

do have wastes. As one of your witnesses has pointed out, everything we do results in wastes, everything we do. The trick is going to be in how do we reconcile them, whether in water or air or land. You have already had much testimony to show that the three are materially interrelated. There was no getting around it.

Now, let me just comment on the fifth one, which is the carbon dioxide and greenhouse effect. Without belaboring it, practically every report on air that I have read in the last 10 years refers to the greenhouse effect, generally to the extent of two sentences. When one inquires as to what you are talking about, as you did, Mr. Conable, and what are its implications, you have roughly the kind of reporting that you got out of Dr. McCloud. It is an explanation of what the greenhouse effect is and what its potentials are.

I was glad to see that following that Dr. Malone pointed out that by 1975, with the continuation of present research, you should have some quantitative global picture of the CO₂ issue. But more important than that, you may remember that he said he has a far greater optimistic view about countervailing measures that may be simultaneously instituted so that the concern about CO₂ may be less than the one or two sentences normally disclose.

This is all I want to say on the testimony on the greenhouse effect. It is well to recall that it is under study and that it will disclose what the probabilities will be, but more, it may also disclose what one may be able to do about it.

No. 6: I come to thermal pollution. This is largely pollution coming out of powerplant activities through cooling water, getting into either the water or alternatively into the air. I say alternatively because the conclusion that if you take it out of the water you have disposed of the problem is not true, because then you have a heat problem, if all of them do it, in the atmosphere.

This has been pointed out before at other congressional committee hearings by Dr. Revelle. I merely want to state for the record that again my own institution has been engaged in a countrywide study of thermal pollution, roughly at about \$500,000 a year, which we have contracted with the Edison Institute. We have now 15 major powerplants under study throughout the United States on rivers, lakes, and oceans. In order to do what? It is strange at this late date that we must now find out what the physical impact of cooling water discharge is on all of these receiving bodies of water, what their hydrologic behavior is, and what their biological consequences are, all three of which incidentally are unknown at this time. Our Department has selected jointly with the institute some 15 major powerplants.

Now you may have heard in the TVA testimony that thermal discharge is objectionable at some times and valuable at others. The TVA testimony indicated that at some of their thermal discharges fishing was materially improved. This happens to be the case on the thermal discharges on the lower Patuxent, which has just been completed. After 2 years of detailed investigation biologically, it took a great deal of hydrologic adjustment of their discharge and where it is discharged into the river in order to accomplish nonobjectionable results.

This is one of the areas that needs exploration. It is getting it and positive answers in maybe 2 to 4 years should be available for ultimate guides.