

now. This is a very popular cause and it is considered a proper function of government. And yet, my limited knowledge has led me to believe that we could spend a great deal of money in development in this area only to find everything was obsolete. It seems to me that we have a very specific research need right now, and one thing that I hope will come out of these hearings will be specific directions for this demand that can make the taxpayer's dollar go further toward accomplishing the end we all deem desirable.

Mr. DADDARIO. Mr. Vivian?

Mr. VIVIAN. I would like to ask a series of questions related to the topic you mentioned a minute ago; namely, the cost versus benefit problem. You have indicated, Dr. Spilhaus, that it is more desirable to prevent pollution than to clean up the pollution afterward. I think many people will concur with that.

For example, I have often wondered whether we are wise to have as many disposable glass containers as we do as opposed to either plastic, paper, or other types of containers. Glass does not deteriorate and retains its use for many years. We do recover newsprint—we have several mills in my district—but when we do the ink from the newsprint is generally sluiced off chemically and dumped into the stream. Newsprint ink, I might add, is considered to be a very difficult pollutant to handle. We even dump our waste from antipollution work. As we dig out channels, we dump waste into some other part of a lake—Erie, for example, and just transport the pollution problem elsewhere. You also mentioned noise pollution, which is a situation where perhaps it would be wiser not to create the noise than to clear up the illnesses that are generated by the noise. Do we have any kind of useful information on the cost-benefit characteristics of nonpollution versus pollution treatment?

Dr. SPILHAUS. No, I believe we don't. I believe that's one of the great gaps in our knowledge, and I mentioned that in the beginning of my statement that we simply are unable to get a comparison of cost of prevention versus cost of cleaning up.

Or, the separation of even the cost of pollution from the cost of trying to keep things clean at the present time. They aren't separated out.

Mr. VIVIAN. Do you think we are getting this? Do you believe this should be information generated by our present governmental or private activities, both research and development and operational?

Dr. SPILHAUS. I believe a great deal more effort is needed on this problem if we want to get at this cost factor.

Mr. VIVIAN. You would single this out as a specific area for increased technical effort?

Dr. SPILHAUS. Yes.

Mr. VIVIAN. I think the area of ecology merits more attention so that we may better understand biological mechanisms themselves, the complex mechanisms involved in many of these processes, whether they involve lake pollution or underground stream problems, and the population dynamics related to the mechanisms themselves; that is, transformation of the knowledge of the mechanisms and dynamics of the population. This is an enormous subject. There are a tremendous number of biological species with each species possessing great com-