

The Lake Michigan Technical Committee report also stated that the area dealing with threshold odors needs intensive research. It is the belief of the steel industry, based on laboratory and waterworks data, that phenol has too often been blamed for threshold odor problems caused by other constituents. Last July, as a result of my work with the Lake Michigan Technical Committee, I recommended a joint research program between personnel of HEW and the AISI research group under Dr. Hoak at Mellon Institute to investigate the formation of chlorophenols from chlorine and phenols in the very low concentrations that occur in sources of water supply. This joint research program has not been started because of administrative changes in forming the new Federal Water Pollution Control Administration.

The final area covered by the technical committee is the need for epidemiological studies on bacterial pollution. The relation of bacterial contamination to incidence of diseases among bathers never has been established scientifically. Research on a vast scale would be required to provide such a scientific basis.

As a matter of fact, a British publication came along some years ago and said it was safe to swim in sewage plants.

I trust that the foregoing has summarized the research being sponsored by the American Iron & Steel Institute, the type of activities being undertaken by the individual steel companies and the research needs as they can presently be visualized. As water quality criteria are announced by the various States, additional areas for technological improvement and advance will be evident.

(The list of companies on whose behalf the testimony is presented is as follows:)

COMPANIES ON WHOSE BEHALF THE TESTIMONY IS PRESENTED

Alan Wood Steel Co.	Latrobe Steel Co.
Allegheny Ludlum Steel Corp.	Lukens Steel Co.
Armco Steel Corp.	McLouth Steel Corp.
Atlantic Steel Co.	National Steel Corp.
Bethlehem Steel Corp.	Northwestern Steel & Wire Co.
CE&I Steel Corp.	Oglebay Norton Co.
Columbia Tool Steel Co.	Pickands Mather & Co.
Crucible Steel Co. of America	Pittsburgh Steel Co.
Erie Forge & Steel Corp.	Republic Steel Corp.
A. Finkl & Sons Co.	Sawhill Tubular Products, Inc.
Florida Steel Corp.	Sharon Steel Corp.
Granite City Steel Co.	Shenango, Inc.
The Hanna Mining Co.	Southern Electric Steel Co.
Harrisburg Steel Co.	United States Steel Corp.
Inland Steel Co.	Valley Mould & Iron Corp.
Interlake Iron Corp.	Washington Steel Corp.
Jessop Steel Co.	Wheeling Steel Corp.
Jones & Laughlin Steel Corp.	Wyckoff Steel Co., Division of Screw &
Kaiser Steel Corp.	Bolt Corp. of America
Keystone Steel & Wire Co.	The Youngstown Sheet & Tube Co.
Laclede Steel Co.	

Mr. DADDARIO. What is the total amount invested in research each year?

Dr. BISHOP. I really don't know. Our AISI work varies depending on projects, at about \$400,000 per year. The company research is very difficult to estimate. There is a gamble on trying out some new