

PROBLEMS FOR FURTHER CONTROL

The three air pollution problems in Los Angeles County which are still of major concern and which must be further controlled are fuel oil burning, organic solvents and the motor vehicle.

1. Motor vehicles

The complete solution to the smog problem in the Los Angeles Basin depends not only on control of stationary sources, but also upon the control of emissions from motor vehicles. As stationary sources have been controlled, and vehicle population has risen, pollution from vehicles has increased in relative importance until it is now responsible for about 85 per cent of the contamination in the atmosphere in the Los Angeles Basin.

To indicate the magnitude of the problem, in the beginning of 1965, 3.5 million motor vehicles in Los Angeles County were consuming a daily total of 7.4 million gallons of gasoline, resulting in emissions to the atmosphere of 12,800 tons of air contaminants. This figure is indeed startling when it is realized that only 5900 tons of contaminants were emitted from vehicles in Los Angeles County in 1948. (See Table V.)

The most conspicuous effects of smog, eye irritation, reduced visibility, and damage to growing vegetation and to property, are traceable to the "photochemical smog reaction". This occurs when auto exhaust is acted upon by sunlight. The hydrocarbons, which are present in the exhaust as unburned gasoline, react chemically with oxides of nitrogen, which are formed during the burning process in the engine. The resulting chemical products create smog.

While the exhaust is responsible for the largest emission from motor vehicles, crankcase and evaporation emissions must also be considered. Crankcases must be ventilated if the engine is to continue to operate properly, but the fumes vented contain substantial amounts of unburned gasoline that leak past the piston rings. This leakage, termed "blowby" accounts for about 25 per cent of the total hydrocarbon emission from automobiles. For this type of emission there is a simple system of control which involves recirculating the crankcase emissions back into the engine intake system so they are drawn into the cylinders and burned.

TABLE V.—Emissions of air contaminants into Los Angeles County atmosphere from motor vehicles

Source	Average daily emissions of air contaminants (in tons per day)									
	Hydrocarbons and other organic gases		Oxides of nitrogen		Oxides of sulfur		Carbon monoxide		Aerosols	
	1948 ¹	1965	1948	1965	1948	1965	1948	1965	1948	1965
Gasoline-powered vehicles:										
Exhaust.....	630	1,400	215	490	47	30	4,570	10,300	20	45
Blowby ²	215	190					35	30		
Evaporation.....	155	340								
Diesel-powered vehicles.....	6	8	6	8	1	2	2	2	2	2
Total (rounded).....	1,000	1,940	220	500	50	30	5,000	10,330	20	45

¹ 1948 emission data has been revised on basis of 1965 baseline data.

² Blowby emissions are not controlled in 1948 and are partially controlled in 1965.

As a result of laws passed by the California State Legislature in 1959 and 1960, the State of California occupied the field for control of the motor vehicle. Under these laws, the Motor Vehicle Pollution Control Board was given jurisdiction over vehicular emissions in the testing and certifying of vehicle control devices, while the Department of Public Health was given jurisdiction over health aspects, in the establishing of standards for air quality and motor vehicle exhausts. More recent federal statutes shift the responsibility for new car control to the federal government, leaving only used car control in the hands of the state government.

Nevertheless, the 13-man California Motor Vehicle Pollution Control Board was the first to establish criteria for both crankcase and exhaust control devices.