Crankcase emission control systems have been installed on most new cars sold in California since 1961 and most used cars are required to be equipped with "blowby" control devices when sold. American automobile makers have been equipping all models manufactured in the United States since 1963 with California-approved crankcase control systems.

At the same time, great progress has been made by the automobile manufacturers in their attempts to reduce exhaust emissions. California motorists now have new cars delivered to them with factory-equipped devices or engine modifications permitting the exhaust emissions to conform with the California State Standards for Clean Air. This solves part of the problem, and it is anticipated that the remaining part, control of exhaust emissions from used cars, will be controlled by some of the devices developed, catalytic and direct-flame afterburners.

But neither this, nor any other solution to the motor vehicle problem, or any other air pollution problem, could have been envisioned, much less developed, if the public had not demanded action and the control agency and the government officials had not accepted their responsibilities and worked to find the solutions.

2. Fuel oil burning

The boilers now operating in steam power plants in Los Angeles County discharge visible smoke emissions when fired with heavy residual fuel oil and emit substantial quantities of sulfur oxides, particulate matter and oxides of nitrogen.

The Joint Research Council on Power Plant Air Pollution Control was formed in 1956 for the express purpose of eliminating air contaminants from power plant flue gases. Since then, a great deal of money has been spent by participating power plant operators, both on the study of plume formation and on means of removing pollutants.

Some important research by the Southern California Edison Company to control the particulate matter emissions from power plants indicated the possibility of using an electrical precipitator. A one million dollar electrical precipitator was built but did not prove up to expectations. Subsequently, a one and one-half million dollar glass filter cloth baghouse was constructed to serve a new unit during oil-firing and is still being investigated. To increase effectiveness in removing particulates from the flue gases, powdered dolomite is injected into the gas stream as a filter aid prior to entry to the baghouse.

Strong efforts have also been made to secure additional natural gas supplies so that fuel oil burning can either be eliminated or restricted to periods when weather conditions are not conducive to smog formation. The substitution of natural gas eliminates six-sevenths of the pollution from power plants. During the peak periods of fuel usage, if all gas were burned the emissions would be reduced from 1,285 tons per day to 290 tons per day—eliminating 995 tons per day. The reductions of specific contaminants are: sulfur dioxide, 735 tons per day; oxides of nitrogen, 185 tons per day; aerosols, 65 tons per day; and hydrocarbons, 10 tons per day.

3. Organic solvents

In the industrial, commercial and domestic activities carried on in Los Angeles County many different solvents are used which are eventually vaporized into the atmosphere. Alcohols, ethers, paint thinners and lacquer thinners, are included in the definition of organic solvents. These organic solvent vapors react in the Los Angeles atmosphere to produce smog in the same manner as gasoline vapors.

Surveys have been made to identify sources of emissions and usages of solvents; research experiments have been performed to determine the reactivities of various solvents; and engineering projects have been completed to develop feasible controls. The most recent estimates indicate that about 550 tons per day of these solvents are discharged into the atmosphere.

Engineering studies indicate three approaches to the successful reduction of organic solvent vapor emissions: (1) installation of equipment to capture, or consume, the organic vapors; (2) introduction of an operational change; and (3) alteration of the type of solvent used, probably the substitution of less reactive organic solvents or inorganic solvents such as water.

Many direct flame incinerators are used in Los Angeles County today for control of odors and other combustible gases, including solvent vapors. These vary in size; some can incinerate 700 pounds of solvent daily, others only a few pounds. One plant alone has 14 units which incinerate a total of 4,800 pounds