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Environmental Law—Control of Pesticides: Proposals for a New Law in North Carolina

Increasing disquietude over the use of pesticides—growing ever since the publication of Rachel Carson's *SILENT SPRING* in 1962—has recently plunged conservation, wildlife, agricultural and industrial organizations as well as federal and state agencies into an uproar. A flurry of resolutions, proposals, solutions, hearings, law suits and legislation has ensued. Some conservationists would have us believe that unless pesticides are completely banned, we are faced with destruction. On the other hand, those who advocate pesticide use claim that without free use of pesticides we will certainly starve. Pesticide use appears to be on the increase¹ and voluminous studies on the various aspects of pesticides conducted by agricultural, scientific and environmental concerns across the country all point to the fact that pesticides, in some way, are affecting our environment.²

Chlorinated hydrocarbons, or persistent pesticides, form the principle arena of the pesticide use/abuse controversy. It is ironic that DDT, a member of this family, often a focal point of the furor and condemned by many as an ecological disaster, was once hailed as a miracle chemical.³ Other members of this notorious group are DDE and TDE (metabolites of DDT), endrin, aldrin, dieldrin, heptachlor, chlordane, toxaphene and lindane.⁴ These chemicals share four characteristics that distinguish them from less controversial pesticides: 1) they do not break down rapidly under natural conditions but remain in the environment for long periods,

¹ There are currently more than sixty thousand pesticide formulations registered for sale in the United States. S. BLOOM & S. DEGLER, *PESTICIDES AND POLLUTION* 4 (1969) [hereinafter cited as BLOOM & DEGLER]. The amount of money spent by farmers for pesticides has grown at the rate of fifteen per cent a year since 1950 (from eighty-seven million dollars to over one billion dollars in 1968). In 1968, farmers spent 3.65 dollars per acre on pesticides. By 1975, this figure is expected to rise to eight to nine dollars per acre. Consumer sales for pesticides, estimated at 1.7 billion dollars in 1968, should reach by 1975 the three-billion-dollar mark. *CHEMICAL WEEK*, April 12, 1969, at 38. The United States produced 1,050 pounds of pesticidal chemicals during 1967. BLOOM & DEGLER 1.

² For extensive bibliographies of these studies, see HEW, *REPORT OF THE SECRETARY'S COMMISSION ON PESTICIDES AND THEIR RELATIONSHIP TO ENVIRONMENTAL HEALTH*, pts. I & II (1969) [hereinafter cited as MRAK REPORT].

³ Rogers, *The Persistent Problem of the Persistent Pesticides: A Lesson in Environmental Law*, 70 *COLUM. L. REV.* 567, 574 (1970) [hereinafter cited as *Persistent Pesticides*]; MRAK REPORT 44-46.

⁴ MRAK REPORT 8-9; E. Brickmeyer & M. Heath, *Regulation of Pesticides in the United States* 2 (1970) (on file at the Institute of Government, Chapel Hill, N.C.); Environmental Clearinghouse, Inc., Memorandum on Pesticides, July, 1970.

i.e., they are nonbiodegradable; 2) they tend to be toxic in some degree for any form of life; 3) they are selectively stored in animal tissues; and 4) they are easily transported through the environment.⁵ Damage to several species of birds, fish and wildlife has been documented,⁶ but much of the research is incomplete, and little is known of the long term effects of pesticides on man.⁷ The problem is not only what to do, but what can be done, and how to do it. This note will briefly discuss federal regulation in the field of pesticides, the existing legislation in North Carolina for pesticide control and the recommendations of the North Carolina Legislative Research Commission for new regulation.⁸

FEDERAL REGULATION

The major vehicle for federal pesticide regulation is the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA),⁹ which requires registration of any product sold in interstate commerce that is classified as an "economic poison."¹⁰ The registration process is conducted by the

⁵ Remarks of Dr. Don W. Hayne reported in *Hearings on the Use and Control of Pesticides Before the Subcommittee on Pesticides of the Legislative Research Commission*, 1969 N.C. Gen. Ass'y at 3 (Jan. 23, 1970) (this report and all other hearings are on file at Institute of Government, Chapel Hill, N.C.).

Perhaps the most frightening characteristic of persistent pesticides involves the process of biological magnification, wherein the concentration of pesticide residue in an animal's tissues is considerably higher than the concentration in the food it eats. Humans, for example, store DDT in fat tissues at a concentration of approximately eleven parts per million (ppm) (three to four ppm on basis of whole body weight). This same DDT is concentrated in the total human diet at about 0.1 ppm—thus, magnification of about thirty-five fold. *Id.* at 5.

A startling illustration of the sometimes damaging results of biological magnification occurred in 1957 in California when Clear Lake was sprayed for gnat control with DDT at a maximum concentration of 0.02 ppm. The magnification proceeded through plankton, plankton-eating fish, carnivorous fish and fish-eating birds. It was discovered later when grebes began dying at an alarming rate that these birds contained a concentration of up to 1,600 ppm DDT and that some fish had built up over 2,275 ppm of DDT in their fat, a magnification of 100,000. *Hearings on the Use and Control of Pesticides Before the Subcommittee of Pesticides of the Legislative Research Commission*, 1969 N.C. Gen. Ass'y at 57 (March 20, 1970).

⁶ MRAK REPORT 177-228.

⁷ *Id.* 229-458.

⁸ These recommendations are based on hearings conducted by the commission. *Hearings on the Use and Control of Pesticides Before the Subcommittee on Pesticides of the Legislative Research Commission*, 1969 N.C. Gen. Ass'y (Jan. 23, 1970; March 20, 1970; April 17-18, 1970; May 22, 1970; June 4, 1970; June 10, 1970; July 11, 1970) [hereinafter respectively cited as *January Hearings*, *March Hearings*, *April Hearings*, *May Hearings*, *June 4 Hearings*, *June 10 Hearings*, and *July Hearings*].

⁹ 7 U.S.C. §§ 135-135k (1964).

¹⁰ An economic poison is defined as "(1) any substance or mixture of sub-

Pesticides Regulation Division of the United States Department of Agriculture (USDA).¹¹ Besides submitting fairly detailed information for registration, manufacturers must devise an appropriate label for the product.¹² Although registration applications are reviewed by the Food and Drug Administration (FDA), the Public Health Service, the Department of the Interior (USDI) and, since 1964, the Department of Health, Education and Welfare (HEW), these agencies' participation is in an advisory capacity only.¹³ The statute provides for seizure where products have been adulterated, misbranded, unregistered or insufficiently labeled and for criminal fine or imprisonment as an additional enforcement method.¹⁴ Supplementing the FIFRA is the Food, Drug and Cosmetic Act (FDCA) which requires that the Secretary of HEW establish tolerances for residues from registered pesticides in food products.¹⁵

After public outcry following the April, 1969, seizure of twenty-eight thousand pounds of salmon containing DDT in excess of established tolerance levels, the Secretary of HEW formed a commission to study pesticides.¹⁶ The result was the well-known Mrak Report, containing recommendations urging various corrective action at the federal level in order to provide more adequate controls for sale and use of pesticides.¹⁷

stances intended for preventing, destroying, repelling, or mitigating any insects, rodents, nematodes, fungi, weeds, and other forms of plant or animal life or viruses, except viruses on or in living man or other animals, which the Secretary shall declare to be a pest, and (2) any substances or mixture of substances intended for use as a plant regulator, defoliant or desiccant." 7 U.S.C. § 135 (1964).

¹¹ BLOOM & DEGLER 39. Recent reorganization has placed responsibility for all laws relating to pesticides in a new Environmental Protection Agency.

¹² For a list of these requirements, see *id.* 41-43.

¹³ *Id.* 39. Because of this lack of veto power, hundreds of pesticides have been registered over the objections of HEW. *Persistent Pesticides* at 570, citing HOUSE COMM. ON GOV'T OPERATIONS, DEFICIENCIES IN ADMINISTRATION OF THE FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT, H.R. No. 637, 91st Cong., 1st Sess. 14 (1969).

¹⁴ 7 U.S.C. §§ 135f, g (1964).

¹⁵ 21 U.S.C. §§ 341-348 (1964). Significant FDCA amendments are the Miller Amendment of 1954 (21 U.S.C. § 364a, b (1964)), allowing condemnation of agricultural commodities if they contain a residue not exempted or in excessive amounts; and the "Delaney" Clause (21 U.S.C. § 348c(3)(A) (1964)), permitting no material in food capable of causing cancer. Enforcement of the FDCA has also been transferred to the Environmental Protection Agency. See note 10 *supra*.

¹⁶ *Persistent Pesticides* at 567. For full title of the commission and its report, see note 2 *supra*.

¹⁷ The more important of the commission's fourteen comprehensive recommendations include: eliminating all uses of DDT and DDD within two years, except those essential to preservation of human health or welfare; requiring unanimous approval of USDA, USDI, and HEW of any registration, restricting or eliminating any pesticide use deemed hazardous by one; restricting other persistent pesticides

In response to the Mrak recommendations, the USDA announced on November 20, 1969, the cancellation of registrations for any products containing DDT for uses on shade trees, tobacco, around the home and by persons other than public officials in aquatic areas and wetlands.¹⁸ Whether the Mrak Commission recommendations will ever be effectively instituted remains to be seen.¹⁹ Meanwhile, several conservation groups have taken matters into their own hands by instituting legal actions aimed at various problems of pesticide control and use.²⁰

CURRENT NORTH CAROLINA LAW

In addition to federal controls, all of the states, including North Carolina, have enacted some form of pesticide legislation. Adapted from a model act, the North Carolina Insecticide, Fungicide and Rodenticide Act (IFRA)²¹ is administered by the State Department of Agriculture and, like the federal act, provides for registration of any "economic poisons"²² and deems it unlawful for any person to sell an unregistered,

to uses that present no known hazard to human health or environmental quality; improving coordination and direction of the elements of HEW concerned with pesticides; creating a pesticides advisory committee to evaluate data on the hazards of pesticides to human health and environmental quality; developing standards for pesticide content in food, water and air that will protect the public from undue hazards; increasing federal support of research on all methods of pest control; and developing model regulations for collection and disposal of unused pesticides, containers and other contaminated materials. MRAK REPORT 7-19.

¹⁸ The department also declared an intent to cancel any other use of DDT unless it is shown that a particular use is essential to protect human health and that there is no effective and safe substitute. 34 Fed. Reg. 18827 (1969).

¹⁹ See generally *Persistent Pesticides* for a detailed, critical discussion of the Mrak recommendations and their chances for success, in light of past federal action.

²⁰ The most virulent and aggressive of these has been the Environmental Defense Fund. See, e.g., *Environmental Defense Fund v. Finch*, 428 F.2d 1083 (D.C. Cir. 1970), in which the Secretary of HEW was ordered to consider a petition to set "zero tolerance" levels for DDT and study scientific evidence and safe tolerance levels in light of the FDCA, and *Environmental Defense Fund v. Hardin*, 428 F.2d 1093 (D.C. Cir. 1970), in which the Secretary of Agriculture was given thirty days to begin cancellation proceedings for DDT or show cause for refusal. Reasons were filed and further argument was set for a later date. Final judgment came January 7, 1971, when the court ordered the administrator of the Environmental Protection Agency (added as a defendant when the FIFRA was removed from the USDA) to issue immediate notices of cancellation of all uses of DDT and "to determine whether evidence that DDT was an 'imminent hazard' to public health required . . . the immediate suspension of all interstate shipments of DDT pending the outcome of lengthy cancellation proceedings." *Raleigh News and Observer*, Jan. 8, 1971, at 1, col. 1.

²¹ N.C. GEN. STAT. §§ 106-65.1-12 (1966).

²² N.C. GEN. STAT. § 106-65.5 (1966).

improperly labeled, "adulterated" or "misbranded" product.²³ The Commissioner of Agriculture can cancel any registration if the registrant has tried to evade any of the provisions of the act²⁴ and may enforce the act by injunction,²⁵ criminal action,²⁶ "stop sale" orders,²⁷ or seizure of the chemical.²⁸ In addition, the Board of Agriculture can make any rules or regulations relating to the sale and distribution of economic poisons that it thinks necessary.²⁹

Another regulatory control is the Structural Pest Control Law,³⁰ which covers all means of controlling termites and household pests and requires commercial applicators to be licensed and pass an examination. Also of possible applicability is the Food, Drug and Cosmetic Act, which defines food as adulterated "[i]f it . . . contains any poisonous . . . substance which may render it injurious to health [or] . . . any added . . . substance which may be unsafe."³¹ Although the provisions do not explicitly mention pesticides, they could be interpreted as pertinent. However, since the Commissioner of Agriculture enforces both the FDCA and the IFRA, the FDCA has never been used for pesticide control. An additional statute invoked in the past in regard to pesticides is the North Carolina "fish-kill" law,³² which allows the Board of Air and Water Resources to investigate fish kills resulting from water pollution and to collect damages in the name of the state. Finally, the Aerial Crop-Dusting Law³³

²³ N.C. GEN. STAT. § 106-65.3 (1966). Under the present statute, the best method for limiting a use of a pesticide appears to be by application of the prohibition of misbranding. The definition of "misbranded" includes any economic poison if the labeling does not contain instructions adequate for the protection of the public, or if the label does not have a warning needed to prevent injury to man or animals, or if when used as directed, it is harmful to man, animals, or vegetation to which it is applied. N.C. GEN. STAT. § 106-65.2 (1966).

²⁴ N.C. GEN. STAT. § 106-65.5(e) (1966).

²⁵ N.C. GEN. STAT. § 106-65.4 (1966).

²⁶ N.C. GEN. STAT. § 106-65.7 (1966).

²⁷ N.C. GEN. STAT. § 106-65.10 (1966).

²⁸ N.C. GEN. STAT. § 106-65.11 (1966).

²⁹ N.C. GEN. STAT. § 106-65.6(c) (1966).

³⁰ N.C. GEN. STAT. §§ 196-65.22-.35 (1966).

³¹ N.C. GEN. STAT. § 106-129 (1966).

³² N.C. GEN. STAT. § 143-215.3(a)(7) (1966). Perhaps the most serious of reported fish kills was the July, 1968 kill on the Cape Fear River, where more than 7000 pounds of fish were poisoned by endrin. Fortunately, the polluter was identifiable, and eventually paid 15,800.89 dollars in damages. The pollution in this case was caused by the polluter's own misuse and carelessness when he dumped leftover endrin into a storm sewer. *March Hearings* at 61. Unhappily, the successful cases are somewhat rare; more often it is impossible to determine the source of pollution.

³³ N.C. GEN. STAT. §§ 106-65.13-22 (1966).

licenses commercial applicators who use airplanes and regulates aerial application of pesticides.

These statutes are administered by responsible officials who willingly receive and accept competent advice from the experts at our state universities. However, the statutes are more pertinent to informational objectives and to protection of the consumer rather than to control of the use of pesticides, and represent at best, a somewhat sketchy regulatory structure. There is, for example, no existing statute to restrict the use of pesticides. Once registered, a pesticide can be legally sold and used without limitation, even for purposes for which registration would have been refused. Another problem is that there are no statutory mandates for persons who sell pesticides. It is estimated that seventy percent of the farmers in North Carolina receive their information on proper application of pesticides from dealers,³⁴ yet the dealers themselves are not compelled to obtain any knowledge of the products they sell, and there is no means of assuring that their advice is accurate. The commissioner has stated that he has no way of knowing the volume of pesticides sold or currently in use throughout the state.³⁵ Surely this information would be valuable for maintaining adequate control over distribution of pesticides, for preventing abuses and for providing much needed data for research. Furthermore, misuse of pesticides—in application and in careless disposal of unused and contaminated materials—is regarded as a major source of problems with pesticides,³⁶ but there are no statutes respecting disposal nor is there any control over some of the major groups of applicators. Finally, although the misbranding section of the IFRA seems to contain adequate authority for cancelling uses of pesticides,³⁷ more explicit power to cancel or ban is desirable.³⁸

³⁴ *April Hearings* at 42.

³⁵ *June 4 Hearings* app. A, at 5.

³⁶ See generally, *March Hearings* apps. B, I; *April Hearings* at 49 & app. K. Mr. Jacob Koomen, Director of the State Board of Health cited several trends in rural pesticide use based upon a survey of 250 farms in one North Carolina county: a) most pesticides are applied by farmers rather than custom applicators; b) excessive noncompliance is evident regarding appropriate disposal of unused pesticides and their containers; c) pesticides are often stored hazardously; d) few farmers wear protective equipment when applying pesticides; and e) rural water supplies are often inadequate to protect against pesticide contamination. *March Hearings* app. I, at 3.

Many conservation groups, however, do not believe that the only damage done to the environment by pesticides is a result of misuse. See, e.g., *March Hearings* at 61-62.

³⁷ N.C. GEN. STAT. § 106-65.7 (1966).

³⁸ On December 22, 1969, the Commissioner of Agriculture declared that in

RECOMMENDATIONS FOR NEW LEGISLATION

North Carolina has not been unaffected by the wide controversy over pesticides. In response to the many questions raised over the proper manner to control the use of pesticides, the 1969 North Carolina General Assembly requested the Legislative Research Commission "to study agricultural and other pesticides" and report its findings to the 1971 general assembly.³⁹ These duties were delegated to a subcommittee which held hearings for several months,⁴⁰ collected volumes of data and prepared a thoughtful and well-researched report containing its recommendations for new legislation.⁴¹

The Legislative Research Commission proposed new legislation affecting organization, regulation, monitoring and research, and financing. In the area of organization, the commission advised the creation of a new five-member pesticide board composed of one representative each from the Departments of Agriculture and Health and a conservation agency and two citizens-at-large.⁴² Administration and enforcement of the program will remain within the Department of Agriculture. A further proposal would establish an eleven member advisory committee of specified composition to consult and advise the board and the commissioner on technical matters.⁴³

1970 the department would not register DDT for any of the uses cancelled by the USDA (see note 18 *supra*) and furthermore, would not register for use on tobacco any labels containing DDD (TDE), aldrin, dieldrin, heptachlor, chlordane, or lindane. For a copy of this order, see *July Hearings* app. C. The Attorney General advised that the IFRA misbranding section was applicable, but the commissioner stated that he would prefer more specific authorization. *July Hearings* app. A, at 2.

³⁹ House Resolution 1392, 1969 N.C. Gen. Ass'y.

⁴⁰ See note 8 *supra*.

⁴¹ REPORT OF THE LEGISLATIVE RESEARCH COMMISSION CONCERNING PESTICIDES TO THE 1971 GENERAL ASSEMBLY (1970) [hereinafter cited as N.C. PESTICIDES REPORT].

⁴² The commission made its recommendation of a separate agency on the theory that broad representation would inspire public confidence. N.C. PESTICIDES REPORT at 28.

⁴³ The committee, to be appointed by the board, would be composed of three members of the North Carolina State University School of Agriculture and Life Sciences, one farmer, one member each representing the Departments of Agriculture and Health, a natural resources agency, agri-business, the pesticide industry, a conservationist and an ecologist. *Id.* These organizational recommendations are largely the work of the Agricultural Chemicals Advisory Committee of the School of Agriculture and Life Sciences (SALS) at North Carolina State University. Recommendations to the Pesticide Study Committee of the Legislative Research Commission from SALS, May 22, 1970, at 3.

The first segment of regulatory proposals permitting the board to construct a pesticide management and control program, include provisions: a) prohibiting the use of pesticides or disposal of containers contrary to label instructions approved by the board, b) placing the burden of proof to justify safety of pesticides on the applicant for registration, c) encouraging the board to delay dates of any use restrictions to allow for phasing out of inventories, and d) authorizing the board to adopt a list of restricted use pesticides with attendant regulations concerning use and sale, other regulations to protect against misapplication, drift and related problems, and regulations to insure proper disposal of unused pesticides, containers, and other contaminated materials.⁴⁴

A major question asked of all witnesses at the hearing was whether or not DDT or other persistent pesticides should be legislatively banned. Farmers and other agricultural interest groups were generally opposed to any absolute prohibition.⁴⁵ Witnesses from conservation and wildlife groups were equally adamant that DDT and some other pesticides be legislatively banned.⁴⁶ The commission seems to have reached a compromise.⁴⁷

The proffered regulations do provide sufficient authority to adequately restrict dangerous pesticides, including the power to impose an absolute ban.⁴⁸ The benefit from this approach is the built-in flexibility allowing the board to adjust to current needs. However, there is no assurance that the board will take action to promulgate and enforce sufficient restrictions or that political pressures and powerful lobbies will not delay

⁴⁴ N.C. PESTICIDES REPORT at 31.

⁴⁵ See, e.g., *April Hearings* at 27 & app. D.

⁴⁶ See, e.g., *April Hearings* at 71; app. N, at 4; app. O.

⁴⁷ This compromise was endorsed by several scientists. Dr. Dan Okun, a member of the Mrak Commission and head of the Department of Environmental Sciences at UNC-CH, who advocated restricting DDT to uses essential to health or welfare, stated "[a]dministratively, it would be simple to ban the persistent pesticides, but this would deny us their uses when . . . justified An investment in regulation and control . . . would permit a selective use of such pesticides where appropriate with a minimum of associated hazards and a maximum benefit to the population." *March Hearings* app. E, at 1. See also Recommendations to the Pesticide Study Committee of the Legislative Research Commission from SALS, May 22, 1970, at 2.

⁴⁸ Many states have used regulatory powers to ban or partially ban uses of pesticides, particularly DDT. See E. Bricklemeyer & M. Heath, A Detailed Review of State Pesticide Regulation and Programs 2, 4, 10, 18, 20, 22 (1970) (unpublished paper on file at Institute of Government, Chapel Hill, N.C.) and *Current Problems—Water Pollution Control in Texas, Part IV, Pesticide Pollution*, 48 TEX. L. REV. 1130, 1135 nn.38 & 39 (1970).

or prevent necessary protection. These and many other misgivings have led at least one state to initiate specific legislative guidelines.⁴⁹

The second major group of regulatory recommendations presents a network of licensing laws for pesticide dealers and applicators and those who commercially give advice concerning pesticides.⁵⁰ This package would require licensing of dealers selling pesticides on the restricted list and registration of their employees.⁵¹ It would provide for reporting of shipments made and volumes sold by manufacturers and would contain incidental provisions regarding record keeping, inspection and other matters needed for an effective regulatory system.⁵² All types of commercial applicators and consultants—including those already covered by current law—would be licensed, but the recommendations would exempt farmers who apply pesticides to their own land.⁵³ Since farmers are the major users of pesticides, their omission from this licensing system might suggest a weak spot in the program. However, even if licensing of farmers were incorporated into the laws, the administrative impossibility of enforcing this provision would make the measure meaningless.⁵⁴

Another chink in this legislative armor is that the licensing itself is insufficient to ensure that dealers are properly educated in pesticide use. Thus, the commission has submitted proposals in the field of education, research and staffing. It suggests that funds be allocated for expanded education and training for dealers, applicators, their employees, and

⁴⁹ The 1969 California legislature enacted statutes that require the Department of Agriculture to develop a program for the review of all registered economic poisons that endanger the environment, to establish criteria for the department's refusal to register or cancel a pesticide. The statutes also provide for designated reports to be rendered both by dealers and by the Director of Agriculture. E. Bricklemyer & M. Heath, *A Detailed Review of State Pesticide Regulation and Programs* 7 (1970).

A question arises in regard to whether North Carolina's regulatory proposals should have included legislative guidelines of this nature. This writer believes, however, that the new system should be enacted as recommended, with a watchful eye kept on the new board's activities. Guidelines should be established only when the need presents itself.

Several states have proposed absolute legislative bans on pesticides, but they have always been defeated. See, *e.g.*, *id.* at 14, 26, 41.

⁵⁰ N.C. PESTICIDES REPORT at 34.

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

⁵⁴ The expenses of additional staff necessary to license farmers would in itself be prohibitive and the impracticalities of systematically monitoring the program cannot be overcome at this time. Interview with Mr. Milton Heath, Assistant Director, Institute of Government, in Chapel Hill, N.C., on Dec. 19, 1970.

farmers.⁵⁵ North Carolina State University has requested appropriations to implement this educational program, and it is hoped that these requests will be given serious consideration.⁵⁶ The commission believes that enlarged research and monitoring programs are highly desirable, and thus recommends that the state's service monitoring activities be consolidated and that research be a function of institutions of higher learning.⁵⁷ It is essential that current research programs be continued and expanded, for the development of effective, safe and nondangerous pest control methods will be the ultimate factor in halting pesticide pollution.⁵⁸ Since the new controls will be only as effective as their implementation and enforcement, the commission further advised additional staffing to meet the needs of the new program.⁵⁹ The measures to finance these proposals call for a combination of fees raised by licensing and appropriations from the general fund totaling 400,000 dollars for the coming biennium.⁶⁰

It is difficult to postulate the effect of the commission's recommendations on the pesticide problem in North Carolina. The suggestions have yet to be reduced to statutory form, and the statutes, when drafted, as well as the budget requests, must be approved by the 1971 general assembly. Enacted as proposed, such a comprehensive regulatory scheme will represent a step forward for the state in pesticide regulation and control. But is the step large enough? Whether the regulatory structure will be as effective at preventing harmful use of persistent pesticides as a legislative prohibition will depend largely on what regulations are made by the proposed board and how these rulings are enforced by the Department of

⁵⁵ N.C. PESTICIDES REPORT at 37.

⁵⁶ The Agricultural Extension Service, an arm of the USDA, has been attempting to develop a total education program in cooperation with North Carolina State University with pesticide co-ordinators in each county. The present need is for a dealer education program. *March Hearings* at 42-46.

⁵⁷ N.C. PESTICIDES REPORT at 37. SALS has a very active research program sponsoring some thirty programs with funds of 727,000 dollars. *March Hearings* 3-4. A segment of SALS recently has devoted much effort to the development of a pesticides monitoring system. See WATER RESOURCES RESEARCH INSTITUTE OF UNC, A WATER MONITORING SYSTEM FOR PESTICIDES IN NORTH CAROLINA (January, 1970).

⁵⁸ Dr. C.J. Nusbaum of SALS reports a vast arsenal of pest control methods available for use including population reduction by cultural practices, crop rotation, seed selection and treatment, development of resistant varieties and biological agents. *March Hearings* app. D, at 4. Dr. Nusbaum also remarked that scientists are now thinking in terms of "integrated control programs where combinations of treatments will be used rather than reliance upon a single treatment." *Id.* at 11.

⁵⁹ N.C. PESTICIDES REPORT at 38. For the Commissioner of Agriculture's estimation of minimum personnel needs, see *July Hearings* app. A, at 5.

⁶⁰ N.C. PESTICIDES REPORT at 39.

Agriculture. The great gaps in current education programs need to be filled by increased funding if the licensing proposals are to be meaningful.

The issue of persistent pesticides is not whether the chemical revolution in the control of pests has proven useful [O]ur miracle innovations must be made to serve the ends of civilization Certainly no goal surpasses in importance the need to prevent man from harming, abusing or destroying himself and his environment.⁶¹

ELIZABETH LYNNE POU

Federal Estate Taxation—Life Insurance Trusts

Life insurance is often purchased by a wife on the life of her husband for the benefit of herself or her children. Should the wife predecease her insured husband, she may provide that he act either as executor of her estate or as trustee of a testamentary trust containing the insurance policies on his life and her other investment assets. Upon the insured husband's subsequent death, the Commissioner may contend that the proceeds of the insurance policies are to be included in the husband's gross estate due to the fact that at the time of his death the husband possessed incidents of ownership in the insurance policies, albeit in only a fiduciary capacity. The Court of Appeals for the Sixth Circuit dealt with such a problem in *Fruehauf v. Commissioner*,¹ in which fiduciary powers held by the insured over life insurance policies were deemed sufficient "incidents of ownership" to compel inclusion in the insured's gross estate under section 2042 of the Internal Revenue Code of 1954,² although he had neither owned nor made an inter vivos transfer of the policies.

Vera Fruehauf purchased six life insurance policies on the life of her husband, Harry, designated herself sole beneficiary of each policy, and paid all premiums due prior to her death. Under Vera's will, Harry was named both coexecutor of her estate and cotrustee of a trust to be formed

⁶¹ *Persistent Pesticides* at 611.

¹ 427 F.2d 80 (6th Cir. 1970).

² INT. REV. CODE of 1954, § 2042, provides in part:

The value of the gross estate shall include the value of all property—

(2) RECEIVABLE BY OTHER BENEFICIARIES.—To the extent of the amount receivable by all other beneficiaries as insurance under policies on the life of the decedent with respect to which the decedent possessed at his death any of the incidents of ownership, exercisable either alone or in conjunction with any other person.