

less iron mineral is treated with low-grade iron and steel scrap under conditions which result in the conversion of the iron content of both materials to magnetic iron oxide which can be concentrated to high-grade iron ore by presently employed technology. Other research is devoted to the development of economic methods for removing the impurities from low-grade scrap such as that from automobile bodies, refrigerators, stoves, and washing machines, so that the metal content can be reused by industry.

The municipal wastes that are discarded each year contain approximately 6 million tons of metal, mostly iron. Most of this metal is buried in land fill and thus permanently removed from the economic cycle. The five million tons of iron in tin cans alone represents a serious loss to our economy. The Bureau of Mines is working on the development of new technology which will allow the recovery and reuse of these presently wasted metals, thus turning a liability into an asset.

In addition to other work being performed on recovery of metals and minerals from scrap, projects are underway to deal with other forms of solid wastes. For example, a survey is being conducted to reveal the location, magnitude, and composition of all of the major solid waste disposal dumps in the country. Samples from the major problem areas will be submitted for laboratory investigation to determine if any valuable constituents can be recovered or if bulk use for the material can be found. Promising results will be followed up in pilot plant scale and the process will be made available to industry.

SUMMARY

It has been shown that much basic scientific information on environmental pollution is available for application toward limiting the amount of air, water, and land pollutants which are a byproduct of our industrial system. However, there is a great lack of engineering technology for the successful abatement of many of the pollutants without putting an economic strain on industry and the public in general. We believe that through continued research and engineering development, it will be possible to solve the problems confronting the Nation effectively and economically. However, such solutions must balance public need against economic considerations. If cleaner air, water, and land is to be attained without disrupting the economy, increased efforts by both industry and Government will be required. The conversion of waste materials into useful products will help minimize these economic burdens. The Bureau of Mines recognizes its responsibilities in many areas of pollution abatement and will consistently work for technically and economically feasible solutions to the pollution problems which confront our Nation.

Mr. DADDARIO. Our next witness is Dr. Thomas Malone, vice president and director of research, the Travelers Insurance Cos., from the city of Hartford, in Connecticut.

We are happy to welcome you here, Dr. Malone.

I would also like to comment that Dr. Malone, as the chairman knows, is on the scientific panel which works with the full committee, and has been of great help to us on many occasions over these past several years.

We are happy to have you here, Dr. Malone, and we are waiting to hear from you.

Chairman MILLER. I would like to say he is one of the outstanding members of that panel, and has done a great deal of work.

STATEMENT OF DR. THOMAS F. MALONE, VICE PRESIDENT AND DIRECTOR OF RESEARCH, THE TRAVELERS INSURANCE COMPANIES

Dr. MALONE. Thank you very much, Mr. Daddario and Mr. Chairman. I responded with alacrity to this invitation to testify before your committee for two reasons. One is to renew an association I found to be extremely pleasant. I think our meeting last January