STATE OF NEW JERSEY

Hon. William T. Cahill, Governor

Department of Environmental Protection
Hon. Richard J. Sullivan, Commissioner

New Jersey Clean Air Council
Stephen F. Lichtenstein, Chairman

REPORT OF THE NEW JERSEY CLEAN AIR COUNCIL

on the

STATUS OF AIR POLLUTION FROM MOBILE SOURCES

with recommendations for further action

JULY, 1970

New Jersey Clean Air Council
Department of Environmental Protection, John Fitch Plaza, Trenton, New Jersey
08625

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DATE July 13, 1970

Honorable Richard J. Sullivan
Commissioner
New Jersey Department of Environmental
Protection
Box 1390
Trenton, New Jersey 08625

Dear Commissioner Sullivan:

The New Jersey Clean Air Council is pleased to forward its 1970 Annual Report pursuant to Title 26:2C-3.3: (h) which states that the Council shall:

> "Hold public hearings at least once a year in regard to existing air pollution control statutes, codes, rules and regulations and upon the state of the art and technical capabilities and limitations in air pollution control and report its recommendations thereon to the commissioner . . . ."

The public hearings providing the primary basis for the Council's recommendations were held on April 8, 9, and 10, 1970 and were limited to the mobile source pollution problem in New Jersey. Testimony was presented by civic leaders, the medical and scientific professions, Federal, State, and local officials, and others concerned with air pollution and its effects.

The Council believes that we are at a critical juncture in the long term control of mobile source pollution emissions. We are convinced, therefore, that the State must act immediately to implement a comprehensive mobile source control program to reclaim and conserve the quality of our air resources.

Sincerely,

Stephen F. Lichtenstein

I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

The automobile is the single greatest source of air pollution in the United States and in New Jersey. Of the total air pollution emissions in this country, 60 percent - 180 billion pounds annually - come from the automobile and New Jersey has the highest emissions per square mile of all the states. Controls on new cars since 1968 will cause a general decline in these emissions until about 1980 when the inexorable increase in the automobile population will again cause emissions to rise.

If we wait for some technological breakthrough in low pollution vehicles to save us "in the nick of time," our hopes may not be rewarded. The Clean Air Council believes it is possible to thwart the upturn in automotive emissions after 1980 only by implementing bold new programs now to supplement Federal controls.

An important fact strongly emphasized at the Council's April 1970 public hearing was the pressing need for mass transit. This program should include:

1. Upgrading the limited, but existing, facilities
2. Coordinating the present systems
3. Instituting immediately comprehensive plans for inter- and intra-state efficient, modern, and nonpolluting means of mass transit

The effective accomplishment of these goals are of great significance, but are of necessity long-range. The Council, while understanding the importance of long-range programs, has nevertheless felt the necessity of placing great emphasis on those programs the results of which will be seen in the near future.

Accordingly, the Council has developed recommendations to the New Jersey Department of Environmental Protection to implement a number of programs within the State to reduce motor vehicle emissions.

These recommendations were derived from consideration of testimony given at the Council's April 1970 public hearing.

Since the programs recommended below for State action can only be carried out successfully with the cooperation and participation of the various State departments involved (such as Department of Transportation, Division of Motor Vehicles, State Police, and the Public Utilities Commission) the Governor should be requested to establish an environmental coordinating committee composed of the heads of the departments, or their designees, from each appropriate agency. This committee should be required to meet monthly to insure the proper coordination and enforcement of the programs recommended hereafter.

Programs involving State action

1. Implement the motor vehicle emission inspection system as now developed, which contemplates the use of the present motor vehicle inspection stations, with a significantly accelerated effort.

2. Enact legislation requiring semi-annual minor tune-ups for all vehicles registered in the State.

3. Impose smoke control codes applicable to any resident or non-resident vehicles operated on the highways.

4. Require manufacturers' warranty that new cars sold in the State will meet the State's emission standards.

5. Develop a program of taxes and incentives to control the pattern of vehicle use in the State, and to encourage the use of mass transportation and car pools, including:

- Parking taxes
- Fast highway lanes during peak hours restricted to buses and car pools
- Increased state gasoline taxes

- Limiting the number of vehicle registrations per household
- Bridge, tunnel and highway tolls based upon vehicle occupancy

6. Change the New Jersey Motor Vehicle Law to permit emission control devices to be required for used cars.

7. Implement program to discourage the use of lead in fuels.

8. Develop a car owners manual of good practices in driving and maintenance to reduce emissions.

9. Enact legislation establishing the position of Chief Ecologist of the State and requiring ecological consulting in all land and water use planning.

10. Establish a State registry of mobile source pollution related diseases.

11. Determine if emissions from off-road vehicles, boats, ships, and miscellaneous vehicles will constitute a future significant problem.

It is contemplated that increases in motor vehicle registration fees and other motor vehicle related taxes will be imposed to fund the above programs as necessary.

Programs involving Federal action:

1. Press for Federal surveillance of assembly-line vehicle compliance with national emission standards.

2. Press for Federal testing and certification of used car "tack-on" devices, or for support of such testing by the State.

3. Press for integrated national transportation and environmental protection priorities with budgets to meet the needs.

4. Request the Federal Aviation Administration to issue a manual of good practices for airport ground and flight operations to reduce pollution.

II. THE MOBILE SOURCE POLLUTION PROBLEM IN NEW JERSEY

A. Mobile Source Pollution and its Effects

In 1968, over 3,000,000 motor vehicles were registered in New Jersey. This figure shows New Jersey to have the greatest geographic density of motor vehicles of all the states, over 400 vehicles per square mile on the average. The vehicle density in the metropolitan areas is much higher than this average figure. In Bergen, Union and Hudson Counties the 1968 density figures were respectively, 1634, 2583, and 3961 vehicles per square mile. Such great vehicular densities mean that New Jersey probably also has the highest average mobile source pollution emissions per square mile of all the states.

Based on the 1968 vehicle registration figures, and taking into account the control on new vehicles since the 1963 model year, Table 1 shows the staggering total of 3,260,000 tons of pollutants being added to the air in New Jersey each year. This pollutional loading takes into account only registered vehicles and does not include the supplementary loading that comes from all nonregistered vehicles --- transient vehicles, farm tractors, construction equipment, etc.

According to testimony given at the public hearings by Federal and State specialists on the effects of mobile source pollutants and additional information given in the Federal criteria documents on carbon monoxide and hydrocarbons:

1. Exposure of nonsmokers to carbon monoxide levels of 10 to 15 parts per million (ppm) for 8 or more hours causes carboxyhemoglobin levels in the blood associated with adverse health effects, as manifested by impaired time interval discrimination. Exposure to levels of 30 ppm for 8 or more hours causes carboxyhemoglobin levels in the blood associated with impaired performance on certain psychomotor tests; and above this level there is evidence of stress in patients with heart disease.

TABLE 1

EMISSIONS OF AUTOMOTIVE POLLUTANTS IN
NEW JERSEY IN 1968
(millions of tons)

	Carbon Monoxide	Hydrocarbons	Nitrogen Oxides	Total
Region I	1.84	0.44	0.16	2.44
Region II	0.47	0.10	0.04	0.61
Remainder	0.13	0.05	0.03	0.21
Total	2.44	0.59	0.23	3.26

Region I: Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset, and Union Counties

Region II: Burlington, Camden, Gloucester, Mercer, and Salem Counties

Remainder: Atlantic, Cape May, Cumberland, Hunterdon, Ocean, Sussex, and Warren Counties

2. For photochemical oxidants, which are functionally related to hydrocarbons, adverse health effects, as shown by impaired performance of athletes occurred with hourly average oxidant levels between 0.03 and 0.3 ppm. Increased frequency of asthma attacks among a proportion of subjects with this disease was exhibited when hourly oxidant averages exceed 0.05 ppm. Eye irritation is exhibited among some subjects when hourly averages exceed 0.03 ppm. Hydrocarbon levels corresponding to the lowest level of oxidant observed to affect human health adversely would be about 0.15 ppm of carbon.

3. A relationship between nitrogen oxides and photochemical oxidants is expected to be established by scientists soon, but the direct effect of nitrogen oxides on health is not yet completely delineated.

Table 2 compares air quality data monitored by the State at Newark, Bayonne and Camden with the levels of pollutants mentioned above as causing adverse health effects.

It is evident from Table 2 that carbon monoxide levels have substantially exceeded safe levels at times in Newark. If data were averaged over an 8 hour period to be exactly comparable to the Federal criteria, it is likely that Bayonne and Camden would also show instances of unsafe carbon monoxide levels. Oxidant levels in the three cities have apparently exceeded the Federal criteria by factors of five or more, indicating that the related hydrocarbon emission levels from mobile sources have also become excessive.

Thus, there is direct evidence that pollution from mobile sources has reached levels adverse to human health in New Jersey. Research on the effects of other mobile source pollutants, such as nitrogen oxides and lead,

TABLE 2

COMPARISON OF OBSERVED 1968 MAXIMUM AVERAGES* OF CARBON MONOXIDE AND TOTAL OXIDANT AT THREE SITES WITH FEDERAL HEALTH CRITERIA
(parts per million, ppm)

	CARBON MONOXIDE		TOTAL OXIDANT	
Monitoring Site	Observed Max. Daily Average	Federal Criteria	Observed Max. Hourly Average	Federal Criteria
Newark	12.8 ppm	10-15 ppm for 8 hrs. or more	0.16 ppm	Hourly averages exceeding 0.03 ppm
Bayonne	5.3		0.18	
Camden	6.5		0.24	

*Defined as the maximum arithmetic mean concentration observed over all hourly or daily intervals monitored.

is still being pursued by scientists and no conclusive evidence yet exists on the levels which cause damage. Lead is highly suspect, however, especially its effects on children. Asbestos from automobile brake linings and clutch facings adds to the asbestos sprayed into the air from building construction. Some forms of lung cancer are associated with moderate levels of asbestos particulate.

Other testimony at the public hearing was concerned with the effects of mobile source pollutants on animals, on vegetation, and on the ecosystems of the State. Photographic evidence was provided of the kinds of damage to various crops, flowers and trees by highly reactive hydrocarbons, such as ethylene, and pollutants formed as a photochemical by-product, such as ozone and peroxyacyl nitrate (PAN). Testimony was also given of the disappearance of lichens in some forest areas of the State.

There is great concern that man's technology, including the automobile, may cause catastrophic changes in the natural balance of nature. For example, between 25 and 150 pounds of nitrogen per acre per year is estimated to be added to New Jersey as a result of man's pollution. The lower figure equals the amount added to fields by farmers and may in the long run have a very severe impact on the plants and animals whose survival is dependent on nature's dynamic balance not becoming unstable. Another phenomenon of great concern to global climatologists and ecologists is the "greenhouse effect." This is a suspected world-wide increase in temperature caused by the great amounts of carbon dioxide emitted from the burning of fossil fuels, including gasoline. In September 1966 the average daily carbon dioxide concentration at the Bayonne monitoring site was 325 parts per million; in September 1968 the average was 346 ppm. Similar increases were observed for other months, showing a consistent rise in carbon dioxide levels and giving evidence in microcosm of the world-wide increase in the levels of this pollutant.

According to expert testimony at the public hearing, nature's capacity to recover from the pollution of our air, water, and land resources is very great, yet finite. The way in which small man-generated effects can accumulate to cause large shifts in the environmental balance is very complex and not well understood. Perhaps ecology - the branch of science concerned with the interrelationships between organisms and their environment - can provide some needed foresight into the natural consequences of our economic and technical developments. Because of the high vehicular and industrial densities we experience in New Jersey we have a special responsibility to subject all present and future transportation and land use plans (e.g. the Hackensack Meadowlands) to an intensive review by ecologists to ascertain the probable extent of environmental damage caused by new development. For such review to be effective it must be (1) mandatory and (2) performed by an authority in the State Government with sufficient powers to negotiate beneficial changes in the character of development plans.

The phasing of new vehicles with presently mandated emission controls into the total vehicle population should reduce concentrations of the controlled pollutants in New Jersey until about 1980, providing (1) the controls do not deteriorate faster than Federal specifications permit, and (2) vehicle densities do not increase. After 1980, pollutant concentrations will once again begin to rise due to the continuing growth of the motor vehicle population. Pollutants not presently controlled, such as nitrogen oxides and particulate matter, will continue to increase until controls are mandated. The indicated reduction of today's mobile source emissions of carbon monoxide and hydrocarbons will only be temporary (see Figures B-1 and B-2 in Appendix B) unless (1) low pollution vehicles are available well before 1980, (2) mass public transportation systems displace large numbers of cars, and (3) New Jersey takes action immediately to supplement Federally-mandated controls.

B. Conclusions

1. Mobile source pollution has reached levels adverse to human health in New Jersey.

2. Mobile source pollution has caused damage to the general environment and to the ecosystems of the State.

3. New car controls already programmed will cause carbon monoxide and hydrocarbon concentrations to decline, but the increase in the number of vehicles will again cause an increase in these pollutant concentrations after 1980. Nitrogen oxides and other pollutants, such as lead and asbestos, are not presently controlled and continue to increase unabated.

4. After 1980, pollutant concentrations in the State can be reduced only through (1) introduction of low pollution vehicles, (2) displacement of private vehicles by mass transportation systems, and (3) supplemental controls by the State.

C. Recommendations

1. The Department of Environmental Protection should establish a registry of mobile source pollution-related diseases and investigate relationships between pollutant concentrations and effects on people, animals, plants and materials.

2. The Department should develop and maintain 10 year projections of mobile source pollutant emissions and concentrations by various areas within the State so that critical problems can be foreseen and inputs provided to environmental and transportation planning. Projections should be based on the best information on the rate of deterioration of new car emission controls, arterial traffic densities, and the proportion of interstate traffic.

3. The Department should seek legislation creating a position of Chief Ecologist and requiring ecological consulting in planning land and water use. Among the use plans to be considered for an area should be nonuse, the conservation or reclamation of the natural character of the environment. These requirements should apply to the Hackensack Meadowlands Development Commission.

III. PRESENT AND FUTURE FEDERAL MOTOR VEHICLE EMISSION STANDARDS

A. Programmed Standards for New Vehicles

The first nation-wide motor vehicle controls were those imposed on crank-case emissions from 1963 model new cars. Federal emission standards on vehicle exhausts were imposed on 1968 model new cars. Stricter Federal exhaust emission standards now apply to 1970 model new cars and Federal emission standards for evaporative losses from carburetors and gas tanks have been mandated for 1971 model new cars. Stricter Federal standards have been programmed for 1973 and 1975 model new cars, including emission standards on nitrogen oxides and particulate, neither of which are presently controlled. The present and programmed motor vehicle controls are summarized in Table 3.

In addition, new 1970 heavy duty trucks and buses powered by gasoline engines must meet the following standards:

	Exhaust concentration
Carbon monoxide	1.5%
Hydrocarbons	275 ppm

Diesel engines offered for sale in the 1970 model year must be designed to limit smoke emissions as follows:

(1) Smoke opacity not to exceed 40 percent during engine acceleration mode

(2) Smoke opacity not to exceed 20 percent during engine lugging mode

Visible smoke from jet aircraft will also be controlled as a result of the agreement by major domestic commercial airlines to install a new type of combustor in jet engines. Agreement was accelerated as a result of an anti-pollution suit filed by the State of New Jersey against commercial airlines using airports within the State.

TABLE 3

PRESENT AND PROGRAMMED FEDERAL EMISSION CONTROLS
FOR PASSENGER CARS AND LIGHT TRUCKS
(grams per vehicle mile)

Model Year	Crankcase	Exhaust				Evaporation
	HC	CO	HC	NO_x	Part.	HC
1963*	0.10-0.15%	--	--	--	--	--
1968**	0	35	3.4	--	--	--
1970	0	23	2.2	--	--	--
1971	0	23	2.2	--	--	0.49
1973	0	23	2.2	3.0	--	0.49
1975	0	11	0.5	0.9	0.1	0

HC = hydrocarbons
CO = carbon monoxide
NO_x = nitrogen oxides
Part. = particulate
*As percent of fuel supplied. "Open" crankcase ventilation was voluntarily installed by U. S. auto manufacturers beginning with 1963 models. Federal standards after 1968 required a "closed" crankcase ventilation system with zero emissions.
**Standards shown only for engines larger than 140 cubic inch displacement

During the hearings prior to passage of the 1967 Air Quality Act the question of Federal preemption of the right of states to set standards on emissions from motor vehicles was raised. Representatives of the State of California opposed the displacing of a state's right to set more stringent standards than the Federal standards to meet peculiar local conditions. The auto industry, on the other hand, objected to state standards because manufacturing automobiles to comply with a variety of standards could place undue economic strain on the industry.

Both of these points of view were recognized in Section 208 of the Clean Air Act as amended in 1967. Under this section the establishment of emission standards for vehicles is reserved to the Federal Government with provision for waiver of Federal right. The Secretary of Health, Education, and Welfare may waive the Federal preemptive right to any state which has adopted standards other than crankcase emission standards for the control of emissions from motor vehicles prior to March 30, 1966 (only California qualifies), unless he finds that the state does not require standards more stringent than the applicable Federal standard.

California obtained a waiver in 1968 and another in 1969 to permit implementation of the California Pure Air Act of 1968. However, because of the March 30, 1966 proviso mentioned above, the Clean Air Act would have to be amended for any other state to qualify.

B. Compliance with Federal Standards and Deterioration of Emission Controls

Automobile manufacturers, foreign and domestic, must obtain Federal certification of compliance with applicable motor vehicle emission

standards to sell new cars in the United States. The procedures for certification are quite complex (see Federal Register, Vol. 33, No. 108, 6/4/68, and Vol. 34, No. 125, 7/1/69), but the features of the certification program of importance to New Jersey are:

(1) All emission certification testing is done on essentially hand-made, finely-machined and tuned, prototype vehicles

(2) Regulations require emission standards to be met up to 50,000 miles with one tune-up at 25,000 miles

(3) The Federal Government tests only four prototype vehicles of each engine displacement and uses manufacturer-supplied factors to project emissions to 50,000 miles

That these prototype certification procedures are inadequate is evidenced by data on assembly-line vehicles observed by the New Jersey Department of Environmental Protection, the Federal Government, the California Air Resources Board, and the New York Department of Air Resources.

The New Jersey data were developed from a vehicle emissions inspection system installed at Baker's Basin on Route 1. These data show that although substantial reductions in emissions of carbon monoxide and hydrocarbon from 1968 and 1969 model cars was achieved compared to pre-1968 and 1969 model cars, the reductions were much less than had been expected. The same seven-mode cycle was used in the test as is used in the Federal compliance procedures but rather than the expected 60 percent reduction expected for hydrocarbons, an average of only 31 percent reduction was observed. For carbon monoxide, the expected reduction was 55 percent, but only 43 percent was observed.

The Federal data, based on 333 1968 model rental car emission tests, showed that half the vehicles emitted carbon monoxide and hydrocarbons in excess of the 1968 standards after 11,000 miles.

The California data, based on 6,892 cars of model years 1966-1969, show an average of only 44 percent meeting the hydrocarbon emission standards for the corresponding model year, ranging from 36 percent of the 1966 cars to 56 percent of the 1969 cars. Earlier California data show that 1968 Ford production cars exceed the Federal hydrocarbon standard at 4,000 miles, the point at which prototypes are certified. General Motors and Chrysler exceeded this standard at about 10,000 miles. The California data also show that the tested cars emitted hydrocarbon emissions averaging 34 percent higher at 4,000 miles than the manufacturers' prototypes at that mileage.

The tests run by New York were based on the driving pattern common to New York City, characterized by a larger proportion of idling and low speeds than the Los Angeles-oriented driving cycle used in federal certification tests. The results showed hydrocarbon emissions to be about twice as high as they would using the Los Angeles driving cycle, and carbon monoxide emissions to be about 16 percent higher than for Los Angeles.

In testimony before the U. S. Congress, the Commissioner of the National Air Pollution Control Administration, Dr. John Middleton, stated, "Very often 75 to 80 percent of the cars failed to meet the standard and they missed the target by 15 to 25 percent. . . It is a high percentage of cars that fail."

The direct result of the rapid deterioration of new car emission controls is that the mobile source pollution emissions in New Jersey are

not being reduced as rapidly as the State's projections indicate and that pollutant concentrations will begin to rise before the end of this decade if more stringent control actions are not taken immediately, both at the Federal and State levels.

C. Prospects for Low Emission Vehicles

Even if the strictest possible controls were imposed on the internal combustion engine, automotive emissions would still begin to rise after 1980. In "The Automobile and Air Pollution: A Program for Progress, Part I," published by the U. S. Department of Commerce, the ultimate practical limits to the control of the automobile after 1980 are compared with the uncontrolled automobile (pre-1963):

	Pre-1963	Ultimate after 1980
Carbon monoxide	1700 lbs/car/year	120 lbs/car/year
Hydrocarbons	520	10
Nitrogen Oxides	90	10

Emission levels lower than the ultimate will require conversion to new low pollution power sources.

Research and development of low pollution vehicles is being carried on with both public and private funds. However, the principal funding is, and will continue to be, Federal.

There are three Federal low pollution engine programs with a total funding in fiscal year 1970 of $2.8 million, and a projected funding through fiscal 1975 of $45.4 million: heat engines, electric power systems, and hybrid power systems.

1. Heat engines. There are three heat engine developments underway:

Rankine-Cycle Engine - this is an external combustion engine which uses high pressure steam or some other working fluid vapor to produce work. A prototype power system for automobiles may be completed in fiscal 1972 and a road evaluation in fiscal 1974. A second generation prototype for automobiles may be completed in 1975 and a road evaluation in 1977.

Brayton-Cycle Engine - this is a gas turbine engine. The objective of this program is to help private industry advance gas turbine development for passenger car propulsion. Commercial usage of these engines is to be initiated in fiscal 1971.

Stirling-Cycle Engine - this is an external combustion engine which uses a gaseous internal working fluid, usually hydrogen or helium. A prototype may be completed in fiscal 1971 with demonstration of a test-bed vehicle in fiscal 1973. No Federal funding is planned beyond fiscal 1973.

2. Electric Power Systems. These systems involve batteries as power storage devices and power transmission components. They are almost completely free of undesirable emissions. There are two developments being Federally-supported.

High-Temperature Alkali-Metal Batteries - this is a long range program with the goal of completing a test-bed vehicle in fiscal 1981 employing a 20-kilowatt battery.

Metal-Air Batteries - the purpose of this research is to develop the technology of this battery as a substitute

for the high-temperature alkali-metal battery for low-power urban vehicles. Battery development will begin in fiscal 1971 and will terminate in fiscal 1977.

3. Hybrid Power Systems. As implied by their name these engines combine the best features of non-hybrid systems and they are likely to be more costly as a result. Very little work has been done in developing hybrids for passenger cars, but two types have been selected for Federal support.

Heat Engine/Flywheel and Heat Engine/Battery - in each case the heat engine supplies power between accelerations to the flywheel or battery which drives the vehicle. These programs were initiated in fiscal 1970 and will terminate in fiscal 1974 with the goal being either to show the feasibility of these sources for passenger car application or to eliminate them from further consideration.

All of the above engine developments entail a considerable degree of technical risk, so there can be little optimism that mass-produced low pollution vehicles will be commercially feasible by 1980 when pollution emissions from the internal combustion engine will again begin to rise.

D. Prospects for Federally-supported Mass Transportation Programs

The dramatic increase in ridership on the PATCO lines between Linden Wald, New Jersey and Philadelphia has shown clearly that passenger car commuters can be attracted by rapid, convenient, economical, and comfortable rapid transit systems. Systems with these qualities are expensive, however, and beyond the means of most city and state governments. Massive Federal support is therefore required if rapid transit

is to become a viable alternative to the private passenger car and its pollution.

It is clear that the present levels of Federal transportation funding are inadequate to create an alternative to the private automobile. A new urban mass transportation bill sponsored by the Federal Administration is pending in Congress. This bill provides for over $3 billion in contract authority immediately. Other proposals would increase the immediate funding and create a national transportation trust fund by raising gasoline taxes. But even if total funding for mass transportation were available immediately, the lead time to build and install such systems would be considerable. At the Council hearings, Mr. J. D. Braman, the Assistant Secretary for Environment and Urban Systems in the U. S. Department of Transportation, testified that a minimum lead time of seven years is required to build a new rapid transit system and that ten or more years would be the usual case.

There are no national transportation priorities at present, however, and because of this lack a conflict clearly exists between the highway building interests, who are supported by a huge dedicated trust fund, and the needs of cities for fast inter- and intra-city commuter transport systems.

E. Industry Programs in Mobile Source Pollution Control

It is difficult to determine the true extent of industry activities in motor vehicle pollution control. General Motors Corporation is one of the few firms to release a figure for its annual research budget in pollution control. The reported figure, $40 million annually since 1967, appears sizable, but how it is being spent has not been revealed.

At the public hearings and since, General Motors, Ford and Chrysler have announced "clean air packages" which can be attached to uncontrolled used cars to reduce hydrocarbon, carbon monoxide, and nitrogen oxide emissions up to 50 percent. The installed cost of these "packages" appears to be low, but little substantiated test data has been supplied to support the emission reduction claims made or to indicate the durability of these devices.

The DuPont Company announced the development of a thermal reactor for automobiles, which, with recirculation of exhaust gases, can meet the 1975 Federal exhaust emission standards for carbon monoxide, hydrocarbons, and nitrogen oxides. Contrary to their advertising, however, the reactor is not available for sale now and no projection was made as to its availability. In fact, DuPont does not intend to manufacture the reactor but only to make it available, royalty-free, to whoever wishes to manufacture it. Other studies of DuPont-type thermal reactors estimate the installed cost of the device to a new car owner at about $80, with an annual operating cost of $15 due primarily to added fuel needed for enriched carburetion.

From other testimony and information presented to the Council there are also a number of petroleum industry research programs in progress to reduce the amount of lead compounds in gasoline, and to reduce both the volatility of gasoline and the smog-producing character of its hydrocarbons. Regarding the reduction of lead, engine modifications should be encouraged to permit vehicles to run on unleaded gasolines because of engine knock and a loss in fuel economy in present engines. Some 1971 model cars will be so modified, according to recent news releases.

As the 1971 evaporative controls are phased into the vehicle population, low volatility reformulations would be redundant in automobiles,

but would have a small bonus effect by reducing hydrocarbon evaporations from refineries, tank farms, tanker trucks and service stations. Smog-producing hydrocarbon emissions from vehicles may also be reduced by replacing the olefins (photochemically reactive hydrocarbons) in gasoline with less reactive substitutes. Again, there would be a bonus reduction of smog-producing hydrocarbon emission in the fuel marketing chain.

F. Conclusions

1. Present Federal certification procedures of assembly-line vehicles are too lax and permit production cars to deviate too widely from emission standards.

2. Present new car controls do not meet the Federal durability requirements.

3. The prospect is very dim for commercially-available low emission vehicles before 1985 at the present level of Federal and private funding of unconventional vehicle research.

4. Integrated national transportation and environmental protection priorities are needed immediately.

5. The automotive and petroleum industries are apparently not investing enough talent into mobile source pollution control research and development; they appear to be "married to the internal combustion engine."

6. The advertising claims of industry often exaggerate industry's commitment to pollution control and frequently mislead the public as to the efficiency and availability of their products; the consumer must be protected by strict Federal testing and certification of

used car "tack-on" devices, fuel additives, and diagnostic instrumentation.

G. Recommendations

1. New Jersey should press for Federal surveillance of assembly-line car compliance with emission standards through quality assurance techniques well-known to the automobile industry.

2. New Jersey should require the manufacturer's warranty that new cars sold in the State meet certain inspection requirements for emissions.

3. The Governor and the State's Federal representatives should press for integrated national transportation and environmental protection priorities with budgets to meet the needs.

4. New Jersey should press either for Federal testing and certification of used car "tack-on" devices, fuel additives, and diagnostic instrumentation, or for Federal support of such testing by the State.

IV. ALTERNATIVES FOR CONTROL OF MOBILE SOURCES IN NEW JERSEY

A. Kinds of Vehicle Controls

There are three kinds of controls which can be imposed on mobile sources:

- Controls on vehicle emission points (crankcase, exhaust, tank, carburetor, brake linings and clutch facings)
- Controls on fuel composition
- Controls on vehicle use

The present Federal standards apply only to emission points on new vehicles. The 1963 model national controls were aimed at hydrocarbon emissions from automobile crank cases; the 1968 and 1970 model standards apply additionally to carbon monoxide and hydrocarbon emissions from the exhaust pipe. The 1971 model standards apply to evaporative losses of hydrocarbons from gas tanks and carburetors. Standards in subsequent years will apply to nitrogen oxides and particulate. No Federal standards affecting particulate emission from brakes or clutch, fuel composition, or vehicle use are presently programmed.

B. Control Options for New Jersey

It was mentioned earlier that the Air Quality Act of 1967 prevents any state but California from setting standards on new vehicles stricter than those published by the Federal Government. In addition, the New Jersey Motor Vehicle Law (Title 26: 2c - 8.4) prohibits any requirement for pollution controls devices to be added to used vehicles. Nevertheless, if amendments to these laws are possible, then stricter standards on all vehicles and control devices on used vehicles can be included in the control alternatives open to the State.

The following alternatives were considered by the Clean Air Council:

Emission Point Controls

1. The State to take no action but rely on present and planned Federal standards

2. Impose stricter standards on new cars sold in the State, and on aircraft, off-road vehicles, boats, ships and on small utility vehicles

3. Ban the internal combusion engine after a certain date

4. Require "tack-on" devices on used cars after a certain date

5. Require inspection and/or maintenance of vehicle emissions against State emission standards

Fuel Controls

1. No action by State

2. Ban leaded gasoline

3. Ban high volatility gasoline

4. Ban gasolines with certain light olefins (chemical components with high smog-producing potential)

5. Require gasoline to contain pollution-reducing additives

6. Require certain vehicles to use low pollution fuels (LNG, LPG, CNG, or non-petroleum fuels) in urban areas

Vehicle Use Controls

1. No action by State

2. Provide comprehensive urban mass transit systems

3. Provide comprehensive inter-city high speed transit systems

4. Impose intra-city vehicle restrictions

5. Provide car pool incentives

6. Impose urban parking taxes

7. Impose private car commutation taxes

8. Limit number of car registrations per household

9. Impose State-wide environmental planning criteria

10. Impose restrictions on vehicles during air pollution alerts, warnings, and emergencies

11. Publish a manual of good driving and maintenance practices to reduce pollution

C. Conclusions of the Clean Air Council Concerning Control Options

Emission Point Controls

1. For the State to take no action would be unacceptable in view of the magnitude of the current problem (see page 4) as well as the likely rise in emissions around 1980.

2. For the State to impose stricter new vehicle standards would be unacceptable since an amendment to the Air Quality Act of 1967 permitting this would also permit the possibility of 50 different sets of standards across the Nation, creating chaos in compliance and enforcement. The benefit of controls on off-road vehicles, boats, ships, and small utility vehicles (lawn mowers, etc.) is unknown and requires investigation. Aircraft emission standards must be nationally imposed because of the obvious aviation safety problems connected with different state standards.

3. Ban the internal combustion engine--unacceptable if mass produced low pollution vehicles are not available as a substitute. If, and when, such vehicles are available, then the State might consider this option to speed the transition.

4. Require "tack-on" devices--may be acceptable if such devices ("clean air packages," thermal or catalytic reactors, etc.) meet certain effectiveness and durability standards at a reasonable price. Amendment to the New Jersey Motor Vehicle Law would be required.

5. Require inspection and/or maintenance of used cars--the inspection system already developed by the State (see Appendix C for description) is the very heart of our technological efforts to decrease pollution from mobile sources. The inspection system as now developed should be given an immediate priority and implemented on a crash basis. In the opinion of the Council, the normal administrative procedures which have slowed the progress of this program can no longer be tolerated. The system as presently developed includes at least a minimum diagnosis to help define the items of primary fault, as is the case in safety inspections. Positive procedures should be prescribed for handling the "inherently high emitter," the vehicle that can never be brought down to the standard short of replacing the engine. Possibilities are (1) a waiver exempting the vehicle from inspections, (2) install a device to bring emissions down to the standards, or (3) dispose of the vehicle through state purchase, return to the manufacturer, or scrapping.

In addition to the proposed emission inspection system, a mandatory maintenance system should be legislated for all motor vehicles registered in the State. Under such legislation, each motorist would be required, twice a year, to have a minor tune-up involving adjustments to idle speed, timing, and carburetor, as well as to control devices where appropriate. The legislation could require either State training and certification of mechanics, or State franchised maintenance stations.

Fuel Controls

1. For the State to take no action would again be unacceptable in view of the feasibility of regulating the composition of fuels sold in the State. Precedent has already been set in controlling the sulfur content of fossil fuels used by stationary combustion sources in the State. In addition, the output of refineries can be varied to suit the requirements of a locale once capital changeovers have been accomplished.

2. Ban leaded gasolines--this would be the most direct way of eliminating lead particulate emissions from automobiles. It also would eliminate the problem of the harmful effect of lead on catalytic systems for reducing exhaust emissions. However, the demands of present engines for high-octane fuels cannot be adequately satisfied if lead is removed from fuels, unless fuel composition is changed, as by the addition of aromatic components--whose contribution to atmospheric pollution, while not fully understood, is probably undesirable. The addition of aromatics may be avoided by modifications to engines to reduce engine knock

and to compensate for a loss in fuel economy, and automobile manufacturers have already announced that some 1971 model cars will be modified for unleaded gasoline.

3. Ban high volatility gasolines--this control would reduce evaporative hydrocarbon emissions from motor vehicles and from the fuel marketing chain (refineries, storage tanks, tanker trucks, and service station pumps), but would become increasingly redundant as mechanical evaporative controls on cars are phased in to the car population after the 1971 model year. Mechanical evaporative controls in the marketing chain would also tend to make this option redundant. Acceptability of volatility control therefore depends on its residual effectiveness.

4. Ban gasolines which contain light olefins--this control would replace some of the more reactive (smog-producing) hydrocarbons in gasoline with less reactive hydrocarbons. This option also becomes more redundant as mechanical evaporative controls are introduced into the car population and as fuel marketing sources are better controlled. Acceptability of olefin control therefore again depends on its residual effectiveness.

5. Require gasoline to contain pollution-reducing additives--if such additives were effective and economical then such a requirement might be acceptable. At present, however the effectiveness of additives in cleaning automobile emissions is highly controversial and requires documentation and certification. Fuel additives for diesel fuels and some aircraft fuels are presently being considered in Federal programs.

6. Require low pollution fuels--acceptable in the case of dual fuel systems for commercial and State-owned fleets. In the city, a dual fuel vehicle would use a low pollution fuel system employing tanks of liquified natural gas (LNG), liquid petroleum gas (LPG), compressed natural gas (CNG), or non-petroleum fuels such as alcohol, ammonia, etc. Outside of the urban area operation on gasoline would be permitted. The acceptability of requiring low pollution fuel operation for all vehicles depends on the supply, distribution, and cost of such fuels and the cost of required installation and vehicle modification. Under some combinations of operating conditions with LPG, increases have been reported in nitrogen oxide emissions compared to gasoline operation.

A favorable feature of all fuel controls is that they apply to almost all vehicles in the population immediately, whereas controls only on new cars take effect slowly as the new models phase into the population.

Vehicle Use Controls

1. No action by State--unacceptable. Regardless of the technology available to control vehicle emission points or fuels, vehicle use controls provide the most effective long-term avenue which the State can and should use to protect the health and welfare of its citizens from hazardous pollution levels.

2. Provide comprehensive urban mass transit systems--acceptable. Requires massive Federal financial support. The time scale for completing such systems is long--a minimum of 7 to 10 years--and therefore grants for

planning and engineering must be obtained immediately.

3. Provide comprehensive inter-city high-speed transit systems - acceptable, but also requires massive Federal support.

4. Impose intra-city vehicle restrictions - acceptable, but only in conjunction with the availability of mass transit systems. This option is therefore available only in the long run, except in the case of air pollution episodes when driving restriction may be required to reduce potentially dangerous pollution levels.

5. Provide car pool incentives - acceptable. This is an immediate option of considerable potential. The incentive could take several forms: rebate of State gasoline taxes, right to use high speed lanes reserved for car pools and buses, parking subsidies, etc.

6. Impose urban parking taxes - acceptable, but transportation alternatives must be provided concurrently, or else parking becomes a rich man's luxury. This would seem to be mainly a future means of spurring mass transit system ridership and car pools.

7. Impose private vehicle commutation taxes acceptable, but again transportation alternatives must be available. Thus, this is also a long-range option.

8. Limit number of car registrations per household - acceptability requires investigation of the fairness or even the constitutionality of such control. Again, alternative means of transportation would have to be available.

9. Impose State-wide environmental planning criteria - acceptable. This is also an option with a long-range impact. Some beginnings in this direction are presently underway in a study to develop air quality-oriented land use planning guidelines for the Hackensack Meadowlands and other areas. The study is being undertaken by the Department of Environmental Protection with Federal funds.

10. Impose restrictions on vehicles during air pollution alerts, warnings, and emergencies - this option is already provided for under Chapter 12 of the New Jersey Air Pollution Control Code which establishes the criteria for imposing activity controls on pollution sources, including motor vehicles.

11. Publish a manual of good practices - acceptable. This is also an option which can be implemented immediately. The Department of Motor Vehicles could issue a car owner's manual with the annual registration tags advising motorists of specific ways to reduce vehicular pollution and noise through improved driving and maintenance. The manual could also advise vehicle owners of State emission inspection and maintenance requirements, and the expected cost to correct discrepancies causing failure of the annual emissions test. Testing or retesting of drivers could include questions on good practices. A manual of good practices in airport ground and flight operations could also be developed, but would require the sponsorship of the Federal Aviation Administration.

D. Recommendations

1. The motor vehicle emissions inspection system as now developed by the Department of Environmental Protection contemplating the use of the present motor vehicle inspection stations should be implemented immediately. The present schedule for full operation by late 1972 must be significantly accelerated.

2. The Department should immediately request legislation requiring, as a prerequisite for reregistration of all motor vehicles in the State of New Jersey, mandatory semi-annual maintenance by State certified mechanics at an appropriate fixed fee.

3. The Department should immediately develop a smoke control code applicable to any vehicle, resident or non-resident, using the highways in the State. This code would be supplementary to the diesel code presently scheduled for public hearing.

4. The Council believes that the use of lead in fuel should be discouraged by:

a. Application of an additional tax on fuel containing lead.

b. Encouragement of the sale of automobiles which use low-octane fuels.

c. A decrease in the State sales tax on automobiles which use low-octane fuels.

d. The ultimate banning of lead as a fuel additive.

5. The Department should determine if the effectiveness of other fuel controls, including dual fuel systems on fleet operations, warrants new legislation.

6. The Department should immediately request legislation removing the restriction in the New Jersey Motor Vehicle Code prohibiting

a requirement for "tack-on" devices on used motor vehicles to control automotive emissions.

7. The Department should immediately develop a proposed program for controlling the pattern of motor vehicle usage within the State by means of tax and incentive programs. These programs could include, but not be limited to

- Heavy taxes on parking fees. Tax exemptions would be granted to motorists who participate in car pools or who drive low pollution vehicles
- Establishment of restricted highway lanes on major arteries during peak hours for use only by buses, cars with three or more passengers, and emergency vehicles
- Further increases in State gasoline taxes to make alternate means of transportation more attractive
- A limitation on the number of motor vehicle registrations per household
- Bridge, tunnel and highway tolls based on vehicle occupancy during rush hours

Tax revenues would be used to support the total pollution control program.

8. The Department should determine if emissions from off-road vehicles, boats, ships, and miscellaneous utility vehicles will constitute a future significant problem, and if so, recommend programs for alleviating them.

9. The Department should request the Federal Aviation Administration to develop a manual of good practices for airport ground and flight operations to minimize pollution, compatible with aviation safety.

10. The Department should develop a car owners manual of good practices to be issued annually with registration tags to advise

motorists of specific ways to reduce vehicular pollution through improved driving and maintenance. Testing or retesting of drivers should include questions on good practices. The manual should also provide expected maintenance charges for emission control tune-ups.

APPENDIX A

BACKGROUND OF CLEAN AIR COUNCIL AND LIST OF WITNESSES AT PUBLIC HEARINGS

APPENDIX A

BACKGROUND OF CLEAN AIR COUNCIL AND LIST OF SPEAKERS AT PUBLIC HEARINGS

The Clean Air Council was created in the New Jersey State Department of Health by the enactment of Titles 26:2C-3.1 to 2C-3.3 which amended the Air Pollution Control Act of 1954.

Title 26:2C-3.1 abolished the Air Pollution Control Commission and transferred its functions to the Department of Health. The Air Pollution Control Commission, functioning from 1954 to 1967, promulgated New Jersey Air Pollution Control Code Chapters I through VIII, which codes still are enforced by the Division of Clean Air and Water.

Title 26:2C-3.2 established the 17-member Clean Air Council and prescribes its composition. The current members of the Clean Air Council are:

Stephen F. Lichtenstein, Chairman
John J. Hanson, Vice Chairman
Roslyn Barbash, M.D.
John Sarrus
John Horton, Sc.D.
Raymond M. Manganelli, Ph.D.
Robert J. Haefeli
Irwin S. Zonis
Franklin W. Church
Joseph Healey
Albin W. Erickson
Arthur R. Sypek
James W. Conlon
Sidney Willis
Richard D. Chumney
Frank J. Dodd
(Vacancy)

Title 26:2C-3.3 sets forth the duties and powers of the Clean Air Council. The Council's basic function is to assist the State of New Jersey in the prevention and elimination of air pollution by reviewing the

performance of the Division of Clean Air and Water and by acting to stimulate public concern in air pollution matters. The Council's members are commissioned to investigate all aspects of New Jersey's Air Pollution Control Program and to report their findings and recommendations to the Commissioner of Health.

The Clean Air Council held its first meeting in September, 1968. Since that time the Council has been actively involved in carrying out its mandated functions. Accordingly, under Title 26:2C-3.3: (h), which states that the Clean Air Council shall: "Hold public hearings at least once a year in regard to existing air pollution control statutes, codes, rules and regulations and upon the state of the art and technical capabilities and limitations in air pollution control and report its recommendations thereon to the commissioner . . . .", four days of public hearings were held in February and March, 1969 and three days of hearings in April, 1970. The 1969 hearings dealt with the total air pollution program in New Jersey and were summarized in the annual report published in December 1969 by the Department of Health.

The purpose of the 1970 hearings was to generate information for the Clean Air Council which might suggest viable solutions to the problems encountered in the control of air pollution from mobile sources. Testimony was invited from members of the general public and those having some expertise in this field. The hearing concerned itself with all mobile sources including gasoline- and diesel-powered motor vehicles, aircraft, off-the-road vehicles, etc.

The first day of the hearing (April 8) was devoted to testimony by numerous experts in the field of motor vehicle air pollution control who were invited by the Council to speak. The morning of the second day (April 9)

was devoted to testimony by representatives of governmental agencies. The afternoon of April 9 and the full day of April 10 was devoted to testimony by the public.

Following is a list of witnesses who presented oral or written testimony at the April hearings.

First Day - April 8, 1970

1. The Honorable William T. Cahill
   Governor of New Jersey

2. Division of Clean Air and Water - Richard J. Sullivan
   Director (now Commissioner, Department of Environmental Protection)

3. Air Pollution Control Program, Division of Clean Air and Water - Vincent Marchesani, Supervisor, Evaluation and Planning

4. National Air Pollution Control Administration - Edward Schuck, Bureau of Criteria and Standards

5. National Air Pollution Control Administration - George D. Kittredge, Division of Motor Vehicle Emission Control

6. Rutgers University - Dr. Richard Forman, Associate Professor, Department of Botany

7. Chrysler Corporation - E. W. Beckman, Staff Engineer

8. Ford Motor Company - John St. John

Second Day - April 9, 1970

1. U.S. Department of Transportation - Honorable James D. Braman
   Assistant Secretary for Environment and Urban Systems

2. Assemblyman James J. Florio

3. Esso Research and Engineering - Robert Epperly, Director, Fuels Research Laboratory

4. Assemblyman Robert E. Littell

5. Rutgers University - Dr. Robert H. Daines, Professor and Research Scientist, Department of Pathology

6. Division of Clean Air and Water - William A. Munroe, Chief, Air Pollution Control Program

   John C. Elston, Supervisor, Motor Vehicle Control Project

7. State Department of Transportation - Keith Rosser, Division of Planning

Third Day - April 10, 1970

1. DuPont Company - Dr. Donald Diggs, Project Manager, Thermal Reactor Automobile Project

2. Senator Frank J. Guarini, Jr.

3. James W. Shue, South Orange

4. Gulton Industries - Dr. Charles Rosen, Division of Electronic Car Program

5. TB-RD Diseases Association of New Jersey - Mrs. Samuel B. Reich, Chairman, Program Committee

6. Community Air Pollution Committee (CAPCOM) - Mrs. Patricia MacDonald

7. Mine Safety Applicances Company - William Daley

8. Betty Schectman, M.P.H., M.D.

9. New Jersey Citizens for Clean Air - Mrs. Ruth Ballou
   Mrs. Ruth Ellen Jacobson

10. Engine Manufacturers Association - Thomas C. Young, Executive Director

11. Environmental Political Action Group (college coalition) - Paul R. Kaminar

12. American Association of University Women, New Jersey Branch - Mrs. Eileen L. Donahue

13. Star Gas Service (Delaware Valley Propane Co.) - Joseph M. Cummings, Jr.

14. Davidson Laboratories - Richard G. Kolb

15. Elizabeth, New Jersey Department of Health, Welfare, and Housing - John N. Surmay, Director

16. Pennsylvania State University - Dr. Lubomyr Kurylko, Professor, Department of Fuel Science

A P P E N D I X B

PROJECTED NATIONAL MOTOR VEHICLE POLLUTION EMISSIONS

1950 - 1990

FIGURE B-1

PROJECTED MOTOR VEHICLE EMISSIONS
OF CARBON MONOXIDE

CONTROL ASSUMPTIONS:

1968 Federal Exhaust Emission Control 1.5% CO

1970 Federal Exhaust Emission Control 23g/veh.-mi CO

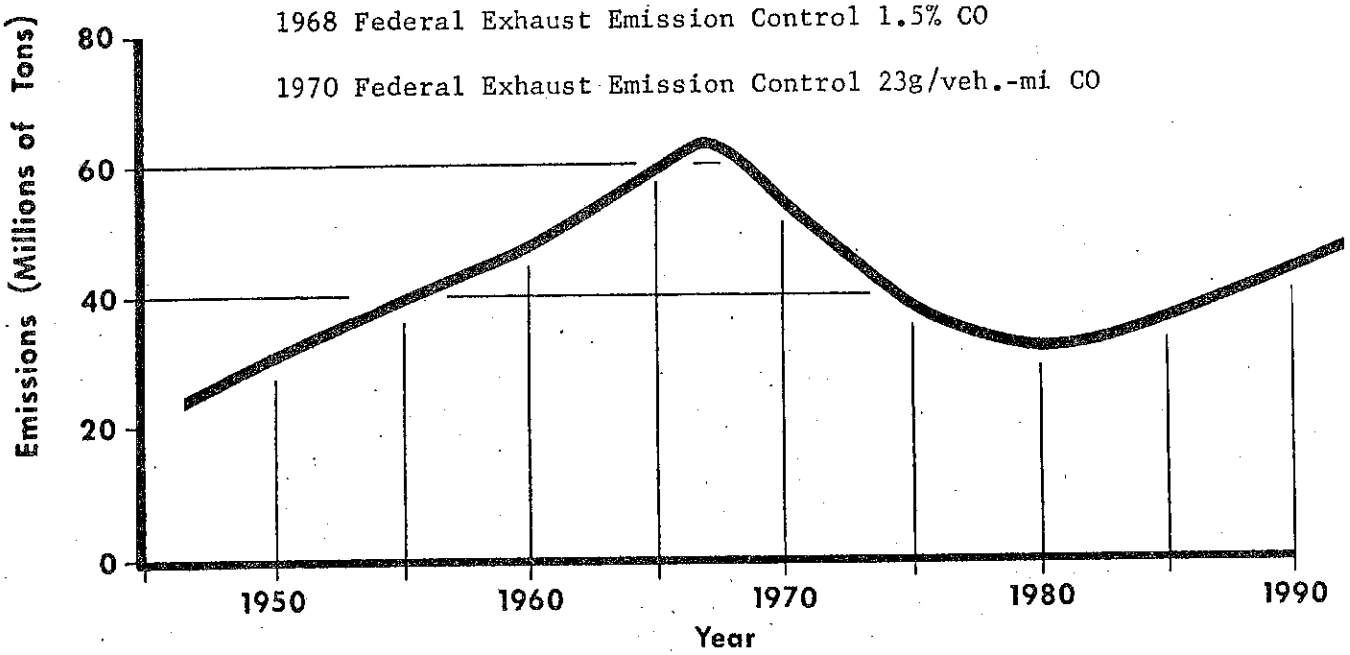
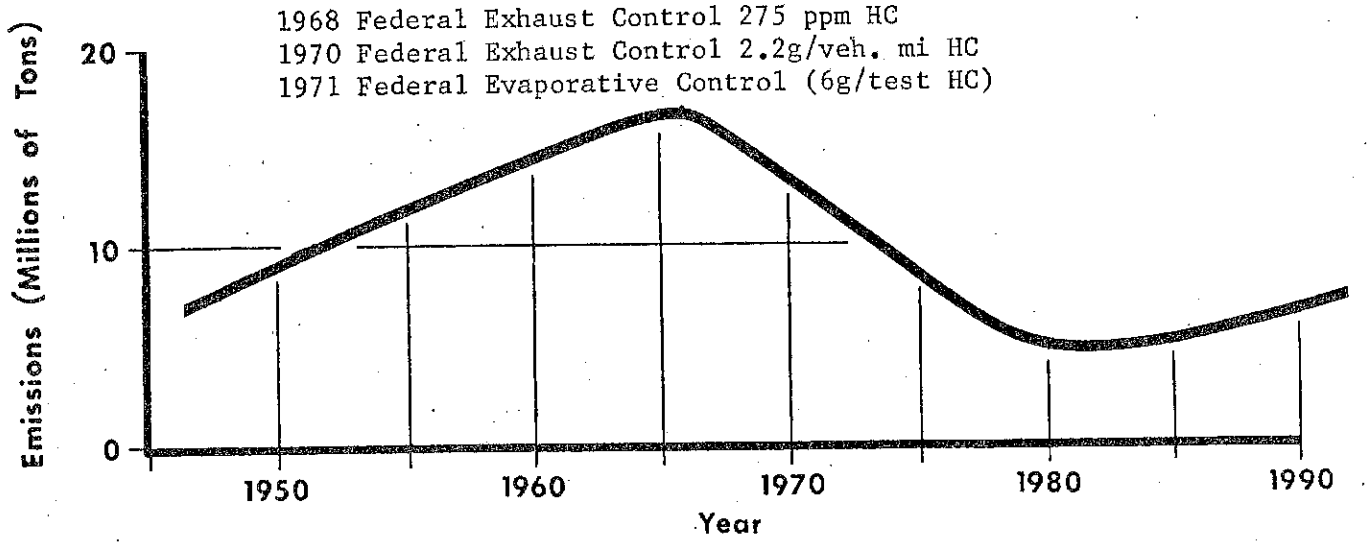


FIGURE B-2

PROJECTED MOTOR VEHICLE EMISSIONS
OF HYDROCARBONS

CONTROL ASSUMPTIONS:

1963 National Crankcase Emission Control
1968 Federal Exhaust Control 275 ppm HC
1970 Federal Exhaust Control 2.2g/veh. mi HC
1971 Federal Evaporative Control (6g/test HC)



A P P E N D I X C

PROPOSED NEW JERSEY EMISSION INSPECTION SYSTEM

APPENDIX C

PROPOSED NEW JERSEY EMISSION INSPECTION SYSTEM

Late in 1966, the New Jersey State Department of Health awarded Scott Research Laboratories, Inc. a contract totaling $313,455.00 to initiate research and development work on simplified vehicle emissions inspection systems. The systems consisted of simplified and rapid exhaust and crankcase emission testing procedures, sample collection equipment, emission measuring instruments, a vehicle loading device and a means of data display. The four-mode ACID cycle was developed which allowed for reasonable correlation with the Federal seven-mode cycle. In addition, it was hoped that individual mode data could be interpreted to provide the motorist with some degree of engine diagnosis. Design criteria imposed upon the system required a complete vehicle test within one and one-half minutes as the vehicle was driven through a New Jersey state operated safety inspection station.

The results of the Phase I program were detailed in "Final Report for Phase I of the New Jersey Motor Vehicle Emissions Program" presented to the New Jersey State Department of Health by Scott Laboratories.

In Phase II of the Scott research program, the emission inspection system was further tested, developed and refined into an advanced prototype system. To aid the state in ultimately setting emission standards for use in statewide motor vehicle inspection stations, emission data were obtained on 200 pre-1968 privately owned New Jersey vehicles.

In Phase III similar data were obtained on about 200 California vehicles equipped with exhaust control devices in order to obtain a fleet which would be a representative of post-1968 New Jersey vehicles equipped

with emission control devices. The vehicles were all tested in an as-received condition. Portions of both the New Jersey and California fleets were tested before and after tune-up to put them in a properly functioning condition relative to exhaust and crankcase emissions. Cost data were also obtained on the tune-ups.

Scott Research Laboratories, Inc. completed its work in 1968, and presented to the New Jersey State Department of Health the prototype testing system. The Department installed the system at a New Jersey Motor Vehicle Safety Inspection Station at Baker's Basin in order to further refine both the system and the testing techniques and to collect motor vehicle emission data from a large cross-section of New Jersey registered motor vehicles. The data thus far collected at Baker's Basin, consisting of about 1,000 motor vehicles, is now being processed by the Department's computer. These data will be used to help develop New Jersey standards for motor vehicle emissions, as well as to provide a guideline for future research work by the Department.

In order to assist in the development of State emission standards and the refinement of testing equipment and techniques, the Department has established a motor vehicle emission testing laboratory. This laboratory will act as the project control center and will house equipment capable of rapid emission testing and vehicle repair. It will also provide a liaison between the State personnel conducting emission tests at the inspection stations and vehicle service mechanics who will tune-up selected vehicles at contract automotive service outlets. The major objective of the laboratory program is to further define what effective levels of emission reduction can be obtained through automotive

maintenance in real-world situations. The cost of automotive repairs will be tabulated along with the emission reductions achieved. This factor will determine a more accurate cost effectiveness figure than is currently available. The program itself will determine the capability of service station personnel to perform a tune-up designed to reduce emissions, as well as the effectiveness of tune-up itself to reduce emissions. A project proposal is being prepared at this time.

The Department has developed the specifications for a final prototype inspection system. All subcontracts have been processed or delivered. The Department of Environmental Protection will fabricate the system. Six of these systems will be purchased and installed at various safety inspection stations throughout the state. From the data collected by these systems, the Department will develop its final recommendations for state emission standards and testing procedures.

ACKNOWLEDGMENTS

Professional technical support to the Clean Air Council during its public hearings and in drafting this annual report was provided by Mr. Ellison S. Burton, Director, Environmental Studies Group, Ernst & Ernst, Washington, D. C. This support was provided under a professional services contract between Ernst & Ernst and the State of New Jersey.

NEW JERSEY CLEAN AIR COUNCIL 1972 PUBLIC HEARING REPORT

THE ENVIRONMENTAL IMPACT ON AIR POLLUTION: THE RELATIONSHIP BETWEEN AIR QUALITY, PUBLIC HEALTH, AND ECONOMIC GROWTH IN NEW JERSEY

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, P. O. BOX 1390, TRENTON, N.J. 08625

October 4, 1972

Honorable Richard J. Sullivan
Commissioner
New Jersey Department of Environmental Protection
Box 1390
Trenton, New Jersey 08625

Dear Commissioner Sullivan:

The New Jersey Clean Air Council is pleased to forward its report on public hearings held pursuant to Title 26:2C-3.3: (h), which states that the Council shall:

> "Hold public hearings at least once a year in regard to existing air pollution control statutes, codes, rules and regulations and upon the state of the art and technical capabilities and limitations in air pollution control and report its recommendations thereon to the commissioner . . .".

The Council held public hearings on March 28, April 27, and April 28, 1972. We were concerned with the complex relationship among air quality, health, and growth in the state. We had the feeling that, while the Department was promulgating and enforcing codes, the increase in automobile usage, energy, industrial capacity and population might negate over the long run the beneficial results of the Department's activity.

The one striking fact that came out of these three days of testimony was the ignorance of all of our witnesses, invited or voluntary, concerning the possible future affect of air quality on the health of our citizens. No witness from the Department, from the medical community, or from any other group had any idea whatsoever as to whether or not the health of the citizens of the State of New

Jersey would be seriously threatened in the future - and by future we mean the next 15 to 20 years. The absence of any assurance in this area is of vital concern.

Of the many findings and conclusions which the Council has reached, there are three which I think are particularly important.

1. Air pollution may already be affecting the health of many of New Jersey's citizens;

2. The current uncontrolled and uncoordinated growth patterns in the state are likely to degrade the quality of New Jersey's air even further;

3. There is no overall coordination in New Jersey regarding the environmental and health implications of growth.

The Council's report discusses these and other findings in detail and presents the Council's recommendations for action.

Very truly yours,

John P. Horton
Chairman

JPH:car