

STATEMENT SUBMITTED TO THE SUBCOMMITTEE ON SCIENCE, RESEARCH,
AND DEVELOPMENT BY RAY K. LINSLEY, EXECUTIVE HEAD, DEPART-
MENT OF CIVIL ENGINEERING, STANFORD UNIVERSITY, AUGUST 3, 1966.
(ORIGINALLY SCHEDULED TO TESTIFY; UNABLE TO DO SO DUE TO
AIRLINE STRIKE)

I am pleased that I have been invited to come here and discuss with you the question of the adequacy of technology for pollution abatement. It is such an all-encompassing subject that it is hard to know where to begin and what to say in a limited time. My problem is made no easier by the very excellent report of your research management advisory panel which has discussed the subject wisely and well.

A few weeks ago, in testimony before the Senate Committee on Interior and Insular Affairs, I suggested that one of our problems in looking at water today is that we are in a period of rapid transition. After centuries of slow change, we now find it difficult to realize that very major shifts in thinking are necessary. Unlike many other scientific and technological developments which have come upon us in a very short time, pollution problems have been developing very slowly for a long time. Our fundamental approach to the pollution problem is as ancient as man himself. Man started to pollute the atmosphere when he first learned to make fire. He piled his solid waste in great heaps which today, all over the world, mark the location of his ancient cities. He found that water was a very convenient medium for carrying away his wastes, and he learned to wash all manner of things in a stream. Ancient man could successfully employ these rather crude means of waste disposal because of his own very limited numbers. The quantity of waste produced was relatively small compared to the assimilative capacity of the environment. Today, when the annual population increase of the world exceeds the total population at the time of ancient man, the situation is quite different. Not only are there more people producing waste, but the per capita production is greater. In addition, our technology is producing substances which, when they become waste, are more durable than much of the organic waste of ancient man.

Sewers to transport storm water from cities date back into antiquity. Because of the prevailing practice of throwing refuse into the streets these sewers carried at least some of the waste washed into them by rain. It is only a little more than 100 years ago that direct sanitary connections to sewers were begun in major cities. These connections together with a system of refuse collection removed the waste from its highly visible location in the streets and considerably augmented stream pollution. As stream pollution got worse, plants for partially treating the sewage were designed to reduce the pollution load on the streams. Today we find that in areas of high population density the partial treatment of waste is not always adequate. We are also beginning to realize that we can ill afford to use so much water to dispose of this waste.