • (518) 387-7987

April 16, 1987

Mr. Roger Hathaway
E.C. Jordan Co.
261 Commercial St.
P.O. Box 7050
Portland, ME 04112

Dear Mr. Hathaway:

Dr. Unterman has asked me to reply to your letter of February 25, 1987 requesting technical information on any GE processes for treating PCB-laden sediments.

During the past decade GE has spent over \$10 million on microbiological and environmental research aimed at the ultimate development of microbiological processes that could be used for either destroying or detoxicating the PCB residues in soils and sediments. Some of this work has already appeared in the primary technical literature (i.e., is available as fairly compact reprints); some is only available in the form of progress reports or preprints (which are much more voluminous); some still exist only as the investigators notes. None of this information is being held as company proprietary; however, some is being considered as possible evidence in lawsuits, and the attorneys involved have asked that requests for such items be channeled through them. The most compact summary of our overall program that is currently available is the 63-page Progress Report dated June, 1986, which I attach. I also include a draft (not for release) manuscript that will appear in Science in about a month.

Since these reports were written, work has proceeded in a couple of areas that will be of particular relevance to your concerns. First, we have undertaken an EPA-supervised assessment of the feasibility of decreasing the PCB level in the soil at a spill site near South Glens Falls, NY by the direct application of cultures of PCB-degrading aerobic bacteria. Site preparation work and the development of procedures for producing the necessary cultures in 55-gallon batches are now complete; the tests will begin this spring as soon as the site thaws out and will run through the rest of the year. We anticipate that the primary outcome will be information on the impact of factors like bioavailability, weather, harrowing, etc., on biodegradation kinetics under actual field conditions.

Second, we have continued to seek out and characterize sites where PCB dechlorination is occurring in nature. This has led to the discovery of one or more very closely related dechlorination processes (designated Process H, H', etc.) that are occurring in marine sediments. These Process H sites include all of the upper (but not the lower) Acushnet estuary; one of the two

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Mr. R. Hathaway

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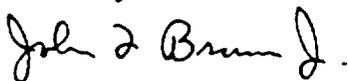
March 23, 1987

represented by sediment samples received from Escambia Bay (near Pensacola, FL); and probably some unidentified spill site near the west end of Brooklyn, NY (judging from fish samples), but not the rest of the New York Harbor area. My current estimate is that the half-time for the elimination of the more easily dechlorinated (and more toxic) PCB congeners is about 3 years in upper Hudson sediments, about 7 years in those of the upper Acushnet estuary, and about 10 weeks in a flooded Japanese rice paddy. Hopefully, anaerobic microbiological studies now underway at Michigan State in Jim Tiedje's group will tell us why the process is going so fast in the paddy soil, so slowly in lightly contaminated sediments, and at intermediate rates in places like the upper Acushnet. And also what, if anything, should be done to speed up the process. In view of the fact that PCB detoxication is already going on at a fair rate in the Acushnet sediments, it might be better to leave them undisturbed.

To summarize the present situation, our research work has gone very well, but has produced--and is continuing to produce--many scientific surprises as to the nature of the interactions between environmental microbes and PCBs. These findings indicate the likelihood that practical, low cost microbial procedures for dealing with PCB-laden sediments will eventually emerge; however, we're not yet ready to write the specifications for any such process and promise the world that it will work. What we have been advising the agencies is to hold off on major engineering efforts to move PCB-laden sediments from one spot to another until there is better understanding of the options available for microbially detoxicating the PCBs either in place or in the ultimate disposal area.

The results of our investigations of the Acushnet estuary dechlorination system are described in a rather voluminous draft report that we've sent to Mr. Paul B. Galvani (of Ropes and Gray in Boston; phone 617-423-6100) attorney for Aerorox, and which he has passed on in part to the attorneys representing the State and Federal agencies. I expect to be presenting a more refined version of the report at the Society for Environmental Toxicology and Chemistry meeting in November, but won't have it written up until fall. Meanwhile, I'd suggest that you contact Mr. Galvani for whatever technical details you need.

Sincerely,



John F. Brown, Jr.
Manager-Health Research
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DEVELOPMENT

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