THE FLORIDA STATE UNIVERSITY

TALLAHASSEE 32306

DEPARTMENT OF OCEANOGRAPHY
AREA CODE 904...599-3300

07 June 1970

Dr. W. R. Richard
Manager R & D
Functional Fluids
Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166

Dear Dr. Richard:

Thank you for your letter of May 22 requesting information about research I am conducting in the northeastern Gulf of Mexico. I have received the samples of Aroclor 1242 and Aroclor 1254 and await the sample of 2,4'-dichlorobiphenyl. The samples of Aroclor 1242 and Aroclor 1254 are quite substantial for the in situ primary production work that I am conducting. I am sorry to have been unable to answer you sooner as we have been conducting some plankton work in the western Gulf of Mexico.

There are three regions in which I hope to conduct this work. Most of the in situ primary production will be determined within ten miles offshore of Dog Island near Apalachee Bay, Florida. I will compare this work with results from the Florida Middle Ground, a broad region about 70 miles south of Apalachee Bay. If and when funding becomes available I hope te conduct several experiments in the central Gulf of Mexico. Since "blue water" oceanography is extremely expensive I am restricting work to coastal regimes.

I will use dieldrin and toxaphene as these insecticides are extensively in the watershed drained by rivers that empty into the northeastern Gulf. Polychlorinated biphenyls have been identified in fat tissues of some marine organisms. There is growing evidence that the PCB's may be widely distributed over the oceans. To my knowledge there is no work of the effects that PCB's may have upon phytoplankton production.

Using concentrations around 1.0 parts per billion I hope to demonstrate that phytoplankton may develop resistance to the toxic effects of these chemicals. Acute toxicities for particular phytoplankton species have been demonstrated for specific pesticides and fall in the general range of 10-100 parts per billion. There is one study indicating that tolerence to pesticides decreases with increased distance from continental influences. I will work on this aspect of acute pesticide toxicity to phytoplankton.

There is some concern that organochlorine pesticides pose a threat to phytoplankton production. Since most of the world's oxygen is produced by phytoplankton, some people are alarmed that the world's oxygen supply is endangered. Published work indicates that phytoplankton productivity is restricted by organochlorines. This work, however, has been conducted on a short-termed basis only. For several reasons, this work has also confronted phytoplankton with chemical concentrations which are unrealistic in terms of the natural environment. I am not convinced that these chemicals represent a significant threat to phytoplankton production. Because of this, the organochlorine pesticides may represent a more significant threat to food relationships in the marine ecosystem.

This work is in partial fulfillment of requirements for the Master of Science degree in oceanography at Florida State University.

I am grateful for the Aroclor samples you have sent.

Cordially,

Stanley A. Moore Jr.

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