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HEARING BEFORE THE COMMITTEE ON COMMERCE UNITED STATES SENATE NINETIETH CONGRESS SECOND SESSION ON

S. 3328 and H.R. 15979

TO AMEND THE ACT OF AUGUST 1, 1958, TO PREVENT OR
MINIMIZE INJURY TO FISH AND WILDLIFE FROM THE
USE OF INSECTICIDES, HERBICIDES, FUNGICIDES, AND
PESTICIDES, AND FOR OTHER PURPOSES

MAY 17, 1968

Serial No. 90-70

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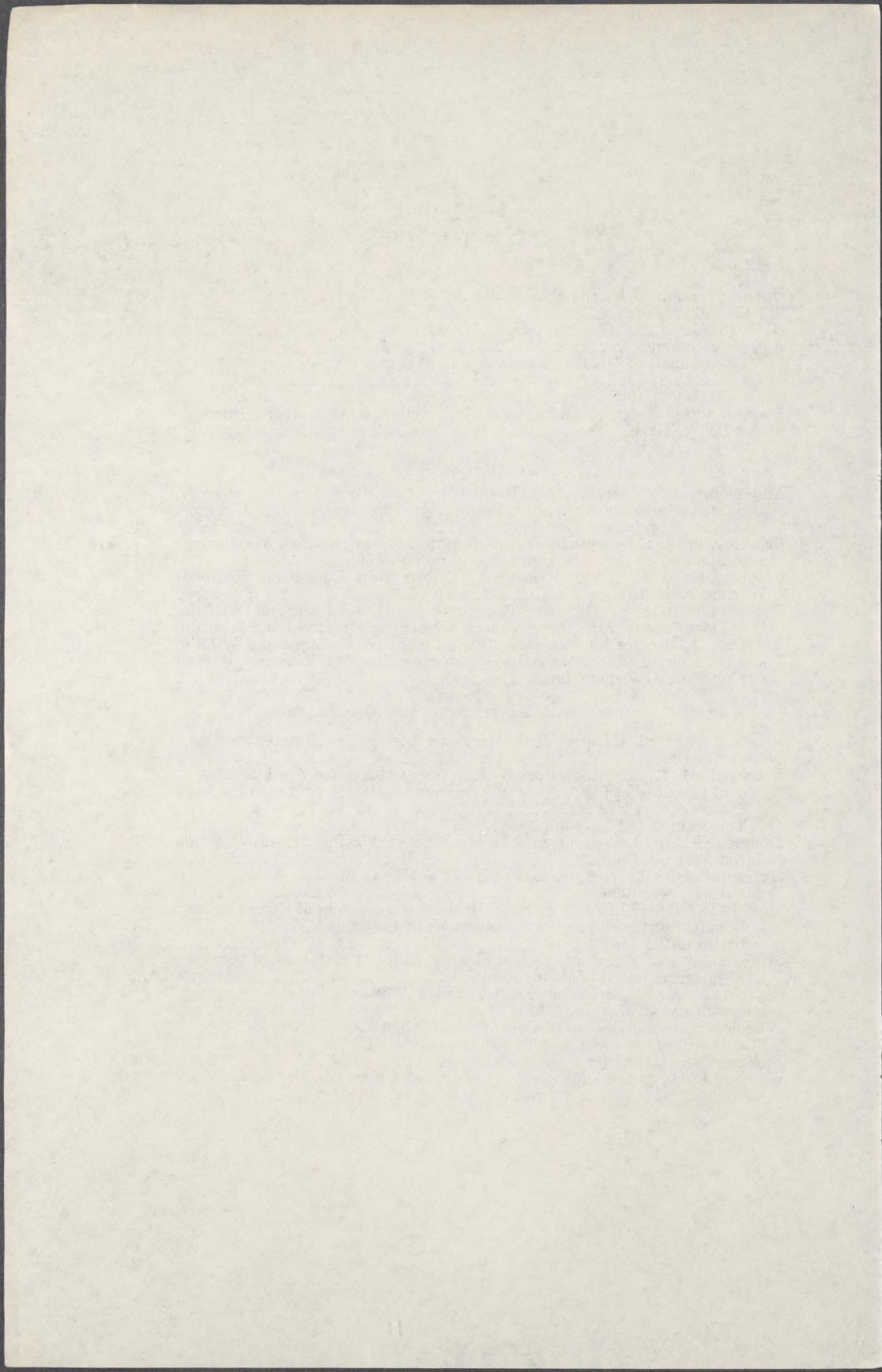
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TO AMEND THE ACT OF AUGUST 1, 1958, TO PREVENT
OR MINIMIZE INJURY TO FISH AND WILDLIFE FROM
THE USE OF INSECTICIDES, HERBICIDES, FUNGI-
CIDES, AND PESTICIDES, AND FOR OTHER PURPOSES

FRIDAY, MAY 17, 1968

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C.

The committee met, pursuant to call, at 9:40 a.m., in room 5110, New Senate Office Building, the Honorable Philip A. Hart presiding.
Present: Senators Hart and Pearson.

Senator PEARSON. The committee will come to order. We will start in the absence of Senator Hart who is going to Chair these hearings. He is delayed for a moment.

I see we have four witnesses today.

We will interrupt the proceedings when Senator Hart gets here, and he can make the opening statement.

At this time I want to indicate for the record that we have here a letter addressed to the chairman of this committee from the Department of Health, Education, and Welfare; a letter from the Wildlife Management Institute also directed to the chairman; a letter from Dr. Bronstad of Fort Worth, Tex.; a wire from J. D. Watson, general manager of agricultural chemicals division, Pennsalt Chemicals Corp.; a wire from A. A. Mulliken, secretary, Chemicals Specialties Manufacturers Association; a wire from Charles H. Callison, executive vice president, National Audubon Society; and a wire from J. W. Penfold, conservation director, Izaak Walton League of America.

All of these will be placed in the record following the statement of the chairman that will open these hearings.

(The opening statement of Senator Hart, the bills on which the hearing is being held, and the communications referred to follow:)

OPENING STATEMENT BY SENATOR PHILIP A. HART

Today, the Senate Commerce Committee holds hearings on H.R. 15979 and S. 3228, bills to amend the Act of August 1, 1958. That Act authorizes the Secretary of the Interior to conduct a program of evaluating chemicals proposed for use as pesticides for the purpose of determining whether these pesticidal chemicals are harmful or hazardous to fish and wildlife resources.

S. 3228, introduced by Senator Magnuson at the request of the Department of the Interior, would extend the authorization of funds under that Act. Specifically, the bill authorizes the appropriation of such sums as may be necessary for fiscal year 1969 and each succeeding fiscal year in order to carry out the objectives of the Act of August 1, 1958.

H.R. 15979, which passed the House of Representatives on April 1, 1968, is more comprehensive. It would authorize the appropriation of \$5,000,000 in each of the fiscal years 1969, 1970 and 1971 to continue the program established under the Act of August 1, 1958.

Staff member assigned to this hearing: John D. Hardy

In addition, H.R. 15979 provides that on the basis of the studies carried out pursuant to that Act, the Secretary of the Interior shall transmit information to the Secretary of Agriculture as to how injury to fish and wildlife through the use of insecticides, herbicides, fungicides and pesticide can be prevented or minimized, and that the Secretary of Agriculture shall require such information or warning to appear on the label of each package of such insecticide, herbicide, fungicide or pesticide.

Finally, it provides that the Secretary of the Interior would distribute to interested persons and agencies data collected showing the effects of pesticides and would authorize him to operate and maintain facilities necessary to carry out the purposes of the bill.

The importance of continuing this program of evaluating the potential hazards of pesticidal chemicals to our living resources is, I believe, obvious to us all. Especially at this time of year we are keenly aware of how tragic a "Silent Spring" would be.

But we also know that it is reasonable and necessary to have controlled use of chemicals for crop and livestock pests.

The present law, whose life would be extended by either of these bills, seeks to help preserve this balance. H.R. 15979 would also further extend the protection against the potential hazards of these chemicals.

I am confident that the testimony we shall hear today will aid this Committee in its deliberations on this vital question.

[S. 3228, 90th Cong., second sess.]

A BILL to amend section 2 of the Act of August 1, 1958, as amended, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and other pesticides

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Act of August 1, 1958 (72 Stat. 479), as amended (16 U.S.C. 742d-1 note), is amended to read as follows:

"Sec. 2. There is authorized to be appropriated for fiscal year 1969 and each succeeding fiscal year such sums as may be necessary to carry out the purposes of this Act. Such sums shall remain available until expended."

[H.R. 15979, 90th Cong., second sess.]

AN ACT to amend the Act of August 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and pesticides, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act of August 1, 1958 (16 U.S.C. 742d-1), is amended to read as follows: "That (a) the Secretary of the Interior is authorized and directed to undertake comprehensive continuing studies on the effects of insecticides, herbicides, fungicides, and pesticides, upon the fish and wildlife resources of the United States, for the purpose of determining the amounts, percentages, and formulations of such chemicals that are lethal to or injurious to fish and wildlife and the amounts, percentages, mixtures, or formulations that can be used safely, and thereby prevent losses of fish and wildlife from such spraying, dusting, or other treatment.

"(b) On the basis of the studies carried on pursuant to subsection (a) of this section, the Secretary of the Interior shall transmit information to the Secretary of Agriculture as to how, in the use of insecticides, herbicides, fungicides, or other pesticides, injury to fish and wildlife can be prevented or minimized and the Secretary of Agriculture, in consultation with the Secretary of the Interior, shall require that such information or warning pertinent to any insecticide, herbicide, fungicide, or other pesticide shall appear on the label of each package of such insecticide, herbicide, fungicide, or other pesticide, as the case may be, which is required to be labeled under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135-135k).

"Sec. 2. The Secretary of the Interior is authorized—

"(1) to conduct a program of evaluating chemicals proposed for use as insecticides, herbicides, fungicides, or other pesticides for the purposes of determining whether the chemicals are harmful or hazardous to the Nation's fish and wildlife resources;

"(2) to distribute to interested persons and agencies, both public and private, data collected under this Act showing the effects of insecticides, herbicides, fungicides, or other pesticides; and

"(3) to operate and maintain existing facilities, including laboratories, necessary to carry out the purposes of this Act.

"SEC. 3. There is authorized to be appropriated the sum of \$5,000,000 for the fiscal year ending June 30, 1969, and for each of the two fiscal years immediately following such year."

SEC. 2. The amendments made by this Act shall take effect on the one hundred and eightieth day after the date of enactment of this Act.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
May 1, 1968.

HON. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in response to your request of April 4, 1968, for a report on H.R. 15979, a bill "To amend the Act of August 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and pesticides and for other purposes."

Section 1 of H.R. 15979 would require the Secretary of the Interior on the basis of studies of the effects of insecticides, herbicides, fungicides, or pesticides on fish and wildlife, to transmit to the Secretary of Agriculture information as to how, in the use of such chemicals, injury to fish and wildlife can be prevented or minimized. The Secretary of Agriculture, in consultation with the Secretary of the Interior, would be required to have such information appear on the label of each package of pesticides which is required to be labeled under the Federal Insecticide, Fungicide, and Rodenticide Act.

Section 2 of H.R. 15979 would authorize the Secretary of the Interior to conduct a program of evaluating chemicals proposed for use as pesticides, to determine whether the chemicals are harmful or hazardous to fish and wildlife; to distribute data showing the effects of pesticides on fish and wildlife; and to operate and maintain facilities necessary to these purposes. It also provides for an increase in the present appropriations ceiling for the Department of the Interior.

We are in accord with the objectives of this bill to give due consideration to the interests of conservation of fish and wildlife in the regulation of pesticides. However due consideration should be given also to the harmful or hazardous effects of pesticides on humans, domestic animals and agricultural crops. We believe, however, that Section 1 of the bill in regard to labeling is unnecessary. In 1964 an interdepartmental agreement was entered into between the Departments of Agriculture, Interior, and Health, Education, and Welfare to coordinate the activities of the three departments pertaining to pesticides. This agreement outlines the responsibilities of the respective departments which relate to the registration of pesticides and the setting of tolerances for pesticide residues. The agreement further provides that each department will undertake to keep each of the other departments fully informed of developments in knowledge on this subject from research or other sources which may come into its possession. The agreement also outlines the procedures to implement these interdepartmental coordination procedures. This interdepartmental agreement is intended to provide a mechanism for the efficient coordination of matters relating to pesticides which Section 1 of H.R. 15979 undertakes to remedy. A copy of this agreement is attached for your information.

We defer to the views of the Department of the Interior with respect to Section 2 of the bill.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely,

WILBUR J. COHEN,
Acting Secretary.

MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF AGRICULTURE,
THE DEPARTMENT OF THE INTERIOR, AND THE DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE ON INTERDEPARTMENTAL COORDINATION OF
ACTIVITIES RELATING TO PESTICIDES

PURPOSE

Coordination of activities of the three departments pertaining to pesticides with special reference to registration and the setting tolerances to give effect to the pertinent recommendations of the May 15, 1963, report of the President's Science Advisory Committee on "Use of Pesticides."

EXISTING DEPARTMENTAL RESPONSIBILITIES

The following responsibilities of the respective departments relate to the registration of pesticides and the setting of tolerances for pesticide residues:

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service.—Conserving beneficial wild birds, mammals, fish and their food organisms and habitat, with regard to pesticides.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

U.S. Public Health Service.—Protecting and improving the health of man in regard to pesticides.

Food and Drug Administration.—Establishing tolerances for pesticides in or on raw agricultural commodities and processed foods.

DEPARTMENT OF AGRICULTURE

Agricultural Research Service.—Providing for the safe and effective use of pesticides, including the registration thereof.

AGREEMENT

1. *Information*

Each department undertakes to keep each of the other departments fully informed of developments in knowledge on this subject from research or other sources which may come into its possession. Additionally, the Department of Agriculture undertakes to furnish to the other two departments on a weekly basis a listing of all proposals affecting registration and re-registration, and the Department of Health, Education, and Welfare undertakes to furnish to the other two departments on a weekly basis a listing of all proposals affecting tolerances. Upon request, the Departments of Agriculture and Health, Education, and Welfare respectively will furnish to the other departments full information about any pending action on registration or the setting of a tolerance.

2. *Procedure*

(a) Each department will designate a scientist to act on behalf of such department in carrying out the terms of this agreement. The weekly listings from the Departments of Agriculture and Health, Education, and Welfare and any additional information relating thereto will be directed to these representatives.

(b) The departmental representative will review the weekly listings of actions pending. If there is reason to question any of the items on that list, this will be communicated to the originating department within one week stating the specific reason for need for further review.

(c) Upon receipt of such request the originating department will furnish the necessary information and make the necessary arrangements for further review and will withhold final action on the matter for an additional three weeks.

(d) If one department concludes that the proposal should be rejected in whole or in part, this view shall be expressed in writing and shall be supported by appropriate scientific evidence. Upon being notified, the department responsible for final action will take the initiative to work out a basis for agreement.

(e) In the event agreement is not reached among the department representatives within two weeks of the initial objection, the matter will then be referred directly to the Secretary of the department responsible for final action with such information, views, and recommendations as the three department representatives deem appropriate.

(f) The Secretary of the department charged with final action may then avail himself of whatever administrative and scientific review procedures seem appropriate under the circumstances. The other two departments will be notified in advance of the proposed final determination of the issues.

(g) The department representatives will jointly make a quarterly report concerning their activities to the secretaries of the three departments.

(h) The departmental representatives are authorized to review questions involving existing patterns of use of pesticides or tolerances upon which they have reason to believe that critical questions exist.

3. Conference

At least once each year the departmental representatives will arrange a general conference to discuss research needs, research program and policy, and the application of research findings in action programs, including public information relating to pesticides.

4. Federal Pest Control Review Board

The Federal Pest Control Review Board may be asked from time to time to consider broad questions on policies relating to pesticides involving the interrelationships of control programs, research, registration, tolerances, and general departmental recommendations to the public.

Date: April 8, 1964

ORVILLE L. FREEMAN,
Secretary, Department of Agriculture.

Date: March 27, 1964

STEWART L. UDALL,
Secretary, Department of the Interior.

Date: April 3, 1964

ANTHONY J. CELEBREZZE,
Secretary, Department of Health, Education, and Welfare.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
May 6, 1968.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: This letter is in response to your request of March 27, 1968, for a report on S. 3228, a bill "To amend section 2 of the Act of August 1, 1958, as amended, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and other pesticides."

The bill would make available such funds for fiscal year 1969 and each succeeding fiscal year as would be necessary to implement the pesticide research activities carried on by the Department of the Interior under 16 U.S.C. 742 d-1.

This Department has no objection to the enactment of this legislation.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely,

WILBUR J. COHEN,
Acting Secretary.

WILDLIFE MANAGEMENT INSTITUTE,
Washington, D.C., May 14, 1968.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
Senate Office Building, Washington, D.C.*

DEAR SENATOR MAGNUSON: The Institute is pleased that the Committee has scheduled a public hearing on H. R. 15979 for Friday morning, May 17. Like other conservationists we are hopeful that the bill will receive prompt and favorable attention.

It is believed that the proposed 3-year extension of the authority of the Secretary of the Interior to continue a comprehensive program of research into the effects of pesticides and other toxic materials on fish and wildlife is imperative. Information now coming to hand, such as the detection of pesticides residues in coho salmon of Lake Michigan, offers startling new evidence of the contamination of a whole aquatic environment. The Lake Michigan coho salmon situation offers graphic proof that the apprehensions expressed by fisheries and wildlife scientists only a

few years ago now are proving to be true. It is possible to contaminate the environment with many of the persistent chemicals that are being used daily for agricultural and other purposes.

The Secretary's authority for the present pesticides research program expires this June 30. It is believed that prompt action by your committee would be helpful in encouraging the appropriation of sufficient funds to continue this essential program in the next fiscal year. We sincerely hope that this will be done. We believe the program should continue, and positive action is needed to prevent the dissolution of the experienced scientific staff that has been assembled on this important project.

The Institute will not be able to have a representative appear before the committee, and I would appreciate having this letter included in the hearing record.

Sincerely,

C. R. GUTERMUTH, *Vice President.*

FORT WORTH, TEX., *April 22, 1968.*

HON. WARREN G. MAGNUSON,
*Chairman, Senate Commerce Committee,
Senate Office Building, Washington, D.C.*

DEAR SENATOR MAGNUSON: I wish to express my interest in H.R. 15979, a bill which passed the House of Representatives on April 1, 1968 which would extend the research program on pesticides for an additional three years. In view of the profound effects by the ever increasing use of pesticides, I feel it imperative for the Interior Department to continue its research program to delineate and curb the deleterious effects of these chemicals on fish, wildlife and the general population. The Interior Department has carried out its research program in an excellent fashion with the existent permissive legislation; it would seem worthy of consideration to intensify the legislation at hand, to make such a program more of a mandatory responsibility of the Department.

In conjunction with this investigational legislation, I feel that rather strict enforcement legislation is necessary to control the use of these chemicals.

Respectfully,

M. T. BRONSTAD, JR., M.D.

TACOMA, WASH., *May 15, 1968.*

WARREN G. MAGNUSON,
Senate, Washington, D.C.:

Understand hearing on H.R. 15979 is imminent we are opposed to section 1(B) but support other parts of the bill. We also support your bill, S. 3228.

J. D. WATSON,
General Manager Agricultural Chemicals Division, Pennsalt Chemicals Corp.

NEW YORK, N. Y., *May 16, 1968.*

HON. SENATOR WARREN G. MAGNUSON,
Senate Office Building, Washington, D.C.:

The Chemical Specialties Manufacturers Association representing the household pesticide industry opposes section 1B of H.R. 15979 which relates to labeling of economic poisons. This section is unnecessary and would interfere with the orderly administration and enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act.

A. A. MULLIKEN, *Secretary.*

NEW YORK, N. Y., *May 16, 1968.*

SENATOR WARREN G. MAGNUSON,
*Chairman, Senate Commerce Committee,
Washington, D.C.:*

National Audubon Society, one of the Nation's oldest citizen associations concerned with natural resources and today American's largest direct membership conservation organization, strongly urges a favorable report on H.R. 15979 as passed by the House. Both parts of this bill are essential. Continuation of research into effects of chemical pesticides on wildlife is vitally necessary. The labeling provisions of H.R. 15979 are simply playing fair with the consuming public.

Farmers, ranchers, and gardeners have a right to know what the dangers are so they can make an intelligent choice between protecting or damaging wildlife and between alternate methods of pest control. Statement for record of hearing, May 17, being sent special delivery mail to Subcommittee on Merchant Marine and Fisheries.

CHARLES H. CALLISON,
Executive Vice President, National Audubon Society.

WASHINGTON, D.C., May 16, 1968.

HON. WARREN G. MAGNUSON,
Chairman, Committee on Commerce, U.S. Senate, Washington, D.C.:

Unavoidable absence from the city prevents my appearing in behalf of the Izaak Walton League in support of H.R. 15979 to continue studies of the effects of pesticides on fish and wildlife. In our judgment it is imperative that this program be continued and strengthened.

Respectfully,

J. W. PENFOLD,
Conservation Director, Izaak Walton League of America.

Senator PEARSON. The first witness is Mr. Gottschalk. Welcome this morning. Have a seat, sir.

STATEMENT OF JOHN S. GOTTSCHALK, DIRECTOR, BUREAU OF SPORT FISHERIES AND WILDLIFE, U.S. DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY DR. RAYMOND JOHNSON, ASSISTANT DIRECTOR FOR RESEARCH, BUREAU OF SPORT FISHERIES AND WILDLIFE; AND DR. ROLAND SMITH, ASSISTANT DIRECTOR FOR BIOLOGICAL RESEARCH, BUREAU OF COMMERCIAL FISHERIES

Mr. GOTTSCHALK. Thank you, Mr. Chairman.

My name is John G. Gottschalk, and I have with me today our Assistant Director for Research in the Bureau of Sport Fisheries and Wildlife, Dr. Raymond Johnson, and Assistant Director for Biological Research of the Bureau of Commercial Fisheries, Dr. Roland Smith.

Senator PEARSON. You are all very welcome. You may proceed as you see fit. I see you have a statement.

Mr. GOTTSCHALK. With your permission, Mr. Chairman, I will read a short statement, and also with your permission I would like to submit for the record supplemental statements under the heading of research accomplishments of the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries in the period from 1960 to 1968 dealing with the use of pesticides.

Senator PEARSON. Thank you, sir.

You may proceed in any manner you wish. The record will be held open following these hearings for other insertions and anything that you want to add to the record.

Mr. GOTTSCHALK. Mr. Chairman and members of the committee, I am here to testify on H.R. 15979, which was passed by the House of Representatives, amended, on April 1, 1968. This bill will amend the act of August 1, 1958, in order to prevent or minimize injury to fish and wildlife from the use of insecticides, herbicides, fungicides, and other pesticides.

Senator PEARSON. Would you like to stop at this time? You are just a paragraph in. Senator Hart is here, and he has an opening statement.

Mr. GOTTSCHALK. Certainly.

Senator HART. Let me apologize to you, Doctor, and thank Senator Pearson. Let's file the opening statement, and you go right ahead.

Mr. GOTTSCHALK. Thank you, sir.

We recommend the early enactment of H.R. 15979 with the deletion of section 2 of the bill which would provide that the effective date of the legislation would be 6 months after the enactment thereof. This would have the effect of delaying the extension of the present Pesticides Research Act to some date after July 1, 1968.

As we have indicated previously, the act terminates on June 30, 1968, unless extended. It would serve no useful purpose to have a hiatus from June 30 until 6 months after the bill's enactment date. Indeed, it would cause serious disruption of important work now in progress. Further, there is no reason for a delay relative to any other provision of this bill.

H.R. 15979 would extend the pesticide research program for 3 fiscal years at an appropriation ceiling of \$5 million annually. We previously recommended that the program be extended indefinitely with no ceiling and without the other amendments. This recommendation and draft legislation were sent to the Senate on March 8, 1968. The draft bill was introduced by your chairman as S. 3228.

We do not, however, object to the 3-year limitation, and would not object strongly to the appropriation ceiling, or the other amendments to the Pesticides Research Act.

In your letter of April 3 to our Department, you posed two questions which were prompted by the debate on the floor of the House on April 1 on H.R. 15979.

Your questions and our comments thereon follow:

(1) Is there duplication in the research by the Fish and Wildlife Service and by the laboratories of the Department of Agriculture on the effects of pesticides on fish and wildlife resources?

We believe that there is not. Because of close interdepartmental coordination at many levels, the pesticide research programs of the two Departments are complementary or supplemental, but do not duplicate each other.

The many differences between tissues of wild and domestic animals, especially in the fish and wildlife categories, the different environments and behavior patterns used and displayed by wild and domestic animals, and the different implications of chemical residues in the bodies of animals reared for human food contrasted with animals that must complete their full life cycles under wild conditions require that the two Departments use different techniques and approaches in their pesticides research programs.

Agriculture concentrates its studies more strongly on target pests, while Interior evaluates possible pesticidal side effects on numerous species of fish, wildlife, and their necessary foods and environments.

At many points the two Departments work together on a common field program, such as the development of Zectran to control spruce budworm without significant hazard to wild mammals, birds, and fish, and the development of Abate to control mosquitoes with greater safety to beneficial aquatic animals.

Your second question was as follows:

(2) Is it your view that the Department of Agriculture must automatically require pesticides manufacturers to put on a pesticide label a verbatim warning of the Secretary of the Interior pertinent to such pesticide? Would you expect to reach joint agreement as to the type and content of such label?

We view the amendment in H.R. 15979 in the same manner as did Congressman Lennon, floor manager of the bill. He said:

The Secretary of Agriculture would not be required to accept the Secretary of the Interior's recommendations per se. The Secretary of Agriculture makes the final determination as to what warning information appears on each label of pesticide chemicals.

The bill merely requires that we transmit information and the Secretary of Agriculture, in consultation with this Department, will require that such information be added to the label. This certainly does not require a "verbatim" warning. As a matter of fact, it does not even require a joint agreement as to the type and content of the label. although we hope, as in the past, we and Agriculture will be able to agree on all label warnings. There has been substantial agreement on all of the 6,500 or more labels processed in the past year.

As a matter of policy, the Department of the Interior is not opposed to the use of pesticides and is, in fact, one of the major Federal users of pesticides; however, our Department is opposed to any use or misuse that may bring about environmental contamination.

Sales of pesticidal chemicals increased an estimated 12 percent in 1967 and by 1985 is expected to increase another sixfold. Our research on the potential hazard of these compounds must continue. We are placing considerable emphasis on the long-life chlorinated hydrocarbon compounds.

The Bureau of Commercial Fisheries has already earmarked funds to increase the pesticide research effort in the Great Lakes. Our pesticide monitoring program has shown that compared to the other Great Lakes, fish from Lake Michigan have relatively high levels of dieldrin and DDT.

The restocking of lake trout and the introduction of coho salmon have created an increased emphasis on sport and commercial fisheries in Lake Michigan.

If these stocks of fish are to be adequately managed, we must be able to correctly assess the dangers they face with prolonged exposure to sublethal concentrations of these materials. This is especially true of lake trout since their reestablishment in Lake Michigan will depend on natural reproduction.

The objectives of this research are to determine the lowest levels at which these insecticides affect reproduction, what these effects are, the degree to which they are increased as the insecticide level is increased, and the relationship between insecticide levels in adult fish, their eggs, and reproductive success.

We are also currently engaged in studies of the effects of DDT and dieldrin upon birds of prey at levels we would expect them to encounter under field conditions. There are indications that these chemicals may have many hitherto unsuspected effects.

For example, we have recently verified British reports that the thickness of eggshells is reduced in certain birds of prey, and at least some other birds fed a diet containing pesticidal material. These subtle changes doubtless have a pronounced effect upon reproduction success as a result of increased breakage of eggs during the nesting season.

In the years ahead, mankind will find it necessary to expand control of living things which compete or interfere substantially with human existence. We must therefore look to research to determine how this can best be accomplished with least harm to fish and wildlife in general, and to the environment of all animals, including man.

That is our opening statement, Mr. Chairman. We would be glad to answer any questions.

Senator HART. Thank you, Doctor.

Before making an effort to develop some information for the record that I think relevant, I should make a very frank acknowledgment about a specific interest that I have in the bill. I doubt if there are very many bills that go through that a fellow doesn't have specific interest in, but let me explain mine.

You have already mentioned that Great Lakes experience in DDT. It is my understanding that Lake Michigan water is polluted to a degree now in certain areas that we can't hatch the coho in the Lake Michigan watershed, that the hatching must be in the upper Peninsula watersheds or Lake Superior. And you know perfectly well the static that that causes amongst sports fishermen and our conservation commission.

Now, when the DDT reaches two parts in a million parts of water I am told about half of that hatch dies, and at four parts per million all die. As a consequence, as I say, the coho in western Michigan rivers had to be hatched in Lake Superior or our Upper Peninsula watershed.

Does this conform generally to your understanding of the situation there?

Mr. GOTTSCHALK. I think I can say it does conform generally, sir.

I would like to ask whether Dr. Smith of the Bureau of Commercial Fisheries would have a comment. It happens that a good deal of the information developed on the content of pesticidal residues has been developed through the work of their laboratory at Ann Arbor, and perhaps he would have something to comment on.

Senator HART. Dr. Smith, we would welcome your comment.

Dr. SMITH. Senator, we are not familiar with the water quality of the hatchery waters supplying the Michigan hatcheries. We do know that the coho eggs taken from Lake Michigan have DDT concentrations somewhat over three parts per million of DDT, that the survival of these eggs in comparison to survival of coho eggs taken from Lake Superior, which have a concentration of two parts per million DDT, is substantially less than from Superior.

Now, the exact reason for this we really don't know at this time.

Senator HART. I have indicated why this legislation is a matter of more than routine interest to a good many people. I am sure it will color my own attitude on it.

Doctor, are there any statistics available to indicate whether the incidence of mortality or other harmful effects due to the toxicity of pesticides has decreased or risen with respect to fish and wildlife since the enactment of the basic law of 1958, which is restated in section 1 of the bill before us?

Mr. GOTTSCHALK. I don't believe that we can attest to the existence of the kind of before and after statistics that would be called for in a full answer to that question. We are most aware, of course, of the effects that pesticides have shown in the inhibition of reproduction in

many of the birds and animals that we have studied under pen conditions. We do know that wildlife in some instances is carrying loads of pesticides within its tissues.

We simply are not, however, in a position to describe a quantitative difference between what may have been the case say 10 years ago and the situation as it exists right now.

We have many examples, on the other hand, where there have been mortalities that can be we think directly traced to the use of—put it this way—the misuse of pesticides. And yet to try to say that we have concrete evidence that there has been an increase in the mortality rates of wildlife in the last 10 years or any change as far as that is concerned would be extremely difficult for us to do, and I wouldn't want to suggest that we have that degree of knowledge of this problem.

Senator HART. Now, you make a passing comment in your prepared testimony. Let me ask this question explicitly.

If the Senate passes without amendment H.R. 15979, do you see any difficulty for the Interior Secretary in doing what he would be required to do under subsection 1(b) of that House passed bill?

Mr. GOTTSCHALK. No, sir, I do not. I must add, of course, that we have been participants with Agriculture and the other Federal agencies in a concerted effort to improve our coordination in handling the Federal Government's responsibilities with respect to the determination of what kind of pesticides are useful, the manner in which they can be used safely, and all that sort of thing.

But my specific answer to your question is that I can see no handicap at all. I am sure that we would continue to work very closely with Agriculture and there would be no burden of any kind placed upon the Interior Secretary.

Senator HART. You adopt the explanation that the House floor manager, the able Congressman Lennon, gave, and you quote Congressman Lennon's remark:

The Secretary of Agriculture would not be required to accept the Secretary of the Interior's recommendations per se. The Secretary of Agriculture makes the final determination as to what warning information appears on each label of pesticide chemicals.

And then you explain that for 6,500-odd specific instances there have never been any disagreements between Interior and Agriculture on this matter.

But let me call your attention to the statement of intention and the interpretation placed on that language by the author of the bill which became the amendment we are now discussing, 1(b).

On page 26 of the hearing record, part II, of the Subcommittee on Fisheries and Wildlife of the Merchant Marine Committee of the House, we find the able Congressman from Michigan, Mr. Dingell, saying this. He is talking to a witness from the Department of Agriculture, Dr. Anderson. Mr. Dingell says, quoting some language, as follows:

The Secretary of Agriculture, in consultation with the Secretary of Interior, shall require that such information or warning pertinent * * *. You have to take the gist of the warning. Obviously it doesn't require that if you get a 14-page warning from the Department of Interior—it doesn't require a 14-page label on a two-ounce bottle of DDT. So it wouldn't say that. I would say you have to get the essential portions of the warning generally in conformity with the scientific information submitted to you by the Department of Interior. I'm the author of the bill and I am interpreting it. Do you have any objection to that interpretation?

And Dr. Anderson replied he did not, though the next man might interpret it another way.

I would inquire whether you see any conflict between the expression of Congressman Lennon and that of Congressman Dingell.

Mr. GOTTSCHALK. No. I think we have studied this record quite closely, Mr. Chairman, and, as I read the remarks of the chairman of the committee from the other body, he was attempting to develop a legislative record that would assure that the relationship which has been developed administratively between the two Departments could be solidified in law, and he did not want to let there be anything in the background which would cloud the issue or lead someone to conclude that the Congress intended more power be given to the Secretary of Interior than he wanted to see given to the Secretary of Interior.

That is the way we interpret the hearing record, and that is the way we interpret the amendment.

It is certainly true that within our two Departments, Agriculture and Interior, as Dr. Anderson indicated in the same testimony, many individuals may disagree, and sometimes quite violently, is to the relative importance of a particular substance and even the wording that might go on a label and sometimes possibly a single word. But we have through the cooperative relationships that have been built up established I think a degree of confidence in each other that has made this a very useful forum for coming to agreement, carrying it on not only at the scientific level but also at the higher executive levels in our respective bureaus and ultimately the Department.

And it seems to me that what Mr. Dingell was trying to do was to provide some legislative mechanism for seeing that kind of a relationship perpetuated by statutory reinforcement.

Senator HART. Now, consensus is a great thing, and for 6,500 specific substances both Interior and Agriculture agreed, I take it, on how the labeling should be handled in a cautionary phrase. But with respect to the damage to fish and wildlife, in my book, we can expect the Secretary of Interior and the Department of Interior to be the most knowledgeable of our agencies. We could expect likewise that Agriculture know best the consequences to fruit, vegetable, and other agricultural products.

Would it give you any difficulty if the judgment of the Secretary of Interior with respect to damage to fish and wildlife caused by any of these studied materials was by Congress to be identified as the one that was overriding and conclusive in that area—namely, damage to fish and wildlife?

Mr. GOTTSCHALK. I am hesitating because I think that is a very difficult question to answer since it requires a long look into the future.

Senator HART. Isn't that the "meat and potatoes" of this problem? Isn't that what we are here talking about or should talk about?

Mr. GOTTSCHALK. Well, I would have to answer that I believe that the way the amendment is included now was designed to strengthen the position of the Secretary of the Interior with respect to this whole problem of the use of these materials in the environment, and as far as we are concerned in the Department of the Interior I do not believe that this would create difficulties for the Secretary of the Interior.

Senator HART. Well, are we to understand that under 1(b) Interior gives Agriculture the chapter and verse on the consequences to fish and wildlife of some of this material and Agriculture in consultation with Interior must—shall—require that such information with respect to the damage to the fish and wildlife go on the label? Isn't that what (b) says?

Mr. GOTTSCHALK. What the author of the amendment was trying to achieve, if I may attempt to interpret the record, was a constraint that would make sure that the findings from our part of this research program should ultimately find their way without particular regard for the specifics of the wording into the labels of the compounds which have been tested.

We would not expect, as we do not expect now, to have the final say-so on the precise wording of the labels as they are printed for application on the product.

However, if, for example, in the course of our research we found that a particular chemical used in a particular way had detrimental results in terms of its effect on fish and wildlife, we would expect the Secretary of Agriculture under this amendment to include some kind of a statement to the effect that there were ways in which this product should not be used and that it would specify what these ways are.

In other words, we would expect that a proper warning would be printed on the label. But I do not think that we would want to be in the position of editing, shall I say, the exact wording proposed by the Secretary of Agriculture.

Senator HART. As Congressman Dingell put it, if you, Interior, give the Secretary of Agriculture 14 pages of explanation as to the adverse consequences and the reasons and all the recitals that would require you to get 14 pages to Agriculture, then Agriculture would have to get the essential portions of the warning generally in conformity with the scientific information submitted to Agriculture by Interior.

Now, I take it that what you have just said is another way of saying what Congressman Dingell was saying there. Am I correct?

Mr. GOTTSCHALK. That is correct. That was my intention. I would say that we would expect Agriculture to paraphrase, in terms of what they think the overall requirements of labeling on any particular product, the findings of the research which we carried out under the authorization of this proposed bill. It would be a paraphrasing of the information presented.

Senator HART. But paraphrasing is another way of saying, "You shall say that the damage that we are reporting to you will occur. You don't have to say it in our technical language. You don't have to say it in our long recitals. But we are notifying you that this can kill x number of fish, if it is used in x fashion, in x location, and that has to get into the label." Right?

Mr. GOTTSCHALK. Well, the fact that there is a potential danger in the use of the product.

Senator HART. All right.

This bears in part on our comment about 14 pages and less. Would the gist of a recommendation by the Secretary of Interior which was to appear on a label normally be brief enough such as the cautionary statements?

Mr. GOTTSCHALK. Most of our recommendations, sir, can be incorporated in about one line.

Senator HART. Senator Pearson.

Senator PEARSON. I want to say to the Director he may know this is my second time around through this, and I find in his statement a balancing of values and a lack of emotionalism that didn't pertain to this subject 2 and 3 years ago. Isn't that so?

Mr. GOTTSCHALK. Thank you, Senator. I was not here at the time, but I am sure—

Senator PEARSON. You know that?

Mr. GOTTSCHALK (continuing). I am sure the statement is true based on my own knowledge of the past, and I think I would have to say perhaps I was a little more emotionally involved in the whole issue at that time myself than I am now.

I think we have come to a point, if I may just make this added statement, that we do recognize that in modern civilized life the real challenge is finding out—not whether we can live with these things—I think we know we are going to have to. But the real challenge in our work, and I think Agriculture shares this feeling also, is to find those things which can be of benefit to man, but do not have the potential for doing man a lot of damage.

And we need to look at both sides of the coin. And I think we are doing that in a more rational manner today than we were a few years back.

Senator PEARSON. Well, I agree that if we learned anything—did you read the report out of the Government Operations subcommittee in 1964 and 1965 when it was probably finally issued? We had long hearings at that time—

Mr. GOTTSCHALK. Yes.

Senator PEARSON (continuing). On this particular subject. And I think we found out, if anything, it was summarized in a statement by a professor from one of the universities who came in and who said, "Our ability to detect exceeds our ability to interpret."

And out of that there was an expression that if we needed anything in this field it was a tremendous amount of research.

So I would agree with you that I would just extend it without the time limitation. But, as a matter of fact, Congress likes to put limitations on these things as a matter of precedent so we don't get a whole lot of programs going without a time limitation upon them.

Who does the research in the Department of Interior?

Mr. GOTTSCHALK. The research is done by the two bureaus, the Bureau of Sport Fisheries and Wildlife, which I head, and the Bureau of Commercial Fisheries, which is represented here this morning by Dr. Smith.

Senator PEARSON. How many people do you have and what are their competencies, Dr. Smith?

Dr. SMITH. Senator, we have a staff of about 34 people. Most of our research is done at our laboratory in Gulf Breeze, Fla., near Pensacola. There we have a professional staff of about five Ph. D.s, six scientists at the master's level and six technicians.

Senator PEARSON. Besides the Department of Agriculture, what other agencies of Government are engaged in pesticide research? Anybody may answer. I don't care.

Mr. GOTTSCHALK. Well—

Senator PEARSON. What part does Food and Drug play, for instance?

Mr. GOTTSCHALK. Well, Food and Drug is carrying on research with respect to the effects of pesticides on human physiology, human health. The Department of Health, Education, and Welfare is carrying out research in the Public Health Service for example in the same general area. I can't be specific. I am not that familiar with their programs. The Department of Defense is carrying out some work on pesticides.

This I wouldn't want to report on except to say that we work with them mostly in the application because of the use of pesticides, including things like herbicides, that they utilize both in military and in civilian application on Army or military installations.

I would say that these are the primary groups.

Also I should mention—and this indicates an oversight I want to correct right now—the Federal Water Pollution Control Administration is another agency in Interior which does have strong interests in the problems of pesticides in public water supplies left as ingredients as a result of effluents being discharged into rivers from various places.

Senator PEARSON. Now, you responded to the question saying no duplication between Interior and Agriculture. I ask you about the duplication or possible duplication between all these other research agencies.

Mr. GOTTSCHALK. I would like to ask Dr. Johnson, my assistant for research, to talk a little bit about the Federal Committee on Pest Control if he could just say a word about this.

Senator PEARSON. Yes; I know that. I would be pleased to have him respond. And would you also indicate the degree that we are dispersing the information that we are acquiring to Government agencies and to the public as well and including industry today? They are doing a great deal of research, I might say.

Dr. JOHNSON. The Federal Committee on Pest Control, organized some years ago, has a coordinating mechanism and a communications mechanism. It has been very effective—

Senator PEARSON. Is it working?

Dr. JOHNSON. Yes, sir. I would say it is working along many lines. It is helping to keep each agency informed on what the others are doing in research.

It is also setting up a monitoring system participated in by many Federal agencies to show the pesticide residue levels in various parts of the country.

It has also helped us in our information activities, too. Various subcommittees of the Federal Committee on Pest Control have been quite effective.

Senator PEARSON. Is industry bringing information in, too?

Dr. JOHNSON. Industry is a constant visitor in our laboratories, and I personally feel quite well acquainted with the agricultural chemical organization people and separate industrial people, Dow Chemical Co., American Cyanamid, that sort of thing. They like to know what we are doing, and, of course, we like to know what they are doing, too.

Senator PEARSON. Have you got a free exchange?

Dr. JOHNSON. It is my impression that the exchange is as free as it possibly could be considering—

Senator PEARSON. The competitive situation?

Dr. JOHNSON. The competitive situation, patent involvements, and things like that, yes.

Senator PEARSON. Now, the Director indicated that there were different techniques. What is the difference between the technique of research between the Department of Agriculture and the Department of Interior? As a matter of fact, the techniques have improved tremendously, haven't they, in the last few years?

Dr. JOHNSON. Yes, sir. They have.

Senator PEARSON. What is our ability to detect now? It used to be millions, It's now in parts of trillions, isn't it?

Dr. JOHNSON. The instrumentation is able to detect parts per billions at least. We have readings of the parts per trillion but they are a little bit beyond the realm of reliability at the moment.

The techniques that were mentioned by Dr. Gottschalk I believe also extended beyond the instrumentation into the other parts of a research project, like feeding programs versus programs designed to show what wildlife would obtain in natural environments either through feeding or contact with the water.

Senator PEARSON. I cosponsored a bill, Public Law 88-305 I think it is, regarding labeling that requires the pesticides to carry the official registration number on the bottle of the Department of Agriculture. Is that right? Can you recall that legislation? I think we passed it in 1965, didn't we?

Dr. JOHNSON. I recall the legislation. I don't know its final outcome. To the best of my knowledge the registration number that we receive from the Pesticide Regulation Division in Agriculture is one of our key numbers.

Senator PEARSON. They have been registered with the Department of Agriculture and then they must on their label put their registration number.

Now, what is the labeling requirement under the act we have before us? A warning?

Mr. GOTTSCHALK. The label must merely carry the sense of any research that we might conduct which might show that there is a potential hazard in the use of the particular material to fish and wildlife without specifying the kind of wording or exactly what would be on it.

But if we, for example, were to complete a research project that showed that a particular substance used in the control of, oh, let's say weeds in a farm pond or in a public water supply had a bad effect on the fish of the sunfish family, we would ask that some kind of appropriate warning be placed on the label so that this would be called to the public's attention and they could get some guidance as to what were the proper uses for this material.

Senator PEARSON. In that case, even when it is used properly and according to the directions?

Mr. GOTTSCHALK. Yes. In other words, it would be the equivalent of what we see on many pesticide labels now.

Senator PEARSON. That is the point I was going to make. Don't we already have that on just about every pesticide label?

Mr. GOTTSCHALK. I can't say.

Senator PEARSON. "Warning"—it must be used as directed, and so forth, and in the directions set forth in the registration number of the Department of Agriculture?

Mr. GOTTSCHALK. The thing that I am not certain of, sir, is that there is a specific warning about materials that have been tested

against their effect on fish and wildlife. Mostly the warnings are such things as: "Warning: This Material May Be Dangerous If Inhaled." And then there are other precautionary statements of the same type.

Senator PEARSON. Or used other than the directions listed below, or something like that.

Well, I only have one final question and I will stop.

I know the Federal Government is one of the greatest users of pesticides and insecticides, and you indicated in your statement that your Department uses a great deal of these chemical compounds. My question is so general I don't know whether you can answer it or not.

But I would like to know what policies your Department is using in relation to precautions, safeguard, warnings, and instructions and regulations to all those people within your Department today.

Mr. GOTTSCHALK. The Secretary of the Interior has taken a very strong position on this whole subject as it relates to the potential, the possible contamination of the environment, and has therefore issued departmental instructions to each of the agencies that have land management responsibilities or other responsibilities which would require them to use pesticides.

We in turn have manualized the departmental policies in our programs, for example, and we prohibit the types of pesticides which have a high residual—

Senator PEARSON. All have a residual effect, don't they?

Mr. GOTTSCHALK. No; some of them are degradable. And then, of course, I guess you get into the question of how long is longevity.

But the very persistent chemicals are ruled out from use in Interior programs.

We have, I will say, a rather severe screening process for clearance of use of pesticides in our own programs. For example, a refuge manager, if we want to think about one of the programs that I am specifically involved in, must receive the approval of his regional director in the field for programs that do involve the use of pesticides. And the regional director depends upon information that we develop in our laboratories and also that we acquire from the Department of Agriculture as to the circumstances under which we will permit any kind of chemicals to be used. Some are specifically eliminated.

Senator PEARSON. You say generally the policy is to use those chemicals which are not "permanent"—the word "permanent" in quotes—that are not of permanent nature or have a long residue period. Then do you go in with subsequent applications of the same type of pesticides of the type that you use?

Mr. GOTTSCHALK. Yes; for example, to use a common one, we have eliminated the use of DDT in our work, but we will use malathion and some of the other less durable types but will have to go in with more frequent applications.

Senator PEARSON. Let me ask Dr. Smith: Isn't the repeated application of some pesticides of greater danger than one application with a long residue?

Dr. SMITH. It is difficult to answer this in a general way. If they are persistent pesticides, certainly the continued application of persistent pesticides in certain conditions can be detrimental and create chronic levels of toxicity.

But continuous application of pesticides that are not persistent, that break down, probably would have negligible effect.

Senator PEARSON. Thank you, Mr. Chairman.

Senator HART. Thank you, Senator.

Mr. Hardy?

Mr. HARDY. No questions.

Senator HART. Gentlemen, did you have anything you would care to add in view of the exchange?

Dr. JOHNSON. No, sir.

Dr. SMITH. No.

Mr. GOTTSCHALK. I don't think so, Senator. Thank you very much.

Senator HART. Thank you very much.

(The statements presented by Mr. Gottschalk for the record follow:)

BUREAU OF SPORT FISHERIES AND WILDLIFE

PESTICIDE-WILDLIFE RESEARCH ACCOMPLISHMENTS, 1960-68

We have:

1. Measured pesticide residues in numerous species of wild game ranging in size from woodcock to elk, and in 18 species of freshwater fishes.
2. Measured the effects of different levels of pesticide residues upon the behavior and reproduction of raptorial and fish eating birds.
3. Measured pesticide residue levels in major fish and wildlife food organisms such as earthworms, snails, and vegetation.
4. Made acute toxicity tests (immediate lethal effects) of more than 300 compounds, including insecticides, herbicides, and fungicides. Chronic toxicity tests (long-term sublethal effects) have been performed on about 40 compounds. Both fish and wildlife species have been used in these trials.
5. Conducted intensive field studies of the effects of large scale pest control programs upon numerous birds and mammals, including rare and endangered species such as the southern bald eagle, and fishes in lakes and streams.
6. Interpreted the significance of different pesticide residue levels in organs such as the brain as means for diagnosing cause of death in wild birds.
7. Determined the presence of pesticide residues in important wildlife ecosystems such as Clear Lake in California, Lake Michigan, Canadian waterfowl breeding grounds and Mexican waterfowl wintering grounds.
8. Cooperated with other agencies such as the Forest Service and with the chemical industry in the development of new less hazardous pest control materials.
9. Established a system for annually monitoring the levels of pesticides in waterfowl wing samples, in starlings, and in bald eagles, and in selected species of freshwater fishes.
10. Provided scientific proof that some birds of prey and other birds produce thinner eggshells when fed on diets that contain levels of DDT-dieldren comparable to what they would encounter under field conditions than do birds that are on pesticide free diets. This effect is believed to result in greater breakage of eggs during the nesting season and may thus account for the world-wide decline in birds of prey that has occurred since the first wide-spread use of DDT during the late 1940's.
11. Documented the conditions under which pesticide residue levels appear to have no effect on fishes, or have caused changes in fish growth rates, behavior, resistance to stresses of several kinds, blood physiology, and internal pathology. High residue levels in the yolk of fish eggs are potentially lethal at the time all yolk is converted into living tissues.
12. Documented the breakdown of pesticides by types of soil bacteria in the aquatic environment.
13. Cooperated with some 65 private companies, 28 State agencies, 18 universities, and 8 research institutions in coordinated studies of relationship between pesticides and fish and wildlife.
14. Contributed to the many advances in improved chemical analytical methodology.

15. Published numerous research findings in scientific journals and participated in many scientific meetings.

16. Helped to educate the public in the safe use of pesticides.

BUREAU OF COMMERCIAL FISHERIES

PESTICIDE PROGRAM

Bureau of Commercial Fisheries pesticide research began in 1960 because of increased use of these chemicals and their possible effect on commercial fish and shellfish. These studies were authorized by Congress under Public Law 85-582 approved August 1, 1958, and its amendments Public Law 86-279 approved September 16, 1959, and Public Law 89-232 approved October 1, 1965.

Total funding to date has been as follows:

| | | | |
|-----------|-----------|-----------|------------|
| 1960----- | \$33, 000 | 1965----- | \$506, 300 |
| 1961----- | 95, 000 | 1966----- | 512, 800 |
| 1962----- | 95, 400 | 1967----- | 732, 800 |
| 1963----- | 102, 200 | 1968----- | 714, 000 |
| 1964----- | 208, 800 | | |

The broad objectives of this research program are:

(1) to determine the lethal and sublethal effects of the more commonly used pesticides on representative commercial fish and shellfish,

(2) to monitor pesticides in representative species from the natural marine environment and the Great Lakes,

(3) to determine the accumulation and effect of pesticides on physiological functions such as growth and reproduction,

(4) to determine the movement of pesticides in the environment and food chains of commercial fishery resources,

(5) to investigate methods for reducing pesticide levels in seafood products

Studies to date have concentrated on objectives one and two, although some research has been done on all. These studies have provided information on the pesticides that pose the greatest danger to fishery resources and the extent to which these chemicals occur in the natural environment.

Controlled laboratory tests have been made on about 200 specific pesticidal chemicals to determine lethal and sublethal levels for oysters, shrimp, and representative finfish. These chemicals are used in about 90 percent of the most commonly used pesticidal formulations. These studies also required development of suitable bioassay tests and standardization of methods. In general the insecticides and the chlorinated hydrocarbons like DDT are most dangerous to fish and shellfish. Oysters stopped feeding and exhibited erratic shell movements when exposed to less than one part per million (ppm) of many chlorinated hydrocarbons. Shell formation in oysters was inhibited by concentrations of a few parts per billion.

Experimental studies showed that oysters will concentrate DDT in the tissues when continuously exposed to 10 parts per trillion in the water.

After 15 days exposure tissue levels were 0.7 parts per million or 70,000 times the concentration in the water. Stored DDT is flushed from oysters gradually when they are transferred to pesticide free water. Residues of 150 parts per million requires 3 months or longer to disappear and 0.1 parts per million are usually lost in about 2 weeks.

With this type of laboratory data, it became essential to determine the geographic extent and magnitude of pesticides in estuaries to better understand the seriousness of the problem. In 1965 a nationwide estuarine monitoring program was begun. This program fitted closely into the National Pesticide Monitoring Program developed and recommended by the Federal Committee on Pest Control.

The success of this monitoring program has been due in large part to excellent cooperation from State and university laboratories. The program presently has contracts with organizations in 14 coastal States for collection of samples. Monthly samples are taken at about 160 permanent stations. These represent, to date, about 6,000 duplicate samples that have been analyzed for about 11 pesticidal chemicals by our Gulf Breeze, Florida, field station. The analytical technique will detect concentrations of pesticides to as low as about 10 parts per billion.

These monitoring studies demonstrate the widespread occurrence of pesticide residues in molluscan shellfish. Concentrations are generally low, less than 0.1 part per million and follow a seasonal pattern. The highest concentrations occur in early summer in estuaries where drainage is mostly from agricultural lands.

Residues from estuaries near large urban areas are consistently high throughout the year, although seasonal peaks can still be detected.

Samples from the State of Washington show the lowest residues throughout the year. Estuaries bordering the Gulf of Mexico, which receives drainage from about half the United States, are always contaminated to some extent. In Texas where truck farming produces three crops annually, three seasonal peaks of residues in oysters can be detected and generally high levels all year. Average residue levels are five times higher than samples from estuaries near other agricultural areas.

The laboratory and monitoring studies have supplied essential information on pesticidal chemicals to the cooperative staff of the Fish and Wildlife Service that reviews, for the Department of Agriculture, applications for pesticide registration.

These studies have shown also that concentrations of pesticides at any one time are probably too small to cause detectable damage to fishery resources. The danger lies in the fact that persistent pesticides are concentrated, cycled, and magnified through the food chain. Small residues in the microsopic planktonic organisms may be magnified 10 million times or more as they progress through small, then larger fish, and finally into the top levels of the food chain such as porpoise and fish eating birds.

This area needs further studies and our future program plans to concentrate on food chain and physiological studies.

The Bureau's biological laboratory at Auke Bay, Alaska, has concentrated on special studies related to the effect of forest spraying on salmon and their foods. Stream insects, essential food of young salmon, were sharply reduced following aerial application of DDT at one-quarter pound per acre. The number of insects began to increase a few weeks after the spraying, but did not recover their normal abundance for about a year. Increased residues occurred in trout, plankton, clams, and the water itself.

During the past 3 years the Ann Arbor, Michigan, biological laboratory of the Bureau of Commercial Fisheries has been analyzing for pesticide residues in Great Lakes fish. Approximately 30 species have been analyzed to date. Residues from fish in Lake Michigan are two to five times higher than any of the other Great Lakes. The other lakes in decreasing order of pesticide concentrations in fish are Huron, Erie, Ontario, and Superior. Chubs from Lake Michigan containing the highest pesticide concentration averaging 7.5 ppm, lake trout averaged 5.0 ppm, alewives, 4.0 ppm; perch, 3.5 ppm; and smelt, 2.5 ppm.

Monitoring over the past 2½ years has shown a buildup of DDT in lake trout from 0.3 ppm at time of stocking to 2.5 ppm in 1 year, 5.6 ppm in 2 years, and 6.4 ppm after 3 years.

Future work at the Ann Arbor laboratory will concentrate on Lake Michigan with particular emphasis on detecting any possible increase or decrease in DDT and other pesticide levels in this environment.

Analyses have been made on coho salmon in Lake Michigan for total DDT levels just prior to entering the streams to spawn and from fish collected in the stream during spawning. Additional analyses of coho sac fry and eggs have been made. Four adult coho salmon from Lake Michigan had an average total DDT value of 2.08 ppm. DDT levels in six coho salmon taken in the stream averaged 10.23 ppm. There are two possible reasons for the high levels found in stream-run coho: (1) the insecticide concentration in the stream is much higher than in the lake and the fish were in the stream long enough to take up increased amounts of DDT; and (2) the utilization of body fat by the stream-run fish resulted in the relocation and concentration of the pesticide in the flesh. Both possibilities will be investigated. The DDT level in coho eggs show no apparent differences between lake and stream-run eggs. These eggs had a total DDT level of 3.34 ppm. The possible effect of this concentration in coho eggs is unknown. We do know, however, that the Michigan Department of Conservation suspects DDT to be a prime cause in the substantial mortality that occurred in their hatcheries with Lake Michigan coho eggs. The DDT level in Lake Superior coho eggs was 2.02 ppm, 1.3 ppm less than the Lake Michigan fish. No unusual mortalities have been reported for Lake Superior coho eggs.

The Ann Arbor biological laboratory of the Bureau of Commercial Fisheries is monitoring the levels of pesticides in coho salmon, to determine the rate of buildup of pesticides, if a substantial increase in pesticides occurs after the fish enter a stream and to provide information on pesticide levels in fish to the fishery management agencies.

Senator HART. Our next testimony will be from the Department of Agriculture. Let me welcome the Associate Administrator of the Agricultural Research Service, Dr. R. J. Anderson.

**STATEMENT OF R. J. ANDERSON, ASSOCIATE ADMINISTRATOR,
AGRICULTURAL RESEARCH SERVICE, U.S. DEPARTMENT OF
AGRICULTURE; ACCOMPANIED BY HARRY HAYS, DIRECTOR,
PESTICIDE REGULATION DIVISION**

Dr. ANDERSON. Mr. Chairman, members of the committee, I am R. J. Anderson, Associate Administrator of the Agricultural Research Service, U.S. Department of Agriculture. I have with me here Dr. Harry Hays, the Director of the Pesticide Regulation Division of the Agricultural Research Service.

I have a brief prepared statement. With your approval I will deliver it.

Senator HART. If you will read it, please.

Dr. ANDERSON. I appreciate the opportunity to appear before your committee to present the views of the Department of Agriculture on H.R. 15979. The bill would authorize and direct the Secretary of the Interior to conduct a comprehensive program of studying the effects of insecticides, herbicides, fungicides, and pesticides upon the fish and wildlife resources of this country to determine the amounts, percentages, and formulations of such chemicals that are lethal or injurious to fish and wildlife and those which can be used safely to prevent loss of these resources.

The bill further provides that on the basis of these studies the Secretary of the Interior shall transmit the information to the Secretary of Agriculture as to how in the use of these chemicals injury to fish and wildlife can be prevented or minimized.

The Secretary of Agriculture, in consultation with the Secretary of the Interior, shall require that such warning or information shall appear on the label of each chemical which is required to be labeled under the Federal Insecticide, Fungicide, and Rodenticide Act.

In addition, the bill would authorize the appropriation of funds necessary to carry out its purposes.

Mr. Chairman, we support the objective of H.R. 15979 to the extent that it would provide new and more extensive research data on the relation of pesticides to fish and wildlife and better information to our Department for use in the administration of the Federal Insecticide, Fungicide, and Rodenticide Act. However, we defer to the Department of the Interior as to the necessity for such provisions.

We do object to the provisions of section 1(b) of the bill dealing with the labeling of products registered under the Federal Insecticide, Fungicide, and Rodenticide Act because they would create the possibility of a conflict of authority between the Secretary of the Interior and the Secretary of Agriculture in the administration of the act.

We believe these provisions are unnecessary because their purpose is now being accomplished administratively under a formal memorandum of agreement among the Departments of the Interior, Health, Education, and Welfare, and Agriculture relating to pesticides registration.

The effectiveness of this interagency coordinating mechanism has increased steadily. On a weekly basis, we furnish to the Department of the Interior a listing of all proposals affecting registration or reregistration of pesticide products intended for outdoor use. These

proposals are reviewed critically by our Department and the Department of the Interior in the light of the potential impact of each product on fish and wildlife.

In calendar year 1967 we referred a total of 6,544 label proposals to the Department of the Interior. In those cases when the Department of the Interior provided additional advice concerning these referrals, we concurred in their recommendations in practically all cases.

These recommendations are implemented under the authority already available to the Secretary of Agriculture to require that products registered under the Federal Insecticide, Fungicide, and Rodenticide Act must include on the product label a warning or caution statement which may be necessary to prevent injury to living man and other vertebrate animals, useful vegetation, and useful invertebrate animals.

Therefore, we recommend against the enactment of section 1(b) of H.R. 15979 because it would appear to conflict with the authority of the Secretary of Agriculture in the administration of the Federal Insecticide, Fungicide, and Rodenticide Act. We believe the labeling provision of that act makes it clear that the ultimate responsibility for determining what, if any, information of warning relating to the possible effects on fish and wildlife would remain with the Secretary of Agriculture. We believe that this is essential since it is he who has the statutory responsibility for administering the Federal Insecticide, Fungicide, and Rodenticide Act.

Mr. Chairman, I will be happy to respond to any questions you or members of the committee may have.

Senator HART. Doctor, I notice in your statement that I was making an assumption when I indicated to the Interior witnesses that in 6,500 instances where exchange of information on products had occurred between Interior and Agriculture that there had been agreement. I notice in your statement that you say:

In those cases when the Department of the Interior provided additional advice concerning these referrals, we concurred in their recommendations in practically all cases.

I take it that means that in some cases you did not. What was the situation in those cases and about how many were there?

Dr. ANDERSON. First, Mr. Chairman, I would like to mention that in the Pesticide Registration Regulation Division, Dr. Hays has scientific competence in many different disciplines. He has scientists in the field of animal biology, the field of toxicology, entomology, plant physiology, plant pathology, and all of the scientific disciplines needed to adequately carry out the administration of the Federal Insecticide and Fungicide Act.

In reviewing the different proposals for registration or re-registration, the manufacturers are required to submit scientific data, research data, relating to efficacy, relating to toxicity to man, to fish and wildlife, and all other of man's values, which are reviewed by members of his staff.

In addition to reviewing the information submitted by the registrant or the applicant in this case, they consider scientific information available from all sources, including the Department of Interior.

So in reaching a final judgment to what is placed on the label the Department not only considers the information submitted by Interior

but that submitted by industry, the universities of this country, and other sources.

So there is reason to expect that there would be some scientific disagreement among professionals in a few cases.

I could call on Dr. Hays here, the Director of the Division, to be more specific, but I don't believe that there have been more than five or six instances in which agreement was not reached.

Senator HART. Doctor, would you elaborate?

Dr. HAYS. Mr. Chairman, if there were any differences, it may well have been one in the pattern of use where in our opinion we did not feel that in this pattern of use the precautionary statement was in fact necessary.

Senator HART. Did not feel that in fact what?

Dr. HAYS. That the pattern of use did in fact not require a precautionary statement regarding fish and wildlife because the pattern of use was in such an area where fish and wildlife was not really involved.

Senator PEARSON. What do you mean by the "pattern of use?"

Dr. HAYS. Around let's say a farm. Around the household. We did not, let's say, in our opinion, see any great hazard in this instance to fish or wildlife, and it was simply a matter of being overlooked I think between the two Departments.

Dr. ANDERSON. The pattern of use would call for its use in an area in which it wouldn't be expected that fish and wildlife would be in the vicinity to the extent that it would create a real hazard. So in those cases Dr. Hays mentioned it was probably based on the pattern of use of the registered product which caused a disagreement as to the need for a precautionary statement on a label relating to fish and wildlife.

Senator HART. Well, now, just as in our own family lives we also try to avoid anticipating and we always try to skirt around really sharp disagreements—but occasionally they develop—

Dr. ANDERSON. Yes.

Senator HART (continuing). It doesn't do anybody any long-term good for us to duck that possibility right here in the area you are talking about.

The Department of Agriculture and the Department of the Interior have able, highly qualified personnel, as you have explained with respect to Agriculture, and I know it is true and you will agree with respect to Interior. Interior's focus understandably is with respect to damage to fish and wildlife. We're talking pesticides. It is concerned, true, with other adverse consequences, but its ultimate responsibility is the safeguarding of the fish and wildlife.

Agriculture's ultimate responsibility is to insure agricultural production is expanded, that crops are protected. True, you have concern for damage in other areas, but your ultimate responsibility is corn. The ultimate responsibility of Interior is the trout.

And all of the wisdom in the two Departments just don't agree. Interior says use in this fashion at this time will hurt the trout, and you say but it will grow corn. Now, what goes on the label, and who decides?

Dr. ANDERSON. Mr. Chairman, again you, I think, very aptly described the mission of the Department of Agriculture. But in administering the Federal Insecticide and Fungicide Act, that act is designed

to protect the consumer, and also it requires that it be administered in a way that all values are fully protected.

So in administering the act, the people with the responsibility look equally at efficacy and safety, and safety becomes the first objective. If it is not safe, if it cannot be used safely, it is not registered regardless how effective it is in pest control.

So in this regard, the mission of the Department of Agriculture in this respect, safety comes before effective pest control. In this regard—

Senator HART. Yes; but—

Dr. ANDERSON (continuing). If I may go ahead, this is reflected in our labeling requirement, that we assure under the law that the Secretary does have the final authority for labeling and for administering the act.

Senator HART. Well, safety. But you have been told by experts that it is not safe for trout. Why don't you put that on? Why shouldn't that go on even though you are satisfied it is safe for corn and corn consumers?

Dr. ANDERSON. That is placed on the label, Mr. Chairman, where it is determined that the particular pattern of use of this product may result in injury or death to fish and wildlife.

Senator HART. Here we get to this family disagreement. Interior says, "In our judgment the pattern of use and the nature of this product combine so that this is what the label should say," and you say, "We don't agree." Now, isn't it up to Congress to say who puts the thing on the label or who is able to keep it off?

Dr. ANDERSON. Yes, sir. It is the responsibility of Congress.

Senator HART. And 1(b), as I read it, says that in that situation the label has to carry the warning.

Dr. ANDERSON. That's correct, but, as I mentioned earlier, the Department has the final responsibility, and it considers all information and not just information from one source.

Senator HART. But if Congress says that it goes on the label under those conditions by adoption of 1(b), then, of course, you would do it?

Dr. ANDERSON. We would have to.

Senator HART. Thank you.

Senator Pearson.

Senator PEARSON. Do we still adhere to the zero tolerance?

Dr. ANDERSON. No, sir. As a result of a study conducted by the National Academy of Science, they recommended that the zero tolerance and no-residue concept be abandoned, and through mutual agreement between the Food and Drug Administration of HEW and our Department we have moved to elimination of all no-residue registration and all zero-tolerance concept—

Senator PEARSON. Was zero tolerance a regulation, or was a zero tolerance a part of the statute?

Dr. ANDERSON. Yes, sir, but they have moved to establishing what amounts to safe levels of a finite tolerance, an insignificant residue, which if it is found—It is first determined a certain level is safe, and even though you can't detect it at that level they will set a tolerance above that safety margin, and then regardless of what they detect later on through their improved methodology, if they do find a finite amount there below the safety level, then it would be permitted, where

under the no-residue or zero tolerance none would be permitted if it could be detected.

So this eliminates the continuing conflict between methodology, ability to detect, and the establishment of tolerances.

Senator PEARSON. I guess just to repeat, as I understand, your position is that the Congress has given the Department of Agriculture or a department within the Department the responsibility of making a determination as to what shall be on the label after registration?

Dr. ANDERSON. Right.

Senator PEARSON. And this particular bill says that the Department of the Interior may come over and require you to put something on there. Isn't that right?

Dr. ANDERSON. In the strict interpretation of the bill—

Senator PEARSON. Pardon me for interrupting you. It says that the Secretary of Agriculture, in consultation with the Secretary of Interior, shall require that such information—that is, the information given from Interior to Agriculture—shall appear on the label.

Dr. ANDERSON. We interpret that to mean just as it is worded that it shall be placed on there, and in that case the Secretary of Agriculture would not have the final authority for labeling.

Senator PEARSON. And your position further is through this inter-agency committee you are now receiving all this information anyway—

Dr. ANDERSON. Right.

Senator PEARSON. In addition to a great deal of other information?

Dr. ANDERSON. Yes.

Senator PEARSON. How many cases have there been that there has been a recommendation by Interior and it has not been followed because of the reasons you stated? You say five or six?

Dr. HAYS. I would say, sir.

Senator PEARSON. Well, I tend to support your position on this thing, and yet I am compelled to ask you if there have only been five or six problems out of how many cases—six hundred and—

Dr. ANDERSON. Six thousand.

Senator PEARSON. If there are only five or six out of 6,000, why would you object to it?

Dr. ANDERSON. Well, we believe that the action taken by the House, if I may refer to that, leaves some question as to where the final authority would rest. And if the legislative history was clearly defined that this final authority would rest with the Secretary of Agriculture, we wouldn't object to this presently informal arrangement being legalized.

Senator PEARSON. That's not the way I read the bill. I read it the same way you do. It is divided authority as to what will be on there.

Dr. ANDERSON. Yes.

Senator PEARSON. It isn't really divided authority at all. It says that the Secretary of Interior may require the Secretary of Agriculture to do something.

Dr. ANDERSON. That is the part that we object to—with the responsibility with the Department of Agriculture with divided authority or in some cases no authority for the final determination for labeling.

Senator PEARSON. That's all, Mr. Chairman.

Senator HART. Mr. Hardy.

Mr. HARDY. Dr. Anderson, I would like to pursue with you just for a moment Senator Hart's line of questioning.

Under the existing agreement among the Department of Agriculture and Department of Interior and the Department of Health, Education, and Welfare, when the Department of Interior gives you information concerning the effects of or the potential for injury to fish and wildlife, of a particular pesticide and when you agree, as you do in most cases, does the information appear then on the label as part of the cautionary statement or does it appear as part of the directions for use?

Dr. ANDERSON. Where a caution or warning is required, that is placed on the label.

Mr. HARDY. You do place it on the label?

Dr. ANDERSON. Yes.

Mr. HARDY. In other words, the information you get from the Department of Interior?

Dr. ANDERSON. Yes.

Mr. HARDY. Now, that being so, just how does this conflict occur? With due deference to the expertise of your scientists and their ability, but granting if you will that the Department of Interior in their research programs are directly concerned with the effect of these chemicals on fish and wildlife, and therefore have great expertise in this area, what possible conflict is there if the Congress should decide that side by side on the label with your cautionary statement the Secretary of the Interior directs that there be a cautionary statement with respect to use about fish and wildlife?

Dr. ANDERSON. It is already being placed—

Mr. HARDY. I know, but what conflict would there be if the Congress decides they want the Secretary of Interior to have this authority where fish and wildlife are concerned? What possible conflict would be?

Dr. ANDERSON. It is already part of the law that requires precautionary warning statement to appear on the label. But the law which would require that we place on the label the findings of Fish and Wildlife, as I said, we think it offers a potential there of conflict of authority.

Mr. HARDY. And I'm asking, could you be more specific as to the sort of conflict? What sort of conflict, what sort of a situation might arise where there would be a conflict?

Dr. ANDERSON. As I have mentioned earlier, in reviewing the hazards or the data pertaining to fish and wildlife and human safety and damage to other things we consider information from every source, which would be, as I mentioned, universities, industry, world-wide information, in addition to the information that is submitted or developed by the Department of Interior.

We think that it could limit us to using the information supplied by just one source instead of multiple sources.

Mr. HARDY. But, on the other hand, or in the same vein, Congress has decided that the Secretary of Agriculture, has the final say. You're the experts. But why couldn't Congress say that in these two areas, because of the particular expertise of the Department of Interior and the Secretary of Interior, that they should have the final say.

Dr. ANDERSON. Well, it would be a divided authority there in which the Interior would have the authority, final say-so, regarding warning and precautionary statements as to fish and wildlife, and the

Secretary of Agriculture would have all other responsibility. And really I think that FIFRA would have to be amended eliminating from the Secretary of Agriculture the responsibility for precautionary and warning statements as it relates to fish and wildlife.

Mr. HARDY. One final question, Doctor, along this line. Under the current memorandum, the memorandum of agreement, you have the final authority. Is that not so?

Dr. ANDERSON. Yes.

Mr. HARDY. In other words, you do not have to accept the recommendation of the Department of the Interior.

Dr. ANDERSON. No.

Mr. HARDY. However, referring again to the House hearings on the bill which ultimately became H.R. 15979 and was passed by the House, when you were asked by Congressman Dingell, whether there would be a conflict with the agreement or between the agreement as it is in force and the enactment of section 1(b) of H.R. 15979 your reply was that there would be no conflict.

Dr. ANDERSON. There would be no conflict, but there would be likely an added constraint.

Mr. HARDY. I see. I have no further questions.

Senator HART. If there are no further questions, gentlemen, do you have anything you would like to add?

Dr. ANDERSON. No, sir. We appreciate appearing before your committee.

Senator HART. Thank you very much.

Next we will hear from the president of the National Agricultural Chemicals Association, Mr. Parke Brinkley.

Mr. Brinkley, good morning.

STATEMENT OF PARKE C. BRINKLEY, PRESIDENT, NATIONAL AGRICULTURAL CHEMICALS ASSOCIATION; ACCOMPANIED BY JOHN D. CONNER, GENERAL COUNSEL

Mr. BRINKLEY. Thank you, sir.

Senator HART. Mr. Brinkley, for the record, if you would, introduce Mr. Conner.

Mr. BRINKLEY. Yes, sir.

Thank you very much, Mr. Chairman and Senator Pearson, for the opportunity to be here.

My name is Parke C. Brinkley. I am president of the National Agricultural Chemicals Association. With me is Mr. John D. Conner of the legal firm of Sellers, Conner & Cuneo. Mr. Conner is general counsel to our association and is our corporate secretary, intimately familiar with the workings of the association, attending all of our board meetings, and so forth.

I might also, Mr. Chairman, in my introduction say to you that from March of 1950 until the end of July of 1962, a period exceeding 12 years, I served as commissioner of agriculture in the State of Virginia, and so have some knowledge of this particular legislation as well as the administration of public laws during this time.

Senator HART. What years did those cover?

Mr. BRINKLEY. 1950 to 1962. During that time I was particularly friendly with the directors of agriculture of your home State of Michigan.

Senator HART. A good one.

Mr. BRINKLEY. As I am today I might say, having also known your present director of agriculture for a good many years while he served in the capacity of deputy director of agriculture.

Senator HART. After having made my acknowledgment of interest in game and wildlife, I want now to indicate on the record that during a portion of the time you were responsible for agricultural affairs in Virginia, I was a Virginia farmer, too. We had a farm down there.

Mr. BRINKLEY. Good. I'm sorry—

Senator HART. After you left the place burned down. [Laughter.]

Mr. BRINKLEY. Thank you very much, sir. I regret it sounds as though you are not presently a farmer, one of our farmers.

The association that we represent has 143 members, and it is estimated that we produce approximately 90 percent of the basic agricultural chemicals and 85 percent of the formulated agricultural chemicals produced in the United States each year.

The National Agricultural Chemicals Association supports S. 3228 by Senator Magnuson. Likewise, we support the basic principle of H.R. 15979 by Congressman Karth to authorize comprehensive continuing studies upon the effect of pesticides on fish and wildlife and to apply the results of that research towards the safer use of pesticides. We object, however, to that portion of subsection 1(b) appearing at lines 10 to 17 of page 2 which reads:

and the Secretary of Agriculture, in consultation with the Secretary of the Interior, shall require that such information of warning pertinent to any insecticide herbicide, fungicide, or other pesticide shall appear on the label of each package of such insecticide, herbicide, fungicide, or other pesticide, as the case may be, which is required to be labeled under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135-135k).

Objection to this provision is based upon the following grounds:

1. It directly conflicts with labeling provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (generally referred to as FIFRA).

2. In addition, it creates needless confusion in the administration of FIFRA because it places in doubt the respective authority of the Secretary of Agriculture and the Secretary of the Interior to determine the adequacy of labeling of pesticides and the applicability of the review provisions of FIFRA applicable to such determinations.

3. It is unnecessary because its purpose presently is being achieved under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135-135k), and the memorandum of agreement between Secretary of Agriculture; Secretary of the Interior; and Secretary of Health, Education, and Welfare; Federal Register, May 1, 1964, page 5808.

If it is the consensus of this committee that H.R. 15979 should be enacted, we propose that subsection 1(b) either be eliminated or amended by inserting a period after the word "minimized" in line 10, page 2, and that the remainder of said subsection be stricken and the following sentence inserted in lieu thereof.

The Secretary of Agriculture shall consider and apply such information in determining the adequacy of the directions for use and of the warning or caution statements for such products required under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135-135k).

DISCUSSION

I will state the basis for each of these grounds for objection:

1. Subsection 1(b) directly conflicts with the labeling provisions of FIFRA.

House Report No. 1223 of the Committee on Merchant Marine and Fisheries to accompany H.R. 15979 states:

Upon questioning at the hearings, the Department of Agriculture witness admitted that Subsection 1(b) of Section 1 of the Bill would not conflict with existing practices under the law—nor under the 1964 Interdepartmental Agreement—nor would it in any way impinge on the capability of the Departments of Interior and Agriculture to do precisely what they are presently doing with respect to pesticide labeling.

It is our belief that the provisions of subsection 1(b) do create a direct conflict with the provisions of FIFRA—a conflict which would result in uncertainty and confusion in the administration of FIFRA. An analysis of FIFRA will demonstrate this conflict.

The Federal Insecticide, Fungicide, and Rodenticide Act was enacted on June 25, 1947 (61 Stat. 163). It has been amended in 1959 (73 Stat. 286), in 1961 (75 Stat. 18), in 1961 (75 Stat. 42), and in 1964 (78 Stat. 190). It provides a comprehensive pattern of regulation of labeling of pesticides.

Under FIFRA the labeling pattern of a pesticide consists of two primary categories of information:

1. The directions for use (frequently referred to as the directions), and
2. The warning and caution statements (frequently referred to as precautionary labeling).

DIRECTIONS FOR USE

FIFRA provides that a pesticide is misbranded:

(c) if the labeling accompanying it does not contain directions for use which are necessary and if complied with adequate for the protection of the public; [Section 2.z.(2) (c)].

Interpretation No. 7 of the regulations for the enforcement of FIFRA, relating to the requirements with respect to the directions for use, provides in part:

* * * * *

Directions must be adequate when carefully followed, to protect the public from economic cheat and from personal injury or damage to property. This requires sufficient completeness to insure the proper use of the product so as to obtain the desired results in pest control without causing injury to man, beneficial animals, or beneficial plants [7 C.F.R. 362.105(e)].

WARNING AND CAUTION STATEMENTS

FIFRA provides that a pesticide is misbranded:

(d) if the label does not contain a warning or caution statement which may be necessary and if complied with adequate to prevent injury to living man and other vertebrate animals, vegetation, and useful invertebrate animals; [Section 2.z.(2) (d)]

DISTINCTION IN FUNCTION AND PLACEMENT OF DIRECTIONS FOR USE
AND WARNING AND CAUTION STATEMENTS

The distinction in the role of directions for use and warning or caution statements was developed in interpretation No. 18 with respect to warning, caution, and antidote statements. The pertinent portions of this interpretation are:

(2) The precautionary labeling detailed in this interpretation for specific economic poisons is directed primarily toward the avoidance of hazard to the persons handling or applying the economic poison and to persons or animals exposed to the economic poison incident to its handling or use. The manufacturer should recognize the possibility of injury of other types associated with the use of his product and the label should bear suitable *directions* for the avoidance of such injury.

* * * * *

Products which might be injurious to fish and wildlife after extensive use or indiscriminate disposal of excess material or spray-tank washings, and which bear directions for widespread use in areas where contamination of waterways would be possible, should bear *directions* such as "To protect fish and wildlife, do not contaminate streams, lakes, or ponds with this material. [Emphasis added] [7 C.F.R. 362.116(c)(2)]

* * * * *

Under FIFRA warning or caution statements must appear on the label. Under FIFRA the label is defined as:

. . . the written, printed, or graphic matter on, or attached to, the economic poison or device or the immediate container thereof, and the outside container or wrapper of the retail package, if any there be, of the economic poison or device. [Section 2.w.]

The directions for use, on the other hand, must appear on the labeling. The labeling is defined to mean either the label or other written, printed, or graphic matter attached to the economic poison or any of its containers or wrappers accompanying it at any time. [Section 2.x]

We may summarize these requirements of FIFRA by stating that it is the function of the directions for use to advise as to how the product should be used to assure that it is effectively and safely used without injury to the environment. These directions frequently may be quite lengthy. Because of this, FIFRA specified that the directions may appear on the labeling which accompanies the economic poison rather than requiring that it appear on the label, which must be physically attached to the economic poison.

It is the function of warning or caution statements, generally referred to as precautionary labeling, to warn of hazards to the person handling or applying the pesticide and to persons or animals exposed to it incident to its handling or use.

Under this labeling pattern, any information relating to the manner in which the pesticide should be used to avoid injury to fish and wildlife would be included in the directions for use. These directions for use are required to appear on the labeling. In practice these directions might appear either on the label attached direction to the container of the economic poison or on the labeling which accompanies it.

The portion of section 1(b) of H.R. 15979 to which objection is made, would require that such information relating to the manner in which the pesticide should be used to prevent or minimize injury

to wildlife "shall appear on the label of each package * * * which is required to be labeled under the Federal Insecticide, Fungicide, and Rodenticide Act. * * * "

The requirement that this information appear on the label rather than providing that it may appear on the labeling thereby presents a direct conflict with the labeling pattern provided by FIFRA. This labeling pattern arises not only from FIFRA, it is also adopted in the Uniform State Insecticide, Fungicide, and Rodenticide Act. This act has been approved by the Council of State Governments and has been enacted in the majority of the States.

May I interrupt just a moment to say here that this legislation that we are talking about, the general legislation in this field, is not just a simple Federal legislation, but it is a complex maze of Federal and State legislation with almost all of the States having legislation governing the registration, distribution, and/or use of pesticides in one form or another.

Now, back to my prepared statement:

2. Subsection 1(b) would create needless confusion in the administration of FIFRA because it places in doubt the respective authority of the Secretary of Agriculture and the Secretary of Interior to determine the adequacy of labeling of pesticides and the applicability of the review provisions of FIFRA applicable to such determinations.

FIFRA authorizes the Secretary of Agriculture to require that the labeling of a pesticide contain adequate directions for use and warning or caution statements. The decision as to the adequacy of the directions and precautionary labeling is vested in the Secretary of Agriculture.

Recognizing, however, that at times the decision as to the adequacy of such information will be based on involved technical questions, Congress in enacting FIFRA provided for reference of such technical questions to an advisory committee of experts designated by the National Academy of Sciences and for judicial review of the final decision of the Secretary.

The provision of H.R. 15979 that—

The Secretary of Agriculture, in consultation with the Secretary of Interior, shall require that such information or warning * * * shall appear on the label.
* * *

Must be questioned in the light of these existing procedures. Is the requirement of H.R. 15979 that the Secretary of Agriculture, in consultation with the Secretary of Interior, require that such information appear on the label of a pesticide intended—

1. to change the existing provision of FIFRA imposing the sole responsibility for making this decision upon the Secretary of Agriculture, and

2. to modify the existing procedure which provides for reference of these questions to an advisory committee designated by the National Academy of Sciences?

The fact that H.R. 15979 does not answer these questions would create confusion and uncertainty in the administration of FIFRA if this bill were enacted in its present form.

3. Subsection 1(b) is unnecessary because its purpose presently is being achieved under the provisions of FIFRA and the Memorandum of Agreement Between the Secretary of Agriculture,

Secretary of Interior, and Secretary of Health, Education, and Welfare.

The purpose underlying subsection 1(b) presently is being accomplished under the requirements of FIFRA and of the "Memorandum of Agreement Between the Secretary of Agriculture, Secretary of Interior, and Secretary of Health, Education, and Welfare." This memorandum specifically recognizes the responsibilities of each of these three departments pertaining to the regulation and use of pesticides. It describes the responsibility of the Department of the Interior in these terms:

Fish and Wildlife Service. Conserving beneficial wild birds, mammals, fish and their food organisms and habitat, with regard to pesticides.

It describes the responsibilities of the Department of Agriculture in these terms:

Agricultural Research Service. Providing for the safe and effective use of pesticides, including the registration thereof.

In the agreement each of the Departments agrees to keep the others fully informed of developments in knowledge on pesticides from research and other sources and of regulatory proposals relating to the registration or use of pesticides.

The agreement provides that this information will be exchanged on a weekly basis. We understand that in practice the flow of information is at even shorter intervals than weekly.

Both USDI and HEW receive copies of each proposed label and are given the opportunity to comment before action is taken. No pesticide label is therefore registered by USDA without prior review by the Fish and Wildlife Service.

Information developed by the Fish and Wildlife Service as a result of its research, and the adequacy of directions and warning and caution statements of pesticides in the light of this information falls squarely within the operation of agreement.

This memorandum constitutes an official document of the U.S. Government. It was published in the Federal Register of May 1, 1964, page 5808, and has been reprinted as a part of House Report 1290, 90th Congress, second session, of the Committee on Merchant Marine and Fisheries on H.R. 15979. The various pesticide activities of the Federal Government are being conducted in accordance with the procedures outlined in this agreement.

Each of the Departments concerned, the Departments of Interior, of Agriculture, and of Health, Education, and Welfare, has expressed the opinion that subsection 1(b) of H.R. 15979 is not necessary (H. Rept. 1290, 90th Cong., 2d Sess., pp. 7-9).

Under these circumstances we can see no justification for the enactment of legislation containing subsection 1(b) in its present form, particularly because it conflicts with the provisions of existing law, and because it may be expected to create confusion and uncertainty in administering existing law.

CONCLUSION

Accordingly, we respectfully recommend:

1. That S. 3228 be enacted by the Senate as an alternative to H.R. 15979.

2. If it is the consensus of this committee that H.R. 15979 should be enacted, that the committee adopt the amendment to subsection 1(b) recommended in the first part of this statement.

Now, I would like to add two short statements, Mr. Chairman.

One, I would just like to reemphasize that FIFRA is a comprehensive, not a fragmented labeling statute, and this is extremely important, we think.

Secondly, that labeling—the total labeling—is too important in the use and safety of pesticides to take a chance on tampering with.

Thank you very much.

Senator HART. Mr. Brinkley, thank you for a statement that encompasses a great deal without covering too many pages.

Mr. BRINKLEY. Thank you.

Senator HART. It is in a very logical sequence.

Senator PEARSON.

Senator PEARSON. Mr. Brinkley, you say that it would conflict with the existing statute. I guess we could amend that too.

Mr. BRINKLEY. Yes. If the purposes of this bill were to be carried out, it seems to us that it should properly be done through amending FIFRA.

Senator PEARSON. Well, that would take care of one of your points as being the devil's advocate here. The other is that it would lend to confusion. Really I don't follow that, because the bill says that the Secretary of the Interior shall furnish information to the Secretary of Agriculture and then he shall do something. It may be divided authority but I don't see the confusion aspect of it.

Mr. BRINKLEY. Senator, it is a great deal more than this simple statement. As I say, FIFRA is a very comprehensive and not a fragmented labeling statute, and you cannot in due course simply flick a little bit of it in or out without confusing a rather complex picture.

Now, I am not an attorney. I am a farmer by trade. Mr. Conner is an attorney, has been very familiar with the drafting and the writing, the enactment, the procedural history of this bill over the years, and court cases that have been a result of it, and I would like for him to discuss this particular point with you because I think he can do it a great deal better than I can.

Senator PEARSON. I would be pleased if he would. I just don't see the point of confusion.

The Secretary of Agriculture now determines what shall be on the label. Under this bill he still determines what shall be on the label but part of that determination is directed by what the Secretary of Interior tells him. Where is the item of confusion?

Mr. CONNER. At the time that this statement was written, it was not as clear as it has been made by the discussion here this morning I believe, that the apparent intention of the drafters of this legislation is that the Secretary of the Interior shall have the final say as to what goes on the label of the product.

At the time this statement was written, we had primarily the statement in the House report that it is the Secretary of the Department of Agriculture I believe that has the final authority under FIFRA to make the decision as to what goes on.

I had not, frankly, read the transcript of the testimony in the House at that time that I think made it as clear as it now is to me that it was the intention of the drafters of the legislation that in the event of an

actual dispute between the Secretary of the Interior and the Secretary of Agriculture as to what should go on the label that it is under this bill the Secretary of the Interior that would have the final say and not the Secretary of Agriculture

But, now, I think that does not relieve the confusion if only this bill is enacted and FIFRA, or the Federal Insecticide, Fungicide and Rodenticide Act, is not—

Senator PEARSON. We'd have to amend it too.

Mr. CONNER. Because you would have two statutes on the Federal books, one of which would say that it is the function of the Secretary of the Interior to make this decision, the other completely unamended, the Federal Insecticide, Fungicide and Rodenticide Act, that says that it is the Secretary of Agriculture that shall make the decision.

And not only does it say that, but than the Federal Insecticide, Fungicide and Rodenticide Act provides a comprehensive review system of the decision of the Secretary of Agriculture on this by providing first for the appointment of an advisory committee of the National Academy of Sciences to review the decision of the Secretary of Agriculture and then provision for formal hearings and then a judicial review based upon the record made before the advisory committee and the public hearings held by the Secretary of Agriculture.

Now, is there to be amendment by implication that all of this is intended to apply to the decision made by the Secretary of Interior under a completely different law as it applies to the decision of the Secretary of Agriculture made under another law?

It just doesn't make sense to me as an attorney to have two statutes on the Federal books that say different things. One says this person shall make the decision; another one says that this person shall make the decision.

Senator PEARSON. Well, pardon the interruption here. Maybe we will have it in testimony some place, but I haven't really yet determined what the problem is we are trying to solve here by this particular section. I don't know. We have only had five or six cases out of some 6,000. I don't know what the great problem is.

What I really think is at the heart of this thing is really a difference of opinion that goes back over the life of chemical pesticides between the wildlife people and the people of agriculture, and they probably are viewing the future more with alarm than they are the past.

I tend to think, Mr. Chairman, just to make a speech myself, that the responsibility has got to be some place. Things are so much better now than they were 3 or 4 years ago that I rather tend to favor S. 3228 than the other. But that's talking off the top of my head, and it is not meant to mislead anybody here as to how I feel about it except a momentary expression.

Mr. CONNER. Mr. Chairman could I add at this point it seems to me that the amendment that we have proposed here to section 1(b) would provide a logical answer to this.

Senator PEARSON. That is already being done, isn't it, sir?

Mr. CONNER. Yes, I think it is. It would just be added assurance that this cooperation between the Department of the Interior and the Department of Agriculture is continued, but it would have this advantage of continuing it under the provisions of an existing law that I think everyone agrees is working properly instead of ending up with two directly conflicting statutes on the book without any effort to resolve that conflict.

It would avoid the conflict and it seems to me continue maybe in a little bit more official way this very fine pattern of cooperation that has developed.

Senator PEARSON. Thank you, Mr. Chairman.

Mr. BRINKLEY. Mr. Chairman, may I say along this very line that, like Senator Pearson who has been hearing congressional testimony in the field of pesticides from different committees over a period of years and devoted a great deal of time to it a few years ago—to the hearings I mean—he has put his finger upon a very important thing. He referred to it earlier during the day, and Mr. Gottschalk replied in I think the same manner that most of us who have been involved in this question for the last several years would reply.

That is that it's a much less emotional situation today. We have got a great deal more knowledge. There is a great deal better working relationship between the various and sundry agencies and interests, private and public and corporate, than there was a few years ago.

This interdepartmental agreement that has been in effect for several years now has been working real well. I have heard of no feeling on the part of anybody, with the exception of the supporters of this particular House bill, that there is need for any legislative change.

And, as a matter of fact, I hear the statements from time to time expressed by people in general that if we have got a good thing going like it is that it would not be wise to take a chance on interfering with it needlessly or until there was some apparent reason for interfering with it by enacting legislation which might, oh, in some way lessen the present program and the way it's being carried out.

So I think it is well that we give a lot of consideration to the case of whether it is needed or not.

Senator HART. Mr. Hardy.

Mr. HARDY. Just a few questions, if you please, Senators. One I would like to direct to Mr. Conner. I think it is merely a matter of clarification.

I believe you said, Mr. Conner, that you had based your interpretation of section 1(b) on the House report, the language of the House report, rather than on the House hearings. I think it is just a matter of clarification, but I would like to refer to the House report on H.R. 15979 and specifically page 5 of that report, the second paragraph under the section-by-section analysis.

I believe that the meaning and explanation in the report is consistent with and identical to the interpretation which Congressman Dingell put on an identical provision in his colloquy with Dr. Anderson in the House hearings on H.R. 487.

So I say this is just a matter of clarification. I believe the House report is quite explicit in reposing final authority for the determination whether something will appear on the label in the Secretary of the Interior, where fish and wildlife are concerned.

Mr. CONNER. You refer there I assume to the last sentence on page 5, reading, "It also would require the Secretary of Agriculture, in consultation with the Secretary of the Interior, to have such information appear on the label of each package of such chemicals"?

Mr. HARDY. Yes, sir. I believe it is consistent. Would you agree with that?

Mr. CONNER. I think it is consistent. To me it—

Mr. HARDY. I think it is just a matter of clarification.

Mr. CONNER. I think that's right. To me the sentence on page 5 is not quite as clear as it has become now.

Mr. HARDY. Yes, but I just wanted to bring that out.

Now, I would like to ask you another question Mr. Conner. In Mr. Brinkley's statement, where he says that the requirement—and I take it he is talking about the requirement under the interpretation of subsection 1(b) which we have been giving here—

Mr. CONNER. Yes.

Mr. HARDY (continuing). That the requirement that the information appear on the label rather than providing that it may appear on the labeling presents a direct conflict with the labeling pattern provided by FIFRA—That is his statement.

Mr. CONNER. That's right.

Mr. HARDY. I would like to ask you this: Is it then also his position that what is currently being done under the memorandum of agreement is in direct conflict with the labeling pattern provided by FIFRA?

Mr. CONNER. No, I think not, because without knowing the details of case-by-case method of how that is operating it would be my guess that a great deal of the information and recommendations that is conveyed by the Department of the Interior to the Department of Agriculture under that agreement would appear in the directions for use rather than in the form of warning and caution statements.

And if it appears in the directions for use, it would go on the labeling rather than the label.

Now, I recognize that in making this statement there may appear to some conflict in what I say with the testimony of the Department representatives of the Department of Agriculture both before the House committee and possibly here this morning. But I refer to the interpretations of the Department of Agriculture which to me seem to make it rather clear that it is the function just as much of the directions for use to assure the safe usage of pesticides—

Mr. HARDY. Well, I understand that, sir; but then your answer to my question is that the current practice as far as you know under the memorandum of agreement does not conflict with the labeling pattern provided by FIFRA? Is that your understanding?

Mr. CONNER. I said insofar as personal knowledge is concerned.

Mr. HARDY. Yes. Now, what I would submit to you, sir, is that the contrary is true, I base this on the testimony which was given this morning by Dr. Anderson. If my memory is correct, he was specifically asked with respect to this information that the Department of Agriculture gets from the Department of Interior dealing with potential injury to fish and wildlife: "In most cases, does it appear on the label as part of the cautionary statement, or does it appear in the directions or as part of the labeling?" And I believe that Dr. Anderson replied that where it is required it appeared on the label as part of the cautionary statement.

Mr. CONNER. Mr. Hardy, would it be appropriate to suggest, since this question has specifically arisen now, that representatives of the Department of Agriculture be asked as to whether the recommendations of the Department of the Interior relating to the safe use of this to avoid injury to wildlife always appears in the warning and cautionary statements or whether sometimes in the directions?

Mr. HARDY. That was the gist of the question I asked Dr. Anderson.

Mr. CONNER. I don't believe the question had arisen quite in as sharp a focus at that time as it has now.

Mr. HARDY. I intended it to if it hadn't.

Mr. CONNER. Would it be appropriate to ask the representatives of the Department?

Mr. HARDY. Well, I think if the record creates confusion on this point we can straighten it out at a later date.

Mr. BRINKLEY. Mr. Chairman, may I add just a word to this specific thing? I too heard Dr. Anderson's statement, and I think that what the general practice is is that a short precautionary statement is put on the label. Mr. Gottschalk, you remember—

Mr. HARDY. That's right. Yes.

Mr. BRINKLEY (continuing). Said that this normally could be reduced to one line.

Mr. HARDY. Yes.

Mr. BRINKLEY. Now, that is the actual flash of "Be Careful," but then I think you will find in the directions for use it is expanded upon.

And so I do not think that the present arrangements are in conflict at all with FIFRA, whereas I think this could be.

Mr. HARDY. There are two other questions which I would like to direct to Mr. Conner. Would we agree that your amendment, in effect, as Senator Pearson brought out, really do nothing more than sort of codify, if you will, the interdepartmental agreement that exists? In other words, where the final say on the fact of labeling under subsection 1(b) would be put under the Secretary of Interior under H.R. 15979, if your amendment were substituted we would be right back where we are now. And the Secretary of Agriculture would have the final say. Is that right?

Mr. CONNER. I'm not sure—no, I don't think it would be quite accurate to say if the amendment were adopted we would be right back, because you would still have the statutory direction that would be contained in the revised section 1(b) to the Secretary of Agriculture to consider the data submitted by the Secretary of Interior.

Mr. HARDY. I understand—

Mr. CONNER. That would be a statutory direction.

Mr. HARDY. I understand that, but my point is, sir, under your amendment the Secretary of Agriculture would still have the final say as he does now under the agreement as to the fact of whether it goes on. I concede that statutory direction would carry some weight. But, again, it would not be mandatory, and that is my point.

Mr. CONNER. That is correct.

Mr. HARDY. I have just one other observation, maybe you would care to comment on it, Mr. Brinkley.

In your final response to Senator Pearson I believe you questioned whether there is an urgent need to upset or, if you will, not upset but give additional authority in this area. And I would just submit to you that I believe it is a fact—there are statistics—that more and more pesticides are coming on the market every year and they will be more sophisticated.

And also we are, of course, encountering problems such as the problem in Senator Hart's State of Michigan with coho salmon.

So I suggest perhaps there is a urgent need in this area.

Mr. BRINKLEY. Yes, I would like very much to respond to that.

You are exactly right in saying that there are more and more pesticides being used each year. We anticipate that this will continue. I hope that Mr. Gottschalk's forecast of a sixfold increase in the next 15 or so years materializes. It sounds real good to us.

On the other hand, I would like to say to you that I do not think that we are having an increasing hazard to fish and wildlife. As a matter of fact, it is my honest belief that we are having less hazard to fish and wildlife, that there is really less pollution of the overall environment from pesticides today than there was 5 years ago or 10 years ago.

I think that our direction is in the proper direction and in the interest of the public health.

So I think that there is not, therefore, the increasing need for this sort of thing.

Mr. HARDY. Thank you.

Thank you, sir.

Senator HART. Gentlemen, did you have any comments you would like to add?

Mr. BRINKLEY. Just one thought, Mr. Chairman, one final thought.

That is, one, we don't see any need for the legislation. If there is need for the legislation based on the thought that this current well-working agreement might cease to exist, then we suggest that the amendment that we have proposed would assure the continuance of it by legislation rather than departmental agreement.

Mr. CONNER. May I add just one comment to that too, Senator Hart?

Senator HART. All right.

Mr. CONNER. I think it goes to the question we were discussing earlier as to the respective roles of the warning and caution statements on the one hand and directions for use on the other. They are completely interrelated from a labeling standpoint.

And it is just as much or even more in my opinion the function of the directions for use advising as to how a pesticide should be properly used to be safe, to assure the safe use of that pesticide, as it is a short warning and caution statement that merely might highlight a danger from the use when it is used.

And it seems to me that it would be administratively a very, very poor pattern if you ended up with a dichotomy of responsibility, the Secretary of Agriculture on the one hand with final responsibility as to what goes on the directions for use as to how the pesticide shall be used and, on the other hand, the Secretary of Interior with final responsibility on the warning and caution statement that should be on the label to warn of any dangers if it is used according to the manner in which the Secretary of Agriculture says that it may be used or registers it for use.

And I just want to point out that this pattern under which pesticides are labeled—and this is central to it—has developed over a period of years, originally with the 1947 enactment by Congress after extensive hearings by the Committee on Agriculture. It has been amended four or five times.

The Council of State Governments has adopted the uniform bill based on the Federal pattern. They are almost one and the same. And approximately 40 States have adopted this pattern too.

And under those circumstances and since it is working so well, we just hate to see it amended to just cut right through the middle of this labeling pattern without at least giving consideration as to what it is going to do to this regulation pattern under which pesticides are presently labeled.

It seems to me that if there is the real sentiment that an amendment of this nature is necessary and that it should be given, that this final responsibility should be given, to the Secretary of Interior, it should be referred to the Committee on Agriculture which under the Legislative Reorganization Act clearly has responsibility for this act.

Let these questions be thrashed out and amend that law if that is the decision rather than ending up with two statutes on the book that completely contradict as to the scope of the authority.

Senator HART. Thank you very much for your summaries.

Our concluding witness today is chief of the Division of Conservation Education for the National Wildlife Federation, Louis Clapper.

STATEMENT OF LOUIS S. CLAPPER, CHIEF, DIVISION OF CONSERVATION EDUCATION, NATIONAL WILDLIFE FEDERATION

Mr. CLAPPER. Good morning, Mr. Chairman.

I am Louis S. Clapper, chief of the Division of Conservation Education for the National Wildlife Federation.

The National Wildlife Federation is a private organization which seeks to attain conservation goals through educational means, with headquarters located at 1412 16th Street NW., here in Washington, D.C. The federation is composed of local groups and individuals who, when combined with associate members and other supporters of the National Wildlife Federation, number an estimated 2.5 million persons.

We welcome and appreciate the invitation of making these remarks here today.

In our opinion, it is urgent that the Congress approve of H.R. 15979 at the earliest possible time in order that the pesticides research program of the Fish and Wildlife Service can continue without interruption. The present staff of technicians utilized by the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries was assembled at great time and effort. It would be a tragic development for the program to be suspended now for a lack of authorization. Unless this bill passes, of course, the authorization for the program ends on June 30 of this year.

We regret time is so short that we hardly dare to recommend changes in H.R. 15979. One amendment, however, possibly would be accepted by the House. This relates to section 2, which makes the act effective 180 days after enactment. We cannot see any reason whatever for such a provision. Its inclusion could only work toward weakening the program, without any apparent advantages. Therefore, we recommend that the section be deleted.

Otherwise, we hope that H.R. 15979 will be approved as passed by the House. This recommendation is made somewhat reluctantly because we fail to understand why the Fish and Wildlife Service is singled out for second-class status and saddled with a dollar ceiling and a limited 3-year authorization.

We have no intent or desire to see the research program expanded beyond reasonable bounds, or to continue a program indefinitely. However, we cannot see why this program is of any less value or importance than those being pursued by the Department of Agriculture on various other phases of plant and pest control. And it is our understanding that the Agricultural Research Service is not fettered by such restrictions.

In other words, if controls managed by the Bureau of the Budget and by the Appropriations Committees on expenditures are sufficient for one effort, they would appear to be sufficient for the other.

As it is, the uncertainty of continuity of program seriously handicaps the Fish and Wildlife Service in the staffing of projects.

We, of course, would prefer this part of the Senate bill where there is no limitation.

Otherwise, Mr. Chairman, we heartily endorse H.R. 15979. For years, our organization has been extremely concerned about the use of potent poisons in pest control efforts. This concern is compounded by knowledge that the overall amount of poisons needed to control pests apparently will grow with the increasing demand for food and fiber. The worldwide use of pesticides will grow we are told from 120,000 metric tons per year to 700,000 metric tons, according to estimates of the President's Science Advisory Committee.

It is evident that such massive applications of pesticides will have a profound effect on other living organisms, including fish and wildlife and man himself. Therefore, it is important that every possible precaution be taken to minimize damage to these resources. Research on the effects of pesticides on fish and wildlife is vital.

In conclusion, Mr. Chairman, we are in accord with the provision that certain information be carried on the labels of pesticide containers. The Secretary of the Interior would make research information available to the Secretary of Agriculture on how pesticidal chemicals may be used to prevent or minimize injury to fish and wildlife. This information then would appear on labels containing the poisonous compounds.

The National Wildlife Federation is aware that effective agreements have been developed on these features, and we most certainly commend the departures involved for their cooperation and diligence. However, we would like to see these provisions incorporated into law which cannot be changed easily, either by agreement or by executive order.

Again, we thank you for the opportunity of making these observations.

May I comment very briefly upon some of the previous testimony submitted here today. As we view the bill, the final determination on what the labels would contain still would remain with the Department of Agriculture. However, we believe that the views of the agency responsible for fish and wildlife should be included on these labels in a similar manner. Neither do we see any direct conflict with labeling provisions of the Federal Insecticide, Fungicide, and Rodenticide Act.

If we correctly understand the distinction between label and labeling that was made by the previous witnesses, we would want the caution and the directions for use printed on the outside of the pesticide containers where they can be observed by the consuming public. Many prospective buyers are interested and concerned about

the effects of pesticides on fish and wildlife and want to know this information before they purchase these materials, and for this reason we hope it can be included.

This concludes our statement, Mr. Chairman. Again we thank you for the opportunity of making these observations.

Senator HART. We appreciate your willingness to assist us, Mr. Clapper.

Senator Pearson.

Senator PEARSON. I don't have any questions. Thank you very much, sir.

Senator HART. Mr. Hardy.

Mr. HARDY. Just one question, Senator.

Then I take it, Mr. Clapper, that you feel that it is more important that these statements appear on the label—that is, as opposed to labeling in the directions for use somewhere—that it should appear in the cautionary statement.

Mr. CLAPPER. Yes, we do. We think it is important that these effects would appear where the public can see them most easily rather than on attached literature or something of this sort that is a separate printed piece or included inside the box.

Mr. HARDY. That is because it is your view that a good number of people are influenced in their use of these pesticidal chemicals by the information appearing on the labels.

Mr. CLAPPER. Correct.

Mr. HARDY (continuing). If they knew this?

Mr. CLAPPER. That's right.

Mr. HARDY. Just one final question if I may, Senator.

At the end of your statement, you talk about the increased use of pesticides and that they will become more sophisticated. You take a little different view than the previous witness, Mr. Brinkley, as to the urgency for more to be done?

Mr. CLAPPER. Well, it appears if we are going to produce additional food, as appears necessary, likely it will also be necessary that there will be additional usage of pesticides. But we are also hopeful, I might add, that more pesticides can be developed of a less persistent nature and of a more selective nature where target pests can be killed without the harmful effects on other organisms. And we are very hopeful that this can be developed.

The Agricultural Research Service is making great strides, we think, in developing biological controls and means of pest control other than chemical. But the need for some pesticides probably still will exist.

Mr. HARDY. I see.

Senator HART. Thank you very much.

Gentlemen, we appreciate very much your help this morning.

I know that Senator Magnuson would want me to say this: I think the Committee on Commerce is fortunate that we have as a member, Senator Pearson who, as an earlier witness said, has spent some years now knee-deep in chemicals and can help some of the rest of us on the committee.

Senator PEARSON. Thank you, Mr. Chairman.

Senator HART. I would like to insert in the record at this point a booklet entitled "The Case Against Hard Pesticides," prepared by Dr. Ralph A. MacMullan, director, Michigan Department of Conservation.

(The booklet referred to follows:)

The Case Against

HARD

Pesticides

DDT

HEPTACHLOR

LINDANE

ALDRIN

ENDRIN

DIELDRIN

CHLORDANE

by

Ralph A. MacMullan

Ralph A. MacMullan, Director
Michigan Department of Conservation

**Persistent chemicals are causing alarming
changes in our environment.**

Michigan has come to a point in its history when it must completely outlaw the use of certain highly destructive pesticides such as DDT, Dieldrin, Aldrin, Heptachlor, Endrin, Lindane, Chlordane, and other "hard," or persistent chemical compounds used to kill insects.

Michigan must move now to halt their use, in a struggle that can prove to be the most difficult and probably the most important that has ever faced our natural resources. Threats of fire, pestilence, and plague against those resources are as nothing compared to the pervasive and sinister attacks of such chemicals. They have now polluted our environment to the extent that we no longer eat any food or drink any fluid without swallowing at least minute quantities of these chemicals. DDT is found in the Antarctic Ocean, thousands of miles from any area where it has ever been used. It is found in fish life of the deep oceans. It is found inside the eggs of eagles and ospreys and falcons—eggs which do not hatch into birds whose numbers are now in decline. We kill robins, our state symbol, and prevent the birth of bald eagles, our national symbol, with these pesticides. We kill so many robins, in fact, that a news item about the "seventh annual die-off of robins" in one of Michigan's cities is hardly noteworthy, and is relegated to the back page of a local newspaper. Two years ago, a U.S. Public Health Service study showed that the average American has gathered 12 parts per million of DDT into his human fatty tissue, as well as .15 of a part per million of Dieldrin. Nursing mothers now impart .08 of a part per million of DDT in human milk given their infants. Frankly, no one knows what 12 parts per million in human fatty tissue means. But we know it's going to stay there and that DDT in far smaller concentrations has awesome consequences for many small or

The Weight of Evidence Against These Chemicals is Overwhelming

simple forms of animal life. DDT is even found in the rain.

We have, in the name of compromise and acceptance, already allowed ourselves to be carried much too far down this hazardous road. We have been beguiled by a malignant belief that things will work out, that better substitutes will be found and used, that American know-how and technology will lead us to the light. We have until recently condoned use of such chemicals even in the Department of Conservation, and we have in the past used them to combat forest insects, park pests, and fish and game problems. We are all sheep in the same flock, and the real fight is not against some distant state or federal bureau, or lone farmer, or crop-dusting pilot. The real fight is against ourselves. Are you, as an urban, or suburban householder, willing to pay twenty-five cents a pound for apples where you now pay twenty cents? Will you accept higher prices when costs of crop production rise? Individually and collectively, we enjoy big, luscious wormless fruits and vegetables available at every market, and we fail to question the individual farmer or rose-grower when crops and flowers are dusted, several times each year.

But we should question them, and we should question ourselves. The weight of evidence against these hard, or persistent chemicals is now so overwhelming that there is no longer any doubt of the need to end their use. Literally hundreds of documented cases tell us of the danger these chemicals pose for wildlife, for soil organisms, for the purity of our water, for all basic elements of the animal food chain. We also have grave reservations about many of the "soft" pesticides—those which are non-persistent, which break down into harmless compounds in a short

time. Some are extremely lethal to wildlife. However, our overwhelming concern is with those chemicals that do not break down readily, which are working insidious changes in our environment and which exert lasting effects on birds, fish, soil organisms, and other elements of the environment.

These chemicals are used to control insect pests, and without question they appear to be highly effective. Generally they are spread as dust or in a fine spray that blankets an entire area. Unfortunately, this blanket keeps slipping off the bed. One study shows that up to half of all DDT spread by airplanes does not settle, but escapes instead into the atmosphere. Such fine particles may then be carried completely around the globe in as little as two weeks, to be deposited anywhere on the earth by rains or winds. If not spread by airplane, such chemicals are carried off the land by the runoff of rainwater or melting snow, or by any vagrant breeze. As a result, DDT and other similar chemicals are now found in every major river system of the United States, in all the Great Lakes and in all inland lakes which have been checked, in soil organisms, and in virtually all human and animal life on which studies have been carried out. Saddest of all, DDT, the most persistent of the bunch, has a half-life of 10 to 15 years. If all further use of these chemicals were halted right now, we would still have to live with the effects of our past excesses for more than a generation. In short, we are talking about altering and changing the environment that we will hand over to our children's children, or even to their grandchildren.

To some it may seem strange that a conservationist should express concern over this pesticide problem. Yet the problem is so intimately woven into the fabric of our environment that eagles' eggs and the contents of a

glass of water and the price of apples are all affected simultaneously. By one view, the problem is the direct concern of no one. By any rational review of the facts, however, the problem is paramount to each of us together, and may in the end prove more dangerous to our total environment than any other single threat in history.

The question of danger, therefore, can no longer be entertained. The questions we now must ask are: A) How much damage already has been done? and B) How can we stop further use of these chemicals?

To the first question, no immediate answer is possible. We know that the effects of these chemicals continue for a long time after they are released. We know that lower forms of life are more easily affected than higher, more complex forms of life. We are beginning to understand the consequences of "biological magnification" which operates with these chemicals. In biological magnification, small plant and animal forms gather quantities of these chemicals into themselves. Even very minute quantities suspended in water are collected or "magnified" in this way. When eaten by larger creatures, the concentrations contained in the lower forms of life enter the larger creatures. When these animal forms

are in turn consumed by even larger creatures, the chemical is further concentrated. Thus, a frog eats dozens of insects that carry particles of this matter. Many such frogs are in turn eaten by pike and bass, and many such fish—either alive or dead—may in turn be eaten by an osprey or eagle. The chemical dangers that faced the insects, frogs, and fish are now concentrated in the bird. An example of this occurred in an attempt to rid Clear Lake in California of nuisance midges. A chemical called DDD was applied to Clear Lake to a level of .02 of one part per million parts of water. That is equal to a few drops of the material in a railroad tank car full of water. Thirteen months later analyses showed the residue levels were 10 parts per million in plankton, 903 parts per million in the fat of plankton-eating fish, 2690 parts per million in the fat of carnivorous fish, and 2134 parts per million in fat of fish-eating birds, most of which had died. This represents a 100,000-fold increase in fish-eating birds over levels in lake water. There is strong circumstantial evidence that this sort of magnification is the single prime reason for the alarming decline of bald eagles—as well as many other species of predatory birds—in recent years. How long such declines will continue or how many spe-

Populations of both eagles and ospreys have shown sharp declines in recent years. DDT and other chemicals are suspected as the cause.



The Answer Could Be in Federal Law

cies of wildlife will be affected can only be matters for conjecture.

The more important question to ask at this time is how to stop further use of these chemicals.

Actually, there are now numerous "soft" chemicals which can be used to control insect pests, but which lose their strength after a relatively short period of time. Some are now in wide use and have proved their effectiveness in solving a broad spectrum of insect problems. Some people have voluntarily turned to them after viewing the consequences of DDT, Dieldrin, and the other hard chemicals. However, some soft chemicals are extremely dangerous to handle and require more frequent application to accomplish the same ends. Also, many are more expensive, hence less commonly available.

To ask a farmer to abandon voluntarily the use of hard chemicals, where they are permitted, is asking him to place himself at a disadvantage in the marketplace. Only through wide-ranging agreement among agriculturists, or by sanctions against those who continue to use hard chemicals can a voluntary program work effectively. It is perhaps too much to expect that this can happen, given the conditions of the free marketplace.

A seemingly simple alternative is to pass a state law preventing all further sale or use of specific chemicals such as DDT in Michigan. While an ideal solution from the standpoint of conservation, this could place some Michigan farmers at a disadvantage to those outstate farmers whose crops are shipped into Michigan.

Perhaps a federal law could be passed, preventing interstate commerce in these chemicals. For example, DDT is produced in

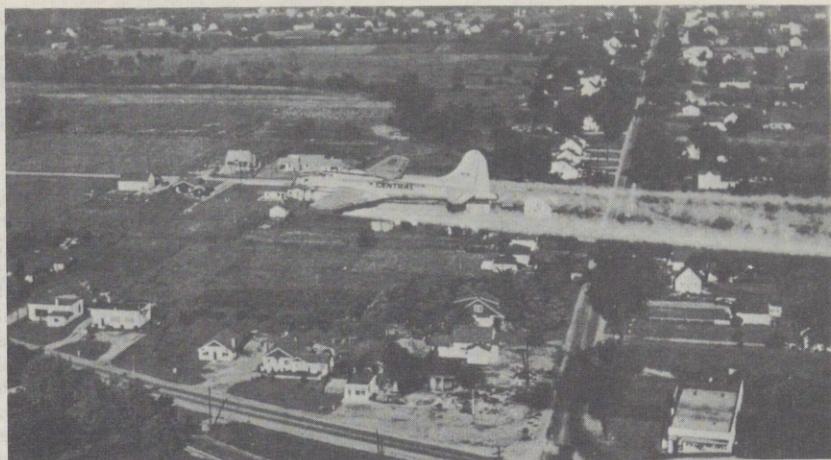
plants in only six states, and a federal law would essentially bottle up production in those states. Senator Gaylord Nelson of Wisconsin recently introduced such legislation into the Congress, but it has yet to see daylight past the doors of the committee room. If such legislation were passed at a federal level, it would give agriculturists across the nation a more even chance to absorb the restriction.

In the meantime, there is much that can be done here in Michigan to reduce the use of hard pesticides. Recently, the Governor asked the directors of the Departments of Agriculture and Conservation to prepare a state-wide policy for eventual elimination of the use of hard pesticides for adoption by these and other agencies within the state. Meetings are being held now to draft such a policy. The Department of Conservation, meantime, has halted all use of hard chemicals for all Department programs and projects, and we have issued binding orders that they are not to be used on any projects in the future. We expect to continue to use soft chemicals for certain projects, but the hard group has been banned.

Individual communities throughout the state also can contribute their share to the effort by refraining from use of DDT in control of Dutch elm disease and mosquitoes.

Mist spraying designed to stop Dutch elm disease can be done with non-persistent chemical pesticides.





Up to half of all the chemical material sprayed by airplane escapes into the atmosphere, and may circle the globe in two weeks.

Actually, there are numerous examples of Dutch elm disease programs that have produced satisfactory results with Methoxychlor.

Sportsmen's groups, civic organizations, women's clubs, and individuals—everybody, in fact—must speak out against hard pesticides if we are to return our environment to a more normal condition. As a beginning, we can all stop the use of such chemicals on home flower and vegetable gardens, and in local mosquito control.

For our part this Department is, as of now, adopting the following five-point action program aimed at ending all further use of these chemicals in Michigan:

1. Through such messages as this one, we will let it be known that we are going to battle right down the line to protect our environment against hard pesticides by making people aware of the problem's seriousness and by urging them to exert their rights and responsibilities as citizens to take corrective steps.

2. We will, in the interest of the people of Michigan, seek appropriate legislation against hard pesticides. Right now, for instance, there really is no reason why another ounce of DDT should be applied anywhere in this state. Effective non-persistent substitutes are available.

3. We will initiate this program NOW! In fact, we have already begun. Our stand against the application of Dieldrin in Berrien County in recent weeks established our position.

4. We will encourage the use of alternative safe chemical and biological controls in place of hard pesticides—chemicals such as Malathion and Methoxychlor, biologicals such as the various natural enemies of harmful insects. We fully realize that these alternatives may be more expensive and less convenient. Their use undoubtedly will temporarily disrupt segments of the agricultural community and others to whom pest control is vital. But we believe this country has the technological capacity to lick these problems without continuing the use of dangerous hard pesticides.

5. We will make it clear to the public that, as consumers, they will have to pay for a chemically clean environment. We may have to ante up a penny or two more per pound for apples or potatoes or cabbage to meet the cost of more expensive but safer controls. The price, however, will be worth it.

For examples of problems pesticides are causing, drawn from the scientific record, turn the page . . .

What Can Pesticides Do?

DDT residues were shown to be completely distributed through food chains in the Lake Michigan ecosystem near Green Bay, Wisconsin. Residues were found in shallow and deep water mud samples, small crustaceans, alewives, whitefish, chubs, old-squaw ducks, and ring-billed and herring gulls (Keith, University of Wisconsin, 1966).

Both DDT and Dieldrin have been shown to pass from mother to offspring through the placenta in mice (Backstrom et al., Royal Veterinary College, Stockholm, 1965), while DDT also passes through the placenta in dogs (Finnegan et al., 1949), rabbits (Fish and Wildlife Service, 1963), and man (Denes, 1962).

The widespread destruction by DDT of salmon runs in the rivers and streams of New Brunswick is probably the best documented in the whole library of unintended "side effects" published in the scientific literature (Elson, Fisheries Research Board of Canada, 1967). More than 130 pages of the *Journal of the Fisheries Research Board of Canada*, No. 4, 1967, are devoted to a description of this disaster.

DDT was applied to Montana forests at 1/2 lb. per acre. Residues were present in eggs and young of grouse 1 year after spraying, and at 2 years after spraying, residues still exceeded pre-spray levels. Residues in the grouse exceeded tolerance levels set for meats by the U.S. Food and Drug Administration (Mussehl & Finley, 1967).

In order of frequency of occurrence, Dieldrin, Endrin, DDT, and DDE were found in all major river basins in the United States (Weaver et al., U.S. Public Health Service, 1965).

The percentage of immature birds in the U.S. bald eagle population in 1961, 1962, and 1963 was 26.5 percent, 23.7 percent, and 21.6 percent, respectively. Nesting failure has been especially severe around Lake Michigan (Sprunt & Ligas, National Audubon Society, 1967; Postupalsky, 1967).

When exposed to quantities of DDT as low as 1/2 of one part per million HeLa S. cells of human origin showed change. Microscopic observations showed increased granulation, elongation, and vacuolation, all of which are manifestations of irregular cell growth and cell destruction. Dieldrin had a similar, but lesser effect. Dieldrin and DDT affected synthesis of both RNA and DNA in cells of human origin, although the pattern of change was inconsistent. These findings suggest a possibly fundamental influence on mammalian cellular biochemistry (Chung, Huang & Brown, Tuskegee Institute, 1967).

The presence of Dieldrin in big game mammals of South Dakota exceeds the zero tolerance for Dieldrin in meats set by the U.S. Government (Greenwood, Greichus & Hughins, South Dakota State University, 1967).

Nesting success of bald eagles has been very low in the eastern United States. In the Chesapeake Bay region the percent of bald eagle nests hatching young has decreased from 97 percent in 1936 to between 9 and 23 percent during the past 5 years. Immature birds are becoming less numerous at a more rapid rate than are adults (Sprunt, National Audubon Society, 1963; Abbott, 1967).

Until the biological effects of a compound known to have some toxic properties have been established through adequate research, that compound must be assumed to be potentially dangerous. Empirical research and experience are teaching us, sometimes the hard way, the folly of assuming that lack of evidence is the same as negative evidence (Warner, Peterson & Bordman, Foundation for Environmental Biology, University of California at Berkeley, 1966).

Senator HART. This concludes our hearing, and we adjourn.

(Whereupon, at 11:47 a.m., the committee adjourned, subject to the call of the chairman.)

(The following statements and letters were submitted for the record:)

STATEMENT OF SIERRA CLUB IN SUPPORT OF LEGISLATION TO PREVENT OR MINIMIZE INJURY TO FISH AND WILDLIFE FROM USE OF INSECTICIDES, HERBICIDES, FUNGICIDES, AND PESTICIDES

Mr. Chairman, my name is Lloyd Tupling and I thank you for the opportunity to present comments on behalf of the Sierra Club on the legislation pending before the Senate Commerce Committee, H.R. 15979 and S. 3328. The Sierra Club has 62,500 members throughout the United States in 22 chapter organizations.

The Sierra Club has long been concerned with use of pesticides, insecticides and other so-called "control" chemicals because of their far-reaching and adverse effect on our natural environment. Sierra Club policy on this question was developed over a long period of time and after careful study by our organization's Natural Sciences Committee, whose members include knowledgeable individuals from academic and scientific fields.

Our general policy with regard to pest control sets forth some of the reasons for careful use of chemical agents. With reference to the pending bills, there can be no doubt that Sierra Club recommendations would go beyond the scope of the bills. However, both H.R. 15979 and S. 3328 have provisions which require more careful scrutiny of the manner in which pesticides, herbicides and insecticides are used. As the Sierra Club policy statement emphasizes, caution is required in the handling and application of these chemicals. Careful judgments must be made concerning side effects.

The text of the policy statement adopted by the Sierra Club Board of Directors in May, 1965 stated:

The Sierra Club urgently recommends that all agencies concerned with pest control on public lands adopt the following tenets and practices:

(A) The Administration of Public Lands should take cognizance of all potential uses of the land; the interests of education, conservation, wilderness preservation, and recreation, as well as of forestry, agriculture, and industry should be represented, in so far as is applicable, whenever policy on pest control is made.

(B) General or extensive pest control programs on public land, and similar tax-supported control programs on private lands should be preceded by public justification including statements of purpose, long range effects, methods, hazards, and economics.

(C) The various parts of the biota are not of equal importance to man, yet rarely is the value of the biota limited to one or several species; pest control programs on public lands should be made with consideration for the total environment—not merely for a part thereof.

(D) No species should be considered inherently and always as a pest or "bad" species; the concept of the pest species has meaning only in relation to circumstances prevailing at a specific place and time. Each control program, therefore, should be independently justified.

(E) Pest eradication is rarely feasible, economical, or possible without profound impact on the environment. Eradication should be attempted, if at all, only in rare and unusual circumstances.

(F) Bounty systems have usually proved to be ineffective and uneconomical and are contrary to tenets above. Therefore, bounties should not be paid on native animals.

(G) Since the broadcasting of poison baits for the elimination of vertebrate pests virtually always results in extensive loss of nonpest species (including vertebrates of value to man) by both direct and secondary poisoning, this method of pest control can rarely be justified.

(H) The use of pesticides tends to reduce the diversity of natural environments, and simplified environments are relatively unstable and subject to depletion by pests. The use of pesticides tends therefore, to perpetuate a need for such use. It follows that pesticides should be used sparingly as a hopeful trial.

(I) The Sierra Club further urges that such of the above tenets and practices as are applicable be adopted by individuals and agencies concerned with pest control on private lands.

An additional specific policy statement was adopted in regard to chlorinated hydrocarbon pesticides. It stated:

"Whereas pesticides that are chlorinated hydrocarbons (including DDT, dieldrin, aldrin, heptachlor, endrin, toxaphene, lindane, and chlordane) have great stability which leads to their persistence and accumulation in the environment; and

Whereas these chemicals are not specific control agents for any pest species but are instead hazardous to virtually all animal species; and

Whereas these chemicals are so readily stored and accumulated in animal tissues that hazard to secondary and tertiary links in natural food chains is greatly compounded even if the original level of application is low; and

Whereas sublethal doses of these chemicals have been shown in specific instances to have adverse effects on the vigor, behavior, growth, and reproduction of a variety of wildlife, including the young of directly poisoned individuals; and

Whereas these chemicals are often widely redistributed beyond the area of original application by natural causes (notably runoff and wind); now

Whereas in these circumstances, the long range effects of these chemicals on the total environment are virtually never known at the time of their use; Now, therefore, be it

Resolved, That the Sierra Club opposes the aerial, or other general application of chlorinated hydrocarbons as pesticides, on all lands and waters, both public and private.

Mr. Chairman, I appreciate this opportunity to present the views of the Sierra Club.

GOODRICH, MICH., *May 16, 1968.*

HON. PHILIP A. HART,
Senate Office Building, Washington, D.C.:

Continued research on effect of pesticides on wildlife is essential to future health of ecosystems upon which human life also depends. Companies should be required to put adequate warnings on pesticide labels for we are dealing not with aspirin or antacid tablets but with poisons. I urge that the subcommittee on Merchant Marine and Fisheries report H. 15979 favorably and facilitate its early passage into law.

EDWARD BRIGHAM III,
President, Michigan Audubon Society.

MICHIGAN DEPARTMENT OF CONSERVATION,
Lansing, May 16, 1968.

HON. PHILIP A. HART,
Acting Chairman, Commerce Committee,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HART: I am writing to express my concern over the state of pesticide pollution in the Lake Michigan basin as a reason for urging passage of H.R. 15979, now before the Commerce Committee of the United States Senate.

H.R. 15979 would amend the Act of August 1, 1958 (16 U.S.C. 742d-1), in order to minimize injury to fish and wildlife from the use of pesticides. Most important, this bill would authorize continuation of the provisions of that Act and provide fiscal support. In addition, it would afford greater protection to our natural resources by requiring that the label on a pesticide container call attention to hazards to fish and wildlife. This latter information would be provided to the Secretary of Agriculture by the Secretary of Interior, following the intensive program of research in the Department of Interior on the effects of pesticides on fish and wildlife.

It has been pointed out that the labeling provisions of the amended Act are now being met by inter-department agreement between the Secretaries of Agriculture and Interior. However, in my opinion, sufficient warning does not always appear on pesticide labels. I feel strongly that more appropriate wording would appear if the full concern of the Secretary of Interior could be expressed as required by H.R. 15979. Furthermore, it is my firm conviction that continued research by the Secretary of Interior, as provided by H.R. 15979, will produce further evidence making more such labeling necessary.

It is also essential that such information be made available to the public, as is provided by H.R. 15979. As we have learned in Michigan during the past seven months, more can be accomplished through public education on pesticides

than by any other means. To do an effective job of education, conservationists must have facts, and this bill authorizes obtaining of such factual information by an agency concerned with the welfare of our fish and wildlife resources.

A striking example to the point of necessity of this bill is our recent experience with DDT in the reduction of our fish hatchery production of coho salmon from Lake Michigan. Losses of salmon fry amounting to 10-to-15 percent of our production, at a time when little or no loss should be expected, almost without doubt resulted from only 1-to-3 parts per million of DDT in eggs obtained from female salmon that had spent only 1½ years in Lake Michigan. Research should have given us warning. Continued research such as authorized by H.R. 15979 is essential to preventing incidents like this from occurring in the future. This can only be accomplished by arousing public concern to the point where the public will refrain from buying, or at least use with great restraint, a pesticide whose label must contain the warning, "Hazardous to fish and wildlife", or similar language.

A dramatic example of what can be accomplished by an informed public fortified with information obtained from research such as is provided by this bill is transpiring right now in Michigan. As a result of the concern over coho salmon, songbird losses, and other evidence of the hazards of DDT, thirty-two Michigan cities have recently stopped the use of DDT for Dutch elm disease control, and the Michigan Department of Agriculture has withdrawn from the Michigan label the use of DDT for mosquito control. This has been the direct result of the concern expressed by an informed public.

In behalf of the International Association of Game, Fish and Conservation Commissioners and the State of Michigan, I urge passage of H.R. 15979 as a most useful, valuable, and necessary step to provide protection to our fish and wildlife resources and the total environment in which they and we human beings must live.

Sincerely,

RALPH A. MACMULLAN, *Director.*

NATIONAL AUDUBON SOCIETY,
New York, N.Y., May 16, 1968.

HON. PHILIP A. HART,
*Subcommittee on Merchant Marine and Fisheries,
Senate Commerce Committee,
Washington, D.C.*

DEAR SENATOR HART: I understand you will be presiding at the hearing tomorrow (Friday, May 17) on H.R. 15979, the pesticides research and labeling bill.

Enclosed herewith are copies of a statement by the National Audubon Society. Will you please see that this statement is made a part of the record.

We are strongly in support of H.R. 15979 as it passed the House, including the labeling provisions.

Sincerely yours,

CHARLES H. CALLISON,
Executive Vice President.

STATEMENT BY CHARLES H. CALLISON, EXECUTIVE VICE PRESIDENT, NATIONAL AUDUBON SOCIETY

To Senate Subcommittee on Merchant Marine & Fisheries:

The National Audubon Society, one of America's oldest and largest conservation organizations, respectfully urges this Committee to report H.R. 15979 as it was passed by the House of Representatives.

Continuation of research into the effects of chemical pesticides on fish and wildlife resources is essential. New chemicals, and new formulations of old pesticides, are coming on the market constantly. Much is still not known of the direct, indirect and synergistic effects of these poisonous substances on living organisms. Seldom do they affect only the target plant or animal for which control is sought. We need this research not only to understand the actual and potential dangers to valuable species and to their ecology, but in order to be forewarned about the dangers to man himself and to the human environment. The proposed 3-year authorization of \$5 million annually is modest in relation to the massive dosages by which these so-called "economic poisons" are being applied to the environment.

The labeling and public information provisions of H.R. 15979 are not only common sense precautions. They are based on the simple and incontrovertible principle of playing fair with the purchasers and users of chemical pesticides. The user has a right to know, Mr. Chairman, what the hazards are. He has a right

to know how he can use a pesticide, or modify his use of it, in order to minimize the dangers to the birds and other wild animals that frequent his garden, his fields or his woods, or that live in the streams and ponds on his farm or in his watershed. Some of these chemicals, notably the fat-soluble chlorinated hydrocarbons, cannot be used at all in the environment without adversely affecting wildlife. This is because they persist in the soil and in waters, are circulated and magnified in natural food chains, and accumulate in lethal or health-destroying quantities in the bodies of animals at the end of the food chains. The scientific evidence is now overwhelming and indisputable that DDT is destroying the reproductive capacity and threatening the very survival of some species of birds and depleting highly valuable fisheries resources.

The farmers and gardeners who are urged by commercial advertising and by agricultural agencies to buy and use pesticides have a right to know the facts so, if they choose, they can use different chemicals or alternate methods of control.

It is true that some progress has been made through the established mechanism of inter-departmental consultation and cooperation in the federal government. However, the progress will be faster, and more certain and permanent, if H.R. 15979 becomes law.

Thank you for this opportunity to present our views.

SPORT FISHING INSTITUTE,
Washington, D.C., May 22, 1968.

Hon. E. L. BARTLETT,
Chairman, Senate Subcommittee on Merchant Marine and Fisheries of the Committee on Commerce, Senate Office Building, Washington, D.C.

DEAR SENATOR BARTLETT: Sport Fishing Institute has gone on record many times in strong favor of legislative actions to firmly and specifically regulate the use of all pesticides. No matter where applied eventually residues find their way into our water courses and generally effect all of our aquatic resources negatively. Sport Fishing Institute, therefore, goes on record favoring the early enactment of H.R. 15979 and appeals to the Committee to make this concurrent with the present term of the Pesticide Research Act so that work begun under this provision will not be left in limbo while enabling authority is in process of being consummated. It would therefore be desirable to delete Section 2 of the bill in order to avoid serious disruption of the important work now in progress under the Act of August 1, 1958.

We feel very strongly that there is need to recognize more than a single approach in field controls. Development of more specific and less stable chemicals must be made. Biological controls including repellents, sex attractants, themosterilants, dissicants, and application of genetic principles in developing resistant crops should be receiving paramount consideration at this time. The ecological consequences of pesticide damage is very considerable. These are the methods that we feel would best prevent or minimize injury of fish and wildlife rather than the continued and long-lasting effects of such pesticides as DDT, Dieldrin, Endrin, and the other chlorinated hydrocarbons that are so slow in their biodegradability. We are now experiencing considerable "backlash" from the use of these chemicals, particularly DDT, in the Great Lakes for the prospects of developing a tremendous silver salmon fishery. Environmental contamination of this sort is of utmost concern to the Sport Fishing Institute.

Mr. Chairman, the Sport Fishing Institute would like to go on record favoring the early enactment of H.R. 15979 with the elimination of Section 2. Kindly include these remarks in any record of hearings. Thank you.

Sincerely,

PHILIP A. DOUGLAS, *Executive Secretary.*

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