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SCIENCE

Progress in Abating Air Pollution

An optimist can at last see signs of progress in overcoming air pollution. The ponderous machinery of government is beginning to move, and segments of industry are behaving as if they realize that they cannot go on increasingly polluting the atmosphere. An important example is the automobile manufacturers who are taking action against the nuisances they were creating. Emission of hydrocarbons by new cars in California this year will be only about 23 percent that of earlier, uncontrolled models. The California standards will apply nationwide in the next model year. General Motors has committed itself "to take the automobile out of the smog problem altogether." The federal government has begun to assume leadership. Recently Secretary Finch issued a schedule for reducing the permissible limits of pollutants from automobiles. By 1975 the emission of hydrocarbons is to drop to about 5 percent of that of uncontrolled vehicles.

Progress has already been made in diminishing the emission of carbon monoxide. Next year's models will emit about a third as much as uncontrolled automobiles. Control of nitrogen oxides has lagged behind, but California standards require a partial abatement in the 1971 model year. The federal standards for 1975 call for a substantial change—a drop to about 15 percent of present levels. A striking feature of the abatement of motor vehicle pollution is its price. The improvements incorporated in the 1971 models will cost no more than $48 per vehicle.

In terms of tonnage of emitted pollutants, the automobile ranks first. However, in overall damaging effects, sulfur oxides from burning of fuels seem most serious. This is especially true in the area east of the Mississippi and north of the Ohio, where sulfur-bearing coal is a principal fuel. In that region, major metropolitan areas have been gambling with catastrophe. An unusual weather pattern with a persistent inversion could result in many deaths. In November 1966, the New York metropolitan area came close to such an event. The experience caused authorities in the area to issue regulations calling for progressively improved control of sulfur oxides. In abating its air pollution, New York in effect limited the sulfur content of fuel to 1 percent. As a result, the concentration of atmospheric sulfur oxides is now less than half what it was in 1966. During 1971 the permissible sulfur content of fuel for most installations will drop to 0.37 percent. This will reduce pollution further. It will also have substantial economic consequences. Fuel will cost more. It will consist mainly of natural gas, purified residual oil, and clean fuel oil.

The United States cannot afford to import enough low-sulfur oil to meet its energy needs. In many regions it will be necessary to use coal which typically contains 2 to 3 percent of sulfur. Only a small fraction of the reserves contains as little as 1 percent. It is possible to remove some of the sulfur from coal by mechanical means, but most cannot be eliminated except by costly chemical processing. In major installations abatement of pollution arising from the burning of coal will require cleansing of stack gases. At a recent congressional hearing,* four processes were described that have reached the stage of commercial application. They are all capable of sharply reducing the concentrations of sulfur oxides emitted by major electric power generating stations. The consumer, naturally, will have to pay more for his electricity—from 6 to 10 percent more, according to present estimates.

In view of the health hazards and other costs of pollution this seems a small price to pay. With this new technology the major polluters can lower their emissions of sulfur oxides, and they should be required to do so expeditiously.—PHILIP H. ABELSON

* Testimony by James R. Garvey, President, Bituminous Coal Research, Inc., to Joint Committee on Atomic Energy, 25 February 1970.