

Mr. BELL. In other words, there may be created an incentive to free enterprise from the development of additional methods of selling programs?

Dr. HAAGEN-SMIT. That is a possibility; yes.

Mr. BELL. That is all.

Mr. BROWN. Thank you very much, Dr. Haagen-Smit. The committee has certainly benefited from your testimony.

If we have any further questions which we feel need to be explored, I hope you will allow us to send them to you in writing.

Dr. HAAGEN-SMIT. Thank you.

(The information requested is as follows:)

STATEMENT BY DR. A. J. HAAGEN-SMIT, CALIFORNIA INSTITUTE OF TECHNOLOGY

The nationwide application of existing methods of air pollution control would go far towards clearing the air of most of our cities. High efficiency dust collection electrostatic precipitators, scrubbers, etc., can take care of particulate matter and a variety of gases. There are, however, some noteworthy exceptions to this general statement. One has to do with the development of smog in large urban areas, such as Los Angeles, where automobile exhausts are a major cause of concern. Control methods have been applied but calculations of theoretical efficiencies coupled with practical considerations show that we must go further in control than is presently contemplated. This control includes hydrocarbons and their derivatives as well as oxides of nitrogen formed in the high temperature reactions between nitrogen and oxygen.

While it is true that efficient control methods exist for dusts, fumes and aerosols, and the efficiency is high for larger particles, smaller particles escape and remain suspended in the atmosphere. Our upper respiratory system is a barrier to the larger particles; the smaller ones which are not controlled readily reach the lungs. With our increasing urbanization and increasing pollution with small particles, ways have to be found to catch these and prevent serious damage to our health.

In all control work instrumentation is of great importance. One has to measure pollutant levels in the atmosphere and also the quantities emitted by various sources of pollution. There is a need for instrumentation which gives a continuous record and where price is of secondary importance. There is also a need for low cost analytical tools.

Control of our pollution is indicated when our health is affected or our senses are offended, when animal and plant life is affected, and damage to materials is seen. In each case the degree of control is a balance between technical feasibility and economic judgment. For control purposes it is of great importance to acquire the knowledge at what levels harm may be done. These criteria form the basis of legal standards for control. At present there are no satisfactory criteria for any one of the pollutants and a greatly accelerated program to acquire this fundamental knowledge for *any control program* is of prime importance.

Mr. BROWN. Thank you.

Our next witness is Mr. Louis J. Fuller. Mr. Fuller is the air pollution control officer in the Los Angeles County Air Pollution Control District, and in that capacity I am sure he has had considerable exposure to this problem.

We are happy to see you here, Mr. Fuller.

STATEMENT OF LOUIS J. FULLER, AIR POLLUTION CONTROL OFFICER, LOS ANGELES COUNTY AIR POLLUTION CONTROL DISTRICT

Mr. FULLER. Thank you, Mr. Chairman, Mr. Bell, and gentlemen.

I think the urgency of our situation here in Los Angeles would have been more apparent if the hearings had been held last Friday, rather than today.

Mr. BROWN. I arrived last Friday, and I appreciate your comment.