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An Agricultural Law Research Article

Environmental Law: Agricultural Pesticides

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I. Introduction

A. Unique Position of Agriculture

Agriculture is society's economic foundation. Its development into a commercial production industry and the tremendous increase in productivity¹ allow consumers to devote less of their income for a wider variety and higher quality of food than ever before.²

Undisputedly chemical pesticides have played an important role in allowing most domestic food supplies and a substantial quantity of exported food to be produced by fewer than five percent of the population.³ Insecticides reduce the economic damage resulting from insects' interference with the quality and quantity of farm output; herbicides control weeds providing a low-cost substitute for mechanical cultivation. Agricultural pesticides satisfy consumer needs by reducing food and fiber costs⁴ and by increasing product attractiveness.⁵

Pesticides, however, are a mixed blessing. Public concern over the inherent dangers of widespread pesticide use⁶ and governmental recognition of the problem⁷ have prompted better documentation of the long-term effects of pesticides and have demanded closer governmental regulation.⁸ While

1. Farm production has increased by 156% since the 1935-39 period notwithstanding the approximately 50 million acres that were retired from production in 1970. This level of production has been achieved in spite of the fact that farm population has decreased from about 30 million persons to about 9.4 million persons. S. REP. NO. 838, 92d Cong., 2d Sess. 3 (1972).

2. *Id.* In 1972, only 15.8% of disposable income was spent on food compared to 23% in earlier years. Compare this to 30% in Europe, 50% in the Soviet Union and as high as 90% in many other countries.

3. S. REP. NO. 838, 92d Cong., 2d Sess. 7 (1972); 61 AM. JUR. 2d *Pollution Control* § 104 (1972); Street, *Agriculture and the Pollution Problem*, UTAH L. REV. 395 (1970).

4. EPA, OFFICE OF WATER PROGRAMS, PESTICIDE STUDY SERIES NO. 10, PATTERNS OF PESTICIDE USE 19 (undated).

5. NATIONAL RESEARCH COUNCIL, COMMITTEE ON PERSISTENT PESTICIDES, DIVISION OF BIOLOGY & AGRICULTURE, REPORT TO USDA 3 (1969).

6. The chief impetus to growing public awareness was the publication of Rachael Carson's *SILENT SPRING*. R. CARSON, *SILENT SPRING* (1962).

7. PRESIDENT'S SCIENCE ADVISORY COMM., REPORT ON THE USE OF PESTICIDES (1963); HEARINGS BEFORE THE SUBCOMM. ON REORGANIZATION AND INTERNATIONAL ORGANIZATIONS OF THE SENATE COMM. ON GOVERNMENT OPERATIONS, 88th Cong., 2d Sess. (1965); DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, REPORT OF THE SECRETARY'S COMMISSION ON PESTICIDES AND THEIR RELATIONSHIP TO ENVIRONMENTAL HEALTH, pts. I and II (1969).

8. See, e.g., Note, *Agricultural Pesticides: The Need for Improved Control Legislation*, 52 MINN. L. REV. 1242 (1968).

pesticide technology is essential to agriculture and our way of life, these miracle innovations must be made to serve the ends of civilization rather than to subvert them.⁹

B. Nature and Scope of the Problem

Chemical use in agriculture began with the trend toward intensive farming in the mid-19th century when cultivation of specialized crops created an imbalance in nature which provided insects and other pests ideal conditions in which to multiply.¹⁰ Today, agriculture uses slightly more than half of all pesticides made. Farm expenditures for pesticides have been rising rapidly, from \$287 million in 1960 to nearly \$900 million in 1970, an increase of about 210 percent.¹¹

The beneficial nature of agricultural pesticides is the most perplexing aspect of the pollution problem. Unlike most air and water pollutants, pesticides are introduced deliberately into the environment for a beneficial purpose. Thus, the mere presence of pesticides cannot be considered harmful to environmental quality, although pesticides clearly can cause environmental damage.¹² The second perplexing aspect of the problem is pesticide contamination is not limited to any one medium. Excess amounts of pesticides can contaminate air, water, soil or food.¹³ Pesticides also are highly mobile. Transported by water run-off and percolation or air currents and living organisms, pesticides may travel great distances.¹⁴ The third perplexing aspect of pesticide pollution is the persistence of some chemicals.¹⁵ The chlorinated hydrocarbons, or "hard" pesticides, may persist in the environment for years.¹⁶ It would take many years, for example, to rid the environment of DDT even if all use were stopped immediately.¹⁷ Production and domestic supply of the more persistent chlorinated hydrocarbon insecticides have declined and less persistent but more toxic chemicals have been substituted, but the overall problem is still with us.¹⁸

9. See Rodgers, *The Persistent Problem of the Persistent Pesticides: A Lesson in Environmental Law*, 70 COLUM. L. REV. 567 (1970).

10. S. REP. NO. 838, 92d Cong., 2d Sess. 6 (1972).

11. Total annual use in the United States has been estimated at between 750 and 800 million pounds. While farmers use slightly more than half, government agencies use about 5% and residential and industrial users account for the rest. EPA, OFFICE OF WATER PROGRAMS, PESTICIDE STUDY SERIES NO. 10, PATTERNS OF PESTICIDE USE (undated); COUNCIL ON ENVIRONMENTAL QUALITY, FIRST ANNUAL REPORT 131 (1970).

12. EPA, OFFICE OF WATER PROGRAMS, PESTICIDE STUDY SERIES NO. 10, PATTERNS OF PESTICIDE USE (undated).

13. COUNCIL ON ENVIRONMENTAL QUALITY, THIRD ANNUAL REPORT 16 (1972). Food, however, is the principal route by which pesticides reach man. NATIONAL RESEARCH COUNCIL, REPORT OF THE COMM. ON PERSISTENT PESTICIDES, DIVISION OF BIOLOGY AND AGRICULTURE TO THE USDA (May 1969).

14. J. BRECHER & M. NESTLE, ENVIRONMENTAL LAW HANDBOOK § 7.10 (1970); 61 AM. JUR. 2d *Pollution Control* § 104 (1972).

15. Rodgers, *The Persistent Problem of the Persistent Pesticides: A Lesson in Environmental Law*, 70 COLUM. L. REV. 567 (1970).

16. This includes DDT, aldrin, dieldrin, endrin, heptachlor and toxaphene. 61 AM. JUR. 2d *Pollution Control* § 104 (1972).

17. COUNCIL ON ENVIRONMENTAL QUALITY, THIRD ANNUAL REPORT 55 (1972).

18. Domestic supply of the chlorinated hydrocarbons dropped from a high in 1956 of 244 million pounds to 31 million pounds in 1970. During the same period, production of parathions, a group of the organophosphate chemicals used to replace the chlorinated hydrocarbons, increased from 7 million pounds to 57 million pounds. COUNCIL ON ENVIRONMENTAL QUALITY, THIRD ANNUAL REPORT 17 (1972).

The tragic effects of direct exposure demand regulation. The indirect effects of pesticide accumulations, however, have raised more concern. While the spectre of pesticide use often has been raised, any objective evaluation suffers because too little research has been done. No conclusive evidence exists that pesticide dosages found in the environment, or even doses several times the normal exposure, lead to any increase in human disease or illness.¹⁹ The principal documented ill effects of pesticides have been upon the environment, viz., on birds, shellfish, wildlife and beneficial insects.²⁰ That pesticides' indirect effects on man are poorly documented does not remove the need for regulation; rather, this lack of knowledge emphasizes the necessity of increased research on the long-term effects of persistent pesticides.

The need for continued research and knowledgeable, reasonable regulation is emphasized by two concomitants of pesticide use: the decrease in pesticide effectiveness and the lack of economical alternatives. In soil, pesticide accumulations may reduce the yield of useful crops, create strains of insecticide-resistant insects or result in the elimination of useful insects.²¹ A decline in the usefulness of some chemical pesticides has been documented as some pest species have built-up resistance.²² Similarly, inadequate regulation of manufacture and use may lead to an eventual increase in the population of pests sought to be destroyed.²³ Attempts at other than chemical control means also have met with difficulties. The process of breeding insect-resistant varieties is slow; incorporation of resistance into a new variety requires five to ten years of intensive screening and testing.²⁴ The widespread use of seed varieties developed for pest resistance also may prove to be a mixed blessing because some have greater vulnerability to plant disease.²⁵

The need for pesticides is clear. Any regulation of pesticides must be rational and based upon anticipating the economic and environmental dangers.

II. Judicial Solutions

The common law imposes liability for the use and manufacture of agricultural pesticides when injury results. While courts traditionally pro-

19. COUNCIL ON ENVIRONMENTAL QUALITY, SECOND ANNUAL REPORT 223 (1971); NATIONAL RESEARCH COUNCIL, REPORT OF THE COMM. ON PERSISTENT PESTICIDES, DIVISION OF BIOLOGY & AGRICULTURE, REPORT TO USDA (1969).

20. COUNCIL ON ENVIRONMENTAL QUALITY, SECOND ANNUAL REPORT 224 (1971).

21. BLOOM & DEGLER, PESTICIDES AND POLLUTION 4 (BNA's Environmental Management Series); R. CARSON, SILENT SPRING 223, 232 (1962).

22. COUNCIL ON ENVIRONMENTAL QUALITY, INTEGRATED PEST MANAGEMENT (1972); Address by C.H. Hoffman, USDA, Symposium on Economic Research on Pesticides for Policy Decisions Making, April, 1970; Brown, *Insecticide Resistance Comes of Age*, 14 BULL. OF THE ENTOMOLOGICAL SOCIETY OF AMERICA 3-9 (1968).

23. Van Den Bosch, *Insecticides and the Law*, 22 HASTINGS L.J. 615 (1971).

24. KANSAS STATE BOARD OF AGRICULTURE, 55TH ANN. REP. 27 (1972).

25. FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, THE STATE OF FOOD AND AGRICULTURE 205 (1968).

vide a remedy for direct injuries, indirect injuries to the public or the environment often go unredressed if benefits outweigh provable injuries.²⁶

Generally the manufacturer is liable for all injuries within the realm of foreseeability.²⁷ Liability results from failure to take precautions that ordinary men would take.²⁸ At common law, manufacturers of agricultural pesticides must make proper tests,²⁹ give adequate warning on the label³⁰ and generally protect the public from the potential dangers arising out of the manufacture and sale of such hazardous materials.³¹

The most extensive common law duty is to label. Pesticide containers must bear a label giving sufficient information to make the product reasonably safe for ordinary persons to use for the purposes intended and for all necessarily incidental uses such as storage or disposal.³² Adequate warning also must be made of latent or lingering dangers that are foreseeable.³³ Liability for failure to warn does not depend on whether the injury is to the person using the product, to the object to which the product is applied or to other persons or things.³⁴ A manufacturer also may be negligent for failure to publish adequate warning of toxic effects and for failure to make available a protective antidote.³⁵ If there is no known antidote, the manufacturer must warn of that fact.³⁶

Manufacturers sometimes are held to a high degree of care to give adequate warning.³⁷ Recognizing that the standard of care must be commensurate with the danger involved,³⁸ failure to protect against reasonably anticipated injuries will result in liability.³⁹ Manufacturers are held to an expert's standard of skill, charged with superior knowledge of their product's nature and obligated to keep reasonably abreast of scientific information, discoveries and advances.⁴⁰

26. *Murphy v. Benson*, 164 F. Supp. 120 (E.D.N.Y. 1958).

27. *Hubbard-Hall Chem. Co. v. Silverman*, 340 F.2d 402 (1st Cir. 1965); *Kennedy v. Clayton*, 216 Ark. 851, 227 S.W.2d 934 (1950); *Colvin v. John Powell & Co.*, 163 Neb. 112, 77 N.W.2d 900 (1956).

28. *Holladay v. Chicago, Burlington & Quincy R.R.*, 255 F. Supp. 879 (S.D. Iowa 1966); *La Plant v. E. I. DuPont Nemours & Co.*, 346 S.W.2d 231 (Mo. 1961); *Moore v. Rumsey*, 36 P.2d 15 (Okla. 1934).

29. *Gonzalez v. Virginia-Carolina Chem. Co.*, 239 F. Supp. 567 (E.D.S.C. 1965).

30. *Beznor v. Howell*, 203 Wis. 1, 233 N.W. 758 (1930); *Mossrud v. Lee*, 163 Wis. 229, 157 N.W. 758 (1916); *Muncy v. Magnolia Chem. Co.*, 437 S.W.2d 15 (Tex. Civ. App. 1968); *Annot.*, 76 A.L.R.2d 9, 37 (1961); *RESTATEMENT (SECOND) OF TORTS* § 402A (1966).

31. *Gonzalez v. Virginia-Carolina Chem. Co.*, 239 F. Supp. 567 (E.D.S.C. 1965).

32. *Boyl v. California Chem. Co.*, 221 F. Supp. 669 (D. Ore. 1963); *La Plant v. E. I. DuPont Nemours & Co.*, 346 S.W.2d 231 (Mo. 1961); *McClanahan v. California Spray-Chem. Corp.*, 194 Va. 842, 75 S.E.2d 712 (1953).

33. *Boyl v. California Chem. Co.*, 221 F. Supp. 669 (D. Ore. 1963).

34. *McClanahan v. California Spray-Chem. Corp.*, 194 Va. 842, 75 S.E.2d 712 (1953).

35. *Griffin v. Planters Chem. Corp.*, 302 F. Supp. 937 (D.S.C. 1969); *Gonzalez v. Virginia-Carolina Chem. Co.*, 239 F. Supp. 567 (E.D.S.C. 1965).

36. *Rumsey v. Freeway Manor Minimax*, 423 S.W.2d 387 (Tex. Civ. App. 1968).

37. *Holland v. St. Paul Mercury Ins. Co.*, 135 So. 2d 145 (La. 1961); *Ellis v. Orkin Exterminating Co.*, 25 Tenn. App. 279, 143 S.W.2d 108 (1939).

38. *Griffin v. Planters Chem. Corp.*, 302 F. Supp. 937 (D.S.C. 1969); *Holladay v. Chicago, Burlington & Quincy R.R.*, 255 F. Supp. 879 (S.D. Iowa 1966).

39. *Beznor v. Howell*, 203 Wis. 1, 233 N.W. 758 (1930).

40. *Holladay v. Chicago, Burlington & Quincy R.R.*, 255 F. Supp. 879 (S.D. Iowa 1966); *La Plant v. E.I. DuPont Nemours & Co.*, 346 S.W.2d 231 (Mo. 1961).

Other courts have held that one who sells an intrinsically dangerous product is strictly liable for injuries resulting to any person.⁴¹ The failure to warn may create strict liability.⁴² Liability results from putting a poisonous product on the market and it is not necessary to establish negligence in any other way.⁴³ The manufacturer of an inherently dangerous product must fully disclose the extent of the danger even if the poison is known by the ordinary person to be inherently dangerous.⁴⁴ Some courts, however, reject the inherently dangerous argument.⁴⁵

Neither state nor federal law purports to change the common law duty to warn.⁴⁶ A manufacturer is liable for injuries resulting from failure to warn of dangerous cumulative effects of inhalation and exposure, whether or not a breach of the statutory duty to label has occurred.⁴⁷ Compliance with regulatory statutes does not preclude a negligence finding.⁴⁸

Both commercial and private pesticide users have common law duties similar to manufacturers. One who applies pesticides has a duty to examine and test the contents of a can containing pesticides and is liable for crop loss resulting from application of the wrong chemical.⁴⁹ If one casts into the air a substance which he knows may do damage to others he is required to know how far it will be carried and strict liability may be applied.⁵⁰ Thus, crop sprayers are held liable for destruction of property when pesticides they are applying drift.⁵¹

Others keeping or dealing with pesticides also may be subject to liability. An employer has a duty to warn that a certain area has been sprayed with pesticides.⁵² Persons keeping poisonous substances upon their premises often are required to exercise a high degree of care to avoid danger to others or others' property.⁵³

Recovery for injuries, however, whether caused by labeling defects or negligent application, often is unavailable. Judicial consideration of the

41. *Merrill v. Beute Vues Corp.*, 235 F.2d 893 (10th Cir. 1956); *Rose v. Buffalo Air Serv.*, 170 Neb. 806, 104 N.W.2d 431 (1960); *Rasmussen v. Benson*, 133 Neb. 449, 275 N.W. 674 (1937).

42. *Cranen, Dargon & Co. v. Pacific Indem. Co.*, 105 Cal. Rptr. 607, 29 Cal. App. 3d 594 (Ct. App. 1972).

43. *Petzold v. Roux Laboratories, Inc.*, 11 N.Y.S.2d 565 (App. Div. 1939).

44. *Rumsey v. Freeway Manor Minimax*, 423 S.W.2d 387 (Tex. Civ. App. 1968).

45. *Boyd v. Frenchee Chem. Corp.*, 37 F. Supp. 306 (E.D.N.Y. 1941).

46. *Hubbard-Hall Chem. Co. v. Silverman*, 340 F.2d 402 (1st Cir. 1965); *Rumsey v. Freeway Manor Minimax*, 423 S.W.2d 387 (Tex. Civ. App. 1968).

47. *Gonzalez v. Virginia-Carolina Chem. Co.*, 239 F. Supp. 567 (E.D.S.C. 1965).

48. *Muncy v. Magnolia Chem. Co.*, 437 S.W.2d 15 (Tex. Civ. App. 1968); *Rumsey v. Freeway Manor Minimax*, 423 S.W.2d 387 (Tex. Civ. App. 1968).

49. *Rose v. Buffalo Air Serv.*, 170 Neb. 806, 104 N.W.2d 431 (1960).

50. *Chapman Chem. Co. v. Taylor*, 215 Ark. 630, 222 S.W.2d 820 (1949).

51. *Kentucky Aerospray v. Mays*, 251 S.W.2d 460 (Ky. 1952); *Chapman, Crop Dusting—Scope of Liability and a Need for Reform in the Texas Law*, 40 TEX. L. REV. 527 (1962); Note, *Regulation and Liability in the Application of Pesticides*, 49 IOWA L. REV. 135 (1963); Note, *Liability for Chemical Damage From Aerial Crop Dusting*, 43 MINN. L. REV. 531 (1959); Comment, *Liability in Crop Dusting: A Survey*, 42 MISS. L.J. 104 (1971).

52. *Holladay v. Chicago, Burlington & Quincy R.R.*, 255 F. Supp. 879 (S.D. Iowa 1966).

53. *Rasmussen v. Benson*, 133 Neb. 449, 275 N.W. 674 (1937); *Midland Valley R.R. v. Rippe*, 61 Okla. 314, 161 P. 233 (1916).

problem has been limited to situations where direct contact caused the injuries. Proving long-term effects of pesticides on the public and environment raises an insurmountable problem.⁵⁴ Causation sometimes is difficult to establish if no direct contact has occurred.⁵⁵ The problem is magnified where the accumulation of pesticide residues results in serious injury or death because no single source may be the proximate cause.⁵⁶

III. Kansas Legislation

Kansas' statutory framework regulates both the manufacture and the use or application of pesticides. Manufacturers and distributors are regulated chiefly by the labeling and registration requirements of the Agricultural Chemical Act of 1947.⁵⁷ Persons controlling pests, such as termites and rodents, in and around structures must comply with the Pest Control Act.⁵⁸ Applicators of agricultural insecticides, herbicides and fungicides generally fall within the regulatory and licensing provisions of the Pesticide Use Law.⁵⁹

A. Agricultural Chemical Act of 1947

The Agricultural Chemical Act generally provides for regulating the sale and registration of agricultural chemicals and economic poisons.⁶⁰ All agricultural chemicals sold or delivered within the state must be registered with the Secretary of the Kansas State Board of Agriculture.⁶¹ A renewal registration is required annually and the secretary may cancel the registration of a chemical at any time.⁶² Manufacturers are required to label chemicals that are highly toxic to man.⁶³ The sale of adulterated or misbranded agricultural chemicals also is prohibited.⁶⁴

Violation of the Act constitutes a misdemeanor, and the registration of the chemical terminates automatically upon conviction.⁶⁵ The Act also provides for confiscation and destruction of any adulterated, misbranded or

54. Note, *Agricultural Pesticides: The Need for Improved Control Legislation*, 52 MINN. L. REV. 1242 (1968).

55. Generally, the causal connection will be found if it is shown that absent the negligent act, the injury would not have been sustained; it is usually sufficient if the negligence was the efficient cause which set in motion the chain of circumstances leading to the injury or damage. *La Plant v. E. I. DuPont Nemours & Co.*, 346 S.W.2d 231 (Mo. 1961). See also *Skogen v. Dow Chem. Co.*, 375 F.2d 692 (8th Cir. 1967) (no proximate cause); *Tripp v. Choate*, 415 S.W.2d 808 (Mo. 1967) (proximate cause).

56. See W. PROSSER, *LAW OF TORTS* § 51 (3d ed. 1964).

57. KAN. STAT. ANN. §§ 2-2201 *et seq.* (1964).

58. KAN. STAT. ANN. §§ 2-2401 *et seq.* (Supp. 1972).

59. KAN. STAT. ANN. §§ 2-2413 *et seq.* (Supp. 1972).

60. KAN. STAT. ANN. § 2-2202(a) (1964) defines *agricultural chemical* and *economic poison* as: ". . . Any substance or mixture of substances labeled, designed or intended for use in preventing, destroying, repelling, or mitigating any insects, rodents, predatory animals, fungi, weeds, nematodes and other forms of plant or animal life or viruses, which the secretary shall declare to be a pest, and any substance labeled, designed or intended for use as a defoliant, and any substance or mixture of substances, labeled, designed or intended for use as a plant regulator, or desiccant."

61. KAN. STAT. ANN. § 2-2204 (1964).

62. *Id.*

63. KAN. STAT. ANN. § 2-2203(a)(5) (1964).

64. KAN. STAT. ANN. § 2-2203(a)(7) (1964).

65. KAN. STAT. ANN. § 2-2208 (1964).

unregistered chemical and any insufficiently labelled chemical.⁶⁶ Notice of contemplated prosecution must be sent to any person who is violating the Act, but the Secretary is given discretion to send only a letter of warning without formal prosecution.⁶⁷ County attorneys expressly are required to prosecute reported violations.⁶⁸

The Secretary is given broad powers to declare any form of plant and animal life or virus a "pest."⁶⁹ The Secretary expressly is authorized to adopt regulations to bring the state into uniformity with restrictions of other states and the federal government.⁷⁰ The Secretary has discretion to exempt from registration agricultural chemicals imported into the state that are registered under federal law if sold in unbroken containers.⁷¹ Also exempt from registration are all carriers, public entities, manufacturers of chemicals for experimental use only, chemicals bound for export to foreign countries and pharmacists.⁷²

B. Pesticide Use Law

Kansas has regulated the application of pesticides since 1951.⁷³ The Agricultural Spraying and Dusting Act generally required the owner or operator of pesticide dispersing equipment to register with the Secretary of the State Board of Agriculture.⁷⁴ Only non-resident applicants, however, were required to give evidence of qualification.⁷⁵ The Spraying and Dusting Act⁷⁶ was replaced in 1970 by the Pesticide Use Law.⁷⁷

The new law incorporates many of the provisions of the old Act and greatly expands its coverage and effectiveness. The Act contains a broad statement of legislative purpose and expressly recognizes the problems inherent in pesticide use.⁷⁸ The Act generally prohibits engaging in the pes-

66. KAN. STAT. ANN. § 2-2209 (1964).

67. KAN. STAT. ANN. § 2-2206(a) (1964).

68. KAN. STAT. ANN. § 2-2205(b) (1964).

69. KAN. STAT. ANN. § 2-2205(a) (1964).

70. KAN. STAT. ANN. § 2-2205(c) (1964).

71. KAN. STAT. ANN. § 2-2204(a)(3) (1964).

72. KAN. STAT. ANN. § 2-2207 (1964).

73. Ch. 15, [1951] Kan. Sess. Laws.

74. KAN. STAT. ANN. § 3-902 (1964).

75. KAN. STAT. ANN. § 3-906 (1964).

76. KAN. STAT. ANN. §§ 3-901-12. This statute was repealed by Ch. 2, § 26, [1970] Kan. Sess. Laws to be effective Jan. 1, 1972. The effective date was extended to Jan. 1, 1973 by Ch. 5, § 4, [1971] Kan. Sess. Laws, when the pesticide use law became effective.

77. KAN. STAT. ANN. §§ 2-2413-37 (Supp. 1972); Ch. 6, [1973] Kan. Sess. Laws 40, amending Ch. 2, [1970] Kan. Sess. Laws.

78. KAN. STAT. ANN. § 2-2415 (Supp. 1972): "The purpose of this act is to regulate in the public interest, the use, manufacture, transportation and application of insecticides, fungicides, herbicides, defoliant, desiccants, plant growth regulators, nematocides, rodenticides, and any other pesticide. New pesticides are continually being discovered or synthesized which are valuable for the control of insects, fungi, weeds, nematodes, rodents, and for use as defoliant, desiccants, plant regulators and related purposes. If not properly used, pesticides may injure man, wildlife or other animals, either by direct poisoning or by gradual accumulation of poisons in the tissues. Crops or other plants may also be injured by their improper use. The drifting or washing of pesticides into streams or lakes can cause appreciable damage to aquatic life. A pesticide applied for the purpose of killing pests in a crop, which is not itself injured

ticide application business without a license.⁷⁹ As a condition precedent to licensing, license applicants are required to show upon examination that they have knowledge of proper equipment use, hazards involved in applying pesticides, the effect of drift and the effect on non-target organisms.⁸⁰ Applicants also must have some knowledge of applicable state and federal regulations.⁸¹

It is unlawful for an employee to apply pesticides without first obtaining an operator's license.⁸² The operator licensing provisions do not apply to operators using only non-aerial methods of applying pesticides provided they work under the supervision of a licensed pesticide business applicator or registered pesticide equipment operator.⁸³ A licensed business applicator is required to be present only when the unlicensed operator is mixing pesticide or calibrating filling equipment.⁸⁴

A condition precedent to issuance of a pesticide business applicator's license is proof of financial responsibility including a surety bond or a liability insurance certificate.⁸⁵ Licensees and registrants are required to keep records.⁸⁶ Two new sections were added in 1973 providing for renewal⁸⁷ and temporary licenses.⁸⁸ Discarding or storing of pesticide containers in a fashion detrimental to man or wildlife is prohibited.⁸⁹ An important feature of the Act is the county's option to restrict any pesticide use within the county subject to the Secretary's approval.⁹⁰

Violation of the Act constitutes an unclassified misdemeanor.⁹¹ The Secretary may deny, suspend or revoke any license if the applicant or licensee has misrepresented material facts in connection with a pesticide's application.⁹² Subpoenas are available to insure compliance with the Act's

by the pesticide, may drift and injure other crops or non-target organisms with which it comes in contact."

79. KAN. STAT. ANN. § 2-2419 (Supp. 1972).

80. KAN. STAT. ANN. § 2-2419(c) (Supp. 1972).

81. *Id.*

82. Ch. 6, § 2, [1973] Kan. Sess. Laws 42.

83. Ch. 6, § 6, [1973] Kan. Sess. Laws 45. Former KAN. STAT. ANN. § 2-2420 (Supp. 1972) exempted only those operators working under the direct on the job supervision of a licensed business applicator or operator. Present law requires only that the operator be "under the instructions and control" of the licensed person.

84. Ch. 6, § 2, [1973] Kan. Sess. Laws 42.

85. Ch. 6, § 4, [1973] Kan. Sess. Laws 44.

86. KAN. STAT. ANN. § 2-2425 (Supp. 1972).

87. Ch. 6, § 6, [1973] Kan. Sess. Laws 45.

88. Ch. 6, § 7, [1973] Kan. Sess. Laws 46.

89. KAN. STAT. ANN. § 2-2428 (Supp. 1972).

90. KAN. STAT. ANN. § 2-2417 (Supp. 1972).

91. KAN. STAT. ANN. § 2-2431 (Supp. 1972).

92. Ch. 6, § 3, [1973] Kan. Sess. Laws 43. "K.S.A. 1972 Supp. § 2-2422 is hereby amended to read as follows: § 2-2422: The secretary after notice and opportunity for a hearing, may deny, suspend, revoke, or modify the provision of any license or permit issued under this act, if he finds that the applicant or licensee has committed any of the following acts, each of which is declared to be a violation of this act: (1) Made false or fraudulent claims through any media, misrepresenting the effect of materials or methods to be utilized; (2) Made a pesticide recommendation not in accordance with the directions for use shown on the label registered under the Kansas agricultural chemical act and/or by the United States department of agriculture, except that lesser specifications may be used upon agreement between applicator and customer; (3) Applied known ineffective or improper materials; (4) Operated faulty or unsafe equip-

record-keeping requirements.⁹³ Officials are given broad investigatory and inspection powers.⁹⁴

The Act, however, does not provide complete control. While governmental agencies are not exempt from the registration and licensing requirements,⁹⁵ the Act regulates only those who apply pesticides to the "land of another."⁹⁶ Persons applying pesticides to their own land or farmers applying pesticides to a neighbor's land are exempt.⁹⁷

C. Pest Control Act

While agriculture accounts for the greater portion of pesticide use, substantial amounts are used by homeowners and industry. The Kansas Pest Control Act⁹⁸ regulates commercial applicators not covered by the Pesticide Use Law. Persons licensed under the Pesticide Use Law, aerial applicators, governmental entities and persons applying pesticides to humans or animals are exempt from the Pest Control Act.⁹⁹ The Act generally prohibits application of pesticides without a license other than at one's own residence.¹⁰⁰ Pest control operators,¹⁰¹ persons controlling pests in and around structures, trees, ornamental shrubs and lawns, are required to obtain a license for each in-state place of business.¹⁰² Applicants are required

ment; (5) Operated in a faulty or negligent manner; (6) Refused, or after notice, neglected to comply with the provisions of this act, the rules adopted hereunder, or of any lawful order of the secretary; (7) Refused or neglected to keep and maintain the records required by this act, or to make reports when and as required; (8) Made false or fraudulent records, invoices, or reports; (9) Engaged in the business of the application of a pesticide without having a *licensed pesticide business applicator or a registered equipment operator* in supervision; (10) Operated unlicensed equipment; (11) Used fraud or misrepresentation in making an application for or renewal of a license or permit; (12) Refused or neglected to comply with any limitations or restrictions on or in a duly issued license or permit; (13) Aided or abetted a licensed or an unlicensed person to evade any of the provisions of this act; combined or conspired with a licensed or an unlicensed person to evade any of the provisions of this act, or allowed a license or permit to be used by an unlicensed person; (14) Made any false or misleading statement during or after an inspection concerning any infestation of pests; or (15) Impersonated any state, county, or city inspector or official.

93. KAN. STAT. ANN. § 2-2432 (Supp. 1972).

94. KAN. STAT. ANN. § 2-2433 (Supp. 1972).

95. KAN. STAT. ANN. § 2-2421 (Supp. 1972).

96. KAN. STAT. ANN. § 2-2419 (Supp. 1972).

97. Ch. 6, § 5, [1973] Kan. Sess. Laws 45: "K.S.A. 1972 Supp. § 2-2427 is hereby amended to read as follows: § 2-2427: The provisions of *K.S.A. 1972 Supp. § 2-2413 to 2-2437, inclusive, and any amendments thereto, shall not apply: (1) to any person or his employees who apply pesticides on or at premises owned, leased, or operated by such person; (2) to any person applying pesticides to a neighbor's land in exchange for work; or (3) to any person applying pesticides in fields of operation for which a license is held under the Kansas pest control act.*"

98. Ch. 5, §§ 1-14, [1973] Kan. Sess. Laws 31-40, amending KAN. STAT. ANN. §§ 2-2401-09, inclusive.

99. Ch. 5, § 11, [1973] Kan. Sess. Laws 39, amending KAN. STAT. ANN. § 2-2409 (Supp. 1972).

100. Ch. 5, § 7, [1973] Kan. Sess. Laws 37, amending KAN. STAT. ANN. § 2-2407(a) (Supp. 1972).

101. Ch. 5, § 1(k), [1973] Kan. Sess. Laws 32, amending KAN. STAT. ANN. § 2-2401(k) (Supp. 1972) defines *pest control operator* as ". . . (A)ny person who advertises, offers for sale, sells, or performs services consisting of the use or application of any fungicide, insecticide, fumigant, rodenticide, *herbicide* or repellent for the purpose of controlling any pest."

102. Ch. 5, § 2, [1973] Kan. Sess. Laws 33, amending KAN. STAT. ANN. § 2-2402 (Supp. 1972).

to furnish the same evidence of financial responsibility as required under the Pesticide Use Law.¹⁰³ Licenses may be revoked, suspended or denied for misrepresentation or the use of unsuitable methods or materials.¹⁰⁴

IV. Federal Legislation

Since 1910 Congress has recognized the need for controls on the production and use of pesticides.¹⁰⁵ The federal government presently regulates the sale and application of pesticides through three statutes: the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA),¹⁰⁶ the Federal Environmental Pesticide Control Act of 1972 (FEPCA)¹⁰⁷ and the Federal Food, Drug and Cosmetic Act.¹⁰⁸ Regulation of pesticides also may be governed in some instances by provisions of the National Environmental Policy Act of 1969.¹⁰⁹

103. Ch. 5, § 3, [1973] Kan. Sess. Laws 34, amending KAN. STAT. ANN. § 2-2402(a) (Supp. 1972).

104. Ch. 5, § 5, [1973] Kan. Sess. Laws 36, amending KAN. STAT. ANN. § 2-2405 (Supp. 1972): "§ 2-2405. (1) The board may at any time after a hearing revoke a license, suspend a license, decline to renew a license or decline to issue a license when a pest control operator personally, or when any officer, partner, employee, solicitor, agent, or representative of said pest control operator: (a) Has been convicted of or has pleaded guilty to a violation of the Kansas pest control act; *has been convicted of or has pleaded guilty to a felony under the laws of any state or of the United States if the board determines, after investigation, that such person has not been sufficiently rehabilitated to warrant the public trust*; (b) Has been convicted of or has pleaded guilty to a violation of any rule or regulation adopted under the Kansas pest control act, or any of the laws or rules and regulations of any other state relating to the licensing of or operations of pest control operators; (c) Has had any license issued to him under the pest control or pesticide use laws of this state or of any other state revoked; (d) Has made any misrepresentation or has defrauded any member of the public; (e) Has used any method or material which is not suitable, has used any material in a quantity which is not sufficient for control of the pests involved, or has used any method or material without respect to public health, safety or welfare; (f) Has refused to provide the secretary with reasonably complete and accurate information regarding methods used, materials used or work performed, or has failed or refused to supply the names of any and all employees, representatives and workmen involved in any work performed when requested by the secretary; or (g) Has failed to comply with any provision or requirement of the Kansas pest control act or any rule or regulation adopted thereunder.

(2) The secretary shall suspend a license, until an acceptable substitute surety bond or until a certificate establishing acceptable replacement of liability insurance is supplied, if the pest control operator fails to furnish an acceptable surety bond or a written certificate of *acceptable* liability insurance within twenty (20) days from the date notice is received by the secretary that the surety bond or insurance policy previously furnished by said pest control operator is to be canceled or terminated.

(3) *The secretary shall suspend the license of any pest control operator who does not have a technical representative at each licensed place of business in this state.*

105. See Act of April 26, 1910, ch. 191, 36 Stat. 331. Generally the Federal Insecticide Act of 1910 prevented the manufacture, sale or transportation of adulterated or misbranded insecticides and fungicides and authorized regulation of sales of insecticides and fungicides. S. REP. No. 838, 92d Cong., 2d Sess. (1972).

106. 61 Stat. 163 (1947), as amended, 7 U.S.C.A. §§ 135 *et seq.* (Supp. 1973). In 1970 administration of the Act was transferred from the Department of Agriculture to the Environmental Protection Agency. 1970 Reorg. Plan No. 3, § 2 (a)(8)(i), 35 Fed. Reg. 15624 (1970).

107. 7 U.S.C.A. §§ 136 *et seq.* (Supp. 1973).

108. 21 U.S.C.A. §§ 301 *et seq.* (Supp. 1973). The Act is administered by the Secretary of Health, Education and Welfare and requires determination of pesticide residues which can safely remain on raw agricultural commodities. See *Environmental Defense Fund, Inc. v. United States Dep't of Health, Educ. & Welfare*, 428 F.2d 1083 (D.C. Cir. 1970).

109. 42 U.S.C.A. §§ 4321 *et seq.* (Supp. 1973).

A. *The Federal Insecticide, Fungicide and Rodenticide Act*

FIFRA prohibits the distribution or sale of any "economic poison"¹¹⁰ that has not been registered with the Administrator of the Environmental Protection Agency (EPA).¹¹¹ Marketing claims made for and directions for use of a pesticide must be consistent with the representations made in connection with its registration.¹¹² Registered poisons are required to have a specified label affixed.¹¹³ If the poison contains a substance highly toxic to man, the label must bear the skull and crossbones, the word *poison* and a statement of the antidote.¹¹⁴ The Act also prohibits the distribution and sale of any economic poison that is adulterated or misbranded.¹¹⁵ While it has been stated that the Act merely codifies a manufacturer's common law duty to adequately warn,¹¹⁶ compliance with the statutory requirements does not release a manufacturer of liability.¹¹⁷ The adequacy of the warning is generally a question of fact.¹¹⁸ Failure to comply with statutory standards, however, constitutes negligence per se.¹¹⁹ While the exact label described by the agency is not required, the substance is required.¹²⁰ The Act's labeling requirements are said to incorporate a substantive standard of product safety.¹²¹

Applicants seeking registration of a chemical are required to file with the EPA the proposed label, directions for use and, if requested by the EPA, a statement of the tests made and the test results upon which the claims are based.¹²² The EPA also may require complete pesticide formulas.¹²³

If a poison does not meet the claims made for it or the application fails in some other respect, the Administrator notifies the applicant of the defect.¹²⁴ If the applicant fails to make corrections the chemical is not reg-

110. The Administrator of the EPA has the power to determine whether a substance is an economic poison. 7 U.S.C.A. § 135d(a)(2) (Supp. 1973).

7 U.S.C.A. § 135(a) (Supp. 1973) defines *economic poison* as ". . . (1) any substance or mixture of substances 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 Administrator shall declare to be a pest, and (2) any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccants."

111. 7 U.S.C.A. § 135a(a)(1) (Supp. 1973).

112. *Id.*

113. 7 U.S.C.A. § 135a(a)(2) (Supp. 1973).

114. 7 U.S.C.A. § 135a(a)(3) (1964).

115. 7 U.S.C.A. § 135a(a)(5) (1964).

116. *Gonzalez v. Virginia-Carolina Chem. Co.*, 239 F. Supp. 567 (E.D.S.C. 1965).

117. *Hubbard-Hall Chem. Co. v. Silverman*, 340 F.2d 402 (1st Cir. 1965); *Muncy v. Magnolia Chem. Co.*, 437 S.W.2d 15 (Tex. Civ. App. 1968); *Rumsey v. Freeway Manor Minimax*, 423 S.W.2d 387 (Tex. Civ. App. 1968).

118. *Boyd v. Thompson-Hayward Chem. Co.*, 450 S.W.2d 937 (Tex. Civ. App. 1970).

119. *Muncy v. Magnolia Chem. Co.*, 437 S.W.2d 15 (Tex. Civ. App. 1968).

120. *Id.*

121. *Environmental Defense Fund, Inc. v. Hardin*, 428 F.2d 1093 (D.C. Cir. 1970).

122. 7 U.S.C.A. § 135b(a) (Supp. 1973).

123. 7 U.S.C.A. § 135b(b) (Supp. 1973). The Act protects applicants by making it unlawful to use or reveal information about the formulas. 7 U.S.C.A. § 135a(c)(4) (Supp. 1973).

124. 7 U.S.C.A. § 135b(c) (Supp. 1973).

istered.¹²⁵ The Administrator also may suspend or cancel any registration when it appears that the Act's labeling requirements have not been met.¹²⁶ In addition, the Administrator may suspend immediately the registration of an economic poison to prevent "an imminent hazard to the public."¹²⁷ Such emergency removal of a product from the agency market is not an appealable final order but is only a temporary measure pending full consideration.¹²⁸ Administrative refusal to suspend pesticides, however, are reviewable as final orders.¹²⁹ The Act gives a right of review to anyone adversely affected by an order.¹³⁰ Final orders are appealable to the United States Court of Appeals which may order the agency to take more evidence if necessary.¹³¹

The applicant may request submission of the dispute to an advisory committee which, after consideration of both the EPA's and the manufacturer's views, submits its recommendations to the Administrator. Should the report be unfavorable, the applicant may request a public hearing.

The purpose of FIFRA is to keep products off the market until their safety has been tested and to place the burden of demonstrating safety on industry rather than government.¹³² The burden of proving continued product safety shifts to the manufacturer upon issuance of notice cancelling registration if a substantial question about the safety of a registered pesticide is presented.¹³³ The primary concern is to protect the public from hazards associated with pesticide use and to protect consumers from ineffective products. The economic poison must be at least as effective as the applicant claims it to be.¹³⁴

Cancellation of registration does not turn on scientific hazard assessment alone.¹³⁵ Courts still may balance a pesticide's benefits against its risks. In this delicate balance, greater weight is given the pesticide's value for disease control than is accorded its value for commercial crop protection.¹³⁶ Such policy questions must be explored in the full light of public hearings.

125. *Id.*

126. *Id.*

127. *Id.*

128. *Nor-Am Agricultural Products, Inc. v. Hardin*, 435 F.2d 1151 (7th Cir. 1970).

129. *Environmental Defense Fund, Inc. v. Ruckelshaus*, 439 F.2d 584 (D.C. Cir. 1971). The court criticized the *Nor-Am* distinction between orders granting and denying suspension. Whether emergency suspension is ordered or derived further administrative action is required. The *Ruckelshaus* court preserved the distinction, however, by recognizing that suspension orders affect private interests while failure to suspend threatens public health and safety.

130. *Environmental Defense Fund, Inc. v. Hardin*, 428 F.2d 1093 (D.C. Cir. 1970).

131. 7 U.S.C.A. § 135b(d) (Supp. 1973). See *Wellford v. Ruckelshaus*, 439 F.2d 598 (D.C. Cir. 1971).

132. *Continental Chemiste Corp. v. Ruckelshaus*, 461 F.2d 331 (7th Cir. 1972); *Stearns Elec. Paste Co. v. EPA*, 461 F.2d 293 (7th Cir. 1972); *Environmental Defense Fund, Inc. v. Ruckelshaus*, 439 F.2d 584 (D.C. Cir. 1971).

133. *Environmental Defense Fund, Inc. v. Ruckelshaus*, 439 F.2d 584 (D.C. Cir. 1971).

134. *Stearns Elec. Paste Co. v. EPA*, 461 F.2d 293 (7th Cir. 1972).

135. *Environmental Defense Fund, Inc. v. Ruckelshaus*, 439 F.2d 584 (D.C. Cir. 1971).

136. *Id.*

B. Federal Environmental Pesticide Control Act

One of FIFRA's weaknesses is that control over use is achieved only to the extent that users read, understand and follow the instructions on labels. FEPCA is designed to remedy this weakness by controlling application.¹³⁷ The Act essentially contains the same registration requirements as FIFRA.¹³⁸ Pesticides are registered if no "unreasonable adverse effects on the environment" would result from their use.¹³⁹ The Administrator is given authority to classify pesticides "for general use," "for restricted use" or "for use by permit only."¹⁴⁰ Pesticides presenting an unreasonable risk of injury to the applicator can be used only by trained applicators. Pesticides presenting a risk to the environment may be applied only with the approval of a trained consultant.

The Act makes it unlawful to distribute or sell pesticides that are not registered or do not meet claims made for them.¹⁴¹ Distribution of adulterated or misbranded chemicals also is prohibited.¹⁴² Label information must be readable and understandable by the ordinary individual under customary conditions of purchase and use.¹⁴³ Label directions must include instructions sufficient to effect the purpose for which the product is intended. The warning and caution statement must be adequate to protect health and environment.¹⁴⁴ Labels of pesticides highly toxic to man are required to have a skull and crossbones, the word *poison* prominently in red and an antidote statement.¹⁴⁵

The Act streamlines the appeals process from decisions of the EPA concerning registration, cancellation and suspension. Registrations are automatically cancelled after five years unless the applicant requests extension.¹⁴⁶

The Administrator has authority to hold a hearing to determine whether or not a pesticide presents a risk to the environment.¹⁴⁷ Registration may be suspended immediately if the chemical poses an imminent hazard.¹⁴⁸ The manufacturer is required to request a hearing on the suspension order after receiving notice.¹⁴⁹ If an emergency exists, a chemical may be

137. COUNCIL ON ENVIRONMENTAL QUALITY, SECOND ANNUAL REPORT (1971).

138. 7 U.S.C.A. § 136a(c) (Supp. 1973).

139. 7 U.S.C.A. § 136a(c)(5) (Supp. 1973). The Act also defines "unreasonable adverse effects on the environment" as ". . . any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide." (7 U.S.C.A. § 136(bb) (Supp. 1973)).

140. 7 U.S.C.A. § 136a(d) (Supp. 1973).

141. 7 U.S.C.A. § 136(j) (Supp. 1973).

142. 7 U.S.C.A. § 136(q) (Supp. 1973).

143. 7 U.S.C.A. § 136(q)(1)(E) (Supp. 1973).

144. 7 U.S.C.A. § 136(q)(1)(F) and (G) (Supp. 1973).

145. 7 U.S.C.A. § 136(q)(2)(D) (Supp. 1973).

146. 7 U.S.C.A. § 136d(a) (Supp. 1973).

147. 7 U.S.C.A. § 136d(b)(2) (Supp. 1973).

148. 7 U.S.C.A. § 136d(c)(1) (Supp. 1973). *Imminent hazard* is defined in 7 U.S.C.A. § 136(1) (Supp. 1973) as ". . . a situation which exists when the continued use of a pesticide during the time required for cancellation proceeding would be likely to result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered"

149. 7 U.S.C.A. § 136d(c)(2) (Supp. 1973).

suspended before notification.¹⁵⁰ The Act permits inspection of places where pesticides are held for distribution or sale¹⁵¹ but protects the manufacturer from disclosure of trade secrets.¹⁵² The Administrator is given the power to issue "stop sale," "use" and "removal" orders and to seize chemicals in violation of the Act.¹⁵³ Civil or criminal penalties may be assessed against violators.¹⁵⁴ Any person who suffers loss by reason of the Administrator's action must be indemnified unless the person had knowledge that the pesticide did not meet the Act's requirements.¹⁵⁵

The Act exempts pesticides intended solely for export.¹⁵⁶ Affirmative action in research and monitoring is required.¹⁵⁷ The Act grants states authority to regulate the use and sale of pesticides if the state does not permit any sale or use prohibited by the federal Act or does not impose any requirements in addition to or different from those required by the federal Act.¹⁵⁸

V. Conclusion

The multiplicity of governmental regulation, both state and federal, would seem at first glance to safeguard adequately the public and the environment. Both state and federal statutes, however, rely chiefly on registration and licensing requirements. Legislation's chief effect has been merely to codify a manufacturer's duty to label. While the user is assured a properly labeled product, environmental contamination still results from inadequate regulation of use.¹⁵⁹ Because all regulation is on commercial applicators, actual users must decide the safest and most proper use and are guided only by persons with proprietary interest.¹⁶⁰ Courts cannot consider all the scientific data necessary to adequately control pesticide use. Moreover, courts can consider only what has occurred or what may foreseeably occur and cannot explore alternative solutions to pest problems. When the obvious benefits and apparent necessity are weighed against the nebulous and perhaps distant effects of pesticide application the court will refuse relief.¹⁶¹

It is naive to think the forces that led to intensification in agriculture can be reversed and the need for chemical controls abrogated. Chemical pesticides in increasing amounts will be necessary until economical alternatives are developed. Legislation should encourage the development of effective

150. 7 U.S.C.A. § 136d(c)(3) (Supp. 1973).

151. 7 U.S.C.A. § 136g (Supp. 1973).

152. 7 U.S.C.A. § 136h (Supp. 1973).

153. 7 U.S.C.A. § 136k (Supp. 1973).

154. 7 U.S.C.A. § 136l (Supp. 1973).

155. 7 U.S.C.A. § 136m (Supp. 1973).

156. 7 U.S.C.A. § 136o (Supp. 1973).

157. 7 U.S.C.A. § 136r (Supp. 1973).

158. 7 U.S.C.A. § 136v (Supp. 1973).

159. See KANSAS LEGISLATIVE COUNCIL, REPORT AND RECOMMENDATION 231-60 (1969).

160. Van Den Bosch, *Insecticides and the Law*, 22 HASTINGS L.J. 615 (1971).

161. See, e.g., *Murphy v. Benson*, 164 F. Supp. 120 (E.D.N.Y. 1958).

tive biological controls by providing incentives.¹⁶² A second program could require use of less toxic substitutes with the same effectiveness. Both state¹⁶³ and federal¹⁶⁴ statutes currently exempt from registration those chemicals bound for export. Such exemptions ignore the fact that pesticides' environmental impact is global because of their mobility and persistence. Compulsory research and coordinated efforts between state and federal agencies also are needed.¹⁶⁵ Finally, some effort must be made to restrict usage to areas of actual need without jeopardizing agricultural production.

J. Steve Massoni

162. After 5 years of development, the EPA recently cleared the way for the first United States commercial production of a viral insecticide. *BNA ENVIRONMENTAL REPORTS, CURRENT DEVELOPMENTS* 201 (1973).

163. *KAN. STAT. ANN.* § 2-2207 (1964).

164. 7 U.S.C.A. § 136o (Supp. 1973).

165. Some research and monitoring is currently required. 7 U.S.C.A. § 136v (Supp. 1973). Research is also required as a prerequisite to action by federal agencies. 42 U.S.C.A. § 4332 (Supp. 1973). See *Environmental Defense Fund v. Hardin*, 325 F. Supp. 1401 (D.D.C. 1971). Kansas provides only that agreements regarding research may be made with other agencies, the federal government or educational institutions. *KAN. STAT. ANN.* § 2-2434 (Supp. 1972).