LEAD POISONING FILE
IN CHILDREN 1542

TO PROVIDE FEDERAL ASSISTANCE FOR ELIMINATING THE CAUSES OF LEAD-BASED PAINT POISONING

HEARINGS

BEFORE THE

SUBCOMMITTEE ON HOUSING

OF THE

COMMITTEE ON BANKING AND CURRENCY

HOUSE OF REPRESENTATIVES

NINETY-FIRST CONGRESS

SECOND SESSION

ON

H.R. 17260

A BILL TO PROVIDE FEDERAL FINANCIAL ASSISTANCE TO HELP CITIES AND COMMUNITIES OF THE UNITED STATES TO DEVELOP AND CARRY OUT INTENSIVE LOCAL PROGRAMS TO ELIMINATE THE CAUSES OF LEAD-BASED PAINT POISONING AND TO REQUIRE AN EFFECTIVE PLAN FOR THE ELIMINATION OF LEAD-BASED PAINT POISONING AS A CONDITION OF FEDERAL ASSISTANCE UNDER CERTAIN OTHER PROGRAMS

H.R. 13254

A BILL TO PROVIDE FEDERAL FINANCIAL ASSISTANCE TO HELP CITIES AND COMMUNITIES OF THE UNITED STATES DEVELOP AND CARRY OUT INTENSIVE LOCAL PROGRAMS TO ELIMINATE THE CAUSES OF LEAD-BASED PAINT POISONING

H.R. 14734

A BILL TO PROVIDE THAT FEDERAL ASSISTANCE TO A STATE OR LOCAL GOVERNMENT OR AGENCY FOR REHABILITATION OR RENOVATION OF HOUSING AND FOR ENFORCEMENT OF LOCAL OR STATE HOUSING CODES UNDER THE URBAN RENEWAL PROGRAM, THE PUBLIC HOUSING PROGRAM, OR THE MODEL CITIES PROGRAMS, OR UNDER ANY OTHER PROGRAM INVOLVING THE PROVISION BY STATE OR LOCAL GOVERNMENTS OF HOUSING OR RELATED FACILITIES, SHALL BE MADE AVAILABLE ONLY ON CONDITION THAT THE RECIPIENT SUBMIT AND CARRY OUT AN EFFECTIVE PLAN FOR ELIMINATING THE CAUSE OF LEAD-BASED PAINT POISONING

JULY 22 AND 23, 1970

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TO PROVIDE FEDERAL ASSISTANCE FOR ELIMINATING THE CAUSES OF LEAD-BASED PAINT POISONING

WEDNESDAY, JULY 22, 1970

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON HOUSING OF THE
COMMITTEE ON BANKING AND CURRENCY,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10:05 a.m., in room 2128, Rayburn House Office Building, Hon. William A. Barrett (chairman of the subcommittee) presiding.

Present: Representatives Barrett, Sullivan, Moorhead, Stephens, St Germain, Widnall, and Halpern.

Mr. BARRETT. The meeting will come to order, please.

This morning the Subcommittee on Housing begins 2 days of hearings on what I consider to be a very serious problem that some of our cities are facing today, namely, the poisoning of young children by the ingestion of lead-based paints. These hearings are being held on my bill, H.R. 17260, a bill to provide Federal assistance for eliminating the causes of lead-based paint poisoning, and similar bills, H.R. 13254, H.R. 14734, introduced by other Members pertaining to the same subject. We hope to ascertain the scope and extent of this problem and to begin devising methods of helping local officials remedy lead-based paint hazards, and in addition, take steps to prevent the poisoning of thousands of children. Lead poisoning is basically a side effect of dilapidated housing.

(The text of H.R. 17260, H.R. 13254, and H.R. 14734 follows:)

[H.R. 17260, 91st Cong., second sess.]

A BILL To provide Federal financial assistance to help cities and communities of the United States to develop and carry out intensive local programs to eliminate the causes of lead-based paint poisoning, and to require an effective plan for the elimination of lead-based paint poisoning as a condition of Federal assistance under certain other programs

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Lead-Based Paint Elimination Act of 1970".

GRANTS FOR LOCAL ELIMINATION OF LEAD-BASED PAINT

SEC. 2. (a) The Secretary of Housing and Urban Development is authorized to make grants to units of general local government in any State for the purpose of assisting such units in developing and carrying out local lead-based paint elimination programs.

(b) The amount of any such grant shall not exceed 75 per centum of the cost of developing and carrying out a local program, as approved by the Secretary, during a period of three years.

(c) A local program should include—

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(1) the development and carrying out of comprehensive testing programs to detect the presence of lead-based paints in interior surfaces of residential housing;

(2) the development and carrying out of a comprehensive program requiring that owners or landlords of residential housing units promptly eliminate lead-based paints from all physical structures or interior surfaces on which lead-based paints have been used as a surface covering, including those structures or interior surfaces on which non-lead-based paints have been used to cover surfaces to which lead-based paints were previously applied; and

(3) any other actions which will reduce or eliminate lead-based paint poisoning.

(d) Each such program shall—

(1) be consistent with the locality's workable program for community improvement referred to in section 3; and

(2) afford, to the maximum extent feasible, opportunities for employing the residents of communities or neighborhoods affected by lead-based paint poisoning, and for providing appropriate training, education, and any information which may be necessary to inform such residents of opportunities for employment in lead-based paint elimination programs.

WORKABLE PROGRAM FOR COMMUNITY IMPROVEMENT

SEC. 3. No grant for a local lead-based paint elimination program may be made under section 2 unless a workable program for community improvement for the locality in which the program will be carried out has been presented to the Secretary in accordance with the provisions of section 101(c) of the Housing Act of 1949, and the Secretary has determined that such workable program meets the applicable requirements set forth in such section.

REQUIREMENT OF PLAN FOR ELIMINATION OF LEAD-BASED PAINT POISONING UNDER OTHER PROGRAMS

SEC. 4. (a) Section 101 of the Housing Act of 1949 is amended by adding at the end thereof the following new subsection:

"(f) No workable program for community improvement shall be certified or recertified under subsection (c) after the date of the enactment of this subsection unless (1) it includes a plan for eliminating the causes of lead-based paint poisoning among children and others in the area covered by the program and (2) the Secretary determines that the plan provides an effective means of eliminating such poisoning and will be implemented and carried out so as to achieve that result in such area."

(b) Section 103(a) of the Demonstration Cities and Metropolitan Development Act of 1966 is amended—

(1) by striking out "and" at the end of paragraph (4);

(2) by redesignating paragraph (5) as paragraph (6); and

(3) by inserting after paragraph (4) the following new paragraph;

"(5) the program (and each related Federal grant-in-aid program) includes a plan for eliminating the causes of lead-based paint poisoning among children and others in the area of the city covered by the program, and the Secretary determines that the plan provides an effective means of eliminating such poisoning and will be implemented and carried out so as to achieve that result in such area; and".

(c) The Secretary of Housing and Urban Development shall impose, as a condition of Federal assistance in any form to a State or local government or agency under any program which is administered by him or under his jurisdiction and which has as one of its primary objectives the provision or financing of housing or related facilities, a requirement that the recipient of the assistance submit, implement, and carry out an effective and workable plan for eliminating the causes of lead-based paint poisoning among children and others in the area where the assistance is to be used to the extent that the housing or related facilities for which the assistance is furnished are involved.

CONSULTATION WITH OTHER DEPARTMENTS AND AGENCIES

SEC. 5. In carrying out his authority under this Act, the Secretary shall cooperate with and seek the advice of the heads of other departments or agencies regarding any programs under their respective responsibilities which are related to, or would be affected by, such authority.

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DEFINITIONS

SEC. 6. As used in this Act—

(1) the term "State" means the several States, the District of Columbia, the Commonwealth of Puerto Rico, and the territories and possessions of the United States; and

(2) the term "unit of general local government" means (A) any city, county, township, town, borough, parish, village, or other general purpose political subdivision of a State, (B) any combination of units of general local government in one or more States, (C) an Indian tribe, and (D) with respect to lead-based paint elimination activities in their urban areas, the territories and possessions of the United States.

APPROPRIATIONS

SEC. 7. (a) There is hereby authorized to be appropriated for grants under section 2 not to exceed $13,500,000 for the fiscal year 1970, $13,500,000 for the fiscal year 1971, and $13,500,00 for the fiscal year 1972.

(b) Any amounts appropriated under this section shall remain available until expended when so provided in appropriation Acts. Any amounts authorized for the fiscal year 1970 but not appropriated may be appropriated for the fiscal year 1971; and any amounts authorized for the fiscal years 1970 and 1971 but not appropriated may be appropriated for the fiscal year 1972.

[H.R. 13254, 91st Cong., first sess.]

A BILL To provide Federal financial assistance to help cities and communities of the United States develop and carry out intensive local programs to eliminate the causes of lead-based paint poisoning

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Lead-Based Paint Elimination Act of 1969".

GRANTS FOR LOCAL ELIMINATION OF LEAD-BASED PAINT

SEC. 2. (a) The Secretary of Housing and Urban Development is authorized to make grants to units of general local government in any State for the purpose of assisting such units in developing and carrying out local lead-based paint elimination programs.

(b) The amount of any such grant shall not exceed 75 per centum of the cost of developing and carrying out a local program, as approved by the Secretary during a period of three years.

(c) A local program should include—

(1) development and carrying out of comprehensive testing programs to detect the presence of lead-based paints in interior surfaces of residential housing;

(2) development and carrying out of a comprehensive program requiring that owners or landlords of residential housing units promptly eliminate lead-based paints from all physical structures or interior surfaces on which lead-based paints have been used as a surface covering, including those structures or interior surfaces on which non-lead-based paints have been used to cover surfaces to which lead-based paints were previously applied; and

(3) any other actions which will reduce or eliminate lead-based paint poisoning.

(d) Each such program shall—

(1) be consistent with the localities workable program for community improvement referred to in section 3; and

(2) afford, to the maximum extent feasible, opportunities for employing the residents of communities or neighborhoods affected by lead-based paint poisoning, and for providing appropriate training, education, and any information which may be necessary to inform such residents of opportunities for employment in lead-based paint elimination programs.

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WORKABLE PROGRAM FOR COMMUNITY IMPROVEMENT

SEC. 3. No grant for a local lead-based paint elimination program may be made hereunder unless a workable program for community improvement for the locality in which the program will be carried out has been presented to the Secretary in accordance with the provisions of section 101(c) of the Housing Act of 1949, and the Secretary has determined that such workable program meets the applicable requirements set forth in such section.

CONSULTATION WITH OTHER DEPARTMENTS AND AGENCIES

SEC. 4. In carrying out the authority under this Act, the Secretary shall cooperate with and seek the advice of the heads of any other departments or agencies regarding any programs under their respective responsibilities which are related to, or would be affected by, such authority.

DEFINITIONS

SEC. 5. As used in this Act—

(1) the term "State" means the several States, the District of Columbia the Commonwealth of Puerto Rico, and the territories and possessions of the United States; and

(2) the term "units of general local government" means (A) any city, county, township, towns, borough, parish, village, or other general purpose political subdivision of a State, (B) and combination of units of general local government in one or more States, (c) an Indian tribe, or (d) with respect to lead-based paint elimination activities in their urban areas, the territories and possessions of the United States.

APPROPRIATIONS

SEC. 6. (a) There is hereby authorized to be appropriated to carry out this Act not to exceed $13,500,000 for the fiscal year 1969, $13,500,000 for the fiscal year 1970, and $13,500,000 for the fiscal year 1971.

(b) Any amounts appropriated under this section shall remain available until expended when so provided in appropriation Acts; and any amounts authorized for the fiscal year 1969 but not appropriated may be appropriated for the fiscal year 1970. Any amounts authorized for the fiscal years 1969 and 1970 but not appropriated may be appropriated for the fiscal year 1971.

[H.R. 14734, 91st Cong., first sess.]

A BILL To provide that Federal assistance to a State or local government or agency for rehabilitation or renovation of housing and for enforcement of local or State housing codes under the urban renewal program, the public housing program, or the model cities program, or under any other program involving the provision by State or local governments of housing or related facilities, shall be made available only on condition that the recipient submit and carry out an effective plan for eliminating the causes of lead-based paint poisoning.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 101 of the Housing Act of 1949 is amended by adding at the end thereof the following new subsection:

"(f) No workable program for community improvement shall be certified or recertified under subsection (c) after the date of the enactment of this subsection unless (1) it includes a plan for eliminating the causes of lead-based paint poisoning among children and others in the area covered by the program and (2) the Secretary determines that the plan provides an effective means of eliminating such poisoning and will be implemented and carried out so as to achieve that result in such area."

SEC. 2. Section 103(a) of the Demonstration Cities and Metropolitan Development Act of 1966 is amended—

(1) by striking out "and" at the end of paragraph (4);

(2) by redesignating paragraph (5) as paragraph (6); and

(3) by inserting after paragraph (4) the following new paragraph:

"(5) the program (and each related Federal grant-in-aid program) includes a plan for eliminating the causes of lead-based paint poisoning among

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children and others in the area of the city covered by the program, and the Secretary determines that the plan provides an effective means of eliminating such poisoning and will be implemented and carried out so as to achieve that result in such area; and".

SEC. 3. The Secretary of Housing and Urban Development shall impose, as a condition of Federal assistance in any form to a State or local government or agency under any program which is administered by him or under his jurisdiction and which has as one of its primary objectives the provision or financing of housing or related facilities, a requirement that the recipient of the assistance submit, implement, and carry out an effective and workable plan for eliminating the causes of lead-based paint poisoning among children and others in the area where the assistance is to be used to the extent that the housing or related facilities for which the assistance is furnished are involved.

Mr. BARRETT. In most cases, such poisoning would not have occurred if the Nation had achieved its 1949 goal of eliminating slum and blighted housing. We know that almost 200 children die from lead poisoning every year, and 12,000 to 16,000 are actually treated and survive. Tragically half of these affected children are left mentally retarded, and only about one case in 25 is actually treated. What this means is that almost 400,000 children may be poisoned, and half of them will end with a permanent handicap.

Many cities are taking steps to deal with this problem. My own city of Philadelphia is beginning an extensive educational program to make parents aware of the tragic effect that may result from the ingestion of lead paint by young children. Chicago conducts a massed-screening program to identify children who have taken an extensive amount of lead paint. Baltimore forces landlords to remove all peeling paint and any type of lead paint from chewable surfaces below a height of 4 feet. However, the overwhelming evidence is that a large scale program backed by Federal funds must be mounted in order to prevent thousands of cases of brain damage, which directly results from eating lead-based paint.

This morning we are happy to have as our first witness Lawrence M. Cox, the Assistant Secretary for Renewal and Housing Assistance in HUD. Following Mr. Cox, we will have Dr. Raymond T. Moore, the Acting Commissioner of Environmental Control Administration, U.S. Public Health Service.

I am happy also this morning to say that we will have Mrs. Veronica Singleton, who will testify on behalf of the Philadelphia coalition against lead poisoning of children.

Mr. Cox, it is certainly nice to have you here this morning. Your reputation in housing is splendid and I am sure we will be glad to hear from your in-depth testimony this morning, and not having an opportunity to read it in advance of your coming, I hope you will be offering some solutions to save the brain damage of many of our young children.

Mr. Cox, we certainly want you to feel at home here this morning, as you have always requested us to have the same feeling when we have been to your office. If you are desirous of giving your testimony in full, or if you wish to present it extemporaneously, you may do so. It will be entirely up to you, and we will be glad to go along with any suggestions you make.

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STATEMENT OF HON. LAWRENCE M. COX, ASSISTANT SECRETARY FOR RENEWAL AND HOUSING ASSISTANCE, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT; ACCOMPANIED BY JOHN BELL, GENERAL COUNSEL'S OFFICE

Mr. Cox. Thank you, Mr. Chairman, it isn't very long. I would like to give it as it is written here. I welcome this opportunity to discuss with you H.R. 17260, the Lead-Based Paint Elimination Act of 1970. But first I would like to introduce the gentleman on my right, who is Mr. John Bell from our General Counsel's Office.

The problem of lead-based paint poisoning calls for public discussion as well as careful attention to what we can and should do. I am sure this committee, through these hearings, will provide a most helpful forum for determining the most appropriate and effective public policy.

Studies in this field often begin with the observation that we do not know just how large the problem really is. But we do know that it affects largely the very young. We know that the consequences of lead poisoning too often include death or irreversible disabilities, including intellectual impairment and that the effects may be slow to manifest themselves.

We know also that lead poisoning in children is commonly associated with old and poorly maintained housing. We know of evidences suggesting that, where such housing is concentrated, the incidence among the very young of at least unusual amounts of lead in the blood is startingly high. We know that, as matters now stand, lead poisoning and the risk of lead poisoning represents a peculiarly tragic burden which is disproportionately borne by the lower income and minority families who live in the decaying areas of our central cities.

Given these considerations the impulse to action is strong as it should be. We can't respond to that impulse simply by saying that the problem is too poorly defined, or too large, or too difficult.

To be sure the complexities are such that it may be premature to decide that new legislation is required to improve or supplement the relatively extensive authorities that already exist. This would be true even of legislation such as H.R. 17260, which very properly centers upon the need for local programs and efforts. But the bill also poses problems insofar as it contemplates a new Federal categorical assistance program and nationwide or uniform criteria for approval of local activities.

But despite these problems, we can at least undertake to devise a plan or program that will enable us to determine what kinds of local efforts are most promising and to know better what kinds of general criteria may be feasible and how they may be made effective. And we should be able to devise a program that will help us to make best use of the legislative authorities that already exist—a program that will enable us as necessary to reassess and revise our regulations, our research schedules, procedures for collection and dissemination of information, and funding estimates and priorities.

We do not yet have such a program in an overall sense. There is an awareness of the problem among different offices and agencies. There are a variety of research and program authorities already in existence that are applicable—or can potentially be applied—to the problem.

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These include authorities for different kinds of Federal assistance, such as HUD code enforcement grants and HEW health services program and project grants. But we can undoubtedly do more to draw these offices and authorities together in a systematic effort to do now what can be done and to identify the gaps in knowledge or authority that should be filled.

In my opinion, this kind of drawing together should logically be our first order of business. Whether or not any new legislative powers are required, the Federal Government could begin formulating a better coordinated plan—a program—for action in this field, bridging agency and authority lines where appropriate. I would hope that, working with HEW and other interested agencies, we could develop the outlines of such a program relatively rapidly. In the process, we could consider whether any new legislative authorities are in fact needed. But we should plan on implementing as soon as possible whatever additional administrative actions can reasonably be taken within our existing authority to deal more effectively with the prevention diagnosis and treatment of lead-based poisoning.

To achieve this result, we will have to address ourselves to a number of difficult and connected issues. I would not at this point undertake to set forth any particular agenda. But I can suggest several areas where questions have arisen in our own programs or thinking and which, as of now, I believe would probably warrant a relatively high priority.

1. As I have already indicated, there appears to be considerable uncertainty as to the exact magnitude of the problem. We do not know with much precision how common lead poisoning in fact is generally or within particular geographic areas or the relative contributions made by different sources of lead. This is partly a matter of reporting but it also appears to be partly a matter of definition—just what is the critical level of lead in the body. Certainly, we do not need complete and comprehensive data. But better information in this area, or at least the more systematic collection and use of information already available, would be most helpful in determining just where our efforts can best be concentrated and in evaluating the results achieved.

2. There is concern over the physical or mechanical methods of detection and elimination. Laboratory testing of paint samples, for example, is awkward as a code inspection procedure; it is much more desirable to be able to test on site. Equipment for this, however, may not be available or may not be satisfactory. An even more formidable problem may exist with respect to systems for removal or covering. If costs of this are substantial, they may too commonly be passed on to tenants least able to pay or may result in further additions to the already too large stock of abandoned housing. Further, paint removal may create its own risks in terms of paint chips, or dust, with a resulting need for temporary relocation at least of children living in the units. In all of these matters, a strong case can perhaps be made for additional research into the technologies involved.

3. The relative roles and capabilities of different programs and approaches is presently very debatable. Concern has been expressed, for example, that local efforts to deal with the problem may sometimes have been handicapped by uncertainty as to whether it is es-

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sentially a health or housing problem. This question has relatively broad implications if it is considered not in jurisdictional terms but in terms of what kinds of approaches are likely to be most rewarding, given the current state of the art. Consider, for example, the potentially very large costs of Federal assistance in connection with paint removal. How should these costs be balanced against the benefits that might be obtained from expanded programs to educate parents or health personnel so that they will be better informed as to ways of minimizing the incidence of poisoning cases and of the importance of early treatment? Even from the standpoint of what are commonly considered housing programs, there are questions as how best to proceed within the current structure. Thus given an objective of removing the hazard just as rapidly and broadly as possible, it is by no means clear that the inspection and enforcement procedures commonly employed in connection with housing codes will prove adequate.

There is one last point that should be kept in mind. Substantial elimination of all the lead-based paint used over many years in millions of dwelling units is a goal that is closely related to our attack on housing probems and needs generally. Perhaps some new medical cure can be developed that will not only prevent death or bodily damage but reverse damage that has already occurred. Absent that, however, a complete solution of the problem of lead-based poisoning related to old and poorly maintained housing may not be attainable much before we manage to replace that housing with new better housing. This does not mean that we should not expect to make significant progress if we focus more thought and more effort on the problem. But it does not underline—with the emphasis of personal tragedies effecting many thousands of children—just how important it is that we meet our housing goals, making up for lost time wherever we can and improving our programs and capabilities just as fast as we can.

Mr. Chairman, that concludes my statement.

Mr. BARRETT. Mr. Cox, we are going to ask you some questions later. We would like to have Dr. Raymond Moore, Acting Commissioner of Environmental Control Administration, Environmental Health Service, Department of Health, Education, and Welfare, to come forward.

Mr. Cox. It is your intention that I stay?

Mr. BARRETT. Yes, we would like to ask you some questions.

Dr. Moore, we are very pleased to have you here this morning and certainly it has been the policy of this committee to make all of our witnesses feel at home.

Dr. MOORE. Thank you, sir.

Mr. BARRETT. If you are not acquiring that feeling just let us know and we will attempt to make you get that that feeling.

Dr. MOORE. Thank you, Mr. Chairman.

Mr. BARRETT. We are happy to receive your testimony this morning. We want to hear it before we ask Mr Cox and you some questions. Now, if you are desirous to read your testimony in full or if you desire to give it extemporaneously that may be done, also.

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STATEMENT OF DR. RAYMOND T. MOORE, ACTING COMMISSIONER OF ENVIRONMENTAL CONTROL ADMINISTRATION, ENVIRONMENTAL HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY DR. JANE S. LIN-FU

Dr. MOORE. Mr. Chairman, if it meets with your approval, I would like to read it in full.

Mr. BARRETT. You may do so.

Dr. MOORE. Mr. Chairman, I appreciate the opportunity to appear before you today to discuss lead poisoning. I am accompanied by Dr. Jane S. Lin-Fu.

In the history of modern medicine few childhood diseases occupy a position as unique as lead poisoning. It is a preventable disease. The cause, epidemiology, and symptoms have all been well defined. Methods for screening, diagnosis, and treatment have long been available.

In the past three decades, concerted efforts to conquer infectious diseases have resulted in the development of vaccines for such vital diseases as poliomyelitis, and measles, the discovery of many antibiotics for bacterial and other infections, and systematic application of these therapeutic agents, but little has been done to eradicate lead poisoning. Yet this man made disease exists in epidemic proportions in many cities.

While mortality and morbidity associated with such diseases as poliomyelitis, tuberculosis, meningitis, and pneumonia have declined sharply, lead poisoning has continued to take a high toll among children. Silently, almost unnoticed, it causes the needless death of many children and leaves many more with mental retardation, cerebral palsy, convulsive seizures, blindness, learning defects, behavioral disorders, kidney diseases, and perhaps other handicaps.

Lead, a trace element which is nonessential to human physiology, occurs widely in man's environment and exposure to it is almost inevitable, even among children. Absorption of lead in man takes place mainly through the respiratory and the gastrointestinal tracts. It is estimated that about 25–50% of the respiratory intake may be retained and absorbed and about 10% of the amount ingested is usually absorbed from the gastrointestinal tract. Without undue exposure, only a small amount of lead is present in the human body. This has not been known to produce toxic effects.

Lead poisoning, or plumbism, is largely an occupational disease in adults. But in children it is almost invariably caused by repeated ingestion of chips or flakes of lead-poisoning paint and plaster——

Mr. BARRETT. Doctor, may I interpose here.

Dr. MOORE. Yes.

Mr. BARRETT. I just want to show you what the committee has picked up, peeling from the walls. Here is a piece of peeling paint. Wouldn't that be inductive to a child who is hungry, 2 or 3 years old, walking by and seeing that nice piece of candy lying on the floor.

Dr. MOORE. Perhaps it would.

Mr. BARRETT. Look at these peelings, all come down in the shape of a candy wrapper. This would induce a child to pick up this and munch on it. I just wanted to point this out as you reached this point. You may continue, Doctor.

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Dr. MOORE. Lead poisoning, or plumbism, is largely an occupational disease in adults. But in children it is almost invariably caused by repeated ingestion of chips and flakes of lead-containing paint and plaster from the walls, windowsills, and woodwork of old and poorly maintained pre-World War II houses. Children between the ages of 1 and 6 years old are the main victims, and those between 1 and 3 years of age comprise about 85 to 90 percent of the cases reported.

We would like your permission to introduce three documents to provide additional data.

Mr. BARRETT. That may be done without objections and so ordered.

Dr. MOORE. Two are published documents by Dr. Jane S. Lin-Fu. The third is "Control of Lead Poisoning in Children"—guidelines prepared by HEW to aid communities in establishing their own programs. (The documents referred to may be found at the end of Dr. Moore's statement.)

Childhood lead poisoning has its roots in dilapidated housing in old urban neighborhoods, it has a high incidence only among children living in city slums. In these areas, accessibility to flaking and peeling lead paint and broken plaster, lack of knowledge among parents that ingestion of lead paint is dangerous and even lethal, frequent inadequate parental supervision of young children, and a high incidence of pica (a perverted appetite for nonfood items such as dirt, paper, paint, and plaster) all set the stage for lead poisoning.

The solution is to make lead-based paint and other hazardous sources of lead unavailable to children and to ensure that children with excessive exposure to lead are identified before irreversible damage has occurred.

Lead concentration in the blood is generally used as an index of exposure to and absorption of lead. The blood-lead level of urban children is higher than that of children living in rural areas. Haggerty et al. reported the median blood lead in a group of rural children to be 12.5 micrograms per 100 milliliters of whole blood. Studies involving urban children indicated the median blood lead level is 27 micrograms per 100 milliliters.

Studies have shown that the blood-lead concentration in the urban population without undue exposure ranges from 15 to 40 micrograms per 100 milliliters of whole blood. Therefore, values above 40 micrograms per 100 milliliters represent undue exposure to and absorption of lead. The current status of exposure of children with blood-lead concentrations from 40 to 49 micrograms per 100 milliliters needs to be investigated. Children found to have blood-lead levels of between 50 to 79 micrograms per 100 milliliters should be investigated for possible lead poisoning. The danger of lead encephalopathy is very great in children whose blood lead has reached 80 micrograms per 100 milliliters; these children should be handled as medical emergencies.

Thus far studies on the effects of increased lead exposure have focused largely on the sequel of overt poisoning. Little is known and little has been done to determine the health effects that occur at low levels of exposure.

There has been little research on the health effects of lead levels below 50 mcg/100 ml—such changes may be subtle, but could possibly have serious consequences. It is likely that growing and developing tissue is much more sensitive to the toxic effects of lead. Children sometimes show signs and symptoms of lead poisoning at blood lead levels at which adults may be asymptomatic.

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Recently, it has been suggested that chronic debilitation and damage, which may not be recognized for many years, may result from an intake of lead far below what has been assumed to be dangerous, and that lead may prove harmful to the body even in the absence of clinical symptoms.

Municipalities that have conducted lead screening studies have found 5 to 10 percent of the children tested had levels equal to or above 50 micrograms per 100 milliliters. The American Academy of Pediatrics reported that prospective studies of children living in deteriorated, pre-World War II urban housing in various cities indicate that 10 to 25 percent of those children between 1 and 5 years of age have absorbed potentially dangerous quantities of lead; of those 2 to 5 percent have clinical symptoms compatible with acute lead intoxication.

Most communities, however, have not carried out lead surveys and there are few data to indicate the extent of the lead problems in these areas. Even where screening studies have been conducted, measurements have been made on small selected samples rather than the general populations. Further, it should be emphasized, that even in the light of the present advanced state of medical knowledge, there has been a low index of suspicion on the part of many physicians, possibly because of a lack of familiarity with juvenile lead poisoning.

The vagueness of the symptoms contributes to the failure to diagnose lead intoxication. As a result, accurate estimates on the number of clinical lead poisoning or subclinical conditions having adverse effects on physical and mental health cannot be provided. There are, however, sufficient data from screening and other medical studies to establish unequivocally that lead intake among children in the inner city is a widespread public health problem.

New York, N.Y.: In New York City, of 61,167 poisonings reported to the New York City Poison Control Center between 1955 and 1963, 1,704 were cases of lead poisoning. Seven hundred and twenty-seven cases of lead poisoning were reported in 1969. Physicians and medical agencies in that city are encouraged to send blood specimens on all suspected cases to the city health department. New York City Health Department officials recently informed us that in recent screening of some 30,000 children they found blood lead levels of 60 micrograms per 100 milliliters in 3 percent of those tested. Over 50 percent had levels of 40 or more micrograms per 100 milliliters.

Philadelphia, Pa.: In Philadelphia there were approximately 8,700 blood samples submitted by physicians from 33 hospitals and from a number of local medical practitioners. There were 777 confirmed cases of lead poisoning of children from less than 6 months to over 5 years of age. Case fatality rates per 10,000 children zero to 5 years varied from the maximum of 6.2 in one health district to zero in others. The frequency distribution for age groups showed 3 percent for children less than 1 year old, 47 percent for those 1 to 2 years, 33 percent for those 2 to 3 years, and 17 percent for those more than 4 years old.

This, Mr. Chairman, would indicate that from ages one to perhaps four is the most critical area.

Baltimore, Md.: The Baltimore, Md., City Health Department recognized the hazard to children of lead-based paint in 1931. Between the years 1931 to 1966 there were a total of 1,096 cases including 135 deaths. In 1967, there were 55 cases of lead poisoning, 15 identified by clinical diagnosis, and 40 by blood lead levels in excess of 60 micro-

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grams per 100 milliliters. In 1968, there were 43 cases, 13 clinically diagnosed and 20 with 60 micrograms per 100 milliliters blood. In 1969, there were 52 cases, 19 clinically diagnosed; 33 with the high blood lead level.

Chicago, Ill.: In 1967, 28,000 children under 5 years of age (one-fifth of total for that age group at risk) were tested—2,379 or 8.5 percent showed elevated blood levels of 50 micrograms per 100 milliliters or higher.

Mr. BARRETT. Doctor, may I interpose here? Does this mean that Chicago has compulsory blood tests for children from zero to 4 or 5?

Dr. MOORE. May I ask Dr. Lin-Fu to respond to that.

Dr. LIN-FU. It is not a compulsory testing program. However, it is a very large-scale program run by the Chicago Board of Health in cooperation with the Neighborhood Health Center people.

Mr. BARRETT. Well, in the best interests of the children and the families of America do you think that it should be a compulsory test, something on the basis of the tubercular tests.

Dr. MOORE. Mr. Chairman, I don't believe that testing should be compulsory nationwide. It should be compulsory in selected areas where there is a high index of suspicion that there is a problem. We have found, or have been able in general to pinpoint the areas of suspicion. Therefore, I don't believe it should be on a nationwide basis.

Mr. BARRETT. Thank you. You may continue.

Dr. MOORE. In 1968, of the 40,800 children under 5 years of age who were screened 1,556 or 3.8 percent had blood lead levels equal to or greater than 50 micrograms per 100 milliliters blood.

In 1969, 48,000 children were screened. In spite of the vigorous activities being directed against lead poisoning there were 456 cases of lead poisoning, another 716 elevated blood lead levels, and there was one death in this group.

In 1966, a followup of a sample of 425 children who had lead poisoning showed that 165 or 39 percent had neurological sequelae; 82 percent of those with symptoms of encephalopathy were left with handicaps including recurrent seizures, mental retardation, cerebral palsy and optic nerve atrophy—some had multiple handicaps.

While lead was involved in only 4.7 percent of the cases of accidental poisoning reported to the Chicago Board of Health from 1959–61, it was responsible for 79 percent of the accidental poisoning deaths during this 3-year period.

The meager data that are available for these relatively few cities cannot, of course, adequately reflect the seriousness of the lead hazard to children. Two cases that occurred in Hartford, Conn. serve as examples of incidents that are recurring throughout the various areas in this country where a lead hazard exists.

A 2-year-old and a 3-year-old child from the same family showed high blood lead levels of 130 micrograms per 100 milliliters and 150 micrograms per 100 milliliters, respectively. The 3-year-old showed clinical evidence of encephalopathy. Both children were severely ill. They were hospitalized for 1 month, and were treated with a chelating agent on a regimen of 5 days a week for the 4 weeks. They were then discharged.

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A survey of their home showed that paint layers on the windowsill contained 50 percent lead. There were 14 members in the family living in four rooms. It was not possible to relocate the family so the children had to be returned home. Three weeks later the 3-year-old was readmitted to the hospital with lead poisoning. The cost for the initial hospitalization and treatment of the two children was $10,000—the effect of the lead poisoning on their brains is unknown. Among survivors of acute lead encephalopathy who are reexposed to an environment which contains lead paint, the incidence of severe permanent brain damage is almost 100 percent.

The severe brain injury that may result from one or two episodes of lead intoxication could render the individual incapable of self-support. Thus, the economic loss may include earnings that could have accrued during working years. In addition, there is the cost of medical care which, according to an estimate by Batelle Institute, amounts to approximately 200 to 250 thousand dollars. It was stated that this represents "an order of magnitude estimate of costs" based upon reputable sources of information.

In summary, childhood lead poisoning is an eradicable disease. Methods for prevention and treatment are available. It has no reason for existence, and steps should be taken to eradicate this long neglected health problem among our children.

Dr. Lin-Fu and I will be pleased to try to answer any questions.

(The documents "Lead Poisoning in Children," "Childhood Lead Poisoning," and "Control of Lead Poisoning in Children," referred to by Dr. Moore in his statement follow:)

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lead poisoning

in children

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SOCIAL AND REHABILITATION SERVICE • Children's Bureau

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Lead poisoning in children, resulting mostly from ingestion of chips of lead-containing paint from walls and woodwork in old, dilapidated housing, remains a unique public health problem. Its etiology, pathogenesis, pathophysiology, and epidemiology are known. Practical methods are available for screening, diagnosis, prevention, and treatment. Yet each year lead poisoning continues to cause the deaths of many children and mental retardation or other neurological handicaps in many other children.

Health workers should be reminded, and the public informed, that lead poisoning is preventable. As is true with many other diseases, total prevention may be difficult to achieve, but significant reduction in the number and severity of lead poisoning cases can be expected from a well-planned program.

The following is an analysis of many facets of lead poisoning in children based on a review of the literature. A plan of approach to this health problem is suggested.

Size of the Problem

Lead poisoning in children is not an uncommon occurrence in the United States. Although slum areas in large old cities appear to have by far the greatest incidence, this problem is not necessarily restricted to the poor; it has been reported in children from economically and socially advantaged homes (*29*).

It is difficult if not impossible to assess the true incidence of lead poisoning in children. Obviously, in any community where overt lead poisoning associated with

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pica is reported, many unrecognized, subclinical cases must also exist. But while one cannot talk in terms of incidence rates, from the number of cases reported in several large cities one must conclude that this health problem is quite common in many areas.

In New York City, over 500 confirmed cases of lead poisoning in children were reported in 1964. This is excluding over 100 suspected cases that were being observed or investigated. Of 61,167 poisonings reported to the New York City Poison Control Center between 1955 and 1963, 3 percent or 1,704 were cases of lead poisoning (*19*). In Baltimore, during 1956–1964, there were 1,337 known cases of lead poisoning in children (*32*). In Chicago, during 1959–1961, 429 cases of lead poisoning were reported to the board of health. They represented 4.7 percent of the cases of accidental poisoning reported in that period (*9*).

Since these reported cases merely represent a portion of the total extent of lead poisoning, perhaps the following survey data are a better indication of the actual prevalence of this problem in slum areas.

In Cleveland, a survey was conducted among 549 children aged 12–35 months living in areas of old, poorly maintained housing where flaking paint was frequently found. Of these children, 28 percent had an abnormal urine that might be indicative of increased exposure to lead, and 6.4 percent fulfilled the diagnostic criteria for lead poisoning. Of 105 children of similar socioeconomic background living in a new housing project, none had significant evidence of lead poisoning (*17*). In Baltimore, among 604 children aged 7–60 months who came from a low-income congested area where lead poisoning was known to have occurred, 333 had clinical or laboratory evidence or a history suggestive of increased exposure to lead. Of these 333, 148 had blood lead levels exceeding 0.05 mg./100 ml. (*4*). Survey of a suspected high incidence area in Chicago disclosed that out of 500 study patients,

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7.9 percent had clinical or laboratory evidence compatible with the diagnosis of lead poisoning (*9*).

Consequences of Lead Poisoning

Mortality

In a 3-year period, 1959–1961, lead poisoning accounted for 4.7 percent of 9,853 cases of accidental poisoning in children reported to the Chicago Board of Health, but it was responsible for 79 percent of the total deaths due to accidental poisoning for the same period (*9*).

Between 1959 and 1963, 182 children were treated for acute lead encephalopathy at Cook County Children's Hospital. Over the 5-year period, despite the use of chelating agents and various techniques for reducing intracranial pressure, the case fatality rate remained essentially unchanged at the 25 percent level (except for one year when a higher fatality rate occurred, reportedly as a result of the bilateral craniectomies employed as part of the treatment that year) (*15*). In Cleveland, the mortality rate reported for lead poisoning from 1952 through 1958 was 30 percent (*17*). Coffin et al. recently reported a mortality of 4.5 percent in a group of 22 children with lead encephalopathy who were treated with a combination of BAL (British anti-lewisite) and CaEDTA (calcium disodium versenate) and measures to control cerebral edema (*10*).

Morbidity

For many of those who survive, the outlook remains grim. In Chicago, a study of 425 children who were fol-

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lowed for 6 months to 10 years after treatment for lead poisoning revealed that 39 percent had some kind of neurological sequelae. Among the 59 children in this group who had presented encephalopathic symptoms initially, 82 percent were left with handicaps: 54 percent had recurrent seizures, 38 percent were mentally retarded, 13 percent had cerebral palsy, and 6 percent were found to have optic atrophy. Some had multiple handicaps (*30*). Other sequelae reported in children who had lead encephalopathy include behavior problems, inadequate interpersonal relationships and inability to comprehend the abstract (*5, 28*). Lead poisoning as a cause of chronic renal impairment is still a controversial subject (*17*), but there is strong evidence which indicates that late lead nephropathy is a sequela of protracted childhood lead poisoning (*8*).

The exact incidence of lead poisoning as a cause of mental retardation is not known, but limited surveys of blood lead levels among mentally retarded children suggest that the incidence is probably not infrequent (*3, 29, 37*). On the other hand, it has been contended that mentally retarded children are more likely to have pica and therefore more likely to have lead poisoning (*3*).

Several followup studies have indicated impairment of intellectual ability in children who had lead poisoning. In the series of 425 children with lead poisoning reported from Chicago by Perlstein et al., mental retardation was found to be the most frequent sequela, occurring in 22 percent of the children. Among those who presented symptoms of lead encephalopathy initially, 38 percent of the children were found to be mentally retarded at the followup study, as mentioned above (*30*).

Similar results have been reported by other investigators. Byers and Lord followed 20 children who had relatively mild lead poisoning and were discharged from hospitals as recovered. They found that the IQ's of these children 3 to 12 years later ranged from 67–107, with a

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mean of 90. All but one of these children showed unsatisfactory progress in school because of specific intellectual defect (*5, 6*). Jenkins and Mellins studied 32 children who had severe lead poisoning (nearly all had evidence of encephalopathy) and found that 6 to 8 months later, their IQ's ranged from 35–115, with a mean of 74. The majority were severely retarded (*23*). Smith reported that five or more years after lead poisoning, a group of children who had lead encephalopathy had an average IQ of 80 (range 58–104), while those who had lead poisoning without encephalopathy had an average IQ of 87 (range 75–117); a group of controls who had pica without lead poisoning had an average IQ of 98 (*33*).

Epidemiology of Lead Poisoning

1. "High risk" areas for lead poisoning are almost synonymous with the slums, where old, deteriorating housing prevails. In these areas, accessibility to flaking paint and broken plaster, high incidence of pica, and lack of adequate parental supervision provide an optimum environment for lead poisoning (*20*).

2. Children between the ages of 1 and 6 years are the main victims; those between 1 and 3 years of age comprise approximately 85 percent of the cases, with the highest incidence at age 2 years (*20, 28*). Over 50 percent of all deaths from lead poisoning occur in 2-year-olds (*19*).

3. Childhood lead poisoning is significantly related to pica. In New York City it has been reported that over 30 percent of children who manifest pica have lead poisoning (*19*). Seventy to ninety percent of children with lead

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poisoning have been found to have a history of pica (*4*, *19*, *22*).

4. Symptomatic lead poisoning in children has a definite seasonal variation. About 45 percent of the cases reported in New York City during 1954–1963 occurred in the summer months of June-September (*19*, *22*). Others report that 80–85 percent of the cases occur in these months (*9*). But lead poisoning should not be considered a summertime disease. More and more cases are being reported in the winter months as health workers become increasingly aware of this problem. Some cases occur in winter when leaded battery casings are burned for fuel and the fumes are inhaled or there is prolonged contact with the ashes (*6*, *35*). Epidemiologic studies indicate that lead encephalopathy is much more frequent during the summer, but asymptomatic lead poisoning is a year-round disease (*19*).

5. There is a high incidence among Negroes and Puerto Ricans, probably because a greater proportion of these groups live in the so-called lead belts (*20*, *22*).

6. There is no significant difference in incidence by sex (*20*).

7. A high incidence occurs among siblings. McLaughlin reported 19 children with clinical lead poisoning from nine families; six of the children died (*27*). A 30 percent incidence among siblings has been cited by others (*14*).

8. There is a high recurrence rate (*27*, *33*, *35*).

9. Lead poisoning associated with pica is a chronic process. From 3 to 6 months of fairly steady lead ingestion is necessary in most cases before clinical manifestations develop (*11*, *35*).

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Diagnosis and Screening

Diagnosis

Since, in its early stage, lead poisoning is often asymptomatic or merely manifested by symptoms commonly seen in association with other diseases in everyday pediatric practice, to those unfamiliar with lead poisoning the correct diagnosis may not even be suspected. Vague, nonspecific symptoms, such as anorexia, abdominal pain, constipation, vomiting, anemia and irritability, are usual in early cases. Often, parents do not volunteer any pertinent information. A survey of 300 confirmed cases of lead poisoning revealed that 76 percent of the children had no presenting complaints, but on specific inquiry it was found that 58 percent of them had anorexia and 9 percent had vomiting (*19*). Among the 22 children with severe lead encephalopathy studied by Coffin et al. (*10*) 18 had been treated symptomatically by local physicians for "gastroenteritis" for varying periods prior to the onset of central nervous system symptoms. In addition, some had been treated for anemia, constipation, glycosuria, gait disturbances and sudden onset of strabismus.

A history of lead ingestion, or the presence of suggestive signs and symptoms in a young child is very useful in substantiating a diagnosis of lead poisoning, but confirmation of the diagnosis requires the demonstration of increased amounts of lead in blood or urine. Blood lead determination is widely accepted as the most reliable and practical method of diagnosing lead poisoning in children, as urinary lead determination requires a 24-hour specimen, and the excretion of lead is influenced by fluid intake, renal function and other factors (*19*, *35*). Lead levels in blood should be interpreted with caution, since values are affected by factors such as hematocrit, intercurrent infection, coincident bone disease, or recent ad-

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ministration of chelating agents (*8*). Caution should be taken to use lead-free equipment in collecting and storing blood samples. Laboratories may vary in accuracy; a physician should be aware of any general tendency in the laboratory he uses to give high or low test results for blood lead determinations.

Jacobziner suggested the following criteria for making a diagnosis of lead poisoning: a blood lead level of 0.06 mg./100 ml. or higher, and the presence of two or more of the following signs and symptoms: gastrointestinal symptoms of anorexia, vomiting, abdominal pain, or constipation; hematologic finding of anemia or pallor; neurologic signs of irritability, stupor, lethargy, or convulsions; and roentgenologic signs of increased density of the long bones, or opacities representing lead flakes in the abdomen. If a patient is asymptomatic but has a definite history of pica and a blood lead level of 0.06 mg./100 ml., he is classified as a "possible" case of lead poisoning, and periodic blood lead determinations are carried out (*19*).

Recently, Chisolm proposed that the "normal" blood lead level be revised downward. According to him, after infancy the median blood lead level is 0.027 mg./100 ml., and the upper normal limit should be set at 0.04 mg./100 ml. The widely used limits for normal of 0.05 and 0.06 mg./100 ml. were based on the use of samples containing a large proportion of young children from old urban housing areas who may have had increased exposure to lead (*8*).

The so-called classical signs of lead poisoning, i.e., lead lines on bone X-rays, radiopaque materials in the gastrointestinal tract, basophilic stippling of erythrocytes, and coproporphyrinuria, are often absent, especially in early cases and in children under 2 years. In one study, only 17 percent of patients with early lead poisoning and 45 percent of those with late poisoning had positive or borderline lead lines on X-rays. In four of eight children with lead encephalopathy, the X-rays were normal (*31*).

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Basophilic stippling was reported to be present in 60 percent of childhood cases of lead poisoning by one author, and in only 30–40 percent of cases by another (*16*). Similarly, coproporphyrin III is sometimes absent in the urine of children with lead poisoning (*4*, *10*). In one survey, blood lead determination was positive (0.06 mg./100 ml. or higher) in 37 percent of the suspected cases, but urinary coproporphyrinuria of 2+ or higher was present in only 5.5 percent of the patients (*19*). These "typical" signs are therefore only useful if present, and their absence does not rule out the possibility of lead intoxication. It is obvious that if one were to wait for the classical signs to appear before making a diagnosis, many children would have progressed to the stage of irreversible neurological damage while others would be diagnosed only on autopsy tables.

Many workers in this field feel strongly that treatment should be begun on any child with clinical symptoms suggestive of lead poisoning or any child with abnormally high blood lead levels even if he is symptom-free. Treatment should not be delayed until a conclusive diagnosis is available (*8*).

Large-scale screening methods

While blood lead determination is the accepted method of diagnosis, it is not suited for large-scale screening in old slum areas because of its cost and complexity.

Urinary coproporphyrin determination has been used by some health workers, but its value as a screening test has been questioned by others (*11*, *13*). While the usual technique is relatively simple, positive results may be indicative of conditions other than lead intoxication, and negative results are frequently encountered in the presence of lead poisoning. Benson and Chisolm have devised a urinary coproporphyrin test which they have found to be uni-

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formly positive (3+ or 4+) in patients with whole blood lead concentration greater than 0.10 mg. per 100 gm. (*2*). The test is less useful for detecting children with lower elevations of blood lead level.

Urinary excretion of delta aminolevulinic acid (ALA) is increased in lead poisoning, and Cramer and Selander were able to demonstrate a close correlation between this substance and blood lead level (*12*). But the rather complicated and time-consuming technique of urinary ALA determination as described by Mauzerall and Granick precludes its use as a screening device for lead poisoning on a large scale (*26*). Recently Davis et al. reported a modified method using disposable ion-exchange chromatographic columns which permits rapid determination of this substance. The pilot study conducted by Davis et al. in Chicago indicated that the relative simplicity of this technique, the rapidity with which the determination can be done, the requirement of only 1 ml. of urine for the test, and the reasonably low cost involved are the outstanding advantages of this method (*13*). However, the validity of this method as a screening device for lead poisoning in children remains to be confirmed, since the incidence of false positives and negatives is not known. Aside from lead poisoning, porphyria is also known to be associated with increased urinary ALA.

Hair, a continuously growing tissue which provides a metabolically passive and irreversible pathway for lead, is known to concentrate more lead per unit weight than any other tissue or body fluid, including bone, blood, and urine. Recently Kopito, Byers, and Shwachman studied the lead content of hair of 16 children with confirmed diagnosis of chronic lead poisoning (*24*). With one exception all had either elevated concentration of lead in their hair or significantly higher values in the segments proximal to the scalp in comparison with the distal segments. The

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mean lead concentration in hair of the 16 children with lead poisoning was 282 μg./gm., while that of 41 control children with 24 μg./gm., a difference of high statistical significance. In eight children, the concentration of lead in the proximal segment was 1.5–3.8 times higher than in the distal segment. The procedure requires only 10 mg. of hair in 5 to 10 mm. segments. The ready availability of hair as a specimen, the ease with which it can be collected, sorted and transported, and the reasonably simple technique of this procedure are the salient features which favor it as a screening device for lead poisoning in children. Further corroboration is essential, however, before this procedure can be accepted as a reliable screening test.

Two other tests reported to be valuable for screening of this condition are the determination of fluorescence of erythrocytes (fluorescytes) (*36*) and ophthalmoscopic examination for retinal stippling (*34*). These tests also require further evaluation.

Factors Contributing to Lead Poisoning

Although lead can be absorbed into the body via various routes such as inhalation and skin absorption, in children lead poisoning results almost exclusively from ingestion of flaking and peeling lead-containing paints found in old houses and on old furniture. Some of the most important factors which work together to perpetuate lead poisoning in children include:

Dilapidated housing

In the large, old cities, there is a marked concentration of lead poisoning cases in slum areas—the so-called

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lead belts. Here, dwellings often have several coats of paint on walls, woodwork, and ceilings, and the base coats generally contain significant amounts of lead. Until about 1940, lead-containing paint was frequently used in interiors as well as exteriors of houses. The houses are usually in bad repair and paint peelings and loosened plaster provide a dangerous source of lead to children with pica. Thus, despite legislative effort to prohibit the use of lead-containing paint for interiors, lead poisoning continues to occur in children living in slums.

A 1958 survey of 100 dwellings occupied by Puerto Ricans in Philadelphia revealed that 87 percent had at least one room in which the lead content of the painted surface was above 1 percent, the maximum level considered safe (*18*). In 1957, a survey of 100 blocks of dwellings in Baltimore randomly selected for lead paint sampling disclosed that 70 percent of 667 dwelling units had paint containing lead in excess of 1 percent (*32*). In contrast, lead poisoning was not found among children living in newly constructed housing projects in New York City, even in the so-called high incidence districts. This indicates that lead poisoning in children is inextricably linked to old, dilapidated housing (*19*).

Lack of awareness about the problem among physicians and other health workers

Many physicians are not aware of the existence or the magnitude of this problem of lead poisoning, either because they seldom encounter cases of it in their practice or because the cases, when encountered, are not correctly diagnosed. In New York City, where several hundred confirmed cases of lead poisoning are reported annually, not a single case was reported to have been seen at a large medical center over a 3-year period (*1*).

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Some equate the manufacture of lead-free paint today with the extinction of lead poisoning in children. What they do not realize is that old houses often still contain many layers of lead-containing paints, that today paints manufactured for outdoor use still contain lead, and that people unaware of the hazard of lead may use the outdoor paint for interior purposes.

An illustration of the misconceptions some physicians have concerning lead poisoning in children is the case of an 18-month-old boy who was admitted to the Massachusetts General Hospital with lead encephalopathy. The child was known to have pica, and, a few months prior to admission, he was seen by two physicians on separate occasions. One physician did not consider the possibility of lead poisoning because he had the common misconception that paint ingestion is harmless since interior paints manufactured today do not contain lead. The other erroneously informed the mother that drinking large amounts of milk will prevent lead poisoning due to paint ingestion (*14*).

Even among those who are aware of the problem of lead poisoning, some are hesitant to make a positive diagnosis. A large number of cases have been reported by hospitals to the Poison Control Center of New York City as "possible lead poisoning" despite highly suggestive clinical symptoms and blood lead levels considerably above the standard used for positive diagnosis (0.06 mg./100 ml.). One child admitted to a hospital with convulsions and vomiting had a blood lead level of 0.32 mg./100 ml. Although this was more than five times the level accepted for diagnosis, the child was reported as a case of "possible lead poisoning" (*21*). Hesitancy in making a diagnosis often leads to undue delay in treatment, and the loss of invaluable time during which irreparable damage may occur.

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A poorly informed public

Many parents are not aware of the danger associated with pica or the consequence of paint ingestion. Jacobziner reported that, in 90 percent of the cases of lead poisoning in New York City, the family knew that the child was ingesting paint but were unaware that this practice was hazardous (*19*). Another example of lead poisoning directly related to the lack of public information about the sources of lead intoxication is the sporadic occurrence of large scale poisoning from inhalation of lead fumes produced by burning wooden battery casings impregnated with lead salts for fuel (*8, 35*). Lead poisoning associated with ingestion of home-grown vegetables produced on a soil containing numerous lead battery casings has also been reported (*29*).

Inadequate prevention of reexposure to lead

There is a high rate of recurrence of lead poisoning among children. In a series reported by Smith, 19 percent of 229 cases of lead poisoning in Cincinnati had recurrent episodes (*33*). McLaughlin of New York City reported a total of 151 admissions of 143 children over a 5-year period. Several children were admitted two and three times, each time with recurrent encephalopathy. In one case, repeated episodes left the child completely incapacitated (*27*). Others working in the field of lead poisoning have also stated that "we saw the same children over and over again being brought in for more deleading, and each time with evidence of more encephalopathy, more residual brain damage. We were seeing mental retardates and institutional vegetables created right under our eyes" (*11*).

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It is thus apparent that failure to prevent re-exposure to lead contributes significantly to the mortality and morbidity of lead poisoning. Chisolm and Harrison have emphasized that the severity of residual handicaps may be correlated with the duration of exposure to lead and with the incidence of recurrent episodes (*7*).

An Approach to Control and Prevention

Knowledge of the epidemiologic data and factors contributing to lead poisoning in children can be translated into programs directed at the control and prevention of this health hazard. The effectiveness of such programs is best illustrated by the results obtained in New York City. After programs were set up for early diagnosis and treatment, the number of children with lead poisoning reported annually rose from an average of 29 during 1950–1954 to over 500 in 1964. Simultaneously, the fatality rate dropped from 27 percent (1950–1954) to 1.4 percent in 1964 (*19*).

In the following plan of approach to control and prevention, action is suggested in several areas: professional and public education; casefinding; followup of cases; legislative measures; research; and improved housing.

Educational campaign

Directed to physicians and other health workers. The encouraging results in New York City were attributed to the early casefinding techniques, and increasing the phy-

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sician's awareness of lead poisoning was a major factor in early casefinding, according to Jacobziner (*20*). Educational programs for the medical profession, nurses and other health workers in the form of talks, exhibits, and distribution of literature can be conducted in medical and nursing schools, hospital conferences, and professional meetings and conventions. Physicians must be made aware that lead poisoning is still a health problem today. They must learn to make routine inquiry about pica in children 1–6 years of age. They must also learn to think of lead poisoning when confronted with children who have symptoms compatible with that diagnosis. They must become familiar with the methods of screening and diagnosis, and know what facilities and services are available locally for making a diagnosis (such as blood lead level determination by the health department).

Directed to the public. The public and, in particular, parents with young children, should be informed of the hazards of lead, the sources of lead (old paints, plaster, storage battery casings, gasoline, etc.), the methods by which lead poisoning can occur (ingestion, inhalation, etc.), and the danger in pica. They should learn to recognize the early symptoms of lead poisoning, and be instructed to seek medical help when such poisoning is suspected.

Casefinding program

Screening in clinics, hospitals, and health projects (e.g., Children and Youth Projects supported by the Children's Bureau, the Head Start projects):

1. Routine inquiry about pica in all children 6 years old or younger.

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2. Blood lead level determination in all children with a history of pica, and in siblings of children with either positive lead poisoning or pica.

3. Reevaluation at regular intervals of children with pica who at initial screening did not have toxic blood lead levels. Children in "high risk" areas who have pica are in constant danger of lead poisoning, and an initial negative screening test does not guarantee that they may not be poisoned later on.

4. Screening of children from "high risk" areas by other methods, such as urinary ALA determination, should be considered.

Home surveys. Home visits are especially useful when parents of children with lead poisoning fail to bring siblings in for screening. Similarly, visits to families living in a housing project where lead poisoning has occurred will often uncover other cases.

Provision of prompt service in blood lead determination by local health departments. The health department of New York City reports results of blood lead determination to physicians and hospitals within 24 hours after receipt of the specimen (*20*). In other places, it may take much longer (*11*). In many cases, delay in diagnosis leads to delay in treatment, which in turn increases the risk of encephalopathy and irreversible damage in the patient.

Followup program

Prevention of reexposure to lead. Since lead poisoning usually occurs among those least able to improve their environment, prevention of reexposure will in many cases require formidable efforts by health and social workers:

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1. Instruction of the parents when a child is discharged from the hospital or clinic after treatment, regarding the seriousness of repeated exposure to lead.

2. Home visits by health workers to determine whether exposure to lead is continuing and to help the family prevent further exposure.

3. Removal of lead from environment. Paint removal is an expensive, time-consuming process, but it should nevertheless be required of the landlord when it is necessary for prevention of reexposure. The child should not be allowed in the home while lead paint is being removed, since there would be great danger of further exposure.

4. In some cities and hospitals, whenever removal of lead from a home is not immediately feasible, the child is placed in a convalescent or foster home until his home has been made safe or the parents have found better housing. This measure may not be practicable in many places because of the lack of suitable foster homes, but it should certainly be considered whenever the only alternative is to send a child home to a dangerous situation.

5. Additional social casework, if indicated, to reduce psychological or cultural factors resulting in pica in the child.

Determination of blood lead levels at regular intervals. This should be done in cases where prevention of reexposure to lead has failed.

Legislation

In those jurisdictions, particularly those including large urban areas, where the following measures are not

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in effect, legislative action ought to be considered:

1. Reporting by physicians of lead poisoning cases to local health departments.

2. Ordinances requiring that dwelling places be maintained in good repair and fit for human habitation, and that any condition found to be dangerous or detrimental to life or health (such as flaking lead-containing paint and loose plaster coated with such paint) be removed.

3. Prohibition of the use of paints containing lead for indoor purposes and on toys and furniture.

4. Warning labels on all paints containing more than 1 percent lead.

Further research

Causes and treatment of pica. Pica is a serious problem among children. In the Children's Hospital of the District of Columbia it was reported to occur in 50–60 percent of all children 1–2 years old in the Negro clinic population. Among the white private patients, the incidence was still surprisingly high—28 percent of the 1- to 2-year olds (*11*). Pica is responsible not only for lead poisoning, but also for other types of accidental poisoning in children. In the Children's Hospital of the District of Columbia it was found that in children admitted because of ingestion of poisons, 67 percent of those in the early age group had pica (*11*).

Various psychological and cultural factors have been cited as contributing to the development of pica. Improper child-rearing practices in particular have been said to result in needs in the child which he satisfies through pica (*25*). Further research into the causes and treatment

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of pica is a logical step in combating accidental poisoning in childhood.

Laboratory screening procedure for lead poisoning. Determination of urinary ALA (delta aminolevulinic acid) and determination of lead concentrations in hair hold promise of being practical and reliable means of detecting children in the early stages of lead poisoning. The respective technique of Davis et al. and Kopito et al. seem to have important practical features, as described above. Well-designed investigations are now necessary to evaluate the reliability and sensitivity of these methods.

Treatment of lead encephalopathy. The report of Coffin et al. indicates that improved methods of treatment can effect a marked reduction in the mortality associated with lead encephalopathy. But in the series of cases reported the residual morbidity caused by lead encephalopathy remained high. Seven of the twenty-two children treated were left with residual injuries. Although the use of both BAL and CaEDTA removed lead from the body and brain cells more effectively than when either agent was used alone, the control of cerebral edema remained a difficult problem. Various therapeutic agents, including urea, mannitol, and dexamethasone, and surgical decompression have been used to combat this problem, but none has proved to be completely satisfactory. Continued research to reduce both the mortality and morbidity from lead encephalopathy is urgently needed.

Slum clearance

Among the benefits of clearing cities of old, dilapidated housing is the reduction of lead poisoning in children due to paint ingestion. This point should not be over-

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looked in the proposals of citizens and government leaders for slum clearance and for improved low-cost housing. Because these goals in housing are far from being achieved in most large cities, however, they cannot be relied upon as the main routes by which lead poisoning will be prevented in today's young children. Educational campaigns, casefinding, followup, and other programs must be carried on vigorously as specific measures against lead poisoning in children.

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CHILDHOOD LEAD POISONING . . .

an eradicable disease

JANE S. LIN-FU

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In the history of modern medicine, few childhood diseases occupy a position as unique as lead poisoning. It is a preventable disease. The etiology, pathogenesis, epidemiology, and symptomatology have all been well defined. Methods for screening, diagnosis, and treatment have long been available. In the past three decades, concerted efforts to conquer infectious diseases have resulted in the development of vaccines for such viral diseases as polio and measles, the discovery of many antibiotics for bacterial and other infections, and the systematic application of these therapeutic agents, but little has been done to eradicate lead poisoning. Yet this man-made disease exists in epidemic proportions in many cities.

While mortality and morbidity associated with such diseases as polio, tuberculosis, meningitis, and pneumonia have declined sharply, lead poisoning has continued to take a high toll among children. Silently, almost unnoticed, it causes the needless death of many children and leaves many more with mental retardation, cerebral palsy, convulsive seizures, blindness, learning defects, behavior disorders, kidney diseases, and other handicaps.

Lead poisoning, or plumbism, is largely an occupational disease in adults. But in children it is almost invariably caused by repeated ingestion of chips and flakes of lead-containing paint and plaster from the walls, windowsills, and woodwork of dilapidated pre-World War II houses. Because of its roots in dilapidated housing in old urban neighborhoods, it has a high incidence only among children living in city slums. In these areas, accessibility to flaking and peeling lead paint and broken plaster, lack of knowledge among parents that ingestion of lead paint is dangerous and even lethal, frequent inadequate parental supervision of young children, and a high incidence of pica (a perverted appetite for nonfood items such as dirt, paper, paint, and plaster) all set the stage for lead poisoning.

Children between 1 and 6 years old are the main victims, and those between 1 and 3 years of age comprise 85 to 90 percent of the cases. Boys and girls are affected equally. A high incidence is reported among Negroes and Puerto Ricans, probably because such a large proportion of these ethnic groups live in "lead belts." Lead poisoning occurs the year round, but lead encephalopathy (brain injury caused by lead), a very serious complication, is much more frequent during the summer. Some cases occur in winter when leaded battery casings are burned for fuel and the fumes are inhaled or there is prolonged contact with the ashes.

Nobody knows how many children in the United States are exposed to this health hazard and how many are actually poisoned, for many cases of lead poisoning are never diagnosed. But since the problem is closely related to poor housing conditions, an educated guess may be made on the basis of the number of old deteriorating houses in the United States and the known prevalence rate of lead poisoning among children living in such houses. According to the 1960 Housing Census, 30.6 million of the occupied housing units in the United States were built in or before 1939, when lead paint was still commonly used for interiors. Of these units, 5.6 million were classified as deteriorating and 1.8 million as dilapidated.

Although since the 1940's lead pigment has been replaced by titanium in interior paints, recent surveys in Baltimore, Philadelphia, and Minneapolis revealed that from 40 to over 80 percent of houses in selected slum areas still contain dangerous quantities of flaking lead paint that was applied many years ago. Surveys have indicated that among children living in such dwellings from 10 to 25 percent of those between 1 and 6 years of age have absorbed potentially dangerous quantities of lead, although clinical symptoms of lead poisoning have been present in only 2 to 5 percent of the children.[1] It is thus apparent that childhood lead poisoning is disturbingly prevalent in well delineated areas in many old cities.

Equally disturbing are the mortality and morbidity associated with this disease. Until the advent of chelating agents—therapeutic agents that bind the lead ions and remove them from the body—about two-thirds of the children with lead encephalopathy died. Even with the use of chelating agents, first BAL (British anti-lewisite) and later EDTA (ethylenediaminetetracetate), the fatality rate remained a shocking 30 percent for many years. More recently, with the use of BAL and EDTA in combination and other supportive therapy, the fatality rate has been reduced to less than 5 percent.

But the reduction of the fatality rate in treated

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All the ingredients for an incipient case of lead poisoning are present in this picture—old peeling plaster containing lead-based paint within reach of a toddler, who, like most children of her age, is likely to pick up and eat anything.

cases is neither evidence of adequate control of the disease nor a cause for complacency, because many of the survivors are left severely handicapped. A follow-up study of 425 children in Chicago who were treated for lead poisoning revealed that 39 percent had some kind of neurological sequelae. Among the 59 children in this group who before treatment presented symptoms of lead encephalopathy, 82 percent were left with handicaps: 54 percent had recurrent seizures, 38 percent were mentally retarded, 13 percent had cerebral palsy, and 6 percent had optic atrophy. Some had multiple handicaps.[2]

In Queensland, Australia, extensive epidemiological studies have demonstrated a high incidence of chronic kidney disease among patients who had lead poisoning in childhood 10 to 40 years ago. Half of these patients with kidney damage also suffered from gouty arthritis and many had severe high blood pressure, mental impairment, and various kinds of psychiatric disorders.[3]

Thus far studies on the effect of increased lead exposure have focused largely on the sequelae of overt poisoning. Little is known and little has been done to determine whether or not damage to the body occurs at a low level of exposure. Although clinical symptoms of lead poisoning often do not appear until the blood lead level is .06 mg/100 gm. of blood or higher, it is generally agreed that the normal blood lead level should not exceed .04 mg/100 gm. Recently it has been suggested that chronic debilitation and damage, which may not be recognized for many years, may result from an intake of lead far below what has been assumed to be dangerous, and that lead may be harmful to the body even in the absence of clinical symptoms.

Lack of awareness

The foregoing facts about lead poisoning pose a compelling question: How can a disease so prevalent and with such serious results escape attention of both the public at large and the Nation's health workers? In looking for an answer, one must first realize that lead poisoning in children is an illness rooted in social, economic, educational, psychological, cultural, medical, and even political factors. A direct result of a child's environment, it is prevalent only among children whose families are least able to improve their living conditions and who are not generally informed. The well-informed segments of the population are seldom affected.

Moreover, the answer is that many health workers who work among the poor are not aware that lead poisoning in children is still a problem. They apparently think that the mandatory use of lead-free paint for toys, furniture, and interiors of dwellings during the past quarter century has eliminated the problem. Furthermore, childhood lead poisoning is a disease that health workers may not recognize, even though it exists in epidemic proportions, because it has no distinctive clinical features. The symptoms of childhood lead poisoning are nonspecific. Anemia, listlessness, excessive irritability, loss of appetite, abdominal pain, constipation—signs and symptoms that appear before obvious evidence of encephalopathy, such as vomiting and convulsions—can all be misinterpreted as indications of some other illness. Because children who suffer from lead poisoning come from the slums, their anemia may be considered to be the result of inadequate nutrition; their listlessness and excessive irritability, to be the results of a pathological home environment; their abdominal pain and vomiting, to be symptoms of indigestion or gastroenteritis. Even convulsions may be regarded as signs of epilepsy rather than as evidence of lead encephalopathy.

Routine physical examination, blood count, and urinalysis will not provide an unsuspecting health

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worker with the correct diagnosis. Unless the worker inquires specifically whether the child has eaten chips of paint or plaster and draws a blood specimen for lead determination, he is likely to miss the diagnosis altogether and treat the child for something else, only to be confronted later with the same patient, who may then exhibit signs of brain injury, which may already be irreversible. In cities with a high incidence of lead poisoning, certain hospitals serving children from known "lead belts" report few or no cases of the disease.

Inadequate housing codes

In addition to poor housing conditions and a general lack of awareness of the problem, other elements contribute to the persistence of lead poisoning. Many cities in which lead poisoning is a public health problem do not have health or housing codes adequate to protect tenants from exposure to lead paint. Even in cities with codes specifically prohibiting lead paint in the interior of dwellings, enforcement of such codes is generally far from satisfactory. The currently available methods of paint removal are expensive and many landlords are not willing to undertake this expense. In cities with large slum areas and insufficient housing for people of low income, city officials sometimes hesitate to enforce the housing codes, reasoning that too rigorous enforcement would compel the landlords to abandon their slum buildings, thereby creating more problems for the city. Even when city officials are interested in enforcing codes, they frequently do not have enough inspectors and sanitarians to carry out the necessary procedures for enforcement—inspection of houses, collection of paint specimens, testing for lead content, and reinspection.

Another reason housing codes are not effective is that enforcement relies primarily on the criminal process, usually in the form of misdemeanor prosecution in the lower criminal courts. Criminal prosecution in such cases is fraught with many procedural and conceptual difficulties. First, summonses are often improperly served, being sent by mail rather than delivered by hand. Even when a landlord has been properly served with a criminal summons, he may fail to appear in court and thus force a postponement. Because a criminal court cannot proceed with a case until the defendant appears in court, housing cases often remain pending for months or even years. When the landlords do appear in court, adjournments and delays are frequent. Furthermore, proving the guilt of the offender beyond a reasonable doubt may be a long and complicated procedure in a lead poisoning case.[4]

When a landlord is found guilty, there is still the so-called "conceptual hurdle"—the reluctance of criminal courts to recognize a housing violation as a true "crime." A distinction is often made between the so-called "true crime" such as murder, assault, and robbery, and the "social welfare offenses" or crimes of omission, which consist of failure to meet health and safety standards. Penalties imposed for the latter offenses are generally minimal and inconsequential. In New York City, for example, while the city's statutes allow the imposition of fines ranging up to $1,000 per violation and provide for jail sentences of up to 1 year for repeated offenders against the housing code, in practice, jail sentences have practically never been imposed. In 1965 the average fine per case was less than $14; the average fine per violation was about 50 cents. Of the cases that did draw fines, many involved violations that had been uncorrected for years. Such inconsequential penalties convince many landlords that it is cheaper to pay the fine than to do the repair.[4]

Failure to get rid of lead paint in a house where a child is known to have developed lead poisoning usually means that a treated child returns to the same hazardous environment to be exposed to another episode of poisoning. The recurrence rate is high in lead poisoning. Among survivors of acute lead encephalopathy who are reexposed to an environment that contains lead paint, the incidence of severe permanent brain damage is almost 100 percent. *Thus early casefinding and treatment programs are virtually meaningless when treated children are returned to their old environment.* Even when a lead-free home is found for a treated child, this merely solves the problem for that particular child; it presents no solution to the problem of lead poisoning in general. If the lead paint in the house is not removed, the lethal heritage will soon pass on to other families with children, and lead poisoning among children multiplies.

Steps to eradication

While the obstacles to the eradication of lead poisoning are tremendous, they are not insurmountable. Slum clearance combined with provision of adequate housing for the poor is the most effective means of eliminating lead poisoning. But even before this measure is undertaken on the scale required, lead poisoning may be reduced through education, early detection, treatment, and follow-up programs that

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include removal of lead from houses wherever it is found. A few cities have demonstrated the value of such methods.

In Chicago, for example, there is a massive screening program for lead poisoning operated through the coordinated effort of local officials, health workers, and the community.

In the summer of 1965 a Citizens Committee to End Lead Poisoning was founded after the discovery of several cases of lead poisoning in the East Garfield Park District. With the help of the American Friends Service Committee, the Chicago Board of Health, and the Medical Committee for Human Rights, an educational and casefinding program was launched. A group of dedicated teenagers carried on a door-to-door campaign in the area, collecting urine specimens from children to be tested for lead poisoning.

In December of the same year the Chicago Board of Health announced plans for a large-scale screening program, and by the next September, 30,000 urine specimens had been tested. In October 1966 the Board of Health began an extensive casefinding program based on blood lead determination by atomic absorption spectroscopy—a screening method far superior to the urine test used earlier. The program has been conducted through the OEO-sponsored Chicago Committee for Urban Opportunity and supported in part by the Children's Bureau and State funds. Community representatives, working out of Urban Progress Centers, go from door to door distributing leaflets and alerting parents to the hazards and symptoms of lead poisoning. They also arrange for all children in the family between 9 months and 5 years of age to have a blood lead test made in the Urban Progress Center by a Board of Health physician. The Lead Poisoning Clinic, headed by Dr. Henrietta K. Sachs, was established for the diagnosis and treatment of children found in the screening program to have elevated blood lead levels.

By October 31, 1969, over 120,000 children had been tested, and over 1,500 children had been treated. As a result of this intensive program, the incidence of elevated blood lead levels among children from the same areas declined from 8.5 percent in 1967 to 3.8 percent in 1968. Along with a rise in the number of cases of the disease that were detected came a decline in the fatality rate. In 1963, the first year the disease was made reportable, 203 cases of lead poisoning were reported in Chicago and the fatality rate was 2.9 percent. In 1968 the number of reported cases rose to 702 while the fatality rate dropped to 1.3 percent. But because many children were returned to the homes in which they had developed lead poisoning, some recurrence among treated children was reported.

Similar figures have been reported from New York City where physicians from all medical agencies in the city are encouraged to send blood specimens on all suspected cases of lead poisoning to the city health department laboratory for prompt and accurate blood lead analysis. In 1954, New York City reported 80 cases of lead poisoning and a fatality rate of 15 percent; in 1968, the fatality rate was less than 1 percent in the 725 cases reported. The city health department is currently working with the lead poisoning screening programs of the Montefiore Hospital and of the federally supported comprehensive health care projects for children and youth at the Albert Einstein College of Medicine, the Jewish Hospital and Medical Center of Brooklyn, the Brookdale Hospital Center in Brooklyn, and Roosevelt Hospital. Because approximately 75 percent of the children with lead poisoning reported in New York City are from families receiving public assistance, plans are underway to mail with public assistance checks a leaflet on lead poisoning written in both English and Spanish. It has also been proposed that the leaflet be mailed with birth certificates so parents will become aware of the problem before their children reach the age of risk.

In Philadelphia, lead poisoning was made a reportable disease in 1950. But from 1950 to 1960 only 278 cases were reported; these cases involved 53 deaths. In 1961 the Electric Storage Battery Co. began to provide free blood lead determinations for suspected cases. As a result, 109 cases and seven deaths were reported during 1961.

In 1966 the Philadelphia City Council adopted an ordinance amending the Health Code and the Board of Health issued regulations regarding the labeling, application, and removal of lead paint. In reported cases in which lead paint in the interior of dwellings proves to be the source of poisoning, the Board of Health requires all loose paint to be removed wher-

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ever found and all intact lead paint accessible to children to be removed down to the bare surface of the wall. Premises may not be repainted until they are approved on reinspection.

Since the ordinance and regulations became effective, approximately 400 properties have been made safe in this way. During the same period—1967 to 1968—there were 176 cases of lead poisoning and two deaths reported.

In 1968, a urine screening program for lead poisoning among children 1 to 3 years of age was initiated in the child health conferences of three district health centers in Philadelphia's high-risk areas.

Baltimore was one of the first cities to recognize lead poisoning in children as a public health problem. For more than 30 years, it has demonstrated an interest in this problem through continuous detection and prevention programs that include enforcement of health and housing codes, epidemiological surveys, and intensive educational campaigns. Aided by the Property Owners' Association, the health department has obtained good cooperation from landlords.

Unlike other cities that have detected increasing numbers of cases, in recent years, as awareness of the disease has increased, Baltimore has reported a steady decline since 1958 when 135 cases and 10 deaths were reported. In 1968 only 13 cases and no deaths were reported. Only one death was reported for each of the years 1964, 1966, and 1967, and none in 1965. These figures probably do not represent the real incidence and fatality rate of lead poisoning in Baltimore, and should be interpreted with caution. It may not be entirely unreasonable, however, to speculate that the continuous existence of the various programs for many years, along with paint removal from many dwellings, has yielded encouraging results.

Voluntary action

Two years ago, the Urban League of Rochester, N.Y., persuaded 22 youths from its Project Uplift Youth Incentives Program to assist the Rochester Committee for Scientific Information (RCSI) in its study of lead poisoning. The young people collected paint samples from slum homes and turned them over to RCSI for analysis. Since then Project Uplift has assigned smaller groups of youths to work with the Rochester Neighborhood Health Center and with doctors from the University of Rochester's Strong Memorial Hospital Department of Pediatrics. Last summer the young people and the Rochester Neighborhood Health Center distributed material explaining the campaign to all families registered with the health center. Teams, of two teenagers each, visited the homes to find out whether the children had eaten paint and to collect paint samples. If a paint sample showed a dangerous content of lead, the teenagers collected urine samples from the young children living in those dwellings for testing for lead poisoning. Subsequently, those children whose urine showed positive results were examined thoroughly. Nearly 7 percent of the children tested thus far have been found to have dangerous levels of lead in their systems.

In New York City the New York Scientists' Committee for Public Information has called the public's attention to lead poisoning by sponsoring meetings both for the population at risk and for health and community workers.

In Minneapolis the University of Minnesota Bio-

A member of Project Uplift, a teenage volunteer organization sponsored by the Urban League of Rochester, N.Y., collects a sample of peeling plaster from an innercity dwelling for analysis to determine whether the paint contains lead.

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medical Student Committee for Social Responsibility and the Minnesota Committee for Environmental Information have sponsored a program to determine the prevalence of lead poisoning in one area of the city. Two University of Minnesota research assistants conducted a survey in early 1969 and found that 40 percent of the houses they examined had chipping interior paint with dangerous lead content. On the basis of this finding, a screening program was begun for children in the high-risk areas. In the summer of 1969 the Minneapolis City Council passed an ordinance prohibiting the use of lead paint in dwellings.

Many comprehensive health care projects for children sponsored by the Children's Bureau have set up programs to control lead poisoning. Among these are projects at the Hill Health Center in New Haven, the Children's Hospital of the District of Columbia, and the ones in New York City already mentioned.

The Johns Hopkins University School of Medicine has received a grant from the Children's Bureau for an urgently needed study of tests used in screening children for lead poisoning. The goal is to develop a simple, quick method of determining the amount of lead in human blood for use in large-scale screening programs. At present blood lead determination, in which a physician or skilled technician must puncture the vein to draw enough blood for analysis, is the only reliable test available. The successful use of this test with more than 120,000 children in Chicago is evidence of its feasibility as a large-scale method of screening for lead poisoning. However, scientists are seeking a quicker, but equally reliable, method that will require only the small amount of blood obtained from a finger prick.

The two currently used urine tests are far from satisfactory; the coproporphyrin test is often negative in lead poisoning and positive in other diseases, while the ALA (delta aminolevulinic acid) test is found to correlate poorly with blood lead levels. Moreover, it is difficult to collect urine from children from 1 to 3 years of age, the age group with the highest incidence of lead poisoning. Determination of the level of lead in hair has also been suggested as another screening test. Because the usefulness of this test has been questioned, further evaluation of it is needed.

In 1969 the Lead Industry Association published a booklet entitled "Facts About Lead and Pediatrics," presenting seven steps to the prevention of lead poisoning. The booklet is being distributed to physicians, public health authorities, social workers, city officials, and others who can help achieve prevention and control of the disease in children.

The recent upsurge of interest in childhood lead poisioning among Federal and local agencies, citizens' groups and government officials, health and community workers, and private and public institutions encourages the hope for an eventual end of this preventable manmade disease. But much more needs to be done.

Steps ahead

The ideal solution to childhood lead poisoning is slum clearance and urban renewal with the provision of adequate housing for families of low incomes. But this goal cannot be achieved quickly. Meanwhile, control and prevention must depend on other means, such as:

1. Public education through all channels and all media of communication to point out the dangers of paint eating, to acquaint the public with the symptoms of lead poisoning, and to urge parents to seek help whenever lead poisoning is suspected, even in the absence of symptoms. Many parents who are aware that their children eat paint do not know that this is dangerous. Among women who themselves eat clay or starch—a common practice in certain cultural groups—a child's paint eating may not receive attention.

2. Education of physicians, nurses, social workers and all other health workers on the prevalence of lead poisoning among children so that they will always have an index of suspicion. Health workers should routinely inquire about pica and paint ingestion in all children 1 to 6 years old, particularly those from high-risk neighborhoods, and should look for lead poisoning even before overt symptoms appear.

3. Mass screening programs in "lead belts" for all children between 1 and 6 years of age, using blood lead determination, the only reliable screening test.

4. Immediate referral of children found to have elevated blood lead levels to a medical center for diagnosis and treatment if necessary; prevention of a treated child's reexposure to lead in the home; and followup and retesting of all treated children who continue to be exposed. The prevention of reexposures means that health workers must work closely with housing authorities to see that lead paint is re-

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moved from every dwelling where poisoning has occurred.

5. The establishment of effective health and housing codes pertaining to lead and lead poisoning and the diligent enforcement of these codes. Where codes are not enforced, court action may be necessary. In New York City, for example, where the health department is said rarely to invoke a law allowing it to require landlords to correct lead hazards, a neighborhood health center is seeking court orders for landlords to repair as common law nuisances dwellings where children have suffered lead poisoning. Other measures that have been advocated are withholding rents to make the necessary repairs or fining landlords for each day the violations remain uncorrected.[5]

6. A concerted effort by research institutions to develop a simple, practical, and relatively inexpensive method for paint removal. The expense of currently available methods to make paint inaccessible to children—either by paint removal through burning, scraping, and sanding, or by covering the old paint with plasterboard or fiberglass—is an important deterrent to correction by landlords.

Research is also urgently needed to accomplish the following objectives:

- Development of a simple portable device for lead detection to make it possible systematically to identify houses containing lead paint. At present detection of lead paint in houses involves collection of paint samples and chemical analysis of such samples.
- Evaluation of available screening tests for lead poisoning and development of a reliable, simple, inexpensive method to determine blood lead level.
- Prospective studies of children with elevated blood lead levels who are "asymptomatic," to determine the subtle effects of lead that do not become immediately apparent.
- A uniform reporting system for all screening programs to facilitiate the collection of pertinent data, exchange of information, and comparison of results.
- Improved methods of treatment to reduce not only the number of deaths from lead poisoning, but also the residual effects in survivors.
- Increased knowledge about the causes and cures of pica to reduce the incidence of lead ingestion.

THE ESTIMATED COST of treatment and institutionalization to the age of 60 of a person who incurs severe permanent brain damage from lead poisoning in childhood is about $222,000. Complete removal of old lead paint from an average rowhouse with 10 windows, two doors, and baseboards would cost $250 to $300; replacement of window and door units and baseboards in such a house would cost $600 to $1,200.[6] These figures show only the difference in dollar costs between preventing lead poisoning through paint removal and permitting severe brain damage to occur in children. They do not take into consideration the suffering and heartache of affected families or the loss of useful manpower to the Nation.

Until society recognizes that permitting children to be killed and crippled by lead through paint ingestion is a crime not very different from permitting massacre and maiming of children by the use of lead bullets, this needless manmade disease will continue to victimize children.

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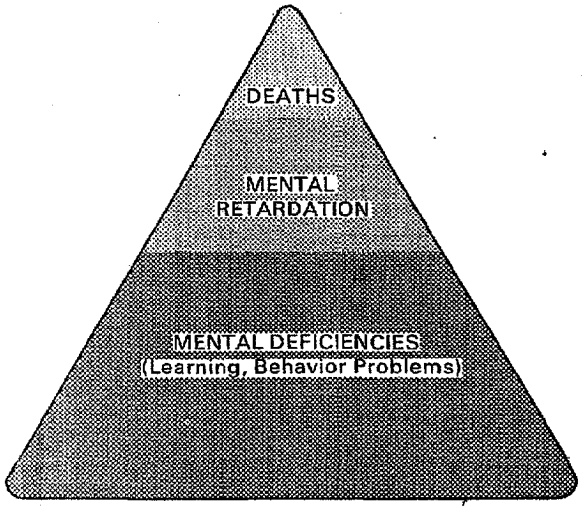
PRE–PUBLICATION DRAFT

Control of LEAD POISONING in Children



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service
Environmental Control Administration
Bureau of Community Environmental Management
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CONTROL OF LEAD POISONING IN CHILDREN

U.S. Department of Health, Education, and Welfare
Public Health Service
Environmental Health Service
Environmental Control Administration
Bureau of Community Environmental Management

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FOREWORD

A number of communities are presently considering the development of programs to control lead hazards to children. The Environmental Health Service of the Public Health Service has prepared guidelines to facilitate planning that are intended to provide essential background material for communities wishing to develop and carry out a lead control program.

The EHS is concerned about the lead problem in this country and plans to provide consultative assistance to cities and communities combating this environmental pollutant and is exploring the possible development of better ways to identify and treat the problems related to lead.

The purpose of this document is to make available the information on those aspects of the lead problem that relate to children, to present suggested methodologies for developing the various components of a community action program for controlling these lead hazards, to estimate the staff and other costs involved in developing each component of this total program, and to synthesize the components of the program in a manner that will allow a systematic and coordinated program to emerge.

This document is divided into seven parts. Part I reviews the lead problem as it relates to children; it lists clinical signs and symptoms; presents the problem statement and includes brief discussions of the epidemiology and the etiology, the need for standard definitions and references to look for blood lead measurements.

In Part 2, the philosophical and practical considerations necessary for a city planning a total lead-control program are delineated.

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In Part 3, methodologies are presented that will serve to help a community to develop a level of awareness concerning the problem of lead necessary for the successful implementation of a total program. In this section, both educational and organizational methodologies are developed.

Part 4 is devoted to several alternative systematic methodologies for the identification and disposition of children with increased body burdens of lead.

Part 5 is concerned with legislation. It lists hazards to be considered in legislation and in enforcement of Federal, State, and local laws and ordinances that exist or are being developed. It presents an example of a model ordinance that a city may use as a guide in developing its legislation.

Part 6 covers various types of fiscal support for a community program for the control of lead. Here are identified those Federal potential resources and revenues that could be used to carry out a total or partial lead program.

In Part 7, the tools and methods for identifying lead sources within the total environment are presented, as well as present methodologies available for deleading the environment. The discussion suggests procedures whereby a city may develop a systematic approach to the analysis of this specific aspect of the program.

Application and testing of the guidelines within a single community can be expected to stimulate widespread interest among a large number of municipalities, especially where there are inner city areas with badly deteriorated dwellings. Interested groups should stimulate action and early planning to obtain resources from their State Legislatures and city government to assist in supporting the control programs.

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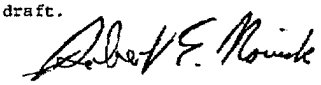
Educational programs and activities undertaken through liaison with government agencies and industry can be expected to reduce some sources of hazard. Increasing awareness by physicians can be expected to result in earlier identification and disposition of cases of children with lead poisoning and high lead intake.

The costs of detection and measurement of lead in biologic and other materials will be reduced by work stimulated by increasing interest in this health problem. The same will apply for deleading techniques.

The planned program is directed toward elimination of hazardous sources and is intended to afford continuing, adequate protection of children against adverse effects of lead on physical and mental health.

I wish to acknowledge with gratitude the fine work of the Bureau of Community Environmental Management staff members -- Fred Burg, M.D.; Barry King, Ph.D.; Frank Jacocks; Floyd Oglesbay; Charles Petrillo; Lewis Polk; A.F. Schaplowsky; James Simpson, and Robert Swiecicki. Major credit is due them for putting this program together and preparing this pre-publication draft.



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PART I

LEAD AS A PROBLEM RELATED TO CHILDREN

Health Hazard

Exposure of children to hazardous sources of lead intake may result in clinically identifiable conditions and/or in subclinical biologic effects. The consequences of clinical lead poisoning in children include death, encephalopathy, neuromuscular impairments, colic and general malaise.[1,2,3,4] Subclinical conditions may include impairment in learning capability and mental retardation.[5,6]

Lead levels associated both with clinical and subclinical conditions can result in destruction of red blood cells and affect hematopoiesis.[7,8] This latter effect results from interference in a step in the formation of hemoglobin of the red blood cells. Even low concentrations of lead have biologic effects. Reduction in the activity of the enzyme delta-aminolevulinic acid dehydrogenase of the erythrocytes can occur at blood lead levels as low as 5-10 µg per 100 ml of blood. The negative correlation between blood lead concentration and enzyme action is essentially constant for levels from 5 or more micrograms percent to over 94 µg percent.[9]

Other types of interference of cellular processes at molecular level are mitochondrial morphologic changes and ribosomal abnormalities.[10] Lead has an injurious effect on germ cells.

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Since lead can pass from the maternal blood to the fetal blood; it can destroy a fetus during the months of gestation.[10]

The Problem

The overall problem is the protection of children from lead poisoning and from the other adverse effects of lead intake on their physical and mental health. The two principal aspects are prevention and therapy. These guidelines on control of lead hazards among children are concerned with prevention. Thus, the specific problem--the problem immediately at hand--is the elimination of sources of lead hazardous to children.

Some sources of lead exposure are common to both children and adults. There are, however, some aspects of the problem of prevention among children that are unique. Some children deliberately eat materials--rubbish--that may contain lead. They may play in areas in which there is a hazardous source of lead in dirt and settled particles. Serious neurological impairments are now seen most often among children. Further, these conditions may occur at blood lead levels that are asymptomatic in adults.

Epidemiology

Municipalities that have conducted lead screening studies have found elevated lead levels in from five to ten percent of the children tested.[11] Many communities, however, have not carried out lead surveys and there are few data to indicate the probable extent of the lead problem in these areas. Even where screening

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studies have been conducted, measurements have been made on selected rather than the general populations. Further, it should be emphasized that, even in the light of the present advanced state of medical knowledge, there is a low index of suspicion on the part of some physicians due to the view that lead poisoning no longer occurs. The vagueness of the symptoms also contribute to the failure to diagnose cases of lead intoxication. In consequence, it is not possible to substantiate estimates of the numbers of children in the United States with clinical lead poisoning or those with subclinical conditions having adverse effects on their physical and mental health. There are, however, sufficient data from screening and other medical studies to establish unequivocally that lead intake among children is an important health problem and that it is widespread.

The summaries given below provide examples of reported data. Where screening was undertaken on selected populations, the earlier data showed an increase in the numbers of cases identified as awareness of the condition increased. As physician interest increased screening programs were extended. Other reports include only those cases identified by diagnosis as ill children and were admitted to several hospitals. Still others report only estimates of lead poisoning *per se*.

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Summaries of Screening and Medical Studies

Chicago, Illinois: In 1967, 28,000 children under 5 years of age (one-fifth of total for that age group) were tested--2,379 or 8.5 percent showed elevated blood lead levels of 50 µg/100 ml or higher.

In 1968, of the 40,800 children under 5 years of age who were screened 1,556 or 3.8 percent had lead levels equal to or greater than 50 µg/ml blood.[12]

In 1969, 48,000 children were screened. In spite of the vigorous activities being directed against lead poisoning there were 456 cases of lead poisoning, 716 elevated blood lead levels, and one death.[12]

In 1966, a follow-up of a sample of 425 children showed that 165 or 39 percent had neurological sequela; 82 percent of those with symptoms of encepalopathy were left with handicaps including recurrent seizures, mental retardation, cerebral palsy and optic nerve atrophy--some had multiple handicaps.[13]

While lead was involved in only 4.7 percent or 67 of accidental poisonings (67 cases) reported to the Chicago Board of Health from 1959-61, it was responsible for 79 percent of the total accidental poisoning deaths during this three year period.

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Hartford, Connecticut: Students in the University of Connecticut Medical School studied 76 children from a census tract where a case of lead poisoning had been reported. Among the 76, 52 or 69 percent had blood lead levels of 40 μg/100 ml, 21 or 28 percent had levels between 40 and 60 μg/100 ml, and 3 or 3.9 percent had levels greater than 60 μg/100 ml.[16]

A December 1969 survey of another section of Hartford revealed six cases in 71 children.

The Hartford Health Department in 1969 reported 11 cases of lead poisoning. Ten of these were hospitalized. One child developed encephalopathy. There were no deaths.[16]

New Haven, Connecticut: An intensive case finding program in 1969 identified 151 cases with blood lead levels greater than 50 μg/100 ml and 43 cases with greater than 70 μg/100 ml. There were 28 admissions to hospitals for 24 children; seven had clinical lead intoxication; one child showed encephalopathy.[16]

Waterbury, Connecticut: Five hundred children were given ALA screening tests; 32 were found to have abnormal lead levels; and one child developed encephalopathy. There were no deaths.[16]

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Baltimore, Maryland: The Baltimore Health Department recognized the hazard to children of lead-based paint about 1931. Between the years 1931-1966 there were a total of 1,096 cases including 135 deaths.[14] In 1967, there were 55 cases of lead poisoning, 15 identified by clinical diagnosis, 40 by blood lead levels in excess of 60 μg/100 ml blood. In 1968, there were 43 cases, 13 clinically diagnosed and 20 with 60 μg/100 ml blood. In 1969, there 52 cases, 19 clinically diagnosed; 33 with the high blood lead level.[15]

Boston, Massachusetts: It was reported at a meeting of city health departments that 600-800 children from a high risk area had been screened in the course of a Children's Hospital research study a few years ago. In 1969, Children's Hospital reported 69 cases with blood lead levels of > 50 μg/100 ml. Lead is not a reportable condition in Boston and other hospitals seldom report cases.[12]

Cleveland, Ohio: The criteria used for lead poisoning are not stated for the data presented here. Presumably the cases were reported as lead poisoning by attending physicians who determined that the child needed treatment. Thirty-one cases including three deaths were reported in 1967, 68 cases with no deaths in 1968, and 69 cases with no deaths in 1969.[12]

Bridgeport, Connecticut: Two cases of lead poisoning were reported. One case was hospitalized.[16]

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New York, New York: Of 61,167 poisonings reported to the New York City Poison Control Center between 1955 and 1963, 1,704 were cases of lead poisoning. Five hundred cases were reported in 1964. Physicians and medical agencies in the city are encouraged to send blood specimens on all suspected cases to the city health department. Cases of pica are followed closely.[3,24]

Detroit, Michigan: It is estimated that approximately 20 cases of lead poisoning occur each year. The estimate is based upon reports from two hospitals.[12]

Philadelphia, Pennsylvania: In Philadelphia there were approximately 8,700 blood samples submitted by physicians from 33 hospitals and from a number of local medical practitioners. There were 777 confirmed cases of lead poisoning of children from less than 6 months to over 5 years of age. Case fatality rates per 10,000 children zero to 5 years varied from the maximum of 6.2 in one health district to zero in others. The frequency distribution for age groups showed 3 percent for children less than 1-year-old, 47 percent for those 1 to 2 years, 33 percent for those 2 to 3 years, and 17 percent for those more than 4-years-old.[12]

The meager data that are available for these relatively few cities cannot, of course, adequately reflect the seriousness of the lead hazard to children. Two cases that occurred in Hartford serve as examples of incidents that are recurring throughout the various areas in this country where a lead hazard exist.

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A 2-year-old and a 3-year-old child from the same family showed high blood lead levels of 130 μg/100 ml and 150 μg/100 ml, respectively. The 3-year-old showed clinical evidence of encephalopathy. Both children were severely ill for over one week. They were hospitalized for one month, and were treated five days a week for the four weeks. They were then discharged. A survey of their home showed that paint layers on the windowsill contained 50 percent lead. There were 14 members in the family living in four rooms. It was not possible to relocate the family, so the children had to be returned home. Three weeks later the 3-year-old was readmitted to the hospital with lead poisoning. The cost for the initial hospitalization and treatment of the two children was $10,000--the effect of the lead poisoning on their brains is unknown.[16]

The severe brain injury that may result from a single or two episodes of lead intoxication could render the individual incapable of self support. Thus, the economic loss may include earnings that could have accrued during working years. In addition, there is the cost of medical care which, according to an estimate by Battelle Institute, amounts to approximately a fifth to a quarter of a million dollars (private communication). It was stated that this represents "an order of magnitude estimate of costs" based upon reputable sources of information.

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There are relatively few data on deaths from lead poisoning. The extent of fatalities may well be underestimated since tests for lead are not generally made at autopsy, and other conditions may present closely similar signs and symptoms.

The families particularly affected by lead hazards are those Blacks and Spanish Americans who, because of their economic status, live in old residences, usually in the inner city, where housing conditions have seriously deteriorated.

Pica. - The children up to about 6 years of age and particularly those between 12 and 36 months constitute the major portion of the population at risk. The principal source of lead intake for this age group is lead-based paint which was formerly used on interior surfaces. These products have been supplanted to a considerable extent by titanium-based paint.

The American Standards Association (now the American National Standards Institute) established a standard in 1955 limiting lead content of interior paint to 1 percent. The multiple layers of the old, high lead-content paint flaked and chipped because of the poor maintenance. These and other lead materials are ingested by children sometimes as the result of normal, oral exploration but more usually as the result of pica. Pica is an exaggerated manifestation of this oral behavior continuing into the 12 to 36 months age group. Those with pica exhibit a habitual, purposeful and compulsive search for and ingestion of unnatural food substances.

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A theory that nutritional deficiency is etiologically related to pica was proposed but could not be demonstrated in a study of urban children in Washington, D.C.[17] It was noted in this study that Black families who had recently moved to Washington from the South seemed to be afflicted most frequently. This was explained as a reaction to the economic and social stress of new surroundings. Lead poisoning should be specifically looked for whenever a history of pica is noted. Bradley et al[18] stated that approximately 70 percent of the children with high blood lead levels had a history of pica. The authors considered this to be underreporting, possibly resulting from parents' failure to observe such behavior, or reluctance to admit its occurrence. Chisolm and Kaplan[4] stated that the relationship of mother and child "is often a critical determinant of pica." Approximately 50 percent of the mothers of these children with pica also exhibited the habit. The child may use pica as a method of relieving anxieties or tensions brought on by an absent or ineffective mother, e.g., a working mother or one who has emotional difficulties, or who is unable to cope with family responsibilities. Pica also may be a means by which the child seeks to gain attention. Males and females aged 1-5 years are the main victims.[1] Incidence of pica is especially prevalent in lower socio-economic groups.

Endemic and Epidemic Lead Hazards. - The sources of lead exposure for children may be continuing or endemic while others are sporadic or epidemic. In addition to paint, other rubbish such as

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caulking, plaster, paper comic books and newsprint, food, water, food containers, and particles from automotive and industrial emissions constitute potentially hazardous sources.[2,4,19,20] While atmospheric contaminants and materials other than paint may not be unique in the causation of ill effects from lead intake, they can be considered contributory to blood leads of adults as well as children.

Airborne lead containing particles in excess of 5 microns settle out and contribute to contamination especially within the central city and are more likely to be ingested by children than by others. Smaller particles may be inhaled. Of these, the larger particles are returned to the mouth and may be swallowed. Those less than one micron may reach the alveoli of the lungs.[8,21,22] Twenty-five to 50 percent of the amount of these inhaled particles may be absorbed directly into the systemic blood vessels.

Food is also an endemic source of lead intake. About 90 percent of the lead ingested passes through the digestive tract without being absorbed and is excreted in the feces. The remainder is absorbed into the portal circulation. Some of this is secreted into the bile, is returned to the alimentary tract and added to the 90 percent excreted in the feces. Goldsmith and Hexter stated that the total quantity of lead absorbed from the respiratory tract is of the same order of magnitude as that absorbed from the gastro-intestinal tract--and that further increases in atmospheric lead

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will result in higher blood lead levels.[20] Pottery and cooking utensils containing leachable or extractable lead may constitute an endemic source in some homes.[8,23]

Burning of lead batteries and lead impregnated materials or ingestion of their ashes may result in epidemics of lead intoxication. Emissions of smoke and effluents from burning industrial plants manufacturing batteries and those manufacturing paints have caused incidents in which lead intoxication occurred in many of the neighboring residents and in others exposed.

Seasonal Variation. - The incidence of lead poisoning increases during the warm summer months (May through September).[7] Jacobziner[24] noted that 45 percent of the cases reported in New York City during 1954-1963 occurred during the months June through September. Christian et al[1] reported that 80-85 percent of the reported cases occurred during these months. Physiological and environmental factors have been associated with the seasonal increase. Increased vitamin D production during the summer months (due to more sunlight) influences mineral metabolism. Christian stated that summer heat may lead to dehydration, acidosis, and increased absorption of lead.[13] Further, during the summer, children are out-of-doors almost constantly, putting them in contact with lead-base paint that is used on building exteriors.

Diagnosis

"Normal" Blood Lead Levels. - Clinical judgment provides a basis for considering four ranges of blood lead levels--15 to

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40 µg/100 ml, 40-49 µg/100 ml, 50-79 µg/100 ml, and 80 µg/100 ml and over. While these values constitute a practical basis for action in programs for prevention of injury to children, the question of what blood lead concentration should be accepted as "normal" for children has not been settled.

Lead is not an essential or a physiological constituent of the body fluids or other tissues. Little attention has been paid to research on the health effects of lead levels below 50 µg--such changes may be subtle, but could possibly have serious consequences. However, since the lower concentrations have not been associated with clinically evident signs and symptoms, the need or desirability of instituting control measures have not been considered until relatively recently.

Lead levels below 40 µg/100 ml may be indicative of exposure to hazardous sources of lead. A recent unpublished study by Haggerty and Norland reported on blood lead levels of small groups of urban children and of country children.[25] The mean value for the former population was 25 µg percent and for the latter 13 µg percent. Only one of the 19 rural children had a blood level above 20 µg percent whereas there were 19 of the 30 urban children above this level. It is questionable whether values which have a high prevalence should be considered "normal" simply on this basis. The environments of the areas in which a high prevalence were noted should be considered when formulating conclusions as to the normal

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range for blood lead. Since public health methods emphasize prevention as well as medical care, lead body burdens below those observed in lead poisoning should be viewed with suspicion and should suggest the desirability of epidemiologic or clinical follow up.

There is a need for an authoritative standardization and general acceptance of a definition of the term "lead poisoning" in order to ensure uniform reporting of the condition from poison control centers and other health and safety organizations. Such a standard authoritative definition also is necessary for successful enforcement of laws and ordinances for protecting the public.

With an established definition of lead poisoning, differentiation can be made between poisoning per se and excessive lead body burdens. Reporting of the latter, which can be done in quantitative terms, is very important for operation of preventive or control programs.

Measurement of Lead in Children. - Measurement of lead levels in children is an effective method in the detection of sources of lead exposure and early recognition of cases requiring surveillance and/or therapy. Blood lead determinations are the most reliable and widely accepted tests. The dithizone technique is the standard wet chemical analytic method.[26] Other methods of measurement in

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use or being considered include the use of atomic absorption, spectrophotometric, X-ray excitation from isotopes, ion selector and polarographic techniques. At the time of preparation of these guidelines, only the dithizone and the atomic absorption techniques are being used for measurement of blood lead in screening programs. There are technical and other drawbacks to existing methods in their present state of development. Additional work is required to improve instrument operation, accuracy and sensitivity, and to reduce the volume of blood required for determination. Ideally what is needed are a rapid micro-method and techniques for obtaining uncontaminated blood by finger puncture. Technical advances are being made and progress in the field should be followed by those responsible for the laboratory analyses.* However, current techniques are adequate and child lead control programs cannot be delayed until "ideal" methods are developed.

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* Information on methods development as advances are made will be made available to communities upon request to H.E.W.

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PART II

PLANNING A CITY PROGRAM FOR LEAD CONTROL

Essentially, a given city's program for dealing with lead hazards consists of three parts: identification, including case-finding; environmental control, including treatment of victims of lead intoxication; and elimination of sources. Some activities in the program cannot be performed until others have been implemented.

A city may well benefit, however, from an educational, motivational campaign to inform its citizens of the dangers of lead intoxication without necessarily taking action to delead all of the apartments in the inner city. Conversely, a case-finding program would likely prove futile without some kind of community awareness of the problem. It is to be expected, however, that, once the affected community is aware of the potential for lead poisoning, citizen pressure will be brought to eliminate the hazard.

Some cities may be reluctant to allocate scarce tax dollars to the program, maintaining there is no lead problem, or that it is at least minimal in terms of priorities when compared to more obvious environmental insults. There is as yet no reason to believe lead poisoning is endemic to only a few large cities. Rather, the studies indicate the problem of lead intake is in some degree universal, but is recognized only in those areas where an attempt is made to identify the hazard. We can assert with conviction that a child with an elevated level of lead in

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his blood will suffer. His tolerance for junk-car bodies is less well established; yet, there is a consensus that old car bodies affect his mental health. This is perhaps an over simplified characterization of the selection of priorities for funding; but, in the final competition for resources, just such cost-benefit analysis will have to be made.

POLICIES IN INITIATING A LEAD-CONTROL PROGRAM

Before a city undertakes a lead-control program, it must be understood that, even though the decision to fund the effort may come from the city council or county commissioners, the Chief executive of the city government must vigorously support the concept. This is true because the progression of activities will inevitably lead to involvement of a number of intra-city governmental departments. A lead-control program cannot be just a "health project" or a "housing ordinance enactment." It has elements of both, and it is neither feasible nor desirable to begin a lead-control program with a few thousand dollars tucked away in a multimillion-dollar housing or health department budget. Welfare agencies, schools, and organizations of the type of the Office of Economic Opportunity (OEO) will participate to a greater or lesser degree.

The city also must understand that successful lead control measures will initially increase in cost as more lead hazards are identified. This will be true whether a total lead program is carried out, or only parts are selected for implementation.

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The point is made not to discourage those who would support lead control, but to establish a realistic basis for continuing support. A common criticism by state and local governments is that most federal monies, grants, pilot programs, etc., are used to identify a need for service. They are then terminated on the assumption the state will assure continuity of the program on the basis of the desirability established with federal monies.

Another principle is that there would be little value in appropriating funds for casefinding of one age group for one year and then eliminating the funds in the next year. This does not necessarily mean an "all or nothing" proposition. A population educated to the danger of lead poisoning is infinitely better off than one ignorant of the consequences of children consuming chipped paint. A one-year program would benefit only those small numbers of the total cases so identified and would likely cause anxiety among the populace when discontinued.

Another policy is that specific goals must be established at the outset in order that the evaluation process used may give a true picture of the program in progress. Short range goals could be: 1) organization and staffing of the agency, 2) establishment of liaison with neighborhood organizations and other city departments, 3) beginning of the operations in community education and screening, 4) establishment of the selection of geographical areas to be tested on a systematic basis. Longer range goals include: 1) legislation, 2) firm programs to delead and renovate housing units.

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It is important that clear-cut objectives be established and priorities reviewed. If these ends are limited and realistic, the probability of continuing fiscal support is greater. Removal of lead from the environment is a long-range program goal, more so than some other public health problems. We are stressing this fact, hopefully, to prevent the occurrence of a "bold new program" syndrome wherein a program is budgeted, launched with fanfare, and then is unable to reach the objectives set by its sponsors resulting in a consequent lessening of fiscal support in succeeding years. A prosaic beginning will ultimately yield greater return, for the results may then be compared favorably with expectations.

Finally, each city must develop and follow a plan of attack specifically tailored to its unique needs. The size of the problem will vary even among cities of the same population, depending on the age of the city, geographical location, ethnic makeup, and the migration patterns. Examples in this document often use a figure of 500,000 population, but this figure may not be a valid one for scaling up or down the size of the operation. Some cities may have much greater resources available in terms of manpower already working on similar programs. Others may find that the people in the community are more receptive to the program because of previous experience with the health department or other city agencies.

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Evaluation - It may be difficult to prove the city is getting a fair return for its money on lead abatement unless you have included evaluation methodologies within the program.

Lead control operations will in the last analysis, be judged on the number of cases extant before and after measures are completed. During the interval between the initiation and final appraisal of the program, continuous analysis should be carried out in order to determine the efficiency of the various components.

Often we hear the old cliche, "if one child is saved, the effort was worth the expense." This kind of rationalization will not stand the scrutiny of hard-nosed custodians of tax dollars. In order to be effective, evaluation must be an intergal part of each component of the whole, be conducted regularly and not confuse activity with results. Organizational activity is measured by recruitment of people who get things done, not by number of committees appointed. Education by number of people motivated to actively participate in screening, not by amount of money spent on materials distributed or television announcements. Casefinding by number of patients identified with increased lead contact, not just number of patients examined.

It is apparent that the evaluation process will concern itself with numbers of things accomplished, not merely measures of activity. An efficiently managed lead control effort can withstand the toughest kind of statistical cost-benefit analysis if these evaluation processes are on-going rather than in response to a critic after the program has been in operation.

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STEPS IN PLANNING AND EXECUTING A LEAD CONTROL-PROGRAM

An example of an unsystematic approach would be to lobby for legislation, only. This could be an error, regardless of whether or not successful. If an ordinance is obtained which requires the removal of lead paint there may be created among the authorities the idea that the problem is on the way toward solution. What is more likely to happen is that because of insufficient mobilization of the community, opposition will develop from vested interests, who will not only try to block the legislation, but will prevent a lead program from ever developing. If legislation is enacted and vigorously enforced, without any additional funding or other incentives, this may lead to abandonment of property or conversion to commercial use.

In developing a systematic approval to elimination of lead a specific sequence of steps are necessary.

The "prime movers" in the city, including those living in the ghetto area, must become concerned about the lead problem in children. These people may or may not be a part of the medical community, but the eventual involvement of both private medicine and public health is needed.

These "prime movers" must first convince the local government that the economics of restricting lead poisoning among children warrant the costs involved. The overwhelming majority of cases of lead poisoning is found in children where it can cause not only suffering, but the greatest economic loss--for medical care, continuous support and loss of future earnings.

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We have discussed the role of community leaders in motivating the heads of local government, for the nature of the problem is such that strong administrative support must come from the top. This means that the director of the lead-control program must have access to the mayor, regardless of where the organizations' budget originates, whether from the health department, housing, or independently-allocated funds. The objectives of the lead-control measures may not always coincide exactly with the day-to-day operations of the sister agencies; and if conflicts arise, there must be access to a higher authority for their resolution.

The second step is the establishment of a staff for the lead program. The size of the staff will depend on the size of the city and the goals set for the program. The size is much less important than the composition and competency of the individuals. There is no need for a full-blown staff initially; a chief, a deputy, and a secretary might suffice for three or six months. What is needed is a full-time administrator who can get things done within the city administration, who relates well to the affected population and who can carefully lay the framework for the larger staff.

There is often a tendency to get the "show on the road." In this case, it might take the form of beginning a casefinding or survey program immediately in order to try to show the magnitude of the problem. In beginning a casefinding program, the error is that the results may well be inconclusive; after the first group of patients have been found, there would be no mechanism to insure a large enough sample from which to draw epidemiologic conclusions.

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Within three months, the nucleous of the staff should have finalized a time-phased total plan wherein components of the operation mesh. The existence of this plan is part of that principle related to periodic and routine evaluations mentioned earlier. The concept of having the director of the lead-control program plan and subsequently carry out the activity is dictated by necessity. It is extremely unlikely that a city would be able to hire a person with both experience in dealing with the overall problems related to lead poisoning and possessing administrative expertise.

The third step is to mobilize an educational effort concerning the problem of lead. Of necessity, some education has been carried on in the upper echelons of local government and with community leaders in order to develop the plan thus far. This education should be phased to maximize the effect with respect to the total program. The effort should expand from the professional medical people and the government agencies, step by step, down to the general public. The Community Awareness and Education section of this document deals with these educational steps.

Casefinding is the fourth step. The singular and most important facet of casefinding is to remember for the purpose of this program it is but a tool to attack the larger problem of lead in the environment. When children are found with elevated levels of lead in their blood, it proves that the proper group is being tested. It means that we have discovered a child who can lead us to hazardous sources of exposure. This source must

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be eliminated. The removal of the child and his subsequent treatment constitute a separate, but associated problem.

Realistically, the success, or lack of it, for a lead program is likely to be the casefinding section. If no children are identified, or if the ratio is markedly below what has been found in programs carried on previously, the casefinding methodology should be carefully reviewed. If, after a periodic evaluation of the results, and any changes and procedures that may be warranted are initiated without influencing the findings, the program should be terminated.

Obtaining fiscal and legislative support for a total effort is the fifth step. Some actions in a lead program must be carried out sequentially, others may be carried on in parallel. Discussion of funding has been deferred to this point in order to emphasize that total fiscal support from outside the city may depend on how well the earlier stages have developed. In other words, the success of the casefinding program should support the funding and legislative efforts even though these activities may have been carried on concurrently.

The magnitude of the costs of the various elements of the program are approximately 10 percent for the identification of the lead, and 90 percent for the removal of the source. Without attempting to equivicate on the estimate, a number of points relevant to the costs are made.

1. Presently, Federal support is quite limited; and it will be difficult for a city to obtain it without matching funds.

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2. The identification of the lead problem--including education, casefinding, and sampling dilapidated homes--will remain a program financed by government regardless of how the deleading is financed.

3. There will be tendency for local legislative bodies, particularly if the Federal government has not yet made large-scale grants available, to legislate specifically against owners of buildings where the hazard exists. This may not accomplish its intended purpose. Unfortunately, there are numerous flaws in this philosophy.

The legislation could result in increased rental, attempt to abandon buildings or refusal to rent to families with children. Such legislation may not be necessary since means of enforcement involving penalties for violation of health ordinances may already exist. If specific legislation is necessary, recognition should be given to establishing equitable means of partially defraying costs including potential sources of Federal, State or municipal funds to rehabilitations or renovations.

4. A permanent organization within the city--either public health or public housing--must be staffed to insure compliance with lead control measures and maintain continuing surveillance.

5. Deleading the environment is the ultimate objective. The technology to remove the hazard exists; only the means to effect it remains in doubt. There are a number of potential sources of lead poisoning impinging on man--vehicle exhaust, lead in water pipes, and aerosol-borne lead--but these are but

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a part of the total problem. The presently identified problem of lead poisoning from ingestion of chipping paint is the major concern. Local government has the power to attack lead without waiting for additional breakthrough in technology.

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PART III

COMMUNITY AWARENESS AND EDUCATION

For a lead program to be truly effective and to gain maximum support from segments of the community most directly affected, it must be carefully and systematically planned with the people involved. The importance of community participation in health affairs has long been recognized, but some health departments in recent years have had difficulty in communicating effectively with low-income people. Health department projects are beginning to recognize the need to include representatives of those groups who are to participate. Communities composed of poor, minority groups--Blacks, Puerto Ricans, Mexican Americans, Appalachians, and Indians--will never get involved in a lead program run by professionals who do not involve them in the planning and implementation.

Many undertakings have been developed on the basis that community-wide education and teaching efforts that show people how to get to health facilities are all that is needed to deal with a problem. Community awareness of lead poisoning alone is useless, however, unless the city develops a workable system to detect and treat cases of lead intoxication and to control exposure sources.

To implement a deleading campaign that relates to the life-styles and needs of poor people, the following suggestions are advanced:

1. A lead poisoning task force of neighborhood people should be established. This task force would help to plan the lead-

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control strategy so that it is relevant to neighborhood people and will develop educational and promotional techniques that can be useful and effective in mobilizing the community.

2. A full-time community organizer or health worker should be assigned to work with and staff such a task force after it is organized.

3. A professional advisory committee composed of doctors, hospital administrators, school officials, and business and labor leaders should be appointed by the health commissioner. The function of the advisory committee is to provide technical assistance.

Health department professionals should be prepared to deal with conflict. The residents who make up the task force are action-oriented and may make demands that professionals may feel are unreasonable.

The task force, the health department staff, and the professional advisory committee will provide a broad-based coalition to carry out the lead control measures. For this coalition to remain productive, the health worker should devote time to making sure that each group is aware of what the other is doing.

Each group should be recognized for its area of competence: the task force for its knowledge of community conditions and life styles of the people, the health department for its knowledge of public health and prevention programs, and the professional advisory group for its technical knowledge.

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By working together on the problem of lead poisoning these groups, perhaps after some initial hostility and suspicion, will begin to operate in a manner that will benefit all concerned. By providing a mechanism for desperate groups to meet and reach a consensus, new relationships and modalities of operation will begin to emerge. Such relationships, strengthened by debate and contact, also can be useful in future programs designed to meet other urgent health needs that face the people of the city.

Education-information activities will be required to facilitate community awareness, understanding, and support. The activities would be directed at these target groups: the general public, parents, older brothers and sisters, and others who care for small children; public health, housing, and welfare workers; physicians, nurses, and paramedical personnel, and laboratory workers.

THE GENERAL PUBLIC

The community program designed to control lead hazards to children should include a continuing flow of information to the public about the extent and nature of the problem, progress of the community program, and when and where specific activities, such as casefinding, are being carried out. This information could be provided through radio, television, newspapers, posters, literature, mobile sound units, and a speaker's bureau.

PARENTS, OLDER BROTHERS AND SISTERS, AND OTHERS WHO CARE FOR SMALL CHILDREN

Parents and other individuals who care for or supervise small

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children need to acquire enough general information about lead poisoning in children to influence them to develop the attitudes and actions basic to a lead-control program. These individuals could be assisted in recognizing potential sources of lead poisoning--such as peeling or flaking paint--and in adopting procedures that can be taken to reduce the exposure of children: good housekeeping, better supervision of children, scraping and removing loose or peeling paint, and reporting such a condition to the property owner and to health or housing authorities. Information also could be provided about pica and other behavioral symptoms that indicate the need for medical evaluation and about where and how such assistance can be obtained. These individuals could be motivated to participate in screening programs designed to detect children with elevated body burdens of lead and to encourage others to do likewise.

A variety of methods and approaches can be utilized to provide information to this target group and to motivate them to take desired actions.

These include:

1. Personal counseling by public health nurses, sanitarians, housing inspectors, welfare workers, physicians, and others in health-care facilities and screening centers;
2. Contacts by health education aides who are community residents;
3. Education of new mothers;

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4. Participation in group discussions at block meetings and other places of assembly;

5. Education in the schools.

The school environment in endemic areas can provide an atmosphere for discussion of the lead problem and its control. This can be accomplished through adult education classes and by providing information to older brothers and sisters on the hazards of lead in the environment. The school nurse can be stimulated to assume an active role in recognizing lead signs and symptoms in children. The teacher has an opportunity during discussions about the home environment to learn of situations and activities in the students' homes that suggest the possibility of lead poisoning. Industrial arts classes in schools located in areas of high incidence can include deleading methods in their curriculum. School staffs can then make appropriate referrals pertaining to diagnosis, treatment, and control.

PUBLIC HEALTH, HOUSING, AND WELFARE WORKERS

All public health, housing, and welfare workers need to acquire familiarity with basic scientific knowledge concerning lead and its effects upon children. They should utilize every opportunity to inform parents and others who care for children about the hazards of exposure to lead and desirable actions that individuals and groups can take to reduce the exposure or to obtain treatment if it is required.

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Early in the development of a community action program professional public health, housing, and welfare workers should become knowledgeable about the lead problem and the program being developed to control it. This background of information should include: the extent and nature of the problem, casefinding methods to be employed, some knowledge of diagnosis and treatment procedures, identification of lead sources and methods for removal of lead from the environment, methods to be followed in referring information about health and housing problems so that action can be taken, and legal foundations for the community action program.

These individuals can best receive the necessary information through formal in-service training courses. A 2- or 3-day training course should provide ample time for instruction. Courses probably will have to be repeated at intervals of about 6 months to insure that all new employees are thoroughly informed.

PHYSICIANS, NURSES, AND PARAMEDICAL PERSONNEL

Medical and related professional personnel need to acquire scientific and clinical medical knowledge about lead and its effects upon children and to maintain during their practice a high index of suspicion for possible cases of elevated body burdens of lead. These individuals need to be knowledgeable about methods of diagnosis and treatment of lead intoxication, the community program being implemented, reporting of cases, referral procedures for environmental control, and new research findings pertaining to the control of lead hazards to children.

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The health department, working through professional organizations and professional schools in the community, can stimulate development of refresher courses, seminars, and conferences for professional personnel. Articles describing the community action program also can be placed in the newsletters of professional societies and representatives of the health department can discuss the program at meetings. A planned systematic information campaign will be needed periodically to remind the professions of the community's program for controlling lead hazards in children and to maintain a high level of public awareness.

LABORATORY WORKERS

Laboratory workers involved in the anlaysis of biological specimens or paint for lead content need to acquire certain basic scientific knowledge about lead and its effects upon children and to develop technical skills in laboratory procedures.

Reliable and accurate lead analyses require highly trained personnel and rigid procedures. Sample contamination is not an infrequent occurrence in many laboratories. Since most clinical and public health laboratories do not routinely perform large numbers of analyses for lead, special training is essential.

A training course of two or three days duration for all personnel involved in lead determinations should be conducted early in the development of a community action program.

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PART IV

CASEFINDING TO IDENTIFY CHILDREN WHO HAVE INCREASED LEAD INTAKE

The objective of this guideline is to offer alternative methodologies that can be used by a city to identify those children who have high burdens of lead in their bodies. Identification would make early treatment possible for children with either minimal or early signs of lead intoxication and would provide information concerning the location of the areas within the city that should be investigated for the presence of lead hazards.

CO-OPERATING AGENCIES AND POPULATIONS

To carry out an effective preventive program that requires individual participation, it is necessary to educate, involve, and motivate the population. In human casefinding for lead, there are two major groups in the city that should be involved in these processes. They are the city's health professionals, such as the health department and medical practitioners, and the citizenry. For specific information on education and community awareness, see the section of this document entitled, "Community Awareness and Education."

ADMINISTRATIVE RESPONSIBILITY

The administrative co-ordinator of a human casefinding program should maintain close liaison with the intra-city neighborhood councils and the city health professionals.

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The parts of the human casefinding portion of the community program include: selection of candidates for evaluation, development of methods for obtaining specimens for analysis, laboratory analysis, disposition of cases, and statistical compilation of information for purposes of program evaluation.

The size and nature of the required staff of such an administrative office depends upon the size and complexity of the casefinding program. If more than 25,000 children per year are to be evaluated, a rough estimate of the staff needed on a full-time basis would include an administrator, a secretary, a key-punch operator, and a part-time statistician. The evaluation of fewer children would reduce the need for a full-time staff. However, at least one full-time person in an administrative position would be needed in any meaningful operation.

SELECTION OF CANDIDATES FOR EVALUATION

The basic problem involved in the responsibility for selecting candidates for evaluation is the comprehensiveness of identification that the city wants in its casefinding program. The more comprehensive, the more costly and elaborate the program must be. Because of the high prevalence in large urban settings of children with increased burdens of lead in their bodies (10 percent of ghetto dwellers), it would seem advisable to develop as comprehensive a program as funds will permit.

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In determining a method or methods for choosing those children to be screened, one must consider the following: funds available for the program, the technical facilities, and the capabilities of the staff. Several methods that could be used in selecting candidates for a lead screening program are described.

Method 1. - Screen all children-first at 15 months of age and again the following spring or summer-for increased burdens of lead in their bodies. In a city with a population of 500,000, the number of 15-month-old children screened per year would be about 8,000. The number followed up per year would be 8,000. Total number would be 16,000 per year.

Method 2. - Refer for screening and evaluation any child between 1 and 6 years of age who is characterized by any of the following conditions: classic symptoms of lead intoxication, siblings of those with increased burdens of lead in their bodies, severe lead hazards found in their environment, family desiring that the child be evaluated for lead contact, and history of pica.

Method 3. - Annually screen all children between the ages of 1 year and 6 years who live in the city. In a city with a population of 500,000, about 50,000 children per year would be screened.

Method 4. - Annually screen all children between 1 and 6 years of age who live in dilapidated areas of the city. Cities vary, but on the average about 30 percent of the population live in substandard housing. Therefore, in a population of 500,000, about 15,000 children per year would be screened.

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Method 5.-Screen all children living in dilapidated areas of the city first at 15 months of age and again the following spring or summer. In a city with a population of 500,000, about 6,000 children per year would be screened.

Recommendation - A combination of methods ONE and TWO. The authors recommend this combination of these two methods to give comprehensiveness as well as specificity. Through city-wide screening of specific age groups, a total profile for contacts with sources of lead would be developed and the monitoring of sources other than those associated with living in dilapidated dwellings would be ensured.

SELECTING OF METHODS FOR OBTAINING SPECIMENS FOR ANALYSIS

The method selected for obtaining specimens for analysis depends upon a number of variables: the size of the population to be evaluated, the amount of manpower available to assist, the amount of money available, and the biologic specimen required. At the present time, the best known method for screening asymptomatic children for increased burdens of lead in their bodies is the determination of the level of lead in their blood. This determination requires 5 ml of blood. In order to simplify this presentation, the authors will deal only with blood as a specimen. At present, other screening methods yield too high a percentage of false negatives to justify their use.

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Method 1. - The least costly approach to obtaining specimens would be through the use of existing manpower. All hospitals, clinics, health centers, and practicing physicians would be contacted and made aware of the city lead control program. They would be provided with instructions and with lead free kits for obtaining blood specimens. Specimens would then be mailed to a designated laboratory for analysis. The cost per case for this component of a program would include: salaries - none; equipment - 40 cents per case; mailing - 25 cents per case. The total cost for obtaining and delivering specimens would be 65 cents per case or $16,250 for 25,000 cases.

Method 2. - Specimens may be obtained through the establishment of full-or part-time lead evaluation clinics. Such a clinic would have the capability not only to draw blood specimens, but also, when necessary, could medically evaluate and treat a child with an increased body burden of lead. The number of such clinics would depend upon the size of population to be screened, manpower, and funds. A center capable of medically evaluating one child in 15 minutes, or drawing one blood specimen every 5 minutes, would require a staff of one physician, one practical nurse, and one clerk. A minimal amount of equipment would be needed for such a center to be operational.

A clinic could have either family-oriented or case-worker recruitment of appropriate candidates. Family-oriented recruitment means that the parents have been motivated by community awareness

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programs sufficiently to bring their child in for screening on their own accord. Case-worker recruitment would require the use of community workers to go out into the community and help families to bring in children who meet the requirements for evaluation. It is estimated that one community representative should be able to help bring in five children per hour for evaluation.

If a city decided to have a screening and evaluation program for 25,000 children per year, it would require at least two full-time centers. To make the centers more effective geographically, however, at least five clinics operating one day per week or five days a week in ten different parts of the city would be recommended. The estimated cost for this plan would be: salaries, $66,000 (excluding those for community representatives); mailing and equipment, $16,000; total, $3.00 per case or $75,000 per year for 25,000 cases.

Method 3. - Full- or part-time blood-collecting centers may be established. Such centers would function only in the capacity of obtaining samples and would be unable to carry out either medical evaluation or therapy. If a city decided to adopt this alternative, other facilities would have to be designated for the medical evaluation and treatment of children with increased body burdens of lead. The location and number of these centers would depend upon the type of program that the city decided upon.

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Such a center for drawing blood would require a staff of one technician legally qualified to draw blood samples from children, one practical nurse, and one clerk. Once again, if case-worker recruitment is deemed necessary, suitable numbers of community representatives would be needed to help families bring in candidates for evaluation. If a city decided to have a screening program for 25,000 children, it would require one screening center operating full-time each day or five centers operating for half a day. The five centers could be located on different days in different geographic areas of the city. The cost would be: salaries, $33,000 (excluding those for community representatives); equipment and mailing, $16,250; total, $2.00 per case or $50,000 for 25,000 children.

If method 3 were adopted, provisions for total evaluation and treatment centers for lead would fall upon existing facilities. These facilities are not readily available within the poorer sections of most cities.

One alternative to having the screening center located in a specific dwelling would be to have a van or vans that could move throughout the city carrying the staff and their equipment.

Recommendation - Because of the problems related to the delivery of health services within the poor areas of the city, it is recommended that a combination of Methods 1 and 2 be used. This combination would provide for comprehensive casefinding on a city-wide basis as well as making clinics available in geographic areas of high risk.

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LABORATORY ANALYSIS

The major problem in this area is the methodology to be used for the determination of lead in a blood sample. At present, two techniques commonly used for determinations of blood lead are:

1) Dithizone Chemical Technique

The dithizone chemical technique is a methodology that is quite accurate but whose technical complexities make mass screening difficult. If a city were to embark on a small-scale program, however, the estimated cost for such a laboratory would be quite reasonable: spectrophotometer equipment, $500.; other equipment and overhead costs, $15,000; salary for one chemist, $10,000; total cost, $25,500; number of samples per year, 2,500, at a cost of $10.00 per specimen first year

2) Atomic Absorption Technique

To use the atomic absorption technique for a large-scale screening program with 5 ml blood samples, the following estimated costs for staff and equipment would provide the capability for doing 25,000 samples per year: three technicians (one on atomic absorption units and two on sample preparation) with total salaries of $24,000 per year; equipment, $12,500; glassware, $10,000; reagents, $4,000; total cost to initiate laboratory, $26,500; estimated total cost yearly, $50,500; number of samples per year, 25,000 at a cost of $2.00 per specimen first year.

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In light of the rapid advances in instrument technologies, the U.S. Public Health Service is willing to provide up-to-date information on request.

In light of the above costs, it would seem advisable that, where possible, cities located near each other could share in developing a common laboratory.

DISPOSITION OF CASES

The responsibility for disposition of cases and maintaining a permanent record or register, belongs to the administrative office for human casefinding. There are four areas of responsibility that should be handled in this area:

1) Reporting to the family the finding of increased body burdens of lead, with the request that the family obtain medical care for their child;

2) Reporting of children with elevated body burden of lead for medical evaluation and therapy when it is deemed necessary. It is the recommendation that a blood level of lead greater than 40 µg percent identifies an individual with an elevated body burden of lead. Depending on the system selected by the city, the report of an elevated blood level of lead should go to the medical facility that generally cares for the child or to a special lead evaluation clinic.

3) Reporting of children with elevated body burdens of lead to the appropriate official organization for evaluation of environment for lead hazards so that appropriate action can be taken.

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4) Long-term followup on all children with elevated body burdens of lead.

It is recommended that where warranted by the size of the screened population, a computer program be developed to facilitate coordination and disposition of cases. The following example might serve as a model for form development.

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Reference No. _____ (Col. 1-6)

1. Name _____
2. Sex M____(1) (Col 7)
   F____(2)
3. Birth date _____ (Col. 8-12)
   MO-DAY-YEAR (last 2 digits)
4. Address _____
5. Site of poisoning _____ (Col. 13-35)
   (Alphabetic)
6. Physician Name _____
   Address _____

7. Mode of poisoning Inhalation ____(1) (Col. 36)
   Ingestion ____(2)
   Absorption ____(3)
   U. K. ____(4)

8. Source of Lead Paint ____(1) (Col. 37)
   Plaster ____(2)
   Other ____(3)

9. Laboratory data
   A. Urine
      1) Lead concentration ____ µg % (Col. 38-40)
      2) ALA concentration ____ µg %
      3) Protein Yes ____ No ____ (Col. 41)
      4) Sugar Yes ____ No ____ (Col. 42)
      5) Coproporphyrin Yes ____ No ____ (Col. 43)
      6) Quantitative lead after EDTA provocation
         8 hr. ____ µg % (Col. 44-46)
         24 hr. ____ µg % (Col. 47-49)
      7) Quantitative urine coproporphyrin
         8 hr. ____ µg % (Col. 50-52)
         24 hr. ____ µg % (Col. 53-55)

   B. Blood
      Lead ____ µg % (Col. 56-58)
      Plasma ALA ____ µg % (Col. 59-61)
   C. X-ray
      Abdomen Yes ____ No ____ (Col. 62)
      Metaphyseal lines - Width ____ mm (Col. 63-65)

10. Symptoms	Present	Not Present	
a. Abdominal pain	____	____	(Col. 66)
b. Constipation	____	____	(Col. 67)
c. Irritability	____	____	(Col. 68)
d. Vomiting	____	____	(Col. 69)
e. Atoxia	____	____	(Col. 70)
f. Drowsiness	____	____	(Col. 71)
g. Stupor	____	____	(Col. 72)
h. Convulsions	____	____	(Col. 73)
i. Coma	____	____	(Col. 74)

11. Treatment	YES	NO	
A. Hospitalized	____	____	(Col. 75)
Removed from home	____	____	(Col. 77)
Out patient treatment	____	____	(Col. 76)
B. BAL	____	____	(Col. 78)
EDTA	____	____	(Col. 79)
Penicillamine	____	____	(Col. 80)

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Other Official Statements on Casefinding in Children

At present, two additional recommendations for casefinding to identify children with high body leadburdens are being prepared.

1. Statement of American Academy of Pediatrics*
2. Statement of Subcommittee on Medical Aspects of Lead* Poisoning, Environmental Health Service, U.S. Public Health Service, Interagency Committee.

These recommendations in many respects are similar to those published within this section of the guideline.

In order to compare these different recommendations, the following table has been constructed.

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Recommendation for Screening Children for Lead

	BCEM Guidelines	American Academy * of Pediatrics	EHS Subcommittee * on Medical Aspects of Lead Poisoning
Age of candidates for screening	15 mo. and following spring and summer	15 mo. and following spring and summer	1-6 years with periodic re-evaluation over this 5 year period
Social selectors for screening in a city	None	Those living in dilapidated dwellings and where other conditions warrant evaluation	Those living in dilapidated dwellings and where other conditions warrant evaluation
Biologic specimen	Blood lead	Blood lead	Blood lead
Blood lead level requiring environmental evaluation	40 ug%	50 ug%	40 ug%
Blood lead level requiring medical evaluation	40 ug%	50 ug%	40 ug%

*Currently in draft form.

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PART V

GUIDELINES FOR DEVELOPMENT AND ENACTMENT OF LEAD CONTROL LEGISLATION

Control of lead hazards to children will require diligent application of all of the following means:

(1) Active utilization of voluntary health-related standards developed by industrial and other qualified nongovernmental groups;

(2) Enactment and enforcement of: Federal standards, statutes, local laws and ordinances.

The guidelines for legislative control consider two principal avenues of approach: constitutional and common law. The constitutional approach is based upon considerations of public health in which the consequences of a stress, a condition, or matter can be documented to be detrimental to health in some cases, but need not be shown to apply in every case. The common law approach involves foreseeability; it relates to liability for allowing a condition to exist that will, with considerable certainty, cause an injury or illness.

The material on approaches or procedures--together with examples of the nature and scope of Federal, State, and local legislation and legal procedure--is presented for those not

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having knowledge or skills in jurisprudence. The purpose is to provide a nontechnical basis for laymen (with respect to law) to discuss their local lead problems with attorneys and legislators. Other materials in this section are to assist the layman in stating what he wants to accomplish so that attorneys and legislators can tell him how it could be done and assist in seeing that it is done.

CONSTITUTIONAL LAWS

Constitutional laws involve the relation between the individual and the public, i.e., "the people." This is in contrast to common law, which is concerned with relations between two individuals. The basis of origin of laws relevant to home rule of municipal corporations lies within the constitution of a State. This allows for enactment of statutes by the State authorizing components of city and county government to issue ordinances and codes applying within their jurisdiction. For example, statutes may authorize a city code that will include a building code and a health code. Local ordinances may be patterned exactly after a State law or ordinance. In other cases, they are consistent with State legislation and may elaborate upon it.

Public health power and administration of building and housing codes are derived from the concept that police power

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is that inherent sovereignty that government exercises whenever regulations are demanded by public policy for the benefit of society at large to guard safety, health, morals, and the like.

COMMON LAW

This provides for civil action involving liability of a person for injury. An example would be liability in a case of lead-paint poisoning in which a landlord or insurer was negligent in not correcting a condition which, in the common experience of man, had proved to be dangerous so that injury therefrom would be foreseeable.

SCOPE OF CODES AND ORDINANCES

There are two extremes in the scope of laws, ordinances, and codes. A health code may be broad enough to cover a variety of environmental conditions. For example, a city code or ordinance may contain a section that is very broad: "any condition or thing in or about dwelling or building, or lot on which it is situated--be dangerous or detrimental to health, the Commissioner of Health may order that the matter, condition, or thing be abated, suspended, altered, or otherwise be removed, as his order shall specify." Others are specific: "all interior loose or peeling wall covering or paint shall be removed and the exposed surface shall be placed in a smooth and sanitary condition."

In the control of lead hazards to children, the emphasis should be placed upon prevention rather than upon redress for

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injury. Paradoxically, enforcement of broad general laws for purposes of prevention is dependent upon the specificity of the terms that are used. If there is common acceptance of a definition of the term, it may be considered specific even though it encompasses a number of conditions, situations, or objects. For example, the term "safe and sanitary condition" is generally understood and can be interpreted as precluding the presence of peeling toxic paint chips readily accessible to children. The term "nuisance" can be defined and is generally understood. For example, dense smoke that is prejudicial to health and safety constitutes a nuisance.

A community may find that their health and housing codes and other ordinances are sufficiently broad to be employed in enforcement of lead control measures. In other cases, legislation referring explicitly to lead may be necessary or desirable.

COURT

Adjudication of health code violations could be conducted in either civil or criminal court. Enforcement of statutes may be under the jurisdiction of a criminal court when violation involves a misdemeanor. For example, Article 101, the State of Maryland's Occupational Disease Law states that "Any person, firm or corporation failing, refusing, or neglecting to comply with any rule or regulation made by the State Department of Health and the Commissioner of Health of Baltimore City, under the powers

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conferred upon them by this section shall be guilty of a misdemeanor, and upon conviction, shall be fined not more than One Hundred Dollars ($100.00) for each day that such violation continues, provided that a written notice of such rule or regulation shall be served on some person in charge of the place where such violation exists prior to any prosecution for violation of any such rule or regulation."

The establishment of a Housing Court has been found to be an effective method for expeditious handling of housing and health codes; this has been used in Baltimore, Chicago, and Pittsburgh.

ADMINISTRATIVE AGENCY ENFORCEMENT

Hearings can be authorized by statute to enable an administrative agency such as a Health Department to enforce its own rules, regulations, and orders. Such a statute could further provide that any suit, action or appeal of the rules, regulations, or orders of the agency shall be advanced for trial and determined as expeditiously as feasible, and no postponment or continuance shall be granted unless deemed imperative by a court having authorized jurisdiction.

APPLICATION OF FEDERAL LEGISLATION FOR CONTROL OF LEAD HAZARD TO CHILDREN

Various agencies of the government can act under existing Federal legislation in enforcing regulations that may be considered relevant to reducing lead hazard to children. These

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agencies include Food and Drug Administration, General Services Administration, Department of Defense, Department of Agriculture, Federal Trade Commission, Interstate Commerce Commission, Department of Labor and others. For example, Food and Drug Administration is concerned with regulation and labeling to control drugs, cosmetics, toys and food with respect to lead content. General Services Administration is concerned with the specification and labeling including lead-containing substances for use by the Federal Government. Interstate Commerce Commission is concerned with labeling of hazardous materials shipped across state lines. Federal regulations can be used directly as a basis for enforcement. Where it is desired to enact comprehensive legislation to cover as many different facets of the problem as possible, the Federal regulations can be used as models for some of the sections.

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LEGISLATION: INTENT AND SCOPE

LEAD POISONING: A PUBLIC HEALTH PROBLEM IN MANY COMMUNITIES

Public support is essential for enactment of legislation. Therefore, it is necessary to establish in the minds of the community and of legislators that elevated blood leads in children may have serious health and economic consequences. Municipalities that have conducted lead screening studies have found elevated lead levels in the blood of 5 to 10 percent of the children tested. In many communities no lead surveys have been carried out, and there are few data on the extent of the problem in these areas.

There are, however, sufficient data to establish unequivocally that lead intake among children is an important health problem, and it is also a very important one for humanitarian, economic, and sociological reasons. (See Summaries - Part II). Legislators should be furnished with copies of statistical data and other information that supports the need for legislative action.

In a recent article on childhood lead poisoning as an eradicable disease, Lin-Fu emphasizes the continuing health, sociological, and economic consequences of the condition. She points out that many survivors of lead intoxication are left severely handicapped. In a sample of 425 Chicago children that were treated, 165 or 39 percent had neurological sequelae. Of those with symptoms of encephalopathy, 82 percent were left with handicaps including recurrent seizures, mental retardation, cerebral palsy and optic

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nerve atrophy--some had multiple handicaps. Dr. Lin-Fu reports that "The estimated cost of treatment and institutionalization to the age of 60 of a person who incurs severe permanent brain damage from lead in childhood is about $222,000" and compares this to the cost of eradication of the hazard in an "average row house".

DEFINITIONS

Terms, unless they have well known definitions, e.g., "safe," "sanitary," and "nuisance" must be specifically defined for the purposes of enforcement. It is the professional responsibility of attorneys and legislators to determine what terms require definition and how they are defined. Many of the definitions that could be used in legislation are shown in section three of the model bill presented in this guideline.

The terms "lead poisoning," and "lead intoxication," which are synonymous, must be defined quantitatively and qualitatively for the purposes of legislation. Until such time as there is general agreement among the clinical and basic medical science communities as to what quantitative and qualitative values should be associated with specific blood lead levels and clinical signs and symptoms, the legal definitions should be established even in the absence of total agreement. The source of these interim definitions should be stated. For example, the American Academy of Pediatrics, a State Health Department, or a University School

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of Public Health or Medical School might develop definitions and be cited as the source.

It can be confidently anticipated that one or several authoritative sources will develop appropriate standard definitions.

PROVISIONS TO BE INCLUDED IN AN ORDINANCE

The nature of the various provisions, together with examples and explanations to clarify the intent are shown below:

Nature of Legislation*	Examples and Explanations
Household use of lead-based paint, lacquer, and other surface-covering materials.	Paint and lacquer on furnishings, toys, walls, ceilings, windowsills, railings, and other surfaces.
Manufacture and sale of household lead-containing items or items covered with lead-containing materials to conform to standards.	Furniture and toys; utensils and food containers with leachable glazes, solder, or alloys containing lead.
Labeling of lead-containing material used in or around residences and other nonindustrial premises, and in agriculture.	Paint, lacquers, plaster, pesticides, dyes, and cosmetics.

*Footnote: All legislative items except those marked with an asterisk fall within the provisions of most State and City Health Codes and Building Codes.

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Nature of Legislation (Continued)	Examples and Explanations (Continued)
Safe packaging of lead-containing materials used in and around residences and other nonindustrial premises, and in agriculture.	Cans, bags, boxes, bottles, and other containers, shall be capable of withstanding impact.
Disposal of lead-containing materials, their ashes and other refuse; prohibition of sale or the giving away of such material.	Regulation of disposal of batteries, paint scrapings, wood; lead impregnated materials from deleading and demolition of buildings to ensure against their being burned within dwellings; prohibition of burning in incinerators or in drums in lots or work areas.
Marketing and sale of foodstuff contaminated with lead.	Control of residual insecticides; food processing and packaging.
Residential zoning for protection against lead-containing automotive exhaust products, and industrial emissions.	Emissions from garages, parking lots, high-density traffic routes; manufacturing plants for paints, lacquers, batteries, and other sources potentially hazardous industrial emissions.

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Nature of Legislation (Continued)	Examples and Explanations (Continued)
*Expenditure of public welfare funds for emergency housing, foster homes, day nurseries, and other occupied buildings with lead-based paint on interior structure or furnishings.	Control of dwellings and buildings for rehabilitation or welfare use.
Eviction from and discrimination against rental of dwelling units to families with children.	Protection from discrimination against families with children by landlords who have been found in violation of the sanitary code with respect to lead hazards, and have carried out corrective maintenance as ordered by court or appropriate authority.
Abandonment of buildings.	Payment by owner for demolition of dwelling unsafe for habitation because of lead or other hazard.
Maintenance and occupancy standards, (1) for landlords, (2) for tenants.	Safe and sanitary maintenance of parts of dwellings and dwelling units; and rooming house, dormitory and rooming units.

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Nature of Legislation (Continued)	Examples and Explanations (Continued)
Powers and duties of inspection by appropriate authority.	Entering and inspecting; sampling of paint and plaster; acquisition of food containers and utensils for testing for lead hazard.
Licensing and operation of multiple dwellings.	Requirement for license; licensing contingent upon safe and sanitary conditions.
*Establishing special Housing Courts to handle housing violations.	To expedite legal action in health emergencies; to be knowledgeable in specialty area.
Enforcement by administrative agency.	Statutes to provide Health Departments to hold hearings and enforce its own rules, regulations and orders.
*Provision and support of qualified chemical laboratories for determination of blood lead levels without cost for indigent children and for others. The administration would be authorized to accept funds contributed on a voluntary basis from individuals and organizations.	To provide competent laboratory facilities and free services as a principal program for prevention of lead intoxication and sequelae.

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Nature of Legislation (Continued)	Examples and Explanations (Continued)
Blood-lead determinations performed on children by municipal, State, or privately owned laboratory, and paid for by public funds, and any cases or suspect cases of lead poisoning diagnosed by physicians shall be reported to the Commissioner of Public Health or other principal health officer. The blood lead level, name, age, sex of the child, and address and social security number of parents shall be registered and kept in public health files.	Registers should be designed to identify special hazard areas, identify sequelae of elevated lead levels, and provide a basis for lead control programs.
Other legislation or sections of ordinances are concerned with notices, enforcement, penalties, appeals, severability, and other items normally included by attorneys and legislators in such codes.	
*Property owners to receive tax benefit for controlling lead hazards.	

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MODEL ORDINANCE

An ordinance of broad scope is submitted as a model that can be adopted to fulfill the legislative needs of a community to establish and enforce a lead control program directed specifically toward the protection of children. It can serve as a basis for a bill, code, or ordinance. The model can be used in part or in its entirety. The individual sections can be used to revise, strengthen, or extend existing health and housing codes and other ordinances. The intent is to control all sources of lead exposure that may be hazardous for children primarily through diligent enforcement of effective health and housing codes. Most provisions would also help to protect adults in the home and in other non-occupational environments.

In developing appropriate legislation, it should be recognized that ingestion of lead-based paint is generally acknowledged to be the principal source of lead poisoning in children today. As such, it is a first priority consideration. It should be further recognized that there are other sources that contribute to the total lead intake. Most are endemic hazards existing at various levels of intensity for various periods of time. In addition, in the burning of lead and lead impregnated materials an epidemic involving numbers of persons in a given neighborhood might occur.

It cannot be too strongly emphasized that an effective control and prevention program must be comprehensive in scope. It is important not only to prevent encephalopathies, neuropathies, and other

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frank medical conditions, but also to prevent more subtle effects such as impairment of mental development, decreased learning ability, and subclinical interference with enzyme systems of the body. Sequelae that may appear many years after exposure must be prevented. Thus, enactment of legislation controlling all sources of lead hazard as rapidly as possible is strongly recommended.

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BOARD BILL NO. _____ INTRODUCED BY*

STATEMENT OF POLICY

An ordinance enacting a Lead Poisoning Ordinance which states its purpose; defines its terms; prohibits the use or application of lead-based substances in or upon exposed surfaces, fixtures, or other household described objects, or on toys or furniture; prohibits the manufacture or sale of certain articles containing lead-based substances; prohibits the manufacture or sale of lead-based substances except in a secure container that bears a prescribed warning label; provides for payment of blood-lead determinations from public funds by qualified laboratories and requires notification and registration of blood-lead measurements where laboratory determinations are performed at public expense; requires physicians, nurses, and public health officers to report diagnosed or suspected cases of lead poisoning; prohibits the burning of lead and lead-impregnated substances and controls sale and disposal of such materials in a manner consistent with the safety and health of the public; prohibits the marketing and sale of foodstuff contaminated with lead; establishes zoning restrictions to protect against lead-containing emissions in residential areas; establishes housing, health and maintenance, and occupancy standards;

* A proposed bill prepared by Alderman Stolar of St. Louis, Missouri and APHA-PHS Recommended Housing Maintenance and Occupancy Ordinance were reference sources for the preparation of portions of this material.

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authorizes and directs the Building Commissioner and the Health Commissioner to inspect for lead-based substances; provides for notice to interested and affected persons of the presence of lead-based substances in or upon exposed surfaces, and provides for violations in and condemnation for human occupancy of dwellings in which, fourteen days after said notice, said lead-based substances have not been removed, replaced, or securely and permanently covered; provides for the manner of removal of paint, putty, plaster, and other structural materials; establishes Housing Courts; authorizes and directs the Health Commissioner to conduct a program to detect, treat, and prevent lead poisoning; prohibits eviction of families with children from dwelling units following enforcement of maintenance and occupancy standards with respect to lead and other health hazards; provides for limiting the expenditure of welfare housing funds to dwellings complying with all conditions required to eliminate lead hazards within dwellings or premises of dwellings; provides for enforcement, penalties, appeals, and severability; provides that this Ordinance shall not be interpreted or applied to defeat or impair rights of action for violation of this Ordinance; provides for the enforcement of this Ordinance; provides for appeals under this Ordinance; contains a severability clause; provides that section titles are not to be considered in the interpretation of this Ordinance; and contains a penalty clause.

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BE IT ORDAINED BY THE CITY OF _____ AS FOLLOWS:

Section One

Title

This Ordinance shall be known and may be cited and referred to as the "Lead Poisoning Ordinance".

Section Two

Purpose

The purpose of this Ordinance is to detect and control sources of lead intake among children, which intake through ingestion and inhalation constitutes a serious health hazard.

Section Three

Definitions

For the purpose of this Ordinance, the following words, terms, and phrases shall have the following respective meanings, unless otherwise specifically provided:

(A) "Building Commissioner"--shall mean the Building Commissioner of the City of _____ or his duly authorized delegate or representative;

(B) "Health Commissioner"--shall mean the Health Commissioner of the City of _____ or his duly authorized delegate or representative;

(C) "appropriate authority"--shall mean that person within the governmental structure of the corporate unit charged with administration of the appropriate code;

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(D) "dwelling"--shall mean a structure all or part of which is designed for human habitation;

(E) "dwelling unit"--shall mean any room, group of rooms, or other interior area of a structure designed or used for human habitation;

(F) "exposed surface"--shall mean in or upon a dwelling or dwelling unit, an exterior surface that is readily accessible to children, and any interior surface;

(G) "lead-based substances"--shall mean any substance or material (including--but not limited to paint, lacquer, putty, plaster, and structural material) that contain 1 percent (1%) or more of metallic lead based upon total nonvolatile content;

(H) "surface"--shall mean the outermost layer or superficial area of a dwelling or dwelling unit, including--but not limited to the outermost layer or superficial area of the walls, ceilings, floors, stairs, windows, window sills, window frames, window sashes, doors, door frames, baseboards, and woodwork of a dwelling or dwelling unit;

(I) "refuse"--shall mean all putrescible and nonputrescible solids (except body wastes), including garbage, rubbish, and dead animals;

(J) "rubbish"--shall mean nonputrescible solid wastes (excluding ashes) consisting of either:

(1) combustible wastes, such as old batteries, paint scrapings, paper, cardboard, plastic containers, yard clippings, and wood; or

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(2) noncombustible wastes, such as tin cans, glass, and crockery.

(K) "safety"--shall mean the condition of being free from danger and hazards that may cause accidents or disease;

(L) "owner"--shall mean any person who alone, jointly, or severally with others,

(1) shall have legal title to any premise, dwelling, or dwelling unit, with or without accompanying actual possession thereof, or

(2) shall have charge, care, or control of any premise, dwelling, or dwelling unit as owner or agent of the owner, or an executor, administrator, trustee, or guardian of the estate of the owner;

(M) "occupant"--shall mean any person--over 1 year of age--living, sleeping, cooking, eating in, or actually having possession of a dwelling unit or a rooming unit, except that in dwelling units a guest will not be considered an occupant.

Section Four

Prohibition upon Use of Lead-Based Substances*

No person shall use or apply lead-based substances

(A) in or upon any exposed surface of any dwelling or dwelling unit; or

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* The addition of this particular section to a housing code would in most cases be adequate to give that code the needed strength in lead control.

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(B) in or upon any fixtures or other objects used, installed, or located in or upon any exposed surface of any dwelling or dwelling unit, or intended to be so used, installed, or located; or

(C) in or upon any toys or furniture.

Section Five

Prohibition upon Manufacture and Sale of Articles with Lead-Based Substances

No person shall manufacture, sell, or hold for sale any of the following articles that have or contain lead-based substances:

(A) any fixtures or other objects intended to be used, installed, or located in or upon any exposed surface of any dwelling or dwelling unit;

(B) any toys or furniture;

(C) any food containers or cooking, eating, and drinking utensils and tableware with extractable or leachable lead.

Section Six

Warning Labels

No person shall manufacture, sell, or hold for sale any lead-based substance for household use including but not limited to paint, lacquer, pesticides, and cosmetics, unless said lead-based substance is in a secure container bearing a conspicuous label on which appears the following statement in large and prominent letters:

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"WARNING: CONTAINS LEAD. POISONOUS IF EATEN. DO NOT USE INSIDE APARTMENTS OR HOMES, ON OUTSIDE SURFACES WITHIN THE REACH OF CHILDREN, OR ON TOYS, FURNITURE, OR OTHER OBJECTS THAT MIGHT BE CHEWED BY CHILDREN. ALL SUCH USES ARE PUNISHABLE BY LAW."

Agricultural pesticides or non-household materials shall bear a conspicuous label on which appears the following statement in large and prominent letters:

"WARNING: CONTAINS LEAD. POISONOUS IF EATEN. KEEP OUT OF THE REACH OF CHILDREN."

Section Seven

Disposal of Lead-Containing Materials

Disposal of lead-containing materials, their ashes, and other refuse shall comply with procedures established by the Commissioner of Health or other principal health officer. The sale or giving away of such materials--including but not limited to--batteries, battery cases, and wood painted with lead-based paint is prohibited.

Section Eight

Protection of Children and Others from Dangerous Emissions

Residential zoning shall be established in such a manner as to provide protection against lead-containing emissions of exhaust products, and industrial emissions.

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Section Nine

Marketing and Sale of Foodstuff Contaminated with Lead

No person shall offer for sale or distribution any foodstuff or articles contaminated with lead that will endanger the health, safety and welfare of the person.

Section Ten

Payment of Public Funds for Blood-Lead Determinations

The expenditure of municipal (or County or State) funds are authorized for payment of blood-lead determinations in children (and in adults where warranted) by a qualified, analytical chemical laboratory certified by appropriate authorities.

Section Eleven

Maintenance of a Blood-Lead Register

Blood-lead determinations performed by an official chemical laboratory and paid for by public funds shall be reported to the Commissioner of Public Health or other principal health officer. The name, age, sex, address and blood-lead level of the child, and social security number of parents shall be registered and kept in public health files.

Section Twelve

Reports

Every physician, nurse, or public health officer who diagnoses or suspects the existence of lead poisoning in any person shall immediately notify in writing the Health Commissioner of such fact.

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Notification shall include name and age of the child, name of parents (or employer if person is an adult), present address and all addresses of such persons for the preceding 3 years.

Section Thirteen

Inspections

(A) The Building Commissioner or the Health Commissioner may, upon his own motion, inspect dwellings and dwelling units for the purpose of ascertaining the presence of lead-based substances in or upon exposed surfaces.

(B) The Health Commissioner shall immediately inspect for the presence of lead-based substances in or upon exposed surfaces of every dwelling or dwelling unit whose address appears in a report filed pursuant to Section Seven of this Ordinance.

(C) In every inspection of a dwelling or dwelling unit conducted by the Building Commissioner or the Health Commissioner (irrespective of whether such inspection is routine, upon a complaint of any nature, pursuant to paragraph ___ of this Section, upon his own motion, or otherwise), he shall inspect for the presence of lead-based substances in or upon exposed surfaces and may remove samples necessary for laboratory analysis.

Section Fourteen

Notice, Violation, and Condemnation

Upon a determination by the Building Commissioner or the Health Commissioner that there are lead-based substances in or upon any exposed surface of any dwelling or dwelling unit, he shall immediately give notice in writing thereof to all occupants,

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the record owner, the record mortgagees, and any known managing or rental agent of said dwelling, and shall immediately post a copy of said notice upon said dwelling in four conspicuous places.

Section Fifteen

Enforcement

The enforcement of this Ordinance shall be governed by the enforcement provisions of the Minimum Housing Standards _____ _____ (as now or hereafter in force), the provisions of which on the date of the enactment of this Ordinance, are contained in Chapter _____ of the Revised Code of the City of _____ _____, except that, (date) for the purposes of this Ordinance, all references in said provisions to said Minimum Housing Standards Law shall be read and construed as references to this Ordinance.

Alternative

The (administering agency) shall enforce and administer the Ordinance and the rules, regulations, and orders promulgated and issued under (this) _____ act. The agency shall have authority to hold hearings in accordance with the _____ _____ Administrative Procedure Act.

Section Sixteen

Establish Housing Courts

The (authorizing agency) is authorized and directed to establish a special court or courts whose duties shall be to

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expeditiously adjudicate cases involving violations of Health and Housing Codes including those involving lead poisoning, maintenance of hazardous lead exposures and other unsanitary and hazardous housing conditions. The court shall also serve as referee in cases of nuisance, promise to repair, and other complaints brought against the landlord or owner by the (appropriate agency), or occupants at risk.

Section Seventeen

Abandonment of Building

The demolition of a dwelling found to be unsafe for habitation because of lead or other hazard shall be accomplished at the expense of the owner.

Section Eighteen

Prohibition of Eviction of Occupants with Children

No person found to be in violation of the Health (Sanitary) code shall evict, or cause to be evicted, occupants with children for the purpose of avoiding corrective maintenance ordered by court or appropriate authority to eliminate hazardous lead exposures or other unsanitary condition. Further, the families with children should be permitted to continue their occupancy in accordance with their lease or rental agreement executed prior to corrective maintenance.

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Section Nineteen

Use of Public Funds for Emergency Housing

Expenditure of public welfare funds for emergency housing, foster homes, day nurseries, etc., that have lead-based paint on interior structure or furnishings is prohibited.

Section Twenty

Appeals

Appeals under this Ordinance shall be governed by the appeals provisions of the Minimum Housing Standards Law of the City of _____ (as now or hereafter in force), which provisions on the date of the enactment of this Ordinance are contained in Chapter _____ of the Revised Code of _____ _____, except that for purposes of this Ordinance, all references in said provisions to said Minimum Housing Standards Law shall be read and construed as references to this Ordinance.

Section Twenty-One

Severability

The sections of this Ordinance are severable. In the event any section of this Ordinance is found by a court of competent jurisdiction to be unconstitutional, the remaining sections of this Ordinance are valid, unless the Court finds that the valid sections of this Ordinance are so essentially and inseparably connected with, and so dependent upon the void section, that it

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cannot be presumed that the valid sections would have been enacted without the void one, or unless the Court finds that the valid sections, standing alone, are incomplete and are incapable of being executed in accordance with the legislative intent.

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PART VI

FISCAL MEANS FOR SUPPORTING A LEAD CONTROL PROGRAM

In the table that follows, this guideline provides information about potential sources of federal funds that can conceivably be used to support programs directed at controlling lead poisoning among children. The term "potential sources" cannot be stressed enough in its literal meaning for that is precisely the status of those funding programs listed in Table I as they presently* relate to lead control activities.

In none of these programs are there specific allocations of monies either for medical casefinding or treatment in connection with lead poisoning control nor for environmental deleading. Unavoidably, too little is known at any given time about the funding levels in each program because they fluctuate continually.

However, it is recommended that the status of funding from these potential sources be reviewed at the planning stage of the program.

Although lead poisoning of children is identified primarily as an urban problem, funding sources that are specific for rural areas and special population groups are also included in this compilation. The rationale for this is to anticipate the possibility that similar lead poisoning problems in rural areas or among migrant workers might become more obvious in the near future

*Refers to Fiscal '71

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than they are perceived today. In addition, programs for rural areas might, in fact, be applicable to political jurisdictions that are not usually considered rural under casual observance. An incorporated municipality of less than 5,500 population, which becomes part of a metropolitan suburb while maintaining its political independence, could conceivably qualify as a rural area, technically. Because of its proximity to a metro-area, it can easily be classed as part of a neighboring city although it does have the same problems as other rural areas and is, in fact, an independent political jurisdiction.

Without equivocation, program planners are urged to make use of available technical assistance and consultation from the respective Regional offices of the various departments named in this guideline. This should be done before any firm planning steps are taken so as to avoid unnecessary loss of time and effort. Technical aid may well be the main, though not the only, Federal contribution to local lead control programs available at this time.

Program planners should also be aware that there may be as yet untapped local or state funding sources. Principally these could come from consolidation, and shifting of funds and personnel from existing programs that have lost their major thrust or are of lesser relative importance. These sources will naturally have to be determined locally because of the number and variety of local potential resources, and the complex conditions that govern their availability cannot be second-guessed at the Federal level.

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TABLE 1. POTENTIAL FEDERAL SOURCES FOR FISCAL SUPPORT

Administering agency: Farmers Home Administration
U. S. Department of Agriculture
Washington, D. C. 20250

Program Title:

1. Farm Labor Housing

Nature of program	Provides insured loans to finance construction, improvement, and repair of rental housing for domestic farm laborers.
Eligible applicants	State or political subdivisions or other public bodies.
Requirements	Applicants must be unable to finance improvements with their own resources or with credit from other sources; must have security for loan and must repay loan; must maintain and operate the housing financed with the loan or grant.
Relation to lead program	Potential source of financial assistance for rural landlords for removal or control of lead sources in the home environment of migrant workers.

2. Rental and Cooperative Housing for Rural People

Nature of program	Provides loans for rental and cooperative housing in rural areas for low-income and moderate-income families. Loans can be used to construct, purchase, improve, or repair rental or cooperative housing.
Eligible applicants	Individuals, business corporations, nonprofit corporations, and cooperatives are eligible.
Requirements	Applicants must be unable to finance the housing with their own resources or with credit obtained from private sources. Applicants must be able to assume obligations of the loan, furnish adequate security, and have sufficient income for repayment. Applicant must also have the intention and ability for maintaining and operating the housing for the purposes for which the loan is made.

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Relation to lead program	Potential source of financial assistance for rural landlords and cooperatives to remove or control the sources of lead in the rural home environment.

Rural Housing Loans

Nature of program	Provides loans for construction, improvement, and repair of rural homes, farm service buildings, and related facilities.
Eligible applicants	Low and moderate income farmers and residents of rural areas; and communities with populations up to 5,500.
Requirements	Applicants must be unable to finance improvements themselves and be unable to obtain reasonable credit terms elsewhere; must be United States citizens, or planning to become citizens of the United States, of legal age and good reputation; must lack decent, safe, and sanitary housing or essential farm service buildings.
Relation to lead program	Potential source of financial assistance for farm or rural nonfarm homeowners for removal or control of lead sources in home environment.
Other	For low-income families, there are special supplemental provisions for payment of interest so that interest rates can be reduced to 1 percent.

DUP050313391

Administering agency: Federal Housing Administration
Department of Housing and Urban Development
Washington, D. C. 20410

or

Local FHA Insuring Office

Program Title:

1. Title I Home Improvement Loans

Nature of program	Provides for insurance of loans up to $5,000 to alter, repair, and improve residential and non-residential properties, and loans up to $15,000 (not to exceed $2,500 for each dwelling) to alter, repair, improve or convert existing structures used, or to be used, as dwellings for two or more families.
Eligible applicants	A person who either owns the property to be improved, is buying it under contract, or holds it under a lease good for 6 months beyond the date the loan will mature.
Requirements	Loan term is 7 years, or not over 12 years from the date the original loan was made if the note is refinanced. Loans may not be used to pay for work already done. These loans are handled directly by FHA approved lending institutions, and prior credit approval by the FHA is required only for loans exceeding $5,000.
Relation to lead program	Potential source of financial assistance for homeowners and landlords to make needed improvements to remove or control lead sources in the home environment.
Other	No downpayment is required, and in most cases the borrower's signature serves as security so that no co-signer is required. Application for the loan is made to any commercial lender participating in the FHA loan-insurance program. Under the Title I improvement loan program, the FHA insures private lending institutions against loss. The FHA does not make any direct loans.

DUP050313392

Program Title:

Code Enforcement Grants

Nature of program	Provides financial assistance to carry out 3-year concentrated code-enforcement projects in appropriately selected areas. Grants are provided for up to two-thirds of the eligible costs - three-fourths for communities of 50,000 or less in population - for the planning and execution of the code-enforcement program. In addition, financial assistance in the form of direct 3-percent-interest loans and grants up to $3,000 are available to eligible area residents. All eligible relocation costs for persons displaced as a result of the code enforcement are provided.
Eligible applicants	Cities, counties, and other municipalities with statutory authority to enforce a comprehensive system of codes regulating the use and construction of private properties within the community.
Requirements	Applicant communities must have a certified Workable Program for Community Improvement in effect; must be carrying out an effective program of code enforcement; agree to maintain normal levels of expenditures for code enforcement, exclusive of that required for the project area; agree to provide relocation assistance to all those displaced by project activities; provide at local expense all those public facilities necessary to accomplish the purpose of the program but that are not eligible project costs.
Relation to lead program	It is possible for activities relating to identification, (including sampling and testing), of lead sources in the home environment to become an eligible cost item in a comprehensive code-enforcement program. Accessibility of lead paint to children will have to be identified in the code as a violation. Property owners who are not able to meet the costs of removing the paint or otherwise making it inaccessible to children can be eligible for a direct low-interest loan or grant to help bring the property up to the standards of the code.
Other	(Please refer to the note at the bottom of page VI-8).

DUP050313393

Program Title:

3. Housing Rehabilitation Loans

Nature of program	Provides loans to assist rehabilitation in existing and in future urban renewal and code enforcement areas as certified by the locality. Intention of the program is to reduce the need for demolition and removal of structures by financing rehabilitation required to make the property conform to applicable code requirements; to carry out the objectives of the plan for the area; and, in addition, to make certain other improvements. The maximum loan for residential housing would be the amount that could be insured under Section 220(h) of the National Housing Act.
Eligible applicants	Owners of property in urban-renewal or concentrated code-enforcement areas. With some exceptions, loans on residential properties are limited to applicants whose incomes are within the maximums prescribed by the Secretary, Department of Housing and Urban Development, under Section 221(d)(3) of the National Housing Act. Loans are made through the public agencies administering the local program.
Requirements	Those prescribed by the loan program. For specific information, refer to the lending agency or Regional Office of the Department of Housing and Urban Development (HUD).
Relation to lead program	Similar to that specified in 2 - Code Enforcement Grants.
Other	(Please refer to the note at the bottom of page VI-8).

4. Housing Rehabilitation Grants

Nature of program	Provides grants to individuals or families who own and occupy residences in neighborhood-development, urban-renewal, and code-enforcement areas and in areas certified by the locality to become such areas. Grants cover the cost of repairs and improvements necessary to make the property conform to applicable codes or other requirements of the plan for the area.
Eligible applicants	Owner-occupants of one-to-four-dwelling-unit properties located in federally-assisted-project areas.

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Requirements	Those imposed by the grants program. For specific information, public agency administering the local program or to the HUD Regional Office.
Relation to lead program	Similar to that specified in 2 - Code Enforcement Grants.
Other	(Please refer to note at the bottom of this page).

Interim Assistance for Blighted Areas

Nature of program	Provides grants to localities for interim assistance programs in slum and blighted areas that are planned for major renewal involving substantial clearance in the near future. Grants are for planning and carrying out activities in these areas to alleviate harmful conditions for which some immediate public action is required until permanent action can be taken.
Eligible applicants	Cities, other municipalities, and counties.
Requirements	Locality must have currently certified Workable Program for Community Improvement.
Relation to lead program	Provides a potential source for funding activities to remove or otherwise make lead sources in the home environment inaccessible to children. Improvement activity within dwelling units would probably be limited under this program to buildings that are owned by the municipality. In this event, other funding mechanisms could probably be employed to assist with improvements in buildings that are privately owned.
Note	These funding mechanisms will not provide funds exclusively for a lead program. Lead control activities will have to be incorporated into the broader code-enforcement or urban renewal program. In most cases, a major upgrading of buildings will be required with the result that improvements under these programs would require expenditures that are substantially above those that would be adequate for lead control alone.

DUP050313395

Administering agency: Maternal and Child Health Service
Health Services and Mental Health Administration
U. S. Department of Health, Education and Welfare
Washington, D. C.

or

State Health Agency

Program Title:

1. Maternal and Child Health Services Improvement

Nature of program	Provides grants-in-aid to States to extend and improve services for reducing infant mortality and promoting the health of mothers and children. Services include, among others, well-child clinics and visits by public health nurses. Grants also are made for special projects of national or regional significance that may contribute to the advancement of services for maternal and child health.
Eligible applicants	States, for grants for maternal and child health services; State health agencies and institutions of higher learning for special project grants.
Requirements	Special emphasis on rural areas or areas suffering from severe economic distress; State allocation figured by forumla; State must match, on dollar-for-dollar basis, one-half of the Federal funds.
Relation to lead program	Program is a potential source for financial assistance in screening, clinic services, and visiting-nurse services for medical aspects of a lead program when operated in conjunction with ongoing maternal and child health programs.

2. Comprehensive Health Care Projects for Children and Youth

Nature of program	This program provides financial support for health care and services to children of school and pre-school age, particularly in areas with concentrations of low-income families. The program includes medical screening, diagnosis and preventive services. Treatment, correction of defect, and aftercare services are provided to children who would not otherwise receive them because of low-income or other reasons beyond their control.

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Eligible applicants	State and local health departments, State crippled children's agencies, and medical schools and hospitals (affiliated with schools of medicine) are eligible for grants.
Requirements	Agencies applying for grants must be prepared to offer comprehensive health services to children of low-income families in the proposed project area. They must submit an application which shows the scope and methods of project operations and shows the source of required matching funds.
Relation to lead program	Program offers a potential source for medical screening, diagnosis, and treatment services for lead control programs conducted in areas with concentrations of low-income families.

DUP050313397

Administering agency: Community Health Service
Health Services and Mental Health Administration
U. S. Department of Health, Education and Welfare
Washington, D. C.

Program title:

1. Health Services for Migratory Workers

Nature of program	Projects assisted under this activity provide health services to migrant agricultural laborers and their families. The purpose of this program is to raise the level of migrants' health to that of the general population. The grants may be used to help support a wide range of health services: medical, nursing, dental, health education, hospitalization, and sanitation services. The major emphasis of the program is to assure that migrants have access to ongoing community health services provided in ways adapted to their situation and need.
Eligible applicants	State and local health departments and other agencies; nonprofit private agencies, institutions or organizations; are eligible to apply for grants under this program.
Requirements	The grantee pays a part of the cost which varies from project to project depending upon the relationship between the magnitude of the problem and other available resources. This share may be paid in money, or contributions of equipment, supplies, personal services, facilities, or other essential items.
Relation to lead program	Potential source of financial assistance for screening and medical care for children of migrant workers affected by lead, and for removal or control of lead sources in the home environment through sanitation improvements.

2. Comprehensive Public Health Services

Nature of program	Provides grants to the States for support, development, and expansion of public health services to meet the needs of their citizens in accordance with priorities and goals established by the States. Encourages the States to develop coordinated programs of State and local public health services, including those directed at maintaining physical and mental health, detecting, preventing, and controlling disease, injuries, and disabilities; and protecting and maintaining a healthful environment.

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Eligible applicants	All state health and mental health authorities are eligible to receive an allotment under section 314(d) of the Public Health Service Act, as amended by Public Law 89-749 and Public Law 90-174. United States' territories are also eligible.
Requirements	States are required to submit a State plan for provision of public health and mental health services to be supported in part by funds provided under section 314(d) and which contain the information and meet the requirements specified in subsection 314(d)(2) of the Public Health Service Act and in the regulations.
Relation to lead program	Potential source for funds that can be used to establish and operate State and local lead-control programs that include casefinding, medical care, neighborhood identification, and deleading operations.

Health Services Development

Nature of program	Provides grants to public and private nonprofit agencies and organizations to cover part of the cost of providing services, including related training to meet health needs of limited geographic scope or of specialized regional or national significance; developing and supporting, for an initial period, new programs of health services, including related training. (PL 89-749, PL 90-174, 314(e).
Eligible applicants	Public and private nonprofit agencies and organizations
Requirements	Federal share must be less than 100 percent. Projects must be in accord with State plan for comprehensive health services. Funding priority will be given to projects of a comprehensive nature or that contribute to comprehensive care for indigent individuals and their families.
Relation to lead program	Potential source of financial assistance for establishing and operating local comprehensive lead-control programs.

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PART VII

PROCEDURAL GUIDE FOR IDENTIFICATION AND MANAGEMENT OF ENVIRONMENTAL LEAD HAZARDS IN THE RESIDENTIAL ENVIRONMENT

This guidelines section proposes a three-phase approach using, in combination, environmental appraisal and medical screening techniques to (1) identify potentially hazardous neighborhoods using published U.S. Bureau of the Census data; (2) assemble descriptive baseline data to help define the magnitude of the problem by conducting a sample survey of designated high risk areas including medical screening and environmental appraisal; and (3) help plan and execute a control program using environmental control methodologies, intensive medical screening and referral for treatment.

PHASE I - ENVIRONMENTAL EVALUATION BY USE OF EXISTING CENSUS DATA

Bureau of the Census data provides an easily accessible source of information that can be used to conduct a relatively simple, cursory appraisal of community environmental quality as it relates to lead poisoning. By considering, in combination, those environmental conditions and age factors that are usually found in association with the occurrence of lead poisoning among children, census tracts can be ranked according to their likelihood to be predisposing to the occurrence of lead poisoning. The ranking technique should aid program managers in determining the potential magnitude of the problem, designing a control program, assigning work area priorities and in allocating resources.

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APPRAISAL FACTORS

Houses that were built prior to 1950 are generally considered to have paints with high lead content on their walls, ceilings, windowsills, doors and doorjambs as well as on other surfaces. Sometime earlier other substances replaced lead, to a large extent, in the manufacture of most interior paints so that houses built after 1940 are not considered a serious potential problem. The poisoning hazard is increased where painted surfaces are deteriorating thereby making leaded paint more accessible, to children who occupy the premises, through chipping, peeling, and flaking from the surface.

Children between the ages of one and six are considered to be within the broad age category of susceptibility with children between one and three years of age the most susceptible.

In the appraisal system recommended here these three factors are used in deriving a scoring technique by which to rank census tracts according to their relative potential for conduciveness to the occurrence of lead poisoning in children:

1. Age of the structure
2. Deterioration of the structure
3. Occupancy by children in the susceptible age category

This system is especially designed to be as uncomplicated as possible to facilitate rapidity and ease of use and to accomodate trainee paraprofessionals and other employees who are unfamiliar with data and numerical manipulations.

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A somewhat more sophisticated technique has also been developed and is included in Appendix I of this section. It is not recommended here as the primary appraisal methodology because it has not been strongly tested. The Bureau of Community Environmental Management, EHS would hope to see it used by interested cities and would appreciate receiving information regarding the results of such tests.

DATA TABULATION

Use of data tabulation sheets similar to those accompanying this guideline section is suggested. Data from the 1970 census should be used. Data from the 1960 census could be used as information only on the environmental factors of age of structure and deterioration of housing units. Population characteristics have probably changed so radically, in the areas of cities that will be of chief concern, as to make the 1960 data grossly inaccurate.

If the population data for a city has been periodically updated since 1960, or if other population data of reasonable accuracy is available from other sources, this can be used in combination with the 1960 data. Failing this, it is recommended that census tracts be ranked by using age of structure and deterioration of housing unit data only, if 1960 data must be used. In this instance, a study of the population age characteristics should be made, prior to the initiation of lead control activities, in those census tracts showing a high potential probability as determined by the environmental factors. This will add the third necessary dimension to the 1960 data.

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As an aid to clarifying the instructions that follow in the use of WORK SHEET A and WORK SHEET B, data entries of an actual census tract are included in the sample WORK SHEET A. Copies of the worksheets will be found in APPENDIX II.

USING WORK SHEET A

Census tract numbers are entered in the column at the extreme left side of the form. The total number of housing units in the census tract (1) can be taken directly from Table H-1 of the census data. (Tables from the 1960 census are used here as examples since format samples of the 1970 census tables are not as yet available). Figure 1 (in Appendix II) shows the location of the data in the table for census tract P-001 of a sample city.

The number of Housing Units Built Before 1950 (2) as a percentage of all housing units can be determined by the simple formula shown on WORK SHEET A. This information is also taken from Table H-1. The number of structures built 1940 to 1949 are added to those built in 1939 or earlier. This sum is multiplied by 100, in the formula, to avoid working with numerical decimals. The product is divided by the total number of housing units to derive the percentage:

93 + 904 = 997 Housing Units Built Before 1950

$$\frac{\#\ HU \times 100}{TTL\ HU} = ____\%$$ Substituting,

$$\frac{997 \times 100}{1001} =$$

$$\frac{99,700}{1001} = 99\%$$

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Similar computations are made for determining the percentage of Deteriorated Housing Units of the total number of units in the census tract. Here dilapidation is considered an extreme form of deterioration and, as shown in (3) Figure 1, the number of units in each category are added together:

$$225 + 11 = 236$$

The formula is completed as follows:

$$\frac{\#\ HU \times 100}{TTL\ HU} = ____\% \text{ Substituting,}$$

$$\frac{236 \times 100}{1001} =$$

$$\frac{23,600}{1001} = 24\%$$

Total population for the census tract (4) is taken from column tract P-001 in Figure 2 (in Appendix II). Since separate figures for male and female are given they must be summed. In our example this would be:

$$1521 + 1660 = 3181 \text{ - Total Population}$$

The formula for determining the number of children under 6 years of age as a percentage of the total census tract population is the same as in (2) and (3). Referring again to Figure 2, the numbers of males and females in each of the age categories from 1 through 6 years of age (5) are combined and the sums added together:

Male		Female	
46		38	
37		42	
30		38	
34		44	
43		20	
33		34	
30		27	
253	+	243	= 496 children under 6

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Completing the formula,

$$\frac{\text{\# Child. X 100}}{\text{TTL Population}} = ____\%$$

$$\frac{496 \text{ X } 100}{3181} =$$

$$\frac{49,600}{3181} = 15\%$$

Determining the potential hazard score for the census tract (6) is accomplished by simply summing the figures in columns (2), (3), and (5) as follows from the example:

$$99 + 24 + 15 = 138$$

WORK SHEET B

This form merely provides a means for tabulating census tracts by rank as determined by their respective scores. The tract with the highest score is ranked Number 01 and the tract with the lowest score is given the lowest place in the ranking scale. The scale will help establish priorities for the lead control program activities.

PHASE II - STATISTICAL SAMPLE TO VALIDATE POTENTIAL RISK SITUATION

The preventative aspects of the problem - removal of the hazard from the environment - present significant economic implications. It is necessary to validate the results obtained from Phase I - determination if a low, moderate, or high risk hazard potential exists - and assemble baseline data upon which a control program can be developed. This is done by statistically sampling for (1) the presence of lead in the dwelling and (2) blood-lead determination in children as shown below.

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PHASE III - SATURATION CONTROL PROGRAM

After neighborhoods with high lead concentrations and childhood poisoning problems have been identified the city can move ahead with a saturation control program in these areas. This will be an expensive undertaking and all potential resources should be carefully identified and studied to determine their actual availability and applicability.

A saturation control program for these areas would involve 100% medical screening of children within the susceptible age group, referral for treatment of positive cases, an environmental appraisal of the entire neighborhood and dwelling units, and environmental deleading. Medical procedures are discussed in other sections of this guideline and need not be considered here.

There are two major areas of importance for environmental control. Of primary importance are sources within dwelling units, and their premises. Those of secondary importance are: Environmental sources outside the home environment, and those which cannot be altered by practical immediate solutions. Most programs will probably place greatest emphasis on controlling primary hazardous sources and include control of secondary sources as part of continuing future operations. These later will obviously require long range cooperative planning with other major agencies since they are part of the larger environmental pollution problem.

DUP050313406

A. ENVIRONMENTAL APPRAISAL

Cities that have studied the problem of childhood lead poisoning have found that most of the children diagnosed as having clinical lead intoxication were found to have been eating paint or lead-containing plaster. Sources of lead containing paint available to children on the walls, ceiling, doors, and window sills of dwelling structures should be given primary consideration in the control program. Although present day interior paints contain insignificant amounts of lead pigment, peeling and chipping of underlying layers of older leaded paint present the real hazard. Some types of exterior dwelling paint continue to employ a lead base; therefore, exposure to leaded exterior surfaces continues to present a potential danger to children.

Method of Testing for Leaded Paints

1. Chemical Analysis

The most commonly used method for determining lead content in samples of applied paint at the present time is through chemical analysis of collected samples. Several techniques have been developed. Some require laboratory facilities and others can be done in the field by trained personnel.

In regard to the later, Kaplan[1] describes a simple wet-chemical method that can be done in the field. In principle, a 25-mg sample of paint scrapings is weighed on a simply constructed

[1] Kaplan E., and Shaull R., "Determination of Lead in Paint Scrapings as an Aid in the Control of Lead Paint Poisoning in Young Children," AJPH, Vol. 51, No. 7, January 1961.

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field balance and digested with nitric acid solution to extract lead. Water is added, and the lead precipitates as the iodide. Conditions are empirically adjusted so that more than 1 percent of lead is required for a positive test. The 25-mg balance is made from a section of plain white index cards glued to a piece of one-quarter inch square hobby shop balsa wood.

2. X-ray Spectrometry Analysis

X-ray spectrometry techniques, using both laboratory based and portable equipment, have been developed and are intended to reduce the time required for wet-chemistry analysis. Radioisotope excited X-ray fluorescence analysis principles, can be used for analysis of any sample of paint down to less than 1% lead by weight. The analysis is non-destructive of the sample, and can be used with a tape to print out a permanent record.

B. IDENTIFICATION AND EVALUATION OF SECONDARY LEAD SOURCES

Although ingestion of leaded paint has been identified as the prime means of lead intake among children, some consideration should be given at later stages in the program to evaluating the role of secondary sources. Some potential sources of secondary lead intake have been identified, but the magnitude of their effect has yet to be confirmed. These are discussed briefly below:

1. Lead intake through drinking water delivered through lead pipes or stored in lead containing tanks (contained in the metal

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of the tank, lead soldering of joints, etc.) has been considered a hazard but this remains questionable. A study by the New York City Health Department indicated that 2.5% of all tap water samples tested had a significant lead content.

2. Another potential contamination source is related to the use of kindling in home space heaters. In neighborhoods in which cuttings from lead storage batteries or other combustible materials which have some lead content are available and are used for kindling, there is a danger of inhalation of leaded fumes where heaters are improperly vented. The same problem exists in using leaded kindling wood taken from old buildings. If these materials are used on a large scale throughout the neighborhood, lead through this source could affect the entire neighborhood. Disposal of ashes also becomes a problem in that children can ingest lead by playing in ash piles.

3. Cases have been reported of lead intake from eating frost and ice from inside refrigerators or freezers and also from drinking water which collects in drip pans. The extensiveness of this problem has yet to be determined.

4. Atmospheric lead contamination through industrial pollution and motor vehicle exhaust are additional sources of lead contamination in the neighborhood, and its role in the childhood lead poisoning problem needs to be given greater specificity.

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C. ALTERNATIVES FOR REMOVING PRIMARY LEAD SOURCES

The following alternatives for controlling primary lead sources are offered for consideration by local bodies in the development of lead control programs. Establishment of program priorities, implementation methodologies and estimation of cost factors should be determined locally since they will be affected by local conditions.

Immediate Temporary Solutions

Once a dwelling has been found to have significant concentrations of lead, several approaches to interfere with the child-lead interaction can be considered.

1. Relocation of the family to lead-free quarters.
2. Use of lead-free play rooms where home supervision is inadequate.

Shielding of Leaded Surfaces

The intention in the use of this method is to isolate the lead-loaded wall from the child. The ideal materials should have the following properties:

1. Difficult to scrape or puncture
2. Vermin proof
3. Fire resistant with a high ignition temperature
4. Not release noxious vapors at high temperatures
5. Should not place additional strain on the existing structures of the building
6. Reasonable installation costs (labor and materials)
7. Low maintenance cost

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Suitable materials are presently available but consideration must be given to cost of materials, and whether application techniques require skilled labor, or whether installations can be made by tenants or neighborhood groups.

1. Flat Surface Covering Material

a. Gypsum Board. The installation of this material creates a new wall in front of the old. It costs about 5 cents per square foot for materials, and installation is relatively expensive and sophisticated requiring skilled labor at a total probable cost of 40 to 50 cents per square foot.

b. Fiberglass Wall Covering Materials. Loose paint and plaster must be removed prior to application and some patching of the wall may be necessary. It is supplied in 40 inch wide sheets; an adhesive compound is applied with a roller over the sheets. Cost for materials is 10 cents per square foot. In some buildings, with two coats of paint over it, this has lasted very well for ten years. The estimated cost is 43 cents per square foot.

c. Paper Wall Cover Materials. These can be made strong, fire-retardant and attractive and can be applied on an unsound wall in a horizontal fashion. The cost of materials runs about one cent per square foot.

Consideration should be given to use of heavy kraft paper (brown wrapping paper) and painting over it with several coats of lead-free paint as a quick temporary measure.

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d. Vinyl Coat Sheeting. This material must be applied with an industrial adhesive. It is the least combustible of the plastics, but does give off some hydrochloric acid fumes in fire. It has very low maintenance, can be tailored to order and has a cost (including adhesive, not labor) of 10 cents per square foot. Rigid vinyl board is available but sheeting might be preferable largely because of labor factors.

e. Plywood and Hardboard. Application if inexpensive grades of thin (¼ inch) plywood, or interior hardboard (1/8 inch) by nailing directly to the wall studs is an effective method of imposing a barrier between the child and the leaded surface. If additional finishing is required, abutment joints can be covered with wood strips or installed with ready-made metal joiners. The entire surface can be painted with lead-free paint to add an esthetic quality. Cost of the hardboard is about 6 cents per square foot and plywood about 10 cents per square foot. Installations can be made by tenants, landlords or civic minded neighborhood groups.

2. Liquid Covering Materials

The general problems involved in the use of liquids include adequate strength (i.e., vinyl paints are not as strong as vinyl films), thickness control, adhesive problems with heavier films and the general need for some wall preparation (sanding, raking, cleaning, etc.)

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a. Urethane-base Paint. As an expedient measure, the walls, ceiling, sills, and other surfaces can simply be scraped to remove all loose paint and plaster chips and the surfaces repainted. This might have to be repeated at relatively frequent intervals since peeling will likely continue. Routine inspections should be considered as a practical control measure. Such an approach might be considered for dwelling units in areas marked for urban renewal or other massive changes in the near future in which large investments of resources would not be practical. This plan would imply eventual relocation of the residents.

b. Pigmented Masonry Conditioner. This is an excellent substance if flaking, peeling, and scaling paint could be removed from the underlying wall. It has a tung oil base which makes it penetrate very well. Several coats add binding strength to the wall.

3. Curved Surfaces

Technically, curved surfaces can be handled with the liquid. If sheeting is used on flat surfaces some other techniques must be used for sills, moldings, etc. Where possible, surfaces should be scraped down to base wood. Otherwise the use of vinyl chloride lacquer applied by spray is suggested. This usually requires masking of the surfaces not to be sprayed. The film is quite tough, but not as strong as the wall films. It should be applied as a spray, and portable self-atomizing aerosol spray units can be used.

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4. Removal of Old Finishes

a. Common Methods. Most methods for paint removal are time consuming and costly. To offset the cost, some codes presently in effect require the removal of paint only to the height of 5 feet (within the reach of children 1 to 6 years old) and from protruding surfaces, such as windowsills, doors, etc. This appears to be a satisfactory compromise so long as there is no peeling or flaking of paint from the ceiling or surfaces above the 5-foot level. Common methods include application of paint removers, sanding, scraping, steaming, and burning with propane torches. All methods are effective to varying degrees, but all have some drawbacks. Some cities have tried the burning procedure, but it is slow and presents a fire hazard.

b. Chemical Paint Removers and Steamers in Combination. The National Paint, Varnish and Lacquer Association has developed a method which it claims that under ideal conditions will remove four to five coats of interior finishes from plaster, vinyl wall covering or wood at a rate of approximately one square foot per minute.

The method uses paint and varnish removers of the water rinseable type and accelerates the paint softening action with application of steam. The paint remover is applied to the wall or woodwork and allowed to stand for 15 minutes. Steam is then applied through a suitable steamer pan, moving the pan after a short time. The steaming action is followed by scraping with a wide blade.

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In demonstrations in New York, the method was found to be faster and considered to be less hazardous than propane burning. It has been reported that Baltimore found some undesirable features of the method and has resorted to propane burning.

D. ALTERNATIVES FOR CONTROLLING SECONDARY LEAD SOURCES IN THE *NEIGHBORHOOD ENVIRONMENT*

Industrial Sources

A part of the community's neighborhood deleading program should be to identify industrial and commercial operations which can contaminate the neighborhood atmosphere. Through air sampling with subsequent laboratory analysis, and study of industrial operations, the amount of lead being put into the atmosphere and collecting in the neighborhood should be determined. Potential effects in combination with other lead sources in the residential environment should be evaluated. Several obvious solutions to serious problems arising from industrial output are:

1. Controls over the industrial operation to reduce the acceptable limits in the amount of aerial lead effluent;
2. Relocation of the most hazardous operations to other sites;
3. Relocation of residents of the neighborhood to more favorable residential areas;
4. Modification of and stringent enforcement of zoning regulations to separate and buffer commercial, industrial and residential areas.

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Streets, Parking Lots and Highway Sources

Exhaust from automobiles, trucks and other road vehicles are sources of atmospheric lead contamination. Tests should be conducted to determine concentrations of lead in residential areas. Traffic pattern studies also need to be made to determine whether residential streets have become major traffic arteries and to evaluate effects of nearness of major highways to residential areas. Several remedial steps can be proposed:

1. Rerouting of traffic away from residential areas combined with strict enforcement of traffic regulations;
2. Revision of traffic plans and zoning regulations to keep major traffic arteries away from residential areas;
3. Relocation of residents.

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PART VII

APPENDIX I

ALTERNATE METHOD FOR IDENTIFICATION AND MANAGEMENT OF ENVIRONMENTAL LEAD SOURCES IN THE RESIDENTIAL ENVIRONMENT

Bureau of Census data can be used to classify by census tracts those areas of communities having high, moderate, or low potential for lead poisoning. The categories to be used are those with specific sub-items known or highly suspected to be associated with the incidence of lead poisoning among children. These are listed below. Relative weights between categories and items within categories are also given. "x" indicates the weight between categories and "z" the weights between items within categories.

1. Age of structure

   x = 3

   z = 6 1939 and earlier

   z = 3 1940 - 1949

   z = 1 1950 - 1955

2. Level of structural deterioration

   x = 2

   z = 10 Dilapidated

   z = 5 Deteriorated

   z = 0 Sound

3. Number of children in census tract within most susceptible age grouping

   x = 3

   z = 6 1 - 3 years

   z = 2 3 - 6 years

   z = 1 1 year and under

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4. Socially related indicators

   x = 1

   z = 1 Renter occupancy

   z = 2 Duration of occupancy

   z = 2 Income

   z = 5 Crowding conditions

   z = 10 Family relationships

WEIGHTING AND SCORING SYSTEM

By applying a relative weighting system between categories and between items in each category, scores can be derived for each category and for the census tract. The census tract score is compared with a scale and classified as having a high, moderate or low risk potential. By plotting the census tracts on a map according to classification, cities will have a graphic means for determining the presence and degree of severity of potential lead poisoning hazards.

Further checks on the accuracy of the data may be obtained by cross-checking clinic health records, physicians and hospital records for actual or hearsay information about possible lead poisoning cases, and housing or building inspection or other municipal records for indicators of maintenance conditions.

PROCEDURE FOR DETERMINING POTENTIAL LEAD POISONING HAZARD FROM CENSUS DATA*

For each of the categories, the cumulative penalty score is derived for each census tract by computing the average point

*Form I can be used as an aid in tabulating the necessary census data.

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value for each category. This is accomplished through the following steps:

1. Multiply "x" and "z" factors (weighting points between categories and between subitems of each category respectively) for each subitem to obtain penalty score.

2. Multiply this number by the number of units which applies to each of the subitems.

3. Sum the totals for each subitem and divide by the total number of units in that category to obtain the Cumulative Penalty Score.

4. Sum the Cumulative Penalty Scores of all categories to obtain the Total Penalty Points for the census tract.

The potential lead poisoning hazard risk category for the census track can be determined from the following table:

High Risk	60 to 40	Moderate Risk	39 to 30	Low Risk	29 to 0

A color coding system can be developed for the penalty point score ranges, such as red for High Risk, blue for Moderate Risk and green for Low Risk, and plotted on a map. This will provide a graphic means for identifying the most potentially hazardous areas and help plan for remedial action.

COMPUTATION OF CUMULATIVE PENALTY SCORE

The procedure to compute the Cumulative Penalty Score for each category is represented by the following formula. The

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Age of Structure category is used here as an example, but the general format of the formula applies to all categories.

$$\frac{(HU_1 \times PP_1 + HU_2 \times PP_2 + HU_3 \times PP_3)}{(HU_1 + HU_2 + HU_3)} = CT$$

Where: $HU_1 + HU_2 + HU_3$ is recorded in (1) on form.
$HU_1 \times PP_1 + HU_2 \times PP_2 + HU_3 \times PP_3$ is recorded in (3) on form.

HU_1 = structures built in 1939 or earlier
HU_2 = structures built in the period 1940 - 1949
HU_3 = structures built in the period 1950 - 1955
PP_1 = Penalty Points for subitem HU_1:
x(3) X z(6) = 18
PP_2 = Penalty Points for subitem HU_2:
x(3) X z(3) = 9
PP_3 = Penalty Points for subitem HU_3:
x(3) X z(1) = 3

The formula can be worked out using the following hypothetical values:

HU_1 = 835
HU_2 = 145
HU_3 = 275

$$\frac{(HU_1 \times PP_1 + HU_2 \times PP_2 + HU_3 \times PP_3)}{(HU_1 + HU_2 + HU_3)} = CT$$

$$\frac{(835 \times 18 + 145 \times 9 + 275 \times 3)}{(835 + 145 + 275)} =$$

$$\frac{(15,030 + 1,305 + 825)}{(1,255)} =$$

$\frac{17,160}{1,255}$ = 13.67 or, rounded to the nearest whole number:

Category Total = 14

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RATIONALE FOR USE OF CENSUS DATA CATEGORIES

1. Age of Structures

This item indicates the probably presence and content of leaded paint in the dwelling structure. The older the structure, the higher the probability of greater numbers of coats of paint on interior surfaces. Structures built during various time periods are assigned relative weighting points as previously indicated.

2. Level of Structural Deterioration

Peeling and chipping of paint occurs where a high degree of deterioration is present thereby making leaded paint more accessible to children. Most clinically diagnosed cases of lead poisoning have identified ingestion of peeling leaded paint as a primary source of lead intake among children. A direct relationship exists between exterior deterioration and interior maintenance problems. Deterioration is therefore an important factor in evaluating the hazard potential of the structure.

3. Number of Children in the Census Tract Within the Most Susceptible Age Grouping

Children up to about the age of six years are considered to be susceptible to lead poisoning with those between one and three years the most susceptible. The combination of environmental and other factors with potentially susceptible children is a highly volatile mix; and therefore, an important consideration in a lead poisoning prevention program.

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4. Socially-Related Factors

Factors of a social or demographic nature, that are related to the problems of lead poisoning are:

a. Renter Occupancy - Such housing units are presumed to have low maintenance, frequent change of household, and a higher deterioration rate than owner-occupied housing units and are therefore penalized.

b. Occupancy Duration - Frequent occupancy changes result in low maintenance and high deterioration for the housing unit. For the purposes of this technique, a housing unit that has been occupied for one year or less is considered to have a high deterioration rate and is therefore penalized.

c. Income - Low housing unit maintenance and poor nutrition which may be associated with pica among children and are presumed to be in association with low income. Therefore, families with incomes of less than $4,000 per year are given a penalty score.

d. Crowding Conditions - Overcrowding results in poor maintenance and high deterioration of dwelling units thereby increasing probability of peeling and chipping of paint. This evaluation penalizes dwelling units in which there is more than one person per room.

e. Family Relationships - The role of emotional factors as a predisposing element in family relationships is suggested by reported data which reveals that one-third of the poisoning cases are from broken families, i.e., the absence of a father, an unmarried mother, parents divorced or separated. A penalty point is given to a census tract for each individual over age 14 reported to be either divorced or separated.

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WORK SHEET A

ENVIRONMENTAL EVALUATION FROM U.S. CENSUS DATA

POTENTIAL LEAD POISONING HAZARD

CENSUS TRACT NO.	TOTAL NO. HOUSING UNITS IN CENSUS TRACT (1)	% HOUSING UNITS BUILT BEFORE 1950 (2)	% DETERIORATED HOUSING UNITS (3)	TOTAL POPULATION (4)	% CHILDREN UNDER 6 YRS (5)	POTENTIAL HAZARD SCORE FOR CENSUS TRACT (6)
	Copy Direct From Census Data	# HU X 100 / TTL HU = ___ %	# HU X 100 / TTL HU = ___ %	Copy Direct From Census Data	# CHILD. X 100 / TTL POPULATION = ___ %	(2) + (3) + (5) = ___
P0001	1,001	99	24	3,181	15	138

SAMPLE

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WORK SHEET B

CENSUS TRACTS RANKED BY DEGREE OF POTENTIAL ENVIRONMENTAL HAZARD
DERIVED FROM U.S. CENSUS DATA

RANK	CENSUS TRACT NO.	SCORE	RANK	CENSUS TRACT NO.	SCORE	RANK	CENSUS TRACT NO.	SCORE	RANK	CENSUS TRACT NO.	SCORE

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Census Tracts

FIGURE 1

Table H-1.—OCCUPANCY AND STRUCTURAL CHARACTERISTICS OF HOUSING UNITS, BY CENSUS TRACTS: 1960

[Some data based on sample; see text. Medians not shown where base is less than 500]

SUBJECT	IN CUMBERLAND COUNTY			PORTLAND					
	TOTAL	PORTLAND	BALANCE	TRACT P-0001	TRACT P-0002	TRACT P-0003	TRACT P-0003 EV	TRACT P-0004	TRACT P-0005
ALL HOUSING UNITS	61 345	26 285	15 049	* 1 904	1 209	---	---	731	620
TENURE, COLOR, AND VACANCY STATUS									
OWNER OCCUPIED	20 083	10 061	4 992	312	342	---	---	128	235
NONWHITE	20 038	10 018	4 989	305	337	---	---	126	234
RENTER OCCUPIED	95	43	3	7	5	---	---	2	1
NONWHITE	17 948	13 868	4 000	685	785	---	---	530	401
VACANT	17 744	13 758	3 999	682	775	---	---	505	393
NONWHITE	99	63	6	5	10	---	---	25	8
AVAILABLE VACANT	1 433	1 329	305	34	84	---	---	62	91
FOR SALE ONLY	206	142	123	---	6	---	---	6	3
FOR RENT	1 364	1 116	163	34	64	---	---	52	88
RENT VACANT	1 830	1 056	772	10	18	---	---	11	34
CONDITION AND PLUMBING									
SOUND	23 856	22 619	13 231	760	1 081	---	---	867	804
WITH ALL PLUMBING FACILITIES	23 616	20 286	12 820	757	1 002	---	---	838	787
LACKING ONLY HOT WATER	240	146	66	8	12	---	---	24	7
LACKING OTHER PLUMBING FACILITIES	2 776	2 741	919	10	67	---	---	47	20
DILAPIDATED	4 968	3 107	1 818	* 222	133	---	---	224	148
WITH ALL PLUMBING FACILITIES	3 456	2 345	1 041	209	102	---	---	139	117
LACKING ONLY HOT WATER	181	135	56	7	13	---	---	21	11
LACKING OTHER PLUMBING FACILITIES	911	567	284	* 15	18	---	---	67	16
DILAPIDATED	972	515	397	* 11	13	---	---	20	21
BATHROOMS									
NONE	32 782	20 998	11 783	932	1 107	---	---	601	713
LESS THAN 1½	2 792	2 167	1 129	41	29	---	---	---	22
1½ OR MORE	5 268	3 118	1 139	61	78	---	---	130	98
ROOMS									
1 ROOM	1 692	1 702	90	3	4	---	---	5	---
2 ROOMS	1 852	1 830	233	11	33	---	---	46	22
3 ROOMS	7 344	2 908	948	181	89	---	---	108	65
4 ROOMS	6 618	3 902	2 736	272	171	---	---	458	155
5 ROOMS	9 356	5 805	3 321	393	395	---	---	226	282
6 ROOMS	9 358	5 358	3 936	199	279	---	---	128	183
7 ROOMS	6 602	2 567	2 035	124	196	---	---	41	76
8 ROOMS OR MORE	5 965	1 903	1 966	74	86	---	---	29	63
MEDIAN	5.2	5.0	5.5	5.1	5.3	---	---	4.7	5.4
UNITS IN STRUCTURE									
1, DETACHED	20 971	9 247	11 224	196	114	---	---	59	126
1, ATTACHED	6 860	6 158	2 309	350	460	---	---	169	256
2 TO 4	9 615	6 886	1 171	221	473	---	---	265	308
5 TO 9	3 922	3 276	267	24	162	---	---	123	59
10 OR MORE	3 282	3 181	121	19	20	---	---	116	---
YEAR STRUCTURE BUILT									
1950 TO MARCH 1960	3 930	1 013	2 917	1	---	---	---	---	---
1940 TO 1949	8 249	1 610	2 539	* 83	---	---	---	---	---
1939 OR EARLIER	32 279	22 706	9 513	* 904	1 209	---	---	731	629
BASEMENT									
BASEMENT	39 139	25 302	13 838	981	1 204	---	---	698	619
CONCRETE SLAB	2 876	669	229	3	3	---	---	23	10
OTHER	1 340	332	1 008	15	---	---	---	12	---
HEATING EQUIPMENT									
STEAM OR HOT WATER	18 351	10 045	7 259	878	885	---	---	420	394
WARM AIR FURNACE	7 702	3 005	9 509	101	46	---	---	11	63
BUILT-IN ROOM UNITS	1 907	645	760	32	70	---	---	3	18
OTHER MEANS WITH FLUE	9 512	5 204	2 318	193	286	---	---	247	345
OTHER MEANS WITHOUT FLUE	267	199	68	30	---	---	---	20	4
NONE	106	97	72	---	4	---	---	32	11
ALL OCCUPIED UNITS	37 901	23 909	13 992	957	1 127	---	---	658	709
PERSONS									
1 PERSON	6 027	5 386	1 281	153	121	---	---	128	72
2 PERSONS	10 885	6 891	3 994	273	291	---	---	191	173
3 PERSONS	6 693	3 933	2 760	168	224	---	---	120	102
4 PERSONS	5 021	3 202	2 620	137	186	---	---	97	129
5 PERSONS	3 029	2 173	1 457	98	141	---	---	73	82
6 PERSONS OR MORE	3 746	2 324	1 911	128	157	---	---	90	144
MEDIAN									
ALL OCCUPIED	3.1	2.5	3.1	2.8	3.2	---	---	2.4	3.3
OWNER	3.1	3.0	3.2	3.1	3.7	---	---	---	3.5
RENTER	2.6	2.2	3.0	2.9	3.4	---	---	2.4	3.6
PERSONS PER ROOM									
1.00 OR LESS	17 981	11 834	6 463	841	981	---	---	595	577
1.01 TO 1.50	8 447	5 600	3 505	156	356	---	---	145	154
1.51 TO 2.00	5 676	3 608	3 078	188	268	---	---	134	169
2.01 OR MORE	5 447	1 882	760	43	112	---	---	94	111

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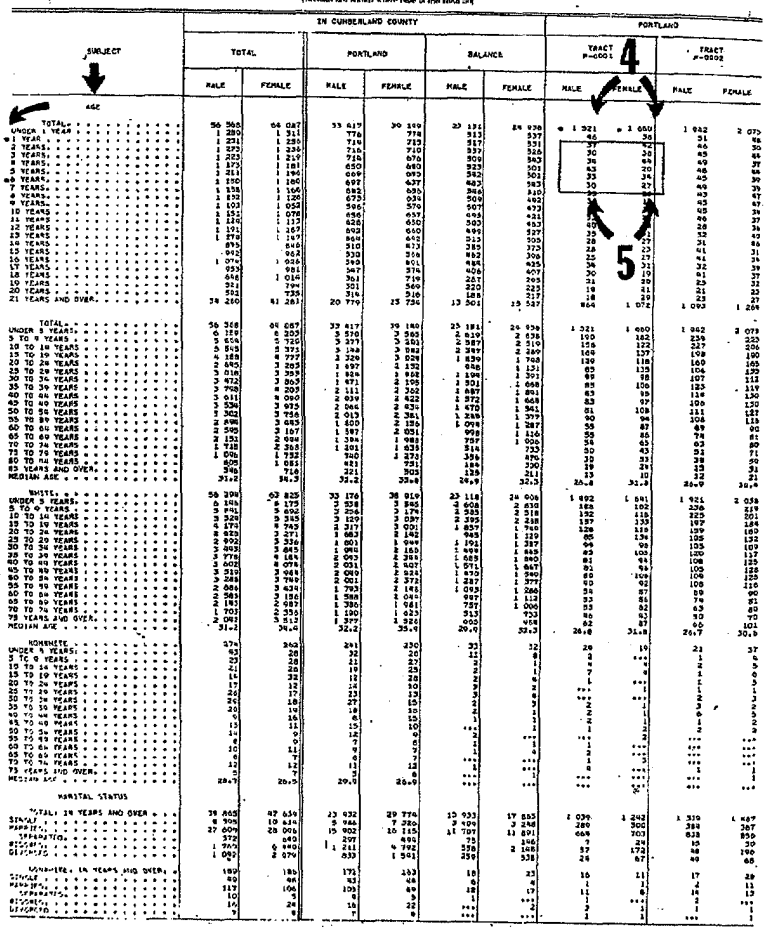
Census Tracts

FIGURE 2

Table P-2.—AGE, COLOR, AND MARITAL STATUS OF THE POPULATION, BY SEX, BY CENSUS TRACTS: 1960

(Median and shares where base is less than 500)



SUBJECT	IN CUMBERLAND COUNTY						PORTLAND	
	TOTAL		PORTLAND		BALANCE		TRACT P-0001	TRACT P-0002
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
AGE								
TOTAL	56 368	64 087	33 617	39 199	22 751	24 938	p 1 321	p 1 650
UNDER 1 YEAR	1 280	1 311	778	778	502	537	46	36
1 YEAR	1 231	1 280	716	715	517	565	30	42
2 YEARS	1 223	1 226	710	737	513	528	36	46
3 YEARS	1 203	1 181	716	670	509	563	34	49
4 YEARS	1 173	1 181	650	680	523	502	43	48
5 YEARS	1 261	1 196	669	693	592	503	33	45
6 YEARS	1 190	1 190	697	677	493	513	34	39
7 YEARS	1 158	1 166	695	655	463	511	33	49
8 YEARS	1 192	1 128	772	650	420	478	30	37
9 YEARS	1 102	1 052	596	570	506	482	45	47
10 YEARS	1 150	1 175	656	650	494	525	39	39
11 YEARS	1 126	1 175	628	650	498	525	28	37
12 YEARS	1 105	1 167	603	660	502	507	38	43
13 YEARS	1 044	1 147	564	642	480	505	31	43
14 YEARS	893	1 046	510	612	383	434	24	36
15 YEARS	942	982	530	544	412	438	31	31
16 YEARS	1 074	1 026	590	601	484	425	42	39
17 YEARS	959	994	567	578	392	416	30	37
18 YEARS	868	1 016	367	579	501	437	19	41
19 YEARS	821	794	301	549	520	245	21	20
20 YEARS	592	729	314	518	278	211	20	33
21 YEARS AND OVER	39 260	41 281	20 779	23 736	18 501	17 545	844	1 092
TOTAL	56 368	64 087	33 617	39 180	22 751	24 907	1 321	1 650
UNDER 5 YEARS	6 128	6 305	3 570	3 582	2 558	2 723	180	163
5 TO 9 YEARS	5 654	5 720	3 371	3 501	2 283	2 219	166	202
10 TO 14 YEARS	5 548	5 771	3 142	3 582	2 406	2 189	168	232
15 TO 19 YEARS	4 188	4 727	2 329	3 029	1 859	1 698	130	185
20 TO 24 YEARS	2 690	3 269	1 497	2 152	1 193	1 117	68	109
25 TO 29 YEARS	3 010	3 359	1 804	2 268	1 206	1 091	85	104
30 TO 34 YEARS	3 472	3 863	2 071	2 560	1 401	1 303	107	112
35 TO 39 YEARS	3 758	4 209	2 111	2 722	1 647	1 488	85	119
40 TO 44 YEARS	3 921	4 080	2 334	2 622	1 587	1 458	83	130
45 TO 49 YEARS	3 536	3 973	2 046	2 631	1 490	1 342	97	100
50 TO 54 YEARS	3 302	3 756	2 013	2 581	1 289	1 175	81	108
55 TO 59 YEARS	2 998	3 683	1 800	2 354	1 198	1 329	58	85
60 TO 64 YEARS	2 590	3 187	1 597	2 051	993	1 136	58	68
65 TO 69 YEARS	2 135	2 904	1 304	1 883	831	1 021	36	65
70 TO 74 YEARS	1 738	2 268	1 101	1 533	637	735	30	63
75 TO 79 YEARS	1 006	1 552	640	1 032	366	520	10	38
80 TO 84 YEARS	605	1 083	421	731	184	352	19	30
85 YEARS AND OVER	345	716	221	505	124	211	13	21
MEDIAN AGE	31.2	34.5	32.2	35.8	29.9	32.5	28.4	31.6
WHITE	56 298	63 835	33 576	38 912	22 722	24 923	1 292	1 641
UNDER 5 YEARS	6 106	6 173	3 538	3 562	2 568	2 611	168	162
5 TO 9 YEARS	5 644	5 696	3 368	3 474	2 276	2 222	152	158
10 TO 14 YEARS	5 526	5 765	3 129	3 597	2 397	2 168	157	159
15 TO 19 YEARS	4 179	4 703	2 321	3 001	1 857	1 702	128	159
20 TO 24 YEARS	2 682	3 271	1 483	2 142	1 199	1 129	68	109
25 TO 29 YEARS	3 002	3 336	1 803	2 249	1 199	1 087	85	104
30 TO 34 YEARS	3 463	3 845	2 061	2 548	1 402	1 297	107	112
35 TO 39 YEARS	3 773	4 189	2 093	2 709	1 680	1 480	85	119
40 TO 44 YEARS	3 922	4 071	2 331	2 615	1 591	1 456	83	130
45 TO 49 YEARS	3 538	3 969	2 049	2 631	1 489	1 338	97	100
50 TO 54 YEARS	3 288	3 749	2 001	2 573	1 287	1 177	80	108
55 TO 59 YEARS	2 984	3 673	1 793	2 345	1 191	1 328	58	85
60 TO 64 YEARS	2 583	3 186	1 588	2 049	995	1 137	58	68
65 TO 69 YEARS	2 133	2 903	1 304	1 881	829	1 022	36	65
70 TO 74 YEARS	1 703	2 256	1 090	1 523	613	733	30	63
75 YEARS AND OVER	1 082	2 351	676	1 526	406	825	32	68
MEDIAN AGE	31.2	34.6	32.2	35.9	29.9	32.5	28.8	31.6
NONWHITE	570	540	241	330	329	210	29	19
UNDER 5 YEARS	82	132	32	20	50	112	12	1
5 TO 9 YEARS	70	24	33	27	37	[illegible]	[illegible]	[illegible]
10 TO 14 YEARS	22	6	13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15 TO 19 YEARS	9	24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20 TO 24 YEARS	17	28	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25 TO 29 YEARS	26	23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30 TO 34 YEARS	26	18	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35 TO 39 YEARS	20	19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40 TO 44 YEARS	9	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45 TO 49 YEARS	13	15	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50 TO 54 YEARS	14	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
55 TO 59 YEARS	14	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
60 TO 64 YEARS	7	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
65 TO 69 YEARS	2	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
70 TO 74 YEARS	12	12	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
75 YEARS AND OVER	2	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MEDIAN AGE	28.7	26.5	29.0	26.0	[illegible]	[illegible]	[illegible]	[illegible]
MARITAL STATUS								
TOTAL: 14 YEARS AND OVER	39 465	42 654	23 932	29 774	15 933	17 885	1 039	1 262
SINGLE	8 305	10 615	5 946	7 280	3 359	3 335	280	300
MARRIED	27 609	28 009	15 902	20 185	11 707	11 691	664	703
SPOUSE PRESENT	372	662	297	496	75	166	37	72
SPOUSE ABSENT	1 760	1 350	1 241	1 702	519	648	27	63
SEPARATED	1 092	2 070	839	1 593	253	477	24	67
WIDOWED	1 551	3 360	1 045	2 309	506	1 051	54	122
DIVORCED	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
NONWHITE: 14 YEARS AND OVER	382	385	173	233	209	152	19	11
SINGLE	80	98	53	68	27	30	5	7
MARRIED	217	194	100	95	117	99	11	4
SPOUSE PRESENT	10	6	6	4	4	2	[illegible]	[illegible]
SPOUSE ABSENT	15	24	10	22	5	2	[illegible]	[illegible]
WIDOWED	9	24	[illegible]	8	[illegible]	16	[illegible]	[illegible]
DIVORCED	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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Mr. BARRETT. Doctor, that is a very fine statement but a very, very frightening one.

I am inclined to think we would have to go back to Mr. Cox and ask him one or two questions. Are you inclined to think that you could pull together existing authorities that you mention on page 3 and tell the Congress within the next few months how these existing programs can be implemented to eliminate the cause of lead-based paint poisoning and how soon they can be implemented.

I noticed—I think it is on your page 4—you indicate that this may be premature, and as time goes on maybe we could eliminate the lead-paint poisoning by constructing new units and raze all those possessing probably four or 5 layers of paint on the interior.

Do you think we could pull this thing together as expeditiously as you point out?

Mr. COX. I would think so, Mr. Chairman. I don't know how to put a time limit on that. I think A few months would do it. But I really can't give you a date today by which I think it could clearly be done. We are not talking about years, but we are talking about months. While there is an awareness, there really hasn't been a concerted effort to see what might be done with existing authorities. And I am not explaining any—I have no reasons on the justification for that.

Mr. BARRETT. I think, too, because of my situation back home—I am pretty close to these dilapidated houses and blighted and slum areas—to say that unless something is done along the line of preventing and eliminating the use of lead-based paint, the brain damage, the retardation and the death is going to increase very rapidly. I think our chances of eradication of this by new instructions is going to be minimal. As you know, we have aimed to build 2 million units per annum for the next 10 years. We are now about 1.7 million behind in our starts. So this certainly is not adding to the expeditious help that is needed to eliminate this type poisoning.

I note here, and I agree there appears to be an uncertainty as to the magnitude of this paint poisoning, and I agree we need better information in this area. I also believe that the Federal Government could provide assistance to local governments to aid them in obtaining and evaluating data on this problem. We could come up with this needed information which would make eradication of lead-paint poisoning more immediate. The urban renewal program, part of which I have just pointed out, and public housing are under your jurisdiction. What do you do really under these programs that would in some way assist local governments in eliminating the cause? I think part of this I mentioned, is to bring together all these agencies and tell them the seriousness of it. I do think Dr. Moore's statement would be a tremendous lead and helpful approach to convince these agencies that no matter what the cost to put this program into action, it would be money well spent. I would go on record saying all the gold in Fort Knox wouldn't be worth its value in comparison to saving one child from brain damage or retardation. So cost to me in dollars means nothing. The human elements I think you can't measure in dollars.

I think it is incumbent upon all of us to move and move very rapidly to get this thing working throughout these areas where we have the highest slum areas.

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Mr. Cox. Well, certainly. First of all, I would like to compliment Dr. Moore on his statement. I think his statement could well be read by not only every public official but every parent in the Nation. It is too bad that this kind of information can't be disseminated thoroughly and effectively. It is a great statement. And more can be done in our programs than is being done. There is no question about this. The uncertainty is——

Mr. BARRETT. Mr. Cox, one point. I am sure you don't think it would be appropriate to forestall a program of this type hoping that we can eradicate it by new housing.

Mr. Cox. We are not suggesting that we forestall this and offering as a substitute new units. We are suggesting that we examine two things, mainly. One is the extent to which the existing authorities can accomplish the purpose throught other than just development of units. And the other is what is the practical and feasible and the appropriate approach from the local level to get this job done.

The difficulty lies in calling for immediate action nationwide, in each community that requires a program, for the total elimination of the problem including the removal and/or the adequate covering of the existing surfaces where lead paint exists, without knowing how that can be done, what the practicalities of the problem are, what the realities of the problem are. Simply calling for that action is not in and of itself going to eliminate the problem.

So what we are suggesting is that while there is concern for the problem frankly there hasn't been the consideration given it over the years that it deserves, that it needs, that it should have. But there are complexities that need to be resolved, that need to be examined as to how best to go about this, how to establish criteria that can be applied nationwide and be really effective.

For instance, the bill would call for the immediate requirement that a plan be prerequisite to the certification of a workable program. This means that all urban renewal would stop in a city unless this plan was really the first time the city came up for recertification.

Now, it does seem to us to call for a better understanding—and we would hope perhaps this forum that you have created will go a long way to avoid doing this—better understanding of how we can——

Mr. BARRETT. May I interpose here before we lose the point. Recertification is a step forwa rd, but that comes in the elimination of lead-based paint. I am hoping that we can get something on a compulsory basis in the high density areas and particularly in the high slum areas to get blood count tests, to a certain age level.

Dr. Moore, what is your thought in this? I think the recertification under a workable program is fine. I think this is necessary. That is in my bill. What I am hoping to do is to save lives and prevent brain damage and retardation by having these children examined at the right age.

Dr. MOORE. Mr. Chairman, I am not qualified to comment on those facets of the bill, but I do believe that lead poisoning in children is preventable and that there is no compelling reason why there should

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be lead poisoning in children. There are problems in screening. One has to define potentially dangerous areas and pinpoint the attack there. Probably the best clue to where efforts should be concentrated is where lead poisoning is found. There should be close followup of where cases are discovered.

The lead comes from somewhere. Where is the source? What are the circumstances? In children it is nearly certain that lead poisoning is from ingestion common of lead, mostly lead in paint.

Mr. BARRETT. But you would not figure the cost in comparison to the damage of the child's mind and the possibility of destruction of his health which ultimately would become more costly as life goes on with him. When you measure that against the cost of the prevention I think you are probably talking about saving taxpayers' dollars rather than spending them.

Dr. MOORE. I have practiced medicine for many years taken care of patients. Every time I ever let the cost factor interfere I usually made a mistake.

Mr. Cox. Mr. Chairman, may I add something here. Really, I would certainly agree that when you are talking about cost of human lives and human miseries, dollars are not the paramount consideration and I don't want to leave you with the impression that I feel they are.

It seems to me that we have three areas that we are talking about.

Mr. BARRETT. Mr. Cox, I don't want to interrupt but I do want to interpose at this time that we are living in a period of time of tight money, even in this period of tight money we should not relax on our expenditures to save lives and the health of these children.

Mr. Cox. Surely.

Mr. BARRETT. I want to ask you also if you are familiar with my other bill which goes into another committee, and that would establish programs I think under Dr. Moore at the Department of Health, Education, and Welfare dealing with the problem of lead-based paint poisoning, and in this case my bill, as well as others, provides for detection—this is the very same thing that the doctor was just pointing out here—and treatment of this problem.

Do you think a joint HEW and HUD program would resolve all these problems and really attack this matter?

Mr. Cox. I think an examination of the problem, and its dimensions with an identification of the actions that are needed, both preventive and curative, and with attention both to eliminating paint that has already been applied and to preventing any further application of lead paint—would give this committee, the Congress, and the Nation a better evaluation of just how far we can go, of what we should do as a practical and feasible matter. We are not talking dollars alone. We are talking about the feasibility of publicly administering a program.

Mr. BARRETT. Well, considering the feasibility and the practicability of this, doesn't it also boil down to the use of funding, the use of dollars? If you can't fund it, you can't do the job that we are hoping that can be done.

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Mr. Cox. Perhaps in a sense, it does. For instance, in the bill it calls for the removal of the lead-based paint that is on the surface of the wall and the removal of that which has been covered by non-lead-based paint. The problems of detecting what is covered up through the normal inspection code enforcement process are such that I am not prepared to say today what is feasible. In other words, we may have a whole new problem of determining the degree to which there is paint covered, the right kind of coating given the onsite detection techniques, and equipment available now. It is awkward to send to laboratories all the samples for all the rooms of all the houses. It is a question of how far we can go.

So I am suggesting that, with HEW and with other Departments interested, we try to get a better understanding of what the problem is and how we can best go about it.

Mr. BARRETT. I am just being told here that I am consuming too much time, but there are so many things that I want to ask and I would like to put this to you, and you don't have to answer it, because I am inclined to think in these high-density slum areas, where there is lead paint and sometimes non-lead-based paint, is applied to the interior of that house, that doesn't prevent the child from getting lead poisoning.

Mr. Cox. That is right.

Mr. BARRETT. And I note here in two cases they recently had, one for about 4 weeks, in the hospital; it cost that family $10,000. I think the type houses that we are talking about, one-two-three-bedroom homes which have been painted with lead-based poisoning paint would cost about $300 tops to burn that paint down to the bare wood. The question of whether fragments or scales lay around, that could be taken care of, too, for probably another $10 to clean the house up. I don't think that kind of cost can be thrown into this in comparison with the loss of a life, and retardation is a loss of life no matter how you evaluate it.

Mr. Stephens.

Mr. STEPHENS. Thank you.

Mr. Chairman, I would like to ask a few questions that I don't see answered from the testimony here. It may be in other things.

When was the problem of this lead poisoning first recognized, approximately, Doctor?

Dr. MOORE. When was the problem in children recognized?

Mr. STEPHENS. Well, so far as the abuse of house paints and lead poisoning. How long ago has it been since that was recognized?

Dr. MOORE. About 25 years, since the time of World War II.

Mr. STEPHENS. I have in general heard about restrictions that have been placed on the manufacturer of paint that has lead-based ingredients in it. What are the present laws on the use of lead-based paints for housing?

Dr. MOORE. There is no Federal law prohibiting lead as a pigment.

Mr. STEPHENS. No Federal law but in States or cities only.

Dr. MOORE. There is a consensus standard which is adhered to by paint manufacturers. This standard provides that in interior paint no more than 1 percent of the nonvolatile components can be lead.

There are some municipalities—and I would have to ask Dr. Lin-Fu to check me on this—that have ordinances against the use of lead in interior-based paint.

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Is that right?

Dr. LIN-FU. That is correct.

Mr. STEPHENS. But there is no national law to prohibit any shipment of lead paint in interstate commerce?

Dr. MOORE. No, sir.

Mr. STEPHENS. What about the manufacture of children's toys? That I have also heard is a source in the past of lead poisoning. Is there restriction, a national restriction on the manufacture of toys painted with lead-based paints?

Dr. LIN-FU. I am not aware of such a law if there is one, but I understand that toys, furniture, interiors of dwellings for many years now have not been painted with lead paint—that is, paint in excess of 1 percent lead.

Mr. STEPHENS. In other words, the industry has policed itself in respect to this health problem without requirement of law.

Dr. LIN-FU. This is a voluntary standard as I understand it.

Mr. STEPHENS. One other thing I would like to comment on on the present legislation.

It provides, as I read it, Mr. Chairman, that a grant may be made to units of general local governments for the purpose of assisting in developing and carrying out local lead-based paint elimination programs.

That doesn't, as far as I can read the legislation, take into consideration the fact that an area may be a suspect area. It just says any area could come long and make a study.

I wonder if it would not be worth considering that the act itself says that the program be limited to an area where there are suspected, or there are incidents of lead poisoning cases.

We have $13,500,000 that is to be authorized in this bill. Wouldn't it be wise to make some restrictions to commence with areas where there is incidence of lead poisoning so that applications just wouldn't flood the Department of HUD?

Mr. BARRETT. Would the gentleman yield there?

Mr. STEPHENS. Yes.

Mr. BARRETT. We have looked that over very carefully and we do agree with you, but this would be discretionary upon HUD, to make these allocations to the areas where there is a problem.

Mr. STEPHENS. That is the point I am making. We are not leaving it up to HUD. I feel like the policy ought to be set here to restrict the number of applications so that an effective program might be made in a pilot way rather than flooding HUD. Aren't we saying we will spread this thing out, just look around and find out if this program needs to be done in this or that community when we could concentrate on the remedy in some of the known communities? There is such a relatively small amount of money to go around that I feel we ought to base it upon where there is a problem detected first and then see if those could not be used as pilot programs that could be expanded later on. But I feel as if it would be better if we restricted it rather than leaving it up to HUD.

That is just a thought. Would you care to comment?

Dr. MOORE. I don't believe I could add anything, Mr. Stephens, to what you have said.

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Mr. STEPHENS. Well, you might either agree or disagree with me. I don't mean to put you on the spot. I just thought you might have some comment.

Dr. MOORE. Traditionally, we have found that when we looked for the causes of disease the best place to look is where we found the disease. This has been a traditional practice in medicine.

Mr. STEPHENS. Yes. Thank you.

Mr. BARRETT. Mr. Halpern.

Mr. HALPERN. Thank you, Mr. Chairman. First I wish to commend our very, very distinguished panel this morning on their helpful and certainly most valuable testimony before this committee. This is a most serious problem, as has been so emphatically brought out this morning.

I was much impressed by your question, Mr. Chairman. They certainly brought out many points that I had anticipated asking the witnesses.

And one conviction I have is that much more can be done to erradicate this plight, and the panel has contributed greatly to our committee's consideration of this bill and I for one wish to commend them.

Our colleague, Mr. Stephens, brought out, I believe, a most important point, and I am appalled that there is no Federal law controling the use of the alleged dangerous ingredients in paint. Surely paint is an interstate commodity and it seems to me that there should be Federal standards.

I would like to ask Dr. Moore or the other witnesses, are current paints being manufactured that due to lead or perhaps arsenic or other harmful ingredients are dangerous, current paints?

Dr. MOORE. Old paint chips may contain, in addition, to lead, other substances such as antimony, arsenic, mercury, cadmium, and selenium, which may also be harmful to human health. Today, paints contain petroleum products which may be harmful if swallowed in liquid form.

Mr. HALPERN. That is all, Mr. Chairman.

Mr. BARRETT. I just want to make clear for the record before we go over to Mr. St Germain, and I know he is very anxious to ask some questions, the cost for treating and institutionalizing a child with severe brain damage for life is $222,000, a child with moderate brain damage is $17,000, and a child with symptomatic lead poisoning from $1,000 to $2,000. The cost of rehabilitating housing with lead-based paint flaking from the walls is approximately $250 to $300. This is a small price to pay for the prevention of lead poisoning and its dire consequences.

Mr. St Germain.

Mr. ST GERMAIN. Thank you, Mr. Chairman.

I unfortunately was under the assumption that lead-based paint which contained lead in dangerous quantities was practically legislated out of business, but, since it isn't, I understand we will be working on the markup of the housing bill real soon, and I certainly feel, and I hope my colleagues on the Housing Subcommittee will agree that, we have the jurisdiction, the authority to amend the act to see to it that in all federally assisted programs of rehabilitation, 236, 235, or public housing; in other words, all housing where Federal funds or subsidies are provided, rehabilitation loans and grants, that we prohibit the use of lead-based paint inside as well as outside, because

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Dr. Moore and Dr. Lin-Fu, isn't it a fact that paint on the outside chips a whole lot faster than paint on the inside and therefore the danger is that much greater if slum landlords are using that cheap paint? Because the paint with a high content of lead base is cheaper than the latex paint; is it not?

Isn't the outside paint as dangerous, if not more dangerous, than the interior paint?

Dr. MOORE. Lead in paint is a problem if it is ingested whether it is inside or outside.

Mr. ST GERMAIN. And isn't it a fact that the lead-based paint is cheaper than the new paints that have been developed to eliminate this problem?

Dr. MOORE. I couldn't comment on that, sir. I don't know.

Mr. ST GERMAIN. I think there is definitely a certain attraction to some people to use lead-base paint because it is cheaper. Mr. Cox, you were executive director of the Norfolk, Va., Redevelopment Housing Authority for 28 years, 1941 to 1969. Let's take you as an example.

What type programs did you institute in the last 15 years of your tenure in that position to eliminate lead paint in the housing under your jurisdiction and to educate the tenants in these low-income areas to the danger of ingestion of lead paint?

Mr. Cox. We used nonlead-based paint on interior surfaces. Beyond that, I can't represent that we did anything constructive and I think this is a pattern of the Nation over.

Mr. ST GERMAIN. I think that this is one of the big problems we have and that is the lack of knowledge in this. Dr. Lin-Fu, I wonder, I am smoking right now, but, when I am at home, my children have been taking my pack of cigarettes for the past 3 or 4 years and they hide the cigarettes on me. The reason they do this is the very effective television campaign that has been waged against smoking. And I am wondering, are there any pamphlets at all that have been prepared, let alone the television program, but pamphlets available to us that some of us might use to point out the danger of lead-paint poisoning?

Mr. BARRETT. Would the gentleman yield? This is put out by the community health service and the Philadelphia Department of Public Health. It tells you all the dangers of the use of lead paint.

Mr. ST GERMAIN. I am wondering if there is anything on a national level that might be available to us.

Dr. LIN-FU. We at HEW have put out two publications. This booklet, "Lead Poisoning in Children," has been widely used in communities to stimulate health workers. It has been circulated very widely to stimulate interest. The booklet was published this year and reprinted by HEW for distribution, and again it has been in great demand. This is written on a popular level so that anybody can read it. It has been circulated quite widely.

HEW is also preparing a very simple pamphlet for parents, occupants of suspect housing, that should be published shortly.

Mr. ST GERMAIN. The type that the chairman displayed to us is what I hope you will be coming out with because you can hit the mass of the people with his and the problem then strikes one very clearly.

Mr. STEPHENS. Would the gentleman yield for another question in respect to the pamphlets?

Mr. ST GERMAIN. Certainly.

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Mr. STEPHENS. What is the availability of those pamphlets to Members of Congress in quantities to send to their constituents?

Dr. MOORE. We have been passing them out by the hundreds. They are available to Members of Congress upon request.

Mr. STEPHENS. The reason I ask that question is as you will recall research done by the Department of Agriculture is put out by agricultural bulletins. We are authorized 10,000 agricultural bulletins a year. Many of us send them out to our constitutents. If this were included, it would certainly be a great way to distribute it, too.

Thank you.

Mr. ST GERMAIN. Mr. Cox, in view of your answer to my question to you as to what steps were taken in Norfolk during your tenure, I think there is a splendid opportunity here. The longer we brush this aside, the worse it is going to be because there is such a danger. You have a list in HUD of all the executive directors of the housing authorities throughout the Nation, and I think, I imagine it is computerized.

I would hope that they would be given the benefit of these pamphlets with a covering letter asking them, until legislation is adopted, in the interim that they do their utmost to disseminate this information also, because I find that most of our executive directors of housing authorities are very public spirited citizens and they hold a place of respect in the community. They could do a great deal in this area for the present time, as I say, until we develop something a little more effective. I hope that you might give some consideration to this.

Mr. COX. We will send them out, and with Dr. Moore's permission I would also like to include his testimony. I think it would be helpful.

Mr. ST GERMAIN. Thank you.

Dr. Moore, do you feel, or Dr. Lin-Fu, that a medical cure can be developed that would prevent lead poisoning and also possibly reverse the damage that has been done? I know it has to be percentage oriented.

Dr. MOORE. I will speak individually and also ask Dr. Lin-Fu to comment.

Lead is a protoplasmic poison. We have not had success in reversing the damage that has already been caused. I am not optimistic that such a reversal agent will be found but I would be very happy if one could be found. I don't know if Dr. Lin-Fu agrees with me.

Dr. LIN-FU. I agree with Dr. Moore fuly, but I do want to say that this is a preventable disease. It is a manmade disease as opposed to a disease which occurs in nature. It is not a disease caused by bacteria. This is a manmade disease and as long as we can prevent children from eating lead paint this does not need to occur. This disease has no reason for existence.

Mr. ST GERMAIN. You get to the point that I was going to get to and that is in the case of poliomyelitis and these other things, the research initially was to find the cause and once the cause was found to eliminate the causes. Here we have the cause; do we not? We know what the cause is. It is lead, lead in paint. So the research has been done. It is not necessary. The thing to do now is we have to eliminate the cause, and I think the chairman brought out those figures and Dr. Moore brought them out also. When you consider the cost to the community—because that is what it ends up as—of taking care of a child who has suffered brain damage, it is a quarter of a million dol-

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lars. You don't need many of those to make up for the cost of elimination or doing away with or getting rid of the lead paint that now exists and we have the mechanics to see that no more of it is used in the future.

Thank you, Mr. Chairman.

Mr. BARRETT. Mrs. Sullivan.

Mrs. SULLIVAN. Thank you, Mr. Chairman. I apologize for being late, but I had to be at a Coast Guard Committee meeting this morning.

I may be repetitive in the questions I ask, but Dr. Moore, Dr. Lin-Fu, have not many children been poisoned by lead from biting their cribs and the playpens that were painted with lead paint?

Dr. LIN-FU. This is possible, if the crib or playpen had been painted with lead paint.

Mrs. SULLIVAN. Now, have we ever done anything to prohibit the use of lead in any paints?

Dr. MOORE. Mrs. Sullivan, there is no Federal statute prohibiting lead-based paint. The paint industry has ascribed to a voluntary standard of no more than 1 percent lead of the total nonvolatile components in interior paint.

Mrs. SULLIVAN. That means future use of the paint that would contain 1 percent or whatever it is of lead would be a tolerance that would not damage or be harmful to anyone when eating it.

Dr. MOORE. Lead is dangerous anytime it is ingested. We feel that 1 percent would not present nearly the problem. But do not misunderstand me, if lead is present and children eat very much of it, it is a problem.

Mrs. SULLIVAN. Do any of you know the background of whether or not the paint manufacturers are striving to find a replacement for the lead. If this is being done I think this begins to cure the problem in the future.

Dr. MOORE. Yes, ma'am. Paint manufacturers now use titanium-dioxide as a white pigment in interior paint.

Mrs. SULLIVAN. We have before our board of aldermen in the city of St. Louis a bill, right now, to prohibit the use of lead paint. In many of our older structures there are layers and layers and layers of paint that contain lead, and when it flakes off a child could pick it up and eat it, and does do so. But I really have not had a chance to go into that local legislation or on what H.R. 17260 would do. But I have seen houses and I have lived in places where the paint has flaked off, too.

But I can't conceive of how in all of our inner cities or big cities we can force everybody to burn all this paint off and start from scratch.

Now, I think the idea of trying to eliminate it is good. But I can't foresee how this can be done to eliminate all the old paint that has been put on walls and structures over these past years.

I don't have any other questions, Mr. Chairman.

Mr. BARRETT. I just want to interpose here on the basis of making this a national law, you probably could make it a national law relative to the painting of interiors. Lead paint is a preventive of corrosion and rust, and when it is used externally on structures such as bridges and structural ironwork, then it is vitally needed.

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What we are talking about here is where it is used and does human damage, and to answer the gentlewoman's question from Missouri, I doubt very much you were here when I pointed out the brain damage of a child over a life period would cost $222,000, and not to be too drawn out here, approximately $200 or $250 would be the cost to strip the interior down to the bare wood. Now, any family that is raising children, particularly a young couple that has three or four children, would rather sacrifice the $250 to $200 than destroy the health of the child. These are the things we have to look at.

Mrs. SULLIVAN. I can see that, Mr. Chairman, and I know the great danger that it is. But I am thinking right now that we are not able to police many of these structures that are being offered as shelter or homes for the poor where landlords are supposed to do certain repairs and put the housing units in livable condition, and then we find out it hasn't been done because no one is able to go in and really police it. I think that the idea of scraping the paint off the walls, burning it off the woodwork, whatever you have to do to get it off the old wood and walls, is good. But how are we going to be sure that this is done correctly, if we enact legislation along this line?

Mr. BARRETT. Very easily. Just recently I had voted for a foreign aid bill in which there were $2.3 billion given in foreign aid for the undeveloped countries. And I would like to go in the record because I think while we are the highest industrialized country in the world we are one of the most undeveloped countries in the world, and some of this money ought to be taken from foreign aid to undeveloped countries and develop this country in the areas about which we are talking, so it will be the top industrial country and no longer considered as an undeveloped country. This money ought to be used in these places. And again I say you can't measure this by dollars against human defects.

Any other questions?

Mr. STEPHENS. Mr. Chairman, I would say that if we are going to contemplate the type of legislation that would restrict the content of lead in paint, we ought to hear from the industry as well and see the present status of lead content.

The thrust of the present legislation is not that way, and I can readily understand why we have scheduled those who are interested from the health standpoint. But, if we were going to make a thrust in the other direction, I think we ought to hear from the industry, too.

Mr. BARRETT. Doctor, I just want to leave you with this one final statement. In Philadelphia, I have my office located on a corner of two main streets, and on the little street behind, there were four children, one of whom was taken out with lead poisoning just 3 weeks ago. So you just can't sacrifice the youth and children of this Nation because of the desire to be economical.

Gentlemen, you have been a very fine panel, and Dr. Lin-Fu, I am grateful for your coming here. You did a very splendid job. We are very grateful for your coming here this morning.

All time has expired. Our next witness will be Veronica Singleton, representing Philadelphia Coalition Against Lead Poisoning of Children.

Mrs. Singleton, we want to invite you here this morning, make you as much at home as anybody on this panel, and we would be disappointed if you did not have that feeling of relaxtion.

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Mrs. SINGLETON. Thank you.

Mr. BARRETT. Just feel as though you are one of this big family. We will certainly be glad to hear your testimony. Now, if you want to read your testimony in full, you may do so. Any manner that you choose will certainly be agreeable with us.

Mrs. SINGLETON. Thank you very much.

Mr. BARRETT. You may begin when you are ready.

STATEMENT OF VERONICA SINGLETON, ON BEHALF OF THE PHILADELPHIA COALITION AGAINST THE LEAD POISONING OF CHILDREN

Mrs. SINGLETON. I want to say that I also represent Philadelphia Welfare Rights. We have been fighting this lead poisoning for over a year. I have gone myself to the AMPHA Association, and I got it into their resolution about this lead poisoning situation. I stayed there 4 days until they finally got it.

But I want to say here that we have a lead belt in Philadelphia from Washington Avenue all the way to Kensington. That is our lead belt in Philadelphia.

And it really is a serious thing to see these children entered into the Children's Hospital through the, I should say the lack of interest of the landlords because we know that those houses from that area all the way up are slum areas.

Mr. BARRETT. You are speaking now of the slum landlords?

Mrs. SINGLETON. Yes, the slum landlords.

Mr. BARRETT. Yet, when they are told by licensing and inspection, code enforcement——

Mrs. SINGLETON. Yes.

Mr. BARRETT. To put that house in a state of repair to make it habitable, they will go in with lead paint to save money and paint that whole interior. Is that right?

Mrs. SINGLETON. License and inspection, actually, they are a little lax on this in Philadelphia. We found this. We have even gone to Paul D'Ortona and talked to him about the situation.

Mr. BARRETT. Is he the president of the city council?

Mrs. SINGLETON. Yes. I do want to read this because this is very interesting and the facts we got from our lawyer. Lead paint poisoning has been recognized as a lethal health crisis of epidemic proportion in urban areas.

The devastating effects of lead intoxication have been well documented. While lead intoxication accounts for 4.7 percent of all reported accidental poisonings in childhood, it has been responsible for approximately 70 percent of all deaths from ingestion. In Philadelphia alone, 1,666 cases of childhood lead poisoning have been reported. At least 89 cases have resulted in death. It is estimated that at least an additional 200 children have sustained permanent brain damage and mental retardation. Some have been required to be institutionalized for the remainder of their lives. It has been estimated that the cost of a single institutionalization is $250,000.

The number of reported cases is misleading as they do not accurately reflect the magnitude of the epidemic. Studies have shown that

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the reported cases are the "tip" of the iceberg of the problem, since usually only overtly symptomatic cases are detected, and reported, and most of the children who are absorbing dangerous amounts of lead into their system go unnoticed.

In addition to the reported cases above, it is estimated that there are at least 3,500 children or 5 percent of the children between ages 1 and 6 in high risk areas of health districts one, four, five, and six alone each year who are absorbing dangerous amounts of lead into their systems, and are on the threshold of intoxication and physical and mental injury.

Lead is an extremely toxic substance which the body cannot easily eliminate. Ingestion of paint containing more than a 1 percent concentration of lead leads to severe and permanent damage of the kidneys, blood, and nervous system, resulting in mental retardation and death. In the older homes of the city, interior surfaces have many layers of paint containing high concentrates of lead.

I do want to say here that if the first coat of paint is put on a house and it contains lead, regardless of how much paint they put on it, lead is going to seep through in the heat. When it gets hot it is going to seep through, and this has been proven that it will seep through.

Most of the paint which was applied before 1940 contained lead in dangerous amounts, more than 1 percent by weight. When this paint is chipping, peeling, or cracking, young children who naturally place things into their mouths are at risk. Children may also chew on windowsills or other accessible painted surfaces during the oral period of early childhood and this leads to lead poisoning when lead paint is in the home environment.

Lead poisoning of defenseless young children is a tragedy of unconscionable proportion since it is completely preventable. That it continues to cause massive injury is a public disgrace. It must be curbed.

The Philadelphia Coalition Against Lead Poisoning supports the Lead-Based Paint Elimination Act H.R. 17260. This bill is a major step toward the complete elimination of lead poisoning in the United States. The major provisions of this bill reflect long overdue recognition that a systematic approach toward eliminating the root cause of childhood lead poisoning is vital.

H.R. 17260 provides that all Federal lead poisoning program funds are to be granted on the condition that substantial local resources are committed to elimination of the causes of childhood lead poisoning pursuant to a comprehensive and realistic program of overall community improvement.

We are in full agreement with this much needed broad-based approach to the problem. H.R. 17260 provides Federal guidelines to assure that localities institute strong and comprehensive programs. Included are requirements for mass screening of homes for the presence of lead paint and programs which require owners and landlords to eliminate lead-based paint. If faithfully established and executed such programs would go a long way toward eliminating the causes of this completely preventable epidemic.

H.R. 17260 also requires that model cities programs act to begin to eliminate the causes of lead paint poisoning within their target areas. Moreover Federal funds for housing are to be granted only on the conditions that recipients of these funds remove lead-based paint from

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these areas. We are especially pleased to see that this bill adopts a coordinated approach to the problem by altering existing Federal programs in addition to providing funds for local programs. We heartily endorse this recognition of Federal responsibility in stamping out the menace that threatens small children in all urban areas.

The Philadelphia Coalition Against Lead Poisoning supports this excellent bill which reflects the sincere concern of its sponsor. The bill adequately deals with the causes of lead poisoning; however, in addition to these provisions we would strongly advise passage of the companion bill, H.R. 17234, the "Lead Paint Poisoning Prevention Act," now pending before the House Committee on Interstate and Foreign Commerce, which provides programs for the diagnosis and treatment for children in high risk areas while the lead paint elimination is in progress. We urge the passage of both bills so that the serious problem of childhood lead poisoning will be eliminated.

Now, I do want to say I called Rebound Health Center, and they gave me this report yesterday. Since January 7 on to July, up to yesterday, 33 cases were reported in District 1. They were 40 to 60 micograms. Ten cases reported in District 2; one reported for treatment.

Now, that child had high micrograms. So you see from January 7 on to July we had 242 more cases. So you see South Philadelphia really has the higher percentage of lead poisoning than anywhere in Philadelphia. We understand that model cities is getting $600,000 from the Federal Government. I don't know whether this is correct or not, but this is what we got. But we would like model cities—we know model cites takes care of North Philadelphia, and that money should be distributed around. It should be distributed in South Philadelphia because South Philadelphia is last on anybody's list, even the rat control. You know that. And we want that money distributed around so they can get started on the situation, because we have had more reported cases in the last month in South Phildelphia than they have had in North Philadelphia. So we urge that something be done about this so they can get started because it is very serious.

And we do want to say here that we have been struggling trying to get our man to release the money that he has frozen for this, but it seems as though he won't some way or another unfreeze it. But it is really needed and needed desperately because our children are not learning in school. It causes them to be absent from school. And such a screening, yes, a screening is good, but they need to get in those belts from Washington Avenue over to Kensington. They are the ones who should be screened first. This lead belt should be wiped out because it is really a bad belt, and it is something that is really wiping out our children, the future of tomorrow. The children might have a bright future for tomorrow, but they are being, say, mentally retarded and they have problems. I had two children with lead poisoning, thank God it wasn't serious, but yet, I don't know what will happen later. I hope nothing will. But it is not because the children are hungry. We know the children like to explore.

I know I went to the health meeting, Mr. Chairman, and they found some of the lead poisoning was coming from grease, and some of the pitchers and the glasses they have. It was stated a person had used a glass and pitchers to make iced tea and the heat from the iced tea brought the lead poisoning out and the whole family got sick. So

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they said they are doing something about imported goods. I understand that they are going to do something about it, these imported goods until they examine them and see if they contain lead, which is a good thing.

Thank you.

Mr. BARRETT. Any questions? Mr. Stephens.

Mr. STEPHENS. I have no questions except I would like to thank you for coming and for bringing this very fine testimony, because you probably have much practical experience with this and can make suggestions as to what can be done much better than I can.

Thank you.

Mrs. SINGLETON. Thank you.

Mr. BARRETT. Mrs. Sullivan.

Mrs. SULLIVAN. No questions, only I am glad to have Mrs. Singleton come up here and talk about this. The thing that worries me about it is how on earth we are going to police these subjects if we would insist that certain paints be burned off or scraped off and repainted with lead-free paint. Now, you talked about the code enforcements. Do you know whether or not inspectors are going around to any of these houses that have been rehabilitated under some sort of a government program?

Mrs. SINGLETON. I do know that we had one child with lead poisoning. The board of health went in and told the landlord he had to scrape it off. He scraped it off one door and left it. But they didn't go back. We would suggest that the landlords have the paint scraped off, but we find if they cannot do it, then the public board of health should.

Mr. BARRETT. Mr. Annunzio. Excuse me, Mrs. Singleton. I was hoping you wouldn't go out so quickly. I just wanted to make your presence known.

Mr. ANNUNZIO. Thank you very much.

Mr. BARRETT. Mrs. Singleton is now testifying on the use of lead paint. Mr. Annunzio, Mrs. Singleton, is one of our Illinois members of this committee. He is one of our most capable men. He comes from the city of Chicago. He is greatly responsible for the bill enforcing the nonuse of lead-based paint in Chicago.

Mr. ANNUNZIO. Thank you.

Mrs. SINGLETON. Yes; I do say that we had recommended that if the landlords weren't able to scrape it off, that public health would go in and do it. Like we know a lot of people on public assistance, they have houses, they own houses, but you know they sign them over to the city when they get on welfare but still they rent it as long as they live, and they are rented out and its impossible to have them to have the paint scraped off the walls. So we suggest that public health, like District 1, District 2, District 3, would hire someone to go out and do it. Also, the rat control, they are not actually doing anything. They can go in and see if this is done.

If you hospitalize a child for this lead poisoning, it will go back in the same house. The same thing will reoccur over again and it might be more serious. So if the child is not in the hospital, why send him back into the house that already has the lead in it?

Mrs. SULLIVAN. I think there is presently plenty of evidence all over that lead poisoning is dangerous enough to insist that something be done, but when I think of a landlord who is going to rent at the price he can get for his old units, he couldn't afford to do this. But this is what makes me angry, when we are spending—as you say,

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model cities got $600,000 in your area. I have seen much money go into our training programs for young men, and then when they train the people to do some kind of work, they can't find a job. I think if they would use a little imagination they could train them right there, on the job, and perhaps bring these young people in to do the scraping and pay them with Government funds, if necessary, to scrape these walls and woodwork, because the landlord won't do it unless he is forced to do it and because the couldn't afford to do it, without funds from some source.

Mrs. SINGLETON. I live in South Philadelphia. The chairman knows me, and model cities is in North Philadelphia. We suggested that they train people and take them off public assistance. If you live in North Philadelphia, you get a job. If you live in South Philadelphia, you don't. That is not fair, but that is the way it works. With the $600,000 they have to start with, why not train people in South Philadelphia and West Philadelphia besides just North Philadelphia. Temple is up there, and if you want a job they get the students from Temple and train them. But South Philadelphia is left out completely. The biggest lead belt we have got is from Washington Avenue all the way up.

Mrs. SULLIVAN. Well, I may seem like a "Scrooge" but I am just sick and tired of seeing millions of dollars going into projects and then nothing accomplished.

Mrs. SINGLETON. That is right.

Mrs. SULLIVAN. There is no one in this Congress who has a bigger heart for trying to help the underprivileged than our chairman here.

Mrs. SINGLETON. Yes, I know.

Mrs. SULLIVAN. And you know this from your working with him in Philadelphia.

Mrs. SINGLETON. Yes.

Mrs. SULLIVAN. But no matter what we do in getting legislation passed, unless we can get this thing actually put into real honest to goodness practice, under tight regulations, it is money thrown away and nothing accomplished.

Mrs. SINGLETON. They are supposed to get this money sometime next month, or the last of this month. I am wondering what are they really going to do with it. Are they really going to put it into lead paint poisoning?

Mrs. SULLIVAN. This $600,000, what is it earmarked to do?

Mrs. SINGLETON. They are to hire mobiles, so they say, and put them into the different areas. It is supposed to be screening.

Mrs. SULLIVAN. But not to do anything with lead paint?

Mrs. SINGLETON. Well, it is supposed to be for lead paint.

Mrs. SULLIVAN. Oh.

Mrs. SINGLETON. Now, what is actually being done I cannot say at this time. But I do want to say to our chairman, that if the Federal Government can give model cities $600,000 for North Philadelphia. I think that it should be split and some of it go down to South Philadelphia too, because we have need of it down there. It shouldn't go to one location. It should be spread around, because we have need of it all over Philadelphia, not just in one location. I don't know whether the Federal Government knows this or not. I would like them to be aware of it because it is not fair. We have our children suffering, too, in South Philadelphia.

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Mr. BARRETT. Mrs. Singleton, let me tell you how this works.

This money is given through model cities and urban renewal funds. Up to this point this money was not considered for lead prevention and poisoning on that premise.

Now, where the project is renewed for any reason, they have to have what they call a workable program. They have to show *x* number of dollars will be used for the eradication of lead poisoning, so it will be based on that.

If there is urban renewal, and which there will be, in the southwestern section of the city of Philadelphia, this workable program will be considered only under recertification. They will not certify the program for urban renewal unless they have this workable program and if my bill is passed, the lead poisoning will be in that program. Then they will recertify that for urban renewal or model cities or whatever it may be.

Mrs. SINGLETON. I mean, actually they can say they are doing it and not do it. It should be looked into to see if the $600,000 is being allocated for the eradication lead paint poisoning.

Mr. BARRETT. I am very happy that you came down to plead the case of those people that you are living with to the extent that you know their needs better than anybody who has ever come before this committee.

Mrs. SINGLETON. Thank you.

Mr. BARRETT. Nice to have you. Thank you for a very fine statement.

All time has expired this morning. The committee will stand in recess until 2 p.m. this afternoon, at which time Raymond L. Tyler, chief, accident control section, Philadelphia Department of Public Health, will appear, and Vincent F. Guinee, M.D., MPH, director of the bureau of lead poisoning control, New York City Health Department, will appear, and we will have the Honorable Edward I. Koch, Congressman from New York.

The subcommittee stands in recess.

(Whereupon, at 11:45 a.m., the subcommittee recessed, to reconvene at 2 p.m., this date.)

AFTERNOON SESSION

Mr. BARRETT. The meeting will be in order.

We are going to be a little irregular this afternoon. We have Miss Dorothy Duke with us this afternoon who possesses a lot of expertise in housing. We are going to bring Miss Duke on first because she has an early plane schedule.

Miss Duke, would you come up front, please.

Miss Duke, I understand now you represent the National Council of Negro Women.

Miss DUKE. Yes.

Mr. BARRETT. If I am not covering your full title, will you please state it for the record.

Miss DUKE. My name is Dorothy Duke, and I am the housing specialist to the National Council of Negro Women.

Mr. BARRETT. Miss Duke, if your desire is to give your statement in full, you may do so. Any way you choose to give it, we are going to agree with your decision. We are not going to ask you a lot of ques-

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tins, but I do want to get your statement in the record so we can bring the other witnesses on immediately after you finish.

Miss DUKE. Thank you.

Mr. BARRETT. You may begin.

STATEMENT OF DOROTHY DUKE, HOUSING SPECIALIST, NATIONAL COUNCIL OF NEGRO WOMEN

Miss DUKE. I appreciate the privilege and the opportunity to appear before you on behalf of the National Council of Negro Women as we are directly involved in the development of homeownership opportunities for low-income families.

Under the leadership of Dorothy I. Height, national president, NCNW has been the initiator of construction of home ownership opportunities utilizing public housing subsidies.

We have had many different kinds of experiences in the last 4 years in helping to develop these programs, securing community support, assisting the families to adjust to their homes and strengthening community resources to meet their needs more effectively.

We have had some failures as well as considerable success. We believe we have learned some important lessons about the use of these programs. Therefore, my comments are directed principally to our public housing programs, the existing opportunities for home ownership through public housing and the proposed public housing ownership program in H.R. 16643.

Low income families whose income makes them eligible for public housing or a rent supplement should have a choice in housing accommodations. This choice should include an opportunity for ownership as well as renting.

Homeownership programs should provide a plan of participation by voluntary organizations in the planning and management of the program.

A publicly assisted housing program that includes a homeownership provision must have with it, in tandem, a plan for training and supportive services.

A housing choice for low-income families depends on the capacity and willingness of local communities to permit the construction of housing for low-income families, and the capacity and willingness of the Federal Government to encourage them to do so.

Both the image and operation of public housing can be improved through the development of program accountability in addition to fiscal accountability.

For the future, public housing, especially through its homeownership programs, has the potential of contributing significantly to the movement of low-income families toward economic stability in America.

Subsidized rental housing, especially public housing, is resulting in increased dissatisfaction on the part of the occupants, the owners and the communities. Public housing authorities, in ever increasing numbers, are facing a fiscal crisis. Landlords everywhere, both public and private, are no longer able to meet the increasing costs of social services and maintenance services, from their rental incomes. As it now stands, federally subsidized rental units are the most expensive hous-

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ing units to produce and maintain. If this trend continues we will not only continue building social ghettos, but will see constantly escalating subsidy requirements for both management and maintenance.

With this administration's emphasis on homeownership opportunities, an administrative redirection of priorities in the public housing program is called for. To date, public housing has failed to make significant use of the existing homeownership programs that offer low-income families a route off subsidy and an opportunity to become full tax-paying homeowners.

These programs, a description of which I have appended to my prepared statement, should be used to increase the housing stock with or without rehabilitation. Although the best results would be obtained by housing the families in individual detached, semidetached or townhouse dwellings, the foregoing can be applied in connection with multistory condominiums or cooperative housing.

The Turnkey III program is an effective means of providing homeownership opportunities for low-income families. The administration has proposed another way to enable low-income families to become home buyers through public housing.

Even though this proposal is designed to serve a higher income family than the existing homeownership programs, homeownership for the poor of our country can be a snare and delusion. A program to achieve the goal of a self-sustaining, financially secure, tax-paying, title holding family must be carefully and painstakingly planned. Simply having the title to a home does not mean the family will "enjoy the benefits of homeownership immediately." To move from years of tenacy to the obligations of ownership requires the provisions of supportive services that reflect the needs and life styles of the families to be served.

The supportive services could include many things depending on the needs of the family. For example, a fund available to the families for use in major maintenance problems. The margin of financial solvency is extremely narrow when you are poor, there is very little room for emergency situations. For example, a city housing inspector could require new wiring in a house. The family in this house is a title holder, as proposed in the bill, and responsible for providing the wiring. This now becomes a financial crisis rather than a wiring crisis. As a result the family either borrows the money at high interest rates or defaults. If the family defaults, it then becomes a financial problem of the housing authority. In essence, every party involved is worse off than when they started. Our considerable experience in this phase of housing results in the following recommendations:

Carefully planned legal, financial and program protections, including supportive services, for all parties involved, need to be added to the proposed public housing ownership program. Until this is done—and we have every reason to believe HUD is moving in this direction—the National Council of Negro Women cannot support the plan as presented in the housing bill.

We support the intent enthusiastically and add only these precautionary measures.

We have been assured that this new program will not be a substitute or replacement for Turnkey III and homeownership using the rent

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certificate plan. However, we are apprehensive that in the efforts needed to launch this new homeownership program, even with the changes we have proposed, the existing programs will not be used to their full potential.

And we strongly urge this committee, in its report, to indicate their support for these programs. These programs have built-in protections for all parties involved. They cost no more than regular public housing. In fact, the cost is less as there is a built-in possibility and probability of going on the tax rolls and off of subsidy.

As you well know, the Housing Act of 1968 established national goals of 6 million units for low and moderate income families over the next 10 years. We believe it is essential that homeownership programs be designated and a goal established for public housing.

Since I prepared this testimony, we are pleased to report that Secretary Romney took the occasion of a National Housing Conference on Home Ownership Opportunities last week to respond to this request, and a task force is being formed to recommend such goals and other matters related to these programs.

A new role should be defined for voluntary organizations. This untapped source of local participation in housing should be encouraged to direct attention to the preparation of the community and low-income families for these new homeownership programs.

There is much said about citizen participation in housing these days. Usually the only participation evident is a protest group from a neighborhood where a proposed housing development for low income families is to be located.

Our recommendation is for a positive participation rather than a negative participation. Assisting low-income families to achieve successfully the goal of homeownership intended for them by the Congress will be possible only with the supportive services planned for the program from its inception. This conviction is firmly grounded by our experience during the past years.

We all should have learned by now that just providing a physical structure for shelter will not cure the social ills of the poor. More than bricks and mortar and title is needed to assure a successful housing program for low-income families.

I think we all must continue to recognize that there is no program proposed or on the books to house truly poor families, families with incomes of $800 a year or $1,000 a year.

The generation of housing for low-income families, be it through rental or homeownership opportunities, ultimately stems from the local community. As you labor with various plans and formulas for the elusive solution to housing our Nation's poor, the real problem is bypassed.

Take a short imaginary journey to Anytown, U.S.A. And in this town you can find adequate financing, the redtape has been cut, there are adaptable codes, good and available sites at low price. You can also find a combination of rehabilitated and new units priced reasonably, an established need, well-defined training and supportive services program, and new technology all over the place, but housing of any kind for low-income families is not produced.

I have come to the firm realization that the real problem is the failure of local communities to accept the reality of housing for the poor.

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With the new spirit of localism advocated by our administration, the problem is only magnified. If community acceptance is identified as the No. 1 problem, what are the contributing factors? Fear of property values decreasing. Fear of overcrowded schools. Fear of those people, disruption of the status quo, change, giveaway programs, "I made it, why can't they?" I think we have heard all the possible excuses.

To ask a suburban community, in which the bulk of local income is derived from property tax, to zone for or allow the poor in is to ask them, they think, to commit community fiscal suicide.

While many other factors are usually identified as the cause, the ones just mentioned above are always just under the surface. We will always have the eternal struggle between the haves and have-nots, but in this country the struggle is compounded by racism.

Until we as a nation, and as an administration, and as local individuals in communities face up to this problem with new attitudes, I am afraid any recommendations will be for naught.

I recognize, of course, that Federal legislation cannot by itself change personal and individual attitudes. Yet, the framework of Federal legislation and statutory law unquestionably can alter the legal context within which State and local governments operate.

And for this reason, the NCNW supports the additional provision recommended by HUD to the 1970 housing bill concerning exclusion of federally assisted low- and moderate-income housing. However, we believe it does not begin to go far enough.

Public housing has been around for a long time, and it has fought for its existence every step of the way. It has had much criticism. Some was warranted; some was not. Most occurred through an unbelievable lack of communication between the critics and the advocates. Yet, this one program, public housing, has housed more poor families than any other plan to date.

Since 1937, our Nation has invested over $10 billion in the capital cost of public housing. We must pay attention to the protection of this investment. As long as local housing authorities have only rental programs to offer their clients, changes in administrative regulations, more effective maintenance procedures, and better methods of rent collecting only tend to stave off for a little while the financial demise they are so graphically heading toward. I recognize, of course, that just instituting a homeownership program will not wave the magic wand either, but it can offer a choice other than dead end rentals, ad infinitum.

A positive look is needed to help housing authorities to find ways to be more responsive to tenant needs. There is abundant testimony of why it doesn't work and dollars alone are not the answer.

I believe this program, public housing, among all subsidized programs offers the most flexible and potent means for expanding housing opportunities for low-income families. Public housing has the potential capacity to provide homes that can be a source of community and family pride.

Every year each administration has asked Congress and the country to legislate new programs as the answer to housing low-income people. Each year Congress has agreed to go along, only to be told the following year what it really needed is still another new program.

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We have been told successively over the years that the answer to the housing problems of poor families is longer term mortgages, a subsidy to reduce interest rates to 3 percent, a flexible rent supplement subsidy tailored to the family's income. Then we were told that we really can't do the job unless interest rates are reduced to 1 percent. Now we understand wholesale technical innovations related to industrialized building will bring an important part of the answer.

But with all this furor over subsidy formulas, insurance guarantees, better methods of construction and financing girations, low-income families still are not being housed satisfactorily. Obviously, another new legislative housing proposal is not the sole route to provide a solution to old problems that have been around for generations.

The National Council of Negro Women recognizes the complexity of the problems confronting the Congress and HUD. We believe it is imperative for Congress and HUD to recognize the complexity of problems and the pervasive devastating experiences of people on the lower rungs of the economic ladder. New attitudes are desperately needed to make the provision of homeownership realistic. If this is done, and by our experience, we know it can be done, the public housing program holds great promise for the future. This is especially true in the homeownership programs I have discussed with you.

Mr. BARRETT. Thank you.

Miss Duke, this is a very fine statement. We are certainly glad you came and gave it to us. We will make, I am sure, good use of this in marking up the big housing bill.

Thank you very much.

Miss DUKE. Thank you, Mr. Barrett.

Mr. BARRETT. Thanks very much for coming.

(The prepared statement of Miss Duke follows:)

PREPARED STATEMENT OF DOROTHY DUKE, HOUSING SPECIALIST, NATIONAL COUNCIL OF NEGRO WOMEN, INC.

I appreciate the privilege and opportunity of appearing before you on behalf of the National Council of Negro Women as we are directly involved in the development of homeownership opportunities for low-income families.

The National Council of Negro Women is composed of 4 million women of diverse educational and economic backgrounds bound together in a common resolve to effect basic changes at the community level, both urban and rural. The Council includes 25 affiliated national organizations as well as individual members. Participation at the community level is through 137 chartered local Sections and units of the affiliate organizations located in 46 states. (Appendix A—NCNW Brochure).

Under the leadership of Dorothy I. Height, National President, NCNW has been the initiator and team participant in the development of the Public Housing Turnkey III and Section 23 Homeownership programs. The staff of NCNW has visited some 36 communities in 10 states. We have talked and worked with local, builders, realtors, bankers, Housing Authority staff and commissioners, tenants, low-income residents in the community, members of the established community leadership, elected officials and HUD's regional and central office personnel.

We have, by invitation, actively participated in various ways in the initiation, coordination and development of ongoing programs of some $33 million worth of homeownership opportunities for low-income families utilizing Public Housing subsidies. We have had many different kinds of experiences over the last 4 years in helping to develop these new programs, securing community support, assisting the families to adjust to their homes and strengthening community resources to meet their needs more effectively.

We have had some failures as well as considerable success. We believe we have learned some important lessons about the use of these programs. Therefore, my

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comments are directed principally toward Public Housing programs, the existing opportunities for homeownership through Public Housing and the proposed Public Housing Homeownership program in H.R. 16643.

SUMMARY

The key elements in my presentation are these:

1. Low-income families eligible for Public Housing or a rent supplement should have a choice in housing accommodations. This choice should include an opportunity for ownership as well as renting.
2. Homeownership programs should provide a plan of participation by voluntary organizations in the planning and management of the program.
3. A publicly assisted housing program that includes homeownership provisions must have with it, in tendem, a plan for training and supportive services.
4. A housing choice for low-income families depends on the capacity and willingness of local communities to permit the construction of housing for low-income families, and the capacity and willingness of the Federal Government to encourage them to do so.
5. Both the image and operation of Public Housing can be improved through the development of program accountability in addition to fiscal accountability.
6. For the future, Public Housing, especially through its homeownership programs, has the potential of contributing significantly to the movement of low-income families towards economic stability in America.

1. EXISTING HOMEOWNERSHIP PROGRAMS THROUGH PUBLIC HOUSING

Subsidized rental housing, especially Public Housing, is resulting in increased dissatisfaction on the part of the occupants, the owners and the communities. Public Housing Authorities, in every increasing numbers, are facing a fiscal crisis. Landlords everywhere, both public and private, are no longer able to meet the increasing costs of social services and maintenance services, from their rental incomes. As it now stands, federally subsidized rental units are the most expensive housing units to produce and maintain. If this trend continues we will not only continue building social ghettos, but will see constantly escalating subsidy requirements for both management and maintenance.

With this Administration's emphasis on homeownership opportunities, an administrative redirection of priorities in the Public Housing program is called for. To date, Public Housing has failed to make significant use of the existing homeownership programs that offer low-income families a route off subsidy and an opportunity to become full tax-paying homeowners. (Appendix B—Description of Existing Homeownership Programs Utilizing Public Housing Subsidy).

These programs should be used to increase the housing stock by inducing new construction. They should also be used with respect to existing housing stock with or without rehabilitation. Although the best results would be obtained by housing the families in individual detached, semi-detached or townhouse dwellings, the foregoing can be applied in connection with multistory condominum or cooperative housing.

The Turnkey III program is an effective means of providing homeownership opportunities for low-income families. The administration has proposed another way to enable low-income families to become homebuyers through Public Housing.

Even though this proposal is designed to serve a higher income family than the existing homeownership programs, homeownership for the poor of our country *can* be a snare and delusion. A program to achieve the goal of a self-sustaining, financially secure, tax-paying, title holding family must be carefully and painstakingly planned. Simply having the title to a home does *NOT* mean the family will "enjoy the benefits of homeownership immediately". To move from years of tenancy to the obligations of ownership requires the provisions of supportive services that reflect the needs and life styles of the families to be served.

These supportive services must include for example, a fund available to the families for use in major maintenance problems. The margin of financial security is extremely narrow when you are poor, there is very little room for emergency situations. For example, a city housing inspector could require new wiring in a house. The family in this house is a title holder, as proposed in the bill, and responsible for providing the wiring. This now becomes a financial crisis rather than a wiring crisis as the proposed program does not have this kind of protection for the family included in the plan. As a result the family either borrows the money at high interest rates or defaults. If the family defaults, it then becomes

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a financial problem of the Housing Authority. In essence, every party involved is worse off than when they started. Our considerable experience in this phase of housing results in the following recommendations:

Carefully planned legal, financial and program protections for all parties involved, need to be added to the proposed public housing homeownership program. Until this is done, the National Council of Negro Women cannot support the plan as presented in the housing bill.

It has been indicated that this new homeownership program will not be a substitute or replacement for Turnkey III and homeownership using Section 23. However, we are apprehensive that in the efforts needed to launch this new homeownership program, even with the changes we have proposed, the existing programs will not be used to their full potential.

We therefore strongly urge this Committee, in its report, to indicate their support for Turnkey III and homeownership using Section 23 as practical, ongoing means of providing low-income families an opportunity to become homeowners. These programs have built-in protections for all parties involved. Any program may be improved and we continue to communicate to HUD suggestions for such improvement.

As you well know, the Housing Act of 1968 established national goals of 6 million units for low and moderate income families over the next 10 years. Yet today, a specific goal for homeownership has not been established in the public housing programs . . . and the mechanics whereby prospective low-income purchasers can actually achieve their individual goals, are still to be clarified. Our experience reflects that the program has not been pushed. One answer may be that the program has not been publicized. For example, you can seldom find a housing person who does not know about 235. 236—yet few know of the Turnkey III program. Another answer may also be found in the administrative procedures—remaining to be crystallized. We believe it is essential that Homeownership programs be designated in the goal established for Public Housing.

2. VOLUNTARY ORGANIZATION MUST BE INVOLVED

A new role should be defined for voluntary organizations. By "voluntary organizations", I mean such groups as NCNW, League of Women Voters, Urban League, church organizations, union groups, and civic organizations. This untapped source of local participation in housing should be encouraged to direct attention to the preparation of the community and low-income families for these new homeownership programs.

A locally based voluntary organization, which also functions on a national scale has many advantages. It never leaves the community. Involvement in the housing program strengthens the local unit, which in turn can become involved in developing programs and services with the people in the housing development. The national organization, through its staff and volunteer leadership can be available to provide new resources for the community and also provide a forum for the development and exchange of information and ideas.

A voluntary organization, devoid of a vested interest such as packaging fees and consultant fees stands a good chance of building a bridge of communication, increasing community receptivity to the program, and helping people to help themselves. It is in this way also that the families to be served are involved in the ownership program.

We recommend that HUD encourage voluntary organizations to serve as an initiator and convener of local efforts by providing program information to the community, low-income residents and other local groups. They could and should assist these groups in organizing a Community Participation Committee to work with the Housing Authority, with specific duties and relationship to homeownership programs. (Appendix C—Description of Role for a Community Participation Committee)

There is much said about citizen participation in housing these days. Usually the only participation evident is a protest group from a neighborhood where a proposed housing development for low-income families is to be located. Our recommendation is for positive participation rather than a negative one.

3. SUPPORTIVE SERVICES AND COUNSELLING MUST BE IN TANDEM WITH OWNERSHIP

Assisting low-income families to achieve successfully the goal of homeownership intended for them by the Congress will be possible only with the supportive services planned for the program from its inception. This conviction is firmly grounded by our experience during the past few years.

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We all should have learned by now that just providing a physical structure for shelter will not cure the social ills of the poor. More than bricks and mortar or title, it is needed to assure a successful housing program for low-income families.

This orientation to homeownership, training, and developed community support must be accomplished by an organization that has, or can soon establish, the trust and confidence of the low-income families. I have appended to this statement a description of the type of community preparation and counselling that NCNW has suggested needs to be provided by such an organization. (Appendix D—Recommended Criteria). As you can see in this Appendix, these requirements cover acquainting low-income families with the concept of homeownership, formation of, and service to, a Community Participation Committee, accepting application, pre-occupancy and occupancy supportive services, assistance with management problems and formation of an incorporated homebuyers organization. All of this is vitally needed.

4. COMMUNITIES MUST HELP MAKE IT POSSIBLE

The generation of housing for low-income families, be it through rental or homeownership opportunities, ultimately stems from the local community. As you labor with various plans and formulas for the elusive solution to housing our nation's poor, the real problem is by-passed.

Take a short imaginary journey to Anytown USA. In this town you can find adequate financing, the red tape has been cut, there are adaptable codes, you can find a combination of rehabilitated and new units, an established need, excellent sponsorship, well defined and funded training and supportive services program, new technology all over the place,—but—*housing of any kind for low-income families is NOT produced.* Why?

I have come to the firm realization that the real problem is the failure of local communities to accept the reality of low-income housing.

With the new spirit of localism advocated by the Administration, the problem is only magnified. If community acceptance is identified as the number one problem, what are the contributing factors? Fear of property values decreasing. Fear of overcrowed schools. Fear of *THOSE* people, disruption of a "status-quo", change, give-away-programs—"I made it, why can't they?"

To ask a suburban community, in which the bulk of local income is derived from property taxes, to zone for, or allow the poor in, is to ask them (they think) to commit community fiscal suicide.

While many other factors are usually identified as the cause, the ones just mentioned above are always just under the surface. We will always have the eternal struggle between the haves and have-nots, but in this country this struggle is compounded by racism.

If you think it is tough to correct inflation, stop the war, do a breakthrough program or bridge the generation gap, you should try to convince one middle-income person to accept, tolerate, permit, one low-income family to move in next door to them. If you don't think this is a problem, you haven't tried it.

Can you honestly identify any neighborhood in any city USA, except in the ghettos, that wants "poor folks" next door, regardless of how plain or fancy a housing program may be?

Until we as a nation, and as an Administration, and as local individuals in communities, face up to this problem, I am afraid any recommendations will just be for naught.

I recognize, of course, that federal legislation cannot by itself change personal and individual attitudes. Yet, the framework of federal legislation and statutory law unquestionably can alter the legal context within which state and local governments operate.

For this reason, the NCNW supports the additional provision recommended by HUD to the 1970 Housing Bill concerning Exclusion of Federally Assisted Low and Moderate-Income Housing. However, I believe it does not begin to go far enough.

5. PUBLIC HOUSING TODAY

Public Housing has been around a long time. It has fought for its existence and acceptance every step of the way. It has had much criticism. Some was warranted, some was not. Most occurred through an unbelieveable lack of communication between the critics and the advocates. Yet, this one program has housed more poor families than any other plan to date.

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Since 1937, our nation has invested over 10 billion dollars in the capital cost of Public Housing. We must pay attention to the protection of this investment. As long as local Housing Authorities have only rental programs to offer their clients, changes in administrative regulations, more effective maintenance procedures, and better methods of rent collecting only tend to stave off for a little while the financial demise they are so graphically heading toward. I recognize, of course, that just instituting a homeownership program will not wave the magic wand either.

A positive look is needed to help Housing Authorities find ways to be more responsive to tenant needs. The most important way is to involve the tenants in the management and decision-making processes. Housing Authorities have fiscal accountability to the Federal Government. They should also have program accountability to the people they have been established to serve, the tenants.

I believe this program among all subsidized programs offers the most flexible and potent means for expanding housing opportunities for low-income families. Public Housing has a potential capacity to provide homes that can be a source of community and family pride.

6. HOPE FOR THE FUTURE

Every year each Administration has asked Congress and the country to legislate new programs as the answer to housing low-income people. Each year Congress has agreed to go along, only to be told the following year what it really needed is still another new program.

We have been told successively over the years that the answer to the housing problems of low-income families is longer term mortgages, a subsidy to reduce interest rates to three per cent, a flexible rent-supplement subsidy tailored to the family's income. Then we were told that we really can't do the job unless interest rates are reduced to one percent. Now we understand wholesale technical innovations relating to industrialized building will bring an important part of the answer.

With all this furor over subsidy formulas, insurance guarantees, better methods of construction and financing gyrations, low-income families still are not being housed satisfactorily. Obviously, another new legislative housing proposal is not the sole route to providing a solution to old problems that have been around for generations.

The National Council of Negro Women recognizes the complexity of the problems confronting the Congress and HUD. We believe it is imperative for Congress and HUD to recognize the complexity of problems and the pervasive devastating experiences of people on the lower rungs of the economic ladder. New attitudes are desperately needed to make the provision of homeownership realistic. If this is done, and by our experience, we know it can be done, the Public Housing program holds great promise for the future. This is especially true in the homeownership programs I have discussed with you.

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APPENDIX A

NCNW

National Council of Negro Women, Inc.

Founded 1935

Reading people, where they are

Today's Goals

To recruit, stimulate and train Negro women for more effective participation in community action.

To develop both independent and cooperative projects for service to the community.

To work for the enforcement of laws, and for administrative and legal action to protect civil rights and to combat poverty.

To broaden the base of participation by women of widely different backgrounds to achieve these common goals.

National Council of Negro Women, Inc.
1346 Connecticut Ave., N.W., Washington, D.C. 20036
Founder: Mary McLeod Bethune
President: Dorothy I. Height

Member National Organizations

Alpha Kappa Alpha
Chi Eta Phi
CME Church Women's Connectional Missionary Council
Daughters of IBPO of Elks of the World
Delta Sigma Theta
Eta Phi Beta
Iota Phi Lambda
Lambda Kappa Mu
National Achievement Clubs
National Association of Fashion and Accessory Designers
National Beauty Culturists League
National Grand Court, Heroines of Jericho, PAAY Masons, USA
Phi Delta Kappa
Sigma Gamma Rho
Supreme Grand Chapter, Order of Eastern Star
Tau Gamma Delta
The Chums, Inc.
The Women's Convention Auxiliary to the National Baptist Convention
United Beauty School Owners & Teachers
Women's Army for National Defense
Women's Auxiliary to the National Dental Association
Women's Auxiliary to the National Medical Association
Women's Home & Foreign Missionary Society of the AME Zion Church
Women's Missionary Society, AME Church
Zeta Phi Beta

NOTE

Voting is power

Creative Fighting

Thus in breaking barriers, building bridges of understanding, and closing the communications gap between the various elements of the community which too often remain out of touch with the realities of the critical situation today, NCNW plays a role in which every woman can have a part.

The Future Is Now!

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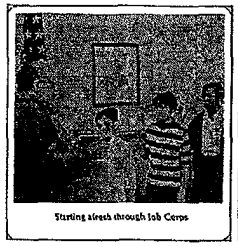
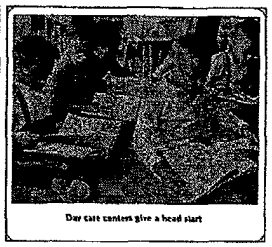
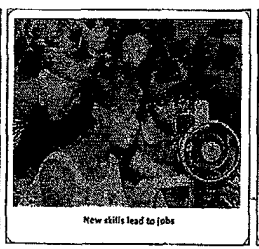


Starting afresh through Job Corps



Day care centers give a head start

Tutoring helps children learn how to learn



New skills lead to jobs

Checking price and quality protects the consumer

The NATIONAL COUNCIL OF NEGRO WOMEN provides a creative rallying point for combatting racism in our society.

In 1935, in the dark days of the Depression, Mary McLeod Bethune, the great educator and advisor to three United States presidents, founded NCNW. She recognized the need for black women in all walks of life to come together to work for their own welfare. And in united planning and concerted action she knew that the greatest impact could be made.

SIZE & STRUCTURE NCNW is an organization of organizations as well as a council that welcomes individuals. It has 25 national member organizations with an outreach of almost four million women and girls. Thousands more are members in more than 100 chartered urban and rural sections of NCNW.

UNIQUENESS & STRENGTH NCNW's uniqueness and strength consist in its ability to communicate in a meaningful way ideas and plans to women of diverse interests and settings and to involve them actively in community affairs affecting their well being and the well being of their families. Hand in hand, women in all states are attacking conditions of poverty, unemployment, inferior education, miserable housing, lack of opportunity, of human dignity.

FUNCTIONS NCNW represents before governmental and private bodies the concerns of women and girls on matters affecting the general welfare of the nation and the particular welfare of the black community.

NCNW sends representatives to major national and international conferences and maintains an Official Observer at the United Nations. It is affiliated with the National Council of Women in the United States, International Council of Women, the Pan Pacific & South East Asia Women's Association, the American Negro Leadership Conference on Africa, the National Assembly for Social Policy and Development and the Leadership Conference on Civil Rights.

METHODS & PROGRAMS NCNW takes the role of advocacy in a wide range of economic and social violations of human rights, such as helping women in Mississippi secure school breakfasts where school lunches were not provided, in upgrading household employment North and South, and in encouraging cooperative businesses which provide jobs.

The Council builds bridges of understanding between civic and government agencies, private business and the people who suffer the corroding conditions of racism. In its workshops, NCNW has given emphasis to welfare rights, to civil rights and to consumer protection.

Better schooling and the teaching of Negro heritage is a concern of NCNW in many states. The giving of scholarships to civil rights workers has resulted in a unique educational experiment in cooperation with Franconia College both at its New Hampshire campus and in a special pilot research-demonstration project now under way in Albany, Ga., the home base of a group of students.

AS CATALYST With NCNW as catalyst, problems are identified and faced up to, resources are examined and decisions for corrective action taken.

NCNW has carried on action research and volunteer training in Minnesota, Virginia and Florida in the prevention of juvenile delinquency among disadvantaged girls. In "Volunteers Unlimited," new insights and patterns for the involvement of women in the black community have emerged.

NCNW is credited by the Department of Housing and Urban Development with initiating in "Project Homes" a method whereby the poor can secure and own their own homes, first step in human dignity. Ground was broken for the first 200 in Gulfport, Miss., in April 1968, and numerous other localities in other states are working on like projects.

AGENTS OF SOCIAL CHANGE In recruiting and training for community action 6,000 Negro women heretofore ignored, NCNW through "Project Womanpower" is providing effective leaders who will involve still more Negro women besides themselves to become agents of social change.

NCNW is working for something more than band-aid treatment of social ills. In workshops, women isolated from the mainstream are brought together, oriented to the changing times and prepared for community participation, both paid and volunteer. Recent workshops in Newark and Paterson, N.J., brought enthusiastic response from women now committed to local action.

Cooperating with the National Council of Jewish Women, the National Council of Catholic Women and Church Women United, NCNW has helped establish Women in Community Service, Inc. WICS has helped recruit girls 16-21 from homes of poverty and screen them for Job Corps training. Those girls who go away from home, as well as those who prove ineligible, are given supportive services. The girls themselves say it is the personal interest that has helped them so much.

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APPENDIX B—DESCRIPTION OF EXISTING HOMEOWNERSHIP PROGRAMS UTILIZING PUBLIC HOUSING

Turnkey III—The developer builds the housing for sale on completion to the Local Housing Authority. The LHA uses 25 years tax exempt notes or bonds for the purchase of the project and provides the families with lease-ownership rights to their dwellings. The project obtains the benefits of partial local tax exemption during the time that the families are lease-purchase occupants and require Federal subsidy. As the family's income increases, the subsidy is reduced.

The occupants are specially selected for their homeownership potential by participation of local community groups representing their peers, among others. The prospective occupants are trained for the responsibilities of homeownership. A "homebuyers" association is formed which ripens into a "homeowner" association as the families graduate into ownership.

The families are required to maintain their own homes. They are individually compensated for doing so by the Housing Authority depositing in their individual accounts the amount that the Housing Authority would otherwise have to pay for maintenance. This earned "sweat" equity belongs to the family. If the families desire to leave at any time prior to obtaining title, they take this accumulated amount with them. If the family does not leave, this equity is applied to enable it to obtain title sooner. While these funds are building up, the LHA uses the annual contributions provided by HUD to make payments on the capital debt of the home. As the capital debt is reduced, the eventual sales price to the resident family is also reduced.

TURNKEY-LEASING USING SECTION 23(G)

This subsection of Section 23, which was enacted by Section 208 of the Housing Act of 1968 has the advantage of enabling the LHA to purchase the units with the tax exempt financing of the regular public housing program the same as Turnkey III. This should result in easier financing and in housing of a somewhat lower income group than Section 23.

As the family's income increases, the subsidy is reduced. When the family's income increases and/or his equity accumulation is sufficient to enable the family to obtain financing for the remaining capital debt on the home, they no longer require subsidy.

Title is transferred to the family and local tax exemption is removed. The Federal Public Housing authorization for annual contributions is thereupon restored and available to support the construction of additional low-income housing.

HOMEOWNERSHIP—USING SECTION 23 OR 10(C) IN COMBINATION WITH FHA

Under this arrangement the developer obtains mortgage financing from the lender with the aid of FHA Mortgage Insurance. He acquires the land, and constructs the housing for sale to the owner who agrees the homes will be occupied by low-income families. The owner may be either a limited-dividend organization or a non-profit sponsor.

The families will be assisted in making full economic payment on their lease-purchase contract by a subsidy from the Housing Authority using Section 23. This system results in homeownership as described in Turnkey III. It also provides for a "spin-off" to individual mortgages under the appropriate FHA vehicle.

Section 23 does not have the benefit of local tax exemption and permits only a relatively short-term commitment, which is, however, sufficiently long to obtain permanent—long-term financing when used in combination with FHA. This program serves a slightly higher income family than Turnkey III.

Section 10(c) can be for a full 40 year term and requires the same local tax exemption contribution as Turnkey III resulting in making the housing available to the same category of lower-income families as Turnkey III.

APPENDIX C—DESCRIPTION OF ROLE FOR A COMMUNITY PARTICIPATION COMMITTEE

RESOLUTION OF PARTICIPATION FOR LOCAL VOLUNTARY ORGANIZATIONS

Whereas, the_____believes the opportunity for home-
(Name of the Organization)
ownership is one of the basic factors that can contribute toward a stable family life and through this build a better community, and;

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Whereas, we believe that families with low-income should have the opportunity and dignity of homeownership as provided in the HUD (Housing and Urban Development) program Turnkey III, administered by HAA (Housing Assistance Administration) through the_____;
(Name of Local Housing Authority)

Whereas, we believe the goals and concepts of such a program provide a new opportunity of extending our service to families disadvantaged in the housing market; THEREFORE, BE IT RESOVED, THAT THE_____
(Name of the Organization)
_____wishes to join with other interested organizations have similar motivations, purposes and interest and so demonstrate out intent of participation by formal adoption of this resolution.

Be it further resolved, that the_____evidencing our
(Name of the Organization)
interest and concern in this matter designate_____and
(Name of Representative)
_____as the duly constituted representative to serve
(Name of Alternate)
on the Turnkey III Community Participation Committee which will provide interim services as indicated below:

1. To act in a representative capacity for the potential applicants of this homeowners program to the local Housing Authority until a Homebuyers Association assumes this responsibility.
2. To participate in site selections by providing written statements to the Authority stating preferences of available sites.
3. To review proposed site and housing plans with appropriate persons and be a channel of communication and interpretation between the Authority, the Developer and the potential homebuyer.
4. To make written recommendations to the Authority regarding special eligibility requirements for admission to this homeownership program.
5. To review applications of families meeting eligibility requirements approved by the Authority and HUD, and recommend to the Authority the families it considers best prepared and able to achieve homeownership.
6. To join with the Authority during this interim period in making periodic maintenance inspections of the homes and common areas.
7. To represent the families in residence in their relationships with the Authority until the Homebuyers Association assumes this responsibility.
8. To assist in such other activities as are appropriate in supporting this opportunity for poor families to own their own homes.

Date: _____

_____
Presiding Officer

City:_____ State _____

SAMPLE LETTER TO HOUSING AUTHORITY

Chairman
Board of Commissioners
_____ Housing Authority
Dear_____:

We are requesting recognition and acceptance by the_____
Name of local authority
of this Community Participation Committee representing the following organization in_____.
Name of City and State

(List of organizations):

1.
2.
3.
4.
5.

The Committee has been duly constituted by the respective organizations.
Attached please find such authorization from each participating group.
We will provide the services indicated below:
(These will be listed exactly as appears on the Resolution)
Members of the Committee are as follows:

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We shall look forward to hearing from you indicating your acceptance of our Committee to provide the aforementioned interim services.

Chairman
Turnkey III Citizen Participation Committee

APPENDIX D—RECOMMENDED CRITERIA FOR INVITING PROPOSALS FROM ORGANIZATIONS TO PARTICIPATE CONTRACTUALLY IN HOMEOWNERSHIP PROGRAMS

1. The organization must be prepared to acquaint the low-income population in the community with the concept of homeownership. This orientation may include dissemination of information through the conventional channels of communications, public and private agencies, social and civic organizations, churches, community groups and person-to-person contact.

2. The organization is responsible for the formation of a duly constituted Community Participation Committee accepted by the Housing Authority. The organization must be able to identify and involve local groups and organizations whose designated representatives shall serve on the committee and participate in the development and implemntation of the Homeownership Program.

3. The organization must provide all related services to the Community Participation Committee during the period of its operation.

4. The organization will provide all services in connection with the processing of applications. These services will include inital receipt of applications, application review conforming to the Housing Authority's eligibility criteria, verification of information contained in applications and transmittal of the applications to the Housing Authority through the Community Participation Committee.

5. Pre-occupancy training will prepare the selected applicants for making the adjustments inherent in the transition from tenancy to homeownership. Training for the selected applicants will include information relative to specific obligations of the head of a household when moving from one house to another, as well as the new responsibilities of a homebuyer.

6. Occupancy training must provide the tools and resources necessary for the individual homebuyer and the community of homebuyers to become self-sustaining in the process of day-to-day living.

The proposal shall reflect recognition of common problems most prevalent in the target income group and offer realistic approaches for developing new and effective ways to cope with those problems.

The proposal shall have a specific plan for periodic evaluation during the training period. This will provide a measure of determining the effectiveness of the training and enable the organization to make changes where necessary.

7. The organization must be prepared to provide for the use of the community building. This will include the responsibility for obtaining necessary funds by submitting proposals to appropriate agencies and activating a program based upon the needs of the community served.

8. The proposal will have a plan for laying the groundwork for management of the corporate affairs of the community. This shall include the establishment of an Incorporated Homebuyers Association and a plan for monitoring the program to assure that continuity and direction of the program is maintained beyond the contract period.

Mr. BARRETT. Our next witnesses this afternoon will be Raymond L. Tyler, chief, Accident Control Section, Philadalphia Department of Public Health; Vincent F. Guinee, M.D., M.P.H. director, Bureau of Lead Poisoning Control, New York City Health Department, very closely associated with Congressman William F. Ryan, and of course our very capable New York Member, Edward I. Koch, a Congressman who has done an exemplary job since he became a Member of the House, and we are very proud of him and glad to have you here.

I would like the three gentlemen whose names I just mentioned to please come to the table.

Mr. Koch, we know your time is important. We are going to have your testimony first, and before you begin I am going to ask unanimous consent to insert in the record the remarks of the Honorable William

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F. Ryan, one of our very deeply interested Members from New York on this important problem that concerns the average American family.

(The statement of Mr. Ryan follows:)

STATEMENT OF HON. WILLIAM F. RYAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. Chairman, I appreicate the opportunity to appear before the Subcommittee on Housing of the House Banking and Currency Committee today to discuss the problem of childhood lead poisoning. And I commend the Chairman for his introduction of legislation aimed at remedying this problem, and the Subcommittee's providing two days of its valuable time to this issue.

The Chairman and the other members of this Subcommittee have been responsible for effective, meaningful legislation over the years, and I know that they will be responsible for strong legislation this session to end the "silent epidemic" of lead poisoning.

Lead poisoning is a legacy left to the children of our urban centers by our decaying cities. More affluent children are unexposed to lead poisoning—because manufacturers have not used lead in paint for twenty years.

In the dilapidated housing of our urban slums, lead paint still remains on the interior surfaces. Much of the inner city housing was built before the Second World War, and there has been little, if any code enforcement.

Those most susceptible to lead poisoning are children between the ages of 1 and 6. Children of this age, both in the slums and elsewhere, have a craving for non-food substances. This craving, called "pica' causes them to eat all kinds of objects—usually anything they can get their hands on.

In slum housing, layers of old paint and plaster are found on the home's interiors. The children who suffer from pica find the most readily available objects are leaded chips which have fallen off the ceiling, or which are within the child's reach on the walls and window sills.

The lead, which is sweet-tasting, fulfills the child's pica cravings. If the child eats enough of these leaded chips, he becomes poisoned. Hopefully, this illness is detected in time; if not, it might be too late for treatment.

Lead poisoning has only recently been acknowledged as a serious childhood disease. Its symptoms were not recognized because of their similarity to symptoms of flus and viruses. Parents knew little of the lead poisoning danger. Doctors and health officials seldom made the right diagnoses. And the disease was often not detected until it reached its most serious stages—resulting in brain damage, mental retardation, cerebral palsy, and sometimes death.

Local governments have done little in the past to fight this disease. There has been some recent action in this field, but many local programs have been hampered by inadequate funding and staffing. Thus, those cities which have taken the initiative on lead poisoning find themselves unable to put together a strong and effective program.

This is why we need federal legislation. We must provide the federal guidelines for localities to follow or many of them will have small, inadequate programs, if they have any at all. Equally important, we must provide federal funds. I do not think I need to elaborate to this Subcommittee on the financial problems of this nation's cities. Our cities lack adequate funds for virtually all of their needs. Eradication of lead poisoning is no exception. If they are to attack lead poisoning, funds must be made available.

The legislation which I have introduced to end this "silent epidemic" of lead poisoning consists of three bills—two of which are before this Subcommittee. They deal with the cause of the disease—housing. The other bill, H.R. 9191 (H.R. 13256 and 14736 with cosponsors) deals with the effects of lead poisoning, its treatment and detection.

H.R. 9192 (H.R. 13254 and 14735 with cosponsors) authorizes the Secretary of Housing and Urban Development to make grants to local governments to create programs meant to detect the presence of lead-based paints and to require that owners and landlords remove it from interior walls and surfaces.

One of the major problems facing local lead programs has been that once the disease has been detected and treated, there is often the danger that the child will be returned to the same environment and be repoisoned.

My legislation would allow for a local program which would encompass comprehensive testing programs to detect the existence of lead-based paints on the

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interiors of housing; and comprehensive programs requiring owners and landlords of dwellings with leaded paint on its interiors to promptly remove the lead-based paint where it exists, including where the paint had been covered up with unleased paint.

Grants for these local programs would not be provided unless the area had a workable program for community improvement as approved by the Secretary of Housing and Urban Development under section 101(c) of the Housing Act of 1949. The lead paint removal plans would have to be consisted with the overall workable program.

In addition, H.R. 9192 provides for the employment of residents of the affected localities by making available necessary training, education, and information to make them eligible for such employment.

My other bill aimed at the problem of lead paint in housing is H.R. 11699 (H.R. 13255 and 14734 with cosponsors). This legislation requires that a local government submit an effective plan for eliminating the causes of lead-based paint poisoning to the Secretary of Housing and Urban Development as a condition of receiving any federal funds for housing code enforcement or rehabilitation. In addition, it provides for enforcement of the plans.

The third bill—which is before the House Interstate and Foreign Commerce Committee—deals with detection and treatment of the disease. H.R. 9191 (H.R. 13256 and 14736 with cosponsors) provides for a fund in the Department of Health, Education, and Welfare from which the Secretary could make grants to localities to create programs to identify and treat children who are lead poisoned.

This nation, approximately twenty years ago, committed itself to eradicating a disease that was plaguing its children—polio. Today, as a result of this commitment, polio is no longer the threat it used to be.

We did not know the origins of polio, and yet we found a cure. We do know the origins of lead poisoning. We also know the cure. And yet, we have not committed ourselves to eradicating the disease.

Lead poisoning is an environmental disease—a disease that has resulted from man's neglect of his fellow man. Lead poisoning exists because man has allowed others to live in uninhabitable housing. Lead poisoning continues to exist because men have not had time to worry whether or not children were being poisoned as a result.

We know what causes this disease. We know how to cure it. And we know how to keep lead poisoning from ever again becoming a threat to this nation's children.

In the past, local governments have not taken the kind of leadership on this issue that they should have. Whether they have been unwilling or unable to handle the problem in the past, the result has been a "silent epidemic" of lead poisoning cases.

In New York City alone, there are 30,000 children afflicted with the disease. Estimates are that it affects 225,000 nationally.

Needless to say, not enough has been done in the past. We are not doing very much now either. Thus we have the opportunity to do something in the future. We have the opportunity to assure that there will be a federal program committed to ending the threat of this disease.

I have been encouraged by the recent support for my legislative package in Congress. Over 20 members of the House, including the distinguished chairman of this Subcommittee and one of the Subcommittee's distinguished members, Congressman Halpern, have cosponsored or introduced legislation similar to mine.

In the Senate, two bills have been introduced. S. 3941, introduced by Senator Schweiker with cosponsors, would require the elimination of lead-based paint in all housing which comes under the Fair Housing Act. The other, S. 3216, introduced by Senator Kennedy with cosponsors, establishes grants for detection and treatment of the disease.

We have a chance to pass a legislative package which provides strong action for detection and treatment of lead poisoning.

This package has received widespread support, including that of persons representing the New York City Council, Health Research Council of New York City, Conference of State Sanitary Engineers, National Key Women of America, Legal Aid Society of the City and County of St. Louis, Connecticut State Department of Health, Druid Health Center of Baltimore, New Haven Legal Association, New Jersey Retardation Planning Board, and Metropolitan Washington Planning and Housing Association.

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The bills before this Subcommittee today provide for a stringent cleanup of leaded paint in the environment.

I know that this Subcommittee shares my concern in this matter. And I am hopeful that the full Committee will report out a bill which includes a comprehensive lead poisoning program.

Mr. BARRETT. Congressman, if you are in a position to start now, we will be glad to hear you and then go on to the other two gentlemen.

STATEMENT OF HON. EDWARD I. KOCH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. KOCH. I thank you, Mr. Chairman, and especially appreciate those very gracious remarks. I am very much in your debt for that.

What I would like to do, with the committee's permission, is to file my formal statement and merely comment upon it.

Mr. BARRETT. That may be done without objection, and so ordered.

Mr. KOCH. Thank you.

Mr. BARRETT. And you may proceed if you are prepared.

Mr. KOCH. I have had an interest in the subject of lead poisoning for quite some time, and I am here to support your bill, Mr. Chairman. It is a matter which Congressman Ryan, myself, and a number of others along with you have pressed, and I am so delighted that you have taken the lead and will see that legislation is passed in this arena.

The reason it becomes so terribly important is that in this case of lead poisoning we are dealing with children. In New York City the figures are startling.

Depending on whom you talk to, the number of children afflicted with lead poisoning range from 9,000 to 35,000, and probably it is somewhere in between.

The city of New York, in my judgment, is first beginning to deal with the problem. When this matter was the subject of discussion last year, I wrote a letter to Mayor Lindsay, and I would just like to quote the opening paragraph of it. The letter is addressed to the mayor. It's dated June 8, 1969, and reads as follows:

Dear John:

I am very upset that New York City has the dubious distinction of being the first American city in 1969 to have a young child die of lead poisoning: 23-month old Janet Scurry of the South Bronx died several days ago. This means that the summer epidemic of this man-made and totally preventable disease has begun. According to the New York City Department of Health, 25,000 to 35,000 children in our city will suffer this disease this year; there may be as many as a quarter of a million young children in the United States who develop this disease from eating old, peeling, lead-poisoning paint in dilapidated ghetto housing.

Now, to come back to my testimony, what we have in New York City are 500,000 apartments which have been designated by the Federal Government as slums.

Now, what does it mean to be designated as a slum?

In most cases it means that we are talking about an apartment which was built under what we call the old law tenant, prior to 1900, and in most of those apartments and in ever more recent apartments, lead-based paint was used extensively.

Even while lead was banned in paints in the 1930's, there was no attempt to remove the lead from existing surfaces. What they did was

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they merely painted over. And what happens in the summertime—and I still have not received an adequate explanation from scientists with whom I have spoken—and I have held a conference on this. No one seems to know why, specifically, but in the summertime is when lead poisoning takes place.

It comes, as I understand it, from other nutritional deficiencies—a desire to eat this paint. And, of course, when it is lead paint it results in various trauma: Anemia, convulsions, epilepsy, mental retardation, and in some cases even death. As I indicated, there was at least one death last year and there may have been others since that time.

Recently, in New York City a law was enacted which made it mandatory that landlords wallboard over the paint. It is not simply enough to paint over it. You either have to scrape the old paint off or wallboard over the paint. Otherwise, the underlying paint comes through.

The law was passed to require this, and to enforce it, and almost at the same time to recognize that landlords do have problems in the economic area. And what was done to assist them on this is to provide a form of tax abatement so that over a period of years they get the benefit of a tax writeoff to help them in the cost of making these changes.

Well, what I think is terribly important about the bill which is before the committee, is that it addresses itself to Federal involvement for the first time in this program. It is not a program that affects just New York City—every major city, every city in this country that has slums will have this problem.

It is important to note that Chicago probably took the lead in facing this problem and undertook a program to detect these——

Mr. BARRETT. Congressman, may I interpose and ask you a question at this time?

Mr. KOCH. Yes.

Mr. BARRETT. I know time is running and you want to leave.

Mr. KOCH. Yes, sir.

Mr. BARRETT. I think that is a quorum call.

I was just desirous to know whether you think in these high density areas where the ghettos are in dire need for some improvement, would you consider having a compulsory blood test in those areas?

Mr. KOCH. Not a compulsory blood test. All that you have to do, Mr. Chairman, is to provide the funds to the cities; Federal funding to do these tests.

These tests are not inexpensive. The figures that I have heard range, depending on whether it is a urine test or a blood test and whether or not it is done in very large numbers, from $1 to $5. And I assume that if it is done in huge numbers, it can be brought down to the $1 figure.

The city of New York is now doing, as I recall it, something like 650 tests a week.

Well, that is nothing. That is nothing compared to the number of children in the ghettos who we are talking about. And what is worse than that is——

Mr. BARRETT. Another point, Congressman.

Mr. KOCH. Yes.

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Mr. BARRETT. How can we get the vast numbers that do not voluntarily come to be screened to come if we do not have a compulsory program?

Mr. KOCH. Well, I would suggest the following. There are community groups, for example, who have said that the city of New York is delinquent, and it has been, and so they went out themselves and, knocked on every door, and they tested children. And they found that among the children that they tested the ratio of lead-poisoned children was 10 percent. The city's figures are only 3 percent, because they are not testing, in my judgment, where the tests ought to be made, and also are not testing as effectively.

But there is one way that you definitely could get people to come in and have their children tested, and that is—and that is one of the amendments that I am going to suggest to you—if you were to specify that one of the priorities in publicly assisted housing would be given to families with lead-poisoned children, because what we have now is—if you have a lead-poisoned child, that child is taken to the hospital, is helped, perhaps even brought back to good health, and then goes back to that same apartment. And I believe that if we required that the city of New York and every other municipality give a preference to a lead-poisoned child family for public housing, then that would encourage families to come in to make certain that their children were not lead poisoned.

Mr. BARRETT. You know, I am inclined to think if you are going to do an adequate job—and I do not want to prolong this because these other two men are waiting—you have to do it through compulsory action. I noticed here this morning—there is your press table over there. If we had some obscenities going on here this morning, that table would be so packed that you would not be able to get in here.

We have here, I think, a program that affects the welfare and the health of the children of this country. There is no press, none of the news media there at all. And I am of the same opinion. You may get 6,000, 600, whatever figure you desire to use, on a voluntary basis, but the difference between that and the vast number that should come in to get a blood test will never come in and we will never know the magnitude of this type program unless we say to them, "Your child must go through the blood test. And when you file application for kindergarten, if the application does not show they have had a blood test, they will not be admitted to school".

I think the only way you can do an adequate job on this is tack it down in the way we are going to lay the foundation, in the way we are going to do the job effectively.

Mr. KOCH. Mr. Chairman, there is only one problem with that, because I am not opposed to the mandatory blood test when the child enters the school.

Mr. BARRETT. I am only speaking of mandatories in cities where they have a high density and overcrowdedness and a tremendous slum problem.

Mr. KOCH. But the problem is Mr. Chairman, that when you are talking about the child entering school, that is almost at the end of the road, because the children who are subject to lead poisoning are generally in the more infant stage. It is the kids in the cribs. It is the kids who toddle around in the apartments and who eat the peeling paint——

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Mr. BARRETT. I am using the argument to prove for psychological reasons you have got to say now, you better have your child's blood tested because when you bring him or her to kindergarten, unless you do, they won't be able to come in.

You have got to have some control on it. As I say, we are hoping to devise rules and methods to eliminate lead poisoning.

Mr. KOCH. I am not opposed——

Mr. BARRETT. And I am only throwing this out to get a device that we can use to get everybody to bring their children in between zero and age 5 or whatever age we may consider.

Mr. KOCH. Mr. Chairman, you will get those people coming in if you provide that it is a priority for housing purposes for any family that has a lead poisoned child, because the fact is that the families want to protect their children; want to protect their children.

Now, many families just are not aware of this great danger. And the city of New York and every other city has been delinquent. And I am not opposed to such enforcement as you are suggesting, with just one proviso—that if you make it mandatory, then you would be spending moneys in areas where there would be no likelihood of lead poisoning, because in the middle- and upper-income areas that does not take place.

Mr. BARRETT. We do not spend moneys in those areas, but we did have here—and I will terminate it with this—a tubercular mobile unit out here, and the wagon stood out there and few went near it. So if you do not have some compulsory mechanism behind a program of this type, you will probably waste your money anyhow. But if you want to do overall good for the greater number of the population, particularly in children, I think you have got to find some reason to make sure they go there.

Mr. KOCH. I have no objection to that.

I have one other proposal by way of an amendment and then I will cease, Mr. Chairman, and that is I would urge that there be a clarification of the language of the bill so as to specify that Federal funds can be used for emergency repairs and the boarding of these peeling surfaces.

That now is not clear in the bill, and I do believe that if some of these funds were made available for that, it would be very helpful.

Mr. BARRETT. That is fine, a good suggestion.

Thank you very much.

Mr. KOCH. Thank you, Mr. Chairman.

(The prepared statement of Mr. Koch follows:)

PREPARED STATEMENT OF HON. EDWARD I. KOCH, A REPRESENTATIVE FROM THE STATE OF NEW YORK

Mr. Chairman and Members of the Committee: I want to thank you for giving me the opportunity to testify today, and I commend you for taking up this most important legislation.

For too long, all levels of government have turned their backs on the silent epidemic of lead poisoning that for years have crippled many children. It is a disease that flourishes primarily, but not solely, in our slums in which our old tenements and housing predominates. It is unconscionable that our country, with its superb medical feats, has done so little to deal with a disease for which both the cause and cure are known and available, and a disease whose toll is so devastating. Our neglect affects an estimated quarter to a half a million children between the ages of one and six; approximately, 25% o f whose victims incur permanent brain damage and some even die. The social costs are so clear—warped

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minds and bodies resulting in classroom disruptions, learning inabilities, job failures and crime. The physical traumas of lead poisoning include anema, convulsions, epilepsy, mental retardation, and even death.

I am pleased to be a co-sponsor of H.R. 13254 and H.R. 13255, originally introduced by our colleague, Mr. Ryan, which are similar to the Chairman's bill now under consideration. This legislation will provide an important first step in providing assistance so that our cities can tackle one half of the problem: its cause. I hope that comparable action will be forthcoming from the Interstate and Foreign Commerce Committee on H.R. 13256, which I am also co-sponsoring with Mr. Ryan, and which would provide financial assistance to develop and carry out intensive programs to detect and treat lead poisoning victims.

The dimensions of the problem are dramatically seen in New York City where there are over a million dwelling units whose walls and moldings contain lethal quantities of lead. Over a million of New York City's most densely populated homes are contaminated by this poison. Should this threat to the health and welfare of our people, and particularly our children, be found in some other form such as contaminated water or an outbreak of smallpox, all of the U.S. and local Health Departments' forces would be mobilized immediately in a massive attack to wipe out the source of the threat to the community's health. And yet, Congressional reaction to the lead poisoning epidemic has been to do nothing.

In another area, the Congress has passed both a Flammable Substance and a Hazardous Substance Act to protect children, primarily of the middle and wealthy classes, from the hazards of flammable clothing and toys. Should we do less for the poor who don't have as many toys and too often inadequate clothing and live in apartments with peeling lead-based paint which they eat?

It should be acknowledged, however, that recently, the City of New York—as well as a few others such as Chicago—have made a beginning in tackling this man-made disease. Through the New York City Housing Development Administration, a program for identifying lead contaminated walls has been put into operation, along with an emergency repair service to correct some of the more flagrantly dangerous situations. But, in a city with so many contaminated units, this program is miniscule and falls far short of the need.

Last year when I urged Mayor John Lindsay to give more attention to this problem, lead poisoning among our slum children held a very low priority in the City Administration. Fortunately, in the intervening months, the Health Services Administration's blood-lead testing service has been expanded so that tests are now being conducted through its health stations and the number of "blood leads" being performed have risen from last year's level of 100 per week to approximately 650. But this is still not enough. As with any epidemic, a thorough door-to-door screening program is needed, for precisely those who live in the slums and not brought to the health stations are most often those most in need of attention. Such a house-by-house screening effort is being conducted by a community group in the South Bronx with 10% of those children being tested showing dangerous lead levels; this compares to the City health station's 3% findings.

A third aspect of the City's fight against lead poisoning is perhaps most innovative and should stand as a model for other cities: this is the tax write-off that is being given, as of July 1st of this year, to landlords to help finance, up to 75%, of the removal of this health hazard.

Credit for this law must go to City Councilman Carter Burden who has been one of the most active and effective persons in New York City in mobilizing both the public and City Hall in recognizing the severity of this disease. Councilman Burden first introduced his bill to provide for the tax abatement program in January of this year and achieved its enactment just last month.

But, it is clear that even in New York we have made but a beginning and much more has to be done. The source of the contamination must be identified and eliminated, and this too requires a house-by-house testing program. If the job is to be done properly, there must be direct assistance by the local government body in carrying out the lead removal program. The testing and lead based paint elimination programs initiated under H.R. 17260 must be more than the issuance of procedural guidelines mandating the removal of contaminated surfaces by the landlords. It is true that for too long the landlords have callously neglected for economic reasons this source of poison in the buildings; and it is essential that every means be used to require them to correct the condition. But, the present situation also demands immediate attention, and I would urge that the language of H.R. 17260 be clarified to specify that federal funds can—

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and indeed should—be used to finance programs in which the local administration, with the assistance of the community, is directly involved in the actual repair of contaminated surfaces and what probably most often will be the case, the covering of the peeling paint surfaces by wallboards.

A second recommendation I would have for the Committee is that a provision be written into H.R. 17260 providing that any family having a poisoned child be given a priority for any publicly assisted housing program. Justification for such a priority is two fold: first is the obvious factor of there being evidence that the family's home contains dangerous levels of lead, and there exists the need to remove the other siblings from the contaminated environment; and second is the greatly increased danger of irreparable brain damage that will be done to the treated lead-poisoned child should he be returned to the same circumstances and again consume lead-based paint—his chances of harm goes up as high as 90%.

My third recommendation is that the Secretary should be directed to provide regulations for the careful disposal of the leaded paint that is removed from walls and moldings and that stockpiles of this poison are not left in hallways or alleys for children and household pets to play with and eat.

The cost of this program should be considered in relation to the cost of losing productive members of society and the additional cost of institutionalizing the brain damaged. This country has so much to give, let it give enough at least to provide for the health of today's children and the generations to come.

Mr. BARRETT. Now, Mr. Tyler, we will go to you next.

Mr. WIDNALL. Mr. Chairman, will you yield to me at this time?

Mr. BARRETT. Yes, I will be glad to.

Mr. WIDNALL. Mr. Chairman, unfortunately, I was unable to be here during the testimony of a previous witness, Dorothy Duke. I ask unanimous consent that I be permitted to submit some questions through the record to Miss Duke and ask that they be answered.

Mr. BARRETT. That may be done without objection and so ordered.

Mr. WIDNALL. Thank you.

Mr. BARRETT. Mr. Tyler, you know the policy of this committee. We want everybody to feel at home, and we want you to have that same relaxed feeling.

Mr. TYLER. Thank you.

Mr. BARRETT. So if you have any tenseness at all, just say I left it back in Philadelphia.

STATEMENT OF RAYMOND L. TYLER, R.S., M.P.H., CHIEF, ACCIDENT CONTROL SECTION, ENVIRONMENTAL HEALTH SERVICES, COMMUNITY HEALTH SERVICES, DEPARTMENT OF PUBLIC HEALTH, PHILADELPHIA, PA.

Mr. TYLER. Thank you. I appreciate the opportunity to present testimony on H.R. 17260, the Lead-Based Paint Elimination Act of 1970, on behalf of the Department of Public Health, City of Philadelphia, Pa. Congressman Barrett is to be commended for his interest and concern in childhood lead poisoning, a problem of immense magnitude and serious public health consequences in large urban centers and for introducing legislation designed to bring this problem under control. In the interest of time, I shall present a short statement on the nature and magnitude of this problem. However, I would like to include in the record of these proceedings a copy of a paper which I presented only a month ago at the annual meeting of the National Environmental Health Association in Las Vegas, Nev. This paper

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deals in some depth with the social, medical, and environmental dimensions of this national problem.

Mr. BARRETT. Mr. Tyler.

Mr. TYLER. Yes, sir.

Mr. BARRETT. May I say your submitting that paper for the record may be done without objection and so ordered.

Mr. TYLER. Thank you.

(The paper referred to by Mr. Tyler follows:)

LEAD POISONING CONTROL: COMBATING THE SILENT EPIDEMIC IN THE GHETTO[1]

(Raymond L. Tyler, R.S., M.P.H., Chief, Accident Control Section, Environmental Health Services, Community Health Services, Department of Public Health, Philadelphia, Pa.)

Childhood lead poisoning which has frequently been called the "silent epidemic" afflicting pre-school children of the urban ghetto has had a history in Philadelphia much like that of other large urban centers. It is regarded as a very grave threat to the health and development of children who live in the "lead belt" surrounding the inner city which is the high risk area of Philadelphia. Although fatal cases occur much more infrequently than heretofore, a substantial number of children sustain permanent brain damage and mental retardation.

The pediatric problem of lead poisoning began to receive attention in cities in the 1920's and 1930's. In 1950, lead poisoning was made a reportable condition in Philadelphia. During the first few years relatively few cases were diagnosed and reported. From 1950 to 1955, a total of 53 cases or an average of 8 cases annually were reported. Fifteen (15) of the 53 cases or 28% were fatal. However, in 1956, the Accident Control Section of the Philadelphia Department of Public Health in the expansion of poison control activities investigated the 38 cases of lead poisoning that were reported in that year. Activities included epidemiological investigations in all reported cases which aided in the documentation of the problem of childhood lead poisoning. A sincere attempt was made to create an awareness of the problem in the community. A Lead Poisoning Advisory Committee composed of medical, professional, trade and civic groups to assist the Health Department in the development of a comprehensive plan was established. Through these efforts, a greater awareness was created in the medical community and the number of reported cases climbed steadily but the grossly inadequate and lacking laboratory facilities to aid in the diagnosis of lead poisoning was a serious handicap. In 1961, the Electric Storage Battery Company of Philadelphia, ESB, Inc., offered to do up to 1,000 free blood and urine lead determinations as a public service. This service immensely aided diagnosis and stimulated reporting. As a result, 109 cases were reported in 1961 which doubled the number of any previous year. Fatal cases reached a peak of 12 in 1959, which was also repeated in 1960 and 1962. ESB, Inc. has continued to provide this free public service and has done as many as 2,500 blood-lead determinations in a given year.

The increased diagnosis, reporting and investigation of cases enabled the Accident Control Section in the documentation of the problem and in planning a program designed to control lead poisoning in Philadelphia. In each case investigated, efforts were made to determine the source of lead in the environment. As was the experience in other cities, children who became lead poisoning victims had a condition known as pica, the compulsive habit of ingesting inedible substances which include paint chips and flakes or to engage in actively chewing on painted surfaces. The basic causes of pica are vague but are believed to stem from emotional factors rooted deep in the psyche of the individual. The

[1] Presented at the 34th Annual Educational Conference of the National Environmental Health Association, June 24, 1970, Las Vegas, Nevada.

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homes in which these victims lived were in the older parts of Philadelphia which surround the center city. Most of these homes, which were built at least 100 years ago, were row homes which are characteristic of Philadelphia but now have been cut-up into a number of small apartments and have many layers of paint on the interior surfaces. Paint samples from these homes were analyzed and most were found to contain unbelievably large concentrations of lead. Practically all of the paint which was applied before 1940 contained large amounts of lead. Although most of the homes had peeling, flaking and falling paint with walls and woodwork in disrepair, in some homes paint was found intact but toothmarks on window sills and woodwork indicated the extent of the child's pica condition. In a few cases, the source of lead was not found. In rare instances, cases were traced to ingestion of pieces of soft metal toys or flashlight batteries, to the practice of burning old battery casings or painted lumber, the intentional inhalation of tetra-ethyl lead gasoline by adolescents or lead absorbed by drinking illegal whiskey distilled in automobile radiators by adults.

As early as 1958, the need for legislation to control the problem was obvious. However, much had to be accomplished to convince the community of that need. As the documentation continued and the number of cases rose steadily, community leaders became increasingly aware of the problem and the need for legislation became more acute. This was further supported by the fact that in the continuing study of cases, the Accident Control Section attempted to achieve voluntary removal of lead paint from the environment of a lead poisoning victim by appealing to landlords and tenants but compliance was achieved in only 31% of the cases. This data accentuated the need for legislation. In 1966, City Council passed an ordinance amending the Health Code which declared lead paint to be a health hazard and enabled the Board of Health to promulgate regulations to implement the ordinance. Specifically, the ordinance and regulations require precautionary labelling of lead paint stored, sold or transferred in Philadelphia, prohibits the application of lead paint on toys, furniture and any interior surface of dwellings or facilities occupied or used by children, prohibits the transfer and delivery of toys or furniture on which lead paint from any premises where the presence of such is creating a health hazard to children.

Implementation of the ordinance and regulations have been carried on with existing personnel and without program re-direction until most recently. Recently, some program re-direction has taken place in order that preventive efforts could be initiated. This includes investigation in all cases where a child has a blood-lead level greater than .04 mgm/100 gms of blood and the detection of children with pica or other symptoms suggestive of lead poisoning by visits made by Community Health Workers in other programs.

Up to 1970, implementation of the lead poisoning control program has been carried out on a decentralized basis utilizing sanitarians and public health nurses assigned to one of the 10 health districts. The administration of the program is conducted by the Accident Control Section. With limited resources through the years, we have conducted epidemiological investigations and the necessary follow-up inspections in enforcement of regulations in all reported cases. In addition, we have examined the labels of lead paint sold in Philadelphia for conformance with labeling requirements.

A case of lead poisoning is ordinarily reported to the Division of Epidemiology on an official report form. Previous to this, the Accident Control Section may already be aware of the case since it may have received a copy of the blood-lead analysis done by ESB, Inc., and a check-list from the physician indicating symptoms and other clinical criteria which are completed when the blood is drawn. Table I demonstrates blood-lead results in reported cases and numbers of symptoms reported. Note that a number of cases which are asymptomatic are reported as confirmed cases and also that some symptomatic cases have shown relatively low blood-lead levels. Symptomatic cases normally show a lead level of at least .06 mgm.

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TABLE I.—LEAD POISONING IN PHILADELPHIA CHILDREN BLOOD LEAD LEVELS AND SYMPTOMS NOTED BY ATTENDING PHYSICIANS (1964–68)

Lead Levels	Diagnosed total cases			Symptoms					
				None		1 or more		Not reported	
	Number	Percent	Cumulative percent	Number	Percent	Number	Percent	Number	Percent
Total	777		100	116	100	265	100	396	
0 to 0.02	13	2	2	3	2	8	3	2	1
0 to 0.03	30	4	6	7	6	14	5	9	2
0 to 0.04	46	6	12	11	9	18	7	17	4
0 to 0.05	107	14	26	23	20	54	20	30	8
0 to 0.06	140	18	44	30	26	51	19	59	15
0 to 0.07	105	13	57	17	15	(39)	15	49	12
0 to 0.08	53	7	64	9	8	23	9	21	5
0 to 0.09	32	4	68	4	3	15	6	13	3
0 to 0.10	52	7	75	8	7	31	12	13	3
0 to 0.20	07	1	76	0	0	3	1	4	1
0 to 0.30	04	1	77	0	0	3	1	1	1
0 to 0.40	06	1	78	2	2	2	1	2	1
Unknown	182	24	100	2	2	4	1	176	44

The official report is sent to the Accident Control Section by the Division of Epidemiology which in turn notifies the Environmental Health Supervisor and the Nursing Supervisor of the district where the victim resides. Visits to the home are made by both the Sanitarian and the Public Health Nurse. The object of each visit is different. The Sanitarian is chiefly interested in the source of the lead in the child's environment and will conduct an epidemiological investigation including the collection of a number of paint samples throughout the house. On occasion, he may take paint samples from another address such as a baby sitter's, the grandmother's or a previous address. Normally, the minimum number of samples taken include one from a window sill and one from a door or door frame from each room and any peeling or flaking paint which may exist. Samples of putty, painted plaster and painted wallpaper are also frequently taken. Currently, the number of samples taken from homes average between 20 and 25. The nurse, on the other hand, is interested in the health care of the child, that the mother is keeping clinic appointments, the possibility of lead poisoning in other siblings, supervision of the child and other health needs of the family. When results of the paint analysis are received and samples indicate presence of lead in amounts of more than 1%, the Environmental Health Supervisor will issue an order for removal of paint to the responsible party. In most cases, this will be the owner of the property. In some cases it could be the tenant if the tenant applied the paint or if furniture or toys are involved. Paint with more than 1% lead is regarded as hazardous by Standard Z66.1—1964 of the American Standards Association.

The belief is that lead ingested in lesser amounts will be excreted and not stored by the body. In the investigation of cases during the five year period, 1964–1968, a total of 5,466 paint samples were analyzed of which 57% were positive as indicated in table II. Although there was no signficant difference in the results from one room to another, woodwork samples were found to be hazardous with a much greater frequency 65–74% than samples from wall area (17%); and much more likely to be responsible for the intoxication because of easily accessible surfaces for chewing.

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TABLE II.—SAMPLING OF PAINT FROM SOURCES OF HOME ENVIRONMENT OF LEAD POISONING VICTIMS (1964–68)

Rooms	Total surfaces sampled		Door and door frames		Walls		Woodwork		Windows		Handrails and spindles		Stair steps		Other surfaces		Fences	
	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)	Number	Positions (percent)
Living room	873	51	192	70	200	10	138	62	289	67	4	25	1	100	49	22	0	0
Dining room	341	53	116	75	95	6	40	68	73	74	0	0	1	100	16	37	0	0
Kitchen	834	57	277	70	184	22	109	66	206	69	0	0	1	0	57	40	0	0
Hallway	705	48	196	80	209	19	74	64	29	76	103	39	90	56	5	40	0	0
Bedroom	1,674	59	491	80	317	15	165	68	574	75	1	100	0	100	126	25	0	0
Bathroom	388	63	160	78	74	20	32	62	98	74	0	0	0	0	24	46	0	0
Other rooms	294	55	95	81	36	45	16	56	61	77	12	67	12	67	74	19	0	0
Outer premises	346	83	149	80	6	100	13	85	33	88	52	92	6	83	60	72	27	89
Unknown	10	10	6	17	0	0	1	0	1	0	0	0	1	0	0	0	1	0
Total rooms sampled	5,466	57	1,682	74	1,121	17	588	65	1,364	73	160	56	112	57	411	34	28	86

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Along with the order for removal that is issued, a specification sheet giving instructions as to the extent of the removal is included. Areas to be removed are limited to all intact lead paint surfaces below a level of five feet where a chewable edge is presented and all areas where lead paint is loose, flaking, or falling. Holes in plaster and wall areas must be repaired. Paint on surfaces which are intact with no chewable edge are not required to be removed. Paint in areas designated for removal must be removed to the bare wood and cannot be repainted until inspected and approved by the sanitarian. In lieu of removal, coverage with a hard durable material is permitted. It is suggested that the person responsible for the removal meet with the sanitarian on the premises in order that the procedure be adequately explained and there is no question as to the areas listed for removal. Removal by burning is the usual method although the owner is advised about the safety precautions he should use in whatever method he employs. The use of respirators approved by the U.S. Bureau of Mines when burning, sanding, scraping or using solvents is recommended.

Following inspection and approval, the responsible party is given permission to repaint with a safe paint although he is not required to do so. Failure to comply with the order to remove hazardous paint results in a request for legal action. Initially, legal action was taken in a Magistrate's Court which was in existence at the time and fines ranging from $25.00 to $300.00 could be imposed. When a new Municipal Court system replaced the Magistrate's Courts, the same procedure was followed although there was a tendency to impose higher fines in second offences. Beginning in 1970, the enforcement procedures were revised and cases are currently being heard in a Court of Common Pleas in which an injunction is requested by the Health Department for failure to comply. If awarded by the court, compliance must be effected within a specified time or a contempt citation is issued with the violator subject to a fine and/or imprisonment. This has resulted in compliance in difficult cases. In certain cases, where a summons cannot be served such as in the case of absentee owners of property, and in certain hardship cases, we are requesting the Department of Licenses and Inspections to abate the hazard by use of their abatement fund for the abatement of housing violations with a placement of a lien on the property for the cost of removal. This is provided for because of a companion ordinance amending the Housing Code requiring the removal of lead paint when so certified by the Health Department which was adopted in 1966.

Our enforcement program has been successful in achieving compliance in elimination of the hazard from the environment. We have found that through the issuance of the orders for removal of hazardous paint and court action in some cases through 1968, we achieved an overall compliance rate of 79%, which is shown in Table III. From 1966 through 1968, a total of 348 properties were made safe by elimination of the hazard of lead paint. The unsuccessful cases are chiefly, those with absentee landlords in which we are unable to obtain service of the summons and hardship cases where the owner is the occupant and financially unable to comply.

TABLE III.—EFFECTIVENESS OF ENFORCEMENT OF REGULATIONS FOR THE REMOVAL OF LEAD PAINT

Year	Number of cases	Number of orders issued	Number of orders where compliance was achieved	Percent of compliance
1966	163	110	90	81
1967	176	153	124	84
1968	184	175	134	77
Total	523	438	348	[1] 79

[1] Average.

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During the 19 years since lead poisoning became a reportable condition, a total of 1,544 cases and 88 deaths were reported as shown in Table IV.

TABLE IV.—LEAD POISONING IN PHILADELPHIA CHILDREN, BY YEAR AND RACE, 1950–68

Year	Cases				Deaths				
	Total	White	Non-white	Unknown	Total	Percent	Case fatality rate	White	Non-white
Total	1,544	177	1,357	10	88	100	6	26	62
1968	184	22	162	0	1	1	<1	1	0
1967	176	8	168	0	2	2	1	0	2
1966	163	8	149	6	3	3	2	1	2
1965	132	7	125	0	5	6	4	2	3
1964	122	15	103	4	2	2	2	0	2
1963	136	15	121	0	3	3	2	2	1
1962	244	21	223	0	12	14	5	2	10
1961	109	9	100	0	7	8	6	0	7
1960	56	14	42	0	12	14	21	4	8
1959	50	7	43	0	12	14	24	4	8
1958	53	22	31	0	6	7	11	1	5
1957	28	7	21	0	3	3	11	0	3
1956	38	14	24	0	5	6	13	4	1
1950–55	50	8	45	0	15	17	28	5	10

In the five year period, 1964–1968, 777 cases were reported with 13 deaths or an average of 155 cases and 2 deaths annually. Compare this with the five year period, 1956–1960, when activities in lead poisoning control began, when 225 cases and 38 deaths were reported on an average 45 cases a year with 7 deaths. This statistic indicates that death from lead poisoning today is a much rarer instance. By awakening the physician, the hospital staff, the community and members of the Health Department team to the problem of lead poisoning, there has been intensive surveillance in early detection and treatment and elimination of the hazard from the environment. Physicians who see many of these cases tell us that they see the severely brain damaged child less often and the grave consequences of lead poisoning in children have been substantially reduced.

Childhood lead poisoning is distributed in Philadelphia similarly to other cities where an awareness to the problem has been created. The victims range chiefly from 13–36 months in age. Non-white children outnumber white by a ratio of 11 to 1 with no appreciable differences in sex as shown in Table V. The greater incidence during the warm months fits the pattern of other cities and this is shown in Table VI. The large majority of cases are found in the Philadelphia ghetto encompassing Health Districts 1, 4, 5, and 6, the areas which surrounds center city. This is the area known as the "lead belt" and is depicted in figure 1 and Table VII. In recent years, cases are found to be more common in the fringes of the belt as the population moves outward. As the people move, the lead poisoning problem moves with them as old housing exits in most parts of the city and the socio-economic and cultural patterns have not substantially changed. The greatest activity of urban renewal and rehabilitation is occurring in the lead belt and it is helping to solve the problem by providing numbers of housing units free of lead paint, but the problem is of such great magnitude that an intensive preventive program is most seriously needed, if it is hoped that the hazard of lead will be removed from the home environment during our lifetime. The community at large most recently has been awakened to this problem and tremendous interest has been generated on the national, state, and local level.

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TABLE V.—LEAD POISONING BY PHILADELPHIA CHILDREN BY AGE, RACE, AND SEX, PHILADELPHIA, 1964–68

Age in months	Total		Race				Not reported
			White		Non-white		
	Number	Percent	Male	Female	Male	Female	
Total	777	100	36	26	362	333	20
0 to 6	0	0	0	0	0	0	0
7 to 12	16	2	0	2	7	7	0
13 to 18	134	17	6	0	55	70	0
19 to 24	243	31	7	10	123	99	4
25 to 30	139	18	8	5	69	55	2
31 to 36	111	14	7	6	51	46	1
37 to 42	40	5	2	2	11	25	0
43 to 48	31	4	2	0	13	14	2
49 to 60	22	3	2	0	12	8	0
61 plus	29	4	2	1	17	9	0
Unknown	12	2	0	0	44	0	8

TABLE VI.—LEAD POISONING IN PHILADELPHIA CHILDREN BY MONTH AND REPORTED OUTCOME, PHILADELPHIA 1964–68

Month	Outcome		
	Total	Nonfatal	Fatal
Total	777	764	13
January	64	63	1
February	49	48	1
March	47	47	0
April	59	58	1
May	52	51	1
June	57	54	3
July	71	71	0
August	100	99	1
September	100	97	3
October	57	56	1
November	51	50	1
December	34	34	0
Unknown	36	36	0

TABLE VII.—LEAD POISONING IN PHILADELPHIA CHILDREN, BY HEALTH DISTRICT, 1964–68

Health district	Cases			Deaths	
	Number	Percent[1]	Average yearly morbidity rates[2]	Number	Case fatality rate[1]
Total	777	100	6.4	13	1.6
1	102	13	22.7	0	0
2	53	7	4.6	2	3.
3	41	5	3.8	0	0
4	95	12	8.2	2	2.1
5	217	28	14.7	2	<1
6	152	20	13.5	5	3.2
7	5	1	.3	0	0
8	61	8	4.8	0	0
9	32	4	2.1	2	6.2
10	1	<1	<.1	0	0
Unknown	18	2	0	0	0

[1] To nearest 1 percent.
[2] Based on 1960 Health District Census; per 10,000 children in the age group through 5 years.

In Philadelphia, citizen groups have become involved and have formed a coalition of citizen and professional groups to support the Health Department in expanding its program. Their request has been for the Health Department to mount a massive preventive program which would essentially screen every child at risk, and inspect each home for lead in the enforcement of regulations. These were the elements of a resolution which was adopted by the American Public

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Health Association when it met in Philadelphia in November 1969. A comprehensive plan for the eradication of lead poisoning in Philadelphia has been developed which encompasses these elements. For the first year of operation such a program would cost approximately $3,000,000,000 and would provide mobile units for intensive health education about the dangers of lead poisoning and for drawing of blood of all children between 1 and 6 in the high risk areas for screening, mass inspection of houses for the presence of lead paint and orders for its removal, and establishment of abatement crews for the removal of lead paint where enforcement procedures did not quickly succeed in achieving compliance. It is estimated that approximately 45,000 children could be screened annually and the hazard of lead eliminated from 50,000 dwelling units in each year with the lead belt cleared in five years. But a continuing program at a reduced level would be needed in succeeding years as the population at risk continues to move outward from the lead belt. The plan provides for the direct hiring of many individuals in the program that are indiginous to the target areas and the establishment of a Citizens Board to assist the Health Department in an advisory capacity. The recent development of a portable fluorescent analyzer utilizing a radioisotope to detect lead in paint has brought such a massive program within the realm of practicality since heretofore paint samples could be collected at a much faster rate than they could be analyzed.

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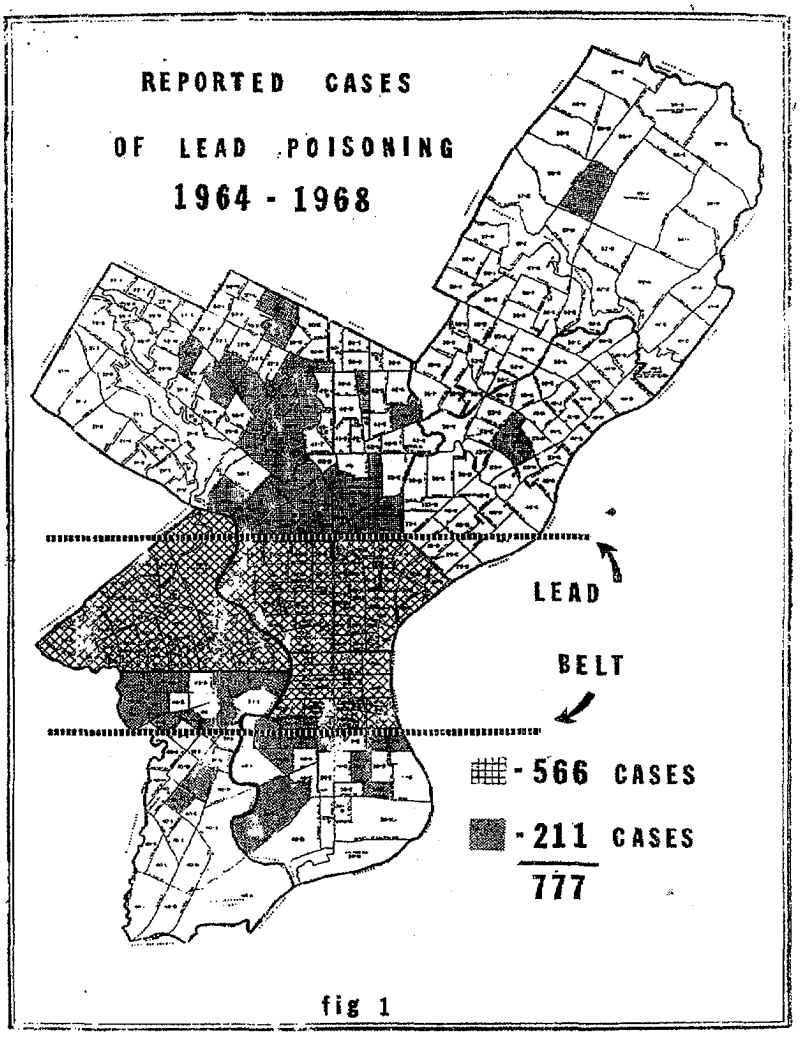

fig 1

DUP050313473

At the time of the preparation of this paper, the budget hearings of the City were being conducted but it appeared that City Council was willing to approve $600,000 for lead poisoning control. We do not know at this time whether this funding will actually occur, but it appears likely, and we are presently involved in the preparation of a modified plan based upon the amount which is expected to be funded.

The major concern of the community appears to be that a large number of children who are asymptomatic may be experiencing a certain degree of physiological damage from the low level of lead in their system which prevents them from performing up to their fullest capacity in school and irreversably affects their future. They contend that the diagnosed and reported cases are only the tip of the iceberg and that there may be as many as 5–10% of the pre-school children in the ghetto who have absorbed more lead than is generally recognized as normal background, and if this absorption continues it will be sufficient to produce overt symptoms. While there is insufficient evidence to support these claims, it appears that a massive program to detect sub-clinical cases and elimination of the hazard from the environment would pay off rich dividends in the future, not only the saving of lives and the prevention and minimization of injury, but the insuring of children to become useful productive citizens. Therefore, the need of a comprehensive prevention program is justified. This program staggers the imagination when we compare it to the comprehensive plan to control lead poisoning which we conceived in 1958. The time seems ripe for lead poisoning to receive some well deserved attention by health departments. Unless lead poisoning control ranks as one of the most urgent priorities in environmental health in other cities, the situation may become as explosive as it did in Philadelphia.

Mr. TYLER. Lead poisoning in Philadelphia children has had a history similar to that of other large urban centers. It is recognized as a very grave threat to the health and development of children who live in high risk areas of the inner city. Lead poisoning victims frequently develop mental retardation, permanent brain damage and sometimes die.

Lead poisoning was made a reportable condition in Philadelphia in 1950. During the first few years very few cases were reported, but as an awareness of the problem was created among the medical community the number of reported cases steadily increased.

In 1956, the Philadelphia Department of Public Health routinely began to investigate reported cases of childhood lead poisoning for the purpose of identifying the source of lead in the child's environment, to document the problem, and to eliminate the hazard.

In 1961, the Electric Storage Battery Co., of Philadelphia, now known as ESB, Inc., offered to perform up to 1,000 blood and urine lead determinations annually as a public service. This has been of immeasurable assistance to the community in aiding diagnosis and stimulating reporting. ESB, Inc. continues to render this valuable service to the community and has made as many as 2,500 blood or urine lead determinations per year.

During the 20 years since lead poisoning was made a reportable condition, a total of 1,666 cases and 89 deaths has been reported. The chief victims of childhood lead poisoning in Philadelphia are Negro and Puerto Rican children ranging from 13–36 months. The majority of the cases occurs in our health districts in south, west, and north-central Philadelphia which surround the central city, among poverty-stricken population living in dilapidated housing. Through the investigation of these cases, the pattern of the disease became very apparent and it was found that most of the children who became victims of lead poisoning had a condition called pica, the compulsive habit of ingesting inedible substances such as point

DUP050313474

chips and flakes, or engaging in active chewing on painted surfaces. The homes in which these victims lived were in older sections of Philadelphia. These homes, most built at least 100 years ago, are row homes which are characteristic of Philadelphia, and many have been cut up into a number of small apartments. The interior surfaces in these homes have many layers of paint, applied through the years, much of it peeling. flaking, chipping, cracking, and falling.

Practically all of the paint which was applied prior to 1940 contained large amounts of lead since this was a standard ingredient of interior house paint at that time.

While some success in removing the lead paint source from dwellings has been achieved on a voluntary basis, it was recognized that enabling legislation was needed to establish a legal base for compliance. In 1966, the Philadelphia City Council amended the health code declaring lead paint to be a health hazard, and the Philadelphia Board of Health promulgated regulations to control the problem. The ordinance and regulations require precautionary labeling of lead paint stored, sold or transferred in Philadelphia, prohibit the application of lead paint on toys, furniture or any interior surface of dwellings or facilities occupied or used by children, prohibit the transfer and delivery of toys, furniture on which lead paint has been applied and requires the removal of lead paint from any premise where its presence is creating a health hazard to children. A copy of the ordinance and of the regulations is submitted for the record.

Mr. BARRETT. That may be done without objection and so ordered.

(The ordinance and the regulations referred to follows:)

DUP050313475

CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC HEALTH

Regulations Relating to Labeling, Application and Removal of Lead Paint

Approved:

BOARD OF HEALTH April 28, 1966

LAW DEPARTMENT June 22, 1966

RECORDS DEPARTMENT July 27, 1966

(217)

DUP050313476

CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC HEALTH

REGULATIONS RELATING TO LABELING, APPLICATION AND REMOVAL OF LEAD PAINT

THE PHILADELPHIA CODE

TITLE 6—HEALTH CODE

Section 6-403—Residential and Occupancy Hygiene.

1. Definition.

   (a) Lead Paint. Any pigmented, liquid substance applied to surfaces by brush, roller or spray in which the total non-volatile ingredients contain more than one per cent (1%) of lead, by weight, calculated as metallic lead.

2. Prohibited Conduct.

   (a) No person shall apply lead paint to toys, furniture or the interior surfaces of any dwelling, rooming house, dwelling unit, rooming unit or facility occupied or used by children.

   (b) No person shall sell, transfer or deliver toys or furniture to which lead paint has been applied.

3. Labeling.

   (a) Containers in which lead paint is stored, sold, or transferred for retail purposes shall be labeled in accordance with regulations adopted by the Department.

4. Hazardous Conditions.

   (a) Where the Department determines that the presence of lead paint upon any premises creates a health hazard to children, it shall issue an order to the owner or occupant to eliminate the hazard in accordance with methods prescribed by regulations issued by the Department.

Pursuant to Section 5-301(b) of the Home Rule Charter and Section 6-403 of the Philadelphia Code, the following regulations are promulgated by the Board of Health and issued by the Department of Public Health.

1. DEFINITIONS

In these regulations, the following definitions apply:

(a) Approved. Satisfactory compliance as determined and recorded by the Department of Public Health.

(b) Dwelling, Dwelling Unit, Rooming House, and Rooming Unit. A building or structure which is wholly or partly used or intended to be used for living, sleeping, or cooking, by human occupants.

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(c) Facility. Any building or structure and equipment therein.

(d) Lead Paint. Any pigmented, liquid substance applied to surfaces by brush, roller or spray in which the total non-volatile ingredients contain more than one per cent (1%) of lead, by weight, calculated as metallic lead.

(e) Premises. A lot, plot or parcel of land including all facilities thereon.

2. PROHIBITED USE OF LEAD PAINT

No person shall apply lead paint to toys, furniture or the interior surfaces of any dwelling, dwelling unit, rooming house, rooming unit or facility occupied or used by children. Such interior surfaces include but are not limited to window sills, window frames, doors, door frames, walls, ceilings; stair rails and spindles, or other appurtenances.

3. PROHIBITED HANDLING OF TOYS OR FURNITURE TO WHICH LEAD PAINT HAS BEEN APPLIED

No person shall sell, transfer or deliver toys or furniture to which lead paint has been applied.

4 LABELING OF LEAD PAINT

No person shall store, sell or transfer for retail purposes a lead paint unless the container used in retail trade bears a warning statement which shall be an integral part of the label and shall be placed in a conspicuous place on the immediate container of such paint and shall be printed in letters which are legible and in conspicuous contrast with other printing appearing on the container. The statement shall be in substantial conformance with state and federal laws and regulations and recommended standards of the Federal Hazardous Substances Labeling Act and shall further conform in wording and type style and size as follows or shall be an approved equivalent:

	(Type size & style)
WARNING !	(10 pt. caps)
CONTAINS LEAD. HARMFUL IF EATEN	(10 pt. caps)
Do not apply on toys, furniture, window sills or other interior surfaces of any dwelling or facility which may be occupied or used by children. Keep away from heat and open flame. Avoid prolonged contact with skin and breathing of vapor or spray mist. Close container after each use.	(10 pt. type)
Use with adequate ventilation.	(12 pt. type)
KEEP OUT OF THE REACH OF CHILDREN	(10 pt. caps)

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This warning statement shall also be required on accompanying literature including directions for use. Where tinting or coloring added to paint at the point of sale produces a final paint product with more than 1% lead, the labeling requirements of this section shall apply.

Labels on containers of lead paint manufactured prior to the effective date of this regulation shall be made to conform with the above labeling requirements by the application of a separate warning label which shall be affixed directly upon the existing label. Provided, however, that after one year from the effective date of these regulations the warning shall be an integral part of the label on the container.

5. REMOVAL OF LEAD PAINT

Where the Department determines that the presence of lead paint upon any premises creates a health hazard to children, it shall issue an order to the owner or occupant to eliminate the hazard. Lead paint shall be completely removed from any surface which can be chewed or eaten by children. Cracked, chipped, blistered or peeling lead paint shall be completely removed. *The lead paint ordered to be removed shall be completely removed to the base surface under such safety conditions as may be approved by the Department.* In lieu of removal of the lead paint, the accessible surface shall be covered with an approved durable material. *Repainting a surface with a non-leaded paint without the complete removal of the existing lead paint shall not be deemed to be satisfactory compliance with this section.*

The methods used for the removal of lead paint shall not present a hazard to health from fumes, dust or vapors by inhalation or absorption through the skin and mucous membranes and shall be in accordance with all applicable laws, ordinances, regulations and safety standards and practices of the City of Philadelphia, state and federal agencies.

* * * * *

Section 6-103 PENALTIES*

(1) In addition to any other sanction or remedial procedure provided, any person who shall violate any provision of this Title, any Regulation adopted under it, any order of the Department issued thereunder, or any condition of any license required thereunder and any person who knowingly participates in any such violation by any other person or who has reason to know that his participation will materially contribute to any such violation by another person, shall be subject to a fine of not less than $25. and not more than $150. for the first violation and not less than $50. and not more than $300. for the second and each subsequent violation together with imprisonment not exceeding 90 days if the fine and costs are not paid within 10 days. Continuous violation of the same provisions shall be a separate violation for each day.

NOTE: *The provisions of Section 6-103 apply to all violations of the Health Code. They are printed here, in part, for information only.

DUP050313479

COUNCIL OF THE CITY OF PHILADELPHIA
OFFICE OF THE CHIEF CLERK
ROOM 402, CITY HALL
PHILADELPHIA

CERTIFICATION: This is to certify that the following is a true and correct copy of the original Ordinance adopted by the Council of the City of Philadelphia and approved by the Mayor on March 11, 1966.

Nathan Wolfman

Chief Clerk of the Council

(Bill No. 1564)

Explanation:
Italics indicate new matter added to existing ordinance.

AN ORDINANCE

Amending Chapter 6-400 of The Philadelphia Code, relating to Miscellaneous Standards and Requirements, by adding a new section defining lead paint and prohibiting its use, and amending Section 7-205, relating to Safe and Sanitary Maintenance, by requiring the removal of lead paint in dwellings, under certain terms and conditions.

The Council of the City of Philadelphia hereby ordains:

SECTION 1. Chapter 6-400 of The Philadelphia Code, relating to Miscellaneous Standards and Requirements, is amended as follows:

APP. NO. 141-1

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DUP050313480

§6-403 Residential and Occupancy Hygiene

(1) Definition.

(a) Lead Paint. Any pigmented, liquid substance applied to surfaces by brush, roller or spray in which the total non-volatile ingredients contain more than one percent (1%) of lead, by weight, calculated as metallic lead.

(2) Prohibited Conduct.

(a) No person shall apply lead paint to toys, furniture or the interior surfaces of any dwelling, rooming house, dwelling unit, rooming unit or facility occupied or used by children.

(b) No persons shall sell, transfer or deliver toys or furniture to which lead paint has been applied.

(3) Labeling.

(a) Containers in which lead paint is stored, sold or transferred for retail purposes shall be labeled in accordance with regulations adopted by the Department.

(4) Hazardous Conditions.

(a) Where the Department determines that the presence of lead paint upon any premises creates a health hazard to children, it shall issue an order to the owner or occupant to eliminate the hazard in accordance with methods prescribed by regulations issued by the Department.

SECTION 2. Section 7-205 of The Philadelphia Code, relating to Safe and Sanitary Maintenance, is amended as follows:

(3) Lead Paint, as defined in Section 6-403(1)(a), shall not be permitted to remain on interior surfaces on any dwelling, rooming house, dwelling unit or rooming unit occupied by children when the Department of Health determines that its presence creates a health hazard.

Explanation:
Italics indicate new matter added to existing ordinance.

APP. NO. 141-2

DUP050313481

Mr. TYLER. The accident control section is charged with the responsibility of implementing the enforcement of the ordinance and regulations. Investigations are made in all reported cases of childhood lead poisoning, and in all instances where a child is reported to have an increased level of lead in his blood; which is indicative of possible exposure and absorption of lead by the child. In addition, whenever a child is found with pica or with symptoms suggestive of lead poisoning, the home environment is investigated for presence of lead paint. Orders for removal of the lead paint and enforcement actions are taken, in all of the above-noted situations where lead paint is found present.

Intensive public education on the dangers of lead poisoning is conducted by the Department, and referrals for medical evaluation are made whenever lead exposure in a child is suspected. This procedure has resulted in the handling of more than 600 cases in the first 6 months of 1970. Our current budget of $182,000 for this program is severely strained to maintain this level of activity, and admittedly is completely inadequate to cope with this major problem.

A comprehensive program to control childhood lead poisoning should include provision for mass screening of children, as well as environmental and abatement measures. In Philadelphia, it is estimated that $3 million is needed annually over a period of several years to control the problem in the so-called "lead belt" of the city, where some 70,000 preschool children are exposed to this hazard in approximately 200,000 dwellings. Beyond the 5-year period, a reduced level of expenditure would be necessary to control the problem in other areas as families move out of the inner city. With all of the urgent problems facing our cities today, it is unrealistic to assume that funds of the magnitude can be made available solely from the local tax dollar base.

For this reason, municipalities must look to Federal appropriations such as would be made available by H.R. 17260 for assistance in mounting comprehensive programs to control childhood lead poisoning. It is respectfully recommended that provision also be made in Federal legislation to include funds for health screening of children exposed to the hazard of lead in their environment. If the problem in the city of Philadelphia provides any indication of the magnitude of the national problem, it is obvious that the proposed appropriation of $13,500,000 annually for this program would be insufficient to mount a crash nationwide preventive program.

The interest and demands by citizen groups for major preventive programs to eliminate this problem have been phenomenal. In Philadelphia, a coalition of citizen groups has been organized to maintain and stimulate political, professional, and citizen interest. On behalf of the city of Philadelphia, I urge that the Congress move swiftly to pass H.R. 17260 in order that major program efforts can be mounted on a national basis to combat this insidious silent epidemic which afflicts so many helpless infants and children in our cities, and may irreversibly affect their future potential.

I thank you for the privilege of appearing before you today and would be pleased to provide you with such additional information on our Philadelphia program as the committee may desire.

Mr. BARRETT. Thank you, Mr. Tyler.

DUP050313482

Now we are going to hear from Dr. Guinee, and we will probably want to ask each of you a question or two after you give your testimony.

Doctor, if you are prepared now, you may give your testimony in full, and at the end we will probably want to ask you one or two questions.

STATEMENT OF VINCENT F. GUINEE, M.D., M.P.H., DIRECTOR, BUREAU OF LEAD POISONING CONTROL, DEPARTMENT OF HEALTH, NEW YORK CITY HEALTH SERVICES ADMINISTRATION

Dr. GUINEE. Thank you, Mr. Chairman.

I am Dr. Vincent F. Guinee, director of the New York City Health Department's Bureau of Lead Poisoning Control. I would like to describe to the committee the problem of lead paint poisoning in New York City and the essential elements of our program.

Lead exposure is one of New York City's major pediatric problems. It is estimated that 450,000 apartment units in New York City are in such a state of disrepair that a child living in them will be exposed to the hazard of lead paint poisoning. Currently, approximately 120,000 children are living in these dwelling and it is estimated that 6,000 to 8,000 of these children have significant levels of lead in their blood. Almost all areas of New York City report some lead poisoning cases because any dwelling with lead painted interior surfaces can become a source of toxic lead. At the present time, we have high incidence areas in the south Bronx, north Manhattan, central Brooklyn, and the Rockaway section of Queens. These areas represent once fine neighborhoods where high-quality lead paint had been used extensively.

Health officials in New York City banned the use of high content lead paint on indoor surfaces in 1959. However, dangerous buildings containing toxic levels of lead were generally built before World War II. It is in such older buildings a young child gains access to paint which contains a high level of lead.

Deaths reported due to lead poisoning have dropped sharply over the past 10 years in New York City. There were 12 in 1959 and two in 1969. At the same time, the number of lead poisoning cases reported to the health department has increased over the last 10 years from 171 in 1959 to 727 in 1969. In the first 6 months of this year, 801 cases were discovered. By our current definition any child with .06 milligrams percent of lead in his blood is considered to be a "case." This value is accepted as a significantly abnormal level of lead in the blood. These children as a rule do not have symptoms, but this level of lead in the blood does indicate two things: First, that the child has access to lead in his environment, and, second, that the child is taking the lead into his system, probably by eating. This level of blood lead, therefore, signals a potentially harmful situation.

Current knowledge on lead poisoning leaves much to be desired. The minimal level of chronic lead exposure which can cause damage to a child's nervous system is not known. The .06 milligrams percent level represents a borderline beyond which danger may lie. When a child with .06 milligrams percent is located, it is important that he be brought under medical supervision and his surroundings carefully examined for lead-containing substances which could on further ingestion cause a toxic level to occur.

DUP050313483

LEAD POISONING CONTROL PROGRAM

In January 1970, in order to mount a more forceful and coordinated attack on the lead poisoning problem, the New York City Health Department created a new bureau, the bureau of lead poisoning control. The bureau was supported by startup funds received in March of this year and $2.4 million for fiscal 1970–71, starting in July. The focus of our approach is the child. We fully realize that the basic problem of lead poisoning is substandard housing. However, our first action should be to identify the child in danger of lead poisoning today, whose home should be first-in-line for repair. The aims of this bureau are to seek out children with significant lead exposure so that they might be brought to medical attention and that their home environment be detoxified. Our overall approach includes—

(1) A community outreach program to encourage and facilitate widespread community participation in the screening program;

(2) A health education program aimed not only at the families of affected children but also at the community at large to bring the lead poisoning problem to their attention; and

(3) A system for data gathering and evaluation.

When a child in New York City is found to have a lead level of 0.06 milligrams percent or greater in his blood, the health department immediately notifies the agency or physician submitting the specimen. A health department nurse and sanitarian visit the child's home. The nurse discusses the situation with the family and helps them plan for medical care. The sanitarian takes samples of paint and plaster from the apartment to determine sources of lead available to the child. If the laboratory finds any paint samples with more than 1 percent lead content, the owner is ordered by the health commissioner to correct the condition within 5 days. At present about one landlord in four corrects the violations. If the owner fails to comply, the emergency repair program of the city's housing and development administration is requested to send a repair team to do the work. When the work is done, the owner is billed.

All hospitals in New York City have been called upon to screen young children who may have been exposed to deteriorating housing. Ninety-five permanent facilities for testing are currently in operation, in addition to mobile units and special door-to-door neighborhood programs.

So far during 1970 we have performed approximately 30,000 blood tests. In contrast, during all of 1969, 10,000 blood samples were examined. In January of this year, we were screening approximately 175 blood tests a week. During the last several weeks we tested roughly 2,000 children per week. This increase in the number of children tested has resulted in many more cases being uncovered. For example, in June 1969, 84 cases of lead poisoning were reported to the New York City Health Department. During the month of June 1970, 326 cases were discovered. More cases have been found in areas which we knew were high-risk residential neighborhoods. But we also found new neighborhoods that had not previously been considered to be part of the "lead belt."

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Citywide, we have found about 3 percent of children tested have a level of 0.06 milligrams percent or higher. There are some neighborhoods which have been consistently finding 5 percent of their children affected, such as the Fort Greene section of Brooklyn. In one of our neighborhood outreach programs in the south Bronx, 10 percent of the children (40 of 435) were found to have significantly evaluated levels. These children with elevated blood levels may or may not be admitted to a hospital, depending on the evaluation of the physician who sees them. Our experience thus far shows that about 40 percent have been admitted to a hospital where they may remain from 1 to 4 weeks.

When apartments of children with elevated blood lead levels are inspected, 11 percent are found to be without evident deterioration—without apparent exposure sites. Of the remaining apartments, where paint samples are taken 57.5 percent have had some high lead content paint identified. The reason for this rather low yield is not clear. We do know that in some instances the child is exposed in another household where he may be with a relative or a babysitter for part of the day.

We hope that the use of new lead-detecting equipment which we are now field testing will shed more light on the situation.

BUREAU BUDGET

The Bureau of Lead Poisoning Control and the emergency repair program have separate budgets. The 1970–71 budget of the Bureau of Lead Poisoning Control is $2.4 million. It is based on a projection of 100,000 children tested, 2,500 of whom are found "positive." It may be divided into three distinct functions—

1. Finding and testing children for elevated levels of blood lead.
2. Testing dwelling units for "leaded" surfaces.
3. Case followup and program administration.

FINDING AND TESTING CHILDREN

(*a*) Forty-five community health workers are responsible for locating individual children exposed to lead poisoning and bringing them in for testing. The cost in this program, $290,750.

(*b*) 21,000 part-time clinician hours and 100,000 part-time clerk and aide hours are provided for drawing blood samples and doing the required ancillary work. The cost of this portion of the program, $615,300.

(*c*) In the department of health laboratories, 44 employees analyze blood and paint samples. The cost of this is $334,150.

The total cost of finding and testing children is $1,240,200, or $12.40 per child tested.

TESTING DWELLING UNITS FOR "LEADED" SURFACES

In the inspection unit, 77 individuals, including 24 teams, composed of a sanitary inspector and a community liaison trainee, are responsible for investigating the home and secondary environments of all cases. This unit reinspects apartments after the 5-day period allowed

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the owner to correct the violation, orders the emergency repair program to do the repairs if the landlord has not complied; and performs reinspections checking the quality of work in apartments where owners have complied.

The total cost of testing dwelling units for "leaded" surfaces, $579,050, or $231 per case.

CASE FOLLOWUP AND PROGRAM ADMINISTRATION

Central administration and surveillance of all tests and cases, computerized recordkeeping, research, epidemiology, and program direction reside in a 44-man central bureau staff.

The total cost of case surveillance and administration, $651,333 or $6.51 per child tested.

EMERGENCY REPAIR PROGRAM BUDGET

At this time the emergency repair program budget for lead poisoning is only partially approved. The cost of this portion of the program is, of course, directly related to the amount of lead found in each apartment. We are currently finding fewer "leaded" surfaces than we believe are actually present in the units we inspect. An average of 15 paint samples are taken from each dwelling unit. Fifteen percent of the surfaces tested are positive, in other words, contain greater than 1 percent lead. Of apartments tested 57.5 percent of apartments require repairs.

It is now costing an average of $150 per apartment to repair the leaded surfaces we find. In most cases walls are covered with wallboard from floor to ceiling. The letter which is sent to landlords details acceptable methods of correction. And this is attached to the testimony submitted.

Under the auspices of the Department's Health Research Council, scientists at New York University have recently developed an X-ray fluorescence analyzer to detect lead in apartment surfaces. This instrument is currently being calibrated and field tested by the department of health. Preliminary reports of a prototype of this machine indicate that 48 of the 51 apartments tested had significant amounts of lead, on an average of two surfaces per room in each apartment. It is expected that repair costs will increase to $1,263 per apartment if the X-ray fluorescence analyzer detects as much lead as preliminary reports would indicate.

Anticipated cost of "deleading" an apartment includes direct labor of one crew chief and three repair aides per crew for 5 days, $476; materials, sheetrock, tape, doors, trim, paint, and hardware, $531; other supplies and equipment, $115; overhead, ancillary and supervisory staff, $141.

So the total cost of "deleading" an apartment with this new equipment, a lead-detection beam used, is $1,263 per apartment. Based on this estimate, a program which uncovers 2,500 new lead poisoning cases a year would cost in the range of $3,157,500 for apartment rehabilitation.

I have presented the New York City experience in considerable detail to afford this committee an opportunity to see the extent of the lead poisoning problem and the magnitude of the effort in both per-

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sonnel and financial resources necessary to attack it. I would add, our program is not without its day-to-day crises; these do not seem, however, to be worse than those experienced in any large-scale urban program.

We agree with the aims of this bill and would suggest only that more funds be made available for this purpose.

We support H.R. 17260. We urge that it be reported out of committee and be enacted by the Congress. At the same time, we would like to emphasize that this bill deals with one aspect of the lead paint poisoning situation, deteriorated housing. Its effectiveness will be enhanced if the complementary health bills (H.R. 9191, H.R. 17027, H.R. 17234, S. 3216 and S. 3941) now pending in House and Senate Committee are also enacted. These bills would provide for grants to local governments for educational programs; testing and followup programs; and penalties for the use of lead paint on interior surfaces of dwellings. A comprehensive program to eliminate lead paint poisoning must include both identification and treatment of affected children and correction of the environments which are dangerous to them.

Thank you.

I would like to submit for the record copies of our health code and several articles that appeared in New York newspapers explaining our program.

Mr. BARRETT. That may be done without objection, and is so ordered.

(Section 173.13 of the New York City Health Code relating to lead poisoning; a resolution dated January 15, 1970, of the New York City Board of Health amending such section; a copy of a violation notice of the New York City Health Code ordering landlords to remove lead paint which may be harmful to the occupants of a dwelling; "Lead Poison Worst Ever at 260 Cases," from the New York Times, May 12, 1970; "A Clinic Wars on Paint Peril," from the New York Post, May 15, 1970; and "10 Percent in Test Have Lead Poisoning," from the New York Post, June 19, 1970, follows:)

[Excerpt from the New York City Health Code: Section 173.13]

Section 173.13 Lead Paint

(a) No person shall possess, sell, hold for sale, give away or leave in any place a paint containing more than one percent of metallic lead, based upon total nonvolatile content of the paint, unless, in addition to the matter required by section 173.05, the labeling bears the following statement: "Contains lead. Harmful if eaten. Do not apply on toys, furniture or interior surfaces which might be chewed by children". This subsection does not apply to marine paints, roof cements and coatings, automotive finishes which are not sold at retail or to paints other than paints for toys, children's furniture or interior surfaces which might be chewed by children, which are sold, for purposes other than resale, to the City or State or Federal Government, or to a manufacturer, an industrial plant, a public utility or metal structural contractor.

(b) No person shall manufacture after the effective date of this Code, or sell or hold for sale after one year after the effective date of this Code, children's toys or children's furniture which have a paint containing more than one percent of metallic lead based on the total nonvolative content of the paint.

(c) After December 31, 1959, no person shall use a paint containing more than one percent of metallic lead based on the total non-volatile content of the paint, on the interior walls, ceilings or window sills of any apartment or room in any dwelling. As used in this section, dwelling means any building or structure or portion thereof which is occupied in whole or in part as the home, residence or sleeping place of one or more human beings.

Amended.—(d) When the Department finds that there is a paint containing more than one percent of metallic lead based on the non-volatile content of the

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paint on the interior walls, ceilings or window sills of any dwelling, it may order the removal of the paint, under such safety conditions as it may specify, and the refinishing of the apartment, room or part of a room with a suitable finish which is not in violation of subsection (c) of this section.

Notes: Subsection (a) is derived from S.C. § 230d(1) and (3). The provisions of S.C. § 230d(4) are deleted as no longer necessary and the requirement of S.C. § 230d(2) is found in section 173.05.(i) and therefore is not duplicated here.

Subsection (b) is new.

Subsection (c) is new. It is the most effective means of reducing deaths and injuries to children from lead poisoning since the vast majority of incidents result from ingestion of paint on fallen pieces of plaster and paint on window sills. The definition of dwelling is identical to the definition contained in Multiple Dwelling Law § 4(4).

Amended.—Subsection (d) is new. It is possible for the Commissioner to order removal of lead paint under section 131.01 of this Code, which pertains to removal of dangerous conditions, but the Commissioner would not then have the power to order repainting. Here the Board specifically declares lead paint to be a dangerous condition, which, under certain circumstances, the Commissioner can order removed.

THE CITY OF NEW YORK,
COMMISSIONER OF HEALTH,
New York, N.Y.

ORDER TO LANDLORD/AGENT

Whereas, it has been found that a person residing at the above dwelling unit has a blood-lead level of 0.06 milligrams % or higher, and

Whereas, as a result of an inspection conducted by this Department of such dwelling unit on ————, it was found that there was paint on the following interior surfaces of such dwelling unit which contained more than 1% of metallic lead based paint on the non-volatile content of the paint:

Those items listed below indicated by an asterisk (*) are applicable for violations on your premises; Now therefore,

In accordance with the provisions of Section 173.13(d) of the New York City Health Code, you are hereby ordered and directed to correct such conditions as follows:

1. All cracks, breaks and other openings in walls must be plastered smooth and continuous, and the walls must be free of loose, scaling or peeling paint.
2. The walls must be covered with wallboard from the floor to the ceiling, or,
3. The walls must be covered with wallboard to a height of four feet from the floor, and above the height of four feet to the ceiling the walls must be covered with fabric such as heavy-duty coated duck or canvas. The adhesive to be used must be resistant to water, mold and fungus.
4. There must be installed at the junctures of the wall and ceiling, wall and floor and wallboard and fabric, a suitable molding, properly installed to protect against loosening of the covering applied and to prevent insect and rodent harborage.
5. All cracks, breaks and other openings in ceilings must be plastered smooth and continuous, the ceilings must be free of loose, scaling or peeling paint, and the surface must be coated with a paint or other substance containing no more than 1% of metallic lead.
6. The window sills, frames, cabinets and other interior wooden and metal surfaces must be replaced by new material or the paint thereon must be removed to the wood or metal by one or more of the methods described below and must be coated with paint containing no more than 1% of metallic lead.
7. The doors must be replaced or the paint thereon must be removed to the wood or metal by one or more of the methods described below and must be coated with paint containing no more than 1% of metallic lead.
8. The door frames must be replaced by new material or the paint thereon must be removed to the wood or metal by one or more of the methods described below and must be coated with paint containing no more than 1% of metallic lead.

Unless you comply substantially with this Order within five (5) days after service hereof, the Department of Health shall request the Housing and Development Administration—Emergency Repair Program to execute this Order pursuant to the provisions of Administrative Code Section 564-20.0 and in order to

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collect the cost thereof, to, among other things, commence collection of rents directly from the tenants and place a prior lien against the property. In addition, failure to comply with this Order constitutes a Class A misdemeanor punishable as prescribed by the Penal Law.

NOTE.—If you perform the work in compliance with this Order, you are eligible for tax exemption and tax abatement in accordance with the provisions of Section J 51-2.5 of the Administrative Code of the City of New York. For the necessary forms contact the Housing and Development Administration, Room 9173, Division of Tax Exemption-Tax Abatement, Office of Rehabilitation Financing, 100 Gold Street, New York, N.Y. 10038.

MARY C. MCLAUGHLIN, M.D., M.P.H.,
Commissioner of Health.

PERMISSIBLE METHODS OF PAINT REMOVAL

There are three possible methods for the removal of paint from interior surfaces: (a) Use of solvents; (b) Burning or softening and scraping; (c) Sanding or wire brushing.

The use of solvents within an apartment or dwelling is not permitted unless the solvent is both non-flammable and its fumes are non-toxic.

Burning or softening by open flame within a dwelling are not permitted by Fire Department regulations.

Sanding or wirebrushing create a dispersion of finely divided lead dust. These operations must, therefore, be limited to vacant apartments with the operator using an effective respirator.

Window sills, baseboards, doors, window sashes may be removed to an outdoor location for paint removal.

NOTICE

During the course of the inspection on _____, the following conditions were also noted:

The Department of Rent and Housing Maintenance has been notified of the aforementioned conditions for such action as is deemed appropriate.

MARY C. MCLAUGHLIN, M.D., M.P.H.,
Commissioner of Health.

HEALTH SERVICES ADMINISTRATION

DEPARTMENT OF HEALTH

Resolution Adopted

SIR: At a meeting of the Board of Health of the Department of Health held January 15, 1970, the following resolution was adopted:

Resolved, that subsection (d) of section 173.13 of the New York City Health Code, as enacted by resolution adopted on the twenty-third day of March, nineteen hundred fifty-nine and filed with the city clerk on the twenty-fourth day of March, nineteen hundred fifty-nine, be and the same hereby is amended, to be printed together with explanatory notes, to read as follows:

(d) (1) When the Department finds that there is a paint containing more than one percent of metallic lead based on the non-volatile content of the paint on the interior walls, ceilings, doors, baseboards or window sills and frames of any dwelling, it may order the removal of the paint, under such safety conditions as it may specify, and the refinishing of such interior surfaces of the apartment, room or part of a room with a suitable finish which is not in violation of subsection (c) of this section, or the covering of such surfaces with such materials and by such methods as the Department may direct to protect the life and health of the occupants of such apartment or room.

(2) When the Department finds that there is a paint containing more than one percent of metallic lead based on the non-volatile content of the paint on the interior walls, ceilings, doors, baseboards or window sills and frames of any dwelling and further finds that the blood-lead level of any person residing in such dwelling is 0.06 milligrams percent or higher, it shall order the removal of the paint, under such safety conditions as it may specify, and the refinishing of such interior surfaces of the apartment, room or part of a room with a suitable finish which is not in violation of subsection (c) of this section, or the covering

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of such surfaces with such materials and by such methods as the Department may direct to protect the life and health of the occupants of such apartment or room. In the event that the owner or other person having the duty or liability to comply with such order fails to comply therewith within five (5) days after service thereof in accordance with the provisions of section 564–21.0 of the Administrative Code, the Department shall request the Housing Development Administration to execute such order pursuant to the provisions of section 564–20.0 of such Code.

Notes: Subsection (d) is new. It is possible for the Commissioner to order removal of lead paint under section 131.01 of this Code, which pertains to removal of dangerous conditions, but the Commissioner would not then have the power to order repainting. Here the Board specifically declares lead paint to be a dangerous condition, which, under certain circumstances, the Commissioner can order removed.

Subsection (d) was amended by resolution adopted on January 15, 1970 to authorize the Department to permit, as an alternate to removal of the lead paint from interior surfaces, the covering of such surfaces with materials and by methods prescribed by the Department. This will overcome the problems faced upnder the former provision occasioned by the hazards of existing paint removal methods. Such subsection was further amended to mandate the Department to order the removal of the lead paint or the covering of interior surfaces containing lead paint in those instances where a resident of the apartment is found to have a blood-lead level of 0.06 milligrams percent or higher, and when the person responsible for removal or covering of the lead paint fails to do so within five days after service of such order upon him, to request the Housing Development Administration to execute such order.

Resolved further, that this resolution shall take effect immediately.

I, Lorance Hockert, Secretary of the Board of Health of the Department of Health of the City of New York, do hereby certify that the foregoing is a true copy of Section 173.13 of the New York City Health Code, as amended, together with explanatory notes, effective immediately.

In testimony whereof, I have hereunto set my hand and affixed the seal of the Department of Health this 19th day of January, 1970.

LORANCE HOCKERT, *Secretary.*

[From the New York Times, May 12, 1970]

LEAD POISON WORST EVER AT 260 CASES

(By Lawrence K. Altman)

Physicians have reported 260 cases of lead poisoning in children to the New York City Health Department during the first four months of this year—more than for any other comparable period.

Health officials attribute the rise in reports to recent increased interest on the part of medical and community leaders in this old medical-social problem. This interest led to a release of city funds allowing the Health Department to test more blood specimens for lead, thereby detecting earlier this preventable disease of the home environment.

Health officials suspect that the higher total represents just a small fraction of the lead-poisoning cases here.

8,000 CASES ESTIMATED

"Our calculations indicate that there are about 8,000 cases here," said Dr. Vincent F. Guinee, head of the city's lead-prevention program. In an interview, Dr. Guinee elaborated as follows on some of the statistics on cases of lead poisoning in recent years:

Ninety-three per cent of the lead poisonings occurred among children 1 to 4 years of age.

Although 86 per cent of the cases were among children from black and Spanish-speaking families, youngsters from these groups made up less than half the city's population for that age range.

The 727 cases in 1969 were the highest recorded in the city's history, but the two deaths were the fewest in the last decade. The most deaths from lead poisoning were the 19 in 1960.

None of the 1970 cases reported thus far were fatal.

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High rates among young children reflect the fact that they eat the lead paint peeling off the indoor walls of homes built before World War II. Though covered with newer layers, the original lead paint remains on walls in many older homes in poverty areas of New York and other American cities.

Since World War II, laws here and elsewhere in the country have prohibited the use of lead paint indoors.

EVEN THE WELL-FED DO IT

Studies have shown that half of even well-fed children eat things like paint, clay, plaster, dirt, matches, cigarette butts or crayons that are not food. Doctors call this little-understood phenomenon pica. In zoology, the pica is the genus containing the magpies, which are omnivorous.

Though pica usually begins about age 1 and disappears by age 5, the American Academy of Pediatrics says that "as many as 50 per cent of mothers of children with pica also have pica themselves."

Because the intestine can absorb only small amounts of lead at any one time, ingestion of tiny amounts of lead over a long time can be more dangerous than eating a larger amount once. Doctors suspect a child must eat lead chips for about three months before symptoms of plumbism—from the Latin for lead poisoning—develop.

Once absorbed, lead can affect almost every system of the body. Most of the heavy metal is stored in bones, and appears as opaque white lines at the end of the wrist and knee bones on X-rays of children with severe lead poisoning.

Because lead interferes with the body's manufacture of hemoglobin, the oxygen-carrying protein in red blood cells, large amounts of lead cause anemia, a deficiency of such cells. When doctors look through a microscope at stained speci- come blue, may lose his appetite for food, vomit, become less alert and more

Symptoms may appear insidiously or suddenly. The child, whose gums may become blue, may lose his appetite for food, vomit, become less alert and more irritable, have temper tantrums, or develop a clumsy, staggered walk. The child may complain of vague abdominal pains, which can become so severe that he doubles up from spasm of the bowel. This symptom, called "lead colic," has fooled doctors into unnecessary surgery such as appendectomies.

Lead can cause tiny hemorrhages in the brain leading to convulsions and coma. The metal may also interfere with functioning of nerves in the arm and leg, causing a paralysis called wrist or foot drop.

Doctors want to detect lead poisoning as early as possible to prevent, rather than treat, these symptoms. That is why the Health Department got an infusion of $1.2 million earlier this year to step up its lead-prevention program.

Action begins when the Health Department receives a report of a case of lead poisoning, either from a practicing physician or from a blood test performed at the department's laboratories.

The most reliable method, Dr. Guinee said, is a laboratory test performed by a process called atomic-absorption spectophotometry. The Health Department considers abnormal a blood lead level of 60 micrograms or higher. (A microgram is one-thousandth of a gram.)

Some doctors had hoped that the ALA (for delta amino levuonic acid) would be the easiest screening test for lead poisoning.

The ALA urine test, Dr. Guinee said, is unreliable. A Health Department study, supported by results of similar ones done in Chicago and Baltimore, found that the urine test falsely diagnosed lead poisoning in about 30 per cent of children without the disease and failed to detect about one-third of true lead-poisoning cases.

After receiving a report of a positive lead test, a Health Department representative takes samples of wall paint where the youngster lives.

If any of these samples is positive for lead, the Health Department orders the landlord to begin removing the lead source within five days. If the landlord fails to comply, as has happened about half the time, the city's Emergency Repair Program does the work and bills the landlord.

Dr. Guinee said the Health Department was detecting lead in about one-half of the homes of children suffering from lead poisoning. In the other half, Dr. Guinee said, sampling procedures may have missed the hidden lead paint, or the family may have failed to reveal other homes that the child visited. Mothers who work while on welfare are reticent to reveal this information despite the Health Department's guarantees of confidentiality.

Next month, the Health Department plans to begin using a portable model of a new lead-detecting machine that New York University's department of

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environmental medicine developed with funds from the city's Health Research Council. It is hoped that this device will enable an inspector to survey an entire housing unit without removing any paint chips and to increase the accuracy of detecting lead paint in homes.

[From the New York Post, May 15, 1970]

A Clinic Wars on Paint Peril

Juan was a two-and-a-half-year-old kid from East Harlem when his mother took him to the doctor because he was vomiting frequently.

The doctor said it was a virus. It wasn't. It was lead poisoning.

A short time later the boy went into convulsions. After that he died.

Jimmy lived in Bedford-Stuyvesant. He was three years old when he was taken to the doctor who said it was the boy's appendix.

It wasn't. It was lead poisoning. Jimmy is now mentally retarded.

The walls of the Washington Heights Community Health Center at 168th St. and Broadway are a grim "civil service" green.

The rooms and halls are cramped. Paint is wearing off the iron, waiting-room benches where young mothers sit with their restless, crying children.

The effect is depressing, but good things are happening here. The newest good thing is the city's lead poison screening clinic.

With this center and 80 others in all five boroughs, the city is trying to reach 120,000 children from ghetto areas. Of these children, an estimated 6000 to 8000 already have a "dangerous" amount of lead in their systems from chewing the flake paint and crumbling plaster of their tenement apartments.

If they are not reached in time, these children between the ages of one and four run the risk of suffering the same things that happened to Juan and Jimmy.

Lead poisoning is limited mainly to the poor, or in this case, their children.

Lead base paint has been banned for years, but in slum apartments, as successive layers of paint peel away, the lead paint underneath becomes a menace to any young child who can pick off the flakes and put them in his mouth.

"They only need small paint chips a couple of times a week over an extended period, to get poisoned," says Dr. Vincent F. Guinee, who is heading the city's anti-lead drive.

Until recently, Dr. Guinee's bureau operated on "hand-to-mouth" grants. But now he has received $2.2 million from the city and plans to move the program into high gear by the summer.

One of his first steps in promoting the program will be a new "pica-balloon" TV commercial, similar to the "rubella umbrella" he designed last year to combat German measles.

(Pica is the medical term for the habit of young children to put foreign objects in their mouths.)

Dr. Guinee said people wanting to take their children to a free testing center can call DI 9-2255 for the address of the nearest clinic.

Coupled with the information program, the city has a standard enforcement procedure whenever a child with a dangerous level of lead in his blood is found. An inspector is sent to the child's apartment to find the source of the poisoning.

If any paint containing more than one per cent lead is found, the landlord is given five days to remedy the situation. If he doesn't the city repairs it and bills the landlord.

"The big problem is baseboards, doors and anyplace elsewhere the high-gloss lead paint was likely to be used," said Guinee.

The program, he hopes, will show the public the "social cost" of neglecting the city's total environment.

"There are probably people dying out there from air pollution," he says, "but we can't pin it down. Here we can say that this child was poisoned by this paint, from this wall."

[From the New York Post, June 19, 1970]

Ten Percent in Test Have Lead Poisoning

Nearly 10 percent of the children tested in a crash program in the Bronx Saturday were found to have lead poisoning, the Hunts Point Community Corp. revealed today.

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The survey, conducted by the Health Dept. and Bronx-Lebanon Hospital in cooperation with the Community Corp., revealed that of 435 children tested in a four-block area, 40 had lead poisoning, usually caused by eating flakes of lead-based paints in old tenement buildings.

Eight of the cases were pronounced "extremely serious," and the children involved were immediately hospitalized. The youngsters ranged in age from 2 to 7.

The tests were conducted door to door by 15 teams of doctors and nurses recruited by the hospital and the Health Dept.

In making the results public, Mrs. Blanche Sanchez, health consultant to the Community Corp., said:

"We are demanding an immediate attack on the epidemic of lead poisoning in the Hunts Point area."

She called for more city funds to relocate the area's families to better apartments and to continue the testing throughout the summer season, when lead poisoning cases seem more common.

Mr. BARRETT. Doctor, I just wanted to say you have made a very fine presentation here this afternoon. It would indicate to me that New York is far ahead in this program already comparatively speaking.

I note that you have done this exemplary job with about 45 employees, and I was wondering if I could make a comparison with the Philadelphia level and ask Mr. Tyler, how many employees do you have in your department working on the same type program?

Mr. TYLER. In our field force we have the equivalent of two sanitarians——

Mr. BARRETT. What is that?

Mr. TYLER. In our field force——

Mr. BARRETT. Come in to the mike.

Mr. TYLER. The fellows who are making the investigations, it is the equivalent of two full-time sanitarians. In addition, there is the equivalent of two full-time sanitarians in administration in addition to myself and my assistant.

We also have a number of nursing personnel involved in this, in addition to our laboratory personnel.

Mr. BARRETT. How would you compare them on manpower with New York?

Mr. TYLER. I would say offhand it would be around 20 people.

Mr. BARRETT. Twenty.

Mr. TYLER. All together.

Mr. BARRETT. You are about 25 short then, aren't you?

Doctor, let me ask you this question.

Is the desire to ingest the lead paint poisoning through body chemistry or is it done because of nutritional deficiencies? What is the purpose that they go after it?

Dr. GUINEE. No one knows.

Mr. BARRETT. Would you say the main reason is starvation?

Dr. GUINEE. No one knows. There has been speculation of psychological possibilities. It may be on the basis of just an extension of the normal mouthing habit of all children which for some reason or other sticks on. It may have a nutritional basis. It is not determined at this time what causes the habit of pica.

Mr. BARRETT. It has been for years, that I always thought it was to soothe the gums of the children who were cutting teeth and the like. They would bite on these chewing levels not realizing that it was the taste, the attraction of the taste in the lead that caused them to do it.

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I am trying to differentiate between what really attracts them and why they do it, and there isn't any answer you have for that?

Dr. GUINEE. It was interesting, not too long ago the question came up of whether or not this could be an iron deficiency, and in looking into this the first reference that I had, that I was able to find on using iron in the treatment of pica was from the year 1968. So people have been looking at it for a while without coming up with solutions.

Mr. BARRETT. Doctor, one other point.

How would you compare New York with other cities in the work that you are doing and the number of affected children that you have found and treated over the period in which you inaugurated this program?

Dr. GUINEE. Well, I would say first that it is very difficult to compare one city's experience with another, because currently people are using local definition of what is called a "case." And because of this we may be talking about two categories of individuals: A child with 0.05 or 0.06 or 0.07 with or without symptoms.

I think one of the things that is important in our national approach to this problem is to come up with some figure, at least all cities will report by levels so we will be able to compare experiences.

I think the levels which we are finding in New York City screening vary widely. Three percent in poor areas probably would be reproduced in most areas. And the only other thing that I think is important is that people do screen rather widely because we do pick up cases in areas which previously did not have tests, or did not have cases because they were not looked for.

Mr. BARRETT. Well, that is fine. This brings me to the question that I want to put first to Mr. Tyler, because he is the chief of accident control.

What is your feeling toward the compulsory blood tests in the areas where it is badly needed?

Mr. TYLER. I would have no particular objection to a compulsory test. However, I believe that if we had the funds to conduct a massive screening and with using community health workers who are indigenous to the area and could communicate with the residents in this area, very well; I think we would have plenty of volunteers for blood tests. I think we could—we could hope to screen perhaps something like 45,000 children if we had the funds available to do it. This is what we proposed in a budget proposal to the city council.

Mr. BARRETT. In other words, yours is a money problem?

Mr. TYLER. That was basically our problem.

Our program for years has been environmental oriented in that we have been able to rather successfully get the point removed in the cases where we find the cases. Our problem has been money for, basically for screening. This has been the most difficult part.

Mr. BARRETT. But are you of the opinion that they will come in voluntarily?

Mr. TYLER. I don't believe that they will come in, but I believe if you take the program out to them that we could——

Mr. BARRETT. Sort of mobile type?

Mr. TYLER. Either mobile type or if we can come up with a test where—and this is what we are exploring right now—a very small amount of blood would be required, something you could get with

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sticking a finger or ear lobe so that we could, say, take a medical technician in the home to take the blood sample right within the home. This is what we are thinking of.

Mr. BARRETT. I was going to ask Dr. Guinee that.

What is the time element between the blood test and your findings?

Dr. GUINEE. The blood sample when it is delivered to the laboratory, we call the person who drew the blood the day that it is run. So it is run, let's say, in the morning. At 4 o'clock this afternoon we have somebody on the telephone calling the hospitals or the health centers telling them that a child is positive. And the nurse has been seeing the child's family within 48 hours of the time that we get notification from the lab.

Mr. BARRETT. Do you think this would be a possible method, to have a mobile unit to check, analyze, and label the lead percentage?

Dr. GUINEE. One of the real problems, the generic problem we have in the lead poisoning business that at least I have found is that people have been talking about a number of simple tests and they say, if you only could, why couldn't you do such and such?

And we are in a position where we have to deal with the technology of today. And we just do not have that. You know, it is out there and it looks good, but we do not have it yet. I am hoping that we will be able to come up, that someone will be able to come up with a simple blood test that might be done on the spot.

If this were the case, we would be able to screen a neighborhood in the neighborhood, or at least have people draw small amounts of blood that can be easily taken in a home. At the present time this technology is not available for large-scale use.

Mr. BARRETT. What amount of blood do you need for the test?

Dr. GUINEE. We need 5 cc.'s, 5 cubic centimeters. It's a small test tube. This is easily taken out of the arm of a young child. We have found that when people get used to it, it is easy enough to do.

Mr. BARRETT. Doctor, one question I would like to get clarified, if I may, and it can be done.

I am going to forgo this question. I think it would be controversial, and I will leave it go for another occasion.

Mr. Widnall.

Mr. WIDNALL. Thank you, Mr. Chairman.

I would like to compliment both witnesses on the good testimony they have given, and it is certainly enlightening for me as an individual Congressman to learn firsthand information as to what is going on in the lead-poisoning programs, what the experience has been, and what the prospects are for the future.

Frankly, until just a couple of weeks ago, I had no idea that this was as serious a problem as it is. I am thankful to Congressman Barrett for having forcibly brought this to the attention of the Congress, not only the people of Philadelphia but the entire Nation.

Would you say that part of this compulsive paint eating is the same as the compulsive action by many adults who I know who have no fingernails today and they have chewed all the skin off the end of their fingers? Some of these people hold doctorates. It is not a question of low income or anything like that. Nervousness? Is that the key to it, Doctor?

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Dr. GUINEE. That is an interesting one to speculate on. I don't know. But even for that matter cigarettes are a mouthing habit, and we certainly see that quite extensively.

Mr. WIDNALL. I am interested in looking at the hands of people who come in to see me, and every once in awhile I see someone who has nothing left, the fingernail and the skin is off. I have seen adults that do this who are not handicapped and are not slum dwellers. It has nothing to do with the ghettos. It is just something in the physical makeup, I suppose, that causes them to do some of this compulsive eating.

I think you are certainly on the right track, and it seems to me that New York has taken great strides already in trying to meet the challenge of this serious disease. I appreciate your testimony.

That is all.

Mr. BARRETT. Doctor, one final question. It is my understanding you have two schools of thought in the medical profession, whether .04 is a high level of lead poisoning or whether .05 would be the peril point.

What is your thought on this?

Dr. GUINEE. The level which potentially could cause damage with lead poisoning is not known. There is nothing to my knowledge in the literature that says that a child with .04, .05, .06, .07 will at some point in the future get into difficulty. So at the present time it is just not known.

Some people feel that .02 and .03 is considered normal and therefore everything above that must by definition be abnormal.

In looking at several thousand children that were tested last year in New York City, the curve of results, however, indicated that of a very large number of children tested, in the neighborhood of 50 percent had levels of .04 or above. And it would just seem to me to be unlikely that half of the children, that a large number of children tested would have this kind of level and that it would be abnormal.

The description of the curve really is a normal curve with a little skew to the right. It does not—the lab results on children of lead determinations—does not break up into two separate curves where you could say this one is normal, this one is abnormal. The people which we classify as abnormal just sort of gradually come into the normal curve, the picture of the normal curve.

I think there is one thing that is very interesting that we are going to find as we screen more widely. You remember, originally blood tests were done when a child came in with symptoms. Therefore, all of the children had symptoms. So they would say, well, a hundred percent of children at .07 have symptoms because symptoms brought them in.

However, when we start testing widely, we find that children with levels as high as .1 milligrams percent, or a hundred micrograms, children with levels as high as that and higher may not have symptoms. So that we are going to be learning as we go into this situation. The final answers are not in on this.

Mr. BARRETT. And I therefore take it that you think that .04 percent milligrams is the lesser of the two evils, and you are in the school which will not reach the highest peril point?

Dr. GUINEE. Well, I am in the school that believes that .06 milligrams percent is a good cutoff point, based on our experience in the last year and based on what is seen in the literature.

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Mr. BARRETT. Doctor, you are a very good witness, a very fine panel, and we are grateful for your coming. Thanks very much.

Dr. GUINEE. Thank you.

Mr. BARRETT. At this point I ask unanimous consent to insert in the record a statement from the Honorable Edward M. Kennedy, U.S. Senator from Massachusetts.

Without objection, it is so ordered.

All time has expired. The subcommittee will stand in recess until 10 a.m., tomorrow morning.

STATEMENT OF HON. EDWARD M. KENNEDY, U.S. SENATOR FROM THE STATE OF MASSACHUSETTS

Mr. Chairman, I am pleased to have this opportunity to express my concern about the problems of lead-based paint poisoning. As you know, there has recently been enthusiastic support for the elimination of this tragic disease throughout the Congress.

In the Senate, my colleague, Dick Schweiker has introduced a proposal that dovetails very neatly with the provisions of my own package of reforms.

Here in the House of Representatives, through the forward looking actions of Bill Ryan, there has been considerable interest in this problem along with a quest for increased knowledge about ways to rid communities of the lead menace.

And now with your actions here today, Mr. Chairman, I believe there will be even more impressive efforts made for legislative reforms to stop our children from suffering from lead poisoning.

My attention was first directed to this disease called plumbism by the medical profession—last fall when I cohosted a conference meeting here in the House of Representatives with Congressman Bill Ryan of New York. Mr. Ryan, as you know, has introduced a package of proposals designed to effectively eliminate the hazards of lead-based paint poisoning in children. In citing the need for legislation in this area, he emphasized the extent of the disease. Estimates of the number of children across the Nation who may be lead sick run as high as 400,000 per year. Yet, there are not nearly enough resources directed toward efforts to relieve the hazards of this debilitating sickness. Most cities that harbor our Nation's "lead belts" have not been able to attract enough help to stop lead poisoning in their communities.

Because this is a relatively little publicized hazard that mainly affects poor children it does not receive the kind of priority attention it deserves.

Bill Ryan saw the urgency for legislation to combat this silent epidemic. His package of reforms realistically meets the fundamental need that must be attacked in the fight to end this problem.

I too have been impressed with the demands for an end to this disease. Therefore, Mr. Chairman, my own proposals for legislation in this area were introduced in the Senate last December. I personally joined the battle against childhood lead intoxication. By stressing the need for education and awareness of the problem. Both in the general public and in the medical community. The problem of eliminating lead poisoning is aggravated not only by a lack of resources but also by the very insidious nature of the disease.

Children who are lead sick often show signs that could be caused by a number of maladies. Consequently, a frantic mother may be too confused or too upset to relate an accurate medical history when she rushes her child to a hospital physician, because the child vomits and has convulsions. At that point the proper care can be provided only after the correct diagnosis has been made. Unfortunately, though, too many physicians fail to suspect lead as the cause.

Last year in New York, after doctors looked at her daughter, one mother was told her child was OK. And they were sent home from a city hospital's emergency room. It turned out that they really didn't know what was wrong.

Six days later, the little girl died, because the tragic effects of lead intoxication had already progressed too far.

Mr. Chairman, we know how to stop lead poisoning. It is not one of those social or medical ills that require extensive study to search for a cause. It does not demand thorough and extended research projects to find a cure. Deaths like that little girl's in New York are almost criminal because she could have avoided

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lead intoxication if her home did not have peeling paint chips falling from the walls.

Under the provisions of H.R. 17260, that little girl's home would have been renovated to eliminate the lead poisoning hazard. With Federal funds authorized by that bill, there could have been an effective program to remove those exposed surfaces in her home covered with lead-based paints.

Lead poisoning is a kind of pollution, a man-made disease. It is part of the offal of modern society. It is a needless cause of mental retardation and death in young children. About 200 children die from lead every year. And 2-year-olds account for more than 50 percent of the deaths attributable to lead poisoning. But of those who receive treatment for this tragic disease, an overwhelming number survive. Though, in a sad, humane sort of way maybe those who die are the lucky ones. Nearly half of all children treated for plumbism are left mentally retarded. for the parents of these children, the end of treatment often means the beginning of a life filled with anguish, heartache and high medical costs.

The caretaking costs for one child who is forced to live out his life as a mental defective due to lead poisoning is more than $200,000. Yet, the physical hazards of this disease can be eliminated from a home for less than $1,000 for that child.

Children get poisoned by lead when they eat falling plaster and peeling paint. Pre-World War II houses are those most frequently found to be painted with lead-based pigments. Since 1940, lead has been replaced by titanium in interior paints. But many homes that are deteriorating now received coats of lead-based paints when they were built. Today, as that paint peels or falls, crawling children begin to eat it.

Dr. Sigfried Pueschel, a pediatrician at Children's Hospital Medical Center in Boston, says some children develop a craving for it. "You can't get them off it," says Dr. Pueschel—"It's sweet tasting and they like it." Another doctor calls their craving for these chips and flakes an "addiction."

Many parents are not aware of the dangers associated with the consequences of paint ingestion. Even when a mother knows her child is eating paint, in too many instances she doesn't know that this hazardous habit can weaken, sicken, and even kill her child. Its seems to me that an informed community can be a rational and effective deterrent to plumbism in children.

For that reason, I am particularly enthusiastic about the portion of H.R. 17260 that will encourage and support jobs for training, education, and distribution of information in lead-based paint elimination programs. Families that know about the danger of peeling paints will be more likely to report deteriorating housing conditions to the proper authorities. Those same families will see therapy and treatment for their children. Community education through publicity, public warnings, and screening programs to find victims of lead poisoning will help to insure an informed healthy public. Perhaps through informational broadcasts and by reporting the number of cases periodically, we may be able to alert families to the dangers of this menace.

In past years, when six or seven cases of polio were reported, alarms and frantic reactions spread wildly through our cities. But cases of lead poisoning are known to be concentrated in our big city slums at a rate 10 times greater than polio cases. Yet nobody notices lead-poisoning cases. Thus, a poorly informed public has become the cruelest and most ironic part of this social tragedy.

To prevent and eliminate this insidious disease we must launch a vigorous campaign to delead every high-risk home. Resurface the walls with wood or masonite panels, and cover ceilings with tile. Enforce housing and building codes to outlaw lead-based paints in new houses and in rehabilitated ones.

There is a critical need for programs that will permit local communities to take advantage of new treatment and detection techniques, to motivate parents, teachers health aides, and others to become more aware of the problem; and use available materials to remove lead painted surfaces from exposure.

Dr. Robert Kline of the Boston City Hospital pediatric staff in his many years of work with the young victims of high lead levels says, "When you don't have a solution to a problem it's tragic. When you do have the solution and don't do anything about it, it's criminal." I submit, Mr. Chairman, that we are under indictment to do something and to do it immediately. I am hopeful that the enlightening effects of these hearings along with other testimony over in the Senate will help make the attack against lead poisoning a success.

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Finally, Mr. Chairman, I wish to bring added attention to the need for adequate medical and therapeutic care for those victims of lead poisoning who up to now have received no attention because no one is aware they are sick.

In Baltimore, Cleveland, and Boston up to 10 percent of preschool slum children may be lead sick. Neighborhood screening programs can seek out these children. In 1968, a Boston search turned up 98 victims from more than 800 children screened. Investigators searching for lead victims know that when they look they will find them. And the more they look, the more they find.

In my own proposal to eliminate lead poisoning from our society, there are specific provisions to meet that crying need. Through community screening programs, every child who may be lead sick can be identified, Then, with the aid of current medical assistance, proper treatment and therapy will be available to help those victims. In cases that are not too severe lead intoxication can be completely cured with no after effects.

Doctors use chemicals called chelating agents, that find the lead and remove it from body tissue. Before chelation therapy was developed 66 percent of severe lead poisoning cases were fatal. With early detection and proper treatment, this figure has probably dropped to less than 5 percent.

Thus, I am enthusiastic about the legislative thrust of those proposals in Congressman Ryan's package as well as those included in H.R. 17260. These bills do not endorse the usual call for study and comtemplation. Instead, they authorize a direct, forthright approach to the elimination of this debilitating hazard.

The principal obstacle we face will be instilling in the public's eye the urgency for immediate action. Landlords will squawk when they have to panel or strip their buildings. They'll say they can't afford it, and some of them won't be able to. Dr. Rene Dubos, who won a Pulitzer Prize for his book. "So Human an Animal" likens the elimination of lead poisoning in the slums to the pasteurization of milk. At one time, the dairy people insisted there was no way to market milk that was guaranteed not to give you tuberculosis. The public demanded, and it was done. Dr. Dubos says the same must be done with lead. He believes this problem is so well defined that it may provide an occasion to introduce a kind of social accounting. If we do not act in a ruthless manner on this limited problem then I believe that our society is intellectually and morally dishonest in talking about improving social conditions or improving our total environment.

If we, with all our technological means. are not willing to make the effort that would be demanded to get rid of lead poisoning then our society deserves all the disasters that will come to it.

Mr. Chairman, I wish to thank you and the members of the Committee on Banking and Currency for this opportunity to testify on a critical issue that affects so many young lives in our country. You properly deserve applause for the interest and concern expressed in your sponsorship of legislation to eliminate the hazards of lead-based paint poisoning. I have committed by efforts in the Senate to successful passage of the proposal that will also provide needed help in this area. Hopefully, the results that we all wish to see will be quickly enacted.

(Whereupon, at 3:25 p.m., the subcommittee recessed until 10 a.m., Thursday, July 23, 1970.)

DUP050313499

TO PROVIDE FEDERAL ASSISTANCE FOR ELIMINATING THE CAUSES OF LEAD-BASED PAINT POISONING

THURSDAY, JULY 23, 1970

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON HOUSING OF THE
COMMITTEE ON BANKING AND CURRENCY,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10:10 a.m., in room 2128, Rayburn House Office Building, Hon. William A. Barrett (chairman of the subcommittee) presiding.

Present: Representatives Barrett, Stephens, St Germain, and Dwyer.

Mr. BARRETT. The meeting will come to order, please.

This morning we have a panel of witnesses, Mr. William White, Executive Director, National Commission on Product Safety, accompanied by Michael R. Lemov, General Counsel; Dr. J. Julian Chisolm, Jr., assistant chief of pediatrics, Baltimore City Hospital, representing the American Public Health Association; Dr. Lawrence Finberg, professor of pediatrics, Montefiore Hospital and Medical Center of New York City, representing the American Society of Pediatrics; and Dr. Hazel Swann, and Mrs. Romana Parker, representing the District of Columbia Committee on Lead Poisoning.

Many of our committee members are at very important meetings this morning. They will be coming in possibly as we go through the testimony.

I think what we should do here this morning is give everyone a chance to read his statement starting with Mr. White, and go on in sequence.

Now, Mr. White, the policy of our committee is to make everybody feel at home. And we want the panel here to be completely relaxed. And if you have any tenseness at all, just leave it from whence you just came.

So Mr. White, we will start off with you and then go right on to Dr. Chisolm after you.

And if you are prepared, you may now begin.

STATEMENT OF WILLIAM V. WHITE, EXECUTIVE DIRECTOR, NATIONAL COMMISSION ON PRODUCT SAFETY; ACCOMPANIED BY MICHAEL R. LEMOV, GENERAL COUNSEL

Mr. WHITE. Thank you, Mr. Chairman.

We appreciate your cordial reception. My name is William V. White, Executive Director of the National Commission on Product Safety,

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and with me on my right is Mr. Michael Lemov, who is General Counsel for the Commission.

We are pleased to accept your invitation to testify with respect to H.R. 17260, H.R. 1254, and H.R. 14734 introduced by Mr. Ryan, the first being introduced by the chairman.

Last month the Commission, that is the National Commission on Product Safety, submitted its final report to the Congress and to the President, as we were directed to do by Public Law 91–46.

In that report we listed 16 categories of consumer products which included unreasonably hazardous makes or models. In addition, we were forced to include a section called unfinished business, which described some hazardous products which we did not have time to investigate thoroughly—either in terms of the scope of the problem or potential remedies.

In that section we said, and it is a very brief excerpt which I will read:

> Lead paint remains responsible for more than 100 deaths and substantial mental retardation every year among children who eat flakes of paint in old buildings. New York City alone reported 642 cases of lead poisoning in children for 1967. Over a 10-year period, Chicago officials testified there were 2,815 reported cases of lead poisoning with 163 deaths. Although a voluntary standard limits the lead content of indoor paint to one percent by weight of the solids, there is no requirement, except in New York City, Baltimore, and the State of Connecticut, that the label on new paint cans state the lead content. No means short of reconstruction or design of a chemical wall covering will eliminate the lead paint hazard in older homes.

That was the excerpt from our report that we labeled "unfinished business," that needed more attention.

Now, we are here today on behalf of the Commission to testify about part of that unfinished business—the preventable hazard to children caused by poisoning from paint which contains lead. Other witnesses have told you about the tragic toll of death and disability which is caused by lead poisoning as well as methods of detection and treatment. And I am sure you will hear more of that this morning.

We will limit our testimony to two areas: First, the dangers presented by lead-based paint which is still being sold in interstate commerce with inadequate warnings and relatively high lead content, and second, the feasibility of measures to eliminate the hazard presented by paint in older buildings which have a high level of lead.

Mr. Chairman, I would like to note it has been said that a fundamental danger to our health and survival in the 20th century is our delay in developing social and political mechanisms to protect us from the dangerous byproducts of our technological advances. I may suggest that if there had been an effective Federal product safety program 40 years ago, when lead-based paints were commonly sold for interior use, it is unlikely that we would be sitting here today.

Much has been written about lead poisoning of children who eat old, peeling paint in substandard housing. It is claimed the problem is a historical one and that it no longer exists in paints currently sold. We do not fully agree. There is still lead-based paint being sold. The result may be ingestion by children.

The "historical" danger of paint now on old buildings is not the full extent of the problem. Dr. Julian Chisolm, who is on my left and will testify this morning. In testimony before the subcommittee on Housing and Urban Affairs of the Senate Banking and Currency Commit-

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tee Dr. Chisolm recently said that the ingestion of even a few tiny fingernail-sized chips of paint containing lead may exceed moderately severe types of industrial exposure to lead poisoning. Now, while "pica," the ingestion of nonfood substances, has sometimes been described as if it were an exclusive phenomenon of poor children, most infants go through a stage of biting and chewing almost anything within the range of their inquisitive mouths. It is understandable that physicians concerned with public health who are aware of this problem will observe it in children who are brought to public health facilities for treatment. But this does not mean that children from other economic areas are immune from the danger. The nonspecific symptoms of lead poisoning may just as well be exhibited by the suburban child who chews furniture or toys painted as suggested by the label on this can.

This is a can of paint that we will discuss in greater detail later which shows a triangle as one of those things to be painted by the can. And we will describe the lead content in this can in just a moment.

Now, as Dr. Chisolm testified, by the time the clinical diagnosis is obvious, permanent brain damage which cannot be modified by therapy may already have taken place.

The extent of the danger to children who do not live in deteriorating housing cannot be estimated, but we believe the potential for poisoning from paint now being sold does exist, and we cannot completely ignore that danger.

I would like now for Mr. Lemov, our General Counsel, to discuss with the committee the seven samples of paint which were purchased in the Washington area, and point out the potential hazard that they present.

Mr. Lemov.

Mr. LEMOV. Mr. Chairman, last week using Commission investigators we did a very brief marketing survey of the Washington metropolitan area, visited some 20 or 30 stores and purchased a variety of paint samples.

We did not spend more than a day or two on this survey. We then requested the National Bureau of Standards to test the paints for lead content.

We were of the opinion that the generally accepted idea that there is no more lead-based paint being sold in a manner which might result in use in interiors of homes and on furniture is probably incorrect. I now would like to read to you the results of the lead testing by brand name.

I might point out, as the chairman of course is familiar, the voluntary American industry standard for lead for interior use in paint is 1 percent by weight. In England it is interesting to note that the standard for lead in paint for children's toys has been reduced by 0.5 percent or one-half of the American standard.

So, with those two base lines, I now would like to indicate what we have here.

This is a can of Wizard homestead spray paint, baby blue enamel. The National Bureau of Standards test indicated 0.08 percent of lead by weight.

That is fairly low in lead content, Mr. Chairman. Although in view of the absence of medical evidence on just how much ingestion of

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lead-based paint, over what period of time will result in injury, we cannot say with absolute certainty that there is no hazard. But that sample is fairly low. Some of the others will be substantially higher.

The second exhibit which we would like to display to the committee is a can of Wizard automobile enamel spray, Bermuda green. The Bureau of Standards test indicated the percent of lead by weight is 3.82 percent. That is almost four times the American voluntary industry standard, and it is almost eight times the British standard for use on toys in that country. And I would point out on the label of this can there is a tricycle suggesting to the consumer, that it might be used to paint a tricycle. There is also a picture of a trailer, again suggesting possible use in a home environment.

Mr. BARRETT. May I just interpose here. One of those is used for external purposes and the other could be used for interior purposes, such as spraying cribs, chairs, toys, et cetera.

The automobile paint would be more hazardous than the one used for toys and children's needs. Should that not be labeled—let me put it that way, not to be used for cribs and child's toys because of the poisonous content? I am not speaking of the automobile paint. I think this is much on the order of the use of red lead paint for structural work and the like. The chances of a child chewing it would be certainly less than the chances of a child chewing on toys in cribs with the first can you pointed to.

Mr. LEMOV. Well, the first can is quite low in lead. It has less than one-tenth of 1 percent by weight. And there is a label on here indicating, on the back in the middle of a paragraph, that it should not be used on interior surfaces. We don't think the label is prominent enough; we don't think it adequately warns the parent of the real hazard, namely poisoning. That is what it should say, poisoning by lead ingestion. So we agree, sir, that the labeling should be more effective. But even on the automobile enamel, we found in our investigation over the last 2 years that what was intended by the manufacturer isn't always what is done by the consumer. It might say automobile enamel, but it is packaged in a little spray can. It is very handy. And the picture on the front shows a tricycle. It is very easy to go from a tricycle to a crib to some other toy. And we think that in view of the state of the art; namely, that in most cases there doesn't have to be any lead pigment at all in paints, the situation could be improved even with respect to the automobile enamel.

Mr. BARRETT. The reason I pointed out the interior and the exterior use of this was that if they are talking about a nationwide law on it, then you may get a conflict from those who use lead paint for rust prevention and corrosion, and the automobile paint—on the bike, the child could bite on it but not as frequently as she would bite on her crib. I am of the opinion that we ought to have a national law on the use of lead paint for interior purposes, and this would take outside users away from fighting the bill.

Mr. LEMOV. We found in looking at this——

Mr. BARRETT. Let me just make one point.

Mr. LEMOV. Excuse me.

Mr. BARRETT. There may be something added to your outside use, that this should be used only by the use of a mask. This might be a warning also on this can. But I agree with you there ought to be

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guidelines on the can telling the people, particularly the mothers and fathers, how this should be used because of its possible poisoning of their children.

Go ahead.

Mr. LEMOV. To continue with the list of paints, the third exhibit is Glidden's Spred Gloss 999 Metal Primer, and the test indicated that it had .46-percent lead by weight, a little less than a half of 1 percent almost the same as the English standard. And, of course this particular can of paint is primarily for metal, but does say as follows on the label: "Use on windowframes, casings, iron fences, railings, bikes, mowers, playground equipment, patio furniture." It is a primer but nonetheless suggested for use on interior structures or exterior structures which might be reached by children.

The fourth example is Glidden's Spred Gloss All-Purpose Enamel, Tulip Yellow. The test indicated the percent of lead is 0.57 percent, in excess of one half of 1 percent by weight, in excess of the British standard.

This particular can of Tulip Yellow paint shows a chair, a cabinet, a bicycle, and a lawn mower on the front. And the back of the can has the following inscription on the label: "Formulated without lead pigment. Suitable for toys and children's furniture. Prevents rust," a use the chairman noted.

The fifth example is DuPont Spray Paint, Hunter Green 2434C. The test indicated this has a lead content of 9.64 percent by weight. We point out that this does have a rather good warning label on the back. It is at the bottom of the back of the can. I will read it for the record if the chairman would like. It says:

> Keep from children. Contains lead. Harmful if swallowed. Do not apply on toys, furniture or other surfaces which might be chewed by children or for interior surfaces of rooms which may be used by children.

But nonetheless the lead content is so high and the likely use of the can of this type of paint would suggest that if there is an alternative available, it should be considered.

Mr. BARRETT. You say that it is 9.4?

Mr. LEMOV. Nine point four. The sixth example is a tube of Tints All Paints Colorant, Yellow Ochre and the test indicated .09 percent of lead.

The final illustration is DuPont Lucite Spray Paint, Bronze Green 2142C. The test indicated .04 percent of lead. And this has the same warning label as the previous DuPont example.

Mr. Chairman, may I point out the paint samples which we had tested for us were tested by the atomic absorbence method. They were tested for us by the National Bureau of Standards. We would like to thank the Bureau of Standards for its assistance to the National Commission on Product Safety in running these tests on rather short notice. Particularly, we would like to thank Dr. Paul Cambell, the scientist at the National Bureau of Standards who supervised these tests. He is one of our country's leading experts in this field. The Bureau advises that the results of the tests are preliminary and they are verifying them further. If there are any changes in the percentages, we will notify the committee.

Mr. White will now continue, Mr. Chairman.

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Mr. WHITE. Well, a basic proposition of product safety is that consumers should be adequately warned of dangers presented by products. Applying this to paints containing lead, the first requirement is that those consumers who purchase paint such as this should be made aware of what can happen to children if they ingest such paint. This warning should be clearly stated and prominently displayed, not hidden on the back of a can.

It is not sufficient simply to warn that paint containing lead should be kept out of the reach of children, as all paints should. And it is misleading to place a fine-print warning on the back of a container that the paint should not be used for children's toys while putting pictures of children's toys on the front of the can—as in this case. The Federal Hazardous Substances Act already provides the authority to require a clear and prominent warning of the dangers presented by paint which contains lead. That authority should be used.

Competitive forces are such that it is simply not realistic to expect a paint manufacturer voluntarily to place a prominent warning on his product which may discourage a consumer from buying his paint. The consumer may select another can of paint on which a less scrupulous businessman has neglected to place such a warning. And it is not sufficient to label paint as merely being suitable for exterior use, but unsuitable for interior use, without a clear description of the hazards posed by lead pigments or dryers. The unstated assumption that children are indoor creatures does not stand the test of common experience, and a recent Chicago case illustrates that children are vulnerable to poisoning from outdoor paints. A landlord was held liable for the death of a child who had eaten paint flakes from the common stairways and from the back porch.

But adequate mandatory warnings on all paint containing lead is only an interim step. "Plumbism," the technical term for lead poisoning, is the result of an accumulation of lead in a small child's body. The present voluntary industry standard of 1 percent, American National Standard Z 66.1–1964, was formulated in 1955, when that was the practical limit in detecting lead content. But lower levels can now be detected by methods such as the atomic absorbence test and such lower levels of lead used for paint with no warning labels can also accumulate faster then than can be excreted by children. The rate at which a child can ingest lead is subject only to the vigilance of the person taking care of him, and the consequences can be fatal. The use of any lead at all (except for minute traces) can be controlled by the manufacturers within the existing state of the art. Substitutes for lead pigment are available. There are few technical advantages to using lead which cannot be foregone. The real solution to this problem is a mandatory Federal safety standard for paint which prohibits the use of lead, except for limited industrial uses where lead serves a significant purpose—such as rust inhibition, where the ingestion is unlikely.

Now, the second topic, and a shorter one, which we will address ourselves to is the means to alleviate the hazard presented by lead paint in old buildings. The hazard presented by old paint with high lead content will persist as long as such paint remains where it is accessible to inquisitive children. Several solutions to this problem have been used. All are basically either methods for complete removal

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of old paint or for covering painted surfaces with child-proof exterior coating. We are not here today to argue in favor of any particular method. Most of these methods are only technical proposals, and the cost of labor and materials are only rough estimates.

Drywall is often used as an interior covering. In other words, placing the drywall boards over the painted surfaces that contain lead.

At a housing rehabilitation project in Columbus, Ohio, the cost for installing unpainted drywall was 22 cents per square foot. But drywall does not cover windowsills and moldings, which are often painted with lead-based paint and are frequently chewed on by children. Also it must be recognized that in other communities, using skilled labor the cost of installing drywall might be substantially more. Perhaps the most novel approach is one developed by PPG Industries using urethane foam. This system has the advantage of fast application. Two men operating the foam machine can coat the interior of a six-story building in 6 days. Voids can be filled, and the foam will adhere to wooden surfaces on trim and mold.

A leading chemical and plastics manufacturer indicated that a vinyl laminate coating could probably be developed, which would seal the lead paint and would cost about 30 to 35 cents a square foot to apply. This would include surface coloring, and painting would not be necessary.

The alternative of completely removing old paint is somewhat expensive and time consuming. A pilot study by the Department of Housing and Urban Development indicated that it would cost $100 to remove the paint from 400 square feet. This estimate does not include repainting. The coating methods appear to offer the promise of more effective and less expensive remedial measures. However, more research is necessary before a final evaluation of the alternative methods can be made.

Other technical possibilities are illustrated in this letter from Cornell Aeronautical Laboratories, Inc., which I would like to offer for the record.

Mr. BARRETT. Without objection, that may be done.

Mr. WHITE. Thank you.

(The letter referred to follows:)

CORNELL AERONAUTICAL LABORATORY, INC.,
OF CORNELL UNIVERSITY,
Buffalo, N.Y., June 18, 1970.

MR. MICHAEL LEMOV,
General Counsel, National Commission on Product Safety,
Washington, D.C.

DEAR MIKE: As we discussed yesterday on the phone, I have a couple of suggestions for possible routes to a solution of the problem of lead paint in old buildings. The most straightforward of these is the use of an overcoating paint formulated especially for this purpose. The coating should be much more strongly cohesive than adhesive in order to provide a rubbery film barrier between the paint and the inquisitive mouths of children.

A likely starting point for the formulation of such a coating would be the strippable vinyl coatings currently in use for the protection of highly polished metal surfaces during manufacturing processes and shipping. These coatings consist of solutions of pigmented, plasticized vinyl resins which can be sprayed or brushed into place and which subsequently dry to leave a tough rubbery plastic coating intended to be peeled intact from the part at the conclusion of the manufacturing process. These coatings are neither complex to use nor unusually expensive. Most manufacturers of industrial finishing materials make or sell

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strippable coatings. I will attempt to get some specific manufacturer's literature on these items and forward it to you.

My second suggestion is the formulation of a coating of more normal, or more nearly normal, paint physical properties, but containing some substances likely to prevent or minimize the consumption or retention of a toxic dose of lead. The development of a coating of this type would obviously require fairly extensive research, some of the starting points would be as follows:

Paint containing an emetic: The organic emetics would probably not be sufficiently lasting for this application, therefore, the older inorganic types such as zinc or copper sulfate might be considered.

Paint containing a cathartic: A cathartic is the usual first-aid remedy for lead ingestion.

Paint containing a repulsive flavoring material: A number of substances suggest themselves here, for example, capsicum, the oleoresin from red pepper.

Paint containing a physiological aid to the excretion of lead: BAL (2, 3, -dimercapto 1, -propanol) is thought to aid in the excretion of lead as are several of the organic chelating agents.

Although several of these are attractive possibilities, a fair amount of research would be required before they could be recommended as both safe and effective. One complicating factor is the nature of toxic action of lead. The coating would have to provide enough of its active ingredient to secure the desired effect any time that enough of the substrate lead-containing paint was ingested to constitute a reasonable threat of chronic poisoning.

I hope these thoughts are of some use to you, if you would like any further expansion on any of them please give me a call.

Yours truly,

C. J. SCHNEIDER, Jr.,
Principal Engineer,
Systems Research Department.

Mr. WHITE. An active Federal program in this area with sufficient funding to support the necessary research should be able to determine which of these methods is most effective and economical, or to devise another method.

The estimated cost of alleviating the hazard presented by lead paint may seem high to some. But considering the cost of rehabilitating an old house in light of the cost of institutionalized care for a brain-damaged child should be sufficient to place housing rehabilitation cost in proper perspective. Dr. Chisolm testified in the Senate that in Baltimore removal of old lead paint from a row house cost is estimated between $250 and $300. We do not know how many children would be saved from lead poisoning by removing lead paint from one or several of these houses, but the estimated cost of institutional care of a brain-injured child for life exceeds $220,000. If the brain damage is less severe and only special schooling is required, the estimated cost to the community will be $17,000.

It is unfortunate that we should resort to dollars-and-cents comparisons such as these in determining whether to take action against an entirely preventable danger which threatens children. But dollars will be needed in order to eliminate this hazard once and for all. It is time for the community to bear some of the hidden costs of this hazard, rather than leaving them for the children to pay.

Mr. Chairman, we commend you, Mr. Ryan and other Representatives for introducing this legislation. We strongly support the enactment of H.R. 17260 or H.R. 13254, and H.R. 14734, and we believe also that H.R. 9119 providing for testing of children should be supported.

Thank you for allowing us to testify.

Mr. BARRETT. Thank you, Mr. White.

Dr. Finberg, we will let you decide whether you or Dr. Chisolm

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wants to go first. Make your choice, and if you are prepared you may begin. I would like to say, Mr. White, we will probably come back and ask one or two questions of you after the panel finishes giving their testimony.

STATEMENT OF DR. J. JULIAN CHISOLM, JR., ASSISTANT CHIEF OF PEDIATRICS, BALTIMORE CITY HOSPITAL, AND ASSOCIATE PROFESSOR OF PEDIATRICS, JOHNS HOPKINS MEDICAL SCHOOL, ON BEHALF OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Dr. CHISOLM. Mr. Chairman, I am Dr. J. Julian Chisolm, Jr., assistant chief of pediatrics at the Baltimore City Hospital and associate professor of pediatrics at the Johns Hopkins Medical School.

Mr. BARRETT. Doctor, may I ask you: Are you going to read your statement in full?

Dr. CHISOLM. No.

Mr. BARRETT. Then you may desire to put your full statement in the record?

Dr. CHISOLM. Yes.

Mr. BARRETT. That may be done, without objection.

Dr. CHISOLM. It is my privilege to be here today on behalf of the American Public Health Association to present testimony on legislation proposed to eliminate the causes of lead based paint poisoning. The American Public Health Association is a professional society organized 98 years ago with a membership of over 25,000, comprised of virtually all of the public health disciplines, physicians, nurses, engineers, dentists, nutritionists, health educators, health care administrators, and many others who devote their energies to the prevention of disease, disability and death. We are convinced that the prevention of disease and disability is not only a vastly more human approach to health care, but also that it is less costly. And it is within this general frame that the position of the APHA is propounded.

Contained in the written statement are two pertinent resolutions passed by the APHA at its meeting 1 year ago, one entitled, "Healthful Housing for the Poor," and a second, "Childhood Lead Poisoning." I will not read these in detail, but they are resolutions on this general subject of the APHA.

Your bill, Mr. Chairman, and others that are under consideration by this committee are aimed at a specific insidious disease which has on the one hand definable consequences which are totally preventable and unnecessary and on the other hand, is due to a single factor.

This single factor is quite clearly the presence of old paint applied 20 to 50 years ago when lead pigment paints were widely used, and this paint of course has never been removed. It is now chipping and flaking from dilapidated substandard housing.

In order to appreciate the massiveness of this type of exposure may I show you a picture of four chips of paint. These are each one about the size of one's thumbnail and they contain 254 milligrams of lead.

Now, we all eat a certain amount of lead in our normal daily diet, and we know that the safe daily intake of lead is less than one-half milligram per day. So that these four chips on a daily basis would represent close to 500 times the safe daily intake.

And we know further from studies of children that those who are severely poisoned often pass in their stool about 50 milligrams of lead

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per day. And this means that they are taking this much. So my point is this, that the ingestion of a few chips of this sort if continued over a period of at least 3 months and perhaps for 6 months can result in the accumulation of a potentially lethal body burden of lead.

And comparable studies in industry indicate that absorption of lead from this source is in many instances worse than some types of industrial exposure. And you may recall that in industry practically 50 years ago expensive control of exposure was introduced. Lead encephalopathy, which used to be seen in adults years ago, is now an exceedingly rare occurrence where good industrial hygiene is practiced. And it is not surprising.

Now, what are the consequences of lead poisoning, severe lead poisoning in young children? As you know, it can cause acute swelling of the brain. The term that we apply to this is acute lead encephalopathy. This may result in permanent brain damage in the form of a convulsive disorder, epilepsy, if you will, mental retardation, learning diffculties, and sometimes aggressive and rather severe behavior disturbances. At the very worst some of these children may become institutional candidates.

There are at present in the Maryland State institution called Rosewood for the Mentally Retarded Children at public expense 15 children who are there as a result of lead encephalopathy. A far greater number are in special schools for the retarded, again at increased public expense.

In a study that I recently completed we followed 38 children who had lead encephalopathy. We found that 16 of these were permanently brain damaged. Only two of this group are at Rosewood at the present time, but the others either never attended schools or they had to go to schools for the retarded.

The general figure of permanent brain damage from various reports in the medical literature is that the minimum is about 25 percent, and a more reasonable figure I think would be about 40 percent of those who have had lead encephalopathy.

I would point out further that the permanent brain damage is often not apparent until several years after the child has had acute lead encephalopathy.

What at the present time can medical treatment accomplish? Well, we can increase survival rates. The mortality from lead encephalopathy has during the past 5 to 10 years been reduced from about 35 percent to 2 percent. It is now, however, clear though that although we have increased survival, we cannot reverse with medical treatment any prior permanent brain damage. Indeed, again returning to my own personal experience, I am currently following 10 children who have gotten lead encephalopathy in Baltimore during the past 3 years. Five of these children are permanently brain damaged. One has just been recently institutionalized, and it is probable that one or two more may eventually come to this point.

Now, the problem I think relates to an emotional habit and we have no medical means of quickly stopping it. If we could quickly stop this habit, we might be able to control this entirely by medical means, but we cannot effectively stop it. So it is not surprising that medical treatment will not prevent recurrences of poisoning if the child after brief hospitalization is returned to this same environment where he became poisoned in the first place.

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In a review of some cases now about 15 years old in Baltimore, I reviewed the cases of 14 children who had been returned, treated briefly and returned to their homes. All 14 of these were severely brain damaged, and we could say then that returning a child to the exposure where he originally was poisoned virtually increases his chances of being injured to virtually 100 percent. So that even with early diagnosis we can say that medical therapy is not totally effective unless the exposure is eliminated.

I might point out further that current medical expenses are often unnecessarily high because we retain the children in the hospital waiting for safe housing for them, when in actual fact they could be treated much more briefly. It just seems to me that a better use of our limited resources would be to make a greater effort to eliminate the source.

As to the cause of the disorder, no one really knows. There are prospective studies that indicate that 10 to 25 percent of children in slum housing do have an increased content of lead in their bodies and that perhaps 2 to 5 percent may have some evidence of poisoning.

It is of interest to note that in Chicago the incidence of increased body lead content has been successfully reduced over the last 3 years through a screening program. With respect to houses there was a survey done in Baltimore approximately 10 years ago in three census tracts containing very poor housing. The figures were—they looked for chipping paint accessible to young children, areas accessible to young children; one tract was 52 percent, another 67 percent and in a third, 70 percent.

Now, I think that the association between lead poisoning in children in old and dilapidated housing is well recognized. Because of the enormity of this housing problem, it is unrealistic to anticipate a direct attack on a health problem through any immediate crash program to eliminate such housing. Rather, it is recommended for a long-term approach that the hazard presented to children by flaking lead paint be given very high priority along with other hazards to health and welfare when plans, large-scale plans for renewal, removal, rehabilitation or maintenance of substandard housing are developed. For the immediate future there is a much smaller problem but more urgent one; namely, the removal of flaking lead pigment paints from housing where actual cases of undue absorption of lead or lead poisoning in children is found.

It is the view of the APHA that the provisions of H.R. 17260 are in complete concert with the APHA's position. Although the APHA does not refer to a necessary percentage of Federal support we are mindful of the fact that the areas of greatest concern are grossly, if not totally, lacking in financial resources. We would subscribe to the proposed 75 percent Federal portion.

The APHA certainly concurs with the proposed requirement contained in section 4, page 3, beginning in line 19 that no workable program for community improvement should be approved without inclusion of a provision for elimination of lead-based paint poisoning in children. We support the provisions of the bill with one proviso, and we make this despite a lack of expert knowledge or accurate information. Federal appropriations for each of fiscal years 1971 and 1972 would be $13.5 million. Whether or not this amount will be sufficient we are simply not in a position to say. But we believe it only fair to

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caution the committee that we are dealing with a very expensive procedure—the elimination of the cause of lead-based poisoning. One simply cannot paint or paper over the old paint because this does not insure safety. Remedial procedures are expensive and a fair Federal share may be more than the amounts contained in the bill. To begin with, however, we certainly subscribe to these amounts.

The APHA appreciates this opportunity to present its views on legislation dealing with this important health problem, and we urge favorable consideration of the legislation.

I want to thank you very much.

Mr. BARRETT. Thank you, Doctor.

(The prepared statement of Dr. Chisolm on behalf of the American Public Health Association follows:)

PREPARED STATEMENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION PRESENTED BY J. JULIAN CHISOLM, JR., M.D.

Mr. Chairman and members of the committee, it is my privilege to appear before this Committee on behalf of the American Public Health Association to present testimony on legislation proposed to eliminate the cause of lead-based paint poisoning. May I briefly identify the organization I represent, the APHA. We are a professional society, organized 98 years ago with a membership of over 25,000 comprised of virtually all of the public health disciplines, physicians such as I, engineers, dentists, nurses, nutritionists, health educators, health care administrators and many others who are devoting their life energies to the prevention of disease, disability, and death. We are convinced that prevention of disease and disability is not only the vastly more humane approach to health care—it is also less costly. It is within this general frame that the following position of the APHA is propounded.

Your bill, Mr. Chairman, and others under consideration by this Committee are aimed at a specific insidious problem which has on one hand definable consequences totally preventable and unnecessary and on the other a single factor in a complicated and costly problem. The APHA has stated its position on each of these in separate treatments and although these positions have been forwarded to this Committee, I would once again like to make them a matter of public record. On November 12, 1969, at our Annual Convention held in Philadelphia, two policy resolutions were adopted by the APHA Governing Council, elected democratically, representing all of the states of the Union and all of public health's disciplines and expertise. Not specifically involved in the subject of this hearing but nonetheless germane and relevant was our resolution entitled *Healthful Housing for the Poor* which I wish to quote:

"A critical national problem demanding immediate action is an attack on the grossly unfit conditions of both urban and rural housing for welfare recipients and other poor. The American Public Health Association believes that a solution to this problem is essential to achieving the national goal enunciated by Congress of 'promoting and assuring the highest level of health attainable for every person in an environment which contributes positively to healthful individual and family living.'

"Millions of American poor lack the minimum essentials of adequate shelter, sanitary facilities, and a residential environment necessary for health. Billions of dollars of welfare funds are being spent for rent, which in too many cases is subsidizing unfit housing. Furthermore, far less than optimum health benefits are attained from billions of dollars spent on medical care for families forced to live under conditions which seriously and adversely affect their health.

"The APHA urges a national commitment to a broad, bold, imaginative approach which marshals all federal agencies, state and local governments, and the private sector to:

1. Adopt and effectively secure conformance with a housing code similar to the APHA–PHS Housing Maintenance and Occupancy Ordnance.
2. Require, as a requisite for payment of welfare funds for housing, that such housing meet healthful housing standards.
3. Unite federal resources into an integrated, massive coordinated attack by tying together the basic health and environmental services, rat control, and welfare programs of the Department of Health, Education, and Welfare, the many relevant programs of the Department of Housing and Urban De-

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velopment, the Department of Agriculture, the Office of Economic Opportunity, and the Manpower Development Programs of the Department of Labor."

Second was our resolution aimed specifically at the problem addressed by the bills under consideration today. That resolution, entitled *Childhood Lead Poisoning*, reads as follows:

"Lead poisoning is epidemic in the ghettos of our cities. In its devastating path are children with mental retardation, blindness, and chronic kidney disease, among other sequelae. "The root of this tragedy is the deteriorating and dilapidated houses of our cities, particularly those occupied by the poor. It is a tragedy that should not exist and is completely preventable.

"The American Public Health Association believes that—pending the availability of healthful housing—local and state health departments and other appropriate agencies should institute the following with adequate funding from federal and other sources:

1. Mandatory testing of all ghetto housing for the presence of greater than 1 percent lead paint.
2. Where lead is detected, the paint should be removed or the walls covered with suitable material.
3. Appropriate mass urine testing for excessive lead content of all ghetto children between the age of one and five years.
4. Prompt treatment and comprehensive follow-up of all detected cases."

The association between lead poisoning in children and old dilapidated housing is well recognized. The widespread use of lead-pigment paints in housing prior to World War II means that as such housing deteriorates and falls into disrepair, it will continue to present a hazard to young children. Because of the enormity of this housing problem, it is unrealistic to anticipate a direct attack on the health problem through any immediate crash program to eliminate such housing; rather it is recommended for the long-term approach that the hazard presented to children by flaking lead paint be given high priority, along with other hazards to health and welfare, and when plans for the renewal, removal or rehabilitation of substandard residential housing are developed. For the immediate future, there is a much smaller, but more urgent problem; namely, the immediate removal of flaking lead pigment paints from housing surfaces of dwellings where actual cases of undue absorption of lead or lead poisoning in children are found. Prompt and adequate removal of lead pigment paints from housing surfaces accessible to young children offers, currently, the only practical and effective means of preventing recurrent severe acute lead poisoning in young children and permanent brain damage, which this disease can cause.

CHILDHOOD LEAD POISONING ESTIMATED COST FACTORS, BALTIMORE, 1969

Prevention: (Rehabilitation of dilapidated housing).

Average Row House: (10 windows, 2 doors, base boards).

Complete removal of old lead paint from window and door units, base boards—$250–300.

Replacement of window and door units, base boards—$600–$1,200.

TABLE I.—CHILDHOOD LEAD POISONING ESTIMATED COST FACTORS, BALTIMORE, 1969

TREATMENT (BAL-EDTA AND D-PENICILLAMINE)

		Acute encephalopathy		Asymptomatic plumbism	
	Unit cost	Severe permanent brain damage	Moderate permanent brain damage	Severe permanent brain damage	Moderate permanent brain damage
Hospitalization acute illness	$75 per day	$1,500, 20 days	$750, 10 days	$750, 10 days	
Convalescent facility	$27.50 per day	$1,650, 60 days	$825, 30 days	$825, 30 days	$825, 30 days.
Out-patient follow-up	$15 per visit	$225, 2 years	$675, 10 years	$225, 2 years	$225, 2 years.
Nursery school	$3 per day		$780, 2 years	(1)	(1).
Special schooling excess cost	$1,200 per year		$14,400, 12 years.		
Institutionalization	$3,650 per year	$219,000, 60 years.			
Total treatment costs		$222,375	$17,430	$1,800	$1,050.

[1] Paid by parents.

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It is our view that the provisions of H.R. 17260 are in complete concert with our position and is necessary of enactment. Although we did not, in our resolution, refer to a necessary percentage of Federal support and mindful of the fact that the areas of greatest concern are grossly if not totally lacking in financial resources, we would subscribe to the proposed 75% Federal portion.

We heartily concur with the proposed requirement contained in Sec. 4, page 3 beginning on line 19 that no workable program for community improvement should be approved without inclusion of provision for elimination of lead based paint poisoning of children. We support the provisions of the bill with one proviso and we make this despite a lack of expert knowledge or accurate information. Federal appropriations for each of fiscal years 1971 and 1972 would be $13.5 million. Whether or not this amount will be sufficient we are simply not in a position to say. We believe it only fair to caution this Committee, however, that we are dealing with a very expensive procedure—the elimination of the cause of lead based paint poisoning. One cannot simply paint or paper over the lead base paint because this does not ensure safety. Remedial procedures are expensive and a fair Federal share may be more than the amounts contained in the bill. To begin, however, we would subscribe to these amounts.

We appreciate this opportunity to present the views of the APHA on legislation dealing with this important health problem and we urge favorable consideration of the legislation.

Mr. BARRETT. Dr. Finberg.

STATEMENT OF DR. LAURENCE FINBERG, PROFESSOR OF PEDIATRICS, MONTEFIORE HOSPITAL AND MEDICAL CENTER, NEW YORK, N.Y., REPRESENTING THE AMERICAN ACADEMY OF PEDIATRICS

Dr. FINBERG. Mr. Chairman and members of the committee, I am Laurence Finberg, M.D., professor of pediatrics at Albert Einstein College of Medicine and chief of pediatrics at Montefiore Hospital and Medical Center. My testimony today is presented on behalf of the American Academy of Pediatrics, the National Association of Board Certified Pediatricians, founded for the purpose of improving the health and welfare of children.

Mr. Chairman, this morning I wish to convey the strong unqualified support of the American Academy of Pediatrics for legislation to reduce and eliminate the incidence of lead poisoning in children.

Lead poisoning of young children continues to be a pressing problem of children living in urban slums in the United States. Every major city in the South, East, and Midwest has many victims. This totally intolerable condition persists and either kills or else maims the brains of many hundreds of children every year in this country.

The principal sources of the lead that infants ingest are threefold: One is flaking paint on back porches where exterior paints have been applied and repainting not maintained. The second is in the crumbling plaster of walls in houses constructed prior to World War II. Prior to that time, paints containing lead were frequently used on interiors. Lead becomes impregnated in the plaster and as plaster crumbles or is crumbled by a toddler, it becomes significant source of lead for ingestion. Another very important source of lead for the toddler living in old housing is the flaking paint and caulking compound from windowsills and frames. We have known for several decades that when a child develops symptomatic lead poisoning and he is returning to the house where plaster continues to crumble or paint chips fall, there is an overwhelming likelihood that he will either die or suffer irreversible brain injury.

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The city health code of most large cities provides that all remnants of available lead be remove prior to permitting the house to have infant inhabitants again. Because of several considerations, primarily economic in nature, the local government often does not enforce this code in a vigorous fashion. It permits landlords simply to replaster and paint over the crumbling surfaces, thereby insuring that in another few years the same dangerous condition will exist again. So long as this practice persists and these homes remain standing, we can depend on giving lead poisoning to infants of impoverished families for generations to come. Houses on Fifth Avenue and Park Avenue in my city when and if the maintenance slips, will also provide lead for children to eat.

There are more brains damaged from this disease in New York City than there were from measles before the immunization program. There are more deaths and permanent cripples from it in each year than there were in an average polio year prior to widespread immunization against that disease. In fact, except for the automobile and the trauma of birth itself, there is no worse scourge for infants living in large cities in this country.

Causative factors which can result in irreversible lead encephalopathy consist of a triad: the child, the parent, and the place. The child is a 1- to 5-year-old youngster with exaggerated oral activities which result in the indiscriminate eating of nonfood substances, a habit called pica. The second part of the triad is a mother with inadequate resources to cope with her family's needs. The third and crucial aspect of the triad is the place; namely, a neglected slum housing unit with lead flakes within easy reach of a small child's grasp. The association between childhood lead poisoning and deteriorated urban housing is well documented. It is estimated that between 10 and 25 percent of young children who reside in urban slum housing show evidence of increased body lead content and that between 2 and 5 percent show evidence of lead poisoning due to lead.

Because of wide disparity in medical recognition and reporting, the exact incidence of acute lead encephalopathy is not known. This much, however, can be said: (1) early diagnosis by a physician on the basis of routine physical examination and routine laboratory tests alone is exceedingly difficult, if not impossible, and (2) by the time the diagnosis of severe acute lead poisoning is obvious to all, permanent brain damage which cannot be modified by medical treatment may already have taken place. It is clear to the medical community, on the basis of these considerations, that a significant reduction in the risk of permanent brain damage due to lead poisoning requires identification of the child with increased body lead burden prior to the onset of toxic manifestations—in a word, mass screening. This, in turn, must be coupled with the prompt elimination of the environmental hazard.

Reports from various parts of the country indicate that at least 25 percent of the survivors of acute lead encephalopathy in childhood sustain severe and permanent brain damage. It is also clear that the newer methods of treatment will not substantially reduce the incidence of severe permanent brain damage among survivors of acute lead encephalopathy. In our professional opinion, as pediatricians, effective elimination of this cause of permanent brain damage requires primary prevention of lead poisoning itself in young children. This, in turn,

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we feel requires a concerted and systematic attack on the elimination of the hazard in old housing; namely, the removal of flaking, crumbling lead pigment substances from deteriorated housing. Safe procedures for the disposal of the hazardous material removed should also be provided.

At the present time there is an instrument being developed which would greatly add to our armamentarium in screening for dwellings which represent a potential hazard for lead poisoning. This instrument enables a single technician to enter a dwelling, focus a radiation beam on a surface, and within a few seconds obtain a reading enabling him to determine whether the lead concentration in the surface is above an acceptable level. I am informed that the instrument should be in production within the next 6 months. Local governments need Federal assistance and encouragement so that instruments might be purchased and personnel might be utilized for screening programs—to locate inexpensively the dangerous areas without the prior sacrifice of a child.

The bills before this subcommittee, Mr. Chairman, provide the seed with which the community, as a whole, can begin an effective program for the elimination of this serious health hazard to young children. Childhood lead poisoning is a preventable disease—it ought to be prevented.

It is quite clear from the experience of the past decade that we of the pediatric community cannot solve this problem alone: neither can municipal health officials solve it alone. What is needed is a systematic, cooperative, multidisciplinary approach. In this way, the community acting as a whole can solve this problem. Lead poisoning in young children can be prevented now. Passage of the legislative proposals before this subcommittee will greatly aid in getting on with the task at hand.

Childhood lead poisoning is an intolerable disease for a civilized society. We know how to eliminate it. Let us get on with it.

Mr. Chairman, I would like to submit a statement of the American Academy of Pediatrics which may be of assistance to this subcommittee and to communities in preparing guidelines to eradicate effectively the problem of childhood lead poisoning.

Thank you for the opportunity to present these remarks on behalf of the American Academy of Pediatrics.

Mr. BARRETT. That statement may be submitted, without objection, and so ordered.

Thank you, Doctor.

(The statement referred to of the American Academy of Pediatrics follows:)

STATEMENT OF THE AMERICAN ACADEMY OF PEDIATRICS; JOINT STATEMENT OF THE COMMITTEE ON ENVIRONMENTAL HAZARDS AND SUBCOMMITTEE ON ACCIDENTAL POISONING OF COMMITTEE ON ACCIDENT PREVENTION

ACUTE AND CHRONIC CHILDHOOD LEAD POISONING

Lead poisoning in childhood is a preventable disease. Virtually all cases occur in children who live in old, deteriorated houses which were built and painted years ago when the use of lead-based paints on housing surfaces was widespread. 85% of recognized cases occur in children in the one- to three-year age range in which pica (the habit of eating non-food substances) is prevalent. Consequently, the disease results from the interaction between hazardous housing and the child with pica. Early diagnosis of plumbism on clinical grounds alone

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is exceedingly difficult, and often impossible. Furthermore, by the time the clinical diagnosis is obvious, permanent brain damage which cannot be modified by therapy may already have taken place. Although the true incidence of plumbism is not known, careful surveys have revealed that 10 to 25% of young children who live in deteriorated urban slum housing show evidence of increased absorption of lead and that 2 to 5% show evidence of poisoning. While recent therapeutic advances have reduced the mortality of acute lead encephalopathy, it is now apparent that at least one-third of the survivors of encephalopathy sustain permanent, irreversible damage to the brain. Significant reduction in the risk of permanent brain damage, therefore, requires identification of the child with increased body lead burden prior to the onset of poisoning. Fundamentally, both the prevention of adverse health effects due to lead and the treatment of identified cases depend upon the elimination of the housing hazard which lies at the root of the problem. In view of the foregoing and in the interest of effective action to eradicate this preventable health hazard to children, the American Academy of Pediatrics recommends that:

1. The major emphasis of programs designed to prevent adverse health effects in children from lead be placed on the testing of dwellings for lead-pigment paints on housing surfaces, both interior and exterior, in order to identify high-risk areas within the community.

2. As a policy, the determination of lead in blood of all 12–15 month-old children living in poorly maintained dwellings in identified high-risk areas and wherever other special local situations expose children to lead hazards. At the very least, a subsequent sample of blood should be obtained during the following spring or summer.

Those children with increased levels of blood lead greater than 50 micrograms per 100 ml whole blood should be referred immediately for definitive medical evaluation and a repeat blood lead determination. All children having two blood samples with a concentration greater than 50 micrograms per 100 ml whole blood should be reported to the responsible local government agency so their environment can be investigated by appropriate officials and action taken to eliminate the hazard.

To be effective, these programs must be supported by local health and housing departments with appropriate personnel and laboratory facilities at their disposal.

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Mr. BARRETT. Dr. Swann.

STATEMENT OF DR. HAZEL SWANN, REPRESENTING THE VITA-D.C. (VOLUNTEERS FOR INTERNATIONAL TECHNICAL ASSISTANCE) COMMITTEE ON LEAD POISONING; ACCOMPANIED BY MRS. ROMANA PARKER

Dr. SWANN. Mr. Chairman, members of the committee, we thank you for this opportunity to give our testimony. Our message is an urgent one that affects potentially thousands of children living in

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slum housing in the District of Columbia, as well as children in many other parts of the Nation.

My name is Dr. Hazel Swann. I am a physician. I am a volunteer with the VITA Washington office. VITA, or Volunteers for International Technical Assistance, along with a number of District of Columbia community organizations has formed the VITA-D.C. Committee on Lead Poisoning. I am here representing that broad group, on behalf of our children.

The lady with me is Mrs. Romana Parker, of the northest section of the District of Columbia. Mrs. Parker is the mother of a child, Ricky Parker, whose tragic death in June of this year was a result of lead poisoning.

Ricky Parker was pretty much of a normal 3-year-old. Maybe a little big for his age, but normal otherwise. Except that he had a habit of sitting on the steps in his house and cramming bits of things into his mouth that he shouldn't eat.

He lived at 229 F Street NE., with his mother, Mrs. Romana Parker, and two other children—a sister 21, and a brother 18. His father is ill in a veterans' hospital.

On June 22, very early, he died. He was dead when his mother reached the hospital.

An autopsy showed he died of lead poisoning. Ricky Parker became the first recorded lead poisoning death in the District, according to Health Department officials. He was not the first child to die of the disease. The autopsy showed that Ricky had lead in his knees; bits of paint chips in his colon; and plaster chips and paint chips in his stomach.

His mother said he had been eating paint wherever he could find it in the house for a year, but never showed any adverse signs of lead poisoning. Every time she would catch him, she would make him stop. She patched the walls in the old house with plaster wherever she would find him picking at flaking paint. She said he couldn't stop eating paint and that just before he died, it almost became a mania with him trying to find paint and plaster that he could eat.

Why did Ricky have to die? Lead poisoning is a completely preventable disease that attacks children living in slums. Its victims are most often children between the ages of 1 and 6 who eat bits of crumbling plaster or peeling paint that is heavy in lead content. No one knows for sure just how many children suffer from the disease but every year children die from it. No one knows how many children die or are irreparably damaged by lead poisoning because the District government only began in April of this year to require doctors to report cases of lead poisoning. This is the first substantive effort at any kind of legislation to deal with the problem of lead poisoning in our city.

The infant who drops his bottle into a pile of chipped paint on the floor or the toddler who crams bits of broken plaster or putty into his mouth is susceptible to lead poisoning. It has been estimated that one child in 15 between the ages of 1 and 6 who lives in slum housing has more lead in his system than is safe.

Parents must know how to detect lead poisoning in their children early before the case is too severe to prevent irreparable damage. That is sometimes hard to do because the early symptoms are vague and could indicate several other types of diseases or illnesses in children.

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But, if a child who is exposed to old paint, putty, or plaster shows these symptoms, medical help should be obtained for him.

Symptoms may be very mild or quite severe. In the very young child, symptoms may appear shortly after exposure to the lead. Mild symptoms include headache, irritability, inability to sleep, stomachache, weakness, loss of weight, vomiting, or loss of appetite. In severe cases, the symptoms may include dizziness, staggering, paralysis, pains in the joints, convulsions, or blindness.

As you can see, the early symptoms of lead poisoning can be and are easily mistaken for other, less virulent diseases. In terms of medical costs and possible loss of life, it is easier to prevent the disease by removing all old, peeling paint, plaster, and putty from walls within 4 feet of the floor. These precautions may help prevent the often permanent damages of lead poisoning. May I emphasize that ignorance is widespread. Reportedly Ricky for some time, was treated for anemia and not for lead poisoning.

The VITA-D.C. Committee on Lead Poisoning came into being several months ago. It was originally composed of representatives from two social organizations, two VITA-Volunteers and the VITA-D.C. staff. There are now about 10 participating community organizations. The goal of the committee has been to launch an informational campaign, directed to the parents of children living in District of Columbia slum housing; better described as the "D.C. Lead Belt."

A simple informational pamphlet was designed by the committee and through the efforts of the participating community organizations, over 25,000 pamphlets have been distributed. Approximately half were distributed on a door-to-door basis. I might add that Mr. Melvin Dabney, an organizer of the Peoples Involvement Corporation, is here in the audience today with some of his workers, the type of people who have delivered our pamphlets for us.

Others were distributed through 52 child care centers, and 12 inner-city schools. Well over 400 persons have been involved in this effort. This is not enough. While we were working, Rickey Parker died of lead poisoning.

We are aware of a recent blood testing campaign conducted on a number of children in the District. This is a worthwhile beginning, but it is still only a small step toward a curative measure. Until children can be treated and returned to a home free from the presence of lead, doctors, parents, and helpless children will be caught in a vicious cycle of band-aid remedies, in which the real cause is never stopped. In short, prevention must be emphasized.

What is to be done first? A massive information/educational campaign must be mounted. It should be directed toward the population most vulnerable to the disease—slum dwellers—and those persons most involved with the problem, that is, community health clinics, landlords, M.D.'s, community organizations, et cetera.

HEW could mount an effective series of public service announcements that would utilize community organization people in the delivery of the message. In addition, community people from "target" areas—"Lead Belt" areas—should be involved in planning the public service announcements.

Appeals to the news media for research and coverage should be made. Specific appeals should be made to the most popular radio sta-

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tions in said areas. Persons forced to reside in slum housing should be made very knowledgeable of the high potential danger of peeling paint and crumbling plaster.

OEO could activate distribution of informational materials to community action programs located in areas that have a high concentration of slum housing.

All Headstart and child care centers in lead-belt areas should receive informational materials. All school systems in these areas should be alerted to the problem through informational materials, that could be passed on to the parent-teachers' associations, et cetera.

In addition to the recommended massive informational educational campaign, we strongly recommend that any national legislation dealing with lead poisoning in children place the greater emphasis on preventive rather than curative approaches. Detection and treatment programs only would see children returning to the same infectious environment, each time coming closer to death or permanent physical damage, such as blindness or mental retardation.

We realize that many people see problems with such legislation—is the present landlord responsible? What kind of feasible system of removal is available? What are the effective means of enforcement?

These are not major problems to those of us who are truly concerned. Landlords are legally responsible for the maintenance of the property they own. Removal of paint from a rowhouse can be accomplished at far less cost than medical treatment for one child. We know the problem can be solved with adequate funds and legislation. As representatives of the community, our greatest concern is that whatever legislation is enacted be stringently enforced. Too often, the community of the poor has been disillusioned with paper legislation in which there is no strong enforcement provision. Our participating organizations are located in the problem areas and can assure their assistance in the enforcement of whatever provisions are enacted to end the death of small children by lead poisoning. Legislation should provide clear avenues for participation by community people who reside in the "target" areas.

Again, we thank you for the opportunity to be heard.

Mr. BARRETT. Dr. Swann, are you anticipating putting your extraneous matter in the record also?

Dr. SWANN. Yes; I am.

Mr. BARRETT. That may be done without objection.

Dr. SWANN. Thank you.

(An excerpt from Environment (formerly Scientist and Citizen), April 1968, "Citizens versus Lead in Three Communities," by Ann Koppelman Simon; an excerpt from the District of Columbia Register, April 20, 1970, regulations related to use of lead paint; "Lead Poisoning: Child Killer," an article from the December 7, 1969, Washington Sunday Star; an article from the March 3, 1970, Wall Street Journal: "Leaded Indoor Paint, Off Market 30 years, Still Kills in Slums"; sections of the "V-Line" (VISTA Volunteer Information Service-Office of Opportunity) articles dealing with lead poisoning, June 26, 1970, and July 10, 1970; "Lead Poisoning—The Child Killer," a pamphlet directed toward parents of the District of Columbia, prepared by the VITA—District of Columbia Committee on Lead Poisoning; "Lead-Paint Law Signed by Mayor," an article from the June

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12, 1970 New York Times; a "Report on Distribution of Lead Poisoning Pamphlet" by the Christian Action Center of Washington, D.C., June 1970, follows:)

[Excerpt from *Environment*, (formerly Scientist and Citizen) April, 1968, "Citizens vs Lead in Three Communities," by Ann Koppelman Simon, including the section dealing with the collecting of lead paint chips, and qualitative tests for lead content.]

The teen-age collectors removed samples of peeling paint from the walls of rooms and sealed them in envelopes. Cataloging data were immediately recorded on each envelope at the time the sample was taken—collector, name, address and phone number of occupant, room and color of paint, and whether or not young children live in the household.

The samples were tested qualitatively for lead by two means; by treatment with sodium sulfide solution, which turns lead-containing samples black by forming lead sulfide, and by ashing a sample and doing a benzidine spot test on the ash for lead. Only samples giving positive tests by both procedures were counted as positives—one sample giving a weak positive with benzidine and a negative with sulfide was counted as negative. Ten of the twenty-seven positive samples were then analyzed spectrographically by Dr. Luville Steadman of the Medical School and Mr. John Temmerman of the County Public Safety Laboratory. All ten samples were found to contain lead as a major constituent (of the order of ten per cent by weight), giving ironclad verification of our qualitative tests. Anderson and the Urban League were appalled at the results, as they were fully aware of their significance in terms of illness, brain damage, suffering, and death of children in the inner-city. They got mad. What followed was one of the more constructive applications of "Black Power" to our local governments. One of the results was that about three weeks ago Dr. Hare, our lead subcommittee chairman, was asked to supply the city building inspectors with instruction sheets for testing paint samples for the presence of lead. I wrote up a detailed description of our sodium sulfide procedure, and such testing will now be routinely carried out during the inspection of slum housing by the City Building Bureau. The Urban League has also launched a large-scale public education campaign to warn parents living in the slums of the hazard to their children of lead poisoning. The Visiting Nurses' Association has alerted its people to the problem. We are also collecting more paint samples. And Dr. Hare, a couple of medical students, and the Urban League are now doing urine tests on the kids living in the houses where we found lead paint, so that any of them that have been poisoned can be given treatment.

[From the *District of Columbia Register*, Apr. 20, 1970. Regulations related to use of lead paint]

The District of Columbia City Council having passed a Regulation on second reading and the Commissioner having signed such Regulation on April 1, 1970, the Health Regulations of the District of Columbia are amended as follows:

Title 8, Chapter 2 of the Health Regulations is amended by adding a new Part 9 as follows:

"*9–2:901 Use of Lead Paint*

"It shall be unlawful for any person to apply to any toy, article of furniture, or exposed interior surface of any habitation, paint containing lead or its compounds in a quantity in excess of one (1) per cent by weight of total nonvolatile material.

"*9–2:902 Definition of Interior Surface*

"Interior surface" means any exposed surface in the interior of any residential building, including, but not limited to, any portion of a window, window frame, door, door frame, wall, ceiling, stair, rail, spindle, balustrade, or other guard or appurtenance.

"*9–2:903 Penalty*

"Any person who violates any provision of these regulations shall, upon conviction, be punished by a fine not to exceed $300 or imprisonment not to exceed ten days for each violation."

Title 8, Chapter 5 of the Health Regulations is amended by adding a Part 3 as follows:

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"Part 3, Reporting of Preventable Diseases

"8–5:301 Plumbism.

"Any physician who diagnoses or treats a case of lead intoxication shall within 72 hours report such case to the Director of Public Health on a form prescribed and furnished by the Director.

"8–5:302 *Penalty.*

"Any physician violating or failing to comply with the requirement of section 8–5:301 shall upon conviction be punished by a fine of not more than $300."

This Regulation shall become effecitve immediately upon encactment.

By order of the Commissioner of the District of Columbia.

MARTIN K. SCHALLER,
Executive Secretary, D.C.

HOUSING REGULATIONS—AMENDED

(Order of the Commissioner No. 70–111)

MARCH 27, 1970.

Ordered:

The District of Columbia City Council having passed a Regulation on second reading and the Commissioner having signed such Regulation on March 27, 1970, the Housing Regulations for the District of Columbia are hereby amended as follows:

Section 1. Insert the following new definition in Section 1102, immediately following the definition of "Hotel":

"'Interior surface' means any exposed surface in the interior of any residential building, including, but not limited to, any portion of a window, window frame, door, door frame, wall, ceiling, stair, rail, spindle balustrade, or other guard or appurtenance."

Section 2. (a) Insert the designation "2605.1" immediately before the existing language of Section 2605 of the Housing Regulations.

(b) Add the following new subsections to such section 2605 of the Housing Regulations:

"2605.2 Whenever any duly designated agent of the District of Columbia (1) upon inspection finds the presence of flaking, peeling, chipped or loose paint, plaster or structural materials on any interior surface of any residential building, or (2) has other reasonable grounds, taking into account the age and location of the building, to believe that a hazard exists to the health of one or more of the inhabitants of said building because of the presence of lead or its compounds in the paint, plaster, or structural materials of any interior surface, said agent is authorized to secure specimens of paint, plaster or structural materials, and to analyze or cause an analysis to be made of said specimens to determine the quantity of lead or its compounds contained in the material. If said analysis reveals the presence of lead or its compounds in a quantity in excess of one per cent by weight or in a quantity otherwise sufficient to constitute a hazard to the health of any inhabitant of said building, the Director of the Department of Economic Development or his agent shall notify the inhabitants that lead in a quantity sufficient to constitute a hazard was found and that a lead poisoning hazard exists because of the existence of such lead."

"2605.3 The Director of the Department of Economic Development or his agent shall order the owner of a building in which lead in a quantity sufficient to constitute a hazard was found either (1) cease occupying or permitting the occupancy of any or all habitations in a building in which lead in a quantity sufficient to constitute a hazard was found on interior surfaces; *or* (2) (a) remove all materials containing lead or its compounds from such interior surfaces to their base surface, under such safety conditions as are approved by the Director of the Department of Economic Development, *and* (b) then either cover such interior surfaces with a paint not to contain lead or its compounds in a quantity exceeding one per cent of the total weight of the material, or leave such interior surfaces in their natural state provided that the flame spread rating of the natural state is at least equal to that required by the D.C. Building Code, 1961 edition; *or* (3) cover such interior surfaces with a durable material approved by the Director of the Department of Economic Development; *or* (4) eliminate the lead poisoning hazard by such other methods as are approved by the Director of the Department

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of Economic Development. Any owner who is served with an order pursuant to this section shall comply with such an order within ten (10) days of its service upon him."

Section 3. This Regulation shall become effective immediately upon enactment.

By order of the Commissioner of the District of Columbia.

MARTIN K. SCHALLER,
Executive Secretary, D.C.

[From the Washington Sunday Star, Dec. 7, 1969]

LEAD POISONING: CHILD KILLER

Linda Peterson, at five, is a sparkly-eyed runabout who holds up a cup when she wants bread and growls in special ways to call her twin sister or her brother. She has recently learned to say Mommy and Daddy and to feed herself with her hands, though these are things she did easily when she was one and a half.

Linda became ill in the summer of 1966. She began to stagger about like a drunk, couldn't keep food on her stomach. One doctor prescribed for an ear infection; another, at Freedman's Hospital, for a sore throat.

When Linda's mother appealed to Childrens Hospital, her daughter was admitted for tests, and then fell into a four-day coma. The diagnosis was acute lead encephalopathy brought on by Linda's eating of leaded plaster and paint.

A recurrence later in the summer left Linda blind (her vision is still severely impaired), unable to walk or to talk. She has been subject since to what her mother calls sieges, when she foams at the mouth and jumps up and down. Though Linda has improved slightly over the past two years, the damage is permanent.

It's such a familiar story, give or take a detail, that people who care about lead poisoning aren't so much saddened as enraged. A man-made preventable disease, without even a bad gene or a virus to blame, goes on hitting children like Linda year after year.

Two things make lead poisoning a disease of the slums. One is that paint, flaking from old walls, is apt to be high in lead (though top coats from the last 20 years were probably done with lead-free paint).

The other is that children from the old housing, "lead-belt" areas tend to have pica, which is an appetite for things that are not food. A classic study on pica was made during the mid-Fifties at Childrens Hospital, linking the disease with emotional needs. Mothers of children with pica, it was found, either worked away from the home during the day and or were themselves dependent, perhaps depressed, persons, many of whom had pica and followed a Southern practice of eating clay and starch.

While infants normally explore the world by mouthing, many poor city children go at it compulsively and much beyond infancy, eating paper, string, putty, cloth or ashes. By preference, the children may concentrate on paint and plaster sweetly flavored with lead acetate. If they do, they need to take in only a small amount regularly—say a chip the size of a postage stamp several times a week for two months—to have downed a lethal dose.

Linda, according to her mother, not only ate the crumbles of plaster and paint that fell from behind the radiator, she chewed her way along the living room window sill and up and down the door jamb. To this day Linda swoops down on bits of broken glass. She swallows cigaret butts, matches, newspaper, when she can get them. And she shoves a chest over to her bedroom window to reach the paint around the upper panes.

No one caught the early signs of Linda's poisoning. There may not have been any. Or there may have been irritability, drowsiness, a little constipation or diarrhea—a cluster of symptoms as one doctor remarked that could describe half the city's kids in summertime.

In the advanced stage the symptoms mimic those of other diseases, so that only a doctor attuned to the possibility of lead poisoning finds it and even he must order a specific test for lead to be sure. Most doctors, perhaps nine out of ten, don't think of lead even when a child enters the hospital in a coma or convulsions. They may treat the child for seizures and send him home again when he gets well.

A further troublesome characteristic of the disease is that it keeps an unpredictable time table. It goes from gut to soft tissue to bone and may then be

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released into the blood quite suddenly, setting off an acute attack when the child hasn't swallowed any lead for months.

Once the disease is spotted for certain, however, the treatment is known. The patient should be hospitalized, thus removing him from the source of lead; then he is given a series of injections of agents which draw lead from the blood into the urine.

Even with the best treatment though, five percent of the hard-hit children die. One quarter of the children who recover are brain damaged. And virtually all who have recurrences are, like Linda, severely brain damaged. The reason for recurrences is not hard to spot. Once the children are released, lead-free, from the hospital, they return to the environment in which they first contracted the disease, and resume their old habits.

Because this deceptive disease has roots in rundown housing and poverty it takes a combined medical-legislative-administrative program to combat it. No such program has been undertaken in the Nation's Capital, though there are some signs that the pressure of publicity and legal action is beginning to get to the city's bureaucracy.

Children's Hospital almost alone has been vigilant. The D.C. Department of Health has been slow to act either to alert health professionals and the public or to initiate a screening program among the city's 50,000 one-to-six-year-olds living in dilapidated housing. The Department of Licenses and Inspections has been slower, dragging its heels on even requesting regulations against lead paint from the City Council.

The few doctors and health officials working on the disease (none of them full time) are out of touch with each other for long periods of time. During the first half of this year, Washington's minimal procedures for attacking the disease broke down. Almost no one seemed to notice.

Most cases of lead-poisoning go undetected. Estimates from a Rockefeller University conference on lead poisoning in New York last spring were that 225,000 children in the last year, there are 5,000 children "endangered" by the lead level in their blood and 20,000 others "debilitated" by it.

In Washington, lead poisoning isn't even a notifiable disease—doctors don't have to report cases the way they do measles, for example. The Public Health Department doesn't know even how many diagnosed cases there are. Its books do show that for 1968, when its lab handled all the lead level tests for the city, 55 children from Childrens had dangerously high lead levels, eight from D.C. General and one from Freedmen's.

Childrens, which at least keeps a count, says it had 45 actual cases last year and 30 through September of this year. At D.C. General, Dr. T. Reichelderfer, chief of pediatrics, said in November, through his secretary, that he did not know how many cases he had either last year or this.

The guess offered by Malcolm Hope, associate director for environmental health in the Public Health Department, is that Washington has 500 lead poisoned children, more than 400 of whom, if his guess is correct, are unknowns.

When Rochester's Dr. Evan Charney addressed a lead workshop in St. Louis last year, sponsored by the Scientists' Institute for Public Information, he said flatly that the number of cases in a community depends on how hard people look. "If you live in an American city with a slum population and you don't have many cases of lead poisoning," Charney said, "then your health department isn't doing its job."

Some 15 years ago Childrens Hospital began its research into the causes and treatment of lead poisoning. One result was the hospital's pica clinic, set up by Dr. Reginald Lourie in 1955.

The new clinic's routine was to seek out children with pica and to test them for lead. Beyond medical service it offered help to the mothers in coping with their children's problem (in some cases finding nursery schools) and help in moving or getting rid of the paint hazard. Within the first years the number of cases seen at the hospital tripled. The number of deaths stayed about the same, but there were fewer and less severe recurrences.

Today the pica clinic continues to meet two Friday afternoons a month with about six patients and their mothers, and the staffs of the two Comprehensive Health Care clinics around the corner from the hospital follow their own pica cases with the same procedures.

Childrens still isn't doing enough, according to some. Dr. Fred Solomon, a pediatric phychiatrist at Howard University, charges that "it's professionally irresponsible for a hospital to do these marvelous studies and then to keep treat-

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ing a preventable disease without trotting down to Congress to do something about it."

Dr. George Cohen, the likeable, generously mustachioed physician who has headed the pica clinic for its 14 years, finds the accusation fair enough. He adds, though, that like everyone else working on lead poisoning he is very much part-time. And that by temperament he's "not a grantsman or a proselytizer. I've learned that about myself. I like to do the work."

He isn't convinced either that legislation is all that successful. "In Baltimore where the landlord can be forced to repaint," Cohen points out, "the family often moves out during the mess and then the whole matter may be dropped unless another child moves in and gets poisoned too."

Dr. Cohen thinks the answer is education—raising the level of suspicion throughout the community. That, and catching cases early. Cohen is embarked now on a pilot project to screen 100 siblings and neighbors of his present patients to learn whether in apparently symptom-free children he picks up enough evidence of lead poisoning to make a mass screening worthwhile.

And he is experimenting with testing techniques using hair and fingernails in the hope that he will come up with a simple, inexpensive indicator for lead poisoning that doesn't apply to 100 other things. The present test—to take a sample of blood or urine and analyze it for lead content—apparently is reliable but, as Cohen points out, it takes sophisticated equipment, highly trained technicians and about a full day to run the test in a laboratory. And the logistics of obtaining samples from large numbers of toddlers are imposing.

Dr. Jane Lin-Fu, of the Children's Bureau of the Department of Health, Education, and Welfare, says her office is seeking the same ammunition by funding research into a micro-technique based on a finger prick of blood. She agrees with Cohen's priorities. "Until we get an instant mashed potato sort of thing," she says, "everyone's hands are tied."

It is worth pointing out, however, that one city, Chicago, has carried out a successful mass screening program using the present chemical blood test. Since 1966, Chicago has tested 160,000 children. Chicago simply put its manpower to the task, sending workers into the streets from 10 urban development centers to collect children for testing at public health clinics that are kept open nights and Saturdays.

Between 1955 and late last year the pica clinic at Childrens was just about the only positive step made to combat the disease in the entire city. This, in spite of the fact that within the health bureaucracy there are individuals concerned about the disease and aware of the long-time, useless spinning of administrative wheels.

One of these individuals is Dudley Anderson, chief of accident prevention at the Public Health Department. Anderson came to Washington from Baltimore, which started moving against the problem 20 years ago. (Modestly, to be sure—at that time lead paint had to be removed from the building in which a child had died from the disease.)

Anderson, though, admits he finds the bureaucratic machinery hard to move on the simplest of matters, and lead poisoning, whatever else it is, is not a simple matter. In 1966 Anderson and the Health Department's lab chief submitted a $160,000 project, half the money to go for research in lead poisoning, half for a large-scale screening. The department turned down the request. Anderson says the disease simply did not have the appeal to win priority. "Here," he says, "we are always robbing Peter to pay Paul."

Labs chief Dr. G. W. H. Schepers has a less resilient attitude. A pathologist with a background of published lead research, Schepers has long been distressed by the increase of lead in the environment. In normal brain tissue over a 30-year period he calculates it to be tenfold. He is scornful of the three grams of lead per gallon which "our badly made cars" spew into the city air. He speaks bitterly of the department's refusal to fund the research and screening project and of the meager use to which his lab has been put for testing lead levels.

In 1968 his chemist received 500 blood and urine samples for such tests, 450 of them from Childrens. "Now you know that's ridiculous," he says. "We should have handled ten times as many. I can only think," Schepers adds acidly, "people aren't much interested in lead."

One person more than casually interested in lead is a young doctor who doesn't even work in the geld. He is Dr. John Mills, 29, a virologist at the National Institutes of Health and a member of the Medical Committee for Human Rights, a loosely structured group of activist health professionals characterized by Dr. Cohen as "good young fellows who don't mind kicking up some sand."

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Mills simply assigned himself the task of shaking up the bureaucracy. It is to him, more than any other individual, that credit is due for getting the District government to move—though the movement has been very slow indeed.

Mills participated in a successful strategem to end run the bureaucracy by taking the matter to the courts. A young lawyer told the doctor of the tragic and typical case of Linda Peterson, and of the need for sharp medical facts. Mills went to the Peterson apartment, scraped paint chips from the walls with a pocket knife, and then had the paint chips tested for lead. He passed on the relevant medical information to the attorney, Herbert Muriel III. Last April, in the U.S. District Court for D.C., Muriel won from the landlord $70,000 in damages for his client.

Muriel says now that although he knew of only two similar cases prior to his and none in Washington, he never had any doubts about the case. "Article 260 section 2605 of the D.C. housing regulations states that a landlord must remove loose or peeling wall covering or paint on interior surfaces."

Muriel also remembers with a kind of wry amusement taking a deposition from the landlord. "When I asked her, 'Do you own the property at 5509 9th St. NW?' she had to ask her lawyer. 'Do I?' before she answered, 'Yes.'"

The money won in court will not undo the damage done to Linda. It may, in fact, be eaten up by the costs of putting the child in an institution, should that become necessary. But even the threat of such damage suits may convince a lot of landlords to remove the old lead paint.

In a more direct approach, more than a year ago Mills brought together Dr. Cohen, officials from Public Health and from the housing division of the Department of Licenses and Inspections—the people who work on lead poisoning in the city but who hadn't talked to each other for months. "I thought it would be useful," Mills says, reviewing what he did, "to put together a program graded from Essential to Wouldn't-It-Be-Nice."

Among suggestions for the future were: city regulations against lead paint, public information, pica clinics for all D.C. hospitals serving children, mass screening or at least a screening of all one to three-year-olds coming from old houses who are presently hospitalized or who are being seen in clinics.

Agreed upon as immediately essential was a reporting system: all cases of lead poisoning to be reported by doctors to the housing inspectors who then would collect paint samples for testing at the Public Health lab and, where necessary, order the landlord to remove the lead paint.

The procedure was circuitious. But at least it gave doctors some control over their patients' environment. (Health would like to have done the whole job up to action against the landlord but lost out to Inspections, which claimed the exclusive right to go into the homes.) This was in November 1968. Eight months later this "immediately essential procedure" had not begun to work.

In July Dr. Bonnie Peacock, serving her first year with the Child Health Center on W Street near Childrens, got it started by threatening a tantrum. She demanded to be told what the city's health officials would be willing to recognize as an emergency if not what she had at the time.

What she had, at Childrens, were four patients, all suffering from lead poisoning and all from the same address—1330 U St. NW. She had Maurice Peele, Melissa Johnson and the two Cooper children, MacArthur Jr., and Natalie, 18 months old and hospitalized for the third time in six months. Dr. Peacock also was treating 16 other patients for lead poisoning at the time. Over the past eight months she had requested paint analyses from the Health Department lab for each one, without getting a single response.

Both Cooper children were ready to be released though it was unthinkable to return them to their apartment. The mother had broken down over the suggestion of a convalescent home. The family hadn't money for a move. And the landlord, Leslie Hayes, at a request for repairs had in turn hollered at the Coopers that he wasn't their babysitter, sent a painter to spray over the flaking radiator with a $1.10 can of paint, and threatened to raise the rent and-or put the family out.

Dr. Peacock's explosion surfaced the news that the Department of Licenses and Inspections had assigned only one of its housing inspectors to collect paint samples. He was away on two weeks leave. (This inspector later explained to a reporter his backlog of paint requests by saying he only did them in the course of other inspections in the same neighborhood. "I'm not supposed to use a lot of gas," he said.)

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Anderson, at Health, was appealed to next. He had no authority to enter a home, but he arranged for the health lab's analytic chemist to accompany an inspector to the U Street address and show him how to collect samples.

Within two days the teaspoonsful of paint were slipped into envelopes, labeled and tested. The lab chemist leached out the lead content, measured it with an atomic absorption spectrophotometer and telephoned his findings: for the Coopers' apartment, four percent lead. (One half teaspoon of that contains 220 micrograms of lead, or 40 times a child's safe absorption, though the body in any case can't absorb anywhere near that much lead at one time.)

Under broad regulations against hazardous conditions, the L&I department ordered the landlord to remove within 18 days all the paint from the bedroom windowsill and the living room walls, which were found on repeat tests to be 16 percent lead. The landlord, declaring himself to be a sorely injured party, complied.

The landlord has a point. In many cases he didn't put on the offending paint. And getting it off is both tricky and expensive. Sanding sends up a cloud of toxic dust. Burning makes fumes and is a hazard in itself. The method favored by George Erickson at the Department of Housing and Urban Development, who seems to have done the only effective worrying about the problem in the city, is to use a water rinsable solvent, then apply a steamer (the kind that's rented for wallpaper removal) and scrape off the loosened paint with a wide knife. He thinks the technical people ought to come up with something better. Paint removal, his way, costs about $100 a room.

The case for a city-wide paint removal program, however, is compelling not only from the humanitarian point of view. It also would make economic sense. A Baltimore chart lists costs as: paint removal for a row house from $250 to $1,200; treatment for lead-poisoned child $1,800; treatment of a child with moderate brain damage $17,000, or severe brain damage $222,000.

Under the circumstances some kind of tax credit might be an appropriate incentive to the landlord, health officials feel, or a large-scale paint removal job covering a neighborhood might be contracted out to local labor.

"We can't rule that out," says one official, "just because we'd be improving somebody's property."

Since Dr. Peacock's agitated call a number of things have happened here, including a lively flow of paint chips through the health lab and a series of seminars put on by Public Health for the housing inspectors. At the first of the seminars Carroll Swanson, acting housing administrator, announced that paint inspectors would get top priority and that inspectors would be trained to spot pica or chewed paint in the course of their rounds, and to make referrals to the Public Health nurse.

Swanson has also announced that his department is drafting for the City Council regulations requiring the removal of lead paint where it's accessible to children. The date when these may be expected has been moved up several times, to Jan. 1.

Thus there are some signs that Washington is moving against what has been called the silent epidemic. But Washington, just as other cities, has a long way to go.

The disease now is well enough known that bills to combat it have been introduced in Congress. Rep. William Ryan, D-N.Y., has introduced three bills in the House, one to fund lead poisoning detection and treatment programs, the other two having to do with eliminating lead paint from old housing. In the Senate, Sen. Ted Kennedy, D-Mass., is sponsoring similar legislation.

But the disease still is so little known that these bills are given very little chance to be enacted into law.

Meanwhile, there will be more cases like that of Linda Peterson. Many of them—perhaps most of them—will go completely undetected or will be diagnosed incorrectly.

It is pertinent to recall a report written by Dr. Lourie of Childrens Hospital, over a decade ago. "We saw the same children over and over again being brought in for de-leading," Lourie wrote, "and each time with evidence of more residual brain damage. We were seeing mental retardates and institutional vegetables created right under our eyes."

And it is pertinent to recall that, as of now, many children suffering from the disease are not even lucky enough to be taken to Childrens Hospital.

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[From the Wall Street Journal, Mar. 3, 1970]

LEADED INDOOR PAINT, OFF MARKET 30 YEARS, STILL KILLS IN SLUMS

CHILDREN EAT THE PEELING PAINT IN OLD, DECAYING TENEMENTS; THE TRAGIC STORY OF GREGORY

(By Everett Groseclose)

NEW YORK.—For the William Franklin family, the experience was terrifying and tragic. When Mrs. Franklin awakened last Sept. 10, her two-year-old son, Gregory, was lying unconscious in bed beside her.

The Franklins rushed Gregory to a hospital. His case was diagnosed as acute lead poisoning—the result of his having eaten paint that flaked off the ceiling or chipped off the wall in the family's slum apartment in Harlem.

For a while, it looked as if Gregory would die, but he didn't. After almost two months of treatment, he left the hospital, but he was hardly a picture of health. He was blind, deaf and could no longer talk and he had suffered severe mental retardation. Today Gregory's sight has returned and he is uttering a few sounds, but he is still deaf and badly retarded. Medical authorities say he probably will never be normal.

In one sense, however, Gregory is all too normal. In many ways he is typical of thousands of slum children who have been poisoned by old paint in decaying tenements. "There is no way to know exactly how many children have been gravely injured because only the worst cases—those near death—show up at the hospitals. We have to believe that a much larger number are never detected," says Dr. Jane S. Lin-fu, an authority on lead poisoning and a consultant to the Department of Health, Education and Welfare.

Reliable figures on the scope of lead poisoning are hard to come by. Some experts say that 250,000 to 400,000 children in the U.S. may have dangerous cases of lead poisoning at any given time, but others say the figure is probably much lower. In any event, a large number of children are involved. In New York alone, city health officials estimate that as many as 8,000 children are dangerously poisoned. Two deaths in New York were attributed to lead poisoning last year, and five occurred in 1968; national figures aren't available.

EATING PAINT AND PLASTER

The victims of lead poisoning are almost always children between one and six years old. Usually, these children have pica, a craving for nonfood substances that may lead them to eat chips of paint and plaster that they find on the floor or peel off the walls.

Almost invariably, lead poisoning victims live in poor neighborhoods. Paint manufacturers stopped making leaded paint for interior use about 30 years ago; thus, most buildings that have gone up since the beginning of World War II have never been painted with leaded paint. But in older structures in cities such as New York, Chicago, Philadelphia and Minneapolis, leaded paint—often cracked, peeling and covered by several layers of nonleaded paint—is still on the walls.

"The tragedy of it all is that lead poisoning could have been stopped many years ago by either removing the old paint or by covering it with wallboard so that kids couldn't get to it—yet it goes on year after year," says Dr. Paul B. Cornely, president of the American Public Health Association and a community health expert at Howard University in Washington.

A major factor is that many parents aren't aware that paint chips can harm children. Slum buildings are also more likely not to have elevator service. To avoid carrying toddlers up and down stairs, parents sometimes leave children unattended while they run errands.

DIAGNOSIS IS DIFFICULT

The economics of slum property is also a big consideration. Landlords are often reluctant to pump money into older buildings for routine maintenance, allowing interiors to deteriorate. Municipal housing authorities, usually understaffed and preoccupied with other problems, are frequently lax about enforcing housing maintenance codes because they fear landlords might abandon old buildings, thereby causing even more problems.

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Moreover, critics say that because symptoms of lead poisoning—headaches, dizziness, constipation and general crankiness—are so similar to symptoms of the common cold and flu that medical authorities sometimes mistake lead poisoning for other ailments. Extended ingestion of lead-laden paint can cause convulsions, coma and brain damage.

Even when lead poisoning is suspected, diagnosis often is hard. Urine analysis can be helpful, but most doctors agree that a blood test—itself far from foolproof—is the most reliable diagnostic method. But in many cities, laboratory facilities are swamped with work, and it can be several days before test results are known. Treatment for severe cases usually calls for agents that induce vomiting and diarrhea.

While lead poisoning is nothing new, it is attracting new concern. Neighborhood groups formed to fight the problem have been gaining influence in recent months. Largely as a result of pressure from such groups, New York Mayor John V. Lindsay is expected to announce a major city-sponsored drive against lead poisoning within a few weeks. It's understood that Mr. Lindsay will urge public health officials in neighborhood clinics to be particularly alert for lead poisoning symptoms and to supply literature to parents who visit the clinics.

"One of the most important things we can do is to get the message across to parents in the slums that paint can be dangerous—and then we want to find new ways to force the city health and housing agencies to do the job they are supposed to be doing," says Paul A. Du Brul, a city planner who is chairman of a New York group called the Citizens' Committee to End Lead Poisoning.

Major progress is being made. For example, New York last month enacted a law—said to be the toughest in the country—that requires landlords to make repairs within five days on buildings in which children are poisoned. If landlords refuse, city workers will do the job and then bill the landlord.

Despite such signs of progress, some groups are still disenchanted with public health efforts to combat lead poisoning and are acting on their own. Last month, a radical Puerto Rican group called the Young Lords, along with volunteer interns and medical students, tested 104 slum children in a door-to-door program in Harlem. According to Juan Gonzalez, a Young Lord, urine tests disclosed positive signs of poisoning in 30% of the children.

Concern is also mounting at the Federal level, Sen. Edward Kennedy of Massachusetts and Rep. William F. Ryan of New York, have introduced bills to make Federal funds available to local governments for detection and treatment programs. The bills would also provide for the correction and eventual elimination of so-called high risk housing units.

Critics contend that a shortcoming in the handling of lead poisoning cases is that children often are returned to the same housing conditions where they were poisoned. Glenn Paulson, co-chairman of a New York group called the Scientists' Committee for Public Information, says, "One of our first priorities has got to be keeping these children from being reexposed to a poisonous environment, as well as protecting other children in the household until a permanent solution can be found.

[Sections of the *V-Line* (Vista Volunteer Information Service—Office of Opportunity) articles dealing with lead poisoning. June 26, 1970 and July 10, 1970]

[From the V-Line, OEO Publication, July 26, 1970]

LEAD POISONING—A "SILENT EPIDEMIC"

(Submitted by Larry Onie, VV)

What is it?

Lead poisoning is almost exclusively a disease of small children (ages 1–6) living in substandard, older housing of the inner city. These children get it by eating base paint and leaded putty from older houses.

Why eat paint?

Children eat paint because they have a tendency toward pica (eating non-food substance) and because lead paints are sweet tasting.

What is the extent of problem?

Lead paint exists wherever dilapidated housing exists.

Spot tests in New York, Chicago, Baltimore and other cities show 5–10% of slum children below age 6 have dangerously high blood lead level.

As many as 400,000 children per year may be poisoned by lead.

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What are the effects of lead poisoning?

200 children die from lead poisoning every year.

One-half of those who receive treatment are left mentally retarded.

What are the symptoms of lead poisoning?

The symptoms are loss of appetite, lethargy, anemia, stomach pains, constipation, etc.

What are treatments for lead poisoning?

The temporary treatment are chelating agents that bind the lead and remove it from body tissues. The permanent treatment is removing lead from the environment. It is pointless to treat a child and send the child back to a home where lead paint exists. The nub of the problem is housing.

What can the Volunteer do?

The Volunteer can help set up a permanent citizens organization that will:

(1) Educate the lay, professional people and public officials about the problem.

(2) Push for the enactment and enforcement of a local government regulation that will make lead paint a code violation.

(3) Get the local government to establish a permanent lead poisoning prevention program.

(4) Urge Congress to hold hearings and pass legislation on lead poisoning this session.

What resources are available to the Volunteer?

There has been lead poisoning prevention activity in the following cities:

(1) Rochester, N.Y.: Contact—David Anderson, Urban League, 80 Main Street, West Rochester, N.Y. 14614, 716/325-6530.

(2) Baltimore, Maryland: Contact—Dr. J. Julian Chisolm, Baltimore City Hospital, 4940 Eastern Avenue, Baltimore, Md. 21224, 301/D12-5400 (Ext. 636).

(3) New Haven, Conn.: Contact—David Lesser, New Haven, Legal Assistance Association, Inc., 185 Church St., New Haven, Conn. 06510, 203/787-5861.

(4) Chicago, Ill.: Contact—Chicago Committee Against Lead Poisoning, 1215 East 53rd St., Chicago, Ill. 60615, 312/684-2084.

(5) New York, N.Y.: Contact—Citizen's Committee to End Lead Poisoning, 184 Eldridge Street, New York, N.Y. 10002, (Dr. Joel Buxbaum, 212/430-2170 and Paul Du Brul, 212/CY3-9000).

(6) Washington, D.C.: Contact—Laurence M. Onie, People to End Lead Poisoning, 1005 13th Street, N.W., Washington, D.C. 20005, 202/737-3700.

NATIONAL LEGISLATION PENDING

House of Representatives

Congressman William Ryan (D-N.Y.) has introduced three bills, H.R. 9191, 9192 and 11699 (staff aide—Lesley Hutchins):

H.R. 9191—HEW grants to local governments to develop programs for detection and treatment of individuals afflicted by lead poisoning.

H.R. 9192—HUD grants to local governments to develop programs designed to detect the presence of lead based paints and to require owners and landlords to remove it from interior walls and surfaces.

H.R. 11699—Requires that a local government submit to the Secretary of HUD an effective plan for eliminating the causes of lead paint poisoning as a condition for receiving any funds for housing code enforcement or rehabilitation.

Congressman William Barrett (D-Pa.) has introduced two bills, H.R. 17234 and H.R. 17260 (staff aide—Dave Glick):

H.R. 17234—Authorizes the Secretary of HEW to assist local governments in developing and carrying out local programs to detect and treat incidence of lead based paint poisoning.

H.R. 17260—Authorizes the Secretary of HUD to assist local governments in developing and carrying out local lead programs to detect and treat incidence of lead base paint poisoning.

Senate

Senator Ted Kennedy (D-Mass.) has introduced S. 3216 (staff aide—Bob Bates):

Title I—Grants for the detection and treatment of lead based paint poisoning (HEW).

Title II—Grants for the elimination of lead based paint poisoning (HEW).

Senators Hugh Scott (R-Pa.) and Richard Schweiker (R-Pa.) (staff aide—Kathy Casey) have introduced a bill that would make it illegal to use lead paint

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on interior surfaces of any home covered by the Fair Housing Act of 1968. It would require homeowners and landlords to remove existing painted surfaces or cover them where lead based paint has been applied in the past and calls for a $1,000 fine for violations of the law.

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Facts About Lead and Pediatrics, Lead Industries Association, Inc., 292 Madison Avenue, New York City 10017.

"Is Your Child Being Slowly Poisoned," Accident Control Section, Community Health Services, Philadelphia Department of Public Health, 500 South Broad Street, Philadelphia, Pa.

"Lead Paint Poisoning in Children," Baltimore City Health Department.

"Lead Poisoning in Children," HEW, Social and Rehabilitation Service, Childrens' Bureau, publication #452–1967, reprinted 1968 (written in medical terminology).

How to Prevent Lead Poisoning in the Home, HEW in cooperation with The National Paint, Varnish, and Lacquer Assn., Inc., 1500 Rhode Island Avenue, NW., Washington, D.C.

NEWSPAPERS

The Village Voice, "Silent Epidemic in the Slums," September 18, 1969, (Vol. XIV, No. 49), New York, N.Y.

[From the V-Line, OEO Publication, July 10, 1970]

MORE ON LEAD POISONING

An addition to Larry Onie's bibliography on lead poisoning! The VITA–DC Committee on Lead Poisoning recently prepared a leaflet, "Lead Poisoning—The Child Killer." (See page 272.) Addressed to the parent, the flyer briefly describes the conditions that cause lead poisoning, the symptoms that result from it, where to go in the D.C. area should one suspect it and what to do to prevent it.

If you'd like to receive copies with an eye towards adapting them to your own community, write: VITA–DC Committee on Lead Poisoning, 915 "Eye" Street, Washington, D.C., 20001.

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*Larry Onie recommends.

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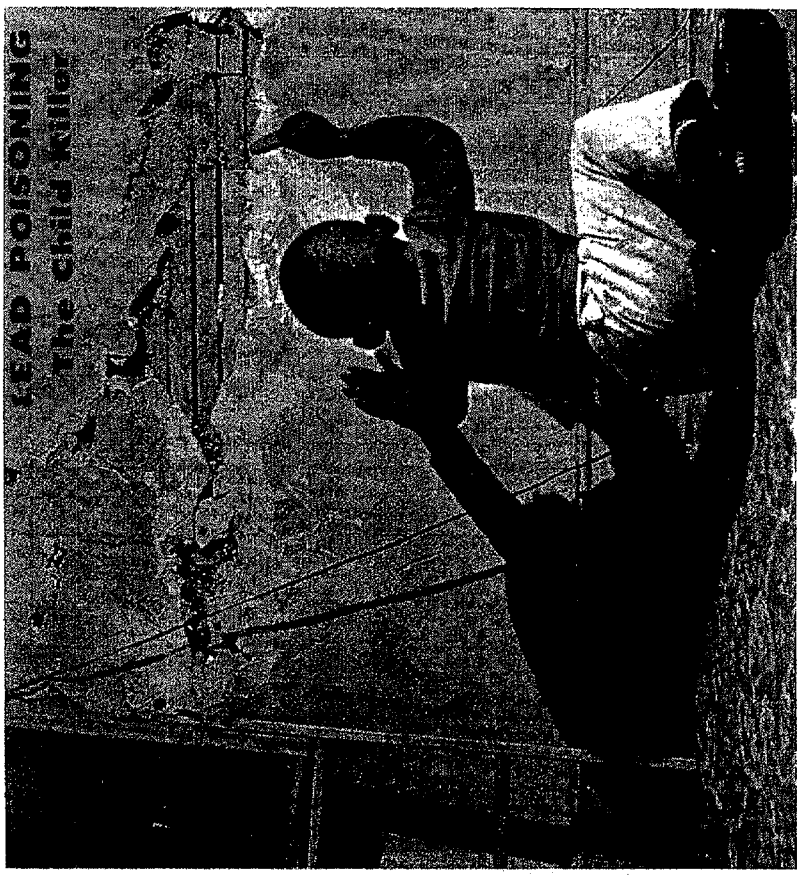

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A CHILDHOOD DISEASE

Lead poisoning is a completely preventable disease that attacks children living in slums. Its victims are most often children between the ages of 1 and 6 who eat bits of crumbling plaster or peeling paint that is heavy in lead content. No one knows for sure just how many children suffer from the disease, but every year children die from it. Others suffer advanced brain damage or severe nervous disorders. Yet, lead poisoning can be prevented—if parents know how to detect early symptoms in their children and if slum housing is repaired.

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LEAD POISONING

The infant who drops his bottle into a pile of chipped paint on the floor or the toddler who crams bits of broken plaster or putty into his mouth is subject to get lead poisoning. It has been estimated that one child in 15 between the ages of one and 6 who live in run-down housing has more lead in his system than is safe. Stopping the disease is simple.

Parents must know how to detect lead poisoning in their children early before the case is too severe to prevent permanent damage. That's sometimes hard to do because the early symptoms are vague and could indicate several other types of diseases or illnesses in children. But, if a child who is exposed to old paint, putty or plaster shows these symptoms, medical help should be obtained for him.

SYMPTOMS

Symptoms may be very mild or quite severe. In the very young child, symptoms may come on shortly after exposure to the lead.

Mild symptoms include headache, irritability, inability to sleep, stomach ache, weakness, loss of weight, vomiting, or loss of appetite. In severe cases, the symptoms may include dizziness, staggering, paralysis, pains in joints, convulsions, or blindness.

WHERE TO GO

There are several places in the District where parents who suspect lead poisoning in their children can go. Freedmen's Hospital, 5th and Bryant Sts., NW; Children's Hospital, 13th and V Sts., NW; and D.C. General Hospital, 19th and Mass. Ave., SE all have personnel who are familiar with the disease and its symptoms.

The D.C. Department of Public Health also has facilities at the following locations: Pediatrics Clinics; Gales Clinic, 65 Mass. Ave., NW; Health Center for Mothers and Children, 702 15th St., NE; Neighborhood Health Center, 635 H St., NE; and the Southwest Health Clinic, 850 Delaware Ave., SW.

PREVENTION

The best way to prevent the disease is to remove all old peeling paint, plaster, and putty from walls within four feet of the floor. Or the District's Bureau of Licensing and Inspection can have an inspector check rented apartments or houses for code violations. If violations exist, the owner may be required by District law to correct them.

These precautions may help prevent the sometimes permanent damages of lead poisoning.

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[From the New York Times, June 12, 1970]

LEAD-PAINT LAW SIGNED BY MAYOR

Mayor Lindsay signed a law yesterday to permit landlords to deduct from their real estate taxes three-fourths of the cost of removing or boarding over lead-based paint in their buildings.

During the same signing ceremony—a public hearing is technically required before any laws are signed—the Mayor bowed to personal lobbying by six of the city's nine remaining hotel runners, who objected to a bill before the Mayor to make runners' licenses unnecessary.

The lead-paint law, which was introduced by Councilman Carter Burden, permits landlords to charge 75 per cent of the cost of scraping off or boarding over lead paint to their basic real estate tax charge. The deductions will be spread evenly over nine years.

The six elderly hotel runners who respectfully confronted the Mayor yesterday were a far cry from the brash young men who, in the heyday of steam travel, greeted ships and trains and competed to snatch suitcases from the hands of arriving visitors to take them to hotels which paid the runners commisisons.

They had come to object to the law to make their licenses unnecessary, to save the city the cost of processing them. But 74-year-old Nathan Simon, who started meeting trains at Grand Central Terminal a half century ago, objected, contending that the licenses were still needed to give the work an air of legitimacy. "Even a dog gets a license," Mr. Simon argued.

Mayor Lindsay smiled and replied that he would defer signing the bill. Placated, the men filed out of the Mayor's office.

Mr. Lindsay concluded the session by signing bills to abolish the need for licenses for street musicians and for ceremonial cannon firing.

A REPORT ON DISTRIBUTION OF LEAD POISONING, PAMPHLET BY THE CHRISTIAN ACTION CENTER, WASHINGTON, D.C., JUNE 1970

In visiting about twenty-two homes in the Inner-City. It was found that a vast potential for children to come in contact with the dangers of lead poisoning.

Most of the homes have peeling wall paper, cracked plastering and small children; a dangerous combination.

About six families talked to said that they have experienced their children, especially the younger ones ages 1–5, eating wall paper or plaster. They didn't think that it would do them any harm.

One parent said that he little boys (ages 4 years and 10 months) had been having trouble with excessive diarrhea. She was told that they should be taken to one of the public health facilities or Children's Hospital for a blood test to check for lead content. She stated that she had never heard of his before. She was told of the risk involved if this was not treated in time.

It has been found that 6 out of 10 persons have no knowledge of the dangers of lead poisoning to children at all.

One mother was found who would eat plaster herself, when food ran out.

Mr. BARRETT. Does Mrs. Parker desire to give a statement or is she here just to——

Dr. SWANN. I think she is here to dramatize the fact that she is a parent who has suffered a great loss.

Mr. BARRETT. All right, fine.

I would say we have a very fine panel here this morning and very edifying. The House meets at 11 o'clock and yesterday I got accused of consuming all the time by the gentleman from Rhode Island who is very much interested in this program In order to pay the debt that I accumulated yesterday, I am going to turn to the gentleman from Rhode Island and let him ask questions first.

Mr. St Germain.

Mr. ST GERMAIN. Thank you, Mr. Chairman.

I want to state that I, too, am very impressed with the panel this morning. I feel it is unfortunate that Mr. Cox from the Department

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of Housing and Urban Development could not have been here this morning to hear this testimony and to observe as well as listen to these witnesses. I think that too much apprehension was voiced by him on behalf of the Department of Housing and Urban Development yesterday with the cost of eliminating this hazard. It was unfortunate because as has been brought out so dramatically this morning, there are times when relative costs have to be weighed. And I feel that this is one instance in which we have to take the bull by the horns and do something.

They stated yesterday in their testimony, Housing and Urban Development, that there was legislation and regulations existing in various agencies but these hadn't been tied together.

Well, this problem has been prominent, and there has been an awareness of this situation now for quite a period of time. I am wondering why they waited, why they had to wait until we had hearings to state that they would attempt to coordinate these agencies in an effort to eliminate this hazard.

Dr. Finberg, in your testimony—I had to go out to make a phone call and I caught it just as I was going out.

I had a question here that you answered almost totally: How difficult and expensive would it be to test the lead content of paint in existing housing?

And you stated that within 6 months there is going to be an instrument available on the market for this testing.

Do you have any idea as to what the cost of that equipment might be, Doctor?

Dr. FINBERG. I am guessing, but I think that—and there may be someone in the room who knows better than I—that the cost will be somewhere in the order of magnitude of about $8,000 per instrument.

Mr. ST GERMAIN Let us say, in a city like Chicago, certainly they could buy one, they would have to get one or two but a State like Rhode Island, a little State, one instrument would suffice for the entire State because it would be covered in a relatively short period of time; don't you agree?

Dr. FINBERG. I would agree that a municipality has to purchase only a few instruments, perhaps only one for Rhode Island; only as many as one had on the staff who could go out and do inspections and record unsuitable dwellings.

Mr. ST GERMAIN. The question of cost keeps coming up, and some of the testimony this morning about the paint that was bought on the market here in the District of Columbia, it is going to be rather difficult for this committee to deal with that type of situation, although we can deal with the paint that is used in construction and rehabilitation of all federally assisted housing. We have the power and the authority to do that.

By the same token, in existing housing where landlords are maintaining this property because they get a profit from it. They get rent from the tenants. I don't see why the Federal Government should have to pay to eliminate this hazard. It just should be a situation wherein if it is found in John Doe's houses, he owns three apartment houses and there is lead paint in the interior of these houses that is chipping and could be hazardous, he should just be told, Mr. Jones—just as you condemn a house that is unsafe, so you condemn the house and say nobody is allowed to live in here—you can't rent these apartments

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to anyone until you take the necessary steps to eliminate this hazard.

I don't, Mr. Chairman, really have any questions except for that one I asked Dr. Finberg, because the testimony has been so clear as I say and so excellent.

I just want to thank the panel for their assistance this morning.

Thank you, Mr. Chairman.

Mr. BARRETT. Mr. Stephens.

Mr. STEPHENS. Thank you. I appreciate the expert information that you have given. I would like to ask Mr. White one question.

Does the Commission on Product Safety have any opinion as to the best available method today to remedy the problem of lead paint in our older urban areas, or is that within the purview of your study?

Mr. WHITE. Well, I have to clarify that the National Commission on Product Safety was a 2-year study commission to define the relationship between accidental injuries and products and to review the effectiveness of Federal, State, and local laws and the effect of industry self-regulation. The Commission has officially completed its study and filed a report with the President and the Congress. So we are now in the remaining 90 days to terminate the activities of the Commission.

We did, however, very clearly state in our final report that this lead paint problem was one that was brought to our attention that was uncovered in the normal investigation activities of the Commission and that it should be listed as a part of the unfinished business. There was no conclusion reached by the Commission. The staff, of course, has become rather expert in investigating problems of this kind, and we couldn't resist the invitation of the committee to actually go out and purchase some of these things and see where we actually had samples that did contain lead.

Now, in terms of the method that is best for covering up or removing the lead paint, we do not have that answer, nor do we have the capability of finding that answer, but that capability does exist within the Federal Government, and there is no reason why a modest research program and cost program could not be undertaken to get the best method and the most effective one.

Mr. STEPHENS. And you feel that more research is actually needed then, to do that?

Mr. WHITE. Well, certainly, an evaluation of the available method and some determination as to which is best and which is more effective for the money spent.

Mr. STEPHENS. Thank you. I have no further questions.

Mr. BARRETT. Thank you, Mr. Stephens.

I want to get a couple of hurried questions in before we go to the floor. That is a quorum call and we have to go over and answer the quorum, but I want to finish so I do not detain this panel. It has been very helpful in its testimony. I also want to report that Mrs. Dwyer, who had to go to another meeting, said she wants to thank the panel on behalf of the minority side, especially their very fine statements that have been very interesting and informative.

That would indicate to me that our panel here and the Housing Subcommittee is very deeply interested in getting to the root of this poisoning.

As you know, our goal in the next 10 years, is to acquire 26.2 million homes and to see that every American has a decent, safe, and sanitary home.

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In this 26.2 million homes we are going to provide for 6 million federally subsidized houses for the low- and moderate-income families. This is quite a field to go into, and 6 million homes apparently are painted with lead paint, and 6 million homes is going to produce a lot of brain damage.

Mr. White, you pointed out I think in your testimony a hundred die every year from lead poisoning.

We have figures stating that 200 die of lead poisoning. We don't know the thousands and thousands who are affected by it, affected through brain damage and retardation. I am of the opinion that you could almost say those people have died.

Mr. WHITE. Yes, sir.

Mr. BARRETT. The life is lost, and if there is any dollars to be spent in the interest of the people of this country it ought to be spent in a program of this type. Much help is going to be needed, and I wonder through all your experience considering the widespread knowledge of this problem whether or not the Federal Government has the authority to set safety standards for lead-paint poisoning.

Mr. WHITE. Not at the present time. There is no such authority.

Mr. BARRETT. Then you would agree there has to be a bill of this type for the elimination of it?

Mr. WHITE. There certainly should be that authority; yes, sir.

Mr. BARRETT. I have another bill in that goes into HEW. This is for finding and treating. I am hopeful that I will be able to incorporate that bill into this. We are going to try to get the authority to do that, and come up with a bill that will do much to eliminate this lead-paint poisoning problem.

But I do think no matter how many dollars are spent by the Government, you couldn't compare it with the loss of one child, loss of one life. And to me, as I pointed out yesterday, all the gold in Fort Knox wouldn't be comparable to the loss of one child that has brain damage and goes through life with it, and the pain that that family has.

So to me you can't measure this human aspect by dollars and cents. It has to be done by human understanding, human consideration for the people who live in these ghetto areas, if we call them ghettos. I hate to call them ghettos. I would rather call them a sea of slime, and until this country, as I have said yesterday, makes up its mind not to be an undeveloped country—and it is undeveloped as long as people are living in poor environment, living in 6 million substandard housing units—we are just as badly in need of development as some of these countries to whom we send billions of dollars to rehabilitate them.

I think you people are going to be called on for a lot of help in this.

Doctors, I would like to ask you this question also. And this I asked yesterday.

There seems to be two schools of thought in the medical profession as to the content of lead which meets a peril point, whether 40 percent micrograms is high or 50 would be the peril point.

What would be your position on that, as to whether you are at the peril point at 40 or 50?

Dr. Chisolm, your indication to me according to your testimony almost puts you in the peril category the minute the child takes a taste of lead.

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Dr. CHISOLM. Well, I guess my own view—you are talking about the blood lead concentration. Fifty micrograms percent I think would be a severe point. One must remember that blood lead levels in urban areas in all people are higher than they are in rural areas. I don't think that 40 is deleterious. In other words, we don't know that that is harmful. The reason for setting a peril point at 50 is because we do know that if children keep on eating so much, it can rise very rapidly. And the real point at which a hazard seems to appear seems to be between 80 and a hundred. And I feel that there should be some lead time—in other words, if we wait until it is 80 or 100 that is too late.

Mr. BARRETT. I asked this question yesterday, too, and I will terminate the questioning because the members have to run. But I asked this question of a doctor yesterday who made a very fine statement, and I will not mention his name today, whether the intake of lead based paint poisoning and the desire to chew it, is body chemistry, nutritional deficiency, or complete starvation. What would you think causes a child to go after this.

Dr. FINBERG. It is probably a perfectly normal thing for children to eat foreign substances in that age period.

Mr. BARRETT. Excuse me, Doctor. I am including you in on this, too, Dr. Swann, because you are pretty close to this, as I followed your testimony.

Go ahead, Dr. Finberg.

Dr. FINBERG. There is really no good evidence that nutritional deficiency is a necessary prerequisite for children to eat foreign substances. In fact all the evidence is quite to the contrary. Normal children in the age period from 1 to 3 do this all the time as any mother can tell you. Under certain circumstances where there is availability of flaking plaster it is much more attractive. If in addition to that the surroundings of the child are such that it is impossible for someone to be paying very close attention, it is apt to be exaggerated.

There is no special reason to think that this is a particular kind of child. What is really important in a negative sense, is that there will be availability of the lead to get into him either through his mouth, which is the usual route, or theoretically at least through his lungs under certain circumstances.

Mr. BARRETT. I note Mrs. Parker's son, though, sat on the step and he would go after paint, and even then he would go into the plaster walls and try to get into the paint so he could get the taste of it. It impressed me that way. Dr. Swann, let's hear from you.

Dr. SWANN. I think some of the children—I don't think there is any evidence that there is any nutritional deficiency. Some of the children, I think, initially taste the paint or the plaster, and after that for some reason they like it and they go back and pick it.

Now, I have tasted—when we became interested in lead poisoning, I tasted flaking paint, and I tasted plaster. It does taste a little salty, and we do know children do like things that are salty, things like potato chips, and pretzels.

It seems to me that there might be some—and this is a surmise on my part—that the children actually like the taste of the paint and the plaster, and once they taste it they go back and actually flake it. And we have seen homes in which initially a very small hole got bigger and bigger and bigger. And not only will they taste it, but if you will look

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at a cover of our pamphlet, they will stick their lollipop into the plaster. They will cover a popsicle with plaster. The children like the taste.

Mr. BARRETT. Dr. Chisolm, Dr. Finberg, Dr. Swann, Mr. White and your associate, Mrs. Parker, we are grateful for having you here today. You have been a very splendid panel.

You have been very educational here this morning, and we are grateful for your coming.

All time has expired, we probably will submit to you of the medical profession as well as Mr. White, questions in writing in order to help us get a bill that might be acceptable to everybody.

Thanks very much for being here.

The committee will now stand adjourned, subject to the call of the Chair.

(The following material was submitted for the record:)

STATEMENT OF HON. RICHARD S. SCHWEIKER, U.S. SENATOR FROM THE STATE OF PENNSYLVANIA

Mr. Chairman, I welcome this opportunity to indicate my support for H.R. 17260, "The Lead-Based Paint Elimination Act of 1970" for the consideration of the members of the Committee on Banking and Currency.

Mr. Barrett is to be commended for recognizing this serious problem, and introducing comprehensive legislation to assist local communities. I am particularly pleased that Mr. Barrett has chosen an approach with dual requirements of a comprehensive testing program to detect lead-based paint, and a comprehensive program requiring owners or landlords to eliminate lead-based paints on interior surfaces. This approach should reach most of the units where children are afflicted and where lead paint exists. In addition H.R. 17260 affords local residents in communities where lead-based paint exists, commonly referred to as "lead-belts" the opportunity to participate in the established programs for elimination of this tragic phenomenon.

It is gratifying that Congress is finally recognizing the serious nature of this problem.

I have also introduced a bill on June 9, 1970 which complements the bills introduced by Mr. Barrett, Mr. Ryan and Senator Kennedy. My bill S. 3941, the Lead Paint Poisoning Penalties Act" on which I testified before the Banking and Currency Committee on July 14, provided civil penalties not to exceed $1,000 per unit for the use of any paint in excess of one percent lead pigments or lead additives on the interior of dwellings falling within the jurisdiction of Title VIII of the Act of April 11, 1968, relating to Fair Housing Public Law 90–284. As of December 31, 1968, more than 80% of all housing units in the United States were subject to the provisions of the Fair Housing Act, so that most of the older housing units in inner cities where leaded paint exists are reached by the bill.

My bill also requires owners or landlords to remove any existing lead-based paint from interior surfaces or to cover these surfaces within one year from the effective date of this act.

Reporting the existence of lead-paint on interior surfaces is made the responsibility of persons in the local communities. The Secretary of Housing and Urban Development is authorized to establish rules and regulations necessary to fulfill this responsibility. HUD already has established complaint procedures for the housing covered under Title VIII, which also covers the housing in this bill. It is my understanding that this can be an effective procedure to enable local communities to register their complaints particularly since HUD has had such wide experience with complaints under the provision of Title VIII. I also feel that this procedure is a novel mechanism in this area, since a complaint can be sent to HUD before a child is afflicted, merely by knowledge of the existence of such paint. Too frequently complaints in local communities are registered after a child with this disease has been detected. I am certain that with the growth of community groups, doctors, and public health departments interested in early detection of this disease throughout the nation, the reporting procedure will work.

All of the bills which have been introduced in the House and Senate give HUD and HEW new responsibilities in this field. I am anxious to see these bills come out of committee and to the floor. We can not allow this tragic disease to con-

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tinue as it has in the past. In New York there were 120,000 children exposed to the hazards of lead poisoning, and 6,000 to 8,000 children have significant levels of lead in their blood. The number of children in New York alone indicates the tragedy of this problem. Yet the problem becomes even more tragic when we realize that these numbers are concentrated primarily in Black and Puerto Rican communities, where survival is always the crucial question, where infant mortality is high, and where other diseases are prevalent. Therefore, to allow an eradicable disease such as lead-paint poisoning to exist is only to lessen the life span of thousands of children, and to say to these communities that we are not really concerned. This eradicable disease according to Dr. Jane S. Lin-Fu, in a recent article, which I am including for the record, entitled "Childhood Lead Poisoning", published in *CHILDREN* and reprinted by the Department of Health, Education and Welfare, occurs most frequently among children residing in housing units constructed prior to World War II, although it can occur in any dwellings where lead-based paint has been used. (The article referred to may be found on page 37.) Children will commonly put items such as paper, pieces of plaster, woodwork, and other similar items in their mouth and swallow them. This is particularly true in dilapidated housing where these substances are common and children suffer from a disease called pica, in which a child has a perverted appetite for non-food items. Repeated ingestion of these lead-painted substances can lead to mental retardation, cerebral palsy, optic atrophy and impairment of intellectual ability. Tragically, it can, and does result in death for many children. The most common victims of this disease are children between the ages of 1 and 6. The article by Dr. Jane Lin-Fu indicates that within this age range, children between the ages of 1 and 3 comprise 80–90 percent of the cases. Additionally, and perhaps most tragically, over 50 percent of all deaths from lead poisoning occur in 2 year olds.

These are horrible observations of what happens to a large segment of our deprived population. The confirmed cases of this disease in four of our major cities in 1969 gives us an indication of the dimensions of the problem. In that year, Philadelphia had 122 confirmed cases, New York had 727 cases, and Chicago treated 467 potential victims. 60 cases have been reported in the District of Columbia since April 1969. Yet, these figures indicate only part of the problem. There are thousands of children throughout this nation who have elevated levels of lead circulating in their blood who have not been detected or treated.

The task facing us with this acute problem now is to move ahead and appropriate funds for local communities, and to establish penalties for those landlords and homeowners who refuse to cooperate. It may very well be that the $1,000 penalty is too low, and I am sure that the $13,500,000 authorized for grants in H.R. 17260 is too low. We will only be touching the surface of the problem with this amount, particularly since many cities have not started programs. In testimony submitted to me from the Department of Public Health in Philadelphia, Dr. Ingram estimates that $3,000,000 would be needed annually to attack the problem in that city. We must recognize that Philadelphia has had one of the better programs in the nation since 1950. Thus, I would recommend that this amount in H.R. 17260 be closer to $30,000,000 for fiscal year 1970, $20,000,000 for fiscal year 1971, and $15,000,000 for fiscal year 1972. Without recognition of the need for these larger amounts the program may very easily run into the problems that confronted the rat control programs.

Finally, I would like to again urge that the Committee quickly act on the bill introduced by Mr. Barrett and move it to the floor. Communities across the nation are anxiously awaiting a solution to this problem and we must act now.

STATEMENT OF ROBERT A. ROLAND, EXECUTIVE VICE PRESIDENT, NATIONAL PAINT, VARNISH AND LACQUER ASSOCIATION

The National Paint, Varnish and Lacquer Association welcomes this opportunity to submit a statement to the House Committee on Banking and Currency, Subcommittee on Housing, in connection with the proposed Lead-Based Paint Elimination Act of 1970 (H.R. 17260) in order to present additional facts relevant to the Subcommittee's review of this legislation and to attempt to clarify certain erroneous matters and possible misconceptions on the subject which developed during examination of witnesses at the hearings on this bill.

The National Paint, Varnish and Lacquer Association is a trade association representing the manufacturers of more than ninety (90) percent of the dollar volume of paints, varnishes, lacquers and allied products produced in the United

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States. In addition, the National Paint, Varnish and Lacquer Association is a spokesman for the major suppliers of raw materials from which the industry's products are made.

At the outset, it should be made clear that the National Paint, Varnish and Lacquer Association strongly supports the progressive legislative proposals of Representative Barrett, Representative Ryan and some forty-five other sponsors in both the House of Representatives and the Senate for Federal financial assistance to States and their subdivisions for projects involving the detection and treatment of lead poisoning in children and for the rehabilitation of areas found to be seriously contaminated by old lead-based paints. Federal assistance will permit the establishment of effective programs across the country wherever needed and will ensure the acceleration of existing programs in the several States and major cities which have been applying their limited resources to the lead-paint problem in varying degrees for a number of years.

During this period of time, the National Paint, Varnish and Lacquer Association and its members throughout the country have maintained liaison with public health officials and other authorities in various States and local jurisdiction to provide technical data, participate in the development and promotion of educational programs and assist in any way possible in the growing effort to reduce and eliminate the incidence of lead poisoning in children. Currently, at least five States and ten major cities, including the District of Columbia have laws, regulations or ordinances concerning the sale and use of lead-bearing paints.

THE PROBLEM

It should be made clear at this juncture that the problem of lead poisoning being considered by the Committee at this time is caused by children ingesting flakes or chips of *old* lead-based paint, which still exists on poorly-maintained walls and ceilings, particularly in the slum neighborhoods. H.R. 17260 deals directly with this problem, i.e., the development and implementation of programs aimed at elimination of the lead-based paints in dilapidated structures which were built prior to World War II. Of equal importance are the companion bills before the Public Health and Welfare Subcommittee of the House Interstate and Foreign Commerce Committee—also to provide Federal financial assistance in developing and carrying out programs to detect and treat the cases of lead poisoning which result from the flaking chips of old paint and crumbling plaster in poorly-maintained housing.

It is true that, prior to World War II, many structures were painted with paints which contained large amounts of basic barbonate or sulfate of lead (white lead). This type of paint has not been used on interior surfaces for more than thirty (30) years. However, even though subsequent coats of paint on the interior surfaces were non-toxic, the paint chips or plaster from these deteriorating surfaces do contain the original toxic lead paint. This situation is most prevalent in slum housing where painting maintenance is minimal or even non-existent.

In such instances, children up to five years of age are known to eat these chips of old paint or crumbling plaster. This is recognized now as the principal cause of childhood lead poisoning. This poisoning generally is ascribed by medical experts to "pica." Seventy to ninety percent of children so poisoned have been found to have a history of pica, i.e., a disorder stemming from a compulsion to eat non-food materials such as dirt, wood, paint chips and plaster. When such children are living in old pre-World War II housing, the many coats of paint on the walls and woodwork frequently contain significant amounts of the older toxic paints containing white lead pigments.

This Statement does not presume to discuss the medical aspects of lead poisoning for the testimony of the several medical witnesses before this Subcommittee have covered this matter accurately and in detail. The National Paint, Varnish and Lacquer Association endorses the work of these groups and, particularly, the dedicated efforts of public health officials and the many volunteers who have worked tirelessly and with very limited resources to find solutions to the problems.

TOXIC LEAD-BASED PAINTS NO LONGER USED ON INTERIOR SURFACES

As stated before, the paint industry ceased using white lead as a basic ingredient of interior paints more than 30 years ago when other white pigments were developed. There is no longer any purpose in using white lead pigments in paints intended for interior use since better white lead-free pigments for this

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purpose now are available at lower cost. When the industry voluntarily stopped making products for interior use with white lead pigments, interior paints ceased to be a major cause of lead poisoning in properly-maintained dwellings; and, today, modern interior paints are safe coatings.

Some lead-bearing coatings still are used today—in structural steel primers, in some exterior house paints and in other exterior coatings for special uses. However, since lead pigments are relatively expensive, their use generally is confined to providing rust-inhibitive properties on steel surfaces and for good exterior durability in certain exterior wood and metal paints. Such paints are labeled to caution against their use on interior surfaces, even though not required to be labeled under the Federal Hazardous Substances (Labeling) Act of 1960.

FEDERAL HAZARDOUS SUBSTANCES ACT

This Federal legislation was developed by joint effort of government and industry representatives to provide protection for consumers by ensuring that adequate warnings as to toxic and other hazards would be placed on containers manufactured and sold for household use. With industry cooperation and effective administration of this Act by the Food and Drug Administration (the agency having statutory responsibility for its enforcement), detailed, proper and adequate labeling has been a way of life for eight years.

Even prior to the enactment of the Federal Hazardous Substances Act, however, the paint industry had anticipated the need for warnings on hazardous products, and had been using such labeling—voluntarily and without requirement of law—since the early 50's. During these years the National Paint, Varnish and Lacquer Association had conducted extensive studies and had developed meaningful data concerning the hazards of the products of the industry, such as the lead-bearing paints still used on exterior surfaces.

RECOMMENDED LABELS FOR THE INDUSTRY

To facilitate compliance with the letter and intent of the Federal Hazardous Substances Act, a series of labels were prepared by the National Paint, Varnish and Lacquer Association. After review and approval by the FDA, the labels were recommended for use by industry members. These labels were found to be so complete and effective that FDA has used them extensively for training inspectors and as guidelines for enforcement of the law.

Subsequently, the National Paint, Varnish and Lacquer Association published a 634-page labeling guide for the industry. In addition to all the recommended labels, this book compiled pertinent laws and regulations on the subject, including those of State and local jurisdictions. The original list of labels was extended in 1964 to include labels recommended for use with industiral products not covered by the Federal Hazardous Substances Act, which is limited to "packages suitable or intended for household use." These have served as a most satisfactory guide for the industry since that date and have enabled paint and coatings manufacturers to label and sell their products with due regard to the safety of users, whether required to be labeled by law or not.

The Food and Drug Administration, other government agencies having related responsibilities, industry officials and cognizant Congressional committees continually review the prescribed labels, in consonance with technological advances and human experience, to ensure that they continue to provide the requisite caution or warning for household products. One specific instance of the continued concern of the Congress in this matter was the enactment in November 1969 of the Child Protection and Toy Safety Act of 1969 (Public Law 91-113), the principal purpose of which was "to amend the Federal Hazardous Substances Act to protect children from toys and other articles intended for use by children which are hazardous due to the presence of electrical, mechanical, or thermal hazards."

NATIONAL STANDARD DEVELOPED IN 1955

Another related but separate problem on this subject—discussed briefly during examination of witnesses testifying on H.R. 17260—has to do with the amount of lead pigment or lead additives which should be used in modern interior paints today. In this regard, the paint industry has operated since 1955 under a national standard which contains specifications to minimize hazards to children from residual surface coating materials.

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This voluntary standard (USA Standard Z66.1) was developed in 1955, under the sponsorship of the American Academy of Pediatrics, to deal with the toxicity hazards which may be encountered through the ingestion of dried coatings on articles or surfaces accessible to children. The standard was reviewed and approved by the American Standards Association (ASA) Sectional Committee on Prevention or Control of Hazards to Children. This ASA Sectional Committee was comprised of about 24 representatives of industry, government agencies and medical groups, all prominent leaders in their respective fields. Z66.1 was revised and re-issued in 1966, in which year the ASA was reconstituted as the United States of America Standards Institute (USASI). (Note: this organization had a name change again in 1969, at which time it became known as the American National Standards Institute.)

As stated, USA Standard Z66.1–1964 prescribes specifications for paint to assure safety from toxic hazards to children with respect to coatings on articles or surfaces accessible to children. This standard has been followed by the industry since its establishment in 1955, and has served as a pattern for the several statutes, regulations and ordinances dealing with this subject since that time.

USA Standard Z66.1–1964 states, in pertinent part, as follows:

"A liquid coating material to be deemed suitable, from a health standpoint, for use on articles such as furniture, toys, etc., or for interior use in dwelling units where the dry film might be ingested by children:

(1) Shall not contain lead compounds of which the lead content (calculated as Pb) is in excess of one percent of the total weight of the contained solids (including pigments, film solids, and driers);"

The bill introduced recently by Senator Schweiker (S. 3941) is the first legislative proposal at the Federal level dealing with the subject. This bill adopts the allowable lead content level specified in USA Standard Z66.1–1964; and, in addition, it would assess civil penalties for violation thereof as well as for the failure of the landlord or owner of the property to take steps within a prescribed period to remove paint from the interior surfaces of dwellings when found to contain lead in excess of the prescribed limit.

ELIMINATION OF THE HAZARD

Once again, the matter of principal concern to this Subcommittee at this time is the removal or elimination of the old lead-based paint from the dilapidated pre-World War II housing. Federal financial assistance is deemed to be necessary for the problem today is of such magnitude that most States and local jurisdictions simply do not have sufficient resources to do the job alone. Unless some financial assistance is provided, many landlords simply will abandon their property, thereby further contributing to the existing housing crisis among low-income families.

No inexpensive method yet has been developed for removing old paint from walls. Removing the old paint by burning or by steam cleaning at best is marginal, and, even with such relatively simple procedures, is quite expensive in view of the high labor costs. Furthermore, many of the walls in this old housing are not structurally sound enough to permit a paint-removal operation. At the present time, the simplest and most direct approach seems to be a complete resurfacing through either fiberglass bonding or drywall and subsequent repainting with modern interior paints.

DETECTION OF LEAD ON INTERIOR SURFACES

Of equal, perhaps even greater, importance is the development of testing programs and equipment to detect the presence of lead-bearing paints on the interior surfaces of the residential housing. Chemical analysis of samples taken from these surfaces is possible but may be too slow to be practical. Also, the large and expensive test equipment now available or under development may not be practical due to its bulk and delicate handling requirements.

Urgently needed is a small portable instrument that can be moved easily from room to room and from building to building and will indicate on the spot the presence of lead. The National Paint, Varnish and Lacquer Association is working with the Atomic Energy Commission and instrument manufacturers to develop such equipment. Another value of a program of this type is the community-relations aspect wherein the residents might observe and understand that something is being done by their local government for their safety and health.

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SUMMARY

The principal cause of lead poisoning in children results from the ingestion of chips of paint or crumbling plaster from the deteriorating surfaces of interior walls and ceilings on which lead-based paints were used more than 30 years ago. The rehabilitation of this substandard housing to remove or eliminate the hazard of the old lead-based paint requires priority attention in order to prevent further lead poisoning.

Federal financial assistance, as proposed by H.R. 17260, would permit the development of effective programs to eliminate the causes of lead-based paint poisoning. In addition, funding of research projects would accelerate current programs to develop means for testing interior surfaces of substandard housing for the presence of lead, and would determine optimum measures for rehabilitating these dilapidated structures.

The National Paint, Varnish and Lacquer Association has given priority attention to these matters, and will continue to work closely with public health officials and other representatives of government agencies—at the Federal, State and local levels—to assist in solving the problems related to lead poisoning at the earliest possible time.

Modern interior paints do not contain white lead pigments and are safe coatings. Exterior paints—in which lead pigments are used today for good exterior durability and for other special purposes—are voluntarily labeled to caution against use on toys, furniture, window sills or interior surfaces of rooms which may be used by children.

The National Paint, Varnish and Lacquer Association stands ready and would be pleased to answer any further questions under its cognizance at any time.

N.Y. SCIENTISTS' COMMITTEE FOR PUBLIC INFORMATION, INC.

This is a summary of a meeting assembled informally by the Buildings Research Advisory Board of the National Academy of Sciences at the request of the New York City Health Research Council and the New York Scientists' Committee for Public Information.

The meeting opened with a discussion of childhood lead poisoning which covered the following points: The disease occurs in children between the ages of one and six living in poorly mantained housing. They may come to the hospital ill with anemia, cramps, kidney trouble or convulsions. A considerable number of these children develop permanent brain damage. An even larger number has less obvious evidence of excessive explosure and must be discovered by the use of various screening tests: the degree of nervous system damage in these children is unknown. 90–95% of lead poisoned children become intoxicated by eating lead contained in older paint which is readily accessible on deteriorating plaster walls and on doors and window sills.

Present-day indoor paint contains insignificant amounts of lead. However, most exterior paints continue to employ a lead base; therefore exposure to exterior surfaces continues to present a potential danger for children.

Children found to be poisoned must be hospitalized for de-leading with chelating agents, a procedure which is not totally without hazard. In addition, they cannot be returned to their former environments unless the home is de-leaded, or they run a great risk of becoming re-poisoned.

In accutely poisoned children the costs become obvious. 25% of these children may suffer overt permanent mental retardation. Each child hospitalized for diagnosis and treatment costs the City of New York $100 per day. Those who suffer permanent damage and require institutionalization (or are unable to support themselves) will ultimately cost the State $200,000–$300,000 over a lifetime.

These are the established facts, but some questions remain. What are the effects of long-term subclinical increased body burden of lead? Studies must be carried out to determine how much this contributes to the incidence of mental retardation in poor urban children. At present there is little data available concerning the intellectual and psychosocial development of children with this kind of exposure to lead.

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Is there a preferred topographic site from which children ingest the most lead? Information provided by the New York City Department of Health, after investigation of the homes of 680 lead poisoned children, revealed that 15% of woodwork samples and 23% of painted plaster samples tested contained more than 1% lead. These data were discussed particularly with respect to the relatively low incidence of positive results. Similar investigations in Baltimore yielded 90–95% positive households in cases of lead poisoning. Three areas of possible error were discussed. The methods of analysis were standard and reproducible and when tested against unknown specimens were found to be adequate.

The sampling procedures in this New York study were discussed at length. It was generally conceded that an insufficient number of samples was being obtained and/or samples were being taken from places unlikely to reflect the presence of lead, i.e. a peeling spot which had previously been replastered or areas which may have been wall-papered in the past and covered with paint only in the last twenty years. The third area discussed was that of additional sources of exposure. The Department of Health indicated that only 2.5% of all water samples tested had any significant lead content, probably eliminating lead pipes as a consideration. However, outdoor fire escapes, window moulding and railings should not be ruled out. In addition, plaster ingestion in a friend's or relative's house would produce illness with negative samples from the patient's own home.

It was suggested that the environmental aspects of lead poisoning could be viewed as two basic problems. The first is detection. The second is prevention of the interaction between child and poison.

Detection seems to be a problem of manpower and methodology. Epidemiologic studies suggest that all apartments of a certain type under conditions of poor maintenance represent a clear hazard. The present methods of detection in New York City involve the collection of three samples per apartment by a sanitarian, with subsequent analysis in a central laboratory. This approach was felt to be inadequate, because present manpower places an unsatisfactory limit on the number of samples obtained. In addition, too few apartments are investigated per unit time. Obviously, more sanitarians and more efficient use of the number presently available are needed. One approach presently being tested in New York City is a lead detector. The surface to be tested is illuminated with gamma rays from a Cobalt-57 source. If lead is present, it responds with its characteristic 74 KEV X-rays and can be monitored easily. In tests to date, it has been able to detect a layer of 5% lead paint under 15 coats of non-lead paint with a 15 second response time.

Questions were raised relative to X-ray scatter and the absorption of the X-rays by other materials which may overlay the bottom layers of lead-containing paint, particularly barium sulfate, a major component of lithopone paints which were in wide use from 1920–1950. One of the participants offered the investigators a supply of lithopone paint to perform the appropriate studies on this point. It was noted that the City hopes to start field trials of the instrument in July. It was suggested that Western Nuclear Research, a branch of the State University of New York, might be able to furnish further technical aid.

An approach to interference with the child-lead interaction in a realistic and humanistic way is a much more difficult problem and was viewed in terms of possible behavioral and environmental modification. Once a dwelling was found to have significant lead on its walls, several steps could be taken. The family could be moved to a lead-free apartment. At present this is difficult because of the limited number of dwelling units available and the reluctance of many of the involved families to move. Second, the affected rooms, apartments and buildings could be clearly labeled so that parents would be constantly reminded of the danger and attempt to keep their children from it. The psychosocial difficulties involved in this type of approach were discussed briefly. Thirdly, the question of lead free "playrooms" or "mini day-care centers" in each affected building was proposed. This was felt to be a good suggestion but not adequate to meet the total problem.

The proposed environmental solutions fell within three categories: The first suggested making the paint and plaster taste so vile that no child would want to eat it by applying a distasteful non-toxic substance in a highly permeable oil-base spray. The experience with this approach to nail-biting and thumb-

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sucking has not been notably successful, hence its application here will probably not be profitable. The second was the "inactivation of lead approach." One could overcoat the wall with chemicals (anions) which combine with lead to decrease its solubility under physiologic conditions so that ingested lead would not be absorbed. Borates and sulfates were proposed and discarded, since the former is too toxic and the latter too soluble.

The third and most extensively discussed was the application of an inert substance to the wall which, in effect, would isolate the lead-loaded wall from the child. The ideal materials would be strong, i.e., hard to puncture or scrape, vermin-proof, and fire resistant with a high ignition temperature. It would not release noxious vapors at high temperatures. It would place no additional strain on the existing structures of the building. It would have a reasonable installation cost (labor and materials) and have a low maintenance cost.

Such materials are presently available. The major points of discussion were which materials, what cost is reasonable and what techniques should be applied? For flat surfaces the following were suggested and discussed:

(1) Gypsum board—The installation of this material creates a new wall in front of the old. It has two main drawbacks. It costs 5 cents per square foot for materials, and installation is expensive and sophisticated, with a total cost of 40–50 cents per square foot.

(2) Fiberglass wall-cover materials—These are made by Owens-Corning or Johns Manville for Sherwin-Williams. Loose paint and plaster must be removed prior to application. Some patching of the wall may be necessary. It is supplied in 40 inch wide sheets; an adhesive compound is applied with a roller over the sheets. This costs 10 cents per square foot for materials. In some buildings, with two coats of paint over it, this has lasted very well for ten years. The estimated total cost is 43 cents per square foot.

(3) Paper wall-cover materials—These can be made strong, fire-retarding and attractive, and can be applied on an unsound wall in a horizontal fashion. The cost of materials runs about one cent per square foot. U.S. Plywood has used paper adherent to wood, then covered with a single coat of paint for up to 30–40 years with good durability. The manufacturers who might be helpful are St. Regis Paper, Union Camp, Kimberly-Clark and Crown Zellerbach.

(4) Vinyl coat sheeting—This material must be applied with an industrial adhesive. It is the least combustible of the plastics, but does give off some hydrochloric acid fumes in fire. It has very low maintenance, can be tailored to order and has a cost (including adhesive, not labor) of 10 cents per square foot. The disadvantages of this material are possible surface tackiness under some conditions and brittleness at very low temperatures. It was felt that neither of these was a significant problem. Rigid vinyl board is available but sheeting seemed preferable to all participants largely because of labor factors. The actual costs of these materials can be obtained from Armstrong Cork, and it was further suggested that other companies to contact were Union Carbide, Diamond Alkali, Firestone Rubber, B. F. Goodrich, Grace Chemical and Borden Chemical Company.

Liquid surface coverings were then discussed. The general problems involved in the use of liquids include adequate strength (i.e., vinyl paints are not as strong as vinyl films), thickness control, adhesive problems with heavier films and the general need for some wall preparation (sanding, raking, cleaning, etc.) Urethane-base paint was mentioned as one possible method. A second suggestion was the use of pigmented masonry conditioners. This was felt to be an excellent substance if flaking, scaling paint could be removed from the underlying wall. It has a tung oil base which makes it penetrate very well. In drying, several coats add binding strength to the wall, and it can contain zinc oxide, to prevent mildew. The only reservations concerned its strength of finish in the face of an aggressive child.

Technically, curved surfaces can be handled with the liquids described above: however, if sheeting is used on flat surfaces some other technique must be used for sills, moldings, etc. It was felt that where possible, surfaces should be scraped down to bare wood. Otherwise the use of vinyl chloride lacquer applied by spray was suggested. This requires masking of the surfaces not to be sprayed. There is some fire hazard during application but little or none afterwards. The film is quite tough, but not as strong as the wall films. It should be applied as a spray.

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Portable self-atomizing airless spray units can be used Aerosol cans are quite expensive.

The consensus of the group was that wainscoating to a level of five feet seems adequate no matter what method is used. The second point of agreement was that no *single* method would be appropriate in *all* affected dwelling units. A variety of methods must be available. In order to establish such an armamentarium, a demonstration project should be set up consisting of no less than twelve comparable apartments. These would be lead-proofed with a variety of methods using both union and indigenous labor. Time, materials, labor, costs of installation and maintenance and effectiveness would be analyzed and compared over a period of at least two years. It was felt that other approaches might be available from professional groups such as Union Carbide or National Starch and Adhesives; these might also be willing to donate materials and some service.

Once effective practical methods of correction are demonstrated, they must be tested for their ability to prevent children from being excessively exposed. This is a somewhat more difficult study but can be probably worked out by a multidisciplinary group including physicians, environmental engineers, social workers, housing experts and people from the involved industries and labor groups—perhaps under the auspices of the Department of Housing and Urban Development. There is a need to motivate industry to develop solutions. It would be helpful to industry's effort if concrete performance criteria were available and an adequate market could be offered. Otherwise research and development support might be underwritten by some federal or regional agency. Programs could be proposed which offered landlords or tenants financial incentives and professional aid for attempts at rehabilitation. Low interest loans could be made available for this kind of rehabilitation. Housing code violations must be handled more effectively and realistically. The imposition of financial penalties on landlords cannot be equated with the physical and mental penalties a lead-loaded environment imposes on its victims and society.

LEAD POISONING IN SLUM CHILDREN, A PROGRAM FOR PREVENTION AND TREATMENT

A program directed toward the treatment and prevention of any disease must consider the agent which produces the disease, the susceptible host and the nature of the interaction between the two. The cause of childhood lead poisoning is the large amounts of lead found in the paint on the walls of deteriorating buildings which make up the bulk of the dwelling units in most of our urban ghettoes. The host is very well defined. It is a child 1–5 years of age, usually from 1½ to 3, in most cases non-white (90–95% in N.Y.C.) whose parents' income is at the poverty level. He or she lives in a specific neighborhood, known to health professionals as a lead belt and has the habit of pica (the ingestion of non-food objects). He is a member of that population which is stated to have a "high background" of mental retardation and is generally not receiving regular medical care (1).

The interaction between host and agent results from the ingestion of relatively small amounts of the lead containing paint over a period ranging from 10 weeks to 12 months. There appears to be a spectrum of disease ranging from the effects of long-term subclinical exposure which are presently ill-defined, through the protean symptoms of fatigue, crankiness, and constipation to the full blown picture of kidney disease, heart disease and lead encephalopathy with seizures, coma and well characterized permanent central nervous system damage (2, 3, 4).

Treatment of the acutely ill child after diagnosis is now well defined. Hospitalization is required while chelating, or metal binding, agents are given intravenously (5). These combine with the lead that is present in the body forming a complex which is excreted in the urine. The drug is given intravenously for 2–5 days. The two drugs which have been used most effectively are EDTA and BAL. These drugs also bind other metals, which are necessary for many normal functions, hence are not harmless and may be dangerous. Once the child has undergone chelation therapy, he or she is evaluated for residual damage, then sent home.

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He cannot be returned to the same environment in which he contracted his disease since he retains the habit of pica. Hence return to his original apartment will result in a reaccumulation of lead within his body and probably another hospitalization. (5). Twenty-five percent of those who enter the hospital with central nervous system damage have permanent sequellae. If they have another episode of encephalopathy, 50% will have permanent CNS disease. If they have a third occurrence virtually 100% will have permanent deficits. At Kings County Hospital in central Brooklyn where children with lead intoxication make up 4% of total pediatric admissions, fully half the cases are readmissions.

Under ideal conditions during the hospitalization period of 5 to 10 days, the family can be relocated in another dwelling or their apartment can be rendered essentially lead-free by a variety of technical procedures (6), so that after the completion of treatment, the child can be returned home to convalesce with as little separation from the family as possible.

However, in most of our cities, the present situation is far from ideal. New York City for example has a health code which states that the discovery of a child with a blood lead level of 60μ gram/100 ml living in an apartment in which the wall contains more than 1% lead demands that the landlord render the walls inaccessible to children by installation of wallboard within 5 days after notification that the condition exists. If the landlord does not comply, the emergency repair program of the Housing and Development Administration can make the repairs and recoup its costs via attachment of the rent from the building. To date, recoupment has been at the rate of 25¢ on the dollar.

In reality after the city laboratory which does the blood lead determination notifies a health department sanitarian of the elevated lead level, the sanitarian is required to inspect the premises and obtain paint and plaster samples for analysis. As of one month ago sanitarians were 3 weeks behind in their inspection, hence 4 weeks behind in landlord notifications. A theoretical 5 to 10 day hospitalization has been lengthened to 40-50 days. Subsequent landlord legal action can stall correction for additional time. The repair crews, when they arrive, repair only walls from which the sanitarian has obtained positive samples, although all the walls probably contain the same concentration of lead in the paint. Hence a major potential hazard remains.

New York City in the last two years has established a fairly aggressive program to combat this disease. Although there is extensive documentation of the existence of the problem in Chicago (7), Cleveland (8), St. Louis (9), Baltimore (10), Philadelphia (11) and other cities a recent survey conducted by New York Scientists' Committee for Public Information, Inc. has revealed that only 2 state and 4 city health departments have similar programs.

What sort of help do these children need? There is an immediate need for convalescent-type facilities so that they may be removed from acute wards after the completion of chelation therapy. There is a need for funds to speed up the entire diagnosis-therapy-home inspection cycle. More inspectors must be hired and trained; sampling and analytic methods must be improved. A promising lead detecting device has been developed in New York but needs further refinement for field use. This combines the sampling and analytic technology in one rapid step and allows the examination of intact walls (12). Funds must be made available for apartment repairs adequate to insure that no re-exposure occurs. HR 9192 and HR 11699 appear to make these funds available in conjunction with a comprehensive program to eliminate blood poisoning. Additional funds should also be available for research to determine the best methods of performing this type of repair. A recent New York City council proposal granted tax abatement to landlords for rendering their premises lead-free.

But these remedies are after the fact. How can we prevent overt disease in these children. These children are generally not in any well-defined scheme of medical care. They are ill-nourished and have poor immunization records. A vigorous outreach type of screening program must be carried out employing local health professionals, community residents and health workers, going door to door if necessary, to inform parents of the potential dangers to their children and insuring that they are tested for an elevated blood lead levels. At this time, there are two major limitations to massive screening. The first is the lack of a suitable micro method of blood lead determinations. Several groups have taken tentative steps in the development of such a method but to date none is avail-

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able. Present technology demands 5 to 10 cc. of blood obtained from the vein of a small child. On occasion this demands puncture of the femoral or jugular vein. These procedures are not totally without hazard both physical and psychological. Hence, funds should be advanced for the development of a technique which will allow analysis from an amount of blood obtainable by a pin prick.

The second limitation is that of personnel. Outreach screening programs such as this demand the use of community people who have been trained as health aides to take blood and urine samples. This requires funds for training and for salary.

What guarantee is there that these types of programs will be effective? There are no such guarantees, however, on the basis of facts available from the New York area it is apparent that if blood tests are performed on children who are readily available, i.e. regular or irregular visitors to clinics and hospitals, about 2% of the children tested will show definite abnormally elevated blood lead levels. Door to door or storefront screenings done during the same time period resulted in the detection of elevated lead levels (13), in between 8 and 15% of the children tested. This kind of program has the additional advantage of bringing a previously unserved population into a formal system of medical care.

It is seldom in medicine that we can totally prevent a disease and in those instances in which it is possible those individuals who are responsible are loudly acclaimed. By implementing the program we have described above we can prevent a disease which probably affects more children than did polio at its worst, (14), "if we do not we are guilty of a great social crime and deserve all the evils which befall us." (15).

J. Buxbaum, M.D., Dept. of Medicine, New York University, Chairman, N.Y. SCIPI

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E. Rothschild, M.D., Dept. of Medicine, Memorial Hospital, Member Board of Directors, New York City Hospital Corp., Lead Poisoning Subcommittee, N.Y. SCIPI

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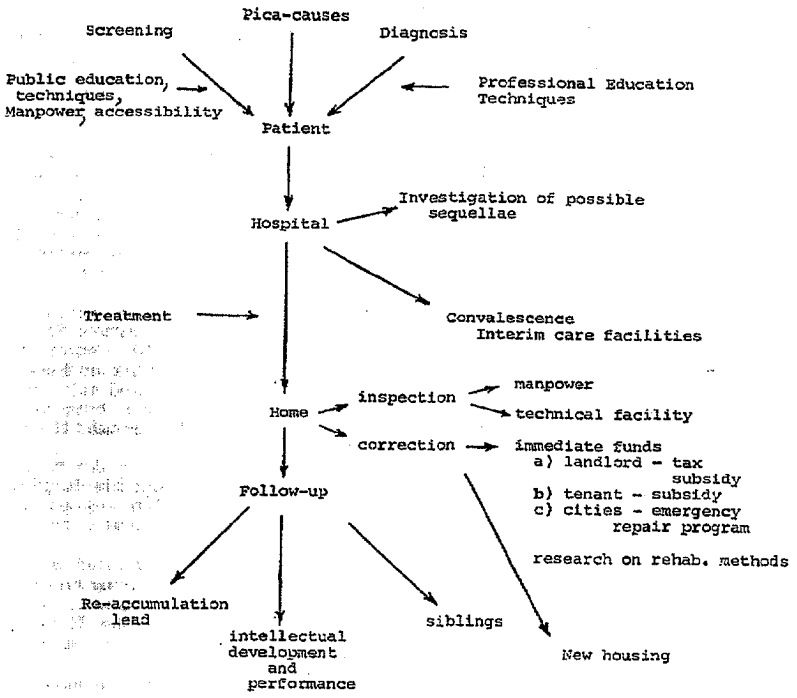

LEAD POISONING – A Comprehensive Program for Treatment and Prevention

Prepared by New York Scientists' Committee for Public Information, Inc.

STATEMENT OF DAVID ANDERSON, CLINICAL ADVOCATE, DEPARTMENT OF PREVENTIVE MEDICINE AND COMMUNITY HEALTH, UNIVERSITY OF ROCHESTER, SCHOOL OF MEDICINE AND DENTISTRY

Gentlemen: I am a citizen of Rochester, New York. All my adult life, I have worked to eliminate problems associated with the education, health, and welfare of young people. Three years, ago, I was introduced to the problem of the lead poisoning of young children. Since then, I have conducted educational and detection programs involving groups from affected areas in Rochester, including 14–16 year old youths. I am continuing that kind of work under the auspices of the University of Rochester's Department of Preventive Medicine and Community Health.

Wanda Matthews is the center of attention in her family. At three and a half, she is the youngest of four children. One year ago she nearly died. Wanda was lead-poisoned. Doctors at first thought the vomiting, constipation, impaired walking, etc., were symptoms of a "bad virus". But Wanda's father, Alex, remembered a lead poisoning demonstration that he had seen in May, 1969. He insisted that his child be examined for lead poisoning.

Wanda lives; we're not sure if there will be residual damage. This year the Department of Preventive Medicine and Community Health conducted follow-up interviews of families of 25 lead poisoning victims. Fifteen showed signs of intellectual malfunctioning.

In 1967, I induced Rochester's Urban League[1] to join the Rochester Committee

[1] I was deputy executive director at that time.

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on Scientific Information et al., in trying to persuade the Monroe County Health Department, and the city's urban renewal agency, and its Department of Buildings and Property Conservation, to mobilize the community into an all-out attack on the lead poisoning problem. Our efforts were largely unsuccessful. Only in the last year has there been any measurable efforts that can be attributed to these agencies. Most of that has, it would seem, been in reaction to adverse publicity.

Despite our figures showing a seven percent rate of intoxication, the Health Department complained of being hampered by lack of funds; Urban Renewal by the shortage of good housing for relocation of families. The Department of Buildings were reluctant to enforce property codes lest slum-lords abandon their dangerous houses. Thus, some families have remained in unsafe buildings despite that possibility of their child-victim becoming re-contaminated. Moreover, when families do move to better locations, vacated houses frequently are occupied, unchanged, by other familes with young children.

From December, 1967 to January, 1970, the most consistent detection and educational work was carried out by youths from the Urban League's Project Uplift in conjunction with the Rochester Neighborhood Health Center, the Rochester Committee on Scientific Information, and the University of Rochester's medical school. Our youths tested paint in slum homes, collected urine samples from young children, and advised parents of lead poisoning dangers. In fact, it was a Project Uplift lead poisoning demonstration that caught the eye of Mr. Matthews.

Mr. Matthews was interested because "some of the pictures in the demonstration looked just like places in my house." Matthews told us that his daughter had eaten plaster plucked from the many holes in the wall. "We stopped her; I don't think she still does it, but I wish you would come by and check the house," he said.

Our youths found leaded paint on window sills, lead in wall plaster, and in flakes floating down from the ceiling. They also found defective wiring and malfunctioning plumbing. We reported these conditions to the Department of Buildings and Property Conservation and to the Department of Urban Renewal. Neither took our warnings seriously; thus, Wanda's hospitalization and the publicity surrounding it, shocked and embarrassed both departments.

This particular case led to more blunders by the three government agencies. Inescapably, politics and race became complicating factors. Charges and counter-changes led to polarization.

Local government agencies are not equipped to tackle this problem. The anxieties of local officials are not likely to be relieved without federal help. Any mistakes they make (and there will be many) will immediately raise the suspicions of citizens. The package of bills before the committee provides for the participation of "residents of the affected localities by making available necessary training, training, education, and information . . ." The measure alone will reduce friction, and in the long run, be more economical.

I can see the legislation stimulating the coordination and appropriate distribution of research findings. Without this coordination, we will continue to have doubts over the efficiency of the various screening and treatment techniques.

Public officials and the courts have little experience in dealing with property owners who understandably are deeply implicated in the problem. The legal and educational work that must be undertaken with them will certainly be enhanced with passage of the legislation.

Lead poisoning was unwittingly created by man. Man can eliminate it. It will require deliberate action.

SILVER SPRING, MD., *July 22, 1970.*

HON. WILLIAM A. BARRETT,
Housing Subcommittee,
House Banking and Currency Committee,
Washington, D.C.

DEAR MR. BARRETT: I understand that your Subcommittee is considering legislation to combat lead poisoning. Therefore, I would like to submit the following testimony in behalf of H.R. 9192 (H.R. 13254 and 14735) and H.R. 11699 (H.R. 13255 and 14734).

Lead poisoning is a dangerous disease of childhood because it can cause serious impairment of the central nervous system. Of children who have lead poisoning affecting the brain, between 25 and 50% retain permanent residual effects such

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as retardation, convulsions or behavior disorders. There is still a significant mortality from lead poisoning in spite of better treatment techniques; at Children's Hospital of the District of Columbia over two per cent of children with lead poisoning die because their disease has not been treated early enough. In symptom free children with excess levels of lead in their bodies, minor illnesses may precipiate acute brain damaging lead poisoning.

Lead poisoning is caused in children by their eating, over a period of months, flakes of paint and crumbling plaster with a high lead content. Pre-World War II housing was usually painted inside as well as outside with lead base paint. After more than 25 years this paint peels, flakes and falls to the floor where small children pick it up and eat it. A postage stamp size flake of lead base paint eaten every day for about three months can constitute a toxic and sometimes lethal dose for a two year old.

In Washington, D.C. there are an estimated 22,000 old dwellings in substandard condition which house over 47,000 children between six months and six years of age, the ages when children are most likely to pick up and eat paint and plaster fragments. Surveys in substandard dwellings in other cities have shown that up to 25% of the children below the age of six have potentially dangerous levels of lead in their blood, and up to five per cent have significant symptoms. Applying these figures to Washington there may well be over 2,000 children with active lead poisoning who are in need of treatment and over 12,000 at some risk.

Although increased awareness on the part of parents and health workers will bring more affected children to treatment earlier, and although mass screening programs will identify more children in need of therapy for lead poisoning, a critical need is to get rid of the source of the illness in the environment of these children. Children who are diagnosed and treated for lead poisoning and then returned to a dwelling where they can be re-poisoned will not stay well.

The acute and chronic medical, social work and special educational services needed for the care of even one permanently damaged child, plus the lack of productivity of such a child when he grows up must be tremendously expensive in money as well as anguish. Repairing and renovating substandard housing would be relatively a much less expensive proposition and would once and for all eliminate a devastating and costly continuing health menace.

I strongly urge passage and implementation of H.R. 9192 and 11699 which will enable cities like Washington to eradicate this terrible disease by eradicating its cause.

Respectfully,

GEORGE J. COHEN, M.D.,
Pediatrician, Pica and Lead Poisoning Clinic,
Children's Hospital of the District of Columbia.

THE UNIVERSITY OF ROCHESTER,
SCHOOL OF MEDICINE AND DENTISTRY,
STRONG MEMORIAL HOSPITAL,
Rochester, N.Y., July 27, 1970.

HON. WILLAM A. BARRETT,
House of Representatives, Banking and Currency Committee,
Washington, D.C.

DEAR SIR: I am writing as the Chairman of the Lead Poisoning Subcommittee of the Rochester Committee for Scientific Information (RCSI). We have been concerned as a group over the continuing decimation of the environment with special reference to problems in Rochester, N.Y. The presence of toxic substances in the air we breathe, the water we drink and the soil that is used for food production has reached such a serious level that mankind must wake up to the ultimate dangers for all life-forms.

Lead poisoning among the urban poor is a case in point where the problem is clear, the risks are serious and solutions are possible. When nearly 5% of children under 5 or 6 years of age living in our nation's urban slums become poisoned by lead, this constitutes a serious acute and chronic problem. Solutions through education as well as removal of lead-base paint from living areas accessible to small children are possible.

In this way the proposed legislation, HR 9192 and HR 11699 are valuable stimuli to communities who have either failed or refused to recognize the prob-

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lem. Poisoned children and their parents don't have advocates in the majority of urban communities. The RCSI has functioned in such a way in Rochester, N.Y. to stimulate City and County government to recognize and attack this environmental hazard. The proposed Federal support will help to broaden and deepen the approach to this serious man-made problem in environmental contamination.

Sincerely yours,

J. D. HARE, M.D.,
Associated Professor of Microbiology.

(Whereupon, at 11:20 a.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.)

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