

Does GM Care About Cleaner Air?

You bet we do! General Motors has made a public pledge to solve the problem of vehicle emissions in the shortest possible time. We're working in two directions to accomplish this objective: finding new ways to further reduce pollutants from our current engines and exploring, through aggressive research programs, new low-pollutant power sources.

GM BEGAN EMISSION CONTROL RESEARCH 20 YEARS AGO

It was some twenty years ago that GM initiated its first research into the control of vehicle emissions. The immediate problem was air pollution in the Los Angeles basin. At that time, air chemistry and the reaction of vehicle emissions in the air was a little-known field. Even today, scientists are only beginning to unravel this immensely complex subject.

WHERE THE EMISSIONS COME FROM

While it was known that trace amounts of the hydrocarbons which make up gasoline are not burned in the combustion process, it was generally thought that these unburned hydrocarbons were emitted only through the exhaust system. GM scientists learned that only 60% of a vehicle's unburned hydrocarbons were emitted through the exhaust system—20% escaped through the crankcase vent and 20% through evaporation of gasoline vapors from the fuel tank and carburetor.

EMISSIONS FROM A CAR WITHOUT CONTROLS

The major emissions from a car without controls are unburned hydrocarbons, carbon monoxide and oxides of nitrogen. Of these, the unburned hydrocarbons were recognized by GM and government scientists as being the major contributors to Los Angeles-type smog and were selected for emphasis in control. As in most technical advances, progress in controlling these emissions was made in a series of steps, not in a single dramatic leap.

CLOSING OFF THE CRANKCASE VENT

The first step was the development of the Positive Crankcase Ventilation (PCV) system. This system, which was installed in all cars sold in California beginning with the 1961 model (1963 model, nationwide), substantially eliminated the 20% of pollutants being emitted through the crankcase vent. This was done voluntarily prior to the existence of government standards.

EXHAUST CONTROL MEASURES

Next, systems were developed to control exhaust emissions. Exhaust control systems were installed on most 1966 GM cars produced for sale in California (all 1968 models, nationwide). These systems, along with the PCV control which previously had been made standard equipment, decreased the emissions of hydrocarbons by about 60% from the level emitted by an uncontrolled car.

CONTROLLING EVAPORATIVE EMISSIONS

Evaporative emissions from the fuel tank and the carburetor were the last of the three sources to be controlled. All 1970-model GM cars produced for sale in California have these controls. Beginning with 1971 models, GM will include evaporative controls on its production nationwide.

WHERE DOES GM STAND?

Certification tests, required by the State of California prior to production, showed that GM 1970 model cars, as equipped for California use, achieved reductions of more than 80% on hydrocarbon emissions and reductions of more than 65% on carbon monoxide emissions compared with 1960 cars without controls.

We think this is good progress toward our goal of a virtually pollutant-free car. While the goal is now in sight, the last mile will be the toughest part of the fight.

WHAT GM IS DOING

As we said, we're pursuing two roads toward our objective of cleaner air: better controls for the present engines and new power sources.

Our research on the current engine is looking into the possible modification of engine design, improved control systems and possibly fuel injection for more precise air-fuel ratios. This research also shows that the use of unleaded fuel would make possible advanced emission-control systems. After the results of this research were discussed individually with different petroleum companies, a number of these companies announced that they would soon offer an unleaded gasoline. With the availability of unleaded gasoline, long-life exhaust catalytic converters, exhaust manifold reactors and exhaust gas recirculation systems could become technically feasible.

We are also continuing to investigate alternative power sources aggressively and completely. We are not committed to the internal combustion engine and are investigating these power sources with an open mind. Steam, electric, Stirling, hybrid and gas turbine engines are being vigorously studied in the largest research program of its type in the world. We will have no hesitation in using a practical low-pollutant alternative to the internal combustion engine.

WHAT CAN THE CAR OWNER DO?

Car owners can actively join in the battle for cleaner air.

First, keep your car in efficient operating condition through proper maintenance. Studies have shown that proper engine maintenance can substantially lower a vehicle's emissions. You should do this anyway to keep your operating costs down and to make sure you are driving a safe car.

Second, GM dealers will soon be offering a low-cost emission-control system to be installed on 1967 models or older (1965 or older in California). The system will include an ignition control device and call for an engine tune-up to manufacturer's recommendations. Emissions are reduced up to 50%. The system will be available in California when certified by the California Air Resources Board and nationally, as soon as possible thereafter. Have it installed when it becomes available.

AT GENERAL MOTORS WE HAVE ACCEPTED THE CHALLENGE

Our society is rightly placing increased emphasis on the necessity for clean air. At General Motors we have accepted this challenge. Over the years we have made a substantial commitment in people, facilities and funds in order to solve our part of the air pollution problem. We will continue this effort until this goal is reached.

A GLOSSARY OF POLLUTION TERMS

Hydrocarbons: Compounds of hydrogen and carbon. Gasoline is made up of many different hydrocarbons. Both evaporative losses and exhaust emissions contain a variety of hydrocarbons. When baked by the sun they react photochemically with other gases to form smog.

Carbon monoxide: A colorless, odorless, tasteless gas resulting from the combustion of carbon with insufficient air.

Oxides of nitrogen: A natural by-product of combustion.

Lead: An additive used in gasoline to reduce engine spark knock. A principal fault is that it fouls pollution control devices.

**OUR OBJECTIVE: TO ELIMINATE AIR POLLUTION
AS IT CONCERNS GENERAL MOTORS VEHICLES AND PLANTS.**

COMPLETE CONTROL NEEDS YOUR HELP.

DO YOUR SHARE BY KEEPING YOUR CAR IN GOOD CONDITION.

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