

Because of the location of my district, I happen to have a special interest in Lake Erie.

Dr. MACLEOD. Yes, sir.

Mr. MOSHER. On August 3, Mr. William Warne, director of the California Department of Water Resources, testified that his State is constructing a prepilot treatment plant to study ways to remove excess nutrients in the runoff of fertilizer from agricultural lands and in sewer wastes.

I think that in the Lake Erie area this runoff from fertilized agricultural land is an important and critical matter. In this prepilot plant, they hope to extract the nutrients from the drainage waters by growing algae in the water and then removing this algae from the water, thereby removing the nutrients that were utilized in the growth.

In California they are developing this prepilot plant to try to solve the problem that way. Do you think that this process has a possibility of application in an area as large as the Lake Erie area? Would you see practical possibilities there?

Dr. MACLEOD. Part of the problem with Lake Erie, Mr. Mosher, is due to runoff from agricultural lands but a great deal of it is due to the dumping of raw sewage, sewage that has only had primary treatment, and sewage that has had secondary treatment into the lake.

Mr. MOSHER. I'm sure that's correct.

Dr. MACLEOD. This has been verified, sir. I should think that the first steps would be to have adequate treatment of sewage in all the communities that border Lake Erie, both on the United States and the Canadian sides. As a part of that treatment, one would hope that we would be able to develop efficient methods of tertiary treatment, of which the one that Mr. Warne cited for you is an example. It is probably a very good example because the algae in the course of their growth do take up these soluble nutrients—the phosphates, potassium and nitrogen that are in soluble form in sewage and which, of course, run from the land. And if algae can be grown efficiently and harvested, this should be one of the methods that could be efficiently applied to tertiary sewage treatment. It is in the development stage as you have said, but the principles I think are understood. We need to devote a good deal of further effort to completing the development and demonstration of the processes. It is possible there are other methods that could be used—methods that, for example, one might apply to the removal of salt from saline waters might also be thought of in this matter.

I think there has to be an approach not from just one avenue but more than one.

Mr. MOSHER. What about the correction of some of the damage that has already been done; for instance, the overgrowth of algae that exists? What practical possibilities are there for its removal in a body of water as large as Lake Erie?

Dr. MACLEOD. I am afraid I can't answer you, sir. I can't answer you directly but I think if we can prevent overfertilization of the lake, and if fish and other living things can survive in the numbers in which they formerly existed, in terms of their consumption of the foods that are there now and the fishing from the lake, then in the