

wastes. Any increase in the standard of living has as a concomitant, increase in waste production.

One of the measures of the quality of our civilization must be our concern about preserving and restoring the quality of our environment, not only for our own benefit, but because we are the dominant biological species.

We have a clear responsibility to damage nature no more than is necessary for our material and spiritual progress.

I'm very pleased by the change of attitudes toward problems of pollution in the last few years. We have taken the first steps in the broad awareness of its undesirability. We have not faced up yet, sir, to the tremendous costs involved in abatement and restoration nor to how these costs are to be paid.

Some of the costs are for the general introduction of well-known principles and practices of sewage treatment so that we don't further damage our streams, our lakes, our estuaries and even the oceans themselves.

Great progress can be made with what is now known. However, we need greatly improved methods of tertiary treatment for sewage and this will cost a great deal in terms of research, development, demonstration, and widescale use. We also need improved methods for the removal and prevention of industrial byproducts now discharged into streams and into the atmosphere.

Likewise, we know a great deal about how to reduce the noxious effluents from motor vehicles, but we must go much further in the design and development of alternative methods of vehicular propulsion if a long-term solution is to be found. One of our consultants, in discussing the new standards for automotive effluents in the State of California, particularly in the Los Angeles region, has pointed out that—even with reduction in effluents that will come about as a result of new standards that have been introduced—with the increase in the number of motor vehicles that is projected we will be by the year 1980 about as badly off as we are now.

We need to develop new pesticides that are much more degradable than many of those that are in use.

We need to know a great deal more about the toxicity of chemical substances that we are exposed to in low dosage over long periods of time in the normal course of our lives before we can set reasonable standards to govern our exposure to them.

We need to develop much more sensitive automatic devices to monitor pollutants of all kinds so that we can have current awareness of what is going on.

Most of the problems of pollution are extremely complex and require a systems approach for their solution. It is necessary, therefore, to employ all the modern means of systems analysis, including automatic data processing, in order to have a proper understanding of how a particular question should be tackled and how it should be solved. We must understand also how modern industrial man is changing the total environment of the earth, not only for himself, but for all living things whether they be plant or animal. We must remember the slowness of the genetic mechanisms to accommodate to the changes that we introduce into nature.