

"O U R   U R B A N   E N V I R O N M E N T  
And Our Most Endangered People"

A Report to the Administrator  
of the Environmental Protection  
Agency by The Task Force on  
Environmental Problems of the  
Inner City.

September 1971

This document has not been formally  
released by the Environmental  
Protection Agency. It is being  
circulated to facilitate the review  
of its technical accuracy and policy  
implications.

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ENVIRONMENTAL PROTECTION AGENCY

REPLY TO  
ATTN OF: Director, Office of Equal Opportunity

DATE September 30, 1971

SUBJECT: Task Force on the Environmental Problems  
of the Inner City Final Report

TO: • The Administrator

•  
The Task Force on Environmental Problems of the Inner City herewith  
• submits its final report in accordance with your directive of July  
9, 1971.

Norris W. Sydnor, Jr.

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## Preface

On July 9, 1971, Administrator William D. Ruckelshaus charged the Director of Equal Opportunity with the convening of the Task Force on the Environmental Problems of the Inner City. The Administrator set the following goals for the Task Force:

1. Assess the environmental burdens on the urban poor resulting from air, water, solid waste, pesticides and noise problems.
2. Review current EPA activities to determine how they were alleviating the environmental burdens of the urban poor.
3. Formulate recommendations for achievements in environmental improvements by June 1972.

In an attempt to ensure that the report would adequately reflect a broad range of EPA concern, the Task Force solicited input from the Office of the Administrator, the EPA Program Offices and the Regional Administrators.

The report of the Task Force is organized into four parts:

Part One is the overview delineating the problems as interpreted by the Task Force. Also included are the Task Force Recommendations for action to be taken.

Part Two contains a subjective narrative and factual profile describing conditions in the inner city.

Part Three covers the program areas of solid waste, air, noise, pesticides and water. Each Program Area describes:

(a) The Problem

- causes of urban pollution, pollution effects and their special impacts on the inner city.

(b) The Program

- discussions in what is currently being done by EPA to alleviate environmental burdens of the inner city.

(c) The Recommendations

- describes, as a result of the analysis, actions the Administrator may wish to take in the near future.

Part Four consists of recommended inter-related programs for the Agency as program responsibility.

While the Task Force recommends the establishment of a few new positions, it wishes to stress that the creation of major divisions is unnecessary. The recommendations can be carried out by EPA as presently organized if a central point of urban program coordination is delegated reasonable authority.

I would like to thank the members of the Task Force for their tireless efforts to put together a professional, comprehensive report in the extremely short time required.

Norris W. Sydnor, Jr.  
Director  
Equal Opportunity Division

Membership of the  
Task Force on the Environmental Problems of the Inner City

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Louis V. Lombardo

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Chairman

## SYNOPSIS OF TASK FORCE RECOMMENDATIONS

### A. Inter-related Program Recommendations

1. Conduct a "National Operation Clean Sweep" in 20 major cities to supplement local sanitation department efforts in clearing away the backlog of trash accumulated in our inner cities; follow-up clearance effort with a maintenance program. Special funding of \$50,000,000 required from Congress.
2. Concentrate and coordinate EPA resources in a "Demonstration City Project" to show the achievability of an improved inner city environment within nine months. Washington, D. C., is recommended for this "model" program.
3. Appoint an EPA Urban Affairs Office to coordinate, direct, and initiate inner city environmental improvement programs within the Agency and serve as EPA's interface with the President's Council on Environmental Quality, the Office of Management and Budget, and organizations in target urban areas.
4. Create an Administrator's (or President's) Urban Advisory Council to develop a budget and program package directed at inner city needs for incorporation into EPA's FY 1974 budget and to monitor EPA's progress in carrying out those recommendations of the Task Force adopted by the Administrator.
5. Create a Voluntary Compliance Office to pursue a vigorous voluntary compliance approach for pollution abatement since such an effort can result in significant achievements at relatively low cost to industry, the government, and the consumer.
6. Recommend or support passage of legislation giving EPA lead agency authority and funding in areas of noise, solid waste, toxic substances.
7. Continue SPARE youth program as a means of implementing environmental improvement in the inner cities through an information-education-paid employment effort.
8. Recruit inner-city residents in a stepped-up manpower training and career development program.
9. Give a progress report on achievements of the urban improvement program and the job still to be done at the June 1972 United Nations Conference on the Human Environment in Stockholm.



## SPECIFIC PROGRAM RECOMMENDATIONS

B. Solid Waste

1. Purchase plastic bags for distribution to the inner city to facilitate trash collection.
2. Establish a pilot recycling plant in Demonstration City, Washington, D. C.
3. Establish liaison officer in the Solid Waste Program for dealing with solid waste problems of the inner city.
4. Increase the number of environmental public education programs in the inner city.
5. Demonstrate and evaluate different methods for improving solid waste storage and collection.

C. Air

1. Promulgate by January 1972 a regulation requiring all gasoline to be lead-free by 1977.
2. Pursue voluntary compliance from automobile and oil industries to accelerate use of lead-free gasoline as an interim measure.
3. Adopt by January 1972 an ambient air quality standard for lead.
4. Promulgate by December 31, 1971, a regulation requiring automobile manufacturers to label vehicles with consumer information, such as octane and lead content of gasoline to be used.
5. Conduct public education programs to encourage lead-free gasoline usage, car tune-ups, low-pollution driving habits.
6. Take leadership role in encouraging "clean street" and "green city" projects by local municipalities.
7. Staff the Urban Advisory Council with two air pollution experts to assure State and local air quality implementation policies are responsive to the needs of the urban poor.

#### D. Noise

1. Adopt as Agency priority the passage of pending noise legislation.
2. Develop a strong public information program to emphasize to the general populus the need for noise legislation; major speeches and magazine articles should be issued immediately.
3. Develop a model noise control ordinance for city governments by January 1, 1972.
4. Conduct a product noise measurement program via grants to Consumers Union and Consumers' Research.
5. Develop voluntary compliance agreements with private industry and Government to ensure noise level control on products, like trucks and motorcycles.
6. Require the participation of the Administrator's Urban Advisory Council in voluntary compliance negotiations.
7. Require that environmental impact statements include noise impact on inner city, from such sources as highways and airports.
8. Provide adequate staffing in the Office of Noise Abatement Control to implement the above recommendations.

#### E. Pesticides

1. Initiate and coordinate urban community pesticide education programs.
2. Conduct a survey on the kinds of pesticides used in inner cities, including information about the labels.
3. Develop international insignia for toxic materials.
4. Require improved pesticide packaging.
5. Develop cooperative efforts between Federal agencies to alleviate reasons for extensive use of pesticides in inner cities, to be conducted by an EPA Clearinghouse on Pesticides.

#### F. Water

1. Establish an Inner City Ecology Corps utilizing EPA environmental interns or SPARE participants.
2. Initiate inner city clean-up programs to prevent litter from entering sewers.
3. Initiate agreements with HUD, FHA, VA, OEO and other Federal agencies to correct deteriorating plumbing and inadequate installation of sanitary facilities.
4. Initiate workshops with inner city residents to identify water supply problems.
5. Expand current Water Programs' training courses to a number of demonstration cities.
6. Initiate Kingman Lake Project, Anacostia River in the District of Columbia.

## PART I

### OVERVIEW

The Environmental Protection Agency was established in December 1970, when it had become evident that the need to act on environmental problems requires special attention by the Federal Government. The Agency brought together environmental programs of several Executive departments. Though the programs are diverse in their focus, they are related in their aim of improving the environment.

Today, there are few who are unaware of the ecological devastation of pollution, but our awareness must go further to an understanding of the effect that this has on the human community. The programs of the Environmental Protection Agency are designed to meet the needs of communities throughout the nation. Among the most pressing needs are those found in our urban communities. Many cities are served by projects already in existence, but solutions to the problems of the cities require comprehensive long-range policy aimed at the roots of the most urgent social problems.

The problems of today's urban poor represent a complexity of conditions, none of which can be considered in isolation. We have too often been project-oriented in designing solutions to problems such as poverty, racial inequality, crime, disease and drugs, and rarely ever considered them as an integral part of a total environmental breakdown. The Environmental Protection Agency's most valuable contribution to the solutions of these problems lies in its ability to envision the inter-relationship of these problems and deal with them in that light.

Cities share many of the problems faced by smaller communities and rural areas, but in the crowded urban environment they are compounded by those conditions which are unique to the city. City residents must breathe the emissions of suburban automobiles which travel in to work every morning, and travel out in the evening to escape the noise and dirt of the city. City children play in the streets over which the automobiles travel, inhaling the gases and dirt left behind. The alleys behind homes are havens for rats which feast on garbage set out for collection. The dirt found on streets and in the air has much greater concentrations of harmful particulate matter in the city than in the less dense suburban and rural areas.

Added together, these ecological conditions contribute to the unattractiveness of residence in the cities. Those who are able to move to cleaner suburban environments do so, taking with them valuable revenue sources and contributing vicariously to the decay of the cities. The residents left behind in the migration include a high percentage of those whose poverty inhibits their mobility. Discriminatory practices and the economics of poverty confine poor residents to certain high density areas within the city.

In general, high density poverty pockets suffer most from the dirt and inadequate sanitary services of the city. Slums are plagued by rats because garbage is allowed to stand uncollected in unsanitary alleys for longer periods of time than in the more affluent neighborhoods. Homes in the poorer areas frequently have dilapidated pipes and sanitary facilities which attract insects and rodents into the very rooms in which people eat and sleep. Insecticides are sprayed to combat the pests but also may have a harmful effect on the human residents who breathe and otherwise come in contact with these chemicals. Lead-based paint chipping off walls is a potential source of danger to children or anyone else who might repeatedly ingest this harmful matter, which can cause lead-poisoning.

The fulfillment of civil rights responsibilities is one approach to alleviating the burdensome environmental problems of the poor. By strict enforcement of the provisions of Title VI of the Civil Rights Act of 1964, the Environmental Protection Agency will ensure that all sectors of a community which receive the benefits of our grants are serviced by our projects. Executive Order 11246 requires that recipients of our financial assistance and contractors with whom we do business affirmatively demonstrate that they do not discriminate on the grounds of race or color in the hiring of employees who work on EPA projects. Within the Agency, there is a vigorous affirmative action plan to provide equal employment opportunity for all citizens seeking employment with EPA as well as for all those working in the Agency.

Even greater efforts are required for the future if social problems are to be alleviated. The Environmental Protection Agency must take a close look at its role in urban life, the nature and extent of the problems and the impact of remedies. Information gathering and analysis and research efforts must be considered on a broad scale of inter-related problems and solutions in a framework of complex, far-reaching social issues.

To date, most efforts have been compensatory, palliative measures to correct problems created by the environmental mismanagement of the past. We must explore preventative measures for the future. Even more importantly, we must devise programs to enhance the quality of life for the urban poor and to involve them in those programs. Bold, creative ideas must be generated and we must not be reluctant to experiment.

We must listen not only to the advice of technical experts but also to those who are most affected by the plight of the urban environment. No one person or agency can single-handedly solve the vast urban problems but each can play a part in assuring that, in the future, our cities will be pleasant and healthy for all who chose to live in an urban environment.

PART II

THE URBAN POOR

(ONE ENVIRONMENT UNEQUALLY SHARED)

PART II

THE URBAN POOR

ONE ENVIRONMENT UNEQUALLY SHARED - A Narrative

THE URBAN POOR, OUR MOST ENDANGERED PEOPLE - A Profile

ONE ENVIRONMENT UNEQUALLY SHARED - A NARRATIVE

By Summer Interns: Linda Bryant  
Tony Collins

MS (Mr. Suburbanite) is concerned about pollution. He remembers his childhood days spent swimming in the stream near his home. Today, his kids cannot play in the river which runs through their suburban community because 20 miles up stream a large factory pollutes the water. Instead, his children must swim in the pool at the club nearby. Luckily, the kids can enjoy fresh lake water at camp and can go to the seashore during family vacations. Thus, they are still able to experience the thrill of jumping off rocks and diving for shells that cannot be simulated in a chlorinated pool.

Every morning, Mr. Suburbanite wakes up in the fresh air-conditioned atmosphere of his bedroom. The air outside his home is fresh, too, and full of the smells of trees, flowers, and grass, a sharp contrast to the air outside of his downtown office. Driving down the expressway on his way to work, MS notices the difference in spite of the air-conditioning in his car. He is annoyed by the foul smell and sickening sight of polluted air. Once downtown, he finds it unpleasant even to walk the streets at lunchtime. Waiting on the corner is noisy, and the annoyance is aggravated by the fumes created by passing buses and cars. After the shortest exposure to the sights, sounds, and smells of the city street, his air-conditioned office becomes an oasis by comparison. Rush hour traffic is a trying experience, but MS justifies subjecting himself to it since it means he doesn't have to live with the unpleasantness of the city 24-hours a day, and more importantly, neither do his kids.

Arriving home in the evening is like stepping into another world. Settling down with the evening paper on the patio overlooking the mowed lawn and well-tended garden dispels all the annoyances of the day in the hot, dirty city.

Just a few blocks off the expressway MS travels over twice a day is the home of MI (Mr. Inner City). He awakens every morning without noticing the habitual fumes and sounds from the automobiles of commuters. MI's children, too, awaken to the sounds and smells of traffic coming in the windows left open to cool their bedrooms at night. During the day, they play in the streets over which the cars travel and on which are left the dangerous residue of automotive emissions. MI's children cannot swim in the river that flows through the city park, nor do they go away to summer camp or to an ocean cottage in the hottest months. The community swimming pool is many blocks away, and on hot days, there is standing room only. Jumping off of rocks and diving for shells will never be part of their childhood memories.

MI worries about the dirty and unsafe surroundings his children are forced to play in, but not as much as he worries about how to keep them



fed and in good health. Little does he know how harmful many things in their surroundings are. He is unaware of the deleterious effects which pesticides may have on them in the long run. He is concerned with protecting the children from harmful rodent and insect bites. He is unaware of the need for new pipes and new paint to decrease the possibility of lead poisoning. He is concerned with buying food and clothing to satisfy immediate needs.

MI tries to earn enough money to provide the basics for his family. He lacks training because he had to go to work at a young age to help support his brothers and sisters. As a result, he has never been given a job which provides training or opportunity for advancement and he cannot afford to go back to school. Nor can he afford to participate in a low paying job training program when higher wages are needed in the here and now, rather than at the end of a long training period. He is always among the first to be laid off. He sometimes is forced into having to buy the family's groceries with food stamps. At such times, he suffers not only limited income, but a feeling of helplessness as well. It's hard to maintain self-confidence or to gain a sense of self-importance under such conditions.

Coming home at night is not a relief for MI. The city must be tolerated 24-hours a day. Some of his neighbors try to escape by deadening their awareness of the environment. MI feels such escape is not possible for him; he must try to stay well. He does not realize his life expectancy is seven years less than that of his suburban counterpart. The rest of his family has not been as fortunate. The children have been bitten by rats and cut on broken glass while playing in the back alley, but the street is worse because of the traffic. The parks have broken playground equipment which no one ever repairs and the ground is covered with old cans, broken bottles and other debris which is rarely, if ever, removed by municipal maintenance crews. This contrasts sharply with the well manicured parks in the downtown and other more affluent areas of the city. The world his kids grow up in is dirty, unhealthy and often unpleasant, but MI cannot afford to move elsewhere. His children are aware of how the world treats their father. Their own experience in unpleasant surroundings, compounded by the poor quality of their schools, and general discrimination dim their outlook on the world, and any prospects for a happy future.

## OUR MOST ENDANGERED PEOPLE - A PROFILE OF THE URBAN POOR

Whatever the hope, be it opportunity or stimulation, that brings people to urban complexes - whatever the success or failure that keeps them there - 130 million Americans share a deteriorating urban environment.

Each of them, whether rich or poor, white or black, suburbanite or city dweller, bears increasingly heavy burdens physical from environmental depreciation. These physical burdens are imposed by air and water pollution, noise, pesticides, and other toxic substances. While borne by all, they fall most crushingly on the poor of our inner cities.

The conditions of poverty create breaking point tensions. When environmental stresses are added, the problems of the inner city poor are greatly compounded.

### Who Are Our Most Endangered People?

One hundred and thirty million Americans now live in urban areas. Of these, nearly 8 million are central city residents existing in poverty - 4.5 million white and 3.1 million black. (Poverty is officially defined for the non-farm family of four as having an income of less than \$3,968 per year.) Many people have an income much lower than the poverty level. Approximately another 8 million "near poor" have incomes slightly above the official poverty level. While not counted in the "statistical" 8 million poor, they suffer a similar fate.

Contrary to common belief, the urban poor are not mostly black; in fact, they are predominately white. The mistaken belief probably stems from the fact that 25 percent of the black population lives in poverty. See Tables II-A and II-B (pages 15 and 16).

The age distribution of the 8 million urban poor is also significant. Three million are under the age of 15 and nearly 2 million are over 60 years of age. Thus, 60 percent of the urban poor are at age levels recognized by the medical profession as most vulnerable to the injurious assaults of pollution. For evaluating the effects of environmental burdens, the control group is usually healthy adult males. That selection has lead to an underestimate of the consequences of pollution. The residents of the inner city cannot afford such underestimates as the following analysis demonstrates.

The mental and physical consequences of pollution are intensified by certain factors intrinsic to poverty level subsistence, such as:

1. Unemployment - lack of money, lack of self-respect and dignity.
2. Poor Housing - inadequate, decaying and infested buildings.
3. Overcrowding - more than one person per room.

Without the money to obtain adequate food, clothing, housing, medical care, and education, the urban poor suffer from undernourishment, malnutrition, higher disease prevalence, shorter life spans and the inability to break out of the cycle of poverty.

## HEALTH CONDITIONS

Illness is more prevalent among poor people than in those with higher incomes. The Task Force, in reviewing the data, was struck by the question: "Are they poor because they're sick, or are they sick because they're poor?" This same ambiguity of relationship was raised by another member struck by high rate of mental disorders among those unemployed. Table II-C (page 18) graphically depicts the high incidence of disabling physical conditions among the poor. Heart disease, high blood pressure, and mental or nervous conditions are prevalent. Under these conditions, noise, toxic substances in the air they breathe and the water they drink have greater adverse effect on the poor than on the more affluent, healthier segments of our society.

Heart Disease - Heart disease is the major chronic condition which the adult poor suffer - along with the rest of our adult population. However, if one is poor and black, the chance of suffering from hypertensive heart disease is three times greater than for a white with family income over \$10,000. See Table II-D (page 19).

Other Chronic Conditions - Other chronic illnesses which afflict the poor include emphysema and other respiratory disease, hearing and sight impairment. Further, persons who have family income of less than \$3,000 per year are subject to a substantially higher incidence of one or more chronic conditions. Limitation of activity due to a chronic condition occurs four times more often in the lowest income group than in family groups with incomes over \$7,000. See Table II-E (page 20).

## CHILD AND MATERNAL HEALTH

The health picture of the adult segment of the urban poor population is depressing. As one of the EPA participants in Washington, D. C.'s "Operation Clean Sweep" said while clearing a rubble-filled alley, "While we cannot write off the adult population, our best hope for progress lies with the youth." However, a Task Force review of the health of the youth, unfortunately, does not support that hope.

Undernourishment and Malnourishment - The preschool nutrition survey, as reported in the 1970 White House Conference on Children, found shocking nutritional deficiencies among poor children. In the low income quartile for children between 1 and 2 years of age, 11 percent had low hemoglobin levels, 48 percent were suffering from (blood) iron deficiency, and 40 percent from vitamin C deficiency. Median vitamin A and B levels for low income children were 25 percent lower than the medians for higher income children and for vitamin B<sub>2</sub> nearly 50 percent lower.

Malnourished and undernourished children are more susceptible to the common childhood illnesses: When these illnesses are contracted, their effects are longer lasting and more damaging.

As President Nixon said to the White House Conference on Food, Nutrition, and Health:

"A child ill-fed is dulled in curiosity, lower in stamina, distracted from learning. The cost of medical care for diet-related illness; remedial education required to overcome diet-related slowness in school; institutionalization and loss of full productive potential - all of these place a heavy economic burden on society, as a whole."

Inadequate Child Care - The children of the poor need medical care most, but they receive very little. Estimates indicate that only 50 percent of children from families with incomes of less than \$3,000 are regularly treated by physicians. This compares with 75% for middle class children. Children of the poor also suffer from inadequate home care. One-third of our urban black children live in a broken home. Lest one jump to the erroneous conclusion that this is due solely to absent fathers, one must examine the maternal death rate among black women. Figure shows that the death rate of non-white mothers during childbirth is nearly four times higher than for white. This robs the newborn, as well as the other children in the family, of their mother.

Hereditary Traits - Any overview of a population of several million has to recognize that children have an incalculable number of different genetic characteristics. Some of these characteristics are common to substantial numbers of the population such as those who have brown eyes. But some of these genetic characteristics are not as innocuous as eye color. Many children carry traits like the sickle cell trait which may make them particularly vulnerable in some respects and strong in others. The sickle cell trait makes people especially vulnerable to toxic substances like lead and carbon monoxide, but resistant to malaria.

Another identified hereditary trait which is common to many urban children (rich and poor), and pertinent to the urban environment is the G6PD deficiency which is believed to make them more vulnerable to the toxic effects of lead and other air pollutants. These genetic characteristics must be taken into account when government sets public policy.

## COSTS TO THE NATION

We cannot measure suffering, but monetarily the cost to the nation for all health care (doctors' services, hospital payments, and medicines) is now over \$63 billion per year and steadily rising. The costs due to lost productivity would be even more staggering.

Heart disease (attributable in part to the assaults inflicted by our urban environment noise, air, and water pollution) is the leading cause of Social Security compensated disability. Payments now cost the nation \$44 million each month.

Emphysema, caused in part by air pollution, presents another staggering monthly bill. Social Security disability payments to 93,000 victims of emphysema and their families total \$16-1/2 million a month.

While pollution attacks on the body have been generally recognized, less recognized have been the assaults of pollution on the mind. The mentally ill, many of them victims of an assortment of environmental stress, occupy more than half of the nation's hospital beds. Income level, housing quality, and the proportion of non-white are all inversely proportional to the rate of schizophrenia in an area. Social Security is making payments of \$18,600,000 per month to 103,700 schizophrenic disabled and their dependents across this nation.

Health costs are not the only costs to the nation which result from our deteriorating inner cities.

The people living in our blighted urban areas carry a heavy burden, but they also are a heavy economic burden for other taxpayers. A study of Sacramento, California, showed that 20% of the population (the urban poor) paid only 12% of the taxes but took 50% of the city's budget for police protection and 50% of the health services budget.

### Summary

A profile has been presented to delineate the conditions of that population group most exposed to and most in need of protection from environmental pollution.

These then are our most endangered people - the ones most vulnerable to the assaults of pollution:

1. Millions of children, vulnerable because of their tender age.
2. Millions of elderly, vulnerable because of their fragile age.
3. Millions, vulnerable because of genetic characteristics.
4. Millions of children, suffering from malnutrition, illness, and inadequate medical care.
5. Millions of people, suffering from one or more disabling chronic conditions such as heart disease, emphysema and tuberculosis.

6. All, suffering the oppressive burdens of poverty: inadequate food, clothing and shelter; enduring racial, cultural, and economic discrimination; and engulfed in problems of ignorance, alienation, drugs, and crime.

These are the people who need EPA the most. The urban poor, more than any other population group, need protection from solid waste pollution, air pollution, noise pollution, water pollution, and pesticides.

These forms of environmental deterioration constitute a severe extra burden on that portion of the population already most heavily laden by chance and circumstances. EPA, remaining completely within its mandate, can take a giant step toward eliminating that extra burden - environmental deterioration.

TABLE II-A

## POPULATION OVERVIEW

	All Races			White			Black		
	Total	Below poverty		Total	Below poverty		Total	Below poverty	
		No.	%		No.	%		No.	%
1. Figures in thousands									
2. 1969 data									
Total U.S.A.	199,849	24,289	12.2	175,231	16,668	9.5	22,349	7,214	32.3
Male	96,802	10,292	10.6	85,089	7,000	8.2	10,586	3,100	29.3
Female	103,037	13,978	13.6	90,133	9,657	10.7	11,763	4,114	35.0
Residence									
SMSA	130,017	12,320	9.5	112,440	8,200	7.3	15,824	3,855	24.4
Central cities	57,781	7,760	13.4	44,392	4,527	10.2	12,439	3,068	24.7
Suburban rings	72,236	4,560	6.3	68,049	3,674	5.4	3,384	786	23.2
Nonmetropolitan	69,831	11,969	17.1	62,791	8,468	13.5	6,525	3,359	51.5
Central cities									
Total	57,781	7,760	13.4	44,392	4,527	10.2	12,439	3,068	24.7
Under 6	5,857	1,146	19.6	3,965	522	13.2	1,781	608	34.1
6-15	10,588	1,853	17.6	7,380	871	11.8	2,994	956	31.9
16-21	5,961	773	13.0	4,470	454	10.2	1,363	284	20.8
22-44	16,212	1,460	9.0	12,402	837	6.7	3,523	581	16.5
45-54	6,997	493	7.0	5,604	284	5.1	1,295	206	15.9
55-59	3,234	283	8.8	2,689	168	6.2	505	106	21.0
60-64	2,711	321	11.8	2,351	236	10.0	330	79	23.9
65 and over	6,251	1,430	22.9	5,531	1,157	20.9	647	250	38.6
Median income: \$/year for central cities	\$ 8,060			\$ 8,697			\$ 6,127		

## Sources

U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 37, "Social and Economic Characteristics of the Population in Metropolitan and Nonmetropolitan Areas: 1970 and 1960," U.S. Government Printing Office, Washington, D. C., 1971.

U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 76, "24 MILLION AMERICANS - Poverty in the United States: 1969," U.S. Government Printing Office, Washington, D. C. 1970.

TABLE II-B - DATA SUMMARY

A. <u>Population United States</u>		199,849,000
a. <u>Race</u>		
White		175,231,000
% Pop. U.S.	85.1%	
Black		22,349,000
% Pop. U.S.	11.2%	
Non-white other than black		2,269,000
% Pop. U.S.	3.7%	
Spanish origin (included in whites)		9,230,000
% Pop. U.S.	4.7%	
b. <u>Poverty</u>		
Total poor U.S.		24,289,000
% Pop. U.S.	12.2%	
B. <u>Location Population</u>		
a. <u>SMSA</u>		
Total SMSA U.S.		130,017,000
% Pop. U.S.	65.0%	
b. <u>Central Cities</u>		
Total Central Cities U.S.		57,781,000
% Pop. U.S.	29.0%	
% Pop. SMSA	44.4%	
White central city		44,392,000
% central city pop.	76.8%	
Black central city		12,439,000
% central city pop.	21.5%	
Non-white other than black		950,000
% central city pop.	1.7%	
C. <u>Central Cities Below Poverty</u>		
a. <u>Total central city poor</u>		7,760,000
% Pop. U.S.	3.9%	
% total central city pop.	13.4%	
b. <u>Race</u>		
White central city poor		4,527,000
% total central city white	10.2%	
% total central city poor	58.7%	
Black central city poor		3,068,000
% total central city black	24.7%	
% total central city poor	39.5%	
Non-white other than black, central city poor		165,000
% total central city poor	1.8%	
c. <u>Sex</u>		
Of poor urban families, 66% black families are headed by females, as compared with the white figure of 37%.		



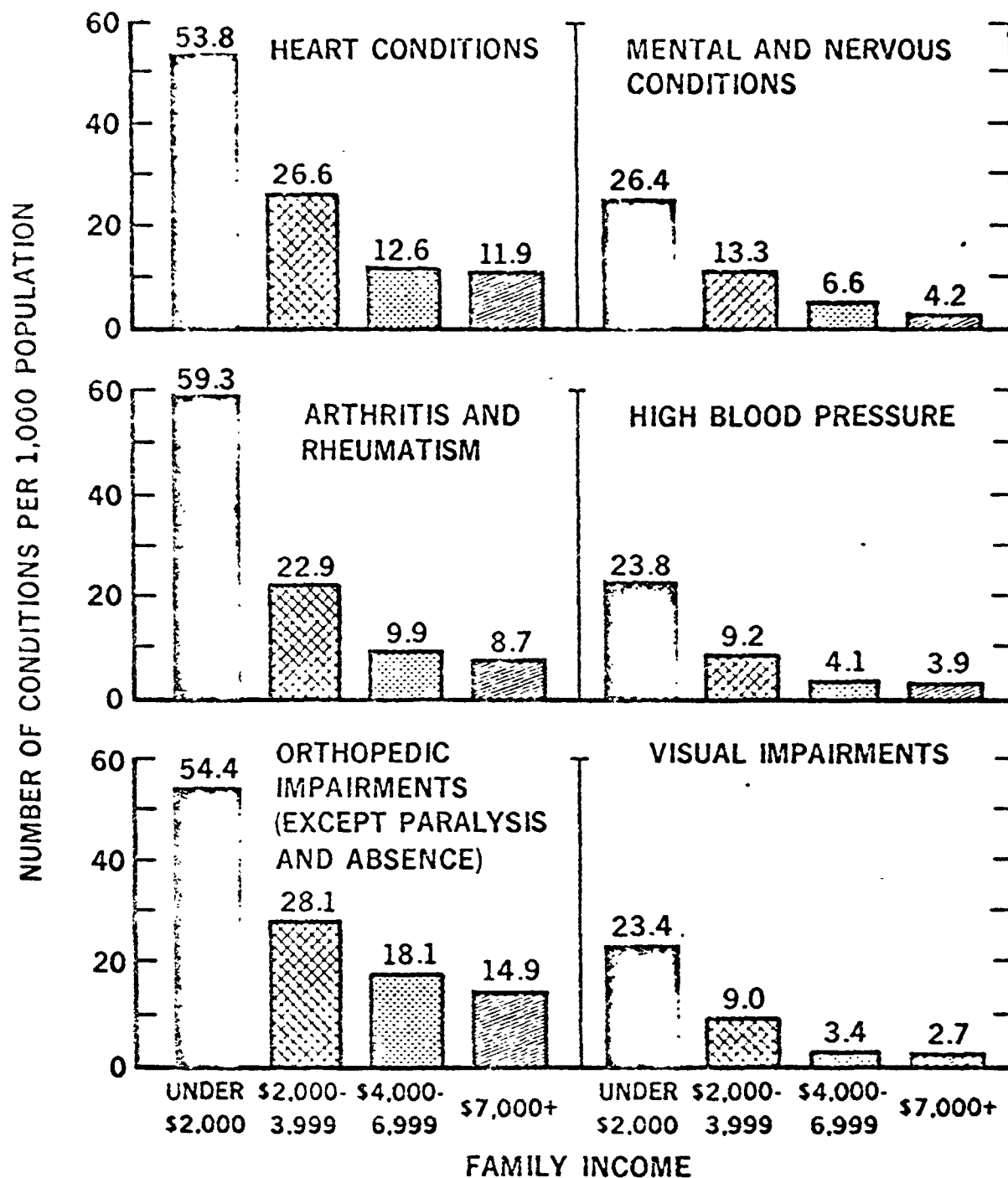
Sources: U. S. Bureau of the Census, Current Population Reports, Series P-23, No. 37, "Social and Economic Characteristics of the Population in Metropolitan and Nonmetropolitan Areas: 1970 and 1960," U. S. Government Printing Office, Washington, D. C., 1971.

U. S. Bureau of the Census, Current Population Reports, Series P-60, No. 76, "24 MILLION AMERICANS - Poverty in the United States: 1969," U. S. Government Printing Office, Washington, D. C., 1970.

U. S. Bureau of the Census, Minority Media Conference Report, New York, May 18, 1971.

TABLE II-C

## Activity-limiting conditions, by income 1964



"Towards A Comprehensive Health Policy For The 1970's - A White Paper"  
 U. S. Department of Health, Education, and Welfare, May 1971, p. 6

TABLE II-D

<u>RACE AND FAMILY INCOME</u>	<u>MEN</u>	<u>WOMEN</u>
<u>Definite Hypertension</u>		
<u>White</u>		
Under \$2,000	16.7	30.3
\$2,000-\$3,999	13.9	16.3
\$4,000-\$6,999	12.2	10.3
\$7,000-\$9,999	10.6	11.5
\$10,000 and over	11.6*	11.9*
<u>Negro</u>		
Under \$2,000	37.1*	34.8*
\$2,000-\$3,999	21.6	24.7
\$4,000-\$6,999	20.3	19.1
\$7,000-\$9,999	5.4	22.1
\$10,000 and over	26.6	*
<u>Definite Hypertensive Heart Disease</u>		
<u>White</u>		
Under \$2,000	10.9	22.5
\$2,000-\$3,999	6.7	10.7
\$4,000-\$6,999	6.0	6.0
\$7,000-\$9,999	3.2	5.1
\$10,000 and over	7.7	8.1
	7.4*	13.0*
<u>Black</u>		
Under \$2,000	30.1*	29.7*
\$2,000-\$3,999	12.4	15.6
\$4,000-\$6,999	13.8	20.5
\$7,000-\$9,999	5.4	10.8
\$10,000 and over	26.6	*

Source: National Center for Health Statistics, Hypertension and Hypertensive Heart Disease in Adults: United States 1960-1962, Series 11, Number 13.

TABLE II-E

AVERAGE NUMBER AND PERCENT OF PERSONS WITH CHRONIC CONDITIONS  
AND WITH ASSOCIATED LIMITATION OF ACTIVITY, BY COLOR AND FAMILY  
INCOME: UNITED STATES, JULY 1965-JUNE 1967.

FAMILY INCOME, CHRONIC CONDITIONS AND LIMITATION OF ACTIVITY	TOTAL	WHITE	NONWHITE	TOTAL	WHITE	NON- WHITE
<u>ALL INCOMES</u>	Average # of persons in Thousands			Percent		
1+ chronic conditions	94,853	85,707	9,147	49.5	50.8	39.9
3+ chronic conditions	27,122	24,720	2,402	14.2	14.7	10.5
Limitation of activity	21,984	19,425	2,560	11.5	11.5	11.2
<u>Under \$3,000</u>						
1+ chronic conditions	17,984	14,239	3,745	61.1	66.7	46.5
3+ chronic conditions	8,127	6,764	1,363	27.6	31.7	16.9
Limitation of activity	7,773	6,320	1,453	26.4*	29.6	18.1
<u>\$3,000-\$6,999</u>						
1+ chronic conditions	32,170	28,761	3,410	47.0	48.8	35.9
3+ chronic conditions	8,731	8,045	685	12.7	13.6	7.2
Limitation of activity	7,231	6,492	739	10.6	11.0	7.8
<u>\$7,000 and over</u>						
1+ chronic conditions	40,975	39,430	1,546	47.9	48.4	36.6
3+ chronic conditions	9,229	8,975	254	10.8	11.0	6.0
Limitation of activity	6,031	5,784	247	7.0*	7.1	5.8

Source: National Center for Health Statistics, Health Characteristics  
by Color; United States - July 1965-June 1967, Series 10,  
Number 56.

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PART III

THE PROBLEMS, THE PROGRAMS, THE RECOMMENDATIONS

SOLID WASTE

AIR

NOISE

PESTICIDES

WATER

## S O L I D    W A S T E

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    The Closed Cycle of Conservation

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    Abandoned Automobiles

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## S O L I D     W A S T E

### I. THE SOLID WASTE PROBLEM

Bounty, product obsolescence, and the disposability of the products used by many people generate solid waste. The U.S. succeeds in producing 3.5 billion tons or more of solid waste each year. We are indeed as Vance Packard described us, "The Wastemakers."

Of our annual solid waste total, 200 million tons are household waste, or 4.3 pounds per person per day. This waste is picked up by some collection agency and hauled away for disposal at a cost of approximately \$4.5 billion per year. By 1980, it is expected that each of us will be discarding 8 pounds of solid waste a day.

#### Solid Waste in Urban Areas

Presently, the solid waste problems of our urban areas fall into two categories: collection and disposal.

In our suburban areas, the collection of litter is becoming difficult as we service an ever-widening land area used for residential purposes. In our cities, the more affluent sections generally have adequate collection service, while the poor inner city areas have sorely inadequate collection service.

The urban areas as a whole have a disposal problem of what to do with collected waste - burn it or bury it. Incineration and landfill are the disposal "solutions" presently used in urban areas. Both present problems. Incineration creates air pollution, and a sanitary landfill calls for sufficient land to bury the waste. Land sites for either are increasingly difficult to find. People want neither incinerators nor dumps nearby.

#### Sources, Causes, and Effects

The Open Cycle of Waste - In our economy, there is an unclosed loop which can be called the open cycle of waste. This unclosed loop begins with the products of our economy - their production, distribution and marketing. The second step in the unclosed loop is the usage and discarding of these products and their packaging. The third step in the unclosed loop is the collection of these discarded products. The fourth and final step of our unclosed loop is the disposal of these discarded products. These steps result in our present household solid waste total of more than 200 million tons. The present annual total includes 50 billion cans, 30 billion bottles and jars, 4 million tons of plastic, 7.6 million television sets and 7 million cars and trucks. These "throwaways" are wasteful of valuable resources.

The Closed Cycle of Conservation - Closing the loop would change our present open cycle of waste into a closed cycle of conservation. To achieve a closed cycle of conservation would require two additional steps. The fifth step would have to be reclamation of materials for further use. The sixth step closing the loop and completing the cycle of conservation would be production of new products from reclaimed materials. In a world where the United States comprises only 6 percent of the population, but consumes nearly 50 percent of the world's resources, the open cycle of waste cannot long continue. The open cycle of waste is a situation wherein the affluent of the world take resources which belong to all - and waste them. EPA's job is to begin creating a system whereby the waste stops. EPA must develop the means for converting waste into resources. Eventually, products must be designed such that their ultimate use is reuse.

Litter - Two causes of the litter problem are:

- (a) the propensity of people to discard these products wantonly after use; and
- (b) the creation of a vast quantity of limited-use products.

The quantity of these "throwaway" products is growing rapidly. Some of these products like aluminum beer cans and plastic cups will disfigure the environment for a few centuries, while others like tissues and paper cups will degrade by biological action and disfigure the environment for "only" a few years.

The average citizen puts his discards down somewhere and wants them to be picked up and hauled away. He doesn't care where; out-of-sight is out-of-mind. But preferably he does not want the disposed waste to accumulate nearby.

The average citizen is also cavalier about the public domain. Note the rubble in street gutters, in empty lots, near construction sites, in public rest rooms and even in office buildings and apartment house utility or incinerator rooms. What makes us such a nation of litterers when it comes to the public domain? What keeps us from realizing that everything we so carelessly discard on the street has to be picked up by someone else so that we will not be walking in our own dirt tomorrow? What makes us continue to create products which people want to throw away? What makes us design products which end in waste rather than use?

Abandoned Automobiles - The abandoned automobile is a growing national eyesore, especially in urban areas. Approximately 7 million motor vehicles

go out of use every year as wrecked, worn-out or obsolete. Each year about 1 million of these are abandoned and not absorbed by the current system of scrap recovery. In New York City, it is estimated that 1,000 automobiles are abandoned each week. These abandoned vehicles are more than unsightly and depressing. They clog traffic and thus contribute to noise and air pollution. They are hazardous to both neighborhood children and motorists. They represent the waste of valuable resources: raw materials and the time and energy required to cart them to dumps. They also serve as places of harborage and refuge for rodents and vermin.

### Solid Waste Burdens of the Inner City

The inner city is in great need of assistance in solid waste management. Oftentimes, projects that aid the typical city resident only scratch the surface of the inner city resident's problems. The solid waste problems of the inner city cannot be treated in the same fashion as those of the rest of the city or the suburbs.

Inner city residents must contend with overflowing garbage cans that line their sidewalks or alleys, rodents and insects which thrive in this refuse, and housing that offers little protection from the rats which find sustenance in the solid waste.

The inner city solid waste problem can be categorized as follows:

1. Rodents and insects
2. Litter (paper, bottles and cans, car parts and furniture)
3. Abandoned automobiles
4. Garbage

The Rodent Problem - Rats and household insects are a constant threat to the inner city. The following discussion is from a section of the Council on Environmental Quality's (CEQ) 1971 annual report:

"Strewn garbage, besides being unattractive and odorous, also invites rodents. Rats feed on easily accessible garbage and present a health problem to inner city residents. Greater than the danger of the diseases they carry is the insecurity and fear they inspire, especially in parents with small children.

"An estimated 60 to 90 percent of rat bites occurs in inner city neighborhoods. Eighty percent occurs after midnight when most victims are asleep. The problem is intensified by large-scale building demolition in old, inner city areas, where rats are dislodged and then flee to other parts of the city. The presence of rats in an apartment often has nothing to do with the particular building's cleanliness. Substandard housing often is replete with holes in basement walls or around windows and pipes, giving rats entry points from which they fan out through a building."

Diseases - Such diseases as rat bite fever, leptospirosis, salmonellosis, and murine typhus fever are spread by rats and insects which breed in solid wastes. The young, the sick and the old are vulnerable, and especially so after midnight when rats are most active and dangerous.

Play time, as well as sleep time, holds dangers for children of the inner city. Bacteria in garbage and litter can infect those playing in the mounds of solid wastes. The very handling of this rubble can spread disease. (And the children must play on the streets for lack of recreational areas. Here again, garbage litter and abandoned automobiles contend with the children for space.)

Economic Loss Due to Rats - The direct economic loss to the nation due to rats is estimated between one half billion and one billion dollars annually. The estimate of loss is based on a rat population in the United States of one rat for every person. Even if recent improvements in environmental sanitation and rodent control have cut the rat population in half, the United States still has some one hundred million rats, each of which damages between \$1 and \$10 worth of food and other materials per year by gnawing and feeding, and contaminates 5 to 10 times more.

Litter and Abandoned Automobiles - The problems of litter and strewn garbage, plus abandoned automobiles, are distressing both to the residents of the inner city and to visitors.

The CEQ 1971 annual report has also stated:

"Junk and litter accumulated in streets, on sidewalks, and in vacant lots and doorways are a familiar sight in poverty areas and cannot help having a psychological effect on those who live there. The resident often despairs of keeping his small living space clean when all around him are litter and garbage. He may conclude that since refuse collection is a public service, the abundance of uncollected litter indicates that his neighborhood is being discriminated against. Residents in 9 of 20 cities surveyed by the National Advisory Commission on Civil Disorders listed inadequate sanitation and garbage removal as significant grievances. Many cities able to set their own priorities with Federal funds have placed emphasis on sanitation services such as collecting garbage, buying trash and garbage containers for the city poor, removing abandoned automobiles, cleaning up littered vacant lots, and increasing the number of sanitation workers.

"Solving the problem involves more than merely upgrading municipal services. Some New York City poverty areas have garbage pickups six times a week, compared to three times a week elsewhere in the city. In Chicago, inner city poor are

served by three collections a week, compared to one collection in the rest of the city. Yet inner city littering and unsanitary conditions continue, and there is widespread disenchantment at the failure of cleanup campaigns to have any lasting effect.

"The reasons for this failure to maintain sanitary conditions in the inner city are complex and interrelated. Frustration over limited opportunities for housing, employment, and education can lead residents of the inner city to withdraw from active efforts to improve conditions around them. This psychological impact is worsened by physical conditions which work against sanitation. Buildings designed in earlier days have been subdivided into numerous crowded living units, with little provision for storage areas, common spaces, or refuse collection systems. Receptacles are often nonexistent, makeshift, or in poor condition - all leading to a situation in which wind, animals, and vandals spread litter throughout houses and neighborhoods. The abundance of vacant lots and abandoned structures, already strewn with refuse, encourages further junk, garbage, and other debris. Together these forces work to frustrate even the most willing city sanitation department in working with residents toward a cleaner neighborhood. Also, sanitation collection services have been criticized as perfunctory in some poverty areas. Often such services are confined to curbside collection of packaged refuse, ignoring litter in lots, sidewalks, and gutters."

Industrial Pollution - In addition to poor quality housing, neighborhoods in the inner city may be further degraded by their location to marginal industries. G. L. Morris, Acting Director of Categorical Programs in the Dallas Regional Office, reports, "Many of these industrial installations are negligent in the handling and disposal of solid wastes. Frequent violations of good practice include substandard storage at the plant, hauling in open vehicles, open dumping on company property near residential areas and improper operation of poorly designed incinerators which discharge noxious smoke, mist and fumes."

Bitterness - Solid wastes cause disease and economic loss, but there is an additional factor. They cause bitterness among the inner city residents. Feelings of depression, discouragement and despair result from lack of progress in environmental improvement.

The solid waste problem particularly angers the young adults of inner city communities. They feel that they receive inadequate collection service compared with the more affluent neighborhoods, and thus they feel discriminated against by society. This feeling is intensified by their other ills, such as the high unemployment rate.

A group of 32 black legislators from 12 states wrote to President Nixon: "Of course you are mindful of the fact that the unemployment rate for black veterans between the ages of 20 and 24 years is 21 percent.... At the depths of the depression in 1933, the unemployment rate was 23.7 percent." (UPI, July 12, 1971.)

## II. THE SOLID WASTE PROGRAM

The Solid Waste Program (and EPA in general) has defined the environment in such broad terms that the inner city is often overlooked in efforts to improve the "environment." However, we must come to realize that the environmental needs of the inner city deserve more consideration by an agency dedicated to fighting the environmental burdens of this nation's citizens.

### "Model Cities" Demonstration Grant Program

In analyzing the Solid Waste Program's effort thus far, we must look at the projects completed or in progress under our Demonstration Grant programs. The main effort of our program in relation to the inner city has been through our "Model Cities" Demonstration Grants.

One of the problems experienced with pre-application proposals was that the applicants were not aware of the terms and conditions of Grant Programs under the Solid Waste Disposal Act. One crucial condition for funding of proposed projects is that "State, interstate, and local agencies of government and public and private nonprofit organizations may receive grant support for demonstrations relating to the application of new or improved methods of solid waste collection, storage, processing, and ultimate disposal." (emphasis added)

All solid waste demonstration grant applications, including those concerning Model Cities, have to meet this requirement. In some cases, it was felt that the proposals didn't give enough information to allow an intelligent decision by granting officials as to whether they showed promise of constituting a fruitful and useful endeavor.

Thus, several of these projects may have improved the communities in which they would have been administered, but they were rejected because they weren't new and unique enough to meet the criteria set by the Solid Waste Program, which was required by law. So, if EPA is to relate to the inner city in its fullest capacity, the grant program should be investigated and its administration altered to involve the people concerned.

### Portland, Maine, Project

One on-going project in the Model Cities category is being conducted in Portland, Maine. It is entitled, "Utilizing the Potential of Model

Neighborhood Residents to Prevent Litter Through Exchanges with Children and Youth." The objective of the project, started in the summer of 1970, is to demonstrate that motivational rather than enforcement techniques can effectively reduce litter in local neighborhoods.

Area youths were hired as "coaches" to lead teams of children in cleaning litter from neighborhood streets and vacant lots. In return, these youths were provided opportunities for recreational and cultural activities. Actual clean-up campaigns were tackled during the summer months, and winter activities were mainly social and instructional aimed at creating anti-litter habits in young people.

Litter counts were undertaken each summer, and these results are now being used to evaluate the project. After one year there was a 33 percent decrease in litter. This project is proving that working with people to change litter habits can aid in solid waste management.

#### Savannah, Georgia, Project

Another project under our Demonstration Grant Program, classified as Model Cities, is in Savannah, Georgia. Its purpose is to determine the operating efficiency and adaptability of the "Kuka Shark" combo-type of refuse collection vehicle in comparison with existing methods. (Savannah presently provides a two-phase residential collection service. Compactor trucks are used for twice-a-week, behind the home or in the alley collection of normal household refuse stored in standard refuse containers. Dry trash or bulky wastes, such as yard wastes, furniture, and the like are collected on the curb or in the alley once every two to three weeks using open trucks. The Kuka Shark vehicle used in the Model Cities area does both operations in one.)

The above are two examples of the several Demonstration Grant projects concerned with the urban environment. The one in Portland, Maine, incorporates the residents' efforts into the solid waste management task. This is good because we need more effective resident involvement to solve the problems of the urban environment. Most EPA projects fail to attack this phase of the problem. However, in most of the projects undertaken, this phase wasn't as important as it is when considering the solid waste burdens of the urban poor. In general, it can be said that very little effort by the Solid Waste Program has been directed at the needs of the inner city.

#### Joint Efforts with HUD

Besides these two projects, the Solid Waste Program is working jointly with HUD in another effort. This is Operation Breakthrough, sponsored by the Department of Housing and Urban Development. Its purpose is to inspire new and imaginative methods of housing construction that will help solve the problem of solid waste storage in the home.

The Solid Waste Program will provide technical assistance to HUD to assure that proper solid waste management techniques will be provided for the Operation Breakthrough projects. It is also intended that some innovative solid waste management systems be demonstrated at selected sites. The Solid Waste Program is recommending these sites and the systems that should be demonstrated. EPA is providing HUD with reliable data and design information for the selection and installation of appropriate total solid waste management systems.

### Technical Assistance

During the past year Solid Waste's Division of Technical Operations received over 1,200 requests for technical assistance. Some of these are for assistance in urban related projects. Recently, the Division fulfilled a request for technical assistance concerning solid waste management from the Boston Housing Authority.

In the FY 72 Solid Waste Program Plan a technical assistance project is planned that should aid inner cities in the storage area. A demonstration of a storage system for the inner city will begin in 1972 and continue in 1973.

### New Program Focus

The argument can be used that the Solid Waste Program is trying to serve the solid waste management problems of all citizens. This is true, of course; however, many times our assistance may greatly aid city residents who have good housing, air conditioners, etc., but only scratch the surface of the problem for the urban poor. Thus, we must realize that greater emphasis on the urban poor's particular problems is needed.

Existing legislation does not appear to present a barrier in formulating a new EPA focus upon the inner city. There is a great opportunity to do many beneficial things within our existing legislative framework. Thus, the scale of priorities must be evaluated within the Solid Waste Program (and EPA). EPA must evaluate Agency programs to assure that adequate attention, effort and funds are being allocated for the amelioration or elimination of the solid waste problems of the urban poor.

### Research Overlap

The Bureau of Mines' activities, also under the Solid Waste Disposal Act, must be evaluated. Its Division of Solid Wastes is involved in a substantial amount of solid waste research. Some of this research is concerned with such projects as the development of junked car incinerators and automobile shredders, separation and recovery of metals from urban refuse, and establishment of recycling plants. In all these areas there appears to be considerable overlap with EPA projects. Each is doing similar research in certain areas. There should be more coordination between the two agencies so as to make duplication of effort



less likely. Currently, the Bureau of Mines and the Office of Solid Waste Management Programs (OSWMP) are engaged in a technical exchange of information in order to remedy this problem. Part of the EPA FY 72 legislative initiative is defining new legislative recommendations that would eliminate this type of duplication. Money spent on duplicative research could possibly be used to aid the urban poor.

The Bureau of Mines conducts extensive research on the disposal and utilization of junk cars. Several years ago the Bureau made a nationwide survey of the auto-wrecking industry, the ferrous scrap-processing industry, and other elements pertinent to the junk car problem. The primary objective of the study was to identify the factors that influence the accumulation and movement of automobile scrap. The information obtained in that study was used to prepare a report entitled, Automobile Disposal: A National Problem. It is a basic source for industry information.

However, the Bureau of Mines program is basically geared to the technical aspects of the problem rather than the legislative or aesthetic aspects. The Solid Waste Program is interested in another aspect of the problem; namely, getting and keeping these cars off the street (or elsewhere) in the first place. This is the problem which impacts directly on the urban poor. Many inner city young people are forced to use the streets as a playground because of lack of space elsewhere. The abandoned automobile only serves to intensify the problem of congestion that already exists. Also, there is the aesthetic problem of the presence of dilapidated and rusting vehicles which have been brought to inner city neighborhoods for the purpose of abandonment. The Solid Waste Program is currently researching this problem. There is contract effort being exerted on several aspects of the abandoned car problem. The contract specifies field data collection of the actual number of abandoned cars (urban vs. rural) through sampling techniques, and the development of state and local legislation pertaining to the abandoned car problem.

#### Need of Programs Relevant to Inner City

In examining other agencies which address problems relevant to the urban poor, we must consider the Bureau of Community Environmental Management (BCEM). This agency has the responsibility for the Urban Rat Control Program. These three programs are focused upon the inner city resident. To properly relate to the urban poor, the Solid Waste Program of EPA might investigate establishing a program activity directed specifically at the inner city. This does two things: delegates to a specific element of the Solid Waste Program the responsibility for inner city solid waste issues, and gives those outside the program a focal point they can contact for assistance. However, this function could be effectively administered through the pending reorganization of the OSWMP. This reorganization (EPA Order 1110.21) will result in more emphasis being placed

on the problems of the urban poor. The Storage, Collection, and Transport Division (SCT) will concentrate on those aspects of solid waste management which most directly affect the inner city.

Because EPA does not presently have a rat control program, it could be stated that the BCEM has been fulfilling a gap in the area of educating inner city residents to the importance of sanitation for their health and well-being. Most EPA demonstration projects have not been directed at this very important aspect of the solid waste problem. To be successful, neighborhood cleanup campaigns must be accompanied by a comprehensive community education program.

HUD also has programs directed at the inner city resident. Among these are the Model Cities Program and the Urban Beautification and Improvement Program, of which the former is discussed above in this chapter. All of these programs aid the inner city residents in combating solid waste.

In the case of HUD, as well as other Federal agencies making contributions to solid waste management, it would be desirable if the EPA Solid Waste Program could lend more technical expertise to their efforts in trying to help the urban poor. Such is the case with HUD's Operation Breakthrough, for which OSWMP is handling the technical solid waste aspects of the project.

#### Manpower Training

Another problem of the urban poor is unemployment. One way in which the Solid Waste Program can help is in the area of manpower training. This aid should not be in the form of jobs that offer little chance of advancement, but a career-oriented solid waste management program. A major advantage of involving the urban poor in such a program is that they are acutely aware of solid waste problems, and would be more sensitized to the needs of inner city residents than outsiders.

At present EPA has an ongoing contract for the assessment of manpower needs in the entire solid waste management field. As a result of this study, EPA may be able to detail a program of advancement for the urban poor in solid waste management.

The individual job categories under evaluation include professional personnel, technical and clerical, supervisory, skilled labor, and unskilled labor. Among the critical information required is the current turnover rates within various occupational categories and functional areas, educational and experience requirements, training opportunities, salaries and wage levels, fringe benefits, analysis of the civil service and merit systems, and union membership. As in any proposed manpower training program we must be aware of the availability of employment after training.

Currently, EPA is beginning an operator training program. The two major components are:

1. safety in collection; and
2. sanitary landfill operations.

#### Budget for Inner City Expenditures

To assess the Solid Waste Program effort in the urban poor category, the Demonstration Grant Program must be used as a yardstick. This is the area in which EPA "Model Cities" grants are administered, as discussed above. Since the EPA budget is listed for 1971, EPA funding for these Demonstration Grants will also be listed for FY 1971.

Our total FY 1971 budget was \$20,591,000. Of this total, \$9,143,101 was allocated to the four types of grant programs. \$4,649,380 was given to the Demonstration Grant program. We utilized \$557,800 or roughly 12% of this amount for the "Model Cities" area, on the following grants listed in the Appendix:

No. 227 . . . . .	\$ 16,000
No. 237 . . . . .	523,800
No. 293 . . . . .	<u>18,000</u>
TOTAL	\$557,800

### III. THE SOLID WASTE RECOMMENDATIONS

The Task Force finds that inner city residents consider solid waste and the associated rat problem their Number One environmental problem. The Task Force finds that improved collection of solid waste, rather than transfer or disposal, is the most prominent aspect of the problem. Moreover, the Task Force finds that the job of achieving a level of cleanliness in the inner city comparable to middle class areas is enormous. Such an undertaking in all our major cities would undoubtedly be a multi-billion dollar program. Nevertheless, there is much that can and should be done now. The enormity of the task should not deter us from making a beginning effort to cope with the problems. Even the most formidable journeys begin with a humble step.

#### 1. Supplemental Trash Containers - Plastic Bags

The Task Force finds that the use of plastic bags can be a highly cost-effective method of immediately improving the inner city solid waste problem. Plastic bags have several important advantages, they:

- a. accelerate the trash collection process (the sanitation worker does not have to return an empty trash can to the curb).

- b. provide an odor barrier and thus are not an open invitation to rats and insects as are conventional trash cans.
- c. are available in unlimited supply while inner city people have limited and usually inadequate number of metal containers. Thus, all trash can be packaged, and overflows can be drastically reduced.
- d. are quieter than metal containers.

The Task Force recommends grants to inner city areas for the purchase and distribution of plastic trash bags. (See National Clean Sweep Recommendation for Budget.) These bags might have suitable civic pride inscriptions on them; for example, "Help Keep Your Street Clean," or "Help Protect Your Environment." (See National Clean Sweep Recommendations elsewhere in this report.)

The Task Force recognizes that plastic bags have at least two environmental disadvantages:

- a. They are not biodegradable in sanitary landfills.
- b. They create noxious fumes when incinerated.

The Task Force feels, however, that the pressing solid waste problems of inner cities dictate, in the short run, the use of plastic bags. For the long run, however, the Task Force feels EPA should accelerate research to develop plastic bags which are both biodegradable and free of toxic fumes when incinerated.

The Task Force suggests that the Administrator set forth a challenge to the membership of the American Chemical Society to develop such a plastic by June 1973, with a progress report to be made to the Administrator by June 1972. An enormous market could be mandated for such a product, and this market would be sufficient incentive for other chemists to join the quest.

## 2. Demonstration City Pilot Recycling Plant

The Task Force recommends the establishment of a pilot recycling plant in Demonstration City (Washington, D. C.). This recycling center could be run by a black-owned and operated corporation or community action group. Possibly, this center could be built at the site of D.C.'s incinerator #5.

In general, recycling would pose an alternative to other forms of solid waste disposal, such as incineration, which adds to the air pollution problem. EPA would thus be putting into action its desire to recycle some of this nation's natural resources, as well as providing employment and capitalization to minority groups.

Initially, this recycling center would serve only a segment of the city. A long range goal would be to expand this operation to the entire city.

In such a system, the city government's sanitation department could handle the collection services for this recycling center. All garbage from the service community would be brought to the center. The garbage would be sorted by recycling center personnel. Solid waste which can't be recycled would be shipped to a disposal facility, preferably a sanitary landfill.

This demonstration would be in keeping with one of the goals of the Solid Waste Program, i.e., to recycle solid waste. Also, this would be a unique demonstration project since we are dealing with inner city residents, as opposed to the middle class residents who benefit from the recycling effort in Berkeley, California, which is a Solid Waste Program Demonstration Grant project.

The facility will require bins for the sorted solid waste, a glass crusher, a distribution mechanism (trucks, rail, etc.), and work stations for the recycling center personnel. However, the most important need is the technical expertise of Solid Waste Program personnel.

This recycling center would not alleviate the solid waste problem by itself. It must be accompanied by an imaginative solid waste collection scheme. However, this recycling center would provide financial help for the inner city community and be a beginning step in completing the cycle of conservation. Jobs will be created by the center's operation, and some of the money would be funneled back into the inner city community.

To make demonstrable achievements by 1972, the solid waste recycling would have to be done by outside companies initially. This would entail using various companies to recycle particular wastes, e.g., the Reynolds Metal Company could recycle aluminum cans. This would require the shipment of recyclable solid waste to various centers. Agreements would have to be worked out with these companies to ensure the workability of such a plan.

Leadership by EPA could help actualize the desire of companies to participate in sound, progressive projects. Many companies are currently the subject of much criticism which alleges that while they advertise that they are trying to help improve environmental quality, they really do very little. In cooperation with these companies, substantive projects could be begun which would offset such criticism.

### 3. Inner City Coordinator

The Task Force recommends the establishment of a liaison position within the Solid Waste Program which is the focal point for solid waste problems of the inner city. One of the reasons the Task Force on the Environmental Problems of the Inner City was established was that there is no one in EPA

currently assessing the effort of our Agency relative to the urban poor. This points up a need in the Office of Solid Waste Management Programs (and other EPA program areas) to have an "urban specialist" who is familiar with the problems in the urban environment, who coordinates program resources in researching solutions, and who is receptive to requests for assistance to the urban poor.

#### 4. Public Education

- a. The Task Force recommends the production of urban solid waste films that enables the viewer to see corrective actions applied to problems. Most of the present films makes one aware of how severely solid waste can damage the environment, both physically and aesthetically. This is good in that the problem is being emphasized, and this helps create a concerned work force and public. However, we should also emphasize solutions to these solid waste problems.

The proposed films could be used by community action groups to emphasize to residents that there are solutions to their solid waste problems. Also, it may serve as an inspiration to the community to clean up its neighborhoods.

- b. The Task Force recommends the establishment of curriculum in the public school systems, colleges, and universities relating urban solid waste problems and possible solutions to students. We do not propose solely the creation of "urban specialists" by this recommendation, but the encouragement of students to take courses dealing with urban environmental issues. These courses will help sustain an environmentally-aware nation. Also, these young people will bring fresh thinking to our inner city problems, and help provide workable solutions.

#### 5. Demonstration Grants

The Task Force recommends the demonstration and evaluation of equipment and methods for improving solid waste storage in densely populated, low income, inner city residential areas for the benefit of the users, and the collection agency. This is in line with a currently proposed Solid Waste Demonstration Grant entitled "Inner City Storage Demonstration and Evaluation."

It will provide alternative solutions for the many problems of solid waste storage for inner city areas. Various solid waste storage techniques should be utilized, such as refuse bags, metal, plastic, or rubber containers, special compactors, bulk containers. New and improved storage techniques which show promise for the inner city is especially encouraged.

One possible solution might be the placing of bins at strategic locations within the inner city community. One problem frequently encountered is that there are not enough storage containers in the inner city for garbage

disposal. Thus, garbage becomes piled on the ground next to those insufficient numbers of trash containers residents can afford. Sometimes collection crews are very careless about the removal of this "additional" trash. This syndrome possibly can be avoided if there are adequate numbers of containers in the first place. Additional data would have to be gathered, however, and a cost analysis performed before such a plan could be implemented.

## 6. Monitoring

The Task Force recommends the establishment of a monitoring program for the inner city solid waste problem. This could either be run by the Solid Waste Program, or the city government with technical assistance from the Solid Waste Program. This monitoring program will be needed in order that any concerted solid waste project in the inner city might have continuing effectiveness.

An inspection of the garbage and litter levels before and after the projects are implemented to ascertain some measure of effectiveness should be made to ensure that the level of clearance is maintained. An analysis should also be made of the types and frequencies of complaints by the residents. This would be accompanied by a survey of community reaction to the project or campaign.

In this manner, the Solid Waste Program can ensure that its efforts to aid the urban poor are viable and continuous. Through the monitoring programs, EPA will be assured that (a) any problems which arise are effectively addressed and remedied, and (b) efforts in this area will have the desired effect.

The above recommendation could be implemented within the existing National Solid Waste Data Network, which currently monitors residential solid waste in three Standard Metropolitan Statistical Areas (SMSA's). Some portion of this monitoring effort should be allocated to the inner city.

## 7. Manpower Training

The Task Force recommends the establishment of a manpower training program for the urban poor by the Solid Waste Program. The manpower assessment study currently being conducted is addressing this problem in part. A complete evaluation is needed to ensure that persons are not trained (a) in skills for which there is no demands, or (b) for jobs which afford little or no advancement. The need exists for a program that will provide for career development in the field of solid waste management for the urban poor. Such a program will help change the attitudes of inner city residents about their community's appearance, and give them the desire to effect change in their own homes.

## 8. Interagency Cooperation

The Task Force recommends that EPA investigate how it can cooperate more effectively with other agencies on joint ventures, especially in cleaning up the inner city. As previously mentioned, HUD, HEW's Bureau of Community Environmental Management, and other agencies have programs specifically aimed at the inner city. Mutual and reciprocal exchange of information and expertise on urban environmental problems between these agencies and EPA would be extremely beneficial to the development of programmatic approaches to the problems. HUD's Operation Breakthrough program, for which we are supplying our technical expertise in solid waste management, is a step in this direction. This cooperation is necessary because the solid waste problems of the urban poor will not be solved by the Solid Waste Program alone. Other factors, exterior to the solid waste problems, must be examined simultaneously. It is through such joint efforts that the most meaningful and enduring results can be accomplished.

Also, duplication of effort could be avoided by this cooperation among agencies.



A I R

- I. THE AIR POLLUTION PROBLEM
- II. THE AIR POLLUTION PROGRAM
- III. THE AIR POLLUTION RECOMMENDATIONS

## A I R   P O L L U T I O N

### I.   THE AIR POLLUTION PROBLEM

#### Air Pollution in Urban Areas

Air Pollution Levels, Low in the County, High in the City - Over every urban area, on a typical day, one finds a dome of polluted air. The 1971 Annual Report of the Council on Environmental Quality contains data describing the air pollution gradient as it increases from remote to urban areas. The data show central city residents breathing air containing five times (500 percent) more suspended particulate matter than air being breathed by people in remote areas. The difference in the lead content of polluted city air and clean rural air is even more striking - 50 times, (5,000 percent) more lead in the city air.

The Polluted Urban Air - The pollution content of the air varies not only from time to time and place to place within a given city but also from city to city. Thus, the air pollution problem of Washington, D. C., which is primarily caused by motor vehicles, differs considerably from the problem of an industrial city, such as Gary, Indiana. Generally, the same pollutants are found in the air of every city, only the relative concentrations of each pollutant vary from city to city. For example, there is more particulate matter in the air over Gary, Indiana, than over Washington, D. C., but in Washington the photochemical oxidants resulting from automobile emissions are likely to be more of a problem than in Gary, Indiana.

Air Pollutants and Their Effects, Especially on the Poor - Air pollution dosage can be appreciated best with a knowledge of the various pollutants and their effects on people.

Air pollutants at the dosage levels found in inner cities are injurious to man, animals, vegetation, metals, and building materials and fabrics and property in general. Such levels cause man discomfort, eye irritation, and difficulty in breathing. Pollution levels restrict his enjoyment of the environment by reducing visibility and violating his aesthetic values. Of all these effects, the most pressing is the destruction of man's health. Each pollutant adds its burden to urban man's health problems.

Particulates - Particulates is a general term for particles of solid matter which are found suspended in the air of all industrialized cities and towns. Particulate matter may be composed of one substance or a combination of substances. The following is an analysis of particulate matter composition.

Suspended particulates - 102 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) average

Analyzed fractions	$\mu\text{g/m}^3$
Benzene soluble organics	6.9
Benzo(a)pyrene	.002
Ammonium	0.6
Nitrate salts	2.9
Sulfate salts	10.7
16 metals - at highest measured levels in U.S.	<u>18.33</u>
Total known	39.432 $\mu\text{g/m}^3$

Ambient air quality standards to protect the public's health have been set for particulate matter at  $75 \mu\text{g}/\text{m}^3$  for an annual average, and at  $260 \mu\text{g}/\text{m}^3$  maximum, for 24 hours not to be exceeded more than once a year.

Most major cities have particulate concentrations which exceed the national standards. In many cities the standards are exceeded by a factor of two. For example, in the "Critical Areas" report the following annual average suspended particulate concentrations were given:

Chattanooga	181 $\mu\text{g}/\text{m}^3$
Gary	151 $\mu\text{g}/\text{m}^3$
Indianapolis	158 $\mu\text{g}/\text{m}^3$
Los Angeles	145 $\mu\text{g}/\text{m}^3$
New York	189 $\mu\text{g}/\text{m}^3$
Washington	104 $\mu\text{g}/\text{m}^3$

Particulates (soot is a common particulate) have subtle but significant effects on health. Particulates are of concern for several reasons:

1. Some particles are so small they elude the human respiratory system's ability to remove them and they therefore remain in the lung.
2. Particulates are often composed of toxic substances. Some are carcinogenic substances.
3. Some particulates increase the harmful effects of other pollutants which are present in inhaled air.
4. Particulate matter can react in the atmosphere to increase the amount of harmful pollution, e.g., sulfur dioxide is converted to more toxic sulfur trioxide in the presence of some mineral particles.

Particulates are often a severe pollution problem in the inner city because factories, power plants, and incinerators built many years ago are not equipped with modern emission control equipment. The urban poor are often housed near such heavy sources of pollution.

Sulfur Oxides - Sulfur oxides is another generic term for a class of pollutants which include sulfur dioxide, sulfur trioxide and their acids and acid salts. These pollutants result from the combustion of fuels containing sulfur.

The ambient air standard for sulfur oxides is  $80 \mu\text{g}/\text{m}^3$  or 0.03 parts per million (ppm) annual arithmetic average. Sulfur oxide concentrations vary considerably from city to city because the fuels used in different cities have different sulfur contents. Thus, while Los Angeles has ambient concentrations of  $65 \mu\text{g}/\text{m}^3$ , approaching the standard, Chicago has sulfur oxides levels of  $372 \mu\text{g}/\text{m}^3$ , or more than four and a half times the level considered protective of the public's health. The sulfur oxides attack the sensitive tissues of the lungs and are believed to be a contributing factor in the development of emphysema and other respiratory diseases.

Oxidants (See Table III-A on page 61) - Oxidants are a major class of chemical compounds found in photochemical smog. An ambient air quality standard to protect the public's health has been set by EPA at  $125 \mu\text{g}/\text{m}^3$  or 0.06 ppm for one (1) hour not to be exceeded more than once a year. Oxidants, ozone being the most common oxidant, result primarily from the interaction of automobile exhaust gases (hydrocarbons and oxides of nitrogen) under the influence of sunlight. Ozone causes irritation of the respiratory system and causes difficulty in breathing.

In Los Angeles, to protect their health, children are restricted from active play on high smog days. The urban poor of Los Angeles live in Watts, which is located in one of the worst smog areas of the L.A. basin. The adverse health effects of smog are not the most pressing problems of the people of Watts, but they are a real though generally unacknowledged environmental part of the oppressive burden they carry.

Oxides of Nitrogen - Oxides of nitrogen is a term which refers to the family of compounds of oxygen and nitrogen which are formed when combustion occurs. The ambient air quality standard for nitrogen dioxide (the most toxic of the nitrogen oxides) has recently been set by the Administrator at  $100 \mu\text{g}/\text{m}^3$  or 0.05 ppm for annual average. In Washington, D. C., the Continuous Air Monitoring Program (CAMP) station recorded an annual average of 0.05 ppm in 1968 (the last year of data presented in the criteria document for nitrogen oxides). In most major cities yearly average nitrogen dioxide levels are approaching levels known to be harmful to health. On high pollution days concentrations of 0.05 ppm are often exceeded by a factor of 4.

Nitrogen dioxide is the compound of most concern since its toxicity is even greater than the toxicity of an equal amount of carbon monoxide.

Carbon Monoxide - This gas is perhaps the most well known air pollutant, since deaths due to the carbon monoxide poisoning are frequently recorded by the news media.

Ambient air quality standards to protect the public's health have been set for carbon monoxide at  $10 \mu\text{g}/\text{m}^3$  (9 ppm) for an 8-hour maximum, not to be exceeded more than once a year. This value was exceeded 70 percent of the time at the Chicago CAMP station between 1962-1967. On the city streets where the urban poor live, traffic frequently creates carbon monoxide levels on the order of 100 ppm. Traffic jams create levels of several hundred parts per million (ppm) carbon monoxide.

The toxicity of carbon monoxide results from its chemical characteristic of attacking the blood's oxygen carrying capacity. Carbon monoxide reacts with the red blood cells 200 times faster than oxygen. The ambient levels of carbon monoxide commonly found in city air (around 10 ppm) result in individuals living day in and day out, deprived of 2 percent of their blood's oxygen carrying capacity. The urban poor who live and play on city streets are deprived of even more of their blood's oxygen carrying capacity. Ambient carbon monoxide levels may poison as much as 5 percent of the blood. Lest one erroneously conclude 2 to 5 percent to be an insignificant deprivation of oxygen, one must remember certain points:

1. Thirty percent of the body's oxygen is used by just one physiological organ - the brain.
2. Dizziness and headache result with over 5 percent deprivation.
3. Above 50 percent deprivation death occurs.
4. The rule of thumb, often used by air pollution control officials to relate effects with ambient concentrations, is:

10 ppm - Dullness (of thought process)  
 100 ppm - Dizziness  
 1,000 ppm - Death

Inner city residents continually carry a heavy carbon monoxide poisoning burden. Their other environmental burdens: noise, rats, malnutrition, undernourishment, pesticides, and all the other air pollutants magnify the significance of the carbon monoxide burden. This is especially true for those urban poor with hereditary traits, such as sickle cell anemia, and the G6PD deficiency, which make them particularly vulnerable to the effects of carbon monoxide.

For example, the National Academy of Sciences Report on "The Effects of Chronic Exposure to Low Levels of Carbon Monoxide on Human Health, Behavior and Performance" devotes a chapter to the effect of carbon monoxide in the presence of abnormal hemoglobin. In this chapter concern is expressed that people with anemia or other abnormal hematological conditions will suffer magnified adverse effects when exposed to carbon monoxide.

"Carboxylhemoglobin in theory can affect the physical-chemical equilibria and reaction velocities of abnormal hemoglobins to a different extent from those of normal hemoglobin A. However, the loss of oxygen-transport capacity and shift of the dissociation curve for oxygen to the left, as mentioned earlier\* for normal Hb, are often exaggerated by anemia and complicate it."

### Lead

Lead air pollution occurs in two forms: inorganic solid lead particles so tiny as to be invisible to the naked eye, and organic lead in vapor form.

Lead vapors last only briefly in the atmosphere; they quickly convert from the vapor to the solid particle form. But lead vapors are of concern because they are estimated to be ten times more toxic than lead particles. Automobiles emit most of the lead found in urban air, (roughly 90 percent). Lead emissions from tailpipes are a by-product of the combustion of leaded gasoline.

Lead Air Standards - Recently, California adopted an ambient air quality standard for lead of  $1.5 \mu\text{g}/\text{m}^3$  over a 30-day averaging time. The data in Table III-B, page 62, indicate that this level is often exceeded in urban areas and that urban lead levels have increased during the 1960's.

Lead Air Standards Exceeded - Every day millions of U.S. citizens are breathing air which is contaminated to levels beyond these standards. Residents of urban areas breathe air with annual average concentrations of lead ranging from  $1 \mu\text{g}/\text{m}^3$  to  $3 \mu\text{g}/\text{m}^3$ . In a current report, Colucci, Begeman and Kulmer recorded an annual average of  $7.9 \mu\text{g}/\text{m}^3$  at Herald

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\*"A second, more subtle disadvantage is that the effective  $\text{O}_2\text{Hb}$  dissociation curve is shifted to the left and becomes relatively more hyperbolic. Although the affinity for oxygen is increased, the tissue cells are in jeopardy, because the local  $\text{pO}_2$  must be reduced to remove a given amount of oxygen from the Hb."

Square, New York City. Recent NASN data show 11 cities exceeding California's  $1.5 \text{ ug/m}^3$  level 30-day standard all year long as follows:

11 Cities	Annual Average Lead $\text{ug/m}^3$
Phoenix	2.0
San Francisco	2.0
Oakland	2.07
Burlington Co., N.J.	2.08
Fairbanks, Alaska	2.12
Detroit	2.42
Scranton	2.50
Long Beach	2.60
Glendale	2.80
Omaha, Nebraska	2.80
Los Angeles	3.10

Data on localized in-traffic or near-freeway conditions reveal much greater exposure to atmospheric lead. In a review of this data, Landau, Smith, and Lynn reported "Lead concentrations measured in traffic have been about an order of magnitude higher than those measured at off the road sampling cities...in a 1967 study designed to determine the levels of lead in cars in rush hour traffic, 1/2 hour averages in the  $5\text{-}25 \text{ ug/m}^3$  range were found."

Dr. Goldsmith testified that monthly average values in excess of  $5 \text{ ug/m}^3$  have been recorded in Los Angeles and individual samples obtained near heavily traveled roadways contained concentrations in excess of  $50 \text{ ug/m}^3$ .

Roughly, it appears that in far out suburban areas the concentration of lead in air is approximately  $0.1 \text{ ug/m}^3$  while in urban areas the concentration is approximately  $1.0 \text{ ug/m}^3$ . This gradient can also be seen in blood lead levels of the exposed populations. A composite figure for the blood lead level of the rural American male is  $16 \text{ ug/100g}$  while the composite figure for the urban American male is  $21 \text{ ug/100g}$ , more than 30 percent higher. For females the figures are  $10 \text{ ug/100g}$  rural, and  $16 \text{ ug/100g}$  urban, or a 60 percent increase with exposure.

Health Effects of Lead - Historically, lead has been known to be toxic to humans for over 2,000 years. Its effects on the human organism seem to be many and diverse. Inorganic lead is implicated as a causative agent in decreased hemoglobin synthesis, liver and kidney damage, mental retardation in children and in abnormalities of fertility and pregnancy.

Any discussion of the health effects of lead must be set in proper perspective. The following quote from a classical medical text on lead toxicology does this:

"One of the most dangerous features of lead poisoning is the insidiousness of its development. Absorption, excretion and storage of excessive quantities of lead may continue for many years without significant manifestation of intoxication."

The body's long term, delayed response to lead can be seen from this excerpt from a report on a lead experiment.

"The daily absorbed dose for the first dosage level was about 0.50 mg; this produced a noticeable decrease in red blood cell count and hemoglobin count within two months, while urine coproporphyrin rose sharply within two weeks."  
(Emphasis added)

Lead also is absorbed rapidly by bone and apparently is released at a slow rate over extended periods of time. Lead workers, removed several years from exposure, still have shown high levels of porphyrin in their blood. Presumably, sufficient lead was released slowly from accumulated reserves to interfere with porphyrin metabolism.

Children are much more susceptible to lead intoxication than adults. Encephalopathy and mental deterioration in lead-poisoned children have been well documented. One study disclosed that 200 normal children had blood lead levels of 14 to 30 micrograms per 100 grams of blood while 100 mentally defective children showed 40 to 80 ug per 100 grams of blood. Aminolevulinic acid levels in the blood of these latter children were also high. It has been stated that an upper limit for blood lead in children should be 40 ug per 100 grams of blood. This figure already borders on the lower value found in affected children, though general population studies of children have not been done.

#### Air Pollution Burdens of the Urban Poor

Longer Exposure - High air pollution levels found in city areas have long been a cause for concern. These high levels have a greater impact on the urban poor than the average urban dweller.

Urban poor tend to live, work, and play in the inner city, thus they spend twenty-four hours a day, nearly everyday, breathing higher air pollution levels. The middle class, on the other hand, lives, works, and/or plays much of the time in the areas where the air is cleaner. They have the financial means to live in the suburbs, or cleaner parts of town, take day



trips through the countryside nearby, spend summers at the lake, etc. At the end of a year's time the urban poor have spent considerably more time breathing polluted air than their more affluent suburban counterparts.

Urban poor tend to live in row or tenement housing close to street traffic. They breathe the high pollution levels produced by traffic coming into the city in the morning and leaving in the evening. This type of living is in sharp contrast to suburban residential living which is typified by houses, surrounded by grass and shrubbery, and set back from tree-lined streets over which pass occasional cars.

Typically higher traffic counts on inner city streets cause high peak pollution levels. These peak levels are often 10 to 30 times higher than average ambient levels. An example of higher traffic counts can be seen from Table III-C below.

TABLE III-C

ESTIMATED VEHICLE COUNTS BY LAND-USE CATEGORY  
GARY, INDIANA - 1968

TYPE	COUNT, VEHICLES/DAY
Major streets	17,000
Industrial	14,000
Commercial	10,000
Residential - Single dwelling	500
Multiple dwelling	1,000
Other	1,000

People in the inner city experience high pollution levels caused by higher traffic counts and more frequent traffic jams. The road in front of an average suburban home carries traffic typified by a car cruising at 25 mph - the lowest pollution traffic mode. The street in front of an average city house carries high traffic counts typified by frequent stops with long idle periods, accelerations and decelerations - all high pollution traffic modes.

In the inner city, houses are not the only things found in a dilapidated condition. Factories built in the early 1900's are now surrounded by low income housing. These factories are often equipped with outdated, inadequate, dilapidated or poorly maintained air pollution controls (sometimes no emission controls).

The Result of Higher Pollution Levels and Greater Exposure: Air Pollution Poisoning - The net effect of these conditions is to expose inner city residents to more pollution than suburbanites and far more than rural residents. The results of such greater exposure can be seen in the following summary of a study of the blood lead content of residents of the Philadelphia area:

Blood specimens of three groups of persons in the Philadelphia area were taken to determine the amount of lead in their systems. The groups were divided into those who had lived and worked in the downtown area, and those who lived in the same neighborhood as the suburban commuter, but also worked in the suburbs. For both men and women, lead was significantly highest in the city dwellers. The suburbanites who worked in the city showed higher lead concentrations than those who lived and worked in the suburbs.

These results demonstrate the greater dosage of pollution received by inner city residents. The dosage received by any given individual is determined by the level of pollution to which the individual is exposed and the length of time such exposure continues.

A study by the California Department of Public Health shows the effects of higher lead dosage received by inner city residents - the higher the dosage of lead breathed, the higher the levels of lead found in the blood. Thus, the dosage received in the inner city environment is far greater than received in the less hostile environment of the suburbs. The hostility of the inner city environment has often been credited with contributing to the "flee to the suburbs" both because it enabled people to move out of the city away from mass transit systems and because it helped convert the city into a hostile environment. In fact, it has been conjectured by cynics that the automobile industry has a positive incentive to design cars that continue to pollute city air.

It is maintained that the automobile industry's historic opposition to stringent emission control standards and mass transit is rooted in their interest in furthering the "flee to the suburb" syndrome, because suburbanites are totally dependent upon the automobile for their transportation needs.

#### Lead Poisoning of the Urban Poor

Lead in gasoline contributes to the dangerously high blood lead levels found in inner city children. Some 400,000 inner city children are believed to be suffering from high blood lead levels. The street dirt found in the inner city, containing high levels of lead from the tailpipes of automobiles burning leaded gasoline, adds to the lead burden of inner city children.

While airborne lead is of concern to the 130 million inhabitants of urban America, it is of critical concern to the inner city poor, especially the children because they:

- a. are very sensitive to lead.
- b. are exposed to the highest concentrations of lead.
- c. are ingesting lead from both the street air and street dirt in which they play.
- d. are ingesting lead from lead-based paints found in dilapidated housing.
- e. are carrying dangerously high blood lead levels (an estimated 400,000 of them).
- f. are undernourished and malnourished, with diminished ability to ward off the effects of environmental lead assault which include mental retardation and death.
- g. have a high prevalence of anemia. The National Pre-School Nutrition Survey found 48% of the children tested from low income families suffering from iron deficiency. Hemoglobin deficiency was found in 34% of Blacks tested in the National Nutrition Survey.
- h. carry hereditary traits of sickle cell and G6PD deficiency which are believed to make them even more vulnerable to the adverse effects of lead.
- i. breathe other air pollutants, especially carbon monoxide and nitrogen oxides which attack the circulatory system (blood) as does lead and, thus, add to the harmful effects of lead.

## II. THE AIR POLLUTION PROGRAM

The Clean Air Act - The Purpose and the Poor - EPA's legal authority and responsibility for the control of air pollution stem from the Clean Air Act as amended in 1970. Title I of the Act, "Air Pollution Prevention and Control," has as its first purpose:

"to protect and enhance the quality of the nation's air resources so as to promote the health and welfare and the productive capacity of its population."

The wording of this section is particularly pertinent to the urban poor, since they, more than most, can least afford to have their health, welfare, and productive capacity reduced by air pollution.

Responsibility for Results - Section 101(a) of the Clean Air Act states that:

"the prevention and control of air pollution at its source is the primary responsibility of States and local governments;" and "that Federal financial assistance and leadership is essential for the development of cooperative Federal, State, regional, and local programs to prevent and control air pollution."

This language tends to place the Administrator of the Environmental Protection Agency in a difficult position. He finds himself with substantial legal responsibility for producing results in controlling air pollution, but only indirect authority. He must still rely on the State and local governments to protect the urban poor from air pollution, yet Congress will hold him accountable for the progress, or lack of progress, in achieving clean air.

From the point of view of the urban poor, this legislation places primary responsibility for results at the levels of government least responsive to their needs. (Witness the example of the District of Columbia's recent action to proceed with construction of Incinerator #5 which will emit thousands of tons of poisonous gases each year, for the next 20 years, in the center of a low income area and simultaneously to purchase the Hopfenmaier rendering plant to stop relatively harmless odors from offending a well-to-do neighborhood.) Experience has taught the urban poor to look to the Federal level for effective action.

#### Regulatory Authority Over Stationary Sources of Pollution

The Clean Air Act, as amended, has two major sections: one concerned with the control of stationary sources through State and local governments; the other concerned with the control of moving sources - automobiles and aircraft.

The Administrator must set national ambient air quality standards to protect the public health and welfare. The primary responsibility for achieving these ambient air quality standards, however, rests with State governments. The States must achieve the EPA-set ambient air quality standards within three years (or five years if a two-year extension is granted by EPA) in accordance with an implementation plan. The implementation plan is to be developed by the State and approved by the Administrator. The States were to have submitted their implementation plans for approval by the Administrator by January 31, 1972. The Administrator had four (4) months, or until June 1, 1972, to approve or disapprove of the States' implementation plans.

The Administrator by regulations can set requirements for State implementation plans to assure that State programs will be both adequate and effective. Through the EPA review process, the Air Programs Office can guide local governments to consider the needs of the urban poor in carrying out their implementation plans.

Historically, the Federal air pollution program has always focused on controlling the high pollution levels found in urban areas. This concern has been typified by the actions of the Federal Facilities Office which places priorities for the control of emissions from Federal facilities on the basis of those urban areas with the highest air pollution levels.

### Regulatory Authority Over Mobile Sources of Pollution

While Title I of the Clean Air Act generally deals with the control of stationary sources of pollution, Title II deals with emission standards for moving sources. This Section of the law places the most direct regulatory responsibilities on the Administrator. The Act requires the Administrator to set emission standards for 1975 and 1976 model year vehicles 90 percent lower than present emission standards. The Act authorizes the Administrator to set interim standards for 1973 and 1974 model year vehicles and provides for a certification program to assure conformance with the standards. Authority is also provided for the suspension and revocation of certificates of conformity.

The Administrator's authority to control motor vehicle emissions is the most direct air pollution control authority he possesses. If EPA is to constitute a viable force in alleviating the air pollution burden of the inner city residents, the Agency must utilize its legal authority to the fullest extent.

The Federal Air Pollution Control Program has already set standards for automobiles manufactured after 1968, and trucks and buses manufactured after 1970, which will improve inner city air quality. Standards have also been set for 1973 and 1974 models as well as 1975 and 1976 models. If all these standards are met we should achieve urban air quality levels protective of public health by 1984. However, if past is prologue, the on-the-road performance of Detroit's 1968, 1969, and 1970 models has not met Federal emission standards and it cannot yet be determined when air quality levels which protect public health will be achieved.

### RESEARCH AND MONITORING ACTIVITIES

Atmospheric Surveillance Networks - Most but not all of the stations in the National Aerometric Surveillance Network (NASN) are located in central city

neighborhoods and thus monitor the home environment of our urban poor. The Task Force did not have sufficient time to separate out this component from NASN stations which primarily reflect commercial and industrial district exposures. The Community Health and Environmental Surveillance System (CHESS) maintains six of its twenty-six monitoring stations in poor urban neighborhoods located in three southeastern cities. This CHESS monitoring effort in poor urban areas involves approximately \$120,000 in FY 72 funds. In addition, studies of simultaneous measurement of indoor and outdoor air quality are being supported. These have showed that defective heating and poorly vented cooling adversely effect indoor air quality. This factor, coupled with a general lack of central air conditioning, inadequate housing and central city location mean that the urban poor are heavily exposed to air pollutants. Trace metals, including lead, are monitored by NASN and CHESS. A special study of roadside dust and dirt by our Division of Effects Research provided one key data link between automotive emissions and the urban lead problem which is severest among the urban poor.

Other Environmental Monitoring - House dust and tap water are being monitored for toxic substances in disadvantaged neighborhoods by the CHESS program.

CHESS Health Effects Studies - The health effects of environmental pollution, particularly air pollution, upon urban children from disadvantaged neighborhoods is being investigated in the CHESS program. Roughly, \$500,000 of the total \$2,950,000 allotted CHESS during FY 72 is devoted towards such research in disadvantaged neighborhoods in three southeastern cities. Tissue levels of metals (including lead), ventilatory function, acute respiratory disease history in children and frequency of asthma and heart disease are being monitored among the poor. Panel studies which involve telephone queries of volunteer families involve fewer poor as they cannot often afford telephones. However, \$265,000 of FY 72 funds is being devoted to the study of the effects of ambient air pollution on elderly volunteers living in public housing in New York City. One panel involves healthy but elderly adults while two others involve those afflicted with chronic heart or lung disorders.

Health Research Projects Linked to Special Health Problems of the Urban Poor - Studies are underway on pollution effects upon unborn and newborn infants, relationship of pollution to toxemia of pregnancy, carboxyhemoglobin levels in urban residents and the effects of carbon monoxide upon angina symptoms and coronary artery disease deaths. The relationship between chronic respiratory disease symptom frequency, hereditary deficiency of alpha-1-antitrypsin, cigarette smoking, and urban air pollution is of special interest in that chronic respiratory disease seems to be more of a problem in poor urban whites than poor urban blacks. Roughly, \$250,000 of FY 72 funding to the Bio-Medical Research Branch Program Element is involved in these studies.

#### Air Monitoring for Short-Term Standards and Short-Term Health Effects -

The urban poor who reside in the most polluted sectors in the city are probably exposed to the highest short-term peak levels and thus might be expected to suffer a disproportionate loss of good health. Dose-rate, a function of pollutant concentration and time, is certainly an important factor in the production of acute health impairments and may be an important component in the genesis of chronic disorders.

Expanded Monitoring for Toxic Substances in Tissues - The lead problem among the urban poor is well-defined. One might also expect that cadmium, manganese, selenium, vanadium, nickel, plasticizer and chlorinated hydrocarbon pesticide residues would be higher among the urban poor. Such monitoring now carried out by CHESS and the Division of Community Pesticides should be expanded in any case because of its importance for an overall environmental index.

### III. THE AIR RECOMMENDATIONS

Lead-Free Gasoline - The Task Force finds that lead emissions from motor vehicles contribute to the high blood lead levels of inner city children. It has been estimated that several hundred thousand inner city children have blood lead levels which are dangerously high. These high blood lead levels stem from several sources, a prime one of which is leaded gasoline. Other sources of lead such as lead-based paints and water supply are not likely to be eliminated in the near future because the economics of elimination are prohibitive. Lead intake from gasoline, however, can be eliminated.

The Bonner & Moore report just completed for EPA shows that adoption of the most rapid lead removal schedule would result in all gasoline being lead-free by 1977. The report further reveals that total lead removal is both technically feasible and economically reasonable. The Task Force concludes that the lead burdens of the urban poor dictate adoption of this most rapid lead-removal schedule. The Task Force, therefore, recommends that the Administrator promulgate by January 1, 1972, a regulation requiring all gasoline to be lead-free by 1977.

The lead burdens of the urban poor are so severe that even this accelerated lead-removal schedule represents an insufficient response to their needs. Thus, further actions to reduce lead emissions between now and 1977 must be taken.

Ambient Air Standard for Lead - The Task Force finds that highways are often built through, or alongside of, urban poor neighborhoods. Highways are notorious for creating heavy concentrations of lead - automobiles emit most of their lead when travelling at highway speeds. Thus, highways are a major contributor to the lead burdens of the urban poor.

The Task Force, therefore, recommends that EPA adopt by January 1, 1972, an ambient air quality standard for lead. Promulgation of an ambient air quality standard for lead would permit local pollution control agencies to fight for the delay of highway construction through or near urban poor neighborhoods. EPA has been severely criticized for not promulgating such a standard and further delay would be unconscionable. Delay on this action only deprives the poor of an important legal weapon with which to defend themselves from this environmental assault.

Voluntary Compliance - To accelerate the use of lead-free gasoline the Air Programs Office has attempted to obtain by voluntary compliance with both the automobile industry and the oil industry an agreement to use special nozzles for the dispensing and use of lead-free gasoline. Lead-free gasoline would be dispensed through pump nozzles which perfectly fit special gasoline tank-fill pipes of new automobiles. New automobiles would be able to use only lead-free gasoline as a result of this special nozzle-fill pipe arrangement. This attempt at voluntary compliance by the air programs was unsuccessful but meritorious. The Task Force believes that the needs of the urban poor require a renewed effort to achieve such an agreement. The Task Force, therefore, recommends that the Administrator direct further pursuit of this voluntary agreement by the Air Programs Office and the Office of Voluntary Compliance. Since new model automobiles consume 15% of the total gasoline sold in a given year, such an agreement can have an immediate and dramatic impact on reducing the lead levels of the inner city.

Labeling Regulations - The Air Program Office has for some time now had under consideration a proposal to require automobile manufacturers to label automobiles with two items of information: (1) the lead content of the fuel they recommend be used in the vehicle, and (2) the minimum octane of the fuel they recommend. These two items of information ought to be available to every consumer so that he can begin to choose a fuel which does not excessively pollute the air with lead and other pollutants (and is not wasteful of natural resources and money). The Administrator has the authority to require automobiles be labeled with this information. The cost of such labeling to the industry and government would be insignificant, and the consumer would actually save money. The Task Force, therefore, recommends that the Administrator promulgate by December 31, 1971, a regulation requiring 1973 and later model year automobiles to carry a label designating the manufacturer's recommended fuel specification for lead content and octane.

The Administrator has authority to require labels on motor vehicles in the engine compartment to contain tune-up specifications. Such labels are now required by EPA, but a crash review of the information now required to be included on the label is likely to result in a more comprehensive and useful label. For example, new engines now require new special heat range spark plugs. Present labels do not specify the type of spark plug needed.



Installation of the wrong spark plug can result in high emissions and/or engine damage. Spark plug specification could be required at insignificant cost to the government, the industry, and the consumer, and result in significant (albeit not readily quantifiable) benefits to the public in terms of air quality, and lower fuel and maintenance costs. Spark plug specification is only one useful added information bit that could be included on the label. A quick 60-day review of label specifications could result in a much more useful and effective labeling regulation within 120 days, effective for 1973 model year vehicles (for sale in the Fall of 1972).

The Task Force, therefore, recommends the Administrator direct a review of label information content to arrive at a more effective labeling regulation by January 31, 1972.

Public Education Campaign - The Task Force finds that the inner city poor tend to do the least driving, yet as a group they are exposed to the most air pollution from motor vehicles. The more affluent suburbanites drive through and around inner city neighborhoods on the way to and from jobs in the city. Commercial traffic primarily serving the affluent is often routed through poor neighborhoods. Consequently, an effort must be undertaken to minimize the emissions of these vehicles, and where possible, to provide alternate routes for this traffic.

Much can be done by the individual motorist to minimize emissions. Many individuals would voluntarily take actions to minimize their emissions if they only knew how and what they could do to help. The Task Force feels that the people have not been adequately informed of the actions they might take to minimize emissions. For example: individuals can use lead-free gasoline of the proper octane to minimize emissions; individuals can drive with moderation to minimize emissions (erratic and fast driving maximize emissions); individuals can keep their cars well-tuned (cars out of tune create excessive emissions). Thus, the Task Force recommends that EPA commence a three-pronged public education campaign to obtain citizen participation in helping to alleviate urban air pollution now.

The three-part public education effort would consist of the following themes:

1. Get the Lead Out Campaign - encourage the motoring public to switch to lead-free gasoline.
2. Drive with a Light Foot Campaign - encourage the motoring public to drive moderately, avoiding what is known as "jack rabbit" driving (fast starts and fast stops).
3. Tune Your Car in Harmony with the Environment Campaign - encourage the motoring public to have their cars tuned in accordance with the manufacturer's specifications at the recommended time or mileage intervals.

The Task Force finds the seriousness of the air pollution burdens of the poor places an enormous responsibility on the shoulders of the Administrator. Practically speaking, he is the only government official in a position to help alleviate their burdens. In addition to the promulgation of the above regulations and seeking voluntary agreements, the Administrator is in a position to provide leadership to the nation. He can begin a nationwide publicity campaign to encourage voluntary actions. Many people would be pleased to do something personally to help improve the environment. We should encourage and enable such voluntary actions by citizens, government, and industry.

Action by the Administrator - Leadership of Concern - State and local governments, under the Clean Air Act, have three years to achieve the ambient air quality standards adopted by EPA. They need more than deadlines from EPA, they need more manpower and better ideas on how to get the job done. Mr. Alexander, the new head of D. C.'s Department of Environmental Services, indicated that "more than money, State and local governments need expertise, energy, and enthusiasm." The Administrator has demonstrated he can provide leadership; the Task Force recommends he exercise a "leadership of concern" for the urban poor. Such leadership should be provided by example as well as by exhortation.

Examples of Leadership - EPA can and should provide assistance and advice to city governments in cooperation with other Federal agencies such as HUD, Interior, Agriculture, Labor, and HEW, to build "Clean Air Areas" within our inner cities. Much can be done when government decides to provide leadership. Resources of agencies such as the Department of Agriculture's Forest Service and the Department of Interior's Park Service can be joined with resources of EPA to begin projects improving the inner city. For example, trees could be obtained from one agency, sod from another, expertise from both. The Department of Labor already provides funds through SPARE to engage inner city youth in worthwhile environmental projects. With leadership EPA could do much to begin creating little pockets of clean air in our inner cities to make them more livable.

The Task Force recommends that the Urban Affairs Office be given a staff of at least five (5) professionals to carry out a program of Leadership of Concern to encourage, initiate, and develop projects to improve both the quality of life and the air quality in the inner city. Such a staff should include an urban planner, someone trained in the social sciences, and someone who can obtain the cooperation of industry and other government agencies. The Task Force recommends the following projects be pursued by the Urban Affairs Office:

# 1. Clean Streets Projects

- a. Frequent washing down of inner city streets by sanitation trucks ought to be vigorously encouraged to reduce lead intake of urban poor children.

- b. Designation of play-streets in the inner city. Traffic pattern changes should be encouraged to reduce the exposure of children to high pollution levels. Play-streets would sharply reduce traffic to only those vehicles having business on that particular block.
- c. Designation of bicycle routes should be encouraged to reduce vehicle traffic in the inner city.

## 2. Green City Projects

- a. EPA could encourage the adoption and enforcement of ordinances requiring inner city landlords to have rubble-filled lots cleared, sodded, and maintained as mini-parks.
- b. Tree-planting programs, possibly, as an extension of the President's "legacy of parks," could be started in the inner city, especially on play-streets. Such programs could make a beginning on converting the presently hostile inner city environment into a more hospitable environment.
- c. By leadership develop projects in cooperation with local governments, industry, and other Federal agencies to increase the quantity and quality of green space in our inner cities.

Some benefits which would result from Clean Streets Projects and Green City Projects are:

- 1. Mini-lawns and tree programs would contribute to cleaner air since vegetation (grass) and active bacteria in the soil have a cleansing effect on polluted air - trapping and converting pollutants into non-toxic substances and creating life-giving oxygen. Vegetation is both a sink for air pollution and a source of clean air.
- 2. Mini-lawns and trees would give people in the community a psychological life instead of a psychological letdown. They soften the harshness of the inner city.
- 3. Vegetation cools a city by transpiration, as well as by shade. There is no doubt that programs are desperately needed to cool the inner city both physically and psychologically.
- 4. Rodent control would be improved, since havens formed by rubble would be eliminated.
- 5. Children would have safer, cleaner, quieter places to play.

6. Maintenance of mini-lawns and city trees would provide employment for young inner city teenagers. Landowners would have to hire them to pick up litter and cut the grass each week. Companies on contract or government agricultural experts could train urban poor in park maintenance.

7. Even water pollution problems would be alleviated since vegetation would trap water which now runs into storm sewers overloading sewage treatment plants.

Inner City Air Quality Assurance Plan - Under the provisions of the Clean Air Act, State and local governments file implementation plans to achieve ambient air quality standards by 1975. The Task Force fears that in this area, as in so many other areas, the interests of the urban poor will be least attended to unless EPA forcefully advocates their interests in the review, approval, or withholding approval, of air quality implementation plans. One way to assure such advocacy is to staff the Urban Advisory Council with several air pollution specialists to influence EPA's review process on behalf of the inner city residents.

Thus, the Task Force recommends that EPA staff the Urban Advisory Council with two air pollution experts, one on stationary sources and one on mobile sources, to assure that procedures, actions, and safeguards to protect the health of the urban poor are incorporated into State and local implementation plans. Furthermore, these advocates should be given the responsibility to assure that these procedures are actually carried out over the next three years.

TABLE III-A

SUMMARY OF TOTAL OXIDANT CONCENTRATIONS  
RECORDED AT CONTINUOUS AIR MONITORING PROGRAM (CAMP) SITES  
1964-1967

City	Year	Days of valid data	Number of days with at least 1 hourly average equal to or exceeding			Maximum hourly average, ppm
			0.05 ppm	0.10 ppm	0.15 ppm	
Chicago	1964	254	149	15	0	0.13
	1965	275	120	9	0	0.13
	1966	235	52	6	3	0.19
	1967	255	113	16	1	0.16
Cincinnati	1964	303	137	36	5	0.26
	1965	310	182	19	5	0.17
	1966	208	54	1	0	0.10
	1967	228	122	24	1	0.20
Denver	1965	285	226	51	14	0.25
	1966	298	187	46	9	0.19
	1967	166	76	12	4	0.21
Philadelphia	1964	269	124	37	9	0.20
	1965	266	109	23	4	0.33
	1966	315	145	52	19	0.52
	1967	282	124	28	3	0.17
St. Louis	1964	253	156	26	6	0.26
	1965	329	206	33	8	0.35
	1966	292	174	33	5	0.22
	1967	289	185	38	4	0.20
Washington, D. C.	1964	293	163	40	4	0.20
	1965	284	150	25	3	0.21
	1966	325	134	27	2	0.16
	1967	322	137	27	5	0.26

TABLE III-B  
SUMMARY OF MONTHLY AVERAGES OF LEAD AND TOTAL PARTICULATE MATTER  
(Based on December 61-November 62 and December 68-November 69)

Station (1)	Station (2)	Geometric Mean Pb (ug/m <sup>3</sup> ) 61-62 (3)	Geometric Mean Pb (ug/m <sup>3</sup> ) 68-69 (4)	% Change (4)/(3) (5)	Confidence Limits for % Change (6)	Geometric Mean PM (ug/m <sup>3</sup> ) 61-62 (7)	Geometric Mean PM (ug/m <sup>3</sup> ) 68-69 (8)
Los Angeles	1	2.49	4.03	+61.42*	37.46	89.56	79.35
	2	2.63	4.23	+60.45*	24.84	106.21	57.72
	3	2.61	3.46	+32.71*	12.26	56.90	86.77
	4	2.27	3.72	+64.04*	36.59	96.99	80.20
	5	2.04	3.06	+49.78*	24.52	80.17	79.91
	6	1.49	2.36	+58.63*	21.14	107.72	57.05
	7	2.17	3.39	+56.29*	38.59	76.25	83.42
	8	2.80	4.55	+62.62*	40.17	88.56	80.75
Philadelphia	11	1.39	1.89	+35.66*	17.95	56.03	97.14
	12	1.75	1.74	- 0.078	- 1.83	1.71	82.00
	13	3.27	3.75	+14.69	- 1.61	33.70	123.81
	14	2.13	2.18	+ 2.02	-14.78	22.13	97.78
	15	1.10	1.39	+25.68*	22.14	29.32	60.29
	16	0.87	1.09	+26.22*	8.63	46.66	56.11
	17	0.86	1.08	+25.35*	6.03	48.19	55.97
	18		1.67			78.92	79.79
	19		1.28				64.03
	20		1.01				53.84
Cincinnati	30	1.70	1.92	+13.27	- 5.29	35.46	68.80
	31	1.09	1.45	+32.97*	6.18	66.51	74.64
	32	1.70	2.13	+25.50*	6.97	47.22	75.87
	33	0.87	0.85	- 2.69	-26.25	28.40	56.80
	34		0.31				46.07
	35		0.33				45.10
Los Alamos	41		0.14				estimated
	42		0.20				estimated

\*Change significant at .05 level

## N O I S E

### I. THE NOISE PROBLEM

Noise in Urban Areas

Major Sources of Noise and the Effects of Noise

- Traffic
- Public Transportation
- Aircraft
- Construction
- Housing Factors
- Industrial

- Noise Inside the Factory
- Noise Outside the Factory

Physiological and Psychological Effects of Noise

Noise Burdens of the Urban Poor

### II. THE NOISE PROGRAM

### III. THE NOISE RECOMMENDATIONS

- Noise Legislation
- National Noise Monitoring Program
- ONAC Staff Increase
- Public Education Program
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- Noise Abatement Program Under Existing Authority

## N O I S E

### I. THE NOISE PROBLEM

#### Noise in Urban Areas

One-hundred and thirty million urban Americans are exposed to an accelerating level of noise. The noise sources include transportation vehicles (including aircraft and recreational equipment), construction equipment, heavy industrial machinery, and an array of devices used in homes and offices. (See Table III-D, page 80.) Merely being on the street at times can be stressful to the ear and psyche.

Though little research has been done on the effect of generalized community noise on physical and mental health, two significant and disturbing facts are evident:

1. Some 20 percent of the United States population, in addition to those exposed to excessive occupational noise, have significant hearing impairment by their fifties. While part of this loss in hearing is due to natural causes, the role of noise is of increasing concern.
2. In urban areas, the noise level is increasing at an alarming rate, up one decibel (dB-A) a year. In another fifteen years, it is believed that the overall noise level will have doubled.

#### Major Sources of Noise and the Effects of Noise

Traffic - Motor vehicles create the primary source of city noise. While communities bordering major airports experience the highest levels of outdoor noise exposure, more people are exposed to road traffic noise. This, though lower level than aircraft sounds, can be more continuous in nature. Urban expressway noise of over 90 dB-A can go on for hours at a time. (For purposes of comparison, 90 dB-A is the Federal standard for maximum in-plant factory noise. Concern that even this level will damage workers' hearing over a period of time has led to the introduction in Congress of a Bill to reduce the standard to 80 dB-A, H.R. 6991.)

Already noise levels measure 90 dB-A on the street corners of many of our cities. Stopping, starting, and accelerating automobiles, typical of city driving, creates more noise than the 25-mph average cruising speed, for example, in suburban areas.

The inner city is particularly burdened by traffic noise because of poor city planning practices and opportunism. Consequently, highways are



generally constructed through inner city neighborhoods. In the inner city, over 60 percent of the traffic noise is generated by people who live elsewhere. Trucks, too, are more apt to be routed through the inner city areas. Trucks are a major source of ambient noise. Older trucks and diesel-powered trucks are especially loud, and their impact on the human organism is one of the most detrimental.

Motorcycles also have become an increasing nuisance. (There were only 417,578 in 1952, and there are now 2.4 million.) Some are producing up to 122 dB-A's measured 18 inches from the tail pipe. This is, quite literally, deafening. Even at 50 feet their noise can be damaging.

Public Transportation - Buses, subways and elevator trains ("els") inflict their noise elements into the urban scene. For example - not as an indictment of mass transportation, but rather a plea for quieter equipment - the Jackson Park el, Chicago public transit, generates noise up to 105 dB-A. This particular train runs at all hours, and passes so close to apartments in the inner city that a passenger could lean out of a train window and touch the buildings.

One irony in the area of public transportation noise control which was discovered by the Task Force can be found in the New York City 1970 Task Force Report on Noise Control. This report pointed with envy to Montreal's subway system, which is 80 percent quieter because the trains run on rubber wheels rather than on the steel wheels used in New York. At the same time in D. C., engineers are designing a "modern" Metro subway system to roll on standard steel wheels.

Aircraft - Aircraft noise has received a great deal of attention, mainly from those who live near flight patterns. For those city people who do live near airports, normal activities and communications are often impossible, even watching television or talking on the telephone are difficult. Aircraft noise when heard closely arouses fear and apprehension. (See section on psychological effects of noise.)

By 1985, 95 percent of all aircraft will be jet-powered. Jets are much louder than piston aircraft, and have already been responsible for the mass exodus from areas bordering airports. The exodus is understandable as the noise level exceeds that found in riveting operations or around textile looms. And, unlike industrial noise, aircraft noise is usually a 24-hour-a-day occurrence.

Current models of four-engine jets produce up to 105 dB-A at an altitude of 100 feet overhead during takeoff, and up to 108 dB-A at 400 feet overhead during landing.

Construction - Construction noise in the city, though often considered temporary, affects all in the surrounding area. Diesel-driven engines, bulldozers, and rock drillers are among the worst offenders. Air compressors and suction pumps, riveting hammers and pneumatic drills are loud and unpleasant. The men who spend their lives working these machines usually sacrifice most of their hearing.

Housing Factors - Residences in high density sections of the city are often located on or near heavily travelled streets, and are generally without trees and shrubs to absorb noise. The houses and apartment buildings in the inner city, in addition, are often poorly built or have a variety of inadequacies, including thin walls. Acoustical considerations are frequently overlooked in the construction of relatively expensive single family units. This oversight is usually even more pronounced in public housing projects.

One of the problems of public housing, and modern architecture in general, is its exterior flatness. The noise from streets reverberates back and forth off of the flat surfaces and thus noise canyons are created. In suburban areas, trees, open spaces and architecture (both internally and externally) help to dissipate and absorb sound. In the city, where buildings are attached or close together, noise is often transmitted from one building to another, further increasing noise levels. Though we tend to think of homes as being "private" places, where one may have shelter from the stress of everyday life, most modern, public housing is simply not this way.

Few people know that if a barrier (such as a wall) does not have enough mass and enough dead space to be sound-absorbent, it will act as a transmitter of sound. As Theodore Berland, author of The Fight For Quiet has noted:

"This is what happens in so many of the buildings that were erected in the 1950's and 1960's. Solid, thick, load-bearing masonry walls became too expensive to build and were replaced by lighter and more flexible steel frames. Inner walls are now made of 2x4 studs spaced (usually) on 16-inch centers. To each edge of these vertical studs are nailed sheets of lath, over which plaster is applied, or to which plasterboard is nailed. As a result, the wall is, in effect, a drum (emphasis by author). Noise that imposes on one side of the wall makes it vibrate sympathetically and transmit the noise directly through steel nails and wooden studs to the other side, where the plaster vibrates almost like a loudspeaker.

"To make matters worse, in a further move to save money through lowered labor time, the electrical outlets are installed back-to-back, connected by a conduit for wires which acts like a small sound tunnel. Plumbing is also installed back-to-back; so are ventilating ducts."

Noise in the home can be generally classified into three sources: those generated by family members; building noises such as fans, blowers and plumbing; and those originating outside but penetrating into the home. In inner city dwellings much noise is associated with plumbing, the neighbor's music and occasionally TV, and/or mechanical appliances. Few people relish the thought of having an auditory involvement with the next door neighbors. And even within families the need for auditory privacy is basic. Space and privacy as any city dweller can tell you costs money. And money, the typical inner city resident does not have.

Industrial - It has not been "proven" that noise degrades job performance, but most individuals would agree that inappropriate or loud noises are an undesirable addition to any work environment. In most jobs some form of verbal communication is necessary. The strain of constantly raising one's voice is unpleasant. In jobs where concentration or risk is involved, noise makes the job difficult.

Noise Inside the Factory - The "blue collar" worker is one of the chief victims of noise pollution. Aram Glorid states that: "The noise source most common to man is industrial, and large population studies indicate that this is by far the most important single cause of hearing loss." It has been estimated that between 6 million to 17 million production line workers experience noise conditions that are hazardous to their health.

The study, Noise as a Public Health Hazard, has shown that: "If two populations are considered, the one - the general population, and the other - an industrially-exposed population, the difference in amount of hearing loss is between 10 percent and 30 percent for all ages. At age 55, 22 percent of the individuals in a non-noise exposed population show significant hearing impairment; in an industrial group the percentage is 46 percent."

Studies have shown that workers in noisy plants (steel and ball bearing) have abnormally high incidences of cardiovascular problems and that there are complaints of impotence, fatigue and insomnia.

Noise is damaging not only if it is exceptionally loud, but if it is continuous. The worker who is exposed to moderately loud noises (85 dB-A) for eight hours a day, for years at a time, is running considerable risk.

Noise rarely occurs in a continuous flow; it hits peaks and lows, occurs at a variety of frequencies, comes from a variety of sources.

Tasks requiring concentration, and verbal communication are often impossible, or intensely frustrating in a noise environment.

Noise Outside the Factory - Men using heavy equipment at construction sites are cause for considerable concern. Unless effective remedial measures are undertaken, the vast majority of heavy equipment operators of the future will be victims of significant noise-induced hearing loss.

Industrial noise also affects those outside of the plant or company. Most noise "leaks" come through the intake and discharges for fans and compressors, ducts and piping running outside the building, from open windows, from blowers and fans and from machinery noises such as punch presses, machine tools, forging equipment, and printing presses. Often such noise is accompanied by air and water pollution, further increasing the burden of the "blue collar" worker.

### Physiological and Psychological Effects of Noise

Loud, unwanted sound produces deafness. The first hearing loss occurs in the higher frequencies. An individual suffering from this sort of deafness will notice that he cannot hear high frequency consonants such as f, th, sh, ch, s, t, or the ringing of a telephone, or the high voices of children. The first effect usually is a shift in the hearing threshold. Temporary deafness and ringing in the ears function as warnings. If the noise level continues, hearing sensitivity will be decreased.

In addition to hearing loss, noise is linked with cardiovascular diseases, nervous diseases and gastrointestinal problems.

Experiments have shown that levels of noise which are not loud enough or continuous enough to produce hearing loss can still cause an involuntary constriction of the peripheral blood vessels. Loud, unexpected sounds can cause a variety of physiological reactions. For example, sudden loud noises can cause the heart to beat rapidly, the blood vessels to constrict, the pupils to dilate, and a spasm to occur in the esophagus and intestines. These symptoms probably lessen considerably as adaptation to the noise occurs.

Animal experiments also show that noise tends to cause elevated levels of cholesterol in the blood, furthering the tendency toward constricting the blood vessels. Thus, the functioning of the circulatory system, as well as the ear, is endangered.

The hardest to quantify, and yet perhaps the most important aspect of noise, is its effect on the quality of life. The interruption of sleep and conversation, the strain at having to shout and listen over the roar of air compressors and the pounding of jackhammers are just isolated examples of the indignities caused by noise.

Unnecessary noise seems to be particularly provoking and has been blamed for triggering murder, suicide and insanity. Less dramatic and probably too common to document are the cases of sudden loss of temper, child abuse, headache, sleeplessness, depression and irritability caused by the intrusion of noise into our private lives.

The idea that people become adapted to noise is a myth. The circulatory system does not adapt. Also, studies have been shown that people who work in high noise levels during the day are more, rather than less, susceptible to aggravation from noise after work. The factory worker is more apt to explode at his noisy children than the man who works in a quiet office.

It is not generally realized that sound affects the human organism in a variety of ways. Not only does noise affect the ear, it also affects the brain. The reticular formation is located at the base of the brain. It acts as an information alert and relay system. We are generally not conscious of the workings of this area of our brain; it is nevertheless, very important to our survival. According to Etienne Grandjean:

"The reticular formation is somehow a central alerting or activating system which enables the whole organism to react in an adequate way to the given outworld situation. The stimulation of the reticular formation by noise...will arouse the animal or human being in order to enable it to focus its attention to the external acoustical information...Therefore, the ability of paying attention depends on the reticular formation.

"Noise provokes physiological reactions over which we have no control: the eyes become dilated; sweat, gastric acid and adrenal glands are activated; the blood vessels contract; the stroke beat of the heart is reduced.

"Thus noise means 'danger' to the most primitive pith of our beings. Without any thinking being necessary, the human being prepares itself for danger; it gears up for imminent attack. It seems like an evolutionary vestige of what would be lifesaving readiness from the roar of a saber-toothed tiger, a mastadon, or a volcano. And the 'roar' does not need to be so loud to arouse this animal reaction within us. Most researchers agree that levels of only 70 dB-A can do this, while 85 dB-A certainly can. The trouble comes in today's modern world, where bodily responses to noise are too many and too often. Thus, what developed over millions of years as protective physiological responses now only serve to deteriorate the body."

A leading audiologist has indicated that when exposed to 90 dB-A of white noise (in his volunteers), there was a change of distolic pressure, a decrease in the stroke volume of the heart, a decrease in the blood supply and other negative cardiovascular effects.

Sontag has done research on the effect of noise upon the reproductive system of female rats. His studies indicated that noise may cause: infertility, increased numbers of stillborn babies, death in infant rate,

inherited defects, malfunctioning in infants (cleft palate, etc.), earlier sexual maturity, bleeding disorders and congenital malformation.

Recent testimony before a state legislative committee on jet noise in New York cited paranoid delusions, hallucinations, suicidal and homicidal impulses as some of the possible consequences of continued sleep deprivation. Even if one is not awakened by the noise, there is likely to be a shifting of the stage of sleep. Each of the stages is important to human health, and such shifts can be stressful. Sleep disturbance is very distressing for: the young, the old, the ill and women. (Drs. William Wilson and William Zung have found that women are three times more likely to be aroused from sleep by noise than men.)

England's Wilson Report states: Of all noise's effects, repeated interference with sleep is least to be tolerated.

Though there has been little information on the subject of noise disorientation, it is a worthy field of investigation. Too much noise removes the audital cues which are so necessary to distinguish parts of the environment. Too much noise has a jamming effect, is over stimulating, and stressful.

Verno Knudsen feels that noise, like smog, is a slow agent of death. If it continues to increase for the next 30 years, as it has for the past 30, it could be lethal.

#### Noise Burdens of the Urban Poor

When environmental burdens such as noise are added to the burdens of poverty and racial discrimination, can they cause collapse?

THE NEW YORK TIMES OF APRIL 16, 1968:

Innis' son, 13, Killed in Bronx

"Negro accused of Shooting Boy in Dispute over Noise  
The 13-year-old son of Roy Innis, the militant associate national director of the Congress of Racial Equality, was shot and killed last night outside a Bronx apartment house a short distance from his mother's home.  
The police quickly took a 49-year-old Negro man into custody.

"According to the police, the boy, Roy Innis, Jr., was playing with his brother, Alexander, 12, and two other boys outside 1142 Union Avenue about 7:45 p.m. As the youngsters shouted, wrestled and raced in and out of the three-story building, the police said, a man leaned from his second-floor apartment and called:

"STOP THE NOISE. (emphasis added)

When the boys failed to heed the warning, the police said, the man came downstairs with a pistol and, as the boys started to run, fired a shot that struck young Innis in the back."

This incident tragically shows what noise can do to people already at the breaking point.

In our cities there are many, and not just the poor, who are often driven to distress and distraction by noise and many other urban factors.

In New York City's report, Toward A Quieter City, the medical subcommittee advocated noise control to alleviate psychological distress. They cited calculations of a definitive study, "Mental Health in the Metropolis," showing 81 percent of the population experienced mild to incapacitating symptoms and 42 percent showing moderate to severe symptoms. The medical committee concluded: "...a good proportion of our population does indeed experience distressing psychological conflicts, and the added upset of preventable noise is an area, which in terms of prophylaxis should be directly confronted."

The long and loud noises of the city cause hearing loss and tension, but the inner city is filled with another kind of noise which contributes to incidents like the Innis tragedy. This other kind of noise is noise which annoys, alarms, irritates, or upsets. Theodore Berland points out that the most annoying sounds are those that are loud, high pitched, inappropriate to your own activities, and unexpected.

City noises often have these characteristics. For example:

Loud - police sirens, fire sirens, ambulance sirens.

High pitched - screeching tires.

Intermittent and irregular - the rumble and roar of passing trucks.

Produced from a hidden or moving source - movement in the halls or rats in the walls.

Inappropriate to your own activities - kids carousing on the street.

Unexpected - garbage cans clanking or cars backfiring at dawn.

Can such noises contribute to the high rate of hypertension among the urban black population?

The urban poor are particularly burdened by traffic noise:

1. Highways are more often built through or near poor neighborhoods, because land values are cheaper and the poor do not have the money or power to successfully oppose highway construction.
2. When highways are built through or near middle class neighborhoods, the adjacent housing becomes less desirable and economically more available to the poor because of the noise and poisonous fumes which are created.

The fact that traffic noise creates a particular burden for the urban poor contains a perverse irony. Ninety percent of the non-poor own cars while only 30 percent of the poor do.

The inner city residents, as has been pointed out, live in the noisiest and most crowded sections of the urban environment and do not have the money to pay for insulated housing or privacy. This noisy environment may very well be interacting with other environmental and socio-economic factors in their lives to reinforce the cycle of poverty and dependence. A 1967 Public Health Service study indicated that the prevalence of binaural hearing impairment decreased as the amount of family income and education increased. In fact, 55 percent of those persons with binaural hearing loss had family incomes less than \$4,000.

It has also been suggested that because of the lack of verbal stimulation given inner city children, the noisy environment consists of essentially random and meaningless noise. The children learn, in self-defense, to screen these noises out of their attention patterns. This means, if true, that in the formative preschool years, many inner city children are learning inattention on an organized basis.

## II. THE NOISE PROGRAM

On the Federal level, very little progress has been made toward alleviating the noise problems of the inner city. Industrial noise and aircraft noise have been subjected to Federal scrutiny, but these are not the primary woes of the inner city resident. Several pieces of legislation now before Congress offer some hope for alleviating the problem. Among some of the provisions being considered are labeling requirements for noisy consumer products, the development of maximum permissible noise levels for transportation vehicles, Federal grants to State enforcement agencies and provisions for citizens' suits against noise polluters.

The Environmental Protection Agency's noise control activities were authorized by the "Noise Pollution and Abatement Act of 1970 (Title IV of the Clean Air Act)." The EPA Office of Noise Abatement and Control was established in April 1971.

The broad mission of the new EPA unit is to identify and classify causes and sources of noise and determine their effects on public health and welfare. The enabling legislation calls for the preparation of a special report to the Congress which will include information on present Federal programs; State and local laws, regulations, and enforcement capabilities; the state-of-the-art on control technology, and recommendations on a long-range noise abatement and control program.

The law also requires that, for the first time, all Federal agencies include noise as a consideration in preparing statements describing the environmental impacts of their various projects. The Office of Noise Abatement and Control has been given the responsibility for reviewing these statements before they are submitted to the President's Council on Environmental Quality.



Until some noise abatement legislation is passed, however, the primary activity, or inactivity, with regard to urban noise remains the responsibility of State and local governments.

It is currently within the purview of the States to set ambient noise level standards, although few States have moved in this direction; California being a notable exception. Providing State authorities with the necessary means of enforcement is an important but often overlooked concern in this area.

On the local level, efforts to mitigate urban noise problems are also few. A notable exception is Memphis, a city in which an ordinance against horn-honking and an anti-noise public attitude campaign have earned it the reputation of being the quietest city in the country.

In New York, an ordinance prohibits the use of sirens by city-operated ambulances. Other localities restrict the operation of heavy trucks in their cities during certain hours of the night.

Passage of any of the noise abatement bills now pending before the Congress would give the Office of Noise Abatement and Control or EPA's Administrator broad powers in dealing with this problem.

On the local level, adoption and enforcement of noise abatement ordinances and regulations could make life within urban centers quieter and more livable. More effective land use planning, zoning ordinances, building codes and transportation controls could ease the noise burdens of the inner city.

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### III. THE NOISE RECOMMENDATIONS

#### 1. Noise Legislation

The first and most pressing need of the noise program is legislative authority in the fields of standard setting and enforcement.

The Task Force recommends as a priority action that the Administrator adopt as a personal challenge the passage of the pending noise legislation. EPA should continue to seek enactment of the pending noise legislation. EPA's effectiveness in the noise abatement field depends upon the passage of this enabling legislation.

#### 2. Public Education Program

For legislation to be effective, people need to know about it and support its aims. Without knowledge and support, legislation is likely to be ineffectual. This is particularly true in the noise control field. The Task Force passes along a recommendation made by the New York City Task Force on Noise which advises:

"Educate before you legislate." This advice was also the recommendation of a predecessor task force in New York. In its report, "City Noise," dated 1930, was the statement: "Prohibition has demonstrated only too well the disaster that inevitably engulfs those who legislate before they educate."

EPA's Office of Noise Abatement and Control is currently conducting hearings on noise pollution in major cities to gain information on and possible solutions to noise problems. A bonus from these hearings has been public education. Additional public education efforts should be undertaken immediately to assure the success of the legislation.

The Task Force recommends that the Administrator and key senior staff personally deliver at least one major speech, or release a major article to a national magazine, on a once-a-month basis for the next nine months under the theme: "Let's Lower The Noise in our Cities."

To further increase national awareness of the growing noise problem, the Task Force recommends that \$100,000 be allocated to ONAC and the Office of Public Affairs for public education efforts to disseminate information on noise, its sources, effects, and control techniques as well as what city residents can personally do to abate noise.

To assist city governments in their noise abatement programs, the Task Force recommends that the Administrator convene an internal action group of attorneys detailed to ONAC, with a \$50,000 budget for consultants, to accelerate present efforts of ONAC to develop a model noise control ordinance for city governments by January 1, 1972. This model ordinance should then be given wide distribution. ONAC should be given the manpower for advocating its adoption and for updating the status report of city ordinances.

ONAC should maintain a listing of these city ordinances so that by June 1972 a progress report can be made on the number of cities which have adopted adequate noise control authority. Such a progress report could be presented at the June 1972 Stockholm Conference on the Human Environment.

### 3. Voluntary Compliance Program

Voluntary compliance, the "achievement of the possible," is the exercise of leadership, the power to persuade. Through the public education program, speeches, and technical trade journal articles, EPA can carry on a campaign to encourage the manufacture of products with "quietness" built in at the drawing board stage of production. The design stage is the point in time when industry can most cheaply incorporate quietness features. In fact, at the design stage, thought given to noise control features can result in cost savings and/or other quality improvements.

Consumer Information - The Task Force recommends that contracts be made to Consumers Union of U.S., Inc. and Consumers' Research Inc. to conduct a product noise measurement program. The publication of their measurements in magazines widely read by consumers would create a gentle but persistent encouragement for product designers to incorporate quietness as a feature of their products.

The Task Force specifically recommends these two organizations because no other organizations would create as effective encouragement. The amount of the grants has been estimated at \$100,000 to each group to enable each to adequately equip for the task. Emphasis should be placed on measurement of auto, truck, motorcycle and tire noise. This recommendation ought not to be delayed for lack of agreement on protocols for measurement. Allowing the grant recipient freedom to choose his own protocol will engender a healthy competition on ways for both measuring and designing quieter products. Also such grants will provide valuable information to ONAC on products and act as a pilot program in noise measurement.

ONAC ought to be given the resources to monitor the progress of the voluntary compliance program. As quieter products are voluntarily developed, ONAC should be in a position to document the veracity of the improvements and to publish an annual list of these new products. Such actions could avoid repeats of the fate of the "quiet garbage can." A quiet container was developed and marketed at a premium cost of \$1.50 per can. Lack of individual interest and lack of a mandated market caused it to be withdrawn from the market.

Historically, voluntary compliance through agreements with industry has been a highly cost effective and relatively painless mechanism of progress. In the pollution control field, outstanding precedents are: (1) The voluntary agreement with the automobile industry to install crankcase emission control on 1962 and later model automobiles. This was achieved by HEW Secretary Abraham Ribicoff when Federal emission standard setting authority was non-existent. (2) More recently a voluntary agreement was reached with the airline industry to install smokeless combustors on all medium-long range aircraft by the end of 1972. These smokeless combustors are estimated to reduce particulate emission by 70 percent, carbon monoxide emissions by 20 percent and hydrocarbon emissions by 50 percent. This agreement was achieved by HEW Secretary Robert Finch. (3) Recently, EPA effected a voluntary agreement with detergent manufacturers to discontinue the use of NTA in their products. The Task Force recommends that the voluntary compliance approach be utilized vigorously in noise abatement since it can result in significant achievements at relatively low cost to the industry, the government, and the consumer.

The Task Force finds that the number of motorcycles in use is growing at an alarming rate. Their associated noise levels are terrifying. ONAC already has substantial information on motorcycle noise and possible noise control levels on which to base an agreement with motorcycle manufacturers. The Task Force therefore recommends that efforts be made to obtain a Government-industry voluntary agreement by June 1972 on noise levels of new motorcycles.

The Task Force finds that trucks are major sources of noise in the inner city areas. The Task Force recommends that efforts be made by ONAC and the Office of Voluntary Compliance to obtain a voluntary agreement by October 1972 with truck manufacturers to begin building quieter trucks.

To assure that both the schedules for voluntary compliance and the degrees of noise reduction are as progressive as possible, and to avoid criticism that they are not; the Task Force recommends that the Administrator's Urban Advisory Council be involved in negotiating voluntary agreements.

One other tool that the Administrator should use to encourage voluntary compliance is to staff ONAC with a coordinator to work with GSA and DOD to insure that all future procurement of vehicles and noise-producing equipment conform with the lowest possible noise production characteristics. The Task Force recommends that the Administrator provide ONAC with resources to immediately hire two professionals to carry out this function.

#### 4. Noise Abatement Program Under Existing Authority

Under the Noise Pollution and Abatement Act of 1970, the Administrator is given the authority to review the present activities of Federal agencies which he believes amount to a public nuisance or are otherwise objectionable. Furthermore, the National Environmental Policy Act, and Section 309(a) of the Clean Air Amendments oblige the Administrator to review and comment on the proposed actions of Federal agencies which may cause noise pollution. This authority carries with the responsibility and obligation to achieve results.

One of the most important sources of noise pollution for the inner city is freeway traffic. The DOT is funding highway construction projects in most, if not all, of our major cities. Through conscientious review of environmental impact statements, EPA ought to be able to reduce the noise impact of these projects on urban areas. EPA, by strongly recommending the incorporation of noise control features into the design of urban highway projects, can and should become an effective advocate for the protection of the inner city environment.

Aggressive review and comment may be time-consuming and difficult, but it is absolutely imperative if we are to carry out our obligation to the urban poor. (Such a review is also imperative from an air pollution point of view.) The Task Force recommends that the Administrator organize and staff an urban highway impact review unit within either ONAC or the Federal Activities Office to carry out this obligation. At least five people should be immediately assigned to carry out this function.

Aircraft noise is a particularly severe problem for millions of urban Americans living in the vicinity of airport takeoff and landing routes. Areas where the problem is particularly severe are likely to house low income or urban poor residents. EPA can do something to help. The FAA periodically authorizes changes in approved takeoff and landing routes, patterns and procedures. STARs, as they are called for Standard Takeoff and Arrival Routes, should be preceded by draft environmental impact statements and reviewed and commented upon in such a manner as to advance the public interest of the urban poor. The Task Force recommends that EPA press for a decision from CEQ to require environmental impact statements from FAA and STARs. At least one attorney, with assistance, should be given full-time responsibility for review and comment on all actions of the FAA having environmental impact, including STARs. His

function would be to advocate procedures, routes, and actions that can be taken by the FAA to protect the urban population.

One last source of noise that EPA can attack through NEPA is radio and TV noise. EPA can request the FCC to encourage producers of radios and TVs to limit the maximum volume of sets to, let's say, 75 dB-A (equivalent to the noise of a freight train at 50 feet). This would be similar to and simpler than the requirement that all TVs be equipped for both UHF and VHF reception.

Similarly, the FCC could be encouraged to require that stations frequently urge viewers and listeners to lower the volume of their sets after 10:00 p.m. The FCC also could require commercials to be broadcast at the same volume as the regular programs. At present, many commercials are much louder than the interrupted program.

In short, EPA should take on an advocate role in protecting the environment through voluntary actions, the vigorous exercise of its authority, and leadership.

Vigorous implementation of NEPA can be a mechanism for alleviating the environmental noise burdens of the urban poor. EPA has not yet won any major battles for the poor with this weapon. If the Administrator charges EPA with both its mandate and the need of the people, many victories probably could be won between now and June 1972.

#### 5. ONAC Staff Increase

The Task Force finds that the Office of Noise Abatement and Control is inadequately staffed. "Inadequate" is an understatement since a total of 25 people, part and full-time, cannot carry out a national noise control program responsive to the nation's needs. As an interim, but immediate measure, the Task Force recommends that the Administrator exercise his managerial prerogatives to permit ONAC to hire at least 35 additional people by December 1, 1971, to carry out present requirements and the additional requirements envisioned in this report.

#### 6. National Noise Monitoring Program

The Office of Noise Abatement and Control should be allocated sufficient funds and manpower to conduct a noise monitoring program in our major cities. This monitoring activity is necessary in order that the efficiency and effectiveness of EPA's noise control efforts can be maximized.

An estimate has been received by the Task Force that a staff of 10 to 15 subprofessionals and one professional audiologist would be required for a noise monitoring program in ten cities. Funds for equipment and personnel should amount to about \$175,000 per city. Such a program should be implemented immediately in Demonstration City and the rest implemented upon passage of the legislation.

TABLE III-D

## Sound Levels of Some Noise Sources Found in Different Environments

<u>Overall Level in dB</u> (SPL re 0.0002 in Microbar)	<u>Industrial</u> ( <u>&amp; Military</u> )	<u>Community</u> ( <u>Outdoor</u> )	<u>Home</u> ( <u>Indoor</u> )
- 140 - Painfully	Carrier deck jet operation (140 dB)		
- 130 - Loud	Oxygen torch (126 dB)		
- 120 - Uncomfortably Loud	Pneumatic chipper (122 dB)		
- 110 -	Pavement breaker (115 dB)		Discotheque (120 dB)
- 100 -	Textile loom (122 dB)	Jet aircraft flyover @ 1000 ft. alt. (110 dB)	
- 90 - Very Loud	Cut-off saw (106 dB)	Power mower (103 dB)	
- 80 -	Farm Tractor (103 dB)	Excavation-Rock drill @ 50 ft. (100 dB)	
	Newspaper press (101 dB)	Motorcycles @ 25 ft. (96 dB)	Food blender (90 dB)
	Bench lathe (95 dB)	Heavy truck @ 50 ft. (93 dB)	Alarm clock (85 dB)
	Milling machine (90 dB)	Train whistle @ 500 ft. (90 dB)	Garbage disposal (83 dB)
	Bed press (86 dB)	Passenger car, 65 MPH @ 50 ft. (76 dB)	Clothes washer (82 dB)
	Key-punch machine (82 dB)	Church chimes @ 150 ft. (70 dB)	Living room music (78 dB)
Moderately Loud		Light traffic @ 100 ft. (66 dB)	Dishwasher (76 dB)
- 60 -			TV-audio (73 dB)
- 50 - Quiet			Vacuum (72 dB)
- 40 -			Toilet flush (65 dB)
- 30 - Very Quiet			Conversation (60 dB)
- 20 -			
- 10 - Just Audible			
- 0 - Threshold of Hearing			



## PESTICIDES

### I. THE PESTICIDES PROBLEM

#### Pesticides in an Urban Context

The Misuse of Pesticides  
Many Application Methods  
Lack of Usage Data

#### Pesticides and Their Effects on People

Disease  
Ethnic Differences  
Routes of Entry  
Sex Differences  
Age Differences

#### Pesticides and the Urban Poor

Poverty, Pests, and Pesticides  
Poor Housing and Pesticides  
Poor Education and Pesticides  
Poor Work and Pesticides  
Poor Children and Pesticides  
Poor Diet and Pesticides

### II. THE PESTICIDES PROGRAM

### III. THE PESTICIDES RECOMMENDATIONS

Public Education Program - Short Range  
Public Education Program - Long Range  
Improved Labeling Program - Short Range  
Improved Labeling Program - Long Range  
Pesticides Research Recommendations - Long Range

## P E S T I C I D E S

### I. THE PESTICIDES PROBLEM

#### Pesticides in an Urban Context

The term "pesticide" refers to a wide variety of chemical substances or mixtures of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life which are considered by man to be "pests," i.e., inimical to human interests.

It has been reported that there are currently some 900 active pesticide chemicals formulated into over 60,000 preparations in the United States. In 1969, production and sales of synthetic organic pesticides was on the order of 1.1 billion pounds, of which about 20% was exported. Slightly more than half of all pesticides produced are used in farming. (About 45% is actually used on crops.) Government agencies use about 5%; residential and industrial users account for the rest. In light of these figures, it is little wonder that the use of pesticides for domestic purposes has become commonplace. And as Dr. Norman E. Dyer, toxicologist in EPA's Dallas office, reported to the Task Force, "Pesticides are sold under many trade names which may tend to confuse the average consumer.

The very existence of these slightly active compounds poses potential and often real problems.

The Misuse of Pesticides - Accompanying the increased application of household pesticides is an increased danger of misuse, accidental poisoning and increased contamination of the home environment. Homeowners are seldom acquainted with the scientific rationale of safe application and frequently fail to read and heed the instructions contained on the label. Thus, problems of overuse and misapplication of pesticides have reached the point where contamination by household pesticides may constitute a significant proportion of the total population exposure. One report also advises that while household sprays may be convenient to use, and may satisfy certain hostile impulses, that their use rarely reduces insect infestation. Baits and repellents are recommended as being far more effective, and safer.

Many Application Methods - Of special concern is the development of a large number of pesticide-dispensing devices intended to simplify the reduction of pests in the household. Shelf paper impregnated with pesticides and evaporators (e.g., "no pest" strips, pellet vaporizers, etc.) intended to produce an insecticide aerosol for insect control are examples of potentially hazardous installations in poorly ventilated areas.

Lack of Usage Data - There is a paucity of information available concerning the type and quantity of pesticides used for domestic purposes in the United States. Odd as it may seem, no nationwide figures are collected routinely on the use of pesticide chemicals; this is true regardless of whether the use be agricultural, institutional, or domestic. United States domestic pesticide sales were reported by the USDA to total \$1.7 billion for 1969 (latest sales figure available). Of this figure, approximately \$1.2 billion was expended for agricultural use; \$255 million for industrial, institutional, and government use; and \$255 million for household, lawn, and garden use.

Usage Patterns Vary - Where information on the domestic uses of pesticides is available, usage patterns are found to vary widely. A case in point would be reports from the Community Studies Pesticides Projects in Utah and Arizona for 1968. These reports indicated that domestic usage of pesticides in Salt Lake County, Utah, accounted for approximately 50% of the pesticide usage in that County, whereas in the State of Arizona study domestic usage accounted for only about 0.6% of the total.

#### Pesticides and Their Effects on People

Disease - In one study by W. B. Deichman and J. L. Radomski autopsied tissues from persons succumbing to chronic disease suggested a relationship between elevated pesticide concentrations in adipose tissue in cases of liver cirrhosis, carcinoma, and hypertension. However, there is some question regarding these findings, since there was a great variability in pesticide concentrations found, and the results were complicated by the diverse backgrounds of the deceased and by the ravages of disease and death.

Another study by B. P. Weiner and R. M. Worth, conducted in Hawaii, suggests a causal relationship between frequent use of household insecticide aerosol sprays and increased prevalence of respiratory impairments, such as asthma, chronic bronchitis, and sinusitis. However, the report cautions that testing for causal effects of specific components of the sprays (e.g., active ingredients, petroleum distillates, etc.) by inhalant challenge to volunteers is necessary before a precise association, if any, can be delineated.

Ethnic Differences - There have been numerous studies of pesticide residues in human tissue and blood. The general consensus from such reports is reflected by data from epidemiological studies in Florida which indicate that there are race-associated differences (Negro more than Caucasian) with respect to storage of DDT and its derivatives (W. F. Edmundson, "Dieldrin Storage Levels in Necropsy Adipose Tissue," Pesticide Monthly Journal, Vol. 2, 1968) (J. E. Davies, "An Epidemiological Application of the Study of the DDT Levels in the Whole Blood," Amer. Journal of Public Health, Vol. 59, 1969), but no such race-associated differences for another persistent pesticide.

The explanation for this association of greater fat and blood levels of DDT-derived materials with the Negro race in the United States is not readily apparent. However, the most plausible explanation would attribute this to socioeconomic factors and would incriminate such aspects as poor housing, inadequate garbage collection, deficient window screening, etc., all tending to further the problems of pest control and the need for greater domestic use of insecticides.

Routes of Entry - Pesticides may gain entrance to the body through the intestine subsequent to ingestion; through the lungs as a result of inhalation of air-borne pesticide-laden dusts, vapors and aerosols; by penetration through the intact skin; and by absorption directly into the bloodstream through the broken skin.

The relative importance of these pathways varies to a large extent, according to the population group under consideration. In the general population, ingestion of residues remaining on foods is probably the major route by which pesticides enter the body. Inhalation may be a factor, particularly in lower income households, where "bug-bombs" are used in the effort to control cockroaches and other pests. Percutaneous absorption also may be a significant route of entry among members of the urban poor population.

Sex Differences - Insofar as tissue residues of pesticides are concerned, some investigators have reported a significant association of residues with sex, others have failed to find any differences, and still others find sex differences but only in the Negro race. The apparent discrepancies in the reported data are attributed to a small sample size; in the largest survey available, which was conducted by the Human Monitoring Program, no differences due to sex were observed.

Age Differences - Data from the Human Monitoring Program Report, and elsewhere, indicate a positive age association for DDT and its residues, including DDE. The body burden of DDT increases as age increases.

#### Pesticides and the Urban Poor

The urban poor live in a hostile environment where, daily, they are subjected to conditions of substandard housing, improper sanitation, inadequate garbage collection, pests and their associated diseases. Pesticides are used by many of these residents to combat rodents, roaches, and other vermin which invade their homes and bring discomfort and illness.

Poverty, Pests, and Pesticides - Pesticide-usage patterns vary considerably. A pesticide use survey by J. E. Keil (Agricultural Chemistry, August, 1969) of urban households in Charleston, South Carolina, contrasted the use of household pesticides by middle-class white families with that of non-white families (mainly Negro) of the lower socioeconomic level. This

survey indicated that whereas 83% of the white families sampled used pesticides in their home, 97% of the non-white families employed household chemicals for pest control. The prime concern of non-white families appeared to be common household insects (roaches, mosquitoes, flies), whereas whites were more frequently concerned with gnats, termites, fleas, weeds and mold. Both ethnic groups seemed equally plagued by ants and rodents. Accordingly, non-white families applied pesticides inside their homes more intensely than did whites, and yard and garden applications were found principally among whites.

At the same time, it was also indicated that private pest control operators were utilized by 51% of white families as compared to only 28% of non-white families.

Grocery stores were the usual source of household pesticides for both races. Places of pesticide purchase differed little between the races, except that whites patronized feed and seed stores more frequently, probably a reflection of a greater interest in ornamental plants and gardening.

Both white and non-white families commonly ignored common-sense safety precautions in the use of household chemicals. Locked storage was not employed by 88% of all families; 66% stored the pesticides within easy reach of small children; 54% stored the chemicals near food or medicine; and 66% never wore protective gloves during use or washed their hands after the application.

Poor Housing and Pesticides - Dr. Norman Dyer portrays the pesticide plight of the poor. Substandard housing denotes dilapidated residential homes in deteriorated neighborhoods, located in the inner city. Most of these homes and/or apartments are owned by suburban landlords. They are in deplorable conditions, with holes in the screens of windows and doors or no screens at all, and cracks in floors and walls. The appalling situation results in an invasion of the premises by all kinds of pests, including flies, ants, mosquitoes, roaches, rats and scorpions; subjecting the residents to a greater exposure to disease-carrying organisms or to continuous exposure to pesticides as they attempt to eradicate their unwanted house guests. But the battle is futile, because of the housing condition, and the prevailing unsanitary local environment which is due to infrequent and improper garbage disposal, resulting in breeding grounds for rats and flies, and inadequate drainage which produces stagnant ditches of water, creating hatcheries for mosquitoes.

Many times in an effort to counteract these unsanitary environmental conditions, the cities may resort to frequent fogging operations which cause more pesticidal exposure to the residents.

Poor Education and Pesticides - In general, the urban poor are less able to choose the proper pesticide for the type of pest involved because of the lower educational levels. Consequently, chemicals are applied which are ineffective in eradicating the pest, resulting in an increase of the pesticidal insult to their health without an accompanying decrease in the vermin problem to which the pesticide is directed.

Additionally, there is extensive disregard for safety in the application of these chemicals in and around the homes, which is exemplified in the spraying and/or storage near food and sleeping infants. The defying of instructions is typified by the old adage, "if a little is good, a lot is better." (The Task Force heard another terrifying description of this typical reaction of the poorly educated: While profusely spraying a room, a mother began feeling dizzy. She stopped. Her reaction then was that the stuff must be good and, with enthusiastic determination, began spraying again.)

Poor Children and Pesticides - The proper disposal of various types of "empty" pesticide containers presents yet another health problem to the urban poor. These discarded containers constitute a potential health hazard, mainly to children. These so-called "empty" containers are never completely empty. Several fatal poisoning cases have been reported in the literature as a result.

Poisoning by pesticides occurs predominantly in children. The facts are that death of an estimated 200 people in the United States last year alone was attributed to pesticides and more than 5,000 people in the United States have been involved in nonlethal poisoning due to pesticides since records have been kept. Information on chronic effects on humans is not generally available. It has been found that 15.2% of the total cases in persons 10 years of age or older were in non-whites, and an additional 13.6% were in persons with distinctly Spanish names. These percentages are higher than the corresponding percentages of these ethnic groups in the general population.

Poor Diet and Pesticides - The urban poor are not as cognizant of the importance of sanitary measures to remove residual pesticides from fruits and vegetables, which contributes to their greater pesticide exposure.

Concomitantly, as a result of the economic status of this large segment of our population, the purchase of lower grade food products is the rule rather than the exception, resulting in consumption of more fatty foods, which contain the greater concentration of pesticides, again compounding their pesticide exposure.

In addition, the purchase of non-graded meats, eggs and other food products, direct from small farmers or through small businesses whose batches have not been subjected to FDA pesticide tolerances and regulations, results in more exposure.

In alliance with these observations, malnourished children are more apt to "chew" on window sills which may be heavily laden with pesticides.

The tolerances set from animal studies and extrapolated for humans is based on healthy, well-fed individuals; as health conditions decrease, the toxic effect is enhanced. Another avenue of increased toxicity occurs when stored pesticides are released from the adipose tissue as a result of starvation.

It is the expressed opinion of the author and others that the preceding propositions represent some of the contributory causes for the greater incidence of prenatal and infant deaths, chronic illnesses, shortened life expectancies and, in general, the degraded quality of life existing in the communities of the urban poor. Yet, they are the least able to pay for medical care; consequently, they are the last to seek it, which results in the existence of chronic morbidity.

Furthermore, the efficacy of many drugs is reduced when treating persons heavily exposed to pesticides due to a decrease in drug half-life resulting from an increase in drug-metabolizing enzyme activity.

B I B L I O G R A P H Y  
(To Problem Section)

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## II. THE PESTICIDES PROGRAM

### A. PESTICIDES ACTIVITIES IN FUNCTIONAL TERMS, EPA

#### 1. Research and Monitoring Activities

The pesticides research program comprises studies on the causes, sources, transport, fate, and effects of pesticides on man, plants, animals, and the general environment. The results of these studies provide the scientific basis for setting safe tolerance levels and for determining pesticide use policy. The program also includes specific studies to verify the toxicity of new pesticide products and provide the bases for reviewing and approving or disapproving applications for pesticide label registrations.

In FY 1971, the program of research included investigations on the physiological effects and metabolism of pesticides, the measurement of pesticide residues in humans and various animals and plants, and special analyses and studies to support court actions. For FY 1972, studies on the toxicity and other effects of pesticides will be expanded. A large portion of the increased resources will support activities to be carried out at the National Center for Toxicological Research currently being jointly established by the Food and Drug Administration and EPA at the Pine Bluff Arsenal facilities in Pine Bluff, Arkansas. The work to be carried out at the Center will encompass the development of tests to be performed by the pesticide industry in evaluating its products, basic toxicological research, ecological research on the fate and effects of pesticides, and comparative epidemiological research to relate the effects of pesticides on test animals to the effects on man. Additionally, in order to support and strengthen the pesticide label-registration program, studies will be carried out on improved methods of testing the effects of pesticides and residues on food, feed, crops, soil, water, and air.

Activities in the pesticides monitoring program include:

- the development of monitoring technology.

- the collection of environmental quality data and information on sources of pesticide pollution.

- network monitoring (e.g., soil, estuarine, human) and special studies to assess amounts and types of pesticide residues in the environment.

## 2. Regulatory Activities

Pesticide regulatory activities include:

- the review of pesticide formulations for efficacy and hazard.

- the establishment of tolerance levels or exemptions for pesticides residues which occur in or on food, feedstuff, or raw agricultural produce to be marketed via interstate commerce.

- the registration of pesticides for use.

- the regulation of sale or use patterns when necessary.

- checking for compliance with label provisions.

- surveillance by field inspectors, and market surveillance of both domestic and imported products.

Enforcement activities include:

- the issuance of citations.

- compliance procedures, either through the voluntary or mandatory recall and removal of the product by the manufacturer, or through seizure of the product by EPA.

- initiation of cancellation or suspension proceedings.

## 3. Grant and Contract Activities

Grant activities are confined to research on pesticides, or a related research area such as alternatives to the use of chemical pesticides. The areas of research encompassed by the FY 72 pesticides research grants program include: ecological, chemical, microbial, physiological, biochemical, and toxicological.

Contract activities are exemplified by the community studies program. This program produces epidemiological information on the effects of pesticides on human health. Both long- and short-term clinical and sub-clinical studies are conducted. Currently, the community studies program is being conducted primarily through contracts with 14 universities and state health departments; additionally, intramural research is conducted to supplement the contract work.

A more detailed description of the community studies program may be found in the Appendix, Section IV.

#### 4. Other Activities

##### Technical Assistance

EPA provides technical assistance to other Federal, State, and local agencies for the control of pesticide pollution. Such assistance includes field investigations and special studies, many of which are joint endeavors, and technical advice and consultation to develop solutions for complex pollution problems. It also encompasses provisions of laboratory services. In addition, in-house training programs are conducted in field facilities for personnel of Federal, State, and local governments, and industry and educational institutions.

#### B. PESTICIDES PROGRAM ELEMENTS, EPA

##### 1. Research and Monitoring

(a) Title: Human Exposure Code No.: 510101

The ultimate objective of this research is to provide data necessary for the intelligent assessment of the hazard to human health of exposure to single pesticides, combinations of pesticides and pesticides in combination with other environmental factors. The studies will be concerned with the identification of pesticide metabolites and the effects of the parent pesticides and their metabolites on normal biological functions, including the function of the primate nervous system.

And, to study the teratological effects of environmental pollutants with special emphasis on pesticides. This project will methodically test environmental pollutants, first singularly and then in combination, and establish dose response data to allow an appropriate extrapolation of human risk.

To develop, evaluate and improve techniques and chemical methods for direct and indirect measurement of exposure of persons to pesticides under field use conditions and correlate with toxic effects; to be carried out in specific exposure situations such as in the home or garden, at or near pesticide applications in the field, in specific work areas of pesticide-formulating plants, and in various other areas where pesticides may contaminate man and his environment. Determine how such exposure of man and contamination of his environment can be reduced.

(b) Title: Animal Well-Being

Code No.: 510102

The objectives of this project are to determine the effect of pesticides and related chemicals on aquatic organisms and to study the effect on organisms of the interactions of more than one pesticide or a pesticide and a heavy metal under several environmental conditions; to determine tolerance levels for pesticides and effects of sublethal concentrations in aquatic ecosystems.

(c) Title: Residue Toxicology

Code No.: 510201

This is an activity to evaluate the acute and subacute toxicity of pesticides by different routes and various dosage levels and combinations to determine safe levels of exposure in laboratory animals and thus obtain data that will be useful in ultimately establishing possible safe levels of exposure for man.

The toxicity of at least six pesticides will be studied per year in laboratory animals (principally rats). This will include the determination of 1-dose LD<sub>50</sub> values for pesticides by the oral and dermal routes, 90-dose oral LD<sub>50</sub> values, and determination of the effect of these diets, or when given to female rats by injection during organogenesis.

Determine what chemical changes are taking place and factors responsible for such changes of pesticides or combination of pesticides producing increased toxic hazard or allergic reactions in workers who come in direct contact with pesticides or with residues on foliage or other surfaces in the environment. Determine hazard of pesticide spillage during transportation and storage and evaluate techniques and methods for determining hazard and for decontaminating surfaces.

(d) Title: Residue Profiles

Code No.: 510302

To determine levels, trends and other characteristics of pesticides, heavy metal and other related materials (1) in soils of major land use areas and major urban areas in the United States, in crops grown on these soils and other related environmental components; (2) in the ambient atmosphere, and (3) in the major estuaries in the United States.

(e) Title: Product Identification

Code No.: 510402

To develop multiresidue methods for determining the extent of human and animal exposure to persistent and biodegradable

pesticides and to develop, evaluate, and apply various instrumental techniques to a program of basic and applied pesticide chemical research.

- (1) Elucidation of the mechanism of action of pesticides and their metabolic products;
- (2) Development of a methodology and capability for the isolation, detection, identification, confirmation, and quantitation of pesticide residues, metabolites, and other chemical contaminants.

## 2. Regulatory

(a) Title: Products Registration Code No.: 521A01

Conduct timely and sound handling of matters requiring scientific review. The registration or re-registration of the pesticides product, the clearance of the suggested labeling, and the establishment of a tolerance or an exemption when residues on food may be involved.

(b) Title: Tolerance Petition Review Code No.: 521A02

Since the processing of a tolerance petition requires a thorough scientific review of the supporting data provided by the petitioner within the specified time limit, the basic objectives of this project are to complete a comprehensive and scientific review and to meet those deadlines.

The immediate objective is to reduce the processing time of new petitions and amendments and supplements to 90 days and to eliminate the backlog of petitions in review status beyond the statutory time limit.

(c) Title: Market Surveillance Code No.: 521501

The market surveillance program involves:

- (1) surveillance of domestic market and sample collection.
- (2) examination of imports.
- (3) monitoring of recalls.
- (4) monitoring of temporary permits.
- (5) monitoring of pesticide use patterns.
- (6) inspection of factories, books, and records.

(d) Title: Sample Analysis Code No.: 521502

General objectives are to: test and report surveillance product samples on a current basis; to develop new or improved test methods; and to re-examine methodology related to renewal registrations.

(e) Title: Monitoring of Accidents and Other Incidents Code No.: 510501

Insure there is a reporting system which will give 90 percent assurance of incidents and accidents involving pesticides and other related chemicals being reported; and provide for an investigational program incorporating Federal, State, and local governmental agencies that will insure prompt and effective remedial action.

(f) Title: Case Preparation Code No.: 521503

FY 1972 - Evaluate an estimated 8,000 pesticide samples. Prepare about 2,000 initial enforcement actions. Redesign the system and procedures for handling review actions. Initiate criminal actions against an estimated 20 companies. Complete recruitment and training schedule for implementation of FEPCA of 1971.

### 3. Grants and Contracts

(a) Title: Pesticide Exposure, Health Effects Code No.: 510301

General objectives are to determine in 14 study areas the levels of selected pesticides in human tissues, and in environmental media such as food, water, air and soil; to study the effects of pesticides upon the health status of a group of subjects selected for their known frequent contact with these chemicals; to determine the types of pesticides to which the human population within the 14 study areas are exposed, the ecologic factors which may effect their health status and to undertake such special studies as may be necessary to provide specific information on individual chemicals or attendant problems.

### 4. Other

(a) Technical Assistance

(1) Title: Intrastate Pollution Control Code No.: 530202

Assist States in insuring uniform application of registered uses of pesticides and provide routine surveillance of control programs.

Conduct regional workshops on regulatory problems and future manpower development for regional, state, and local officials.

(2) Title: Intrastate Pollution Control Code No.: 530202

Technical assistance is given at State and local levels to improve legislation and regulations; develop control programs; promote accident reporting; advise on disposal of pesticide wastes and containers; assist with plant safety practices; advise on scientific and technical skills development and provide a focal point for latest Federal regulations and scientific information.

(3) Title: Special Skills Development Code No.: 530602

To develop technical competence at regional, State, and local operating levels and in regional and state product analysis laboratories; to have standardized pesticide residue methodology.

Provide consultative services to State pesticide control agencies; assist State officials in planning for and providing training; and provide formal resident courses.

(4) Title: Training Pesticide Applicators Code No.: 521B03

General objective is to have uniform training programs for pesticide applicators functioning in all fifty States by 1977.

(b) Technical Information

(1) Title: Intergovernmental Cooperation Code No.: 530301

To collect, store, and disseminate information on all aspects of pesticides available within Pesticides Programs, other EPA programs, and from other agencies and scientific users, as well as to the general public.

## C. PESTICIDES BUDGET, EPA

The Table below indicates the allocation of funds, in functional terms, for pesticides in FY 71 and FY 72.

<u>Activity</u>	<u>FY 1971</u>	<u>FY 1972</u>
Abatement and Control	\$ 11,167,000	\$ 13,629,000
Research, Development, and Demonstration*	5,031,000	7,846,000
<u>Manpower Development</u>	<u>-0-</u>	<u>-0-</u>
TOTAL	\$ 16,198,000	\$ 21,475,000

\*includes the Grants Program (FY 71 = \$783,000; FY 72 = same)

## D. PESTICIDES PROGRAM ACTIVITIES, OTHER AGENCIES

1. Department of the Interior (Bureau of Sports Fisheries  
and Wildlife)

(a) Research and Monitoring

Conducts substantial research and monitoring activities pertaining to pesticides on both fish and wildlife.

(1) Fisheries Services

Conducts research studies concerned with, and anticipatory to, the requirements for information necessary to the management of this natural resource; does not conduct studies relating to pollution abatement. The Fisheries Service budget for pesticides-related research:

FY 71 = \$730,000 and FY 72 = \$730,000.

Also maintains a nationwide monitoring system, some of it on a contract basis, for sampling representative fish species for a continuous assessment of pesticide residues in marine species. The total budget for this type activity:

FY 71 = \$216,000 and FY 72 = \$266,000.



## (2) Wildlife Services

Basic objective of pesticides wildlife research studies is to assess the hazard of pesticides upon natural populations. The Wildlife Services budget for pesticide-related research:

FY 71 = \$1,747,000 and FY 72 = \$1,817,000.

Monitoring activities are diverse: protect wildlife by forecasting hazard; monitor for tissue residues; render technical assistance, as needed. The total budget for the monitoring program:

FY 71 = \$132,000 and FY 72 = \$182,000.

## (b) Regulatory

None; function transferred to EPA.

## (c) Grants and Contracts

A small percentage of the monitoring budget for both the Fisheries and Wildlife Services is allocated for contract work:

Fisheries Services, FY 71 = \$26,000 and FY 72 = \$50,000.  
Wildlife Services, FY 71 = \$10,000 and FY 72 = \$10,000.

2. Department of Agriculture (Agricultural Research Service;  
Forestry Service)

The USDA has extensive programs on pesticides and related activities (e.g., pest control, biological alternatives, etc.); these programs include research and monitoring, regulatory, and grant and contract activities. The objectives of these USDA programs are:

to gain knowledge of the taxonomy, biology, ecology, physiology, pathology, metabolism, and nutrition of pests and host plants and animals.

to improve and develop means of controlling pests by nonpesticidal methods.

to develop safer and more effective pesticide use patterns, formulations, and methods of application; and improved methods for detecting, measuring, and eliminating or minimizing pesticide residues in plants, animals, and their products, and in other parts of the environment.

to study the toxicity, pathology, and metabolism of pesticides and investigate levels, effect, and fate of their residues in plants, animals, and their products, and in other parts of the environment.

to study economic aspects of pest control and its impact on the environment; determine the supply, requirements and use of pesticides; and give assistance to control agencies and industries in emergencies.

to control pests and protect the environment during and after control operations.

to monitor the presence and distribution of pesticides in plants, animals, and their products, and in other parts of the environment.

to provide guidelines for the safe and effective use of properly labeled pesticides.

to educate and inform the public about the importance of pesticides and pest control, and the need for safe and proper use of pesticides; coordinate and review pesticide and pesticide-related activities of the U. S. Department of Agriculture and coordinate them with other Federal, State, and private organizations.

The USDA budget expenditure for research and regulatory activities related to their pesticides and pest control program is as follows:

	(Thousands of dollars)	
	<u>FY 1971</u>	<u>FY 1972 (Est.)</u>
In-house Research	\$ 68,938	\$ 71,611
Extramural Research	1,500 (est.)	1,500
Monitoring	800	1,300
Regulatory (Pest Control)	42,665	41,890
Managing Use of Pesticides	<u>213</u>	<u>1,000</u>
TOTAL	\$114,116	\$117,301

3. Department of Commerce (National Marine Fisheries Service;  
National Oceanic and Atmospheric Administration)

(a) Research and Monitoring

Conducts research relating to marine organisms; monitors shellfish for pesticide residues and assesses biological effects, if any. Special interest in research on techniques to reduce pesticide content in marine organisms. The budget for pesticide-related activities:

Research, FY 71 = \$115,000 and FY 72 = \$167,000

Monitoring, FY 71 = \$82,000 and FY 72 = \$0.

(b) Regulatory

None.

(c) Grants and Contracts

None.

4. Food and Drug Administration

(a) Research and Monitoring

None; transferred to EPA.

(b) Regulatory

Field and market surveillance for presence of pesticides in food. The expenditures for this program:

Headquarters, FY 71 = \$150,000 and FY 72 = \$315,000

Field operations, FY 71 = \$2,635,000 and FY 72 = \$2,867,000.

(c) Grants and Contracts

None.

5. National Institute of Environmental Health Sciences, PHS, HEW

(a) Research and Monitoring

Research on health aspects of pesticide use. The budget for this activity:

FY 71 = \$2,700,000 and FY 72 = \$3,100,000.

(b) Regulatory

None.

(c) Grants and Contracts

Awards grants to public and private non-profit institutions for research on biological effects, in general, and human health aspects, in particular. The grants program for pesticide-related research:

FY 71 = \$9,500,000 and FY 72 = \$12,300,000.

6. Department of Defense

(a) Research and Monitoring

Conduct a wide range of operational activities dealing with the evaluation of various aspects of pesticide use (e.g., effectiveness, human health hazards, etc.). The budget for these activities:

FY 71 = \$5,700,000 and FY 72 = \$6,800,000.

(b) Regulatory

None.

(c) Grants and Contracts

Not specified; if any, budget figures are included in the research and monitoring budget figures given above.

7. Department of Transportation

(a) Research and Monitoring

None, except through grants.

(b) Regulatory

Regulates the interstate shipment of certain pesticides as hazardous materials; controls non-Federal use of pesticides via licensing of aerial applicators.

(c) Grants and Contracts

Awards grants and contracts for research and development designed to support the regulatory function. Expenditure of funds for pesticide-related regulation for:

FY 71 = \$252,000 and FY 72 = \$800,000.

8. National Science Foundation

## (a) Research and Monitoring

None, except through grants.

## (b) Regulatory

None.

## (c) Grants and Contracts

Awards grants-in-aid to public and private non-profit institutions, and to individuals for applied basic research, includes research relating to pesticides, ecology, etc. The grants program for pesticide-related research:

FY 71 = \$250,000 and FY 72 = \$300,000.

9. Office of Education, HEW

## (a) Research and Monitoring

None, except through grants.

## (b) Regulatory

None.

## (c) Grants and Contracts

Awards grants to public and private non-profit institutions, and to individuals, for research relating to environmental education and environmental quality. In the current FY 72 grants programs pesticide-related project expenditures are estimated at \$10,000.

10. Department of State

Role limited to providing technical assistance and advice to foreign governments relative to policy matters concerning economic poisons (e.g., meeting U. S. importation standards; recommending substitutes for "banned" pesticides; etc.). There are no separate budget figures available for this type program activity.

11. Federal Trade Commission

Regulates the advertising of economic poisons. The FY 72 budget for this purpose is approximately \$25,000.

12. Department of Labor

This Agency has a \$1 billion budget for FY 1972 to be used as grants-in-aid for socioeconomic improvement through employment, training, etc. Of these funds, all or nothing at all may be environmentally oriented depending upon priority judgments.

B I B L I O G R A P H Y  
(Pesticides Program)

1. "Agriculture - Environmental and Consumer Protection Appropriations for 1972," House Appropriations Subcommittee Hearings, Part 5, (1971), p. 5 ff.
2. "Pesticides Programs FY 1972 - FY 1977 Program Plan," dated May 15, 1971, as prepared by E. L. J. Grandpierre, Director, Program Development, Office of Pesticides Programs, Environmental Protection Agency.

### III. THE PESTICIDES RECOMMENDATIONS

The pesticides programs of the Environmental Protection Agency are quite diverse in nature, and are in keeping with the mandate of this Agency to protect and enhance the quality of the environment, both for man and other life forms. The Agency's pesticides programs are not directed toward any particular segment of society, but rather toward a protection from environmental hazards for all persons. But because the poor, both urban and rural, carry heavy burdens which probably make them more susceptible to pesticide hazards, EPA has a special responsibility to this group of endangered citizens.

The urban poor are a disadvantaged segment of society. It should be recognized that the total burden on the urban poor arises from a complex interplay of social, cultural, economic, environmental, and educational factors, and the necessity for use of pesticides is a part of the problem. To try to separate out the pesticides factor and study its effect, *per se*, on the urban poor is a formidable task which approaches impossibility.

But as the Mrak Commission's Report on Pesticides expressed it:

"No human activity is entirely without risk and this maxim holds for pesticide usage in the human environment just as it does for all other exposure to chemicals. There are formidable inherent difficulties in fully evaluating the risks to human health consequent upon the use of pesticides. In part, these difficulties stem from the complex nature of the problems involved, the fact that many facets of these problems have been recognized only recently, and the general backwardness in this area of research in man, as distinct from work in laboratory animals. Above all, one must not lose sight of the large number of human variables - such as age, sex, race, socio-economic status, diet, state of health - all of which can conceivably, or actually do, profoundly affect human response to pesticides. As yet, little is known about the effects of these variables in practice. Finally, one must realize that the components of the total environment of man interact in various subtle ways, so that the long-term effects of low-level exposure to one pesticide are greatly influenced by universal concomitant exposure to other pesticides as well as to chemicals such as those in air, water, food and drugs. While all scientists engaged in this field desire simple, clear-cut answers to the questions posed by human exposure to pesticide, the complexity of the human environmental situation seldom allows such answers to be obtained."

We do not know what harmful effects result when pesticides burdens are added to all the other physiological burdens of poor health and poor environment borne by the urban poor. Definitive answers on the effects of



these added body burdens will take many years of research. In the interim our duty is clear: to take every practical action to minimize human dosage and accidental poisonings. As the regulations implementing FIFRA (the Federal Insecticide, Fungicide and Rodenticide Act) state: the purpose of the Act is "to protect the public health before injury occurs rather than subject the public to dangers of experimentation and take action after injury."

#### Public Education Program - Short Range

A public education program is needed nationwide, but especially in our inner cities to provide instruction on the following:

1. Proper purchase - the right pesticide for the right pests, and the right applicator.
2. Proper usage - the right quantity and type of application (for example, don't paint the floor boards with persistent pesticides when there are children at the crawling stage in the house).
3. Proper storage of pesticides - locked away from children.
4. Proper disposal of empty pesticide containers (which are never really empty).
5. The use of alternatives to pesticides such as repellents and baits.

The Task Force recommends that the Urban Affairs Office be directed to initiate and coordinate community pesticide education programs in urban areas.

The Urban Affairs Office can utilize the Regional Public Affairs Officers and the Public Services Division of the Office of Public Affairs in a coordinated effort to obtain the broadest possible dissemination of information in nine months' time. In cooperation with the Pesticides Program, the effort would involve preparation of pamphlets and fact sheets capable of being easily understood by the poorly educated. Similar materials should be prepared for those whose only language is Spanish.

Dissemination of the information materials would be achieved through community improvement groups and the mass media. Magazines, newspapers, TV and radio stations with predominantly minority audiences should be utilized.

The Task Force recommends that \$100,000 be allocated for use on this pesticide education program over the next nine months.

### Public Education/Community Action Programs - Long Range

#### 1. Pesticide protection teams should be developed within each urban area.

Such pesticide protection teams could be composed of existing local personnel supplemented by neighborhood volunteers, or such teams could consist entirely of local citizenry (both volunteers and salaried) who have been thoroughly trained by professional personnel. This represents one means of providing a job opportunity for the urban-poor resident while, at the same time, involving him in a neighborhood self-help program.

Such pesticide protection teams would be responsible for informing and training persons in their immediate neighborhood of the safe uses of pesticides, proper storage, techniques for disposal, dangers from improper use, procedures to follow in pesticide-related emergencies, etc.

Such teams should also be able to work with city officials in their rodent control, anti-litter, etc., campaigns by explaining to neighborhood citizens how such programs are beneficial to them and what they, as individuals, can do to help.

Such teams could also serve as a focal point for citizens to lodge local grievances relating to inadequate pest control, etc.

The effectiveness of such teams would be related to the extent of personal contact and rapport which they are able to establish with the local residents, especially in the poorer urban areas where the intrusion of "outsiders" is often resented.

EPA's role in this activity would be advisory, with conceivably an active role in the training and up-dating of such teams. A collaborative effort with the Department of Labor would be required to secure the money and jobs necessary for its implementation.

The concept of pesticide protection teams is similar to that of the "health educator aide" program which has been implemented by the Department of Health, Education, and Welfare. Perhaps a collaborative effort with DHEW would be in order so that these two programs could be intermeshed.

#### 2. A counselling service for pest control problems should be made available as a public service to the urban dweller.

The most important element in the wise use of household pesticides is the individual person who selects the chemical to be used and decides upon the method of application. Too often individual selection is

based upon cost and availability rather than upon safety and efficacy. Detailed information and recommendations (e.g., what pesticides to use for what pests, best method of application, brand names locally available, special precautions to take, emphasis on reading and following label directions, advice regarding professional exterminating services, etc.) should be available at the neighborhood level to residents who have specific pest problems. Such advice should be easily obtainable - either by telephone or through some non-profit public service community center specifically set up for that purpose.

Implementation of this recommendation could be achieved via the pesticide protection team concept discussed previously. As stated above, EPA could work in concert with the Department of Labor and the Department of Health, Education, and Welfare to implement this program; EPA would provide the professional expertise to train such teams and would oversee their activities and keep them supplied with up-dated information.

#### Improved Labeling Program - Short Range

The Task Force recommends that the Administrator order:

1. for completion by November 30, 1971, a survey to determine which pesticides are used most frequently in our inner cities.  
(See details on survey) 1/
2. for completion by December 30, 1971, an evaluation of the most commonly-used labels for compliance with the following criteria:
  - a. Readability - easily understood by a poorly-educated person.
  - b. Legibility - reasonable size print, contrast with background color.
  - c. Content - toxicity warning  
                  persistence  
                  target organism  
                  recommended application procedure  
                  methods and quantity  
                  recommended antidote and first aid procedures.

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1/ The nationwide survey in selected urban areas should gather information on types, amounts, and formulations of pesticides used; purpose and frequency of use; methods of storage and disposal; marketing information; et cetera, including scientific data pertaining to health and physical environmental factors (climate, ventilation, areas of usage in square footage, etc.). Such a survey should canvass the individual user, the commercial pest control operator, and city operations (e.g., tree-spraying, rodent control, etc.) involving the dissemination of pesticides in urban areas.

- d. Spanish - the instructions and warnings should be in several languages, but must include Spanish.
3. for completion by January 30, 1972, a report recommending actions to be taken by the Administrator to achieve compliance with the above criteria.

The actions to be recommended should be aimed at achieving effective labeling on the major products found with inadequate labels by May 1, 1972. It is envisioned that through a voluntary compliance effort on the part of EPA, manufacturers could be persuaded to begin attaching decals to their products by May 1, 1972. Decals could be an interim measure. The companies could alter their basic labels at a later date convenient to their production schedules.

#### Improved Labeling Program - Long Range

The Task Force finds there is a longstanding need (the Mrak Report on pesticides referred to it) to develop a system of non-language, internationally recognizable insignia or marketings on pesticides to convey:

1. the toxicity.
2. the target organisms.
3. the application method and quantity.
4. antidote and first aid.

The Task Force recommends that the Administrator order a study to develop an international insignia system for toxic materials which can then be a proposal by the Administrator at the United Nations Conference on the Human Environment in Stockholm, Sweden, June 1972.

Appropriate consultation with our counterparts in other governments should be undertaken to assure acceptability of the proposal.

#### Improved Packaging Program - Short Range

The Task Force feels, as does the CEQ, that the growing trend to less persistent, but more toxic, pesticides will probably result in a higher incidence of accidental poisonings. Thus, the Task Force recommends that the Administrator order a review of the packaging of pesticides used in urban areas (both inner city and suburbs). Although accidental poisonings have tended to occur more frequently among the poor, the Task Force believes that the danger to suburban children also is growing and demands a broad review of pesticide packaging.

The Task Force recommends that reviewers be required to prepare a report by January 30, 1972, for the Administrator on actions which should be taken to require improved pesticide packaging to prevent accidental poisonings.

Improved packaging concepts which should be considered include:

1. Child-proof containers (such as those used for baby aspirin) with safety closures.
2. Deposit of 25 cents to insure return of the dangerous empty containers (which are never empty) to the manufacturer for proper disposal or preferably recycling.
3. A review of aerosol nozzles to insure that more toxic ground sprays are applied with a highly-focused spray, while nozzles which produce a fine mist are limited to cans containing substances of low toxicity.

#### Pesticide Research Recommendations - Long Range

1. The causative factors necessitating the household use of pesticides should be removed.

This would require a sustained effort on the part of Federal, State, and local governments, industry, and private individuals to improve the urban environment by elimination of sub-standard housing, solving the solid waste and litter problem, and, in general, the alleviation of the socio-economic and related factors which are the basis for a slum environment.

The Department of Housing and Urban Development, through its "Model Cities" program, is attempting to improve life in the inner city. Other Federal agencies (e.g., Department of Labor, DHEW, etc.) are participating in this effort, also. EPA should contribute its expertise in any way possible.

2. A study should be commissioned to delineate the most effective means of heightening and sustaining public awareness of the proper handling (use, storage, and disposal) of pesticides and other toxic chemicals.

It is within EPA's statutory authority to commission such a study. An effort should be made to involve consultants from the advertising industry who have expertise in "the selling of the public" (i.e., consumer habits).

Based upon the findings of such a study, EPA should actively participate in the development and implementation of a toxic chemicals awareness program.

3. Continued research efforts are needed to develop safe methods of disposal of pesticide wastes.

The best means for the large-scale disposal of stockpiles of unused pesticides, used containers, and other pesticide-contaminated materials must be found. EPA has on-going research efforts in this area via grants-in-aid to various universities. The Offices of Solid Waste and Pesticides Programs are working together to try to find a solution to this problem.

4. A study of dangers from aerosol application of pesticides should be undertaken.

There is preliminary indication that household use of pesticides in aerosol containers may result in an increased prevalence of respiratory impairments. This study should be followed up to determine the causative factor and to delineate the preventive or corrective measures which should be initiated.

Such a research effort is within EPA's purview; the preliminary study was conducted within the Office of Pesticides Program's epidemiologically-oriented Community Studies Program (Hawaii).

5. A national clearinghouse for pesticide information should be established within EPA.

With respect to pesticides, a serious information gap exists in the absence of reliable sources of data on local activities, progress, and problems throughout the nation. This was pointed out in the Mark Commission's Report on Pesticides in 1969, and it remains there today.

A national clearinghouse is needed to collect, organize, and disseminate information on pesticides and their relationships to human health and the quality of the environment in a modern system for information storage and retrieval. The Environmental Protection Agency is a logical place to house such a clearinghouse.

Cooperation from other Federal, State, and local agencies, universities, private research centers, industrial laboratories, et cetera, will be needed if such a clearinghouse is to effectively serve the purpose for which it is intended.

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## I. THE WATER PROBLEM

In our cities, water, a vital resource, is becoming increasingly inadequate to meet the requirements of concentrated population and industry.

The quality of many city waters is degraded by municipal and industrial wastes. These pollution problems become intensified in congested central city areas where deterioration of water and sewer facilities are commonplace.

The following analysis looks at the magnitude and effects of water pollutants on urban residents, and proposes recommendations to prevent and control the problem.

### Water Pollution and the Effects on Urban People

Municipal Wastes - Municipal wastes rank first in terms of waste sources affecting the people of this country, including the inner city populace. Fortunately, this waste source also ranks first in terms of our ability to solve the existing or potential pollution problems it creates.

Municipal wastes consist of two components: (1) domestic waste discharges, and (2) discharges to municipal systems from industrial sources. In most municipal systems, the industrial waste component is a significant part of the total waste load.

Wastes from municipalities are significant because: (1) they are a large source of organic material which lowers the dissolved oxygen content of water; (2) they contain large numbers of bacteria and virus creating a potential health hazard where receiving waters are used for recreation and as a public water supply, and (3) they contain nutrients that accelerate eutrophication of rivers, lakes, and estuaries.

Industrial Wastes - Industry adds to the pollution problem in inner city areas by discharging huge volumes of untreated wastes into the municipal sewer systems. As of 1968, an estimated 50 percent of the Biochemical Oxygen Demand (BOD) in municipal sewage was produced by industry. The toxic wastes that industry adds to our waters include oils, metals, pesticides, poisons, dyes and chemical catalysts that can strain a sewage treatment plant to the breaking point.

In addition, industries also discharge untreated wastes directly into our waters, causing a greater BOD load than that of municipal sewage. Since 1920, industrial pollution has exceeded domestic pollution. In 1968, industrial wastes were responsible for four to five times more pollution (in terms of BOD load) than domestic wastes.

Other Urban Wastes - In addition to sewered municipal and industrial wastes, other urban wastes - including combined sewer discharges and other urban



runoff, such as land erosion - are a serious source of water pollution in urban areas, which must be attacked in the next five years in order to achieve water quality standards, even in part, by 1976. In large metropolitan regions where water-based recreational demand is especially high and combined sewer systems are the rule instead of the exception, control of "other urban wastes" will be the keystone in meeting water quality standards and preventing closure of beaches during wet weather flows.

#### Quality Aspects of Water Pollution

The main impacts of water pollution on the inner city populace are manifested by changes in the physical qualities of the water, its taste and odor, its appearance, its oxygen levels and the aquatic life within the water.

Water Quality Detractors - Domestic wastes, including industrial wastes, if inadequately treated, can have the following effects: (1) closing recreation areas to swimming, fishing and boating; (2) closing shellfish beds; (3) eliminating desirable fish species; (4) denying the use of water as a public water supply or creating taste and odor problems if a polluted water source is used for drinking water purposes; and (5) creating a nuisance and thereby reducing the aesthetic enjoyment of water-adjacent land areas.

The number of sewered communities in the United States is just under 13,000 and 68 percent of the nation's population lives in such communities. During the next five-year period, it is estimated that about 8,000 communities across the nation will construct new, improved or expanded sewage treatment facilities.

Urban runoff wastes have many of the same adverse effects on water quality and water use as municipal sewage: they contain high concentrations of bacteria, solids, organics, and inorganics and result in attendant degradations of water quality.

Pollutants from storm sewer run-off, raw or inadequately treated sewage, and industrial wastes, along with excessive blue-green algae growth, are mainly responsible for producing the foul taste, odor and coloring of some urban water supplies.

Such pollution contributes to non-potable water and can cause physical discomforts such as vomiting and gastric upsets. A nationwide survey, reported in a 1970 study, indicated that algae was considered by 241 water works officials to be the most frequent cause of foul taste and odor in water supplies. (Kenneth Mackenthun and Lowell Keup, American Water Works Association Journal, August 1970.)

Although algae may not be directly injurious to human health, excessive algae growth in addition to other organisms can interfere with a water supply by clogging filtration systems and pipes. Organisms such as thin red blood worms in piping (Midge larvae) which generally indicate polluted water have occurred in municipal drinking water in at least 17 scattered municipal systems, including New York City and Washington, D. C. The combined presence of worms and bad taste make some urban water unfit for domestic use.

Health Effects of Water Pollution - The physical effects of polluted water on the individual range from minor discomforts and bad taste to major diseases causing death. Bacteria in polluted streams may cause typhoid fever and kidney disease. Mercury, arsenic, and other chemicals in water may be fatal to those drinking the waters.

Methemoglobinemia, a disease affecting infants less than three months old, is caused by the bacterial conversion of the relatively innocuous nitrite ion to nitrate. The physiologic effect is oxygen deprivation, or suffocation.

Acute cases of "blue babies" may only be the tip of the iceberg. Nitrates have been found to interact in the stomach with secondary amines from drugs, food flavoring or decaying meat to produce nitrosamines. Some nitrosamines are carcinogenic, and teratogenic.

The authority of EPA's water hygiene program extends to preventing the spread of communicable diseases. To do this EPA has set up national standards on the acceptable bacterial levels of drinking water. At this time EPA has no enforcement authority beyond notification to the Food and Drug Administration that a certain area's water supply falls below safe bacteria levels. The FDA then prohibits interstate carriers such as trains and planes from using such substandard water. Currently, about 670 water supplies serve interstate carriers.

Related to health effects is the fact that waters surrounding our major cities are littered with dead fish, garbage, wood, metals, detergents, suds, oils, plastic and rubber goods, cans, and dead plant life. Domestic sewage and industrial wastes emptied into rivers account for most fish kills. The newspapers and the technical literature are replete with records of small to massive kills in urban areas. Statistics for 1969 show that an estimated 41 million fish were killed in that year.

#### Water Pollution and the Inner City Populace

The lack of hard data on the wide range of physical effects on inner city people caused by contact with polluted water, however, permits only speculation. A reason few data exist is due to desensitization

of the people who come in daily contact with polluted water. Effects are often not reported, or, if they are, are reported days after contact with the water and not recognized as stemming from water contact.

The biggest psychological effect of water pollution on the inner city people is the loss of recreational resources and facilities. A recent report shows there will be an average increase of 65% of the number of people who swim in the United States between 1965 and 1980. At present there are 100 million swimmers, 57 million fishermen, and 52 million boaters. By 1980, they expect there will be 200 million swimmers. Of these only 50% live within commuting distance of a beach.

Many inner city residents take their existing environment for granted. Colored, odd-tasting drinking water is to some a customary presence. Often, the bad taste, however, can be traced to piping in the urban homes, not the municipal water systems. The presence of a nearby polluted or littered body of water, unfit for recreational purposes, may also be a customary sight. Effective implementation and enforcement of the water quality standards program can change the situation and result in water of sufficient quality to be used for many beneficial uses.

Why Big City Waste Water Systems Have Deteriorated - Degradation of the urban waste water treatment system exists for two reasons.

First is neglect. This has created a great backlog of unmet facility needs and the need for improved operation of existing facilities. This is severe in the Northeast which includes a large percentage of the urban population of the country. New England, New York, and Pennsylvania, with about 20 percent of the national population, have 52 percent of the sewered population with waste handling facilities that are often inadequately or improperly operated through lack of trained plant operators or other reasons. It has been estimated that 40% of existing treatment plants are not operating at designed efficiency levels. The effect is that the public, including the inner city populace, are not getting their money's worth out of many waste treatment facilities which they have or are paying for at the present time. The question of neglect also relates to the inner city people. Litter and garbage on city streets contribute to the pollution load entering the sewers and hence the treatment systems.

Second is the expense, currently estimated at \$12 billion for conventional waste treatment alone to meet water quality standards, which has discouraged, until recently, a real attack on municipal waste problems. The money, however, is now hopefully becoming available for upgrading conventional treatment through intensified and expanded Federal grants programs. The immense cost of sewer separation, estimated at \$15 to \$50 billion and lack of effective technology, are tremendous constraints to any serious addressal of the combined sewer problem. The age of the wastewater collection and treatment systems in use in many of the older cities of the Northeast and Midwest, with its corollary of combined sewer systems, is yet another factor.

It is recognized that the cost of replacing wastewater collection and treatment facilities in our older urban areas is costly. In many of our cities the existing fee or rate schedules for wastewater treatment are often inadequate to allow replacement and renovation of existing facilities.

The technological problems are more or less solved with respect to conventional municipal waste treatment systems, although more efficient and cheaper techniques are highly desirable as the move is made to 100% purification of water in the cities with the highest population concentrations. However, considerable additional research is needed in the combined sewer and run-off areas. These areas have significant public impact in terms of the living conditions of the inner city people. It is the problems of combined sewers, urban run-off and deteriorating facilities in our central cities that have a continuing hazardous impact upon the inner city populace from the standpoint of public health.

B I B L I O G R A P H Y  
(Water)

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## II. THE WATER QUALITY PROGRAM

The Water Quality Program, authorized by the Water Pollution Control Act, as amended, and conducted by the Office of Water Programs, EPA, contains many facets, all of which relate in some part to the inner city environment as well as to all other urban and rural environments, because it is a national program. To avoid lengthy discussions of the total program, only those facets of the program which relate more directly to the inner city environment are described in the following paragraphs.

### Training and Manpower Development

Development of Wastewater Treatment Plant Operator Training - This program includes: (a) a pilot State-training grants program for water pollution control operator training; (b) an intensive technical training program for supervisory treatment plant and public works department personnel; and (c) an instructor training program to support the training of operators and supervisors.

EPA at present manages a contract, under the Manpower Development and Training Act, which annually trains about 300 entry level waste treatment plant operators drawn from the unemployment and disadvantaged, and about 700 operators drawn from the under-employed blue collar workers currently employed in waste treatment plants. Twenty of the State water pollution control agencies, plus those of Puerto Rico, the Virgin Islands, and the District of Columbia, manage similar contracts to provide training for an additional 2,500 each year. Three new programs supplement this work. First, pilot grants for State training programs will be awarded in 20 states to design and initiate State-directed training activities and to commence development of the self-supportive State training capabilities. These will result in the training of 700 persons.

Second, a new program will be conducted under contract at one or two advanced waste treatment plants. Supervisory treatment plant and public works department personnel, mostly professional engineers from middle and large-sized plants across the country, will be given intensive technical training in the operation of advanced waste treatment processes. The program will train approximately 100 individuals.

Third, an instructor training program will be carried out to support the pilot State program and the intensive technical training efforts. The courses will be conducted at two or three locations to train approximately 50 personnel, mostly former treatment plant operators who can provide the insight of practical experience.

Professional Training - Professional training grants are awarded to educational institutions for graduate training programs. Office of Water

Programs (EPA) encourages institutions to develop specialized water pollution control sources within multidisciplinary curricula and to consider total environment needs which may cross and combine a number of traditional disciplines. During 1972, 88 training grants to academic institutions will be supported and these will provide traineeships for about 930 students.

#### Research and Development

Research and demonstration grants and contracts are awarded to assist in supporting basic and applied research projects and to develop and demonstrate the feasibility of new methods related to the causes, control, and prevention of water pollution. They support projects in the field of water pollution control which are directed toward the discovery and application of new information and technology in the chemical, physical, biological and social sciences, in engineering, and in administrative aspects related to water pollution in urban and rural areas, including the inner city environment. These grants and contracts may be awarded to States' municipalities, intermunicipal agencies, public and private agencies, institutions, and individuals.

#### Construction Grants and Wastewater Treatment Works

Grants are provided to assist and serve as an incentive in the construction of waste treatment works and major interceptor sewers to prevent the discharge of untreated or inadequately-treated sewage or other wastes into any waters. Basic grants cover 30 percent of the cost of a project; may be increased to 50 percent if the State pays at least 25 percent of the cost.

Municipalities (including the inner city areas), States, and interstate agencies having jurisdiction over the disposal of wastes are eligible.

The proposed \$12 billion program is designed to meet municipal needs as identified in water quality standards. Approval of grants is based on conformance with basin/metro plans, approved cost effective guidelines, EPA (OWP) design, operation, and maintenance guidelines, and State approval.

#### Water Quality Planning

EPA's planning programs include three general kinds of activities:

1. Financial assistance to regional, State and local planning agencies.
2. The administration of the grants used to provide this financial assistance.
3. Direct performance of broad scope planning in cooperation with states and other Federal agencies.

Basin Planning Grants serve as incentives to State and local governments to cooperate in the development of plans for the systematic cleanup of an entire river basin, or portions of it, such as metropolitan areas, including the necessary fiscal and organizational machinery to make the plan work.

EPA-OEP requirements necessitate the development of metropolitan basin or regional plans, including urban areas, and that these plans incorporate adequate sewage treatment facilities in compliance with water quality standards.

Federal Planning and Technical Assistance - This includes an interagency water resources planning program; joint Federal-State river basin planning program (development of mathematical models of the 100 most critical and complex basins); and direct assistance and review programs, to increase aid to State, regional, and metropolitan water quality planning agencies to ensure effective plans and conformance of construction grant applications with those plans.

Interagency Relationships - Water Quality Planning is conducted at all governmental levels, and such planning, together with construction of wastewater collection and treatment systems, is supported by grants from EPA Wastewater Treatment Works Construction Grant Program and River Basin Grants. HUD provides grants from Water and Sewer Facilities Grant Programs and 701 Planning Assistant Programs. However, fundamental responsibility for water pollution control is at the State and local level.

Comprehensive planning by the States, with the assistance of Federal agencies, develops fundamental water quality goals and objectives, guides development, and provides a framework for regional, metropolitan, and local water quality management planning. Planning will be done by area-wide planning organizations recognized by EPA, HUD, and the Governor of each State. On or after October 1, 1971, area and organizational, comprehensive planning, and water/sewer planning and programming certifications are required by both EPA and HUD prior to grant awards.

EPA regional staff are available for establishing coordination with State, local and regional agency officials. Permits for allowable wasteloads issued to industry are determined by the basin plans. Basin planning organizations are to be designated by the States, and are to be assisted in their work by EPA and HUD.

The Federal Government, and some States, require impact statements on all major Federal or State actions that may impact on the environment to be made public. These statements, with attached comments by any governmental agency with legal jurisdiction or special expertise, must cover impact adverse effects, alternatives, short and long-term uses, and irreversible resource commitments.



### Water Hygiene

Water Hygiene Office initiates major revisions of the Drinking Water Standards, publishes a Program Guide to Interstate Carrier Water Supply Program, conducts research on treatment technology on virus removal and toxicity of trace metals, and presents 14 training courses on Water Hygiene, all of which relate to urban and rural areas.

In addition, the office has realized the need for an expanded program and has developed a proposed program described in detail in the paper included in the attachments.

### Water Quality Standards

The Water Quality Standards Program provides effective tools to help clean up America's polluted rivers, streams, and lakes, both in urban and rural areas.

The Standards Program provides for the protection of public drinking water supplies, recreational water uses, and for the general protection of our health and welfare and enhancement of opportunities for future benefits to mankind.

As a result, cities and industries with significant waste discharges know what is required of them in order to upgrade or maintain the quality of the interstate waters in their respective States. In effect, the program puts cities and industries in a given river basin or along an interstate lake on a relatively equal footing. Although not required, many States took advantage of the opportunity and extended standards coverage to include intrastate waters. In an action clearly indicating their desire for high quality water the States have classified about 90% of their streams for recreational use and/or the propagation of fish and wildlife.

The standards package from a State contains three main elements:

1. The uses to be made of a particular stretch of a river, lake or coastal waters, such as for swimming.
2. A scientific determination of the specific characteristics or criteria which would permit the appropriate uses agreed on by the State and the Federal Government. Limits on such pollutants as bacteria, toxic materials, and taste and odor-producing substances in the water are set by the standards.
3. A step-by-step plan for construction by cities and industries of waste treatment facilities and use of other measures to meet the water quality requirements.

The major immediate objective will be the control of pollution from cities with inadequate waste treatment facilities or none at all and major industrial plants which either have unsatisfactory treatment or no treatment at all.

Once standards submitted by a State have been approved by the Administrator of EPA, they become Federal Standards as well and are, therefore, subject to Federal enforcement action. However, the initial responsibility for enforcement of standards rests with the States. If a State fails to exercise this responsibility, the Administrator may act. If the Administrator is advised that monitoring or other information indicates that the standards are being violated, he is empowered, after notice and a wait of 180 days to refer the matter directly to the Department of Justice for filing of a court suit.

Residents of the inner city along with all other people can play an important role in both the establishment and enforcement of standards. In establishing or revising standards, participation in public hearings to influence the determination of water uses is paramount. After adoption of standards, enforcement assures that action will be taken to meet these standards. Specifically, the inner city residents may participate in enforcement by joining local environmental groups, working with educational, scientific, and technical groups, find out what local government agency is responsible for enforcing standards, use political pressure to get clean water action, and accumulate the required data to bring direct court action if responsible agencies are slow to act.

Once the standards have been approved, they are not set in concrete for all time. They can be changed from time to time as new information becomes available. Either at the request of a Governor or on his own initiative, the Administrator is empowered to take steps for revision of standards.

### Enforcement

EPA is concerned with securing compliance with water quality standards for interstate waters, abating pollution in shellfish areas where the marketing of shellfish in interstate commerce is adversely affected. EPA, in conjunction with the Coast Guard, carries out also various activities to enforce regulations covering the control, cleanup, and prevention of oil spills. EPA also brings enforcement actions under the Refuse Act of 1899. In all cases, close cooperation and coordination with State and local efforts are maintained. During 1971, work in over 50 active enforcement actions is under way.

### III. WATER PROGRAM RECOMMENDATIONS

#### Recommendations: Immediate Action

Establishment of an Inner City Ecology Corps - It is recommended that such a corps be established to prompt people to be involved in educational projects and action projects to cleanup inner city areas. We cannot assume that the inner city people are knowledgeable about the causes and effects of water pollution. A description of the various types of projects which could be conducted under the aegis of a Ecology Corps are described in the attachment. The Corps, among other things, would provide a means to expand EPA's public educational system with informational materials such as "A Curriculum Guide to Water Pollution and Environmental Studies." Initially, a corps could be developed in one to 20 major cities on a "pilot basis." The cost would be about \$5,000/person/year for residents in the program, about 100 people would be needed per city. Thus, the cost would probably run from about \$5 to \$20 million depending on the size of the Corps. The Corps could incorporate another recommendation by the Task Force, that a government Environmental Intern Program be initiated for inner city residents. (See general recommendations on SPARE which incorporates this concept.)

Inner City Clean Sweeps - It is recommended that inner city cleanup programs be initiated to remove the litter, garbage, etc., that contribute to the pollution load entering the sewers and thence the treatment plants. Because this is primarily a solid waste problem, the details are included in that section. (See general recommendations on National Operation Clean Sweep which incorporates this concept.)

Residential Construction - Deteriorating plumbing and inadequate installation of sanitary facilities in many of our old urban neighborhoods can be corrected to provide safe drinking water and adequate sanitary facilities. It is recommended that administrative agreements be initiated with HUD (expanded agreements), FHA, VA, OEO, and other Federal agencies involved in urban renewal, housing codes and home mortgage insurance. Short range costs would be administrative.

Water Supplies - Public Involvement - It is recommended that workshops be covered with inner city residents to identify water supply and other problems particular to their immediate environment - to feel the pulse of the local people. Conversely, Water Programs representatives could inform residents of actions they can take to help remedy local immediate problems. The cost would probably be about \$1,000 per workshop. Again, perhaps this could be initiated on a pilot basis in one to 20 cities.

Inner City Short-Term "Colleges" - It is recommended that the Water Programs' established 22-week and 44-week training courses in various aspects

of water quality be expanded and that the expansion be directed to a number of demonstration inner cities. This would involve expansion of the Public Service Careers Program directed to the disadvantaged. Approximate training cost is \$1,000/person.

Initiation of Kingman Lake Project - EPA should strongly support the proposed Kingman Lake Project, located on the Anacostia River in D. C., which would use new techniques to control and treat combined sewer overflows, with the renovated water being used for recreation. The project is presently awaiting OMB clearance, and we strongly recommend that the Administrator encourage OMB clearance. The Bicentennial Commission has shown an interest in the project. Estimated cost of the water pollution aspects of the project is \$29.5 million over a four-year period. The financial burden is on the District of Columbia. It is, also, recommended that additional funds be allocated to the D. C. budget, approximately \$1 to \$2 million to initiate the planning and design; this should be coupled with a strong, effective public information program. Details on the project are included in the attachment.

#### Recommendations - Long Range

Storm and Combined Sewers - A major source of urban pollution is storm and combined sewers. This problem requires:

1. Immediate planning and programming for handling and treating storm water and waste water in major cities. This requires considerable capital outlays over the next ten years, estimated at \$15 to \$50 billion. Immediate actions could consist of promoting installation of fine straining treatment systems in cities, coupled with an active public information program. Costs would depend on the number of cities involved; a 25 million gallon/day (mgd) screening facility would cost (construction) about \$500,000 per unit.
2. Expand present control and monitoring authority. Example: promote strengthened local controls to prevent indiscriminate dumping of oil and other toxic wastes (from garages and car washes), trash and floatables in storm drains. A means of preventing entry of such wastes in storm drain systems should be explored. A public information program is needed (see recommendation regarding Ecology Corps).

Waterfront and Shoreline - Many of our major cities are blessed with miles of waterfront, coastline and streams that no longer can provide recreational opportunities or even aesthetic beauty to the urban scene because of pollution. Remedial measures could include establishing appropriate water quality standards, followed by regulation and control and supported by more intensive and expanded monitoring systems and surveillance programs.

Project Cure Water Programs - A proposal has been developed, "Project Cure" (Clean Urban River Environment), that offers an imaginative approach to reintroduce water courses in the immediate urban environment. By means of strategic location of sewage treatment plants, control and treatment of surface water runoff, a high quality effluent can be used to increase the flow of existing streams or to create canals which lace the urban centers with water courses providing recreational opportunities and aesthetic beauty.

Estimates on a per city basis could range from a small amount to the \$50 million-plus range. Such efforts involve intense interagency coordination and assistance.

Training and Employment - Many opportunities exist to provide the inner city populace with job opportunities or training in pollution control programs. A substantial number of disadvantaged persons from the inner city are reached in current sewage treatment plant operator training programs. Disadvantaged persons are now referred to EPA through "local employment services" and "concentrated employment sources." Full utilization of the Emergency Employment Act of 1971 would increase Federal authority to provide training and employment in cooperation with the Department of Labor. Such efforts have been initiated but need to be expanded. Now, the EE Act is entirely under the jurisdiction of the DOL; we recommend that EPA be given an active role in the use of salary support funds for urban areas. Maximum salary support to match previously identified training programs would be approximately \$50 million/year. The training portion would be \$9 million. The mechanism would consist of grants to cities to train people, train the teachers, and provide salaries for needed jobs - thus initiating a modicum of self-sufficiency.

Incorporation of Human Aspects into Environmental Assessments - The Environmental Policy Act should be examined along with the functions and responsibilities of the Council on Environmental Quality to incorporate criteria for assessing environmental pollution on the human and social environment, particularly that of the inner city populace.

Legislation Recommendations - EPA should strive to expand its water quality standards program to include all intrastate, navigable, land ground waters plus an increased contiguous zone to provide the basis for protecting the public health and welfare and enhancing the quality of water.

That EPA, through its Water Hygiene Office, should establish an expanded water supply program as described in the attachment. The program would probably cost in the range approaching \$20 million/year addressed primarily to community level (urban areas).

Also, it is recommended that EPA should:

1. provide financial and technical assistance to State and local governments for the development of improved methods of

making water safe for drinking and recreational purposes. The development of water quality management plans for handling municipal, combined sewer and industrial wastes in all urban areas of the United States will cost about \$250 million. EPA planning grants program will be providing about \$2 million in direct financial assistance to this effort in FY 72, and

2. provide training grants to State and local governments for training persons for occupations involving the public health aspect of raw water sources, water treatment and purification works, and distribution systems. Annual expenditure would be about \$9 million.

ATTACHMENTKINGMAN LAKE

About one-third of the area of the District of Columbia is served by a combined sewer system which causes large quantities of raw sewage to be discharged into Rock Creek and the Anacostia River during wet weather. These overflows contribute significantly to the organic and nutrient loads in the estuary and also cause serious bacteriological problems. The combined sewer problem must be dealt with if the total effort, including the massive Blue Plains Project to cleanup the Potomac estuary, is to pay off. The staff of the Office of Water Programs conceived the idea of the Kingman Lake Project to abate pollution from the combined sewers discharging to the Anacostia River.

The proposed Kingman Lake Project, located on the Anacostia River near RFK Stadium, would utilize the newest techniques of controlling and treating combined sewer overflows, with the renovated water being used for recreation such as boating, fishing, and swimming. The project would be located on land in the heart of the nation's capitol that is at the present time not being utilized fully. With this project the Federal and D. C. Governments could demonstrate how both waste water and waste land can be reclaimed for the use of society.

The present estimated cost of this project is \$45.2 million, of which \$29.5 million is for water pollution control, \$6.3 million is for recreational facilities, and \$9.4 million is for associated highway and parking costs. Cost would be spread over a four-year period and would have no immediate cash outlay effect. It is felt that most of the costs for water pollution control will be eligible for Federal construction grant assistance from EPA. It is also felt that certain planning and operation costs will be eligible for grant assistance from research, development, and demonstration funds.

The effective implementation of this project will require coordination of efforts with agencies of the D. C. Government and with the National Park Service. Recommended actions to be taken by EPA are fully outlined in a document prepared by the Office of Water Programs. This document identifies the benefits which would be derived from this project and suggests a method of implementation so that the facility would be under full construction in 1972.

PART IV

SUMMARY OF INTERRELATED PROGRAM RECOMMENDATIONS



## I. NATIONAL OPERATION CLEAN SWEEP

The Task Force recommends that the Administrator request from Congress a supplemental appropriation to fund an "Operation Clean Sweep" in 20 major cities. (See Table IV-B for list of cities.)

Operation Clean Sweep would finance the formation of Environ Men Teams within City Sanitation Departments to clear away the backlog of trash accumulating in our inner cities. These teams would augment the trash collection service presently being provided to inner city areas by the local sanitation departments. The Environ Men Teams would be supplemented by SPARE "Follow Through" Teams, also financed by EPA. These "Follow Through" Teams would be teenagers working on a part-time basis to maintain an area's level of cleanliness achieved by the "Environ Men."

Environ Men Teams - Three-man teams would be formed and provided with trucks and cleanup equipment to remove rubble from alleys, vacant lots, and the yards of abandoned buildings. The rubble behind abandoned buildings is probably the most challenging task. At times this rubble is piled to the second story window level.

Bulky wastes such as refrigerators (dangerous to children), abandoned automobiles, and discarded furniture would also be removed by these teams. The teams would begin to fill the gap between the service presently provided by trash collectors, who simply empty trash cans at the curb, and the street cleaners who clear up litter in the streets.

The Environ Men Teams would have important and well-paid jobs. Unemployed inner city veterans would be given preferential consideration for these jobs.

To appreciate the number of Environ Men Teams needed for the abandoned building problem alone, one need only review the following statistics from the CEQ 1971 Annual Report:

"It is estimated that there are 100,000 abandoned dwelling units in New York City, between 20,000 and 30,000 in Philadelphia, more than 10,000 in St. Louis, 4,000 or more in Baltimore, and 5,000 or more in Chicago."

Employment of Inner City Residents - The staffs of the 20-city Environ Men Teams should consist of residents of the inner city, because the workers would be sensitive to the needs of their communities.

The Task Force proposes a flexible program for the teams that will allow each city to meet its own solid waste collection needs. In some cities, the abandoned house problem would need emphasis; whereas in others, the bulky waste problem would be paramount.

Salaries - The salaries of the Environ Men Team members would be worked out according to the applicable wage guidelines set up in a particular city for its sanitation department staff. The Task Force recommends that the "Environ Men" be paid at least \$10,000 annually.

SPARE "Follow Through" Teams - Environ Men Teams would be supplemented by SPARE "Follow Through" Teams made up of teenagers who would help keep the areas clean after the "Environ Men" have worked through a neighborhood. They would also be involved in projects to clear, sod, and maintain vacant lots as mini-parks.

Cost of National Operation Clean Sweep - Assuming each Environ Men Team consists of three men and a truck with appropriate equipment, the Task Force arrived at the following rough budget for the National Clean Sweep Program: \$50,000,000.

<u>Environ Men Teams</u>	<u>Cost</u>
1. 3,000 men @ \$10,000/year	\$30,000,000
1,000 trucks @ \$10,000/truck	10,000,000
<u>SPARE "Follow Through" Teams</u>	
2. 7,000 teenagers @ \$2.00/hour (10 hours/week) (50 weeks)	7,000,000
3. Trash receptacles (40,000 @ \$50.00 each)	2,000,000
4. Plastic bags	<u>1,000,000</u>
	\$50,000,000

Lest budget people think that \$50,000,000 is an extraordinarily large program cost, it is not when compared with the need. \$50 million is not an excessive cost for a program of this nature because of the immediate and compelling need for its implementation.

If each team could clear the yard of just one building each day (probably an unrealistic goal), and even if each team worked 300 days each year, the 200 teams would clear only 60,000 of the estimated 100,000 abandoned-house areas in New York City. Still left unattended would be the abandoned lots, alleys, and general bulky waste collection problems.

## II. DEMONSTRATION CITY PROJECT

The Task Force feels that, since fragmented efforts have been made in the past, there is a necessity for EPA to become involved in a meaningful attempt at the rehabilitation of the inner city environment. Therefore, the Task Force is recommending a "Demonstration City Project" as a viable and efficient means of urban improvement. Washington, D. C. is the recommended Demonstration City.

By concentrating EPA resources in one city in a coordinated effort, the Agency should be able to develop a model environmental improvement program for the nation to follow. Such coordination would be the responsibility of the Urban Affairs Officer. (Functions of this Officer are described elsewhere in this Recommendations section.)

The Task Force recommends that the Administrator select Washington, D. C. as the demonstration city since it is most visible to municipal and State government officials and to the nation as a whole. The capital should be the nation's model. The proximity to EPA headquarters, plus the efforts of the District's Environmental Services office, would help assure achievements by June 1972.

Five projects in EPA program areas and two projects of a general nature are suggested:

### 1. SPARE Environmental Protection Ombudsman

Hire one professional to direct a SPARE operation with five inner city assistants to supervise some 200 SPARE teenagers and job trainees. Teenagers would work 10 hours a week, trainees full time.

The SPARE office director would act as an environmental ombudsman for the inner city. Under his guidance, his assistants and their teams of trainees would identify and seek remedial action for environmental problems such as noise, air, and solid waste. They would also educate inner city residents on pesticide usage and solid waste practices.

### 2. Solid Waste

a. Finance "Environ Men" teams to: (1) cleanup inner city lots, alleys, and the yards of abandoned houses, (2) collect bulky waste materials, (3) haul abandoned automobiles off the streets.

b. Finance the purchase of plastic bags for distribution to inner city areas for improved trash collection. Plastic bags

are: (1) effective odor barriers, and thus would not be "open invitations" to rats and insects, (2) quiet, from a collection consideration, (3) more easily stored; thus, when the trash supply necessitates, there are containers on hand to handle the overflow.

c. Purchase 2,000 additional trash cans at a cost of \$10,000 for inner city use. District trash cans are currently unevenly distributed; many more in the business district than in the inner city where need is greatest.

d. Hire SPARE "Follow Through" Cleanup Teams.

(1) Teenagers under the supervision of an EPA SPARE program director would be paid to work 10 hours weekly cleaning up light trash and debris after Environment Teams.

(2) These teenagers would also clear, sod, and maintain vacant lots converted to mini-parks.

(3) They would educate the communities in city programs and requirements for solid waste removal, and provide follow-through on city service to the SPARE Director.

e. Explore through the Office of Solid Waste Management and the Urban Advisory Council the possibility of organizing a black firm to collect, for recycling, the waste paper generated by all the government agencies in the District of Columbia.

### 3. Air

Provide planning assistance funds to develop a constructive alternative to the incineration of the District's solid waste. (The city is in the process of building a large incinerator - Incinerator #5 - in the area of highest air pollution. This incinerator will emit over 1,000 tons of pollutants each year.) The District would like to convert Incinerator #5 into a combination trash transfer station and pilot recycling plant.

Technical assistance is needed by the District's Department of Governmental Services. Two experts, one from Solid Waste and one from Air Pollution Control, should be assigned to the District Government for a one-month period to draw up an implementation plan to convert Incinerator #5 into a baling and transfer station and pilot recycling plant by June 1972.

By acting on this proposal, the Administrator could by June 1972:

- a. Prevent a major source of air pollution in the District.
- b. Make the District the first city in the nation to handle its solid waste without incineration within the city.
- c. Start a model recycling plant to provide employment to people of the inner city.
- d. Provide an example of "waste being converted to use."

#### 4. Water

Train 100 teenagers and young adults from the SPARE program for sewage treatment and water supply technician jobs (training to be completed by June 1972).

#### 5. Noise

The Office of Noise Abatement and Control will conduct a one-year noise monitoring program. Specific sources of noise would be identified and measured as well as general ambient noise levels in various parts of the city. A budget of \$200,000 should be provided for this project.

A noise abatement team would be created consisting of five SPARE personnel. This team, under the supervision of the EPA SPARE program, would investigate noise complaints and spot check inner city areas to identify "noise polluters." Complaints would be rectified by voluntary compliance and legal mechanisms.

#### 6. Pesticides

Carry on community education campaigns through SPARE on the dangers of pesticides, correct use and storage of pesticides, need for proper disposal of containers.

#### 7. EPA Planning Grant to District of Columbia

The Task Force recommends a planning grant be made to the District's Department of Environmental Services to help make it the most modern, local environmental protection agency, one responsible to the needs of the people. Such a grant would help make the D. C.'s Department of Environmental Services an exemplary counterpart to EPA on the local level, emulating the progressive image of EPA at the national level.

The grant would do much to show the nation by June 1972, through the national media, that Federal and local levels of government can bring about achievements through progressive teamwork.

The budget for the District of Columbia Demonstration City Project has been estimated as follows:

Environmental Teams: \*

198 men	\$1,980,000*
66 trucks	660,000*
462 SPARE workers (teenagers part and full time)	462,000*
Plastic bags and trash receptables	<u>198,000*</u>
	\$3,300,000*

\*(From National Operation Clean Sweep budget elsewhere in this Recommendation section)

Noise Monitoring Project	200,000
Planning Grant (1 year)	<u>200,000</u>
Total	\$3,700,000

In summary, the D. C. Demonstration City project consists of the following elements:

- a. Financial assistance (grant and contact money).
- b. Public education assistance (SPARE program).
- c. Technical assistance (for air, solid waste, pesticides and noise).
- d. Enforcement (legal) assistance (through the Ombudsman).
- e. Manpower training (SPARE).

The financial and technical assistance would be provided to the District's Department of Environmental Services.

The project would be comprehensive to achieve demonstrable results in solid waste, air, water, pesticides and noise.

The responsibility for the implementation and operation of the various aspects of the program could rest in the hands of appointed officials in the responsible program offices coordinated by the Urban Affairs Officer.

### III. URBAN AFFAIRS OFFICER

The Task Force recommends that a coordination point be established within EPA that can give focus (on an agency, interagency, inter-governmental and EPA-community basis) to our programs on behalf of the inner city.

This coordination point, or Urban Affairs Officer, could be in EPA's Office of Civil Rights and Urban Affairs, or Office of Planning and Management, or preferably in the Office of the Administrator, or under the Deputy Administrator.

This Urban Affairs Officer would have three major functions, and serve as an interface for three groups:

#### Functions

1. The UAO would coordinate the various EPA and EPA-funding efforts in the urban core, and insure that the Administrator's mandate was fulfilled.
2. The UAO would direct non-Program Office projects, as well as intermedia efforts in the urban core.
3. The UAO in consultation with various EPA and non-EPA groups would initiate new thrusts directed at the problems of the environment of urban America.

#### Interfaces

1. The UAO would interface with intra-agency groups (regional offices, program offices, support offices, Administrator's Urban Advisory Council, and staff offices) to provide the aforementioned coordination and information on specific areas in the urban setting.
2. The UAO would interface with the following: (a) other Federal governmental agencies, perhaps through CEQ, and certainly OMB, and on a regional level through the FEB, to provide information on EPA activities, and to promote inter-agency cooperation in dealing with the urban environmental crisis; (b) State and local agencies concerned with target urban

areas for essentially the same reasons mentioned above (under other Federal agencies) and to make States and localities aware of the expertise, funding, and training available through EPA. In this "interface" the UAO would serve as a resource to EPA regional offices.

3. The third interface would be with selected non-governmental organizations in the target urban areas: block councils, citizen improvement groups, etc. Perhaps the major means here could be the Environmental Intern Program,\* being studied by the Committee on EPA Youth Programs. An Environmental Intern would be an inner city youth, who, after having been trained, would return to his community with the technical and legal expertise to attract contracts and grants money, and otherwise mobilize the available governmental resources in the pursuit of a better urban environment.

The Task Force feels the UAO essential to any long-term, broad-gauged commitment on EPA's part to help solve the environmental problems of the urban poor.

#### IV. ADMINISTRATOR'S URBAN ADVISORY COUNCIL

The Task Force recommends that the Administrator create an Administrator's Urban Advisory Council and/or ask for a President's Urban Advisory Council. The purpose of the Council would be to:

1. Develop a private report for the Administrator or President by June 1972, recommending a budget and program package directed at inner city needs for incorporation into EPA's FY 1974 budget.
2. Monitor EPA's progress in carrying out those recommendations of the Task Force adopted by the Administrator.

The Council would consist of 12 members from such national urban-oriented organizations as: the NAACP, the Urban Coalition, and the Urban League, and from such environmental-activist organizations as: the Center for the Study of Responsive Law, Environmental Action, the Environmental Defense Fund, and possibly representatives from EPA's Senior Staff Wives Corps. Necessary staff would be provided from within EPA.

Provision should be made for the Council to meet frequently, and with the Administrator of EPA, or his designee, on a bi-monthly basis.

\*See Recommendation VIII in this section.



Council subpanels would be required to prepare private, but written, reports for the Administrator on a regular basis. The reports would contain the subpanels' views on EPA progress, or lack of progress, in carrying out those recommendations of the Task Force on Environmental Problems of the inner city which have been adopted by the Administrator as action goals.

While such a Council would require a one-year budget of \$150,000, the Task Force believes this Council would be the most effective method for assuring substantive achievements by June 1972. The money would be well spent since the Council would create an avenue for constructive dialogue and assure progress and motivation.

The Task Force recommends a public advisory group rather than an internal group for several reasons:

1. This public group, containing many experts on urban problems, will bring to EPA much needed expertise responsive to the needs of the inner city.
2. This public group will be most helpful in justifying the budget and program, once designed, after June 1972.
3. This public group will serve as a constructive and stimulating sounding board to program personnel.

The Task Force believes that frequent meetings are necessary until June, 1972.

The Task Force believes the Administrator's/or President's Urban Advisory Council should be under the guidance of the Administrator's Liaison Officer. A small staff must be provided the Council, and the Task Force feels that in view of the dual function of the Council, two staff members are needed. One should be from the Office of the Assistant Administrator for Planning and Management to assure a realistic budget proposal, and one should be from the Urban Affairs Office for technical coordination.

#### V. VOLUNTARY COMPLIANCE OFFICE

The Task Force finds that voluntary compliance in EPA is an under-utilized mechanism for environmental improvement. The Task Force recommends that the Administrator create a Voluntary Compliance Office under the Assistant Administrator for Standards and Enforcement. Placement of an Office within this branch of EPA is suggested because of the following factors:

1. Voluntary compliance can best be achieved by an office with technical and legal background in enforcement.

2. The Assistant Administrator for Standards and Enforcement is the individual most responsible, under the Administrator, for achieving concrete environmental improvements. What better way than through voluntary compliance can a substantive list of accomplishments be achieved by June 1972?

3. Voluntary compliance is likely to be most effective if housed in a branch of EPA which can wield the stick if the proffered carrot is not accepted.

This office should initiate, explore and coordinate EPA efforts toward voluntary compliance agreements not only in matters of air, water, noise, solid waste and pesticides but in more general matters of environmental protection as well (for example, preservation of urban park land). The office ought to be given the challenge to sign at least two major agreements in each of these areas by June of 1972. The Task Force further recommends that prior to, and during, the development of voluntary agreements the office advise and, in turn, receive advice from the Administrator's Urban Advisory Council to (1) assure that voluntary agreements are as progressive as possible, and (2) to avoid criticism that the terms of the voluntary agreements are weak.

The Task Force would urge that voluntary compliance be interpreted and applied in its broadest context. Voluntary compliance should include appeals not only to industry but to Federal government agencies as well. In fact, appeals can stimulate effective response from government agencies at all levels (regional, State, and local), from labor organizations, from civic and educational groups, and even from individual citizens.

The Task Force has recommended various voluntary compliance actions in areas of air, noise, and solid waste in Chapter II.

## VI. LEGISLATION

The Task Force finds that additional EPA legislative authority is needed in the areas of: solid waste, noise, and toxic substances in order to tackle effectively the environmental problems of the inner city.

The Task Force recommends that EPA accelerate efforts to obtain legislative authority to fill the following needs:

### Solid Waste

1. Authority and funds are needed to provide program support to local sanitation departments for improved collection services in inner city areas.
2. Authority and funds are needed to set up small companies in the business of recycling. (The inner city is naturally suited

to such businesses because raw material is in abundant supply, the manpower is readily available, and the collection and distribution systems converge in the inner city. The only elements missing must be provided by government: mandated markets for recycled material, technical know-how, encouragement, and seed capital.)

### Noise

1. Authority and funds are needed to support local noise control programs.
2. Authority and funds are needed to set and enforce national control standards.

### Toxic Substances

1. Authority is needed to prevent problems such as those created by the use of lead-based paint.

## VII. INNER CITY INFORMATION, EDUCATION, AND WORK PROGRAMS UTILIZING SPARE PERSONNEL

The Task Force recommends the continuation of EPA's Summer Program for Action to Renew the Environment (SPARE) as a means of implementing environmental improvement information-education-and-employment programs in the inner city.

To effect change in the inner city, residents must be involved.

1. Inner city residents need to be made aware of the hazards in their environment and the benefits to be derived from environmental improvement programs. However, this information and teaching should be carried on by local organizations and/or neighbors to be effective.
2. Inner city residents need to be made a part of a working team to improve their neighborhoods. With this community involvement, programs have effect, meaning, and continuation.
3. Inner city residents need gainful employment. EPA has the making of such a three-pronged program of education-involvement-and paid employment in the SPARE program. The Task Force has found that inner city residents do not want super-imposed government programs. They want to be able to develop their own programs suited to their own particular needs and utilizing their own ways, ideas, and people. SPARE projects can be designed to enable communities to develop their own flexible, self-help projects.

### Background on SPARE Program

SPARE, the Summer Program for Action to Renew the Environment, was an EPA summer work program designed to employ high-school age enrollees in the Department of Labor's Neighborhood Youth Corps (NYC) in work improving the urban environment. SPARE gave teenagers a chance to make concrete improvements in their environment. It also taught them about environmental issues, surveys of local environmental problems, and work efforts in environmental improvements.

In its first summer (1971), SPARE employed approximately 10,000 inner city, low-income youths, ages 14-18, in approximately 50 communities. In compliance with the NYC program, SPARE enrollees were paid \$1.60 per hour, usually for a 26-hour work week. EPA provided some planning for work and educational activities, as well as technical assistance. The Department of Labor, through its local NYC sponsor, selected and funded the SPARE participants. Most administrative costs and daily administration came from the local sponsor, usually the city government or Board of Education.

Enrollees worked at a variety of environmental improvement projects in their own neighborhoods. In some cities, like St. Louis, SPARE workers canvassed homeowners to warn of the danger of lead poisoning from deteriorating lead paint in inner-city homes. In Goose Bay, Oregon, students traced local sewage problems throughout the town. In Indianapolis, SPARE won enthusiastic responses in one area when enrollees cleaned up a rat-infested four-block area which had been used as an unofficial dump for nearly 30 years. And in Cleveland, SPARE participants joined in a major cleanup of the city's parks and beaches.

In addition to work projects, environmental education was an important part of the program. In Cleveland's program, for example, many enrollees spent 40 percent of their time taking a course in ecology for which they received high school credit; and 45 enrollees in the Cleveland program received prospective college credit for their classroom environmental work at the local community college. And, as supplements, participants took field trips to environmental protection facilities. By providing work supervisors with some expertise in environmental and community problems, SPARE projects provided environmental education through on-the-job training. For example, Cleveland enrollees were led by high school science teachers and Baltimore students assisted city health inspectors.

As these projects have indicated, SPARE is part of EPA's effort to help the urban poor recognize and solve environmental problems that concern them. Specifically, SPARE recognized that rats, lead paint poisoning, extensive trash accumulation, and crowding are as much a part of the inner city environment as are air pollution and water quality control. As it developed

out of the Clean Waters Program of 1970 (under the Office of Water Quality), SPARE expanded the traditional understanding of environment to include the total environment of a community.

#### Proposed SPARE Programs for 1972

1. In the area of Solid Waste: Provide manpower for a Clean Sweep program and increase the effectiveness of such a program by canvassing, informing, and educating the community; and relating community concerns about city services to municipal officials.
2. In the area of Air Pollution Control: Monitor air pollution content (following a training period), make reports on specific "pockets" containing high quantities of pollutants, investigate pollutant sources, make reports to city officials.
3. In the area of Water Quality: Investigate quality of drinking water in inner cities, locate contaminant sources, investigate run-off in gutters, study health effects on local residents, make reports to city officials.
4. In the area of Pesticides: Survey rodent control programs in inner city and the effectiveness of these control measures, survey use of pesticides by residents, encourage proper use-storage-container disposal measures, suggest alternative measures, suggest alternative measures of insect control.
5. In the area of Noise: Operate equipment to monitor noise levels (following a training period), report sources of noise and effects on inner city residents, suggest alternate routes for trucking.

The Task Force recommends a two-component SPARE program for carrying out an inner city information-education-and-paid employment program.

1. Continue the joint EPA-Department of Labor (DOL) SPARE program enabling teenagers to work on environmental projects part-time. This would utilize (DOL) Neighborhood Youth Corps funds to pay nearly 10,000 teenagers roughly \$10 million over the next year. EPA funds would be limited to \$500,000 for supervision and equipment in 50 cities during the school year, and \$2,000,000 during the summer of 1972 for supervision and equipment in 100 cities.
2. The Task Force recommends, as a part of the National Clean Sweep Program, that EPA create a SPARE "Follow Through" Program to hire 7,000 teenagers at a cost of \$7,000,000 to supplement the cleanup efforts of the "Environ Men." These teenagers would be

paid for 10 hours of work each week helping to clean, improve, and maintain their neighborhood environment. These "Follow Through" teams would be working in 20 cities across the nation. (See Recommendation I in this section for details of National Operation Clean Sweep.)

#### VIII. COORDINATED MANPOWER AND CAREER DEVELOPMENT IN THE INNER CITY

The Task Force recommends that EPA recruit in the inner city to provide minorities with both employment and career growth.

This would involve additional training in entry level positions that will be primarily filled by minorities. The recruitment should be in accordance with EPA's personnel system. The Office of Civil Rights and Urban Affairs' Equal Employment Office can serve as liaison between the Personnel Division and job aspirants.

One promising manpower training development, under consideration by EPA's Youth Program, is the "Environmental Intern Program."

Environmental interns would be inner city youths of college age (though probably without college education) who would spend a year in four three-month assignments, each assignment would be in a different office of EPA. They would learn the complexities of government involvement in the inner city environment. Typical assignments would include:

1. Contracts Compliance and Section 8(a) Program - learning how to attract contract money to the inner city and how to assure fair treatment of minority contractors.
2. Enforcement and General Counsel - learning in a broad way the laws designed to counteract environmental deterioration in the inner city.
3. Public Affairs - learning how to call attention to, and stimulate public concern for, various critical issues in the inner city.

At the end of the year, these interns would generally return to the inner city where they would work for municipal governments and community organizations to draw Federal monies and technical expertise to their local areas.

EPA's Equal Employment Office (within the Office of Civil Rights and Urban Affairs), under authority of the Manpower Development Training Act of 1962, is already geared toward helping the disadvantaged, semi-skilled and skilled workers under the following programs:

### The Couple-OJT Program (Institutional plus on-the-job training)

This program is designed to improve the skills of employees on-the-job and to recruit new employees for entry level positions. The program also combines classroom work with related in-plant training.

### Institutional Training Program

This program is conducted in community colleges or vocational training schools. For example, in the Water Programs a cooperative arrangement was made with training institutions and publicly-owned local waste treatment facilities which provide the opportunity for "hands on training." Upon completion of the courses, trainees have a marketable skill to make them employable at entry level in the waste treatment control plants.

### Public Service Careers

The objectives of this program are: secure, within merit principles, permanent employment for disadvantaged persons in government agencies and stimulate the upgrading of current employees, thereby meeting public sector manpower needs.

### Neighborhood Youth Corps

This program is comprised of three main components: an in-school program designed to provide paid jobs for youth inclined to drop out of school; a program to encourage youth to remain in school, and a summer program with similar objectives. The program provides an "equivalent certificate" (comparable to a high school diploma) to those who have already left school and needed work experience and remedial education to be able to compete in the job market.

It would cost approximately \$300,000 to implement a comprehensive manpower training program. This would provide salaries for trained personnel, institutional training for youth involved in the program, and other related costs.

## IX. URBAN PROGRESS REPORT AT UNITED NATIONS STOCKHOLM CONFERENCE

The Task Force recommends that the Administrator (or his designee) include in his presentation at the June 1972 United Nations Conference on the Human Environment, Stockholm, a progress report on U. S. A. urban environment achievements.

Since the theme of the conference is the human environment, the findings of the Task Force on conditions in our inner cities and the achievements of EPA should be of value and inspiration to developing countries. We must demonstrate to the world that our concern is with the environment of people, everyone's environment, rich and poor, but especially the environment of those upon whom pollution falls most heavily.

% of Total Poverty Population of 20 Cities

<u>Rank</u>	<u>City</u>	<u>Black Population</u>	<u>% of Pop.</u>
1.	New York, New York	1,666,636	20.0
2.	Chicago, Illinois	1,102,620	13.5
3.	Detroit, Michigan	660,428	8.1
4.	Philadelphia, Pennsylvania	653,791	8.0
5.	Washington, D. C.	537,712	6.6
6.	Los Angeles, California	503,606	6.2
7.	Baltimore, Maryland	420,210	5.2
8.	Houston, Texas	316,551	3.9
9.	Cleveland, Ohio	287,841	3.6
10.	New Orleans, Louisiana	267,308	3.3
11.	Atlanta, Georgia	255,051	3.1
12.	St. Louis, Missouri	254,191	3.1
13.	Memphis, Tennessee	242,513	3.0
14.	Dallas, Texas	210,238	2.6
15.	Newark, New Jersey	207,458	2.6
16.	Indianapolis, Indiana	134,320	1.7
17.	Birmingham, Alabama	126,388	1.6
*18.	Boston, Massachusetts	104,707	1.3
*19.	Denver, Colorado	100,000	1.3
*20.	Seattle, Washington	100,000	1.3
		8,151,569	100.0

\*Not strictly ranked - geographical factor added.



Table IV-B

Budget for National Operations Clean Sweep

<u>Rank</u>	<u>City</u>	<u>Men</u>	<u>Trucks</u>	<u>\$ for Plastic Bags and Receptacles</u>	<u>No. of SPARE Teenagers</u>	<u>Total Dollars</u>
1.	New York	600	200	600,000	1,400	\$10,000,000
2.	Chicago	405	135	405,000	945	6,750,000
3.	Detroit	240	81	240,000	565	4,050,000
4.	Philadelphia	240	81	240,000	565	4,000,000
5.	D. C.	198	66	198,000	462	3,300,000
6.	Los Angeles	186	62	186,000	434	3,100,000
7.	Baltimore	156	52	156,000	364	2,600,000
8.	Houston	117	38	117,000	270	1,950,000
9.	Cleveland	108	36	108,000	252	1,800,000
10.	New Orleans	99	33	99,000	231	1,650,000
11.	Atlanta	93	31	93,000	217	1,550,000
12.	St. Louis	93	31	93,000	217	1,550,000
13.	Memphis	90	30	90,000	210	1,500,000
14.	Dallas	78	26	78,000	182	1,300,000
15.	Newark	78	26	78,000	182	1,300,000
16.	Indianapolis	51	17	51,000	119	850,000
17.	Birmingham	48	16	48,000	112	800,000
18.	Boston	40	13	40,000	91	650,000
19.	Denver	40	13	40,000	91	650,000
20.	Seattle	40	13	40,000	91	650,000
		<u>3,000</u>	<u>1,000</u>	<u>\$3,000,000</u>	<u>7,000</u>	<u>\$50,000,000</u>

## A P P E N D I X

P E S T I C I D E S

## APPENDIX

### PESTICIDES - LEGAL AUTHORITY IN FUNCTIONAL TERMS

#### A. REGULATORY PROVISIONS

##### 1. Environmental Protection Agency Authority<sup>1</sup>

- a. Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 135-135k.<sup>2</sup>

An Act regulating interstate marketing of economic poisons and devices by means of a registration and labeling procedure; enforcement provisions explicit.

- b. Federal Food, Drug, and Cosmetic Act, as amended, 21 U.S.C. 346, 346a, 348.<sup>2</sup>

Relating to the establishment, regulation, and/or exemption of pesticide tolerances in food and feed-stuffs, and in or on raw agricultural commodities shipped in interstate commerce.

- c. Section 112 of the Clean Air Act of 1970, as amended, 42 U.S.C. 1857 et seq.<sup>2</sup>

Provides authority for the issuance of national ambient air quality standards for individual air pollutants which adversely affect public health and welfare; implicit authority to set air emission standards for economic poisons.

- d. Pending legislation; Federal Environmental Pesticide Control Act of 1971<sup>3</sup>, HR 4152, a Bill pending before the 92nd Congress.

An Act to supersede and strengthen the Federal Insecticide, Fungicide, and Rodenticide Act.

##### 2. Related Authority of Other Federal Agencies

- a. Department of Transportation

Department of Transportation Act, Public Law 89-670, 49 F.C.R. 170

Provides authority for regulation of transport of hazardous materials, including pesticides, in interstate commerce.

b. Federal Trade Commission

Section 5 of the Federal Trade Commission Act,  
15 U.S.C. 45.

An Act regulating the advertising of economic poisons.

c. Food and Drug Administration

Federal Food, Drug, and Cosmetic Act, as amended,  
21 U.S.C. 321-392.

(Excepting Sections 346, 346a, 348). Authorizes  
monitoring and surveillance of food for economic poisons.

d. Department of Agriculture

Regulatory authority derived from a series of Acts;  
USDA statutory authority is listed in the "Research  
and Monitoring Provisions" Section [(B)(2)(c)].

USDA regulatory authority no longer relates to pesticides,  
per se (authority transferred to EPA); however, USDA  
retains authority to prevent the introduction of pests  
into the United States, and other activities relating  
to the control and spread of pests.

3. Related Authority of State/Local Agencies

a. State Laws<sup>4</sup>

(1) Registration Laws

These include those laws which: (a) regulate the  
production and marketing of pesticides by requiring  
compliance with registration and labeling criteria  
prior to interstate or intrastate commerce; and,  
(b) set up pesticide tolerances for agricultural  
commodities sold within the particular jurisdiction.

These State laws are generally modeled after the  
Federal Insecticide, Fungicide, and Rodenticide  
Act, as amended, and are relatively uniform in  
content. All except two States (Indiana and  
Delaware) now have pesticide registration laws,  
although not all States have fully implemented  
the authority granted.

## (2) Use and Application Laws

These include those laws which: (a) require examination and licensing of persons engaging in the business of applying pesticides (e.g., custom applicators, etc.); (b) regulate professions concerned with the use and application of pesticides, including consultation services and recommendations for treatment (e.g., horticulturists, tree surgeons, etc.); and (c) 1) prohibit or restrict the use of certain pesticides; 2) require (i) the purchaser to obtain a permit before using highly toxic pesticides giving the kind of pesticide to use, the concentration permitted, the crop to be treated, method of application, and precautions to be observed, and (ii) dealers in "prescription" pesticides to be licensed.

There is considerable divergence among State laws of this type, and some 10 States have no laws of this nature at all.

### b. Local Ordinances

A few local governmental bodies and municipalities have adopted ordinances and regulations which, in part, control the use of pesticides. Perhaps the most common are those which prohibit or restrict the use of highly toxic rodenticides or other pesticides by pest control operators in homes, warehouses, and structures.<sup>5</sup>

The considerable amount of State and Federal legislation regulating pesticides has reduced the need for local ordinances; however, in the 10 or so States without use and application laws and in the two States without registration laws, local ordinances are necessary if control of pesticides is to be accomplished.

## B. RESEARCH AND MONITORING PROVISIONS

### 1. Environmental Protection Agency Authority

- a. Pesticide Research Act, as amended, 16 U.S.C. 742(d)(1).<sup>2</sup>

An Act authorizing studies on the effects of pesticides upon the fish and wildlife resources of the U.S.

- b. Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 135-135k.<sup>2</sup>

- c. Section 204(5) of the National Environmental Policy Act, Public Law 91-190, 83 Stat. 855.

Authorizes the conduct of general research pertaining to ecological systems.

- d. Sections 104(b)(1)(3), (k), and 204(k) of The Agricultural Trade Development and Assistance Act, as amended, Public Law 480, 7 U.S.C. 1701 et seq.<sup>2</sup>

Authorizes Federal agencies to conduct selective Federal research programs, explicitly including investigations relating to the effects of economic poisons, in foreign countries through agreements with foreign research institutions and universities. Such programs utilize foreign currencies generated by the sale of surplus U. S. agricultural commodities.

- e. International Health Research Act of 1960, 22 U.S.C. 2101-2104; 42 U.S.C. 242f.<sup>2</sup>

Authorizes the conduct of health-oriented research and research training in foreign countries.

- f. Section 5(e)(1)(2) of the Federal Water Pollution Control Act, as amended, 33 U.S.C. 466 et seq.<sup>2</sup>

Authorizes research to determine the kind and extent of effects on health and welfare which may be expected from the presence of pesticides in the water in varying quantities; authorizes the conduct of studies and investigations of methods to control the release of pesticides into the environment, including examination of the persistency of pesticides in the aquatic environment and alternatives thereto.

- g. Section 212 of the Solid Waste Disposal Act, as amended, 42 U.S.C. 3254(f).<sup>2</sup>

Orders a study on means and methods for storage and disposal of hazardous wastes, including toxic chemical waste.

## 2. Related Authority of Other Federal Agencies

- a. Department of the Interior (Bureau of Sport Fisheries and Wildlife)

Fish and Wildlife Act of 1956, as amended, 70 Stat. 119; Fish and Wildlife Coordination Act of 1964, as amended, 48 Stat. 401.

Authorizes research and monitoring investigations relating to the fish and wildlife resources of the U. S.

- b. Department of Commerce (National Marine Fisheries Services; National Oceanic and Atmospheric Administration)

Fish and Wildlife Act of 1956, as amended, 70 Stat. 119; Fish and Wildlife Coordination Act of 1964, as amended, 48 Stat. 401.

Authorizes research and monitoring activities relating to aquatic environment and fisheries.

- c. Department of Agriculture (Agricultural Research Service; Forestry Service)

The USDA statutory authority for research and regulatory activities involving pest control is as follows:

Organic Act of U.S.D.A., 1862;  
Hatch Act of 1887, as amended, PL 84-353;  
McIntyre-Stennis Act of 1962, PL 87-788;  
Research and Marketing Act, 1946, PL 79-732;  
McSweeney-McNary Act of 1928, as amended, PL 70-466;  
Agricultural Trade Development and Assistance Act of 1954, PL 83-690;  
Control of Incipient or Emergency Diseases of Insect Pests or Plant Diseases, 1937, PL 75-20;  
Cooperation with Mexico in Screwworm Eradication, 1966, PL 89-251;  
Cooperation with States, 1962, PL 87-718;  
Federal Plant Pest Act, 1957, PL 85-36;  
Golden Nematode Act, 1948, PL 80-645;  
Halogeton Glomeratus Control Act, 1952, PL 82-529;

Mexican Border Act of 1942, PL 77-426;  
 Plant Quarantine Act of 1912, PL 62-275;  
 Terminal Inspection Act of 1915, PL 63-293;  
 USDA Organic Act of 1944, PL 78-425;  
 Research Grants - Basic, 1958, PL 85-934; and  
 Research Grants - Special, 1965, PL 89-106.

Under these authorities the USDA conducts functional activities relating to pest control and pesticides, including the conduct of research in foreign countries.

d. Department of Defense

A.R. 40-5 (preventive medicine) and 420-76 (entomological service).

Army regulations providing guidance for DOD operational activities dealing with the evaluation of various aspects of economic poison use.

e. National Institute of Environmental Health Sciences,  
 PHS, HEW

Public Health Service Act, as amended, 42 U.S.C. 201.

For research on physical and mental diseases and impairments of man; human health-oriented research explicit.

3. Related Authority of State/Local Agencies

Research and monitoring authorities are implicit in the State registration laws which are modeled after the Federal Insecticide, Fungicide, and Rodenticide Act.<sup>2</sup>



## C. GRANT AND CONTRACT PROVISIONS

### 1. Environmental Protection Agency Authority

- a. Sections 301, 311, 314, and 361 of the Public Health Service Act, as amended, 42 U.S.C. 241 et seq.<sup>2</sup>

Authorizes the awarding of grants-in-aid to universities, hospitals, and other public or private institutions, and to individuals for the conduct of research, investigations, experiments, demonstrations, and studies, including those relevant to human and environmental effects of economic poisons; provides grants to assist health-oriented State programs.

- b. Federal Insecticide, Fungicide, and Rodenticide Act, as amended, 7 U.S.C. 135-135k.<sup>2</sup>

Implicit authority to let contracts relating to research and monitoring of hazards associated with economic poison use.

### 2. Related Authority of Other Federal Agencies

- a. National Institute of Environmental Health Sciences, PHS, HEW

Section 301(d) of the Public Health Service Act, 42 U.S.C. 241.

Authorizes grants-in-aid to public and private non-profit institutions, and to individuals, for research on diseases, including health significance of economic poisons to man.

- b. National Science Foundation

The National Science Foundation Act of 1950, as amended July 18, 1968, PL 507, 42 U.S.C. 1861 et seq.

Authorizes grants-in-aid to public and private non-profit institutions, and to individuals, for applied basic research, including research on economic poisons.

- c. Office of Education, HEW

Environmental Education Act, PL 91-516, 84 Stat. 1312.

Authorizes grants and contracts to public and private non-profit institutions and organizations for research, demonstrations, and pilot projects on environmental quality and ecological balance, including effects of economic poisons.

d. Department of the Interior

Fish and Wildlife Act of 1956, as amended, 70 Stat. 119;  
Fish and Wildlife Coordination Act of 1964, as amended,  
48 Stat. 401.

Implicit authority for contracts relating to monitoring  
of fish and wildlife resources for hazardous substances  
such as economic poisons.

e. Department of Agriculture

The statutory authorities of the USDA are listed under  
"Research and Monitoring Provisions," (B)(2)(c).

Under various of these authorities the USDA is authorized  
to award grants-in-aid and let contracts for research  
relating to pest control, and for other purposes relevant  
thereto.

f. Department of Labor

Manpower Development Training Act of 1962, 42 U.S.C.  
2571 et seq.; Emergency Employment Act of 1971,  
PL 92-54.

Authorizes grants-in-aid and other assistance at the  
Federal, State, and local levels for training and  
programs, including those environmentally oriented.

g. Department of Transportation

Department of Transportation Act, Public Law 89-670,  
49 F.C.R. 170.

Provides implicit authority to award grants and contracts  
for the purpose of conducting research into improvements  
of the regulatory control of the transport of hazardous  
materials such as economic poisons.

3. Related Authority of State/Local Agencies

Implicit in the State registration laws is the authority to  
let contracts, as needed, for the research and monitoring  
activities needed to support the implementation of the Act.

FOOTNOTES/BIBLIOGRAPHY  
(for Appendix)

1. The Environmental Protection Agency was established by Reorganization Plan No. 3 of 1970 (July 9, 1970); copy in Appendix III.
2. Copy of legislation in Appendix III.
3. Copy of Bill and transmittal letter outlining its salient points in Appendix III.
4. Listing of Pesticide Laws, by States, in Appendix III.
5. Frear, D. E. H. (ed.), Pesticide Handbook-Entoma, p. 36, (1971).
6. Rohrman, D. F., "Pesticide Laws and Legal Implications of Pesticide Use," National Communicable Disease Center, (1968), p. 18.

EPA-CEQ Issue Paper  
on  
WATER SUPPLY LEGISLATION

July 9, 1971

EPA-CEQ Issue Paper  
on  
WATER SUPPLY LEGISLATION

This paper was developed to accompany the EPA-CEQ legislative proposal on water supply during review and discussion within the Executive Branch. The rationale for the proposed Federal program and the elements of the legislative proposal are presented. In addition, the paper presents the rationale and implications of the proposed State program grant authority and considers anticipated costs and benefits associated with the proposed Federal program.

I. Background

The Federal government has a long standing history of involvement with community water supply systems through administration of the interstate quarantine regulations under the Public Health Service Act. We are now proposing to improve that involvement through a more effective Federal program - a program designed to enhance State and local program effectiveness in assuring adequate supplies of safe drinking water. The need for program improvements was documented by the Community Water Supply Study which was originally undertaken in response to an OMB (then BOB) initiative.

Following publication of the Community Water Supply Study in August of 1970, a joint EPA-CEQ study of water supply problems was undertaken during the early part of 1971. The result of that effort was an issue paper, dated May 11, 1971, which summarized a number of facts concerning the problem and outlined alternative solutions and legislative options.

Briefly, the major problems were found to be as follows:

A. A number of communities - particularly communities of less than 5,000 population - are delivering potentially dangerous water. Based on extrapolation of the findings of the Community Water Supply Study, the phenomenon affects approximately 5.4% of the national population served by public water supply. Problems are generally related to bacterial contamination and/or harmful quantities of toxic or hazardous constituents.

B. Nearly 25% of the 160 million persons served by community water supply systems are using water which exceeds recommended drinking water limits for one or more parameters. Although consumption of such water is not considered to represent an immediate threat to health, aesthetic (related to taste and odor), economic and convenience (related to excessive mineralization) problems exist, and such water supply systems may not provide adequate protection over the longer term.

C. Most community water supply systems, including some large systems but most prevalent with smaller community systems, evidence deficiencies relating to construction, operation, maintenance and surveillance which may inhibit the ability of the suppliers to deliver water of an acceptable quality on a continuing basis.

When the magnitude of current national water supply problems was considered in light of anticipated future conditions, it became apparent that new and expanded Federal leadership and assistance should be given serious consideration. A number of options, ranging from no additional Federal action to strong Federal regulatory authority were considered and presented in the previous issue paper.

Publication of the Community Water Supply Study led to national concern about the quality of drinking water. As a result, five Congressionally sponsored bills - each of which proposed various extensions of Federal authority in the area of drinking water supply - were introduced in the current session of Congress. The Administrator of EPA testified on the subject of drinking water before the House Committee on Interstate and Foreign Commerce, Subcommittee on Public Health and the Environment, on May 26, 1971, indicating that EPA was currently studying the problem and would consider the need for both legislative and administrative actions. Since that time, the House Committee has prepared draft water supply legislation.

## II. Rationale for the Proposed Federal Water Supply Program

Development of the proposed Federal program was premised on the fact that basic and primary responsibility for maintaining, operating and regulating public water supply systems rests with State and local government. Past Federal involvement has dealt with establishment and limited enforcement of standards to prevent interstate spread of communicable disease, research, and technical assistance and training to enhance State and local capabilities. The proposed program envisions a continuance of these basic Federal-State relationships but is designed to more effectively deal with major institutional deficiencies related to the current water supply situation.

A substantial majority of existing water supply problems may be attributed to the general ineffectiveness of State and local water supply programs, which are largely understaffed and inadequately funded. This situation, on the other hand, may be attributed to a general lack of public awareness of the sometimes tenuous state of public water supply systems. Most people - because of inadequate surveillance of water supply systems and lack of procedures for informing the public - are simply not aware of the quality of their drinking water or of the dependability of their water supply systems. As a result, there is little incentive for public support of expanded regulatory programs.

The problems of inadequate regulatory programs and lack of public involvement are thus interrelated, and there is every reason to believe that neither State and local governments nor the private sector will be able to resolve these problems without additional Federal leadership and assistance. In view of this, it seems unreasonable to wait until existing water supply problems become more serious or new ones emerge before taking corrective action.

The proposed program would provide the public and local and State government with new incentives for action and more effective means of control. The program would involve and rely upon the public and each level of government in the following ways:

A. Improved public awareness of drinking water problems would be achieved through a provision whereby each community or private water supply system found out of compliance with established standards would have to so notify its customers. This would allow and enhance public choice between accepting known problems or petitioning local government for improvement of drinking water quality.

B. Better local support and new forms of Federal assistance would lead to improved programs for regulation of water supply systems. As a result, the states would be in a better position to deal with the public's demands for adequate quantities of safe drinking water.

C. The Federal role would be largely stimulatory in nature, involving financial and technical support of State regulatory programs. Enforcement authority would be available to deal with problems of an imminent and substantial nature in cases where the States are unable to implement remedial actions. In most cases, however, remedial actions would result from public demands and would be dealt with at the State and local levels of government.

A strengthened Federal role in the water supply area is in line with current trends in safeguarding the general health and safety of the population. As a part of these trends, Federal agencies have set and enforced standards for drugs, foods, air quality, mine safety, etc. The water supply issue, presenting some of the same health dangers, would also seem to justify continued Federal involvement. Safe water supply will be an area of increasing public concern in the overall environmental field. The question appears to be one of how extensive that Federal involvement should be.

After considering several alternative levels of future Federal involvement, we find extension and improvement of Federal drinking water standards and more effective Federal enforcement authority, coupled with financial and technical support to State water supply programs, to be the appropriate course of Federal action. The rationale for this broader Federal role is as follows:

A. Health threats in water are not limited to the transmission of communicable diseases, currently covered under interstate quarantine provisions; they include the harmful effects of toxic chemicals and other hazardous materials as well. Therefore, Federal authority should be extended to cover these constituents.

B. Insuring adequate supplies of safe public drinking water is largely a State and local problem. However, because of the mobility of our population, interstate affects as result of consumption of nearly any public water supply are probable. Direct Federal enforcement involvement under the EPA-CEQ proposal would focus on "imminent and substantial" dangers, which can affect residents other than those of the state or community concerned.

C. Extension of present Federal enforcement authority, which is currently limited to prohibiting interstate carriers from using unsafe supplies rather than initiating action against the water supply system itself, is proposed because interstate carriers represent only one means by which interstate health threats can occur. In addition, current authority is not directed to assist the 82 million residents served directly by interstate carrier water supply systems.



D. For chronic health effects, which require long-term exposure, the proposal would continue to rely on direct State regulatory action. We would provide the Federal financial support and increased technical assistance to State water supply programs to enhance the capability of states to deal with their problems. Promulgation of more comprehensive and more stringent drinking water standards will place increased demands on these now relatively ineffective programs. Thus, any new Federal initiative to improve drinking water quality must include a commitment for Federal assistance in the development and operation of effective State programs in order to insure effective implementation of drinking water standards.

E. The research, technical assistance and training provisions are a continuation of the existing authority. The basic purpose for including these provisions in the proposed legislation is to secure a comprehensive bill.

### III. Elements of the EPA-CEQ Water Supply Legislative Proposal

Major elements of the EPA-CEQ legislative proposal and explanatory notes are as follows:

#### A. Federal Standards

1. The standards would include drinking water quality constituent limits as well as standards for water supply treatment and distribution facilities and their operation, maintenance and surveillance to assure that the water quality constituent limits are met consistently.

2. The standards would be applicable to all public water supply systems, not just those serving interstate carriers.

3. The standards would distinguish between those violations which represent an imminent and substantial danger to health and those which represent less than adequate protection over the long-run, but appear to present no immediate threat to health. This distinction concerning the nature or degree of threat would serve as a basis for triggering Federal regulatory action in the absence of appropriate State action.

4. The Federal standards would not deal with the aesthetic, economic and convenience problems - such as taste and odors, and other similar non-health related problems - other than advising as to the preferability of such limits, as is done under current standards. We see no direct Federal regulatory role or exertion of pressure on states or communities to achieve such standards.

#### B. Federal Enforcement

1. The primary responsibility for enforcing compliance with the standards would rest with the states. In all cases, the states and communities would be relied upon to enforce against all violations which did not represent a substantial danger to health. State regulatory capability would be strengthened through Federal program grant support described in Section IV of this paper.

2. Despite the primary State and local enforcement responsibility, a strong Federal backup role is necessary. We already have a history of Federal enforcement with respect to supplies serving interstate carriers. An extension of this currently limited authority is proposed, but only in cases of imminent and substantial dangers to health.

3. Federal enforcement authority would be invoked only in cases where a violation of standards representing an imminent and substantial danger to a health occurred, and after determination that State remedial action was not adequate.

C. Nature of Enforcement and Regulatory Action

1. As a part of an approved State program plan (see item D.3. below), the Federal government would require inclusion of a provision whereby each community or private water supply system found out of compliance with standards would have to so notify its customers, in transmitting water bills or by other appropriate means. Where the State does not have such a requirement - and therefore no approved program plan - the Federal government could post appropriate notice, even in those cases where no imminent and substantial danger to health exists. This provision would be the full extent of Federal regulatory action in situations of less than imminent and substantial danger to health. It is proposed only for the purpose of assuring that the public is notified when a water supply system is found to be out of compliance with standards so that citizen remedial actions may be instituted in the affected community.

2. In all cases where an imminent and substantial danger to health came to the attention of EPA (through the State program plan or other means), EPA would assure that the following actions would be taken:

(a) Appropriate notice would be posted in the affected community;

(b) Use of the substandard water on interstate carriers would be prohibited;

(c) The Food and Drug Administration and the Department of Agriculture would be notified, with a recommendation to prohibit use of the water under their authorities (e.g., use of water in bottling and food processing); and

(d) The adequacy of State action to secure remedial measures would be reviewed.

3. If State action were adequate, no further Federal action would be taken.

4. If State action were inadequate, direct Federal enforcement action would be taken. The proposed authority would provide an opportunity to issue compliance orders or to bring civil suit. These measures would be designed to induce community remedial action and would include the following forms of injunctive relief:

(a) Limitations or prohibition of certain uses of unsafe water;

(b) Prohibition of new connections to the substandard water supply system;

(c) Holding of water supply user charge receipts in escrow until remedial action is taken; and

(d) Other suitable remedies.

5. Other proposed regulatory provisions would include:

(a) Reservation of authorities in the Public Health Service Act to control interstate spread of communicable disease;

(b) Opportunity for EPA entry and inspection of any water supply facility, after reasonable notice and at reasonable times, to determine compliance with Federal standards; and

(c) A provision requiring Federal installations to adhere to those standards relating to imminent and substantial threats to health.

#### D. State Program Grants

1. Since a major deficiency in the national water supply situation relates to the weakness of State programs, one component of the legislative proposal is State program grant support. An initial program of three-years duration is proposed at the following funding level:

FY 73 - 5 million dollars

FY 74 - 7 million dollars

FY 75 - 10 million dollars

2. The initial program would provide formula grants (allocated primarily on the basis of population), requiring non-Federal matching funds ranging from one-third to two-thirds of total program costs (matching ratios determined primarily on the basis of per capita income). These provisions would be very similar in nature to those of Section 7 of the Federal Water Pollution Control Act.

3. In order to be eligible for program grant support, States would be required to:

(a) Develop and submit for approval a program plan which provides for administration of the plan by the State agency; sets forth plans, policies and procedures to be followed; and provides for appropriate accounting, budgeting and other fiscal procedures for proper administration of the plan.

(b) Adopt drinking water standards the same as or more stringent than those promulgated by the EPA Administrator. (States could qualify for program grant support during the first year of the program by agreeing to adopt appropriate standards in those instances where State legislative sanction would be necessary.)

(c) Adopt appropriate regulations and procedures which can reasonably be expected to ensure that public water supply systems will comply with the standards.

(d) Report annually to EPA the status of standards compliance in each community. Reporting categories would be: (i) in compliance with standards; (ii) presently in marginal compliance, but required to take remedial action in the foreseeable future; (iii) in violation, but not creating a substantial danger to health; and (iv) in violation and creating a substantial danger to health. These annual reports would serve to focus attention on areas where Federal regulatory action might be needed [category (iv) above].

(e) Implement a standards violation notification system whereby each community or private water supply system found to be out of compliance with standards [categories (iii) and (iv) above] would have to so notify its customers, in transmitting water bills or through other appropriate means.

#### E. Research, Training, Technical Assistance, etc.

1. It is proposed to have a general authorization for these activities, rather than specific authorized funding levels. This will provide more flexibility for EPA choice of priorities in administering its budgetary resources.

2. EPA already has general authority, and is conducting these activities under the Public Health Service Act.

#### IV. State Program Status and the Need for Federal Support

The Community Water Supply Study and subsequent analyses have very clearly shown that a large majority of our current water supply problems are operational in nature and could be significantly lessened by improving the capabilities of State and local water supply programs. For this reason, a significant component of the proposed Federal program relates to State financial and technical assistance.

##### A. Current Status of State Programs

Many State water supply programs are currently understaffed and inadequately funded to meet their primary responsibilities for insuring adequate supplies of safe drinking water. The impact of this situation is felt severely at the local level of government in the form of ineffective technical assistance and laboratory support, inadequate water treatment plant operator training, and poor surveillance of operating water supply systems.

In June of this year, the EPA Water Hygiene Program conducted a study of State water supply program expenditures and found that total 1970 expenditures for the fifty states and six territories amounted to approximately \$10 million. These expenditures translate to a national per capita expenditure of 6.3 cents per person served by public water supply.

A state-by-state analysis of these data shows that State expenditures (excluding the ocean islands, some of which have very small populations served) ranged from as little as 1.3 cents to 18.2 cents per capita served. About 40 percent of the states (23) provide less than 5 cents per capita served, one-third (19) provide between 5 cents and 10 cents per capita and the remaining states (14) provide in excess of 10 cents.

Data concerning 1960 State program expenditures were also collected as a part of this study. After adjusting the value of the 1970 dollar to that of the 1960 dollar in terms of the services it could purchase, it was found that the per capita expenditures (based on total population as opposed to population served by public water supply) increased by only 14% during the 10-year period. However, when considering that about 15% more people are now served and that the number of community water supply systems has approximately doubled during the past decade (primarily due to the proliferation of small systems), this rate of increase in expenditures appears insufficient.

Although per capita expenditures can be somewhat misleading when applied to any specific state because of the many local variables, previous studies by the EPA Water Hygiene Program, in which detailed analyses of several State programs were performed, have indicated that a fully effective State water supply program would require funding in the vicinity of 20 cents per capita served. (This estimate appears reasonable when compared with the actual 1970 expenditures of approximately 18 cents per capita by State water pollution control programs - after program needs and differences in the programs are taken into account.)

On this basis then, it can be stated that the states should be spending approximately \$32 million per year on water supply programs, as compared to current expenditures of approximately \$10 million per year. It would be unrealistic to assume that the states will fill this \$22 million per year gap - particularly in view of current State financial problems. For this reason, we feel that Federal financial support should be provided to supplement and, to the extent practicable, increase the level of State program funding - contingent upon the adoption of appropriate enabling and regulatory authority, regulations, policies and procedures and the development, implementation and operation of effective programs.

#### B. Rationale for Proposed State Program Grant Support

The basic rationale for proposing a program of Federal financial support to the State water supply agencies is that we feel the states could significantly lessen water supply problems by implementing effective control programs at the State and local levels of government. These programs are currently inadequate and ineffective, and they are not now satisfying their primary responsibilities for insuring adequate supplies of safe drinking water. With a program of Federal leadership and assistance in the development of effective State programs, the states could better fulfill their responsibilities.

The Environmental Protection Agency is currently providing State and local program grant support in many of its environmental programs - including air pollution control, water pollution control, solid wastes management planning, etc. As a result, we have gained experience in the formulation and administration of such programs. Each of these existing programs were studied during our consideration of alternative approaches to be applied in the area of State water supply programs.

Consideration of several key issues, discussed below, largely shaped our proposed program:

1. Duration of Program Authorization. Because the proposed program is new and because several proposals for combining various forms of program grant support are under consideration both within and outside EPA, we feel that the program authority should be of relatively short duration. Our proposed three-year authorization would thus allow subsequent evaluation of the program in light of our experience with the State water supply agencies and would permit early alteration of the program should a new approach to administration of program grants be adopted.

2. Type of Grant. Three general types of grants were considered: project grants (which provide the greatest leverage for Federal influence and development of the grant recipient's program), straight formula grants (which have their virtue in simplicity and ease of administration), and formula grants modified by bonus provisions (similar to that currently proposed in the area of water pollution control program support). We feel that a straight formula grant provision with language similar to that of Section 7 of the Federal Water Pollution Control Act would be most appropriate during the initial three-year phase of the program. Upon evaluation of our experience during this initial phase, we could modify the program - possibly toward bonus provisions to provide incentives for development of desirable control program elements.

3. Magnitude of the Program. A state-by-state analysis of the financial impact of alternative Federal funding levels was conducted on the basis of the allocation equations and matching ratios specified in Section 7 of the Federal Water Pollution Control Act. Summary results of that analysis are shown in Table 1. The analysis indicated that a program of more than \$4 million or \$5 million in the first year would place a significant number of the states in the position of requiring additional non-Federal funds to meet minimum matching requirements. With an advance indication of these needs for additional funds, however, it would appear reasonable that most of the states could obtain the necessary funds (which would amount to about \$2.7 million or a 26% increase above current expenditures) over the three-year period. As a result, a \$5 million initial program is proposed, with increases to \$7 million and \$10 million over the subsequent two years. This program would provide an incentive for increased non-Federal spending in more than half of the states and would result in a more than doubling of expenditures to 14.2 cents per capita served.



TABLE 1 (EPA-CEQ Issue Paper)

FINANCIAL IMPACT OF ALTERNATIVE LEVELS  
OF FEDERAL FINANCIAL SUPPORT

	No Federal Support	Alternative Federal Funding Levels			
		\$4 million	\$5 million	\$7 million	\$10 million
No. of States currently spending less than minimum matching requirements (number, as related to a total of 56 jurisdictions)	-0-	9	11	23	29
Required additional State funding to meet minimum requirements (\$1,000's)	-0-	207	348	1,078	2,667
State programs with minimum matching requirements (\$1,000's)	10,124	10,331	10,472	11,202	12,792
Total Federal/State program (\$1,000's)	10,124	14,331	15,472	18,202	22,792
Total per capita expenditure with Federal/State program	6.3	8.9	9.7	11.4	14.2

Note: Calculations assume State water supply program funding levels during 1970 and are based on allocation equations and matching ratios specified in Section 7 of the Federal Water Pollution Control Act. Calculations also assume that all States will satisfy minimum matching requirements and that no Federal funds will be reallocated.

## V. Program Costs and Benefits

### A. Program Costs

The EPA budget now pending before the Congress contains a request of \$4.6 million for the Water Hygiene Program in fiscal year 1972. The extent to which various aspects of the program will be increased over the next five years has not yet been determined, although preliminary estimates of future resource requirements for the program are currently under internal review. It can be assumed that there will be some increase in Water Hygiene budgets in future fiscal years, but the magnitude of these increases will have to be determined in competition with other EPA programs in relation to overall EPA ceilings and allowances.

If the proposed legislation were enacted, certain additional increases over and above those which might be required under existing legislation would be called for. These increases fall into two categories: those that would be mandatory and those that would be desirable in view of our increased commitment to the program as a result of the new legislation.

The mandatory increases would be required to fund the new State program grants (together with certain additional administrative costs) and to increase Federal enforcement efforts as a result of broader enforcement authority. The commitments necessary as a result of the new legislation are summarized as follows:

	Additional Resources Required (\$1,000's)				
	FY 73	FY 74	FY 75	FY 76	FY 77
State Program Grants	5,000	7,000	10,000	*	*
Grants Administration	250	300	400	*	*
Enforcement	800	1,000	1,500	1,500	1,300
TOTALS	6,050	8,300	11,900	1,500	1,300

\*No commitment of Federal funds would be involved inasmuch as authority for State program grants is not being requested beyond FY 75. It would be reasonable to assume, however, that reevaluation of the program in FY 75 would indicate the need for continued State program support at a level of \$10 million to \$15 million annually in future years.

The implied Federal commitment for an expanded water supply program as a result of new legislation could also absorb additional costs in other program elements such as research, technical assistance and training. These costs would not be mandatory, however, and would be determined in light of other EPA program priorities on a discretionary basis.

## B. Program Benefits

The true measure of anticipated benefits attributable to the proposed program would be expressed in terms of reduced incidence of waterborne disease and health effects, and in terms of reduced societal costs associated therewith. However, our ability to precisely quantify benefits of this type on an incremental basis is limited. Epidemiological surveys have yet to define a true demarcation between infection or disease per se and economically critical physical disability. The major cost to society of waterborne disease and illness is probably not the cost of medical treatment or even time lost from work, but the 365 days spent each year in semi-productive work due to chronic disease and illness.

The correlation between water supply and disease and toxicity is a complex matrix of cause and effect, interrelated with innumerable other factors. However, the downward trend of enteric disease with improved water supply technology is universal, irrespective of per capita income and health expenditure. These trends are supported by incontrovertible laboratory, clinical and epidemiological evidence that water is a major carrier of disease-bearing organisms and toxic chemicals.

Even though no quantitative assessment of program benefits is available, several significant - although not mutually exclusive - anticipated benefits can be described. Enactment and implementation of the proposed legislation could be expected to result in the following:

### 1. Broader Preventative Program Coverage of the Population.

Current Federal enforcement authority under the Public Health Service Act is limited to prohibiting interstate carriers from using unsafe water supplies, but is not directed toward protection of the 82 million residents served by interstate carrier water supply systems. The proposed standards and regulatory authority would not only provide better protection for these 82 million people, but would serve to protect all of the 160 million people served by public water supply systems.

In addition to broader population coverage, the new standards would provide much broader coverage in terms of toxic materials and other pathogenic microorganism constituent limits and would cover water supply treatment and distribution facilities and their operation, maintenance and surveillance.

### 2. Reduced Waterborne Disease Outbreaks and Health Damage.

Extrapolation of findings of the Community Water Supply Study indicated that approximately 5.4% of the 160 million people served by public water supply systems are consuming water considered to be potentially dangerous, and some 274,000 persons (or 3.3% of the 82 million people served by interstate carrier systems) are consuming water now prohibited under interstate quarantine regulations.

During the ten-year period 1961-1970, there were 128 known outbreaks of disease or poisoning attributed to drinking water. Of these, 35 outbreaks involving 39,810 cases of illness were attributed to drinking water from public water supply systems. Nearly half of these outbreaks were caused by contamination of distribution systems, and the causes of most of the remaining outbreaks were evenly distributed between inadequate treatment facilities and improper control of treatment processes. About one waterborne outbreak that we know about occurs per month with something over 100 persons becoming ill. Some of the illness is quite severe and about two deaths per year are attributed to waterborne outbreaks.

Although we do not have adequate data on which to base a prediction of the anticipated reduction in waterborne disease outbreaks and health damage, we are convinced that some reduction will accrue as a result of the proposed program. Many of our current water supply problems are operational in nature and could be rectified rather easily if they were first recognized as problems and if pressure for remedial action were instituted through strengthened regulatory programs and increased public awareness.

3. Enhanced Opportunity for Citizen Choice Through Public Awareness. The proposed program is designed to bring about improved drinking water quality throughout the nation - but largely at the option of local citizens who would be expected to bear the burden of most of the additional costs of safer drinking water. We believe that the proposed approach of informed citizen decision, coupled with strengthened State and local regulation of public water supply systems, has many advantages over both the current situation as well as the less desirable alternative approach of strict imposition of Federal regulation upon local jurisdictions.

4. Better Capital Investment Safeguards. The Department of Commerce in 1967 estimated the capital investment in public water supply facilities to be about \$50 billion. When this investment is considered in relation to the 160 million people served by community water supply systems, we find an average investment of \$312 per capita served.

Most of the investment is in municipally-owned and operated public water supply systems and is thus considered to be part of the social overhead capital comprising basic public services, such as police, public health, fire protection, etc., that are necessary so that other productive activities may function in a specialized society. The industry, though large, is largely non-profit and in many cases tax-supported, which has limited the amount of funds available for overseeing the construction, operation, maintenance and surveillance of water supply facilities.

As a result of these minimal administrative overhead expenditures, many water supply facilities are inadequately designed and constructed, improperly operated, and poorly maintained (findings of the Community Water

Supply Study support these contentions). The proposed program - through improved standards, strengthened State regulatory programs, and better public awareness of water supply problems - would serve not only to correct many of these current deficiencies, but to prevent them from occurring in the future. Over a period of time the public costs saved as a result of reducing and minimizing the rate of depreciation of these facilities could be substantial.