Federal Pollution Control Programs:

water, air, and solid wastes

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volve systems such as retention of flows in lagoons or tanks, handling of sanitary flows in small lines after grinding, and chlorination.

A long-range look at the trend of water pollution research was provided by Dr. Allan Hirsch, assistant commissioner, environmental and program planning evaluation, in 1967. It still seems valid:

"Within the next 10 years, we would expect essentially to have achieved control of conventional sources of waste from cities and industries, and to have devised means of keeping abreast with growth of these waste loads. As these sources are controlled, the more diffuse sources will increase in relative significance. Water quality deterioration resulting from acid mine drainage, combined sewer overflows and urban runoff, cattle feedlots, sediment and other agricultural wastes, and salinity increases associated with irrigation will more often become conspicuous as the principal remaining impediments to water use.

"At the same time, through research and development, we will have improved our ability to begin to cope with these situations. New problems, presently unperceived, will continue to arise as a result of changing technology, but hopefully we will be better equipped to keep pace with these.

"Institutional arrangements for dealing with pollution control on a regional basis will have emerged, ranging from the *ad hoc* and simple to the formal and highly sophisticated, depending upon the circumstances. As a result, and because of continuing scientific and technical studies, we will be better able to begin to make optimizing decisions and to undertake day-to-day water quality management."

Legislation

The basic law is the Federal Water Pollution Control Act of 1956 (PL 84-660), as amended in 1961, 1965, 1966, and 1970. It was preceded by an act in 1948 and its later extension (PL 82-579), which put the Federal Government into pollution control planning and enforcement functions in a small way. But the 1956 act was the beginning of the construction grants program and of the enforcement and research authorizations that form the key parts of the present program.

As early as 1899, Congress passed a Refuse Act (33 U.S.C. 407) that made it unlawful (without a permit) to throw refuse into navigable waters. The law has taken on new life within the last few years as an enforcement tool. In 1966, the Supreme Court held that refuse "includes all foreign substances and pollutants." (384

U.S. 224; 1 ERC 1033) Violations of the Act by any person or corporation are punishable by fines of up to $2,500, imprisonment (for a natural person) for a year, or both.

Few permits for industrial waste discharges into navigable waters have been issued. The Nixon Administration has adopted regulations for permits under the Refuse Act, however, and is expected to require registration of some 41,000 industrial sources of pollutants by mid-1971. The permits to be granted were to be conditional in most cases. That is, they were to require agreements to improve any waste discharges to ensure compliance with the water quality standards.

The applications for permits must include data on the composition and volume of industrial wastes. The information is to be public, and may be used in prosecution of polluters.

Partly as a result of congressional pressure, the Justice Department prosecuted many violators under the Refuse Act during 1970-1971. The courts repeatedly upheld the Act, and in a few cases awarded half the fines to informers. Several courts rejected *qui tam* cases under which private citizens brought suit on behalf of the government, however. (See, for instance, 2 ERC 1259 and 2 ERC 1204.)

In the Public Health Service Act of 1912 Congress included an authorization for continuing investigation of water pollution in relation to diseases of man.

The Oil Pollution Act of 1924, which in 1970 was incorporated into the Federal Water Pollution Control Act and strengthened, related to control of oil discharges from vessels. The Oil Pollution Act of 1961, administered by the Secretary of the Army, implemented the provisions of the International Convention for the Prevention of the Pollution of the Sea by Oil.

The 1956 Federal Water Pollution Control Act authorized a $50-million-a-year, five-year program of construction grants to municipalities for sewage treatment plants. The Act was tailored mostly to help small towns. Federal aid was limited to 30 percent of the cost of a project, with a $250,000 ceiling on the amount of aid to any one project. The 1956 act also set up the enforcement machinery that still exists with some strengthening changes, increased research, and extended aid to state and interstate water pollution control agencies.

The key figure in the enactment of the 1956 law was Congressman John A. Blatnik (D-Minn), who now is chairman of the House Public Works Committee. The bill was drafted on Capitol

Hill, unlike most major pieces of legislation, which usually originate in the Executive Branch.

Mr. Blatnik also was the prime mover of the Federal Water Pollution Control Act Amendments of 1961 (PL 87-88). The 1961 amendments increased construction grants to $100 million a year, extended enforcement authority to navigable as well as interstate waters, raised the ceiling on aid to individual projects to $600,000, encouraged joint municipal projects by setting a $2.4 million ceiling, increased research to $5 million a year, authorized seven regional laboratories, and transferred authority for the program from the Surgeon General to the Secretary of Health, Education, and Welfare.

In the early period, the key Senate figure was the late Robert S. Kerr (D-Okla). Senator Kerr did a great deal to foster water resources development but was less interested in strong action against water polluters. His influence was on the restraining side when the law was strengthened in 1961.

By 1965 the principal Senate figure had become Edmund S. Muskie (D-Maine), who as chairman of a Public Works Subcommittee on Air and Water Pollution has taken the leading role in Congress for air, water, and solid wastes legislation during the last six years. The Senate, which in earlier years had been unwilling to move as fast as the House, became eager to go faster, and both bodies showed a willingness to go much further than in the past. There had been strong minority opposition to the 1961 amendments, but the 1965, 1966, and 1970 laws passed almost without dissent.

The Water Quality Act of 1965 created the Federal Water Pollution Control Administration within HEW, but FWPCA the next year was transferred to the Interior Department by a Presidential Reorganization Plan. The Act authorized the demonstration program of projects on the separation of storm and sanitary sewers, with a $20-million-a-year, four-year authorization. It increased construction grants to $150 million and doubled the ceiling on aid to individual projects. It provided an incentive of up to an additional 10 percent for projects conforming with metropolitan-area plans. And it authorized the program of mandatory standards for interstate waters discussed earlier in this book.

In 1966 the Administration proposed major legislation for the first time. It sought to tie the pollution control program closely to the river basin planning commissions that had been authorized under the Water Resources Planning Act of 1965 (PL 89-80), a law initiated by the Administration. Like the Water Resources

Research Act of 1964 (PL 89-404), it had been promoted by the Interior Department. The Administration, seeking to shift the financial burden, proposed a plan under which user charges would have been imposed on waste discharges. This would have put treatment projects on a reimbursable basis with respect to operations and replacement. The proposal also included drastic new enforcement powers that were not approved.

Congress rejected most of the Administration's plan and enacted a different law largely of its own design. This was the Clean Water Restoration Act of 1966, based in part on the Administration's bill but mostly on a measure introduced by Senator Muskie. The 1966 Act was remarkable principally because it authorized huge new sums for construction—$450 million in fiscal 1968, $700 million in 1969, $1 billion in 1970, and $1.25 billion in 1971, or a total of $3.4 billion in the four-year period.

The Senate originally had voted $6 billion, which Senator Muskie said amounted to at least a 30-percent federal share of the expense of providing secondary waste treatment for 80 percent of the population and advanced waste treatment for 20 percent, at a cost of $20 billion. The House figure was smaller, and the outcome was the $3.4-billion compromise, which turned out to be much more than was later requested by the Johnson and Nixon Administrations or appropriated by Congress. Both House and Senate passed the legislation unanimously.

The 1966 law also authorized $305 million for research and development and $3 million for a study of estuaries, which has since been completed. It removed all ceilings on aid to individual projects and provided incentive features making it possible for a city to receive as much as 55 percent federal aid. The incentives encourage state matching and the establishment of enforceable state water quality standards. In practice, 55 percent aid has seldom been available, and the percentage of federal aid provided to large city projects in particular has been much smaller.

Research authorized for a three-year period for the first time included authority to make grants to industry. This research is to cover demonstration of industrial-waste-treatment methods, advanced waste treatment, and joint municipal and industrial treatment.

Other studies which have been done under the 1966 Act include one on personnel in the pollution control field, a study of incentives for industrial-waste-treatment construction, and a study of the cost of the Act for the federal and other units of government, along with "comprehensive analysis of the national requirements

for and the cost of treating municipal, industrial, and other effluent to attain such water quality standards as established pursuant to this Act or applicable state law." The last study was to be repeated yearly.

The cost study produced a series of documents for particular industries, covering the pollution control costs for blast furnaces and steel mills, motor vehicles and parts, paper mills, textile mill products, petroleum refining, canned and frozen fruits and vegetables, leather tanning and finishing, meat products, dairies, and plastics materials and resins. In 1971, new studies of 22 industrial groups were under way, with a view to the preparation of effluent standards for each industry.

The study of incentives produced a negative result. ABT Associates, the Cambridge, Mass., firm that conducted the study, advised against the enactment of any tax incentive for industry. ABT said that such an incentive at least should be limited to plants already in existence and should be limited to facilities intended to bring a firm into compliance with the water quality standards.

The Treasury Department and the Council of Economic Advisers have been opposed to tax incentives. But the 1968 Republican platform promised tax incentives as a part of the pollution control effort. The Tax Reform Act of 1969 included rapid tax amortization features for certain severely limited pollution control facilities. In early 1971, the Internal Revenue Service regulations pertaining to the amortization of such facilities had been proposed but not yet adopted.

The principal argument in favor of a tax break is that pollution control equipment does not earn any economic return for industry. A counterargument is that an incentive might lead industry to choose special equipment for pollution control rather than to make process changes to reduce waste discharges. The Treasury's past opposition was based both upon the revenue loss involved and upon disapproval of the principle of encouraging industry action through the tax structure.

The Water Quality Improvement Act of 1970 was the most recent amendment of the Federal Water Pollution Control Act. In addition to the features imposing strict liability for oil spills and blanketing oil pollution statutes into the Act, the 1970 law authorized standards for watercraft, extended the research program, authorized an acid-mine-drainage-control demonstration program, and provided that federal licensees and permittees would have to get state certification that they would comply with the water quality standards.

Hearings by the Muskie subcommittee were held on the Nixon Administration's water pollution legislative proposals in 1970, but otherwise Congress largely ignored them. The President proposed speedier enforcement procedures and creation of an Environmental Financing Authority to underwrite local bond issues.

Similar legislation has been drafted by the Administration for 1971 consideration, except that EFA now is proposed as a supplement to the federal aid program rather than a replacement for it. As a part of his revenue sharing proposals, Mr. Nixon asked Congress to reorganize the aid programs administered by the Departments of Agriculture, Commerce, and Housing and Urban Development.

The Nixon legislation would require revision of the interstate and coastal water quality standards to include water-use designations and effluent requirements. Other provisions of Administration draft bills would increase aid to state and interstate control programs, authorize $6 billion in construction aid over a three-year period, revise the formula for allocation of grant funds, and authorize both speedier action and severer penalties as a part of the enforcement program.

Hearings on this legislation and on measures proposed by Senator Muskie began in March 1971. The Muskie proposals would authorize a $2.5-billion-a-year construction grant program. The debate on the amount of aid was shaping up at a time of increasing concern with the inflation of construction costs. There was increasing evidence that the cost estimates of earlier years would have to be revised upward, even though they made allowance for cost increases that had been anticipated.

In December 1970, the Federal Water Quality Administration, as FWPCA had been renamed by the 1970 amendments, was abolished and its functions transferred to the new Environmental Protection Agency. EPA's Water Quality Office now administers the Federal Water Pollution Control Act. EPA is an independent agency created under a Presidential Reorganization Plan, and it also administers the air pollution control and solid waste programs.

Industry Expenditures

In its study of the costs of waste treatment, FWPCA said it would cost anywhere from $2.6 billion to $4.6 billion to provide industrial waste water treatment comparable to municipal secondary treatment. This included $1.8 billion to $3.6 billion for new industrial treatment works and $800 million to nearly $1 billion

III: AIR

Major new air pollution control legislation was adopted by Congress in 1967 and substantially amended in 1970. The Air Pollution Control Office of the Environmental Protection Agency administers the program since the organization of EPA in December 1970. The National Air Pollution Control Administration, its predecessor, had been a unit of the Department of Health, Education, and Welfare.

Although the technical problems are entirely different, the legal problems are similar for air and water. In some respects the development of the air control program is paralleling the history of the water program, but it is lagging a few years behind. The level of spending is considerably lower, and the Federal Government has not assumed the same degree of control over air as over water pollution, except with respect to motor vehicles.

The 1970 amendments provided a greater degree of federal control, however. Minimum standards for the ambient air have been proposed for emissions of sulfur oxides, particulates, carbon monoxide, oxidants, and hydrocarbons. States will continue to set standards for other pollutants. Federal standards will be proposed for additional pollutants after criteria documents describing the effects on health and property of the pollutant are issued.

Motor vehicles had to meet federal standards for the first time in the 1968 models. Stricter standards took effect with the 1970 models, and still stricter standards will apply to the 1972 models. Under the Clean Air Act Amendments of 1970, a 90-percent reduction in automotive emissions by 1975, in comparison with the 1970 levels, was required.

The auto standards are uniform nationally, except for California. As the trailblazer in air pollution control and the victim of severe air pollution conditions, California has been permitted to set stricter standards. The state believes that stricter standards than the Federal Government's will not be necessary after 1975, however.

The 1970 standards were to reduce exhaust tailpipe emissions of carbon monoxide and hydrocarbons by about 30 percent below the 1968-1969 model years. The regulations switched from a parts-per-million standard to a limit on the weight of pollutants per

vehicle mile. Emissions from cars and light trucks were limited to 23 grams of carbon monoxide and 2.2 grams of hydrocarbons per mile, with 80 percent and 69 percent degree of control, respectively.

The 1972 standards limited hydrocarbons to 2.9 grams per vehicle mile and carbon monoxide to 39 grams, but with a higher degree of control that was expected to reduce emissions. The standards also eliminated the practice of averaging emissions, and required all vehicles produced to meet the standards.

Large trucks and buses also are subject to emission standards. Diesel smoke emissions were limited to a faint plume and gasoline-fueled vehicles were required to make a one-third reduction in exhaust pollutants.

The standards for 1972 also require control of the evaporative losses of gasoline from motor vehicles. A limit of two grams per test will be imposed.

Legislation

The federal air pollution control program began with a law (PL 84-159) passed in 1955 that authorized a research program in the Public Health Service and the rendering of technical assistance to city and state agencies and other groups concerned with air pollution abatement. The funds spent under this Act rose from less than $1 million in 1956 to almost $13 million in 1964.

In 1960 an additional law (PL 86-493) directed the Surgeon General to study the problem of motor vehicle pollution and to make a report to Congress within two years. The report, *Motor Vehicles, Air Pollution, and Health* was published in 1962 as House Document 489.

The 1963 Clean Air Act authorized a $95-million, three-year program of research, grants to state and local agencies, and abatement procedures. Three specific research areas were designated for special attention: control of motor vehicle exhaust, removal of sulfur from fuels, and development of air quality criteria for major pollutants to serve as guidelines to control agencies in establishing source emission limits and ambient air quality standards.

The grants provided up to two thirds of the cost of developing, establishing, or improving state or municipal air pollution control programs. For comprehensive regional programs the federal share could be as much as three fourths. Only 20 percent of the authorization could be spent for grants.

The abatement authority provided for federal conferences and recommendations in cases of interstate pollution in which local

agencies failed to act. If a conference failed to produce results, a hearing board could be convened, and eventually the case could be taken to court, under procedures nearly the same as those for water pollution.

The Clean Air Act of 1965 (PL 89-272) provided for federal regulation of motor vehicle emissions, authorized an expanded research program and creation of a federal laboratory, authorized investigation of new sources of pollution, and instituted a procedure for abating international air pollution.

In 1966 Congress authorized (in PL 89-675) a $186-million, three-year expansion of the program. For the first time, grants were authorized for operations of local control agencies as well as for the establishment or improvement of local programs. The legislation authorized $46 million for fiscal 1967, $66 million for 1968, and $74 million for 1969.

The Air Quality Act of 1967 replaced the Clean Air Act completely, although the latter name still is used to refer to the whole. The 1967 Act provided a complicated procedure for issuance of air quality criteria, establishment of atmospheric areas and air quality control regions, setting of standards and adoption of implementation plans by the states, and federal action only if the states failed to act.

Under the 1967 Act, the National Air Pollution Control Administration designated 13 atmospheric areas covering the continental United States, Alaska, Hawaii, and Caribbean possessions. These cover the California-Oregon coastal area, the Washington coastal area, Rocky Mountain area, Great Plains area, Great Lakes-Northeast area, Appalachian area, Mid-Atlantic coastal area, South Florida-Caribbean area, Hawaiian-Pacific area, Alaskan Pacific Maritime area, Alaskan Bering Maritime area, Alaskan Arctic Maritime area, and Alaskan Continental area.

Each area was described as a segment of the country in which climate, meteorology, and topography are essentially homogeneous. Designation of the areas has little apparent connection with subsequent administration of the Act, however.

The 1967 Act also provided for the designation of air quality control regions. NAPCA first announced a list of 57 cities or metropolitan areas to be covered by such regions, which can be either interstate or intrastate areas. In April 1970 an additional 34 regions were planned.

The early plans called for designation only of regions with serious air pollution problems. After the creation of EPA, however, it was decided to designate regions that would cover every geographical area of the United States and its possessions. EPA completed the naming of the proposed boundaries of these regions by the spring of 1971.

Factors being considered in the designation of regions included meteorological and topographical factors, the extent of urban and industrial development, and especially jurisdictional factors, including existing arrangements for regional action. State and local officials were consulted about the boundaries in a series of hearings before final action is taken in each region.

A region is a jurisdiction without any organization. The standards for regions have been set by the usual state control agencies, so that interstate regions in effect have had as many different standards as there are states represented in the region. For instance, in the Metropolitan Cincinnati Interstate Air Quality Control Region, there are Kentucky standards and implementation plans, Indiana standards and plans, and Ohio standards and plans, each applying to that state's portion of the region.

NAPCA also labored on the air quality criteria, which are a series of descriptive documents about the damage that particular air pollutants do to health and property. The intent was for the states to use the criteria in the preparation of standards.

The first criteria document, on sulfur oxides, was published in March 1967 and then withdrawn after a storm of criticism. A new criteria document for sulfur oxides was published in January 1969, along with criteria for particulates. In March 1970 criteria were published for carbon monoxide, hydrocarbons, and photochemical oxidants, and in January 1971, for nitrogen oxides.

The Air Pollution Control Office also had planned to issue criteria for four other pollutants in January 1971, but for unexplained reasons did not do so.

The criteria documents have been accompanied by control technique documents for carbon monoxide from stationary sources; carbon monoxide, nitrogen oxide, and hydrocarbons from mobile sources; hydrocarbons and organic solvents from stationary sources; nitrogen oxides from stationary sources; particulates; and sulfur oxides.

The 1967 Act authorized a total of $428.3 million for the program, including $125 million earmarked for research on fuels. The remaining $303.3 million was for operating expenses, grants to state and local agencies for abatement programs, training, and other research. The research authorization was for fiscal 1968-

1969, but was later extended, while other funds were authorized through 1970.

Another feature of the 1967 Act required the registration of fuel additives. The fuel manufacturer was required to provide the name, range of concentration, and purpose in use of any additive in fuel sold in interstate commerce. The registration required the furnishing of information on chemical composition and structure, with provision for protection of trade secrets. No research related to health was required as a condition of registration. By February 1971, manufacturers had registered 249 gasoline additives.

The Johnson Administration had asked for authoritiy to set national emission standards for major industrial processes while the 1967 Act was under consideration, but Congress did not approve the request.

The Clean Air Act Amendments of 1970 authorized a larger federal role in air pollution control, and required tougher regulation of automotive emissions. The Amendments authorized setting national air standards for any pollutant for which criteria have been published. As required by the law, the Air Pollution Control Office issued proposed standards for sulfur oxides, particulates, carbon monoxide, hydrocarbons, and photochemical oxidants within 30 days of its passage. Subsequent standards must be published for other pollutants simultaneously with the publication of criteria, and within a year. The nitrogen oxides standards have been proposed, and other pollutants that are expected to be covered include lead, polynuclear organics, odors, and fluorides.

The states may adopt more stringent standards in any air pollution control region, but cannot adopt less strict standards. After the federal standards are adopted, the states will have nine months to submit plans to EPA, after which the Administrator will have six months to accept or to substitute a federal plan. After approval, the states will have three years to obtain compliance with such plans. A two-year waiver can be granted on the request of a governor, but EPA's action in approving waivers will be subject to court review.

The 1970 Amendments provide for setting national ambient air quality goals at levels adequate to protect health and prevent adverse effects on soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values. There is no timetable for developing these goals or for meeting them. The

existing criteria documents will have to be revised to include all of these effects.

New sources of air pollution will be required to use the best available control techniques. The states must include in their implementation plans a procedure to assure that new source locations will be reviewed and that air standards will not be violated. If a new source does violate the standards, the EPA Administrator can shut it down as soon as it begins operation.

EPA also will be able to set standards for hazardous agents. These were to be set within six months of passage of the Act. Substances such as asbestos, cadmium, mercury, and beryllium were to be covered by these standards.

If the timetables in the Act are not adhered to, the EPA Administrator, federal agencies, and polluter will be subject to citizen suits. Such suits would not be for damages, but only for enforcement of standards.

Enforcement conferences and hearing boards were nearly eliminated as a part of the procedure by the 1970 Act. The EPA Administrator can ask the Justice Department to go directly to the federal courts if a violation of the law is found, to bring suit for an injunction to restrain the violation. If Justice fails to bring suit, the EPA Administrator may do so himself.

Penalties are $25,000 a day or up to one year in jail for first violators who knowingly violate the law. Second violators are subject to twice that amount of fine and time in prison. For false statements knowingly submitted or improper monitoring equipment, the penalty is $1,000 or six months in jail, or both.

Industry is required to maintain open records on emissions and to provide effective monitoring equipment at its own expense. EPA has the right of entry.

If a state violates the law, EPA can issue a 30-day notice. Failure to comply gives EPA the authority to take over administration of the state plan.

The Act forbids federal agencies to do business with air polluters. Other provisions tightened up the fuel registration procedure by including authority to prohibit lead additives; required mandatory licensing of patents; and created a low-emission vehicle procurement plan with incentives ranging up to 50 percent of the cost.

The 1970 legislation authorized $1.1 billion for research and enforcement. For fiscal 1971, $200 million was authorized, for 1972, $350 million, and for 1973, $450 million. In addition, $55 million was authorized for low-emission vehicle procurement and

$15 million for long-term contract research on health effects of air pollutants.

Motor Vehicles

Federal officials have estimated that automotive exhaust accounts for about half of U. S. air pollution. With the number of vehicles rapidly rising, they have advocated tight controls just to keep the problem from getting worse. The automobile manufacturers have met the standards so far, but have cautioned Congress and the Government against pushing for impossible restrictions. The 1970 Act included a provision for a request for a one-year extension if the industry cannot meet the standards required for 1975 model vehicles.

The manufacturers have until January 1, 1975, to reduce emissions of carbon monoxide and hydrocarbons by 90 percent as compared with 1970 model year vehicles. Similarly, cars sold after January 1, 1976, would be required to have 90 percent less emission of nitrogen oxides.

The request for a one-year extension could be granted by the EPA Administrator without judicial review. Industry cannot ask for the extension before January 1, 1972, for CO and hydrocarbons and January 1, 1973, for nitrogen oxides.

The 1970 Act also required a warranty for performance of pollution control devices covering five years or 50,000 miles, after the EPA Administrator determines that an effective test of performance has been achieved and after the states have inspection programs. Inspection programs must be a part of the state implementation plans.

The Act also provided for establishing standards for aircraft emissions, and the states are free to regulate commercial vehicles.

The major auto manufacturers report that improvements in the internal combustion engine offer the best hope for pollution control. But members of Congress have shown interest in replacing the internal combustion engine entirely. The low-emission vehicle incentive program was the outgrowth of bills by Senator Muskie and by Senate Commerce Committee Chairman Warren G. Magnuson (D-Wash) to provide federal aid for development of electric propulsion. Hearings were held on electric cars in early 1967 and on steam propulsion in 1968.

HEW took the position that it already had the authority to do research in this field. A small program along these lines was followed by the increased funds provided by the 1970 Act, and the program of incentives to be provided by federal procurement.

Electric vehicles already are in use, but they have drawbacks.

Batteries are expensive and bulky and have a limited range without recharging. Performance in terms of speed and pickup leaves much to be desired. Little has happened in the last few years to advance the estimate that widespread use of such cars may be as much as 10 years away. And, of course, the electric power used for recharging batteries would itself be a source of air pollution.

A Commerce Department advisory Panel on Electrically Powered Vehicles recommended a $60-million, five-year federal program to seek innovations in energy sources for vehicles, propulsion systems, emission control devices, special-purpose urban cars, and general purpose vehicles. The Panel issued reports in October 1967 and January 1968 on its consideration of automotive pollution problems.

Dr. John T. Middleton, the air pollution control administrator, who before his federal service was chairman of the California Motor Vehicle Pollution Control Board from 1960 to 1966, had said that feasible improvements in the internal combustion engine could bring gradual and significant reduction of pollution in the next 15 to 20 years. But after that, he warned, increases in the number of vehicles will cause the problem to worsen if another propulsion source is not developed.

Private efforts to develop electric or steam cars have been interesting and well publicized, but so far cannot be termed successful.

Fuels Industry

The coal industry has been especially vehement in opposition to federal emission standards and actions that have been taken in some areas to limit the sulfur content of fuels.

The industry saw NAPCA actions in several enforcement cases as a threat to its markets. It feared that restrictions on fuels would push coal out of the market for such customers as electric power generating plants in urban areas. It was concerned over the original criteria document for sulfur oxides, it already has seen federal installations in major cities placed under restrictions on the sulfur content of fuels they use, and it was alarmed by HEW-recommended curbs on high-sulfur fuels in a New Jersey-New York enforcement case. State and local actions in Connecticut, Illinois, St. Louis, and other cities have added to the fears.

Most coals in the eastern United States contain more sulfur than is permitted in the HEW recommendations for limited areas. The industry argues that it is not feasible to make a large-scale switch to lower-sulfur fuels, which are in limited supply and also

IV: SOLID WASTES

Federal involvement in the field of solid waste disposal dates from passage of the Solid Waste Disposal Act of 1965, which was part of the Clean Air Act (PL 89-272).

The Act was substantially amended by the Resource Recovery Act of 1970, which sought to shift the emphasis from waste disposal to recycling.

The program, like those for water and air, is administered now by the Environmental Protection Agency. EPA's Solid Wastes Office is the successor to the Bureau of Solid Waste Management, which had been in the Department of Health, Education, and Welfare.

The Bureau of Mines, an Interior Department agency, also has major solid waste programs relating to the management of mining wastes and the recycling of metals and minerals.

HEW described the solid waste problem as follows:

> "The fantastically high rates of production and consumption made possible by advancing technology coupled with a sharply rising urban population have created a refuse disposal problem that far outstrips the waste handling resources and facilities of virtually every community in the nation.
>
> "The results are obvious and appalling—billowing clouds of smoke drifting from hundreds of thousands of antiquated and over-burdened incinerators, open fires at city dumps, wholesale on-site burning of demolition refuse as old structures are destroyed to make room for new construction, acres of abandoned automobiles that blight the outskirts of our greatest cities, and veritable mountains of smoldering wastes abandoned at mining sites."

The 1965 Act authorized federal research, training programs, and grant support for demonstration projects and planning of state and local programs. The object of the research program was to find ways of disposal without creating health hazards or pollution and to recycle scrap materials into production processes. The grant program provided for up to two thirds of the cost of local demonstration projects, or three fourths in the case of regional projects.

Federal authority was limited to support of local and state agencies in solving solid waste problems. Primary responsibility for solid waste handling and for carrying out programs for

improved practices remained at local and state levels.

The Act limited the Federal Government's objectives in the following words:

> "To initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes; and to provide technical and financial assistance to state and local governments and interstate agencies in the planning, development, and conduct of solid waste disposal programs."

Legislation

In 1965, Congress enacted the Solid Waste Disposal Act (PL 89-272) authorizing a program of federal research and demonstration projects. The Act also authorized grants for state and interstate planning of solid waste disposal facilities.

The Act authorized more than $60 million for the program over a four-year period for the Department of Health, Education, and Welfare and more than $32 million for the Bureau of Mines. The amounts actually appropriated under the Act were somewhat smaller, however.

Recycling of wastes was given new emphasis with passage of the Resource Recovery Act of 1970 (PL 91-512), which amended the Solid Waste Disposal Act. The 1970 legislation provided additional aid, particularly for projects designed to reuse waste materials.

The 1970 Act authorized $41.5 million for fiscal 1971, $72 million for 1972, and $76 million for 1973 for the old programs now administered by the Environmental Protection Agency, and $80 million for fiscal 1972 and $140 million for fiscal 1973 for the new EPA programs to encourage recycling. The Bureau of Mines programs were authorized $8.75 million for fiscal 1971, $20 million for 1972, and $22.5 million for 1973.

Actual spending will be much less, however. Outlays for the EPA programs were estimated to be $11.3 million in fiscal 1971 and $16.9 million for fiscal 1972. Requests for appropriations for 1972 are about $19.3 million for EPA solid waste programs. A $1.1 million Bureau of Mines program for salvaging refuse was included in the President's fiscal 1972 budget requests.

The 1970 legislation also included the National Materials Policy Act, which created a National Commission on Materials Policy. The seven-member commission will be charged with developing a national policy on materials requirements, supply, use, recovery,

and disposal. The commission is temporary, and is supposed to make a final report by June 30, 1973. A sum of $2 million was authorized for the work. In May 1971, members of the commission had not been appointed.

The 1970 legislation provided for an expanded planning grant program authorizing funds to prepare proposals for resource recovery systems demonstration grants and programs for removal of abandoned autos. The federal share of planning grants is two thirds for single municipalities and 75 percent for others.

The legislation also authorized training grants, a national disposal sites study, publication of guidelines and technical information on solid waste handling, and a requirement that federal facilities and federally licensed operations comply with the guidelines.

Some of the disposal methods that have been investigated in research and demonstration projects under the Solid Waste Disposal Act include sanitary landfills, composting, incineration, rail haul to suitable disposal sites, and reuse of various materials, including glass, metals, and paper.

V: THE NATIONAL ENVIRONMENTAL POLICY ACT

Congress in 1969 enacted the National Environmental Policy Act. The Act requires federal agencies to prepare "environmental impact statements" on all proposed projects and requests for legislation that will have an effect on the environment. Pollution is one of the effects considered, but the Act also requires consideration of other factors such as beauty, recreation, and fish and wildlife.

The Act created the President's Council on Environmental Quality, a three-member advisory group that has been making top-level governmental policy on environmental questions. CEQ, under the chairmanship of Russell E. Train, has been influential in advising the President on the impact of controversial projects such as the proposed Trans-Alaska Pipeline, the now-abandoned Cross-Florida Barge Canal project, and the supersonic transport aircraft.

Numerous law suits have been brought under the Act, with varying results. In some, the courts refused to give the Act a retroactive effect, in others the standing of the parties to sue was denied, in still others the relief requested was denied, but in some cases the courts have halted projects for failure to comply with the Act. Some judges have denied that the Act provides a substantive cause of action, however, or that it takes precedence over the acts authorizing a particular project.

Therefore, the meaning and effect of the Act still are under interpretation by both the courts and the federal agencies complying with the Act. Congress planned to take a new look at the legislation during 1971.

The Environmental Protection Agency itself, as the administrator of pollution control programs, does not have to comply with the Act. But it makes comments on the environmental impact of the projects proposed by other federal agencies.