

28. A study of the toxicity of aromatic hydrocarbons in the lung, with particular emphasis on the relationship of the physical characteristics of particles to carcinogenesis. Project EH-1. Contractor: The Chicago Medical School.

29. A study that will analyze ambient air samples of hydrocarbons covering a wide molecular range, and will compare them to similar compounds from known sources—including automotive exhausts. The samples will also be studied to determine the rate of hydrocarbon disappearance when exposed to irradiation. Project BR-1. Contractor: University of California (Riverside).

Mr. GAMMELGARD. Permit me, however, to review some of these projects so that you will understand the oil industry's views as to research and technology limitations that beset us today.

We are presently concerned with two main areas. The first of these is sulfur oxide pollution resulting from the burning of some heavy or residual fuels. I should point out that, through advanced technology, the oil industry is now producing "almost sulfur-free gas, gasolines, lubricating oils, and light fuel oils that constitute the bulk of the products of the oil and gas industry," as was stated the other day at these hearings by Arthur Stern, Assistant Chief of HEW's Division of Air Pollution.

However, there has been no comparable success in our quest for a technically feasible yet economic way to reduce the sulfur content of high sulfur residual oil used in industrial plants, power stations, and other large facilities.

A considerable amount of research is being carried on by individual oil companies to devise practical ways to attack the sulfur oxides problem.

Since economics is a constant consideration in this sulfur matter, the API is currently sponsoring a study by the Bechtel Corp. to determine the feasibility and cost of reducing the sulfur content of residual oil that is supplied to our eastern seaboard from the Caribbean area refineries, such as those in Venezuela.

Another API-sponsored study is being conducted by the Pace Co. of Houston. It will provide factual information on how much past and present effort the oil industry has made to reduce the sulfur content of its products.

Since researchers have encountered difficulties while trying to reduce the sulfur content of high-sulfur residual oil, we are exploring another possibility. API is now conducting a state-of-the-art study regarding removal of sulfur oxides from the stack gases that result when fuel is burned. When this exploratory data is assembled, we will attempt to cooperate with other groups on further research.

Mr. DADDARIO. What other groups do you have in mind? The coal industry?

Mr. GAMMELGARD. Yes, we are thinking of coal people. The Bureau of Mines have a process that they are currently researching with PHS funds. Others that are interested in this process will contribute in money and manpower.

Mr. DADDARIO. Do you sense a desire to cooperate in this area with these other people?

Mr. GAMMELGARD. Yes, sir. I think there are about four processes now that look like they might have promise but the economics yet do not look very good and research should be done in several of them to find out if something can be brought forth that can have good economics.