

Since the instrument tested was hand built by the Harvard personnel, commercial production of the monitor is the next stage of the development. The policy of the American Iron & Steel Institute is to publish on such instrument development. Any interested company can then proceed with the manufacturing. It is hoped that the instrument will be referred to as an AISI monitor as the others have been.

The present assignment for the Harvard group is to examine broadly the problem of nitrogen oxides in stack gases.

Battelle Memorial Institute was asked in 1958 to study the mechanism by which fumes are formed in a metallurgical operation and to evaluate possible methods for ameliorating fume formation.

Mr. DADDARIO. Dr. Bishop, do I understand that the three pilot filters that were built and tested, but didn't have economic feasibility led to the development of this instrument to automatically measure amounts of stack dust? You still haven't been able to develop a pilot filter?

Dr. BISHOP. That is right, we have given up the filter development. While it looked promising for a long while it finally was shown not to be an acceptable unit. In working with the unit as a cleaner we became involved in a great deal of sampling and so, as an offshoot of our work, we asked the Harvard group to continue their development work on an automatic monitoring unit, which they have done.

Mr. DADDARIO. Are you still continuing research with the filter?

Dr. BISHOP. No; the filter work has been dropped as being unworkable. We published our results and dropped it at that point.

By chemical and physical measurements and high-speed photography, success was attained in discovering the mechanism of fume formation when using oxygen in a lance in refining steel. It appeared that the inclusion of a reducing chemical with the oxygen might prevent fume formation. In the laboratory, additions of methane, hydrogen, and steam to the oxygen showed considerable promise for suppressing fume formation. However, commercial trials of methane and steam demonstrated that the additives were not very effective and that their use could not be considered as an alternate to the installation of cleaning equipment.

Battelle has now been asked to study the mechanism of formation of hydrogen sulfide from blast furnace slags. When blast furnace slags come in contact with water, they react to form hydrogen sulfide. This is true when cold slag piled in the open comes in contact with moist air or rain. Because hydrogen sulfide is detectable at very low concentrations, it may create a community problem. It is the object of this research to identify the exact reaction mechanisms involved, and then to explore possible ways of economically suppressing the formation of the hydrogen sulfide.

In the water pollution abatement, the American Iron & Steel Institute has sponsored a research project on water pollution abatement at Mellon Institute since 1938 with Dr. R. D. Hoak as administrative head. Emphasis in the program has always been directed toward the accumulation of scientific data that would increase knowledge about the causes of pollution and the measures that could be taken to overcome their effects. A large amount of data on these problems has been accumulated over the past 28 years. Only a few