

start about 2 years hence. Last November we cut the red tape in API and approved a budget in just 48 hours of several million dollars.

This is unusual for API and we are going to require about 6 months leadtime for approval of next year's projects.

We recognize that research projects may come up on short notice and you shouldn't have to wait for an administrative budget procedure that doesn't get the project off the ground for 18 or 24 months. I think in this case the Bureau of Mines could probably dig up some money a year or two from now for this project and make possible new discoveries and proceed along such new avenues as this research goes forward. We will be glad to come up with manpower and money to explore promising avenues in this field.

Mr. MOSHER. Mr. Chairman, I don't quarrel at all with Mr. Gammeldgard's point of view as just expressed but I assume this issue of propriety will be considered in our report.

Mr. DADDARIO. Yes; I don't think there is any question about that, Mr. Mosher. We have looked into the standards established over the course of time by the Bureau of Mines in conducting programs of research such as this, and the results have indicated that it has been an objective and proper type of a cooperative venture.

Mr. GAMMELGARD. Very much so.

Mr. DADDARIO. I do think we need to look at it and to sort of document the kind of programs that are carried out. Mr. Mosher's question to you and your explanation have added to the discussion and put us on the right road.

Mr. GAMMELGARD. Thank you, Mr. Chairman.

The purpose of this research is to determine what effect, if any, on evaporative and exhaust emissions of automobiles would be brought about by varying fuel composition and volatility, and by blending gasoline with and without lead.

At least 25 passenger cars, selected to encompass a wide range of types, will be employed in the tests. All vehicle emissions will be measured in terms of total quantity, composition, and smog-forming potential using the very best available scientific knowledge and equipment.

In the tests an effort will also be made to determine the effects of variations in gasoline formulas on the output of nitrogen oxides and carbon monoxide.

When I mentioned evaporative and exhaust emissions, I think it might be worthwhile to say that up until 1963 when positive crankcase devices were voluntarily put on new automobiles made in the United States, there were four "holes" in a car's fuel system. One is the vent in the fuel tank. You have to have a vent or you would collapse the tank when you pump the gas out of it. There is a gasoline vapor loss as "breathing" takes place in the tank.

Another one is the carburetor. After driving and then stopping your engine, the heat under the hood causes some of the gasoline that is in the bowl to evaporate into the atmosphere. There are other minor losses from the carburetor.

The third one was the crankcase vent where from 20 to 35 percent of the gasoline lost from a car took place through the road draft tube. That was sealed off and by recirculating vapors back into the intake system that loss was eliminated.