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Control Pesticide Drift**

by

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Chemical Trespass?—An Overview Of Statutory And Regulatory Efforts To Control Pesticide Drift*

BY SARAH E. REDFIELD**

INTRODUCTION

Howard Clayton grew cotton on 840 acres of land located across Boggy Bayou from the Kennedy property. The Kennedy brothers sprayed their rice with 2,4-D, once aerially and once by hand equipment. The Kennedys claimed that they did not think that the herbicide would “drift”¹ more than sixty to seventy five feet in the absence of wind. To avoid further drift, the herbicide was applied in the late afternoon, on a calm day, and the spray was cut off before the canal. Regardless of these precautions, the herbicide drifted and damaged Clayton’s cotton.²

John Sullivan, a rice farmer, hired Burnett Flying Service to spray his crop. Voyles’ truck farm adjoined Sullivan’s rice farm. Voyles testified that he was in his field when Norman Burnett started spraying, and that the wind was blowing from Sullivan’s

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¹ For the purpose of this Article, the Environmental Protection Agency (EPA) definition of “drift” is useful: “The term ‘drift’ means movement of a pesticide during or immediately after application or use through air to a site other than the intended site of application or use.” 40 C.F.R. § 162.3(n) (1984). See also 40 C.F.R. § 162.3(aa) (1984) which defines nontarget organisms as “those flora and fauna (including man) that are not intended to be controlled, injured, killed or detrimentally affected in any way by a pesticide.”

² Clayton collected damages in negligence. See *Kennedy v. Clayton*, 227 S.W.2d 934 (Ark. 1950). See also *Reasor-Hill Corp. v. Kennedy*, 272 S.W.2d 685 (Ark. 1954) (Kennedy’s suit against seller).

farm. The spray damaged Voyles' tomatoes, potatoes, squash, and green beans.³

D.N. Schrock raised cantaloupes on eighty acres of land abutting Crouse's cotton fields. Crouse was a customer of Wilbur-Ellis, a company which sold insecticides and also advised customers on their use. In reliance on Wilbur-Ellis' observation that his cotton was infested with lygus and stinkbugs and their

³ Voyles collected damages for negligence. See *Sullivan v. Voyles*, 462 S.W.2d 454 (Ark. 1971). See also, e.g., *S.A. Heeb v. Prysock*, 245 S.W.2d 577 (Ark. 1952) (action by cotton farmers against rice farmer to recover for damage to cotton crops when aviator sprayed rice crops in an allegedly negligent manner); *Burns v. Vaughn*, 224 S.W.2d 365 (Ark. 1949) (damage to cotton crops from chemical dust which defendant had employed an airplane pilot to spray on defendant's rice crop); *Augustine v. Dickenson*, 406 So. 2d 306 (La. Ct. App. 1981) (property owners recover from flying service and insurance company for damage to vegetable gardens and fruit trees from drift from spraying of paraquat to kill grass in soybean field); *Watkins v. Johnson*, 606 S.W.2d 493 (Mo. Ct. App. 1980) (damage to red clover from aerial application of 2,4-D to pasture); *Pitchfork Land & Cattle Co. v. King*, 335 S.W.2d 624 (Tex. Civ. App. 1960), *modified*, 346 S.W.2d 598 (Tex. 1961) (action by cotton farmers against aerial spraying company and ranch owner for damage to cotton crop allegedly caused by drifting of herbicide).

In cases like these the courts typically find spraying to be inherently dangerous and thus extend liability to both the independent contractor and the employer. The rule was well stated in a 1932 decision of the Arkansas Supreme Court where the court explained an exception to the general rule that the employer is not liable for the negligence of an independent contractor. *S.A. Gerrard Co. v. Fricker*, 27 P.2d 678 (Ariz. 1933) (negligent spraying of lettuce by independent contractor destroyed neighboring apiary). The court noted that "the law will not allow one who has a piece of work to be done that is necessarily or inherently dangerous to escape liability to persons or property negligently injured in its performance by another to whom he has contracted such work." *Id.* at 680. Of particular interest was the court's application of the principle to pesticides' use: "This is especially true where the agency or means employed to do the work, if not confined and carefully guarded, is liable to invade adjacent property, or the property of others, and destroy or damage it." *Id.* Specifically, the court found:

The defendant was within its legal rights in depositing the insecticide on its lettuce fields for the purpose of ridding it of the worms . . . but, because of the very great likelihood of the poisonous dust or spray spreading to adjoining or near-by premises and damaging or destroying valuable property thereon, it could not delegate this work to an independent contractor, and thus avoid liability.

Id.

See generally *Emelwon, Inc. v. United States*, 391 F.2d 9 (5th Cir. 1968), *cert. denied sub nom.* *Florida v. Emelwon, Inc.*, 393 U.S. 841 (1968); *Boroughs v. Joiner*, 337 So. 2d 340 (Ala. 1976); *Copeland v. Hollingsworth*, 535 S.W.2d 815 (Ark. 1976); *McKennon v. Jones*, 244 S.W.2d 138 (Ark. 1951); *Hammond Ranch Corp. v. Dodson*, 136 S.W.2d 484, 487 (Ark. 1946); *Pannella v. Reilly*, 23 N.E.2d 87 (Mass. 1939); *Lawler v. Skelton*, 130 So. 2d 565 (Miss. 1961); *Pendergrass v. Lovelace*, 262 P.2d 231 (N.M. 1953); *Frazier v. Moeller*, 665 S.W.2d 155 (Tex. Civ. App. 1983); *Gragg v. Allen*, 481 S.W.2d 452 (Tex. Civ. App. 1972).

recommendation that the crop be sprayed with an insecticide containing DDT (5%) and sulphur (77%), Crouse proceeded to have the insecticide applied. Within two days of the spraying the entire neighboring cantaloupe crop was lost; expert testimony established that the loss resulted from drift of the sulphur.⁴

Patrick and Dorothy Langan raised organic vegetables in Washington. The insecticides Guthion and Thiodan were found on their vegetables after their neighbors' fields were sprayed; as a result the Langans lost their organic certification.⁵

Each of these fact patterns is excerpted from judicial opinions dealing with damages caused by pesticide drift.⁶ Recovery for such damage may be had under several legal theories⁷ including negligence;⁸ strict liability;⁹ and, occasionally, trespass¹⁰

⁴ Crouse settled with Schrock and then sought reimbursement from the flying service and supplier. See *Crouse v. Wilbur-Ellis Co.*, 272 P.2d 352 (Ariz. 1954).

⁵ The Langans recovered under a theory of strict liability. See *Langan v. Valicopters, Inc.*, 567 P.2d 218 (Wash. 1977). See also *Gotreux v. Gary*, 94 So. 2d 283 (La. 1957); *Russell v. Windsor Properties, Inc.*, 366 So. 2d 219 (La. Ct. App. 1978); *Winston v. State Dept. of Highways*, 352 So. 2d 752 (La. Ct. App. 1977); *Young v. Darter*, 363 P.2d 829 (Okla. 1961); *Bella v. Aurora Air, Inc.*, 566 P.2d 489 (Or. 1977); *Loe v. Lenhart*, 362 P.2d 312 (Or. 1961).

⁶ There are other fact situations which bring pesticide concerns to the attention of the courts. For example, some cases involve damage from direct spraying, where the pilot fails to turn off the spray before flying over the adjoining land or where the product is applied to the wrong site. See, e.g., *Hammond Ranch Corp. v. Dodson*, 136 S.W.2d 484 (negligence where aerial spray of cotton not turned off in circling over plaintiff's pasture). See also *Bourg v. Cane Air, Inc.*, 325 So. 2d 738 (La. Ct. App. 1976) (spraying of plaintiff's land while crossing to intended site); *Mustion v. Ealy*, 266 N.W.2d 730 (Neb. 1978) (negligence found where plaintiff's pasture sprayed at time of spraying neighboring cornfield); *Cross v. Harris*, 370 P.2d 703 (Or. 1961) (trespass found where pilot mistakenly sprayed crops on the plaintiff's land).

⁷ The choice of legal doctrine is not so clear cut as a list might suggest. See *Loe v. Lenhart*, 362 P.2d 312. See also *Sigler, Controlling the Use of Pesticides*, 15 J. PUB. L. 311 (1966); Note, *Regulation & Liability in the Application of Pesticides*, 49 IOWA L. REV. 135 (1963); Comment, *Crop Dusting—Scope of Liability and a Need for Reform in the Texas Law*, 40 TEX. L. REV. 527 (1962). See generally Annot., 37 A.L.R.3d 833 (1971); Annot., 12 A.L.R.3d 1103 (1967); Annot., 12 A.L.R.2d 436 (1950).

⁸ See notes 2-4 *supra*. Cf. *Cooper v. Peturis*, 384 So. 2d 1087 (Ala. 1980) (negligence not found where evidence showed defendant followed accepted aerial practice while spraying the insecticide Banvel); *Partridge v. Younghein*, 277 N.W.2d 100 (Neb. 1979) (no showing that spray drift was proximate cause of damage to orchard); *Ford v. Shallowater Airport*, 492 S.W.2d 655 (Tex. Civ. App. 1973) (insufficient evidence to prove drift caused illness); *Gamblin v. Ingram*, 378 S.W.2d 941 (Tex. Civ. App. 1964) (jury verdict that herbicide not negligently applied upheld despite showing of damage to

or nuisance.¹¹ While litigation among private parties about various aspects of pesticide use is not uncommon, the issues raised are also increasingly the subject of legislation¹² and concomitant enforcement activities.¹³

adjoining cotton); *Stulls Chemicals v. Davis*, 263 S.W.2d 806 (Tex. Civ. App. 1954) (manufacturer not negligent).

⁹ See note 5 *supra* for cases applying strict liability. See also Israel, *Comments on Recent Important Aviation Cases, Aerial Spraying of Herbicides and Insecticides*, 32 AM. TRIAL LAW. J. 733 (1968); Note, *Cropdusting: Two Theories of Liability?*, 19 HASTINGS L.J. 476 (1968); Note, *Liability for Chemical Damage From Aerial Crop Dusting*, 43 MINN. L. REV. 531 (1959); Note, *Crop Dusting: Legal Problems in a New Industry*, 6 STAN. L. REV. 69 (1953).

¹⁰ See *Schronk v. Gilliam*, 380 S.W.2d 743 (Tex. Civ. App. 1964). See also *Lingle v. Crawford County*, 315 N.W.2d 814 (Iowa 1982); *Chase v. Henderson*, 509 P.2d 1188 (Or. 1973); *Cross v. Harris*, 370 P.2d 703; *Dallas County Flood Control Dist. v. Fowler*, 280 S.W.2d 36 (Tex. Civ. App. 1955). But see *Alm v. Johnson Aviation Co.*, 275 P.2d 959 (Idaho 1964) (lack of evidence of damages); *Wall v. Trogdon*, 107 S.E.2d 757 (N.C. 1959) (causation not proved).

¹¹ While private nuisance has not been a prevalent theory of recovery for pesticide damage it is occasionally discussed. See, e.g., *Miles v. A. Arena & Co.*, 73 P.2d 1260 (Cal. Ct. App. 1937). More typically the theory of nuisance is ignored or rejected by the court. See, e.g., *Lingle v. Crawford*, 315 N.W.2d 814; *Gotreaux v. Gary*, 94 So. 2d 293; *Trotter v. Callens*, 546 P.2d 867 (N.M. 1976).

¹² A careful examination of pesticide litigation and its theory is not the basic purpose of this Article. Legislation concerning pesticides, however, is sometimes used as the standard of care in litigation between private parties. See, e.g., *Wilson Farms, Inc. v. Wallace*, 590 S.W.2d 42, 44 (Ark. Ct. App. 1979) (violation of regulations of Arkansas Plant Board considered in determining negligence); 335 S.W.2d at 629 (Texas standard prohibiting spraying with wind greater than 10 miles per hour considered in finding negligence where spraying occurred in wind of 18-21 miles per hour). See also *Langan v. Valicopters, Inc.*, 567 P.2d 224. Statutory provisions may also be a procedural bar to private litigation. See *Stewart v. McArdle Flying Serv.*, 446 P.2d 379 (Okla. 1968). See also *Leonard Farms v. Thompson-Hayward Chem. Co.*, 568 S.W.2d 438 (Tex. Civ. App. 1978) (Texas court construes Oklahoma statute to bar plaintiff's suit against applicator, but not necessarily against seller and manufacturer). *Accord Dowers Farms, Inc. v. Lake County*, 607 P.2d 1361 (Or. 1980) (notice provision of Oregon Tort Claims Act construed in potato farmer's case in negligent trespass against county for herbicide drift). But see *Short v. Jones*, 613 P.2d 452 (Okla. 1980); *Cross v. Harris*, 370 P.2d 703. But see also *Malaer v. Flying Lion, Inc.*, 670 P.2d 214 (Or. Ct. App. 1983) (whether defendant is estopped from challenging adequacy of notice given by plaintiff—to extension agent rather than Department of Agriculture as required by statute—is a question of fact precluding summary judgment); *Christensen v. Midstate Aerial Applicators Corp.*, 166 N.W.2d 386 (N.D. 1969) (statutory requirement of verified complaint not condition precedent to action by person for whom chemical applied).

¹³ Increasingly, pesticide legislation and regulation is the basis of enforcement-oriented litigation between the government and the violator. Occasionally such litigation directly confronts the drift issue but more often other violations are the basis of the enforcement effort. See, e.g., *State v. St. Regis Paper Co.*, 432 A.2d 383 (Me. 1981). *St. Regis Paper Co.*, a procedural decision, describes the underlying lawsuit where the

The United States Department of Agriculture statistics indicate that over one billion pounds of pesticides are produced annually for use in the United States.¹⁴ It is believed to be virtually impossible to apply pesticides without drift. Given this usage and the inevitability of potential problems from drift, it is not surprising that regulatory programs have been enacted at all levels of government to attempt to control drift.¹⁵ At least one such approach sought to define and prohibit "chemical trespass."¹⁶ Other legislative bodies have enacted other types of standards.¹⁷ While the basic concepts of the regulation of pesticides are derived from the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),¹⁸ much of the legislative initiative to control drift has evolved within the states and shows an impressive variety in approach.¹⁹

State of Maine sought civil penalties against St. Regis (the landowner) and Northeast Helicopter Services, Inc., in a situation involving drift. For litigation involving violations or potential violations of other aspects of pesticide regulation, see *Oregon Envtl. Council v. Kunzman*, 714 F.2d 901, 905 (9th Cir. 1983) (label provision to "avoid" breathing of the insecticide carbaryl not violated by direct aerial application to residential area where buffers, markers, pretreatment over-flights and notice used); *United States v. Corbin Farm Serv.*, 444 F. Supp. 510 (E.D. Cal. 1978) (use inconsistent with label prohibition against application where water fowl known to feed repeatedly), *aff'd*, 578 F.2d 259 (9th Cir. 1978); *State v. Courtney*, 247 N.W.2d 714 (Wis. 1976) (violation of Wisconsin regulations concerning disposal of pesticide containers); *Perry Creek Cranberry Corp. v. Hopkins Agricultural Chem. Co.*, 139 N.W.2d 96 (Wis. 1966) (violation of misbranding prohibition).

¹⁴ With regard only to those products for which information is available (and there is no information available for many products), data from the Agriculture Stabilization and Conservation Service indicates that 1,508,638,000 pounds of pesticides were produced domestically, 1,469,000 pounds were imported and 546,825,000 pounds were exported. U.S. Dep't of Agriculture, *Agricultural Statistics*, 1983.

¹⁵ See note 21 *infra* and accompanying text.

¹⁶ ME. REV. STAT. ANN. tit. 7, § 606.2G (1983) (repealed and replaced 1984). See note 109 *infra* for the statute's revision. Although the Maine Legislature initially used the words "chemical trespass," a review of recent judicial precedent indicates that the trespass theory is infrequently used in pesticide litigation. See note 10 *supra* and accompanying text. For chemical trespass cases in general, see *Renken v. Harvey Aluminum, Inc.*, 226 F. Supp. 169 (D. Or. 1963) (aluminum particles); *Borland v. Sanders Lead Co.*, 369 So. 2d 523 (Ala. 1979) (lead particles and sulphur dioxide); *Hall v. DeWeld Micca Corp.*, 93 S.E.2d 56 (N.C. 1956) (silicon dioxide); *Martin v. Reynolds Metals*, 342 P.2d 790 (Or. 1959), *cert. denied*, 362 U.S. 918 (1959) (flouride gas and particulates). See generally *Annot.*, 2 A.L.R.4TH 1054 (1980).

¹⁷ See generally, Part II *infra*.

¹⁸ Federal Insecticide, Fungicide, and Rodenticide Act of 1947, ch. 125, 61 Stat. 163 (codified as amended at 7 U.S.C. §§ 135-135k) [hereinafter cited as FIFRA].

¹⁹ Because much of the regulation of pesticide drift is conceived at the state level,

Consistent with the evolution of the law concerning drift, this Article first describes the federal context for pesticide regulation and then reviews the state statutory and regulatory programs designed to control drift.²⁰ Based on this review it is clear that the essence of drift control regulation now lies within state law. Given the often local nature of the concerns and problems engendered by pesticide use, this state focus appears particularly appropriate.

I. THE FEDERAL CONTEXT: A BRIEF REVIEW

Pesticides are regulated by both state and federal governments.²¹ A review of the context and historical perspective in which pesticide regulation has developed is useful in understanding the scope of existing and potential state approaches to the regulation of pesticide drift and off-target residues. This first section of the Article describes the federal approach which, in large measure, was the genesis and model for the state laws.²²

research for this Article required a review of both state statutes and state regulations, the latter not being readily available from any single source. Codified statutes of the fifty states and of several Canadian provinces were reviewed. Relevant regulations and additional information were obtained by contacting pesticide control officials in each state by telephone during November and December 1983, and January 1984. Once regulations were received, two written confirmations were sent to each state: first, to assure all current materials were referenced and cited, and second, to verify the excerpts. All regulations cited here were current as of December 1983 and many as of April 1984. As a general matter, the interviews and correspondence provided current data and yielded some helpful information and observations about drift problems in the country; they also showed a great diversity in perspective. In many states (*e.g.*, Arkansas, Florida, Montana and Texas) drift is perceived to be a major, if not *the* major, problem associated with pesticide application. In other states, drift is either not a subject of particular voiced concern, (*e.g.*, Alaska, Minnesota and Nebraska) or is perceived to be adequately regulated to obviate serious problems (*e.g.*, Alabama). This same diversity was shown in the agencies' enforcement approach.

²⁰ It is important to note that the scope of this Article is limited. It does not discuss the whole spectrum of federal and state law regarding pesticides; important questions of registration, applicator certification and labeling are discussed only tangentially. *See generally* notes 33-60, 71-80 *infra* and accompanying text. Similarly, the evolution of judicial precedent dealing with pesticide drift is also discussed only in reference to legislative and quasi-legislative approaches to the problem.

²¹ In some areas, local or county governments also play a role in pesticide regulation, but this is not generally the case. *See, e.g.*, CAL. FOOD & AGRIC. CODE § 12977 (West 1968 & Supp. 1984). Federal law does not preempt the states in most instances. *See* 7 U.S.C. § 136v (1980). In some instances state law has been held to preempt local regulation. *See, e.g.*, *Town of Salisbury v. New England Power Co.*, 437 A.2d 281 (N.H. 1981). It appears that most states have not addressed the local preemption issue.

²² *See generally* U.S. ENVTL. PROTECTION AGENCY, DIG. OF STATE PESTICIDE USE & APPLICATION LAWS (1976) [hereinafter cited as DIGEST].

The federal government began its involvement in pesticide regulation in 1910 when it prohibited the manufacture or shipment of adulterated products.²³ Originally enacted to prevent consumer fraud in the marketing of these products, over time the legislation has been amended to assert federal preeminence in this regulatory field and to address the broader issues of the impact of pesticides on health and the environment.²⁴

The current federal law is derived primarily from the 1947 enactment of FIFRA.²⁵ FIFRA was intended to assure that pesticide products shipped in interstate commerce were unadulterated, safely labeled and efficacious.²⁶ To achieve this objective, FIFRA, as originally enacted, required the registration of economic poisons²⁷ and made distribution in interstate commerce unlawful if the composition or the claims made for the products differed from the assertions made in the registration process.²⁸ The criteria for registration under the original FIFRA were simply that the composition of the product warranted the proposed claims for it and that the labeling was accurate.²⁹

As a result of increasing public concern with the impact of pesticides on the environment, FIFRA was extensively amended

²³ See Insecticide Act of 1910, *repealed by* FIFRA, ch. 125, § 16, 61 Stat. 163.

²⁴ See note 25 *infra*.

²⁵ See 7 U.S.C. §§ 135-135k, *amended by* 7 U.S.C. § 136 (1980). FIFRA was amended by the Federal Environmental Pesticide Control Act of 1972, 7 U.S.C. § 136 (1980) [hereinafter cited as FEPCA]. Since 1972 FEPCA has been further amended by Act of Dec. 18, 1973, Pub. L. No. 93-205, 81 Stat. 903; Act of Nov. 28, 1975, Pub. L. No. 94-104, § 9, 89 Stat. 754; Federal Pesticide Act of 1978, Pub. L. No. 95-396, § 1, 92 Stat. 819; Act of Oct. 17, 1979, Pub. L. No. 96-98, tit. V, § 509, 93 Stat. 695; Federal Insecticide Act of 1980, Pub. L. No. 96-539, 94 Stat. 3194; Act of Dec. 2, 1983, Pub. L. No. 98-201, 97 Stat. 1379.

²⁶ This purpose is elucidated in *Continental Chemiste Corp. v. Ruckelshaus*, 461 F.2d 331, 335 (7th Cir. 1972).

²⁷ 7 U.S.C. § 135(a) (amended 1972) defined the term "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 desiccant.

The current definitions of the terms "pesticide" and "pest" are similar, though reference is added to "bacteria or other micro-organisms" not in living man or animals. See 7 U.S.C. §§ 136(u), 136(t) (1980).

²⁸ See 7 U.S.C. § 135a (amended 1972).

²⁹ See 7 U.S.C. § 135b (amended 1972). See also 7 U.S.C. § 135a (amended 1972).

by the Federal Environmental Pesticide Control Act (FEPCA) of 1972.³⁰ FEPCA extended registration requirements to pesticides distributed in intrastate commerce,³¹ expanded the issues to be considered prior to registration to explicitly include environmental and health impacts, and generally increased the scope of federal control of pesticide application.³²

In broad terms, the current focus of FIFRA is threefold, concerning itself primarily with product registration, product labeling and pesticide applicators' certification. Within these three categories, the federal regulation of pesticide use seldom involves direct efforts to reduce or eliminate drift, although as noted in the following discussion of each sphere of federal legislation, reference to propensity to drift is not absent.³³

A. Registration

Although perhaps the least significant in terms of its actual impact on the control of drift, the registration process, which requires Environmental Protection Agency (EPA) approval before a product can be distributed or used, is at the core of FIFRA.³⁴ The statutory³⁵ criteria for pesticide registration require findings by the EPA that the composition of the product is such

³⁰ See note 25 *supra*.

³¹ See 7 U.S.C. § 136a(a) (1980).

³² See, e.g., 7 U.S.C. §§ 136a(c)(5)(C)-(D), 136x, 136b(b) (1980).

³³ In addition to a review of FIFRA and the Code of Federal Regulations, information for this section was obtained from Richard W. King, Office of Pesticide Programs, EPA, in telephone interviews on Feb. 3 and May 30, 1984. Drift is now mentioned in the EPA general worker protection standards: "No owner or lessee shall permit the application of a pesticide in such a manner as to directly or through drift expose workers or other persons except those knowingly involved in the application. The area being treated must be vacated by unprotected persons." 40 C.F.R. § 170.3 (1983).

³⁴ See 7 U.S.C. § 136a(a) (1980).

³⁵ Two additional standards are provided in regulations adopted by the EPA: (1) a tolerance or exemption from the tolerance requirement of the Federal Food, Drug and Cosmetic Act 21 U.S.C. §§ 301-392 (1972) [hereinafter cited as FDCA], must have been obtained where the product is proposed for use on food or where its intended use may reasonably be expected to result in food residues; (2) if the product is a drug as well as a pesticide, the Food and Drug Administration (FDA) must have notified the EPA that the product complies with any applicable FDA requirements. 40 C.F.R. § 162.7(d)(2)(iii)(E)-(F) (1984). Tolerances, intended to reflect the amount of pesticide residue which can remain on a crop when it moves to market, are now set by the EPA. For a review of the relationship of FIFRA to the FDCA in the context of DDT tolerances, see Environmental Defense Fund, Inc. v. United States Dept. of Health, Educ. and Welfare, 428 F.2d 1083 (D.C. Cir. 1970).

as to warrant the proposed claims for it; that the labeling is in compliance with law; that the product will perform its intended function without unreasonable adverse effects on the environment; and that the product, when used in accordance with widespread and commonly recognized practice, will not generally cause unreasonable adverse effects on the environment.³⁶

In registering a pesticide, the EPA must also classify its use as general, restricted or a combination of the two.³⁷ Classification is a method of limiting the extent of use of a product. A restricted-use classification generally requires application only by or under the direct supervision of a certified applicator or within other specified conditions.³⁸ The classification decision is dependent upon the impact of the proposed applications on the environment. Those products which, when applied in accordance with the label or with the commonly accepted practice, will not generally cause an unreasonable adverse impact on the environment are classified for general use.³⁹ Those which, under the same circumstances, may cause injury to the applicator or other adverse impact are classified for restricted use.⁴⁰

In both registration and classification decisions environmental impact is a central statutory concern. The crucial term "unreasonable adverse effect on the environment" is defined in FIFRA as "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental

³⁶ See 7 U.S.C. § 136(a)(c)(5) (1980). See also 40 C.F.R. § 162.7, .8, .10, .11 (1983). There are less restrictive criteria for certain conditional registrations and for products of limited use. See 7 U.S.C. § 136a(c)(1)(7), (c)(2)(A) (1980).

³⁷ See 7 U.S.C. § 136a(d) (1980). The standards are explicitly defined by regulation for new registrations in 40 C.F.R. § 162.11(c)(1) (1983) and for preexisting registrations in 40 C.F.R. § 162.11(c)(4) (1983). See also 40 C.F.R. § 162.31 (1983).

³⁸ See 7 U.S.C. § 136a(d)(1)(C) (1980). Where the restricted classification is based on a finding that toxicity presents a hazard to an applicator, the product may be applied only by or under the direct supervision of a certified applicator. See 7 U.S.C. § 136a(d)(1)(C)(i) (1980). Where it is based on environmental hazard, other restrictions may apply instead. See 7 U.S.C. § 136a(d)(1)(C)(ii) (1980). See also 7 U.S.C. § 136b (1980) as to applicator certification.

³⁹ See 7 U.S.C. § 136a(d)(1)(B) (1980).

⁴⁰ See 7 U.S.C. § 136a(d)(1)(C) (1980). See also 40 C.F.R. § 162.2(c) (1983). The EPA regulations mention drift in regard to classification by indicating that impact on nontarget organisms will be considered whether the impact results "from exposure to the product ingredients, their metabolites, or degradation products, whether due to direct application or otherwise resulting from the application, such as through volatilization, drift, leaching or lateral movement in soil." 40 C.F.R. § 162.11(c)(2)(iii)(D) (1983).

costs and benefits of the use of any pesticide.”⁴¹ “Environment” is defined to include “water, air, land, and all plants and man and other animals living therein and the interrelationship which exist among them.”⁴² These terms thus contain within them the federal mandate to balance health and environmental effects with efficacy and economic impact.

From the language of these definitions, it appears that a product’s propensity to drift could be grounds to limit use by restrictive classification or to eliminate use by refusal to register. According to the EPA, in considering registration, the Agency has operated since 1976 under a “policy” of requesting the submission of spray drift data in certain instances.⁴³ It was not until October of 1984 that this policy was added to EPA regulations,⁴⁴ with spray drift data still being only conditionally required.⁴⁵ It remains unclear what impact requesting such studies has had or will have on actual classification or registration decisions.⁴⁶

B. Labeling and Related Requirements

The EPA approach to labeling provides more explicit guidance as to the Agency’s attitude toward drift than does its registration process. FIFRA emphasizes labeling as a key control mechanism⁴⁷ by making it unlawful to misbrand a product or to use it in any manner inconsistent with its label.⁴⁸ Under the labeling standards, there is opportunity to consider and warn against environmental hazards. In 1980, the EPA indicated:

⁴¹ 7 U.S.C. § 136(bb) (1980).

⁴² 7 U.S.C. § 136(j) (1980).

⁴³ 49 Fed. Reg. 42871 (1984).

⁴⁴ See generally 40 C.F.R. 158 (1985).

⁴⁵ See 40 C.F.R. § 158.142 (1985). See also Pesticide Assessment Guidelines Subdivision R: Spray Drift Evaluation, available from the National Technical Information Service (NTIS), U.S. Dep’t of Commerce, Springfield, VA 22161.

⁴⁶ Telephone Interview with Richard W. King, Office of Pesticide Prog., EPA (Dec. 3, May 3, 1984).

⁴⁷ See 7 U.S.C. § 136(p)-(q) (1980). See generally Environmental Defense Fund, Inc. v. EPA, 465 F.2d 532 (D.C. Cir. 1972) (discussion of statutory framework of FIFRA labeling requirements).

⁴⁸ See, e.g., 7 U.S.C. § 136j(a)(1)(E)(F), (a)(2)(A), (a)(2)(G) (1980). See also United States v. Corbin Farm Service, 444 F. Supp. 510 (E.D. Cal.) (standard for labels not unconstitutionally vague), *aff’d*, 578 F.2d 259 (9th Cir. 1978).

Label Improvement

All pesticides must be registered with the EPA before they can be marketed. Part of the pre-market clearance process for pesticides is approval of product labels which must include extensive and specific information, including detailed use directions and precautionary statements. Current standards require that products destined for aerial application carry statements regarding the potential for spray drift and means of minimizing spray drift such as larger droplet size and maximum wind speeds for safe application. Use directions may instruct the applicator to apply the pesticide in combination with a suitable drift control agent, to observe buffer zones around streams, ponds, other bodies of water, areas of human habitation, or crops that are susceptible to damage by the pesticide.

Recently registered products for aerial application carry these labeling statements designed to minimize spray drift to the extent possible. Older products frequently need revision to bring labeling into accord with the more recent and extensive drift precautions.⁴⁹

This statement by the EPA was made in response to a petition filed by an environmental organization, Friends of the Earth (FOE), with the EPA and the Federal Aviation Administration seeking adoption of rules regarding labeling and enforcement for aerial pesticide applications.⁵⁰ Under the proposal put forward by FOE, all pesticides would have been classified as restricted-use pesticides when used in aerial applications, and all aerial applicators would have been required to obtain written permission "to allow spray drift on persons or property not in the spray contract."⁵¹ The FOE petition suggested that the label of every pesticide provide:

Warning

This pesticide must not be allowed to drift onto people or property without prior written permission by that person or property owner.

⁴⁹ Notice, 45 Fed. Reg. 3317 (1980).

⁵⁰ *Id.* at 3316.

⁵¹ *Id.* at 3319, 3323.

For aerial application, *at minimum* written permission must be obtained from all persons living or owning property within 1000 feet of the spray project boundary.

For ground rig operation other than fine droplet misting the applicator must obtain *at minimum* written permission from all persons living within or owning property within 250 feet of the spray project boundary—1000 feet for misting.⁵²

The FOE proposal, in a general effort to reduce reliance on chemical pesticides, would also have had the label indicate: “[A]n integrated pest management program for your crop may be available from your local university or from the Extension Service of U.S.D.A.”⁵³ The FOE petition was a major effort to obtain regulatory recognition of the concept of chemical trespass and to limit the exposure of unconsenting persons to drift. It was not adopted.⁵⁴

Still, a substantial number of pesticide labels in use are now required to contain general drift precautions.⁵⁵ The drift precautions which have been required on labels as a result of cancellation proceedings are illustrative of this type of prohibition. For example, in its decision document concerning the insecticide EPN, the EPA indicated that the product’s registration would be cancelled for use on certain crops (e.g., cotton, soybean, field corn) unless the applicants modified the terms of registration and agreed to meet the following conditions:

⁵² *Id.* at 3323 (emphasis in original).

⁵³ *Id.* at 3321. *But see* 7 U.S.C. § 136b(c)(1980) which provides as to instruction in integrated pest management techniques:

Standards prescribed by the Administrator for the certification of applicators of pesticides under subsection (a) of this section, and State plans submitted to the Administrator under subsections (a) and (b) of this section, shall include provisions for making instructional materials concerning integrated pest management techniques available to individuals at their request in accordance with the provisions of section 136u(c) of this title, but such plans may not require that any individual receive instruction concerning such techniques or be shown to be competent with respect to the use of such techniques. The Administrator and States implementing such plans shall provide that all interested individuals are notified of the availability of such instructional materials.

⁵⁴ See Notice, 47 Fed. Reg. 22,069 (1982).

⁵⁵ The EPA indicates that there are several thousand. See Telephone Interview, *supra* note 46.

The following statement must appear in the "Use Directions" section of the label:

Do not apply this product when weather conditions favor drift from treated area. . . .

The following statement must appear in the "Environmental Hazards" section of the label for WP and EC formulations:

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops and weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.⁵⁶

Similarly the EPA required the oxyfluorfen label to provide:

In order to minimize the hazard to aquatic organisms pending the completion of field monitoring studies, the Agency will require the modification of the labeling of oxyfluorfen products for all uses, including experimental uses, to contain the following warning statement:

This pesticide is highly toxic to aquatic invertebrates, aquatic plants, wildlife and fish. Use with care when applying in areas frequented by wildlife or adjacent to any body of water or wetland area. Do not apply when weather conditions favor drift or erosion from target area.⁵⁷

Other EPA label requirements also relate to drift control. Many labels (for example, those indicating that wind should be greater than two but less than ten MPH) mandate specific equipment or weather conditions to minimize drift.⁵⁸ There are also a few instances where buffer zones are incorporated into the label restrictions typically at the behest of the registrant.⁵⁹

A key issue inherent in the use of label restrictions to control drift is the interpretation and enforceability of standards of this type. Occasionally the validity of a broad "do not allow to

⁵⁶ Notice, 48 Fed. Reg. 39,498 (1983).

⁵⁷ Notice, 47 Fed. Reg. 27,122 (1982). *See also* Notice, 48 Fed. Reg. 48,512 (1983) (lindane); Notice, 47 Fed. Reg. 53,784 (1982) (toxaphene).

⁵⁸ EPA indicated hundreds of labels are in this category. Telephone Interview, *supra* note 46.

⁵⁹ EPA indicated five to seven products are in this category, including Blazer, Lasso, 2,4-D and paraquat. Telephone Interview, *supra* note 46.

drift" label prohibition is litigated.⁶⁰ The refinement and interpretation of these types of standards have also been the basis for EPA's issuance of advisory opinions in a limited number of cases. For example, in response to complaints from residents of Scottsdale, Arizona, about drift of defoliants and desiccants from adjoining agricultural land, the EPA issued an Advisory Opinion Concerning Application of Cotton Defoliants in Arizona:

Depending on the circumstances, the drift of cotton defoliants to nontarget areas can constitute use of a pesticide in a manner "inconsistent with its labeling," which may result in an enforcement action against the applicator under section 12 and 14 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) 7 U.S.C.A. §§ 136j and 136i (Supp. 1979). However, after the fact imposition of civil penalties or other sanctions for violations of label statements pertaining to pesticide drift which do not provide guidelines for preventing drift into nontarget areas is, at best, an awkward and inadequate means of reducing such drift.⁶¹

The Advisory Opinion recommended application practices so that "drift into nontarget areas will be minimized."⁶² If an applicator used the recommended practices (and followed the other provisions of the label), the EPA would not prosecute for a violation of FIFRA for "small amounts of measurable drift away from the target site."⁶³ EPA explained its purpose as follows:

The Agency has developed certain application practices which should mitigate spray drift. These practices address such areas as wind direction and velocity, distance restrictions (buffer zones), aircraft type, aircraft speed, nozzle size, nozzle pressure, nozzle angle, and dilution factors. . . . A particular concern is to minimize spray drift into sensitive areas, which for the purposes of this Notice means any areas where people are actually residing, areas in which substantial commercial activities are conducted (e.g., shopping centers), any area where a

⁶⁰ See notes 13 and 48 *supra*.

⁶¹ Notice, 44 Fed. Reg. 59,956 (1979). See also Notice, 46 Fed. Reg. 14,965 (1981) (ultra-low volume applications); Notice, 44 Fed. Reg. 40,399 (1979).

⁶² Notice, 44 Fed. Reg. 59,956 (1979).

⁶³ *Id.*

school is in session or will be in session within 24 hours, public parks and highways.⁶⁴

The specific recommendations were separately laid out for two groups of defoliants (those with particular irritation characteristics and all others) and varied with the type of equipment used.⁶⁵

The recommended practices addressed such application factors as wind speed and direction, specified nozzle size, and required buffers:

1. General Considerations For all aerial application of cotton defoliants, there must be an air movement of not less than 2 miles per hour nor more than 10 miles per hour away from any sensitive areas. If the wind direction changes during the application, the application must be halted. In all applications, because of the large droplet size produced, applicators should be aware that if an insufficient volume of diluent is used they might not obtain adequate coverage or achieve efficacious defoliation. A nozzle pressure not to exceed forty (40) pounds per square inch (gauge) must be used. . . .

2. Group 1. Defoliants in Group 1 (Def. Folex, Paraquat) must not be aeri ally applied closer than one-quarter mile (440 yards) from a sensitive area.

3. Group 2. Defoliants in Group 2 (Cacodylic Acid, Sodium Cacodylate, Endothall, Sodium Chlorate, Sodium Chlorate Borate, Arsenic Acid) must not be aeri ally applied closer than one hundred (100) feet from a sensitive area.⁶⁶

⁶⁴ *Id.* at 59,957.

⁶⁵ *See id.* For example, for hydraulic ground applications, the opinion indicated that "[a]ir movement must be away from sensitive areas but wind speed is not specified. In all applications, applicators should be aware that if an insufficient volume is used they might not obtain adequate coverage or achieve efficacious defoliation." *Id.*

⁶⁶ *Id.* In addition to the recommendation quoted in the text, the nozzle requirements further provided:

For fixed wing aerial applications, nozzles must have not less than a one-sixteenth inch nor larger than a one-quarter inch orifice and they must produce a jet or cone type dispersion pattern. Jet and cone nozzles may be fitted with a No. 46 (or larger) WHIRL PLATE WHICH PRODUCES A CONE TYPE DISPERSION PATTERN. Fan nozzles are not recommended unless they are capable of producing a droplet of comparable size. Nozzles must be directed back with the airstream. Aircraft speed must not exceed 130 miles per hour.

For rotary wing aerial application, cone or jet nozzles must have not

The labeling approach, together with the language in the rare special advisory opinions issued to interpret label requirements, indicate the kind of measures EPA has believed likely to control drift. Also illustrative of this EPA perspective are the restrictions that the EPA places on individual applications that need a special exemption from the Agency.⁶⁷ Typical and illustrative of the EPA approach in this situation is the specific exemption granted in 1981 for the Mississippi Department of Agriculture and Commerce to use Bolero (thiobencarb) to control barnyard grass. The exemption includes the following conditions:

6. Applications may be made with aerial equipment using a minimum of 10 gallons of spray mixture per acre, or with ground equipment using 10 to 20 gallons of spray mixture per acre.

7. All applications will be made by commercial or private applicators certified in this category of pest control.

8. Precautions will be taken to avoid spray drift to non-target areas. The pesticide will not be applied when weather conditions favor drift.⁶⁸

More precise are the conditions similarly imposed that same year on the specific exemption for Florida to use permethrin on tomatoes:

9. Permethrin is highly toxic to bees exposed to direct treatment or residues on crops or weeds. It must not be applied

less than a one-sixteenth inch nor larger than a one-quarter inch orifice and may be fitted with a No. 46 (or larger) whirl plate capable of producing a cone dispersion pattern. Nozzles must be directed back with the airstream where application speeds exceed sixty (60) miles per hour. No restriction on nozzle angle is placed on rotary wing aircraft at application speeds of less than sixty (60) miles per hour. Other nozzles may be used but they must produce a droplet comparable in size to the droplets produced by the previously mentioned equipment. Drift control agents may be used at the applicator's discretion.

Id.

⁶⁷ These "special exemptions" are yet another aspect of the regulatory process. See generally 40 C.F.R. pt. 166 (1983). Although not "labeling" in its generic sense, the resulting directives are discussed here because of their similar nature.

⁶⁸ Notice, 46 Fed. Reg. 20,772 (1981). See also, e.g., Notice, 46 Fed. Reg. 20,601 (1981).

or allowed to drift to weeds or crops in bloom where bees are actively foraging. . . .

10. Permethrin should not be applied any closer to fish-bearing waters than indicated in the chart below: [Chart not reproduced] The Applicant is warned that applications closer than those allowed in the above chart may result in fish and/or other aquatic organism kills.

11. Precautions must be taken to avoid or minimize spray drift to nontarget areas. It is recommended that pesticide applications be made when wind speeds are between 2 and 5 miles per hour. No pesticide applications are to be made when wind speeds exceed 10 miles per hour.

12. Permethrin is extremely toxic to fish and aquatic invertebrates. It may not be applied directly to any body of water, and drift reduction precautions must be observed. . . .

13. Two endangered species, the Florida Everglade Kite and the Southern Bald Eagle are endemic to regions in the treatment area. Application of the pesticide according to the above instructions and restrictions is expected to minimize the risk to these animals. Permethrin should not be applied in areas where spray drift could possibly impact aquatic ecosystems containing federally designated endangered and threatened species.⁶⁹

Occasionally the special exemption, such as that for nemacur on raspberries, incorporates not only drift precautions, but also specific residue limits for treatment areas.⁷⁰

Overall, labeling and related restrictions are the most direct of the EPA regulations dealing with drift. As the preceding review indicates, label requirements dealing with drift are typically very general in their terms and, their generality may tend to make enforcement somewhat difficult. The tendency to general warnings (unlike, for example, the approach embodied in the limited number of advisory opinions) certainly does not provide useful guidance to applicators, a situation not apt to be

⁶⁹ Notice, 46 Fed. Reg. 16,128 (1981). *See also, e.g.*, Notice, 46 Fed. Reg. 15,940 (1981); Notice, 46 Fed. Reg. 14,445 (1981).

⁷⁰ Notice, 46 Fed. Reg. 17,131 (1981). *See also, e.g.*, Notice, 46 Fed. Reg. 16,130 (mint—napropamide 1981); Notice, 46 Fed. Reg. 14,446 (beans—oxamyl) (1981).

resolved by the EPA approach to drift in reference to certification.

C. *Applicator Certification*

In addition to labeling and registration, the third major federal initiative to speak to drift involves the EPA criteria for certification of pesticide applicators. This approach is even less direct than a generally-applicable performance standard or label precaution. Under FIFRA, the federal government prescribes standards for applicator certification⁷¹ and imposes them in the absence of a satisfactory state program. Because the federal standards for certification are incorporated in most state programs, it is useful to note their general approach and the extent to which the standards explicitly concern themselves with issues of drift.⁷² The theory here is that by virtue of the fact that FIFRA (and, derivatively, state law) require examination on questions related to drift, applicators will necessarily be more knowledgeable about preventing drift and therefore less likely to apply pesticides in inappropriate conditions and situations.

The general certification scheme embodies a division between private and commercial applicators applying restricted use pesticides.⁷³ Both private and commercial applicators must be certified, though the standards are less stringent for the former. Private applicators, those using restricted pesticides for agricultural production on their own property,⁷⁴ must show general practical knowledge of pests and pest control.⁷⁵ Drift, as such, is not specifically delineated as a subject of competence, but is at least implied in two standards requiring a showing of practical knowledge and ability to "[take] into account such factors as

⁷¹ 7 U.S.C. § 136b(a)(1) (1980).

⁷² See generally notes 76-80, 248-50 *infra* and accompanying text.

⁷³ 40 C.F.R. §§ 171.7-.9, .11 (1984).

⁷⁴ 40 C.F.R. § 171.2(a)(20), .3 (1984). "Private applicator" is defined as: [a] certified applicator who uses or supervises the use of any pesticide which is classified for restricted use for purposes of producing any agricultural commodity on property owned or rented by him or his employer or (if applied without compensation other than trading of personal services between producers of agricultural commodities) on the property of another person.

40 C.F.R. § 171.2(a)(20) (1984).

⁷⁵ 40 C.F.R. § 171.5(a) (1984).

area to be covered, speed at which application equipment will be driven, and the quantity dispersed. . .” and to “[r]ecognize local environmental situations that must be considered during application to avoid contamination.”⁷⁶

As to commercial applicators, the testing standards are somewhat more precise. In all subcategories of commercial applicators, competence must be demonstrated regarding certain factors in application techniques including:

- (a) Methods of procedure used to apply various formulations of pesticides, solutions, and gases, together with a knowledge of which technique of application to use in a given situation;
- (b) Relationship of discharge and placement of pesticides to proper use, unnecessary use, and misuse; and
- (c) Prevention of drift and pesticide loss into the environment.⁷⁷

In addition, in certain subcategories of commercial applicators (namely the agricultural, forest pest, ornamental and turf, and right-of-way subcategories), drift is directly⁷⁸ or by clear implication⁷⁹ noted as a matter concerning which competence is to be required. By reference, these standards are also applicable to public health, regulatory and research subcategories.⁸⁰

As a result of these standards, it can be expected that applicators will have some training and be exposed to some level of testing as to factors relevant to pesticide drift. Still, this appears to be a somewhat tangential approach to the problem. The more direct approaches have been matters of state concern as discussed in the following section.

II. THE STATE STATUTES: AN OVERVIEW

This section of the Article summarizes and provides illustration of the various approaches which state *statutes* utilize in considering the control or implications of pesticide drift. Imple-

⁷⁶ 40 C.F.R. § 171.5(a)(3), (4) (1984).

⁷⁷ 40 C.F.R. § 171.4(b)(1)(vii) (1984).

⁷⁸ See 40 C.F.R. § 171.4(c)(3), (6) (1984).

⁷⁹ See 40 C.F.R. § 171.4(c)(1), (2) (1984).

⁸⁰ 40 C.F.R. § 171.4(c)(8)-(10) (1984).

mentation and further definition of these statutory requirements is often accomplished by agency regulation, discussed further in the next section.⁸¹

The authority of the states to regulate pesticides is explicitly recognized in FIFRA, which provides, in part that "[a] state may regulate the sale or use of any federally registered pesticide or device in the State, but only if and to the extent the regulation does not permit any sale or use prohibited by this subchapter."⁸² More particularly, states may establish a supplementary registration program and, consistent with federal law and EPA approval, may register products for special local needs for uses not federally registered.⁸³ The states may also implement their own applicator certification programs after submitting an acceptable state plan to the EPA.⁸⁴ In addition, where the state regulations meet minimum federal standards, the EPA may delegate to the state the primary enforcement authority under FIFRA.⁸⁵ Almost every state has been recognized as appropriately implementing state registration, certification and enforcement primacy.⁸⁶

Given the structure of the federal law (that is, as a law allowing for state control consistent with federal standards), it is not surprising that many state statutes have adopted the federal approach and, like the federal government, have ordinarily concerned themselves directly with the pesticide products and applicators and less directly with the actual application.⁸⁷ The states, however, have enacted variations on the federal theme both by statute and by regulation. Indeed, it is largely in these areas where state control extends beyond the FIFRA model that innovative approaches to the regulation of drift and off-target residues are found.

⁸¹ Although statutes and regulations function together to control pesticide drift, the two legislative methods are discussed here separately to draw attention to the differences in scope and direction between programs enacted by state legislatures and those subsequently imposed by agency regulation.

⁸² 7 U.S.C. § 136v(a) (1980).

⁸³ 7 U.S.C. § 136v(c)(1) (1980). See also 40 C.F.R. § 162.150-.186 (1984).

⁸⁴ 7 U.S.C. § 136b(a)(2), (b) (1980).

⁸⁵ 7 U.S.C. §§ 136w-1, w-2 (1982). See also 7 U.S.C. § 136u(a)(1) (1982); 40 C.F.R. pt. 173 (1984).

⁸⁶ Telephone Interview, *supra* note 46.

⁸⁷ The EPA summary indicates that all states had registration laws and most have use and application laws of some type. See generally DIGEST, *supra* note 22.

Many state statutes refer explicitly in some way to drift or to concepts indicative of a concern with damage from drift. These references range over a continuum in the extent and directness of the control imposed. At one extreme, in a very few instances, drift is directly prohibited. In other cases, the states regulate drift through restriction on application, either through performance standards for application or through requiring a permit for specific applications. In still other instances, drift is considered in setting requirements for insurance, licensing, record keeping or enforcement. Some state legislatures have been even less specific, indicating only a general concern with the subject of drift and authorizing further regulation by the state's pesticide agency. Toward the further end of the continuum, there are those state statutes that recognize control of drift as a reason for governmental intervention in pesticide use, but refer to the subject specifically only in the purpose section, presumably leaving implementation to the regulatory agency. At the extreme end, there are statutes which do not speak to drift, though even here the statutes tend to imply the authority for its regulation by their reference to environmental concern.

This section describes the state statutes in two broad divisions: first, those provisions where state law largely follows the federal law, in requiring registration, classification, labeling and applicator certification;⁸⁸ and second, those provisions less influenced by FIFRA, including permit requirements, product or area restrictions, performance standards and the like.

A. Use of the Federal Model: Labeling, Registration, Classification and Certification

As to the pesticide product itself, most states, consistent with FIFRA, require that pesticides be registered, be adequately and

⁸⁸ Before beginning the substantive discussion of statutory provisions, a note on the choice and use of terminology is necessary. The study of a large number of statutes and regulations reveals a measure of inconsistency in the terminology used. Despite such differences in terms, the concepts are fairly uniform from state to state. To simplify the comparison somewhat, the following terms are used in the text to reflect the general approaches to regulation: 1. Registration: the requirement that a *product* be approved by the state before use; 2. Certification and/or licensing: the requirement that the *applicator(s)* be approved by the state before using pesticides or specified categories of pesticides; 3. Permitting: the requirement that a specific *type of use* (specific, for example, as to site, product or time) be approved by the state prior to application.

appropriately labeled and be designated as restricted or general use pesticides.⁸⁹ In these aspects the state statutes, like their federal counterpart, seldom deal explicitly with pesticide drift.

While labeling is one of the stronger tools under FIFRA, it is the least significant of the areas of direct state involvement. This limited state role is a result of FIFRA's explicitly precluding states' imposition of "any requirements for labeling or packaging in addition to or different from those required under this subchapter."⁹⁰ State statutes routinely track the federal language as to labeling, making it unlawful to use a product in a manner inconsistent with its label.⁹¹ The label is thus a central tool in both federal and state enforcement of appropriate application, but the direct influence of state statutes in prescribing label standards, in this sphere where federal control is preemptive, is minimal.⁹²

Registration is another aspect of pesticide regulation where state legislation is generally patterned after the federal model. The Iowa statute is representative of the majority of states in requiring that the pesticide be registered and in providing that the Secretary of Agriculture shall register the product if it appears "that the composition of the article is such as to warrant the proposed claims for it and if the article and its labeling and other material required to be submitted comply with the requirements of this chapter, he shall register the article."⁹³

⁸⁹ See generally DIGEST, *supra* note 22.

⁹⁰ 7 U.S.C. § 136v(b) (1980).

⁹¹ See, e.g., ARK. STAT. ANN. §§ 77-230(19)-(20), -231, -232 (1981); KY. REV. STAT. ANN. §§ 217.544(19), (20), (22), .580(2)(c)(2), .670 (Michie 1982) [hereinafter cited as KRS]; MO. ANN. STAT. § 263.270(23), (24) (Vernon Cum. Supp. 1984); NEB. REV. STAT. § 2-2601(22), (23), (26) (1983); NEV. REV. STAT. §§ 586.170, .180 (1979); N.Y. ENVTL. CONSERV. LAW § 33-0101(25), (26), (29) (McKinney 1984); WASH. REV. CODE §§ 15.58.060, .58.150 (1983).

⁹² The states' involvement is not, however, nonexistent. See, e.g., CAL. FOOD & AGRIC. CODE §§ 12851-12859, 12882 (West. Cum. Supp. 1984). See also IND. CODE ANN. 15-3-1.5 (Burns 1983) (herbicides' labeling specifically addressed); VT. STAT. ANN. tit. 6, § 1104(3) (Cum. Supp. 1984) (deletion from label of uses found unwise or dangerous).

⁹³ IOWA CODE ANN. § 206.12(4) (West Cum. Supp. 1984). See also, e.g., IND. CODE ANN. § 15-3-3.5-5 (Burns 1983); MO. ANN. STAT. § 263.300(9) (Vernon Cum. Supp. 1984); NEB. REV. STAT. §§ 2-2602(1)(a), 2-2603(4) (1983); NEV. REV. STAT. § 586.290(1) (1983); N.M. STAT. ANN. § 76-4-6(H) (1981); N.Y. ENVTL. CONSERV. LAW § 33-0709 (McKinney 1984); N.C. GEN. STAT. § 143-442(d) (Michie 1983); OKLA. STAT. ANN. tit. 2, § 3-63 (West Cum. Supp. 1984); S.C. CODE ANN. § 46-13-40(I) (Law. Co-op. Cum. Supp. 1983); WIS. STAT. ANN. § 94.68(5) (West 1972).

The Arkansas statute is somewhat broader in its scope. In addition to the criteria outlined in the Iowa law, it lists the following standards, reminiscent of FIFRA, for special local-needs registration. The product must "perform its intended function without unreasonable adverse effects on the environment." In addition, "when used in accordance with widespread and commonly recognized practice," the product must be found to "not generally cause unreasonable adverse effects on the environment."⁹⁴

Maine law is unusual in the precision with which it addresses registration and requires environmental review. Prior to re-registration, the Maine statute mandates that there be:

An environmental risk assessment to determine the effects of pesticides on the ecosystem. This assessment is to be based on available literature. The commissioner shall request data that he determines necessary to carry out the purpose of this chapter, but, when the literature is not available, is inadequate or incomplete, this assessment shall be based on an environmental monitoring protocol. . . .⁹⁵

If this review shows that "the impact of the pesticide on the ecosystem warrants additional health or environmental safeguards," the Maine Department is to "require implementation of those safeguards prior to reregistration."⁹⁶

Even given the few statutes like Maine's which focus in detail on environmental concerns, the registration process as delineated in the state statutes is not predominantly designed nor implemented in a manner intended to influence or control drift. A

⁹⁴ ARK. STAT. ANN. §§ 77-232(8) (1981). See also, e.g., KRS § 217.570(8) (1982); OHIO REV. CODE ANN. § 921.02(G) (Page Supp. 1983); OR. REV. STAT. § 634.016 (1981). Note that there is a distinction in some states between the standards applied to: (1) federally registered pesticides also required to be state registered for the same uses as on the federal label; and (2) pesticides which may be registered by the state for additional uses for special local needs. E.g., compare KRS § 217.570(5) (state registered pesticides) with § 217.570(8) (federally registered pesticides). See also N.Y. ENVTL. CONSERV. LAW § 33.0701 (McKinney 1984).

⁹⁵ ME. REV. STAT. ANN. tit. 7, § 607-A(2)(a) (Supp. 1984).

⁹⁶ ME. REV. STAT. ANN. tit. 7, § 607-A(3) (Supp. 1984). See also CALIF. FOOD & AGRIC. CODE § 12824 (West. Cum. Supp. 1984) (providing, in part that before the first registration or renewal of registration "there shall be a thorough evaluation" and that "[a]ppropriate restrictions may be placed upon its use including, but not limited to, limitations on quantity, area and manner of application").

somewhat more likely area for drift to be considered is in the decision whether a product is to be classified as a restricted use or a general use pesticide under state law. As under FIFRA, restricted use pesticides may typically be applied only by certified or licensed applicators, while general use pesticides can be applied without such state approval. Accordingly, placing a pesticide on the restricted list is a direct method of limiting and controlling its availability and use, and also of imposing a knowledge standard on those applying the product.

State statutes again tend to follow the federal criteria for the classification division between restricted and general use.⁹⁷ As discussed previously, the standards for categorization are broad enough to allow a product to be restricted because of existing or potential drift problems. However, no state statutes were identified that explicitly acknowledged this possibility, although a few slightly amplified the federal statutory criteria in ways that imply more concern with drift. These are well illustrated by the Indiana definition of "restricted use pesticide" as one that is ". . . found and determined to be unduly hazardous to persons, pollinating insects, bees, animals, crops, wildlife or lands, *other than the pests it is intended to prevent. . .*"⁹⁸

There are also instances in which state legislation provides for an additional category of pesticide classification. While the terminology differs⁹⁹ the intent of such a category appears to be to allow the state regulatory agency to take further cognizance of local concerns. Accordingly, once a product is classified within this state category, additional regulatory requirements are likely to be imposed on its use.¹⁰⁰ The Indiana statute is again exemplary in its definition of "pesticide for use by prescription only" as "any pesticide which the board has found to be more haz-

⁹⁷ See, e.g., ME. REV. STAT. ANN. tit. 7, § 604(30) (1964); IND. CODE ANN. § 15-3-3.6-3(26) (1983); NEB. REV. STAT. § 2-2613(1) (1983).

⁹⁸ IND. CODE ANN. § 15-3-3.5-2(27) (1983) (emphasis added). See also, e.g., KRS § 217B.050(3) (1982); MO. STAT. ANN. § 263.270(33) (Cum. Supp. 1984); notes 37-40 *supra*.

⁹⁹ See, e.g., COLO. REV. STAT. § 35-9-105(d) (1984); IND. CODE ANN. § 15-3-3.5-2(24) (1983); IOWA CODE ANN. § 206.2(25) (West Cum. Supp. 1984); ME. REV. STAT. ANN. tit. 22, § 1471-C(16) (1980); OR. REV. STAT. § 634.306 (1981); TEX. AGRIC. CODE ANN. § 76-003 (Vernon 1982); WASH. REV. CODE ANN. § 15.58.030(19) (1983); W. VA. CODE § 19-16B-4(c) (1984).

¹⁰⁰ See, e.g., ME. REV. STAT. ANN. tit. 22, § 1471-C(16) (1980); OHIO REV. CODE ANN. § 921.16(D) (Page Supp. 1983).

ardous by one criterion or another than a restricted use pesticide so that any specific use and application shall be determined and prescribed by a qualified pest [sic: pest] management specialist approved by the state chemist."¹⁰¹

The last area where state statutes follow the federal model, certification of competency of applicators, tends to demonstrate a more in-depth concern with drift than either labeling or registration and classification. Concern with environmental harm is reflected in applicator certification programs either in the statutory requirements for the categorization of applicators¹⁰² or in the levels of competency required to be demonstrated.¹⁰³ In the former case it is not uncommon, for example, for state legislation to provide explicitly for particularized requirements for aerial applicators, presumably because of a perception of the likelihood of added harm from inappropriate aerial application.¹⁰⁴ In the latter, there appears to be a distinction contemplated between levels of competency for commercial applicators and private applicators, with requirements for private applicators often being less extensive.¹⁰⁵

Within this scheme, in some states, the statutes explicitly refer to knowledge of drift and related issues as a basis for certification of competency. For example, Kansas law provides that commercial applicators must pass an examination which tests, in part, their knowledge as to the following:

- (a) The proper use of the equipment.
- (b) The hazards that may be involved in applying the pesticides, including:

¹⁰¹ IND. CODE ANN. §§ 15-3-3.5-2(24), .5-10(1), .5-11, .5-18 (1983).

¹⁰² See, e.g., IND. CODE ANN. § 15-3-3.6-5 (1983).

¹⁰³ See notes 73-80 *supra* and accompanying text. See also notes 247-50 *infra* and accompanying text.

¹⁰⁴ See, e.g., ARIZ. REV. STAT. ANN. § 3-377.01 (Supp. Pamphlet 1984); CALIF. FOOD & AGRIC. CODE §§ 11901-11940 (West Cum. Supp. 1984); IOWA CODE ANN. § 206.6(1) (West Cum. Supp. 1984); N.C. GEN. STAT. §§ 143-452, -453 (1983). *Accord* KAN. STAT. ANN. § 2-2441a (1982); KRS § 217B.130 (1982). A related type of licensing is that required in a few states of "pesticide consultants," those who give advice about pesticide applications. See, e.g., N.M. STAT. ANN. § 76-4-14 (1981); N.C. GEN. STAT. § 143-455 (1983).

¹⁰⁵ E.g., compare KAN. STAT. ANN. § 2-2443a (1982) with KAN. STAT. ANN. § 2-2445a (1982) (commercial applicator certificate requires fee plus an extensive written examination to show applicant has adequate knowledge, whereas private applicator certificate is obtained with smaller fee plus open-book examination of applicant).

- (1) The effect of drift of the pesticides on adjacent and nearby lands and other nontarget organisms;
- (2) The proper meteorological conditions for the application of pesticides and the precautions to be taken therewith;
- (3) The effect of the pesticides on plants or animals in the area, including the possibility of damage to plants or animals or the possibility of illegal pesticide residues resulting on them¹⁰⁶

In many more cases, knowledge of drift concerns is covered statutorily only by implication and more directly by agency regulation.¹⁰⁷

Also significant in the states' applicator certification programs are the parallel statutory provisions for license revocation. These commonly include as grounds for suspension or revocation findings that the applicator is no longer qualified; has engaged in fraudulent business practices; has used pesticides in a careless, faulty or negligent manner or in a manner potentially harmful to the environment; or has violated the statute or rules of the state.¹⁰⁸

B. Other Approaches: State Innovation

Overall, the basic approaches to state pesticide control discussed in reference to the federal model appear to concern themselves somewhat tangentially with drift. However, these are not the only ways in which state legislatures have addressed the issue. It is generally observed in the field of regulatory law that,

¹⁰⁶ KAN. STAT. ANN. § 2-2443a (1982). See also KRS § 217B.070(3) (1982).

¹⁰⁷ See, e.g., WIS. STAT. ANN. § 94.705(2) (West Cum. Supp. 1984) (Wisconsin's reference to federal standards).

¹⁰⁸ See generally COLO. REV. STAT. § 35-10-112 (1984); HAWAII REV. STAT. § 149A-18 (1976); ILL. ANN. STAT. ch. 5, § 814 (Smith-Hurd Cum. Supp. 1984); KRS § 217B.120 (1982); LA. REV. STAT. ANN. § 3:3275 (West Cum. Supp. 1984); ME. REV. STAT. ANN. tit. 22, § 1471-D(8) (Cum. Supp. 1984); MONT. CODE ANN. § 80-8-211 (1983); N.C. GEN. STAT. § 143-451 (1983); N.D. CENT. CODE § 4-35-16 (1975); OHIO REV. CODE ANN. § 921.24 (Page Supp. 1983); OKLA. STAT. ANN. tit. 2, § 3-86 (West Cum. Supp. 1984); PA. CONS. STAT. ANN. tit. 3, § 111.29 (Purdon Supp. 1983); R.I. GEN. LAWS § 23-25-18 (1979); S.C. CODE ANN. § 46-13-90 (Law. Co-op. Cum. Supp. 1983); TENN. CODE ANN. § 43-9-105 (1980); TEX. AGRIC. CODE ANN. § 76.076 (Vernon 1982); VT. STAT. ANN. tit. 6, § 1104(8) (Cum. Supp. 1984); VA. CODE § 3.1-249.8 (1983); W. VA. CODE § 19-16B-14 (1984). See also note 131 *infra* and accompanying text.

in any area where the federal government has not preempted the field, the states will act as a laboratory, utilizing a diversity of approaches to achieve the objective. The area of pesticide control is an excellent example of this principle. While virtually all state statutes follow the federal model in their approach to labeling, registration, classification, and applicator certification, many statutes extend beyond these areas, often in ways which reflect a growing concern with drift.

The diverse state approaches fall into eight types of legislative directives: (1) direct prohibition of drift; (2) withdrawal of certain areas from spraying; (3) permit systems; (4) establishment of both substantive and procedural performance standards; (5) requirements as to financial and legal liability; (6) enforcement techniques; (7) recognition of drift control or mitigation as a legislative purpose; and (8) rulemaking authority. The last, rulemaking authority, is itself the basis of yet further and more definitive control through the adoption of agency rules discussed in the next section.

1. *Direct Prohibition of Drift*

Perhaps the most forthright approach to the regulation or control of drift by statute is through its direct prohibition. While a few states have prohibitory regulations, statutory provisions of this kind are very rare. One example is the California statutory provision which, in the section governing pesticide usage, provides: "The use of any pesticide by any person shall be in such a manner as to prevent substantial drift to nontarget areas."¹⁰⁹ The impact of such broad statutory standards is de-

¹⁰⁹ CALIFORNIA FOOD & AGRIC. CODE § 12972 (West Cum. Supp. 1984). See also the California rules discussed in notes 180-83 *infra* and accompanying text. In a similar manner, prior to its repeal, Maine's pesticide statute provided that it was unlawful "[f]or any person to apply pesticides in a manner which results in off-target residues." ME. REV. STAT. ANN. tit. 7, § 606(2)(G) (amended 1984). Within a year after enactment, the Maine law was amended to make it unlawful "[f]or any person to apply pesticides in a manner inconsistent with rules for pesticide application adopted by the board." See ME. REV. STAT. ANN. tit. 7, § 606(2)(G) (Cum. Supp. 1984). As to the type of rules contemplated, the statutory revision indicates that the rules were to be designed to "minimize pesticide drift to the maximum extent practicable under currently available technology," and then, "[w]ithout limitation" provided that the rules "may prescribe procedure to be used for the application of pesticides, including the time, place, manner and method of that application, may restrict or prohibit use of pesticides in designated areas or during specified periods of time, and may prescribe tolerance levels for pesticide residues in off-target areas." *Id.*

terminated by the agency's implementing regulations discussed in the next section.

2. *Withdrawal of Certain Areas from Spraying*

A second direct approach by which state legislation can prevent damage from drift or off-target spray is to withdraw the area which might be damaged, together with an adequate buffer zone, from eligibility as a spray site. Only a few state statutes were identified using this technique and there is substantial variety in their approach. For example, New York allows certain grape growing areas to be specifically protected from spraying. The statutory process first requires a petition to protect a grape growing area to be signed by ten or more growers in the same or contiguous towns. The petition must allege that the use of 2,4-D, 2,4,5-T, or MCP near the vineyards has harmed the grape crop and request restriction or prohibition in the affected area.¹¹⁰ An order may then be issued limiting or restricting the specified products in the area subject to the petition and for a two-mile radial distance from the site of the damage. The order is issued if the state finds that there has been damage "caused by the use of the chemical substance complained of . . . and by that cause alone"; that the use was on lands in or proximate to an affected area; and that the grape production is a major source of agricultural income.¹¹¹

Oregon provides a much more extended range of possibilities for removing lands from spray areas, as well as an intricate scheme for regulation of such removed areas. On petition from at least 25 landowners representing 70 percent of the acres in the area, the Oregon Department of Agriculture may establish a "protected area."¹¹² In deciding whether to establish such an area, specific agricultural, topographical, meteorological and environmental factors are considered.¹¹³ Once established, a protected area is a type of political subdivision regulated by a "governing committee" established under the terms of the statute.¹¹⁴ The committee then annually promulgates rules "govern-

¹¹⁰ N.Y. ENVTL. CONSERV. LAW § 33-1101 (McKinney 1984).

¹¹¹ See N.Y. ENVTL. CONSERV. LAW §§ 33-0101, -1105 (1984).

¹¹² OR. REV. STAT. § 634.212 (1981).

¹¹³ OR. REV. STAT. § 634.212 (1981).

¹¹⁴ OR. REV. STAT. §§ 634.222, .226 (1981). The areas may be funded by a tax levy. OR. REV. STAT. § 634.242 (1981).

ing or prohibiting the application of pesticides within the protected area, by aircraft or otherwise, which relate to the time, place, method of pesticide application and other matters necessary to prevent damage or injury to susceptible crops, insects, wildlife or forests.”¹¹⁵

In addition to the establishment of protected areas, the Oregon law envisions the establishment of “restricted areas” up to ten airline miles beyond the boundary of the protected area.¹¹⁶ Within this restricted area all pesticides can be restricted for one mile and herbicides can be restricted for up to ten miles.¹¹⁷ Oregon’s approach is far-reaching, allowing the possibility of a certain amount of resident “self-determination” of susceptibility to spray or spray drift. Unlike the New York approach to withdrawal, the Oregon formation of protected areas is not necessarily based on damage.

A third statute of this type is the Oklahoma law which presents a more limited version of withdrawal than that found in either Oregon or New York. Oklahoma authorizes a petition, (from at least 25 percent of the occupants of agricultural lands of a county) to require a hearing to establish a date after which hormone-type sprays will not be allowed.¹¹⁸

3. *Permit Systems*

Prohibition of drift and removal of an area from possible spray are perhaps the most direct statutory approaches, but there are numerous other methods used for controlling drift. One of the more focused of these approaches is that in which permits are required for certain pesticide applications. Permit requirements call attention to a particular use and allow site- or product-specific decisions to be considered and limited. In some instances, the imposition of a permit requirement and the ultimate issuance of a permit may, by the terms of the statute, be

¹¹⁵ OR. REV. STAT. § 634.226(4)(a) (1981).

¹¹⁶ OR. REV. STAT. § 634.232 (1981).

¹¹⁷ OR. REV. STAT. § 634.232(3)(a) (1981).

¹¹⁸ OKLA. REV. STAT. tit. 2, § 3-84 (West Cum. Supp. 1984).

related to the likelihood of drift although more often the precise standards appear in agency regulations.¹¹⁹

4. *Performance Standards*

It is unusual to find state statutes which set out performance standards—that is, which mandate explicitly how pesticides are to be or not to be, applied. However, legislation occasionally does make the setting of these standards mandatory and, more rarely, sets a statutory standard to be followed in certain specified situations. California presents one example of this approach in its limitation on use of certain designated products or classes of products.¹²⁰

A second example is presented by the legislation in states addressing the possibility of mitigating drift by controlling application technique through required registration or inspection of equipment. New Mexico law, for example, provides:

A. The department shall provide for an annual inspection of any equipment used for the application of pesticides by a commercial pesticide applicator and may require repairs or other changes before the equipment is used to apply pesticides. A list of requirements that the equipment shall meet shall be provided by the department.

B. Any piece of equipment which fails inspection shall . . . not be put back into service until it has passed reinspection. . . .¹²¹

¹¹⁹ See OKLA. STAT. ANN. tit. 2, § 3-85 (West Cum. Supp. 1984). See also ALA. CODE § 2-27-11 (Cum. Supp. 1984) (restricted use); ARK. STAT. ANN. § 77-233 (1981) (experimental use); CALIF. FOOD & AGRIC. CODE §§ 11931-11940 (West 1968 & Supp. 1984) (aerial operators); CONN. GEN. STAT. ANN. § 22a-51 (1975) (experimental use); DEL. CODE ANN. tit. 3, § 1214 (Cum. Supp. 1984) (restricted use pesticide; experimental use); LA. REV. STAT. ANN. § 3273 (West Cum. Supp. 1984) (pesticide waste); N.D. CENT. CODE § 4-35-07 (1975) (experimental use); OHIO REV. CODE ANN. § 921.03 (Page Supp. 1983) (experimental use); R.I. GEN. LAWS § 23-25-7 (1979) (experimental use); TEX. AGRIC. CODE ANN. § 76.048 (Vernon 1982) (experimental use); WASH. REV. CODE ANN. § 17.21.030 (1983) (restricted use); WYO. STAT. § 35-7-357 (1977) (experimental use); notes 235-48 *infra* and accompanying text.

¹²⁰ See CALIF. FOOD & AGRIC. CODE § 14006 (West Cum. Supp. 1984) (restricted materials as defined under § 14004.5).

¹²¹ N.M. STAT. ANN. § 76-4-26 (1981). See also N.C. GEN. STAT. § 143-452 (1983); notes 135-36 *infra* and accompanying text.

Another method by which legislation occasionally controls application is through procedural burdens. For example, the Massachusetts pesticide statutes require that utilities notify town officials before herbicide spraying in their area.¹²² Similarly, several states make it unlawful to aerially apply any pesticide toxic to bees without first providing notice to registered apiary owners.¹²³ Far more common than these direct statutory approaches is the legislative delegation of authority to the designated administrative agency to establish such standards. As discussed in the next section of this Article, agencies have imposed performance standards in a wide variety of ways, both substantive and procedural.

5. *Financial and Legal Liability*

Potential liability for damage caused by pesticide application is a complex subject.¹²⁴ The imposition of liability is obviously a standard governmental answer to deterring misapplication of pesticides; that is, an applicator who assumes his or her liability in the case of pesticide drift will presumably act with more caution. Requiring applicators to provide a stated amount of insurance coverage is one way to begin to make applicators more aware of their potential liability. The technique also assures that where an applicator is at fault, the person damaged will be able to recover at least in the amount of the insurance.

¹²² MASS. ANN. LAWS ch. 132B, § 6B (Michie/Law Co-op. Cum. Supp. 1984).

¹²³ See, e.g., N.C. GEN. STAT. § 143-443(b)(4) (1983). See also CALIF. FOOD & AGRIC. CODE §§ 29141-29145.5 (West Cum. Supp. 1984).

¹²⁴ The scope of this Article does not extend to questions of liability for pesticide damage as it has been determined and assessed by the courts. Obviously, in some cases the courts have been called upon to construe and apply specific legislative provisions like those discussed in this section and the section on regulation to assess liability of various kinds. See, e.g., *J.L. Wilson Farms, Inc. v. Wallace*, 590 S.W.2d 42, 44-45 (Ark. Ct. App. 1979) (plant board's regulations properly considered in determining negligence); *Pitchfork Land & Cattle Co. v. King*, 335 S.W.2d 624, 629 (Tex. Civ. App. 1960) (agency regulations referred to as to appropriate wind velocity). More frequently the courts have been called upon to use the principles of common law—rather than statute—to resolve private disputes concerning harm alleged to have resulted from pesticide application. See generally notes 1-13 *supra* and accompanying text.

Virtually all states require some form of commercial applicator insurance.¹²⁵ Of these, several states specifically mention drift as a problem to be covered by such insurance. Alabama law is illustrative: "Each applicant for a license to perform the custom application of pesticides shall . . . file with the commissioner a surety bond . . . conditioned for the protection of . . . persons who may suffer legal damages as a result of licensee's custom application of pesticides, or drift to plants, animals, or property. . . ."¹²⁶ Still other states, by indicating that lands intended to be sprayed are *not* covered by the requisite insurance, imply that at least in part the statutory requirement contemplates harm off target.¹²⁷

Several states, in addition to requiring liability insurance, go a step further in indicating the extent of responsibility by specifically providing that the pesticide laws are not to be seen as a limitation on liability. Kentucky's provision is representative: "Nothing in this chapter shall be construed to relieve any person from liability for any damage to the person or lands of another caused by the use of pesticides even though such use conforms to the rules and regulations of this department."¹²⁸ A similar disclaimer is the Michigan statutory statement that "[a] certificate or license issued by the director shall not exonerate the holder from responsibility for damage resulting from misuse of pesticides such as . . . overdosing, drifting or misapplication."¹²⁹

While statutes like Kentucky's or Michigan's leave open all legal remedies, it should be noted that there are a few state statutes which are more limiting in setting forth the standard of

¹²⁵ See, e.g., GA. CODE ANN. § 5-1512a (1981); IDAHO CODE § 22-3404(2)(c) (Cum. Supp. 1984); ILL. STAT. ANN. ch. 5, § 810(3) (Smith-Hurd Cum. Supp. 1984); IND. CODE ANN. § 15-3-3.6-13 (Burns 1983); IOWA CODE ANN. § 206.13 (Cum. Supp. 1984); KAN. STAT. ANN. § 2-2448 (1982); KRS § 217B.130 (1982); MINN. STAT. ANN. § 18A.36 (West 1981); MISS. CODE ANN. § 69-21-13 (1973); N.M. STAT. ANN. § 76-4-24 (1981); N.C. GEN. STAT. § 143-467 (1983); TENN. CODE ANN. § 43-9-104 (1980); TEX. AGRIC. CODE ANN. § 76.111 (Vernon 1982). See also ALA. CODE § 2-27-56 (1977); MO. ANN. STAT. § 281.065 (Vernon Cum. Supp. 1984); OHIO REV. CODE ANN. § 921.10 (Page Supp. 1983); S.C. CODE ANN. § 46-13-100 (Law. Co-op. 1977); VT. STAT. ANN. tit. 6, § 1106 (1972); VA. CODE § 3.1-249.9 (Supp. 1984); W. VA. CODE § 19-16B-15 (1984).

¹²⁶ ALA. CODE § 2-27-56 (1977).

¹²⁷ See, e.g., MO. ANN. STAT. § 281.065(1) (Vernon Cum. Supp. 1984).

¹²⁸ KRS § 217B.130(4) (1982). See also, e.g., IND. CODE ANN. § 15-3-3.6-13 (Burns 1983); MO. ANN. STAT. § 281.065(4) (Vernon Cum. Supp. 1984); OHIO REV. CODE ANN. § 921.10(E) (Page Supp. 1983); VT. STAT. ANN. tit. 6, § 1106 (1972).

¹²⁹ MICH. STAT. ANN. § 12.340(17)(1) (Callaghan 1981).

proof to be required. Mississippi, for example, provides that "[t]he plaintiff . . . shall allege and prove that the damage complained of is the result of negligence on the part of the . . . defendant."¹³⁰

6. *Enforcement Techniques*

Like the imposition of financial liability for the consequences from pesticide drift, there are a variety of mechanisms related to the enforcement of pesticide standards that may serve to control drift as well as other kinds of misapplication. The chief enforcement tools are license revocation and the imposition of penalties. Related to these are statutory requirements for inspection, monitoring, tolerances and recordkeeping.

Virtually all state statutes list grounds for license revocation,¹³¹ delineate "unlawful acts,"¹³² define penalties¹³³ and au-

¹³⁰ MISS. CODE ANN. § 69-12-15 (1973). *Accord, e.g.*, NEV. REV. STAT. § 586.290(2) (1983).

¹³¹ See note 108 *supra*. See also *Wingfield v. Fielder*, 105 Cal. Rptr. 619 (Cal. Ct. App. 1972) (license revocation and suspension in case involving damage from herbicide drift). Cf. *Medlock Dusters Inc. v. Dooley*, 181 Cal. Rptr. 80 (Cal. Ct. App. 1982) (effort to suspend license in a drift situation, remanded for more specific findings). As to license suspension or revocation in general, see, e.g., *Aantex Pest Control Co. v. Structural Pest Control*, 166 Cal. Rptr. 763 (1980) (license revocation for negligent use of endrin in extermination); *Camacho v. Youde*, 157 Cal. Rptr. 26 (1979) (suspension of employer's pest control license for employee's spraying on innocent bystanders); *Grace v. Structural Pest Control Bd. of Texas*, 620 S.W.2d 157 (Tex. Civ. App. 1981) (reprimand for failure to register and for performing work in category for which not certified).

¹³² See generally DEL. CODE ANN. tit. 3, § 1224 (Cum. Supp. 1984); ILL. STAT. ANN. ch. 5, § 814 (Smith-Hurd Cum. Supp. 1984); LA. REV. STAT. ANN. § 3226 (West Cum. Supp. 1984); MONT. CODE ANN. § 80-8-305 (1983); N.Y. ENVTL. CONSERV. LAW § 33-1301 (McKinney 1984); N.D. CENT. CODE § 4-35-15 (1975); OHIO REV. CODE ANN. § 921-25 (Page Supp. 1983); OKLA. STAT. ANN. tit. 2, § 3-62 (West Cum. Supp. 1984); OR. REV. STAT. § 634.372 (1981); R.I. GEN. LAWS § 23-25-18 (1979); TEX. AGRIC. CODE ANN. § 76.201 (Vernon 1982 & Supp. 1984); VA. CODE § 3.1.249.8 (1983); WIS. STAT. ANN. § 94.70 (West Cum. Supp. 1984). Of the most relevance to the discussion of drift are those provisions which make it unlawful to apply a pesticide in a manner inconsistent with its label, to apply a pesticide in a faulty, careless or negligent manner or to use pesticides in a manner inconsistent with agency rules. As to the constitutionality of this type of regulation in general terms, see generally *United States v. Corbin Farm Service*, 444 F. Supp. 510 (E.D. Cal. 1978); *Wingfield v. Fielder*, 105 Cal. Rptr. at 625-26.

¹³³ See generally, e.g., ALA. CODE § 2-27-16 (1975) (misdemeanor/gross misdemeanor); CONN. GEN. STAT. ANN. § 22a-55 (West Supp. 1983) (penalties established); DEL. CODE ANN. tit. 3, § 1224 (Cum. Supp. 1984) (misdemeanor); HAWAII REV. STAT. § 149A-41 (Supp. 1983) (civil/criminal); ILL. STAT. ch. 5, § 824 (Smith-Hurd Cum.

thorize the inspection of spray sites and sites adjacent thereto.¹³⁴ Many specifically authorize the inspection of equipment as well.¹³⁵ Often such inspection is a key both to deterrence of misuse of pesticides and to assessment of liability. The Ohio statute is perhaps most on point in its implications as to drift in this regard:

(A) The director of agriculture may: . . .

(2) Enter upon any public or private premises at any time, when or where pesticides are being applied to determine if the applicator is or should be certified or licensed, if proper notice has been given before pesticide application, and to collect samples of pesticides being applied or available for use, and to inspect equipment or devices used to apply pesticides;

(3) Enter upon any public or private premises at reasonable hours to inspect any property thereon, to collect samples

Supp. 1984) (class C/B misdemeanor); LA. REV. STAT. ANN. §§ 3226, 3276 (West Cum. Supp. 1984) (civil); MO. CODE ANN. § 281.105 (Vernon Cum. Supp. 1984) (misdemeanor); MONT. CODE ANN. § 80-8-306 (1983) (misdemeanor); N.H. REV. STAT. ANN. § 149-D:11 (1977) (misdemeanor/felony/civil penalty); N.J. STAT. ANN. § 13:1F10 (West 1979) (civil penalty); PA. STAT. ANN. tit. 3, § 111.49 (Purdon Supp. 1983) (criminal penalty), § 111.507 (Purdon Supp. 1983) (civil penalty); R.I. GEN. LAWS § 23-25-8 (1979) (civil/criminal); S.C. CODE ANN. § 46-13-180 (Law. Co-op. Cum. Supp. 1983) (misdemeanor); TENN. CODE ANN. § 43-9-106 (1980) (misdemeanor); VT. STAT. ANN. tit. 6, § 1107 (Cum. Supp. 1984) (criminal); VA. CODE § 3.1-244, .1-245 (1983) (misdemeanor/warning); WASH. REV. CODE ANN. § 17.21.310 (1983) (misdemeanor/gross misdemeanor); W. VA. CODE § 19-16B-22 (1984) (misdemeanor/civil penalty); WIS. STAT. ANN. § 94-71 (West Cum. Supp. 1984) (civil/criminal); WYO. STAT. § 35-7-366 (Cum. Supp. 1984) (misdemeanor/penalty).

¹³⁴ See generally, e.g., ARIZ. REV. STAT. ANN. § 3-373 (1974); DEL. CODE ANN. tit. 3, § 1226 (Cum. Supp. 1984); FLA. STAT. ANN. § 487.164(1) (West 1981); GA. CODE ANN. § 5-1522a (1981); ILL. ANN. STAT. ch. 5, § 815 (Smith-Hurd Cum. Supp. 1984); IND. CODE ANN. § 15-3-3.5-18 (Burns 1983); MONT. CODE ANN. § 80-8-304 (1983); N.H. REV. STAT. ANN. § 149-D:6 (1977); N.C. GEN. STAT. § 143-466(e) (1983); N.D. CENT. CODE ANN. § 4-35-24 (1975); PA. STAT. ANN. tit. 3, § 111.53 (Purdon Supp. 1983); R.I. GEN. LAWS § 23-25-20 (Cum. Supp. 1984); S.D. COMP. LAWS ANN. § 38-21-53 (1977); W. VA. CODE § 19-16B-24 (1984). In some cases search warrants are explicitly authorized. See, e.g., LA. REV. STAT. ANN. § 3204 (West Cum. Supp. 1984); S.C. CODE ANN. § 46-13-170 (Law. Co-op. 1977); S.D. COMP. LAWS ANN. § 38-21-54 (1977).

¹³⁵ See ALA. CODE § 2-27-61 (1977); ARIZ. REV. STAT. ANN. § 3-373 (1974); COLO. REV. STAT. § 35-10-115 (1984); FLA. STAT. ANN. § 487.164(1) (West 1981); HAWAII REV. STAT. § 149A-36 (1976); KAN. STAT. ANN. § 2-2462(1) (1982); KRS § 217B.160, .070(2)(e) (1982); MONT. CODE ANN. § 80-8-304(1)(a) (1983); N.H. REV. STAT. ANN. § 149-D:6(11) (1978); N.C. GEN. STAT. § 143-466 (1983); N.D. CENT. CODE ANN. § 4-35-24 (Cum. Supp. 1983); OHIO REV. CODE ANN. 921.18 (Page Supp. 1983); R.I. GEN. LAWS §§ 23-25-20(1), 23-25-20(2)(a) (Cum. Supp. 1984); S.D. COMP. LAWS ANN. § 38-21-53 (1977); VA. CODE § 3.1-249.18 (1983). See also note 121 *supra* and accompanying text.

of vegetation or animal life, water, soil, or other matter, in order to determine residue levels, efficacy of application, or adverse effects of application, drift, or spillage; . . .

(B) When the director or his authorized agent observes, or has reasonable cause to believe that a piece of equipment used by a custom applicator, or operator requires calibration, adjustment, or repair to enable it to perform satisfactorily, he may require such adjustment to be made immediately or issue a "stop operation" order pending repair to the equipment and he may require a demonstration of it before cancellation or withdrawal of the "stop operation" order.¹³⁶

The Ohio law authorizes observation, sampling and control of equipment. These actions are all types of governmental intervention which may contribute to more careful pesticide applications and thus lessen the likelihood of drift occurring. While not directly speaking to drift, these sections and others contemplating monitoring will undoubtedly impact application techniques.

Another enforcement-type approach that may encourage more careful application is suggested by those state statutes which seek to limit pesticide residues or tolerances. The premise is that enforcement of the law and control of misuse will best occur where there is a measurable standard imposed defining unacceptable pesticide levels. Maine is the only state identified where the legislature had sought to define (and thus control) drift by residue standards, making it explicitly unlawful "[f]or any person to apply pesticides in a manner which results in off-target residues."¹³⁷ A few other states, such as Oregon and California, have a statute requiring the adoption of tolerances and residue standards, usually for food or pasturage.¹³⁸ Still other state

¹³⁶ OHIO REV. CODE ANN. § 921.18 (Page Supp. 1983). *See also, e.g.*, GA. CODE ANN. § 5-1515a (1981); KAN. STAT. ANN. § 2-2462 (1982); KRS § 217B-230 (1982); N.C. GEN. STAT. § 143-466 (1983); PA. STAT. ANN. tit. 3, § 111.41 (Purdon Supp. 1983); TEX. AGRIC. CODE ANN. § 76.115 (Vernon 1982); VT. STAT. ANN. tit. 6, § 1104(2) (Cum. Supp. 1984). In some states equipment must be specially identified. *See e.g.*, N.D. CENT. CODE § 4-35-17 (1975).

¹³⁷ The statute went on to require that "[t]he Board of Pesticides Control shall issue standards to define what constitutes chemical trespass or off-target drift by June 1, 1984." ME. REV. STAT. ANN. tit. 7, § 606.2.G (repealed 1984). *See note 109 supra* for description of the 1984 amendment.

¹³⁸ *See, e.g.*, CALIF. FOOD & AGRIC. CODE §§ 12501-12623 (West 1968 & Cum. Supp. 1984); OR. REV. STAT. §§ 616.345, .346, .366, 634.042 (1981).

statutes imply concern with residues by reference to inspection and taking of samples to test, at least in part, for residues from drift or off-target deposits.¹³⁹ The implications of these types of approaches are better understood in the context of agency rules proscribing drift, either per se or in reference to some standard of unreasonable or significant damage. Once a "significance" or "damage" criterion is incorporated, the measurement of levels to ascertain if the significant level has been reached is crucial; this question is elaborated under the next heading.

In addition to inspection and related provisions, another enforcement tool used by the majority of states is the requirement that commercial applicators keep some kind of records.¹⁴⁰ In some cases there is specific statutory reference to a record of weather conditions.¹⁴¹ For example, in Kansas, applicators are required to provide to their customers a written statement as to services which includes, among other information, "the wind direction and velocity, when applicable."¹⁴²

Another aspect of reporting includes the requirements of many states that damage caused by pesticide application be reported. Typically, an applicator is required to notify the enforcing agency of pesticide accidents; a large number of states

¹³⁹ See, e.g., OHIO REV. CODE ANN. § 921.18 (Page Supp. 1983).

¹⁴⁰ See, e.g., COLO. REV. STAT. § 35-10-111(2) (1984); DEL. CODE ANN. tit. 3, § 1234 (1984); ILL. ANN. STAT. ch. 5, § 818 (Smith-Hurd Cum. Supp. 1984); KRS § 21B.150 (1982); N.C. GEN. STAT. § 143-466 (1983); N.D. CENT. CODE § 4-35-16 (1975); OKLA. STAT. ANN. tit. 2, § 3-83 (West Cum. Supp. 1984); R.I. GEN. LAWS § 23-25-23(3) (1979); S.C. CODE ANN. § 46-13-120 (Law. Co-op. 1977); TEX. AGRIC. CODE ANN. § 76.114 (Vernon 1982); VA. CODE § 3.1-249.11 (1983).

¹⁴¹ Not surprisingly, weather conditions are often the basis of imposing liability in private litigation as well. For example, the Missouri court stated the standard simply: "[D]ue care must be exercised in seeing to it that weather conditions are right . . . and that [the spreaders] do not spread dust when the wind is so blowing as to float it to the crops of others." *Faire v. Burke*, 252 S.W.2d 289, 290 (Mo. 1952) (citing annot., 12 A.L.R.2d 436, 438 (1952)). In this regard courts have also recognized the significance of heavy wind and fog in determining liability. See, e.g., *Mid-Continent Aircraft Corp. v. Whitehead*, 357 So. 2d 122 (Miss. 1978). In addition, defendants have been liable for failure to take into account that the wind was likely to shift over the period of time the 2,4-D pesticide fumes could reasonably be expected to remain. *Binder v. Perkin*, 516 P.2d 1012 (Kan. 1973). Defendants likewise have been found negligent for failure to use a wind gauge or take steps to ascertain wind velocity. See *Pitchfork Land and Cattle Co. v. King*, 335 S.W.2d 624 (Tex. Civ. App. 1960).

¹⁴² KAN. STAT. ANN. § 2-2455(a)(8) (1982). See also WASH. REV. CODE § 17.21.100(6) (1983).

also outline a specific procedure under which those injured by pesticide application must report their claim.¹⁴³

7. *Recognition of Drift Control*

Some of the more recent state statutes have definitively recognized the control of drift as a purpose of state intervention. North Carolina, for example, in the preamble to its pesticide law notes:

(b) The purpose of this Article is to regulate in the public interest the use, application, sale, disposal and registration of insecticides, fungicides, herbicides, defoliants, desiccants, plant growth regulators, nematicides, rodenticides, and any other pesticides designated by the North Carolina Pesticide Board. New pesticides are continually being discovered or synthesized which are valuable for the control of insects, fungi, weeds, nematodes, rodents, and for use as defoliants, desiccants, plant regulators and related purposes. However, such pesticides may be ineffective or may seriously injure health, property, or wildlife if not properly used. Pesticides may injure man or 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 danger to aquatic life. A pesticide applied for the purpose of killing pests in a crop, which is not itself injured by the pesticide, may drift and injure other crops or nontarget organisms with which it comes in contact.* In furtherance of the findings and recommendations of the Legislative Research Commission, it is hereby declared to be the policy of the State of North Carolina that for the protection of the health, safety, and welfare of the people of this State, and for the promotion of a more secure, healthy and safe environment for all the people of the State, the future sale, use and application of pesticides

¹⁴³ These statutes follow a fairly standard format. See, e.g., N.D. CENT. CODE ANN. § 4-35-21 (Supp. 1983) (person damaged/defined by rule); OKLA. STAT. ANN. tit. 2, § 3-95 (West Cum. Supp. 1984) (person damaged); OR. REV. STAT. § 634.172 (1981) (person damaged); S.C. CODE ANN. § 46-13-110 (Law. Co-op. 1977) (defined by rule); TEX. AGRIC. CODE ANN. § 76-184 (Vernon 1982) (person damaged).

shall be regulated supervised and controlled by the State in the manner herein provided.¹⁴⁴

North Carolina further reflects its interest in drift issues by authorizing the pesticide board to “[c]arry out a program of planning, environmental and biological monitoring, and investigation into long-range needs and problems concerning pesticides.”¹⁴⁵ Where a state legislature makes explicit its purpose, that purpose is likely to be infused throughout the agency’s planning and implementation, although its value as a direct control measure may be slight.

8. *Rulemaking Authority*

The authority for state pesticide agencies to adopt rules is the core of the regulatory process. In many cases, rulemaking authority reiterates the approaches previously described and authorizes more particularized state regulatory control. In other

¹⁴⁴ N.C. GEN. STAT. § 143-435(b) (1983) (emphasis added). See also ALA. CODE § 2-27-51 (1977); GA. CODE ANN. § 5-1503a (1981); R.I. GEN. LAWS § 23-25-3 (1979); 1975 S.C. Acts No. 220 § 1 (1975); W. VA. CODE § 19-16B-2 (1984). Compare the somewhat more typical language of the Arkansas and New Hampshire statutes:

The purpose of this Act is to regulate in the public interest the labeling, distribution, storage, transportation, and disposal of pesticides as hereinafter defined. Pesticides are valuable to our State’s agricultural production and to the protection of man and the environment from insects, rodents, weeds, and other forms of life which may be pests; but it is essential to the public health and welfare that they be regulated to prevent adverse effects on human life and the environment. New pesticides are continually being discovered, synthesized, or developed which are valuable for the control of pests and for use as defoliants, desiccants, plant regulators, spray adjuvants, and related purposes. However, such pesticides may be ineffective, may cause injury to man or may cause unreasonable adverse effects on the environment. Therefore, it is deemed necessary to provide for regulation of such pesticides.

ARK. STAT. ANN. § 77-229 (1981).

The purpose of this chapter is to recognize the benefits of chemical pesticides in the economy of the state when applied in a safe, scientific, and proper manner; to safeguard public health and welfare and public assets in the soils, waters, forests, wildlife, and other natural resources of the state by insuring proper application of chemical pesticides; to provide for the scientific measuring and monitoring of residual pesticides in the waters and other natural resources of the state, and to establish accurate records of pesticides use in the state without superseding controls presently in force.

N.H. REV. STAT. ANN. § 149-D:1 (1978).

¹⁴⁵ N.C. GEN. STAT. § 143-437(2) (1983).

cases the legislature has not itself set a standard for limiting drift: Instead, drift is explicitly mentioned as a subject for agency rulemaking—that is, the state legislature has not enacted specific substantive controls or standards regarding pesticide drift, but has explicitly authorized the state pesticide agency to promulgate rules in this regard. The actual regulations adopted are discussed in the next section of the Article. Such rules will carry the force and effect of law.

As previously discussed, the Maine legislature sought to explicitly mandate agency rulemaking in regard to drift.¹⁴⁶ A discretionary statute is far more common. For example, the Kentucky statute authorizing rules to protect adjacent or nearby plants (including forage), wildlife, fish, pollinating insects, animals and persons provides that the department “*may* prescribe methods to be used in the application of pesticides” and that such rules “*may* relate to the time, place, manner, and method of application of the pesticides, *may* restrict or prohibit use of pesticides in designated areas during specified periods of time and *shall encompass all reasonable factors which the department deems necessary* to prevent damage or injury by drift or misapplication.”¹⁴⁷

There are also several more states where rulemaking authority, although not specifically using the word “drift,” may be viewed as intended to deal with drift. These are illustrated by the Iowa provision which, to assure proper use, allows for agency regulation of “time, method, and manner” of application.¹⁴⁸

¹⁴⁶ See notes 109, 137 *supra*.

¹⁴⁷ KRS § 217B.050(1) (1982) (emphasis added). See also, e.g., COLO. REV. STAT. § 35-10-104 (1984); DEL. CODE ANN. tit. 3, § 1203 (Cum. Supp. 1984); GA. CODE ANN. § 5-1505a (1981); MISS. CODE ANN. § 69-21-19 (1973) (hormone-type herbicides); N.C. GEN. STAT. § 143-458 (1983); N.D. CENT. CODE § 4-35-06(1) (1975); R.I. GEN. LAWS § 23-25-9(e) (1979). For comparative purposes see the more general rulemaking authority in ALA. CODE § 2-27-8 (1977); ALASKA STAT. § 46.03.320 (1982); ARK. STAT. ANN. § 77-235 (1981); COLO. REV. STAT. § 35-10-118 (1984); FLA. STAT. ANN. § 487.051 (West 1981 & Cum. Supp. 1984); OKLA. STAT. ANN. tit. 2, §§ 3-63, 3-85 (West Cum. Supp. 1984); MONT. CODE ANN. § 80-8-105 (1983); N.J. STAT. ANN. § 13:1F-4 (West 1979); TENN. CODE ANN. § 43-9-102 (1981). For a somewhat unusual listing, see OR. REV. STAT. § 634.306 (1981).

¹⁴⁸ See IOWA CODE ANN. § 206.19 (West Cum. Supp. 1984). See also, e.g., ALA. CODE § 2-27-58 (1977); FLA. STAT. ANN. § 487.042 (West 1981) (restricted use pesticides); ILL. ANN. STAT. ch. 5, § 808 (Smith-Hurd Cum. Supp. 1984); MO. ANN. STAT. § 281.025 (Vernon Cum. Supp. 1984); N.H. REV. STAT. ANN. § 149-D:7 (Cum. Supp. 1983); N.Y. ENVTL. CONSERV. LAW § 33-0303(3)(e) (McKinney 1984); OHIO REV. CODE ANN. § 921.16(A) (Page Supp. 1983); TEX. AGRIC. CODE ANN. § 76-104 (Vernon 1982); WASH. REV. CODE ANN. § 17-21-030 (1983).

Also worthy of particular note—not so much as an effort to limit drift, but as a method to address the potential impact of drift on others in the area—is the rulemaking authority explicitly enabling an agency to require notice to be given prior to spraying.¹⁴⁹ New Mexico legislation, for example, authorizes its pesticide agency to establish rules

to notify land owners of property adjoining the property to be treated, or in the immediate vicinity thereof, of a proposed application of a pesticide, if such notice is necessary to carry out the purpose of the Pesticide Control Act, and for a hearing before the director of the department of any objecting owner of property adjoining the property to be treated before the application of the pesticide. . . .¹⁵⁰

While the above types of rulemaking authority focus on drift and related problems in the most basic sense, there are other areas where potential rulemaking may serve to control drift. For example, statutes which provide for regulations to determine that certain areas will not be sprayed, or will be sprayed only under limited conditions, may be addressing the impossibility of preventing drift in or near these places. The provision in Maine law which allows for the designation of critical areas is an example of this type of rulemaking authority.¹⁵¹

There are also statutes which authorize the agency to establish by rule a permitting system, for example, for restricted use pesticides or for “special local needs” registrations.¹⁵² Usually the decision is left to agency discretion; Ohio is an exception and mandates rulemaking to establish permit requirements.¹⁵³ This permit-based approach to rulemaking brings into play the same kinds of considerations noted earlier where the statutes themselves mandate permits, thus adding the potential for an extra layer of control for certain areas or uses.

¹⁴⁹ At least one statute was identified where such rulemaking was mandatory rather than discretionary. See OHIO REV. CODE ANN. § 921.16(B) (Page Supp. 1983).

¹⁵⁰ N.M. STAT. ANN. § 76-4-9(A)(5) (1981). See also N.C. GEN. STAT. § 143-458(b) (1983).

¹⁵¹ ME. REV. STAT. ANN. tit. 22, § 1471-F (1980 & Supp. 1984).

¹⁵² See, e.g., IND. CODE ANN. § 15-3-3.5-11 (Burns 1983).

¹⁵³ OHIO REV. CODE ANN. § 921.16(B)(2) (Page Supp. 1983). See also VT. STAT. ANN. tit. 6, § 1104(3) (Cum. Supp. 1984).

Rulemaking also parallels statutes in those states which address particularly the rulemaking authority to further regulate equipment. Kansas law is representative:

The secretary, may at his or her discretion, require the registration of any equipment used in the commercial application of pesticides, and any equipment required to be so registered may be marked for identification in a manner prescribed by the secretary. Unannounced inspections may be made without charge to determine if the equipment is properly calibrated and maintained in conformance with laws and rules and regulations, and the secretary may require repairs or other changes before its further use for pesticide application. A list of requirements that equipment shall meet may be adopted by rules and regulations.¹⁵⁴

All of these statutory authorizations, for rulemaking as well as other agency directives, shape the form of pesticide regulation to be used in each state. Agency implementation of these statutes is discussed in detail in the next section.

III. STATE REGULATORY APPROACHES TO DRIFT

The preceding section of this Article described the state statutes which address the control or mitigation of drift or off-target residues. Under these statutes state pesticide agencies have been created to serve many functions. Such agencies register and classify pesticides, issue licenses to persons wishing to apply pesticides, issue a variety of special or experimental permits, adopt rules governing aspects of pesticide use, and exercise enforcement authority over pesticide use and disposal. Within each of these functions the agency adopts rules and issues orders and decisions further amplifying the legislative directives and defining the mechanisms for assuring that pesticide use in the state is within the appropriate balance between need for the product and environmental protection.¹⁵⁵

¹⁵⁴ KAN. STAT. ANN. § 2-2456(a) (1982). See also OHIO REV. CODE ANN. § 921.16(B)(3) (Page Supp. 1983). For further discussion of equipment, see notes 121, 135-36 *supra*.

¹⁵⁵ This Article does not attempt to review agency procedures or the applicable provisions of administrative law. Generally speaking, properly adopted agency rules have the force of law. Accordingly, violation of agency rules subjects the violator to the same penalties as violation of the statute itself. Most statutes explicitly so provide. See, e.g.,

In reviewing the approaches of pesticide agencies in this country and in some of the Canadian provinces, it is difficult to discern any single state or provincial regulatory program (or even a particular part thereof) which in and of itself can be said to control drift. Instead it seems that a reading of the agency rules as a whole reveals a plethora of initiatives working in a series of different combinations. Agency efforts regarding drift are categorized here in five major groups: (1) standards for use; (2) permitting; (3) licensing; (4) registration and classification; and (5) enforcement-related activities.¹⁵⁶

A. *Standards for Use*

As was the case in the statutory discussion in the preceding section, the most obvious of the agency regulations dealing with drift or off-target residues are those which either prohibit drift per se or impose direct limitations or performance standards intended to control application and drift within specified bounds. Several state agencies have standards of this type, though there is a marked difference among them. Some rules are blanket prohibitions, while others incorporate general and/or specific standards of care to be exercised. Some prohibit drift where it results in specified levels of damage; others are written without apparent regard to proof of harm.

This section reviews state standards designed to prohibit or minimize drift. While in many states standards of one type tend

ME. REV. STAT. ANN. tit. 7, § 616 (1979), tit. 22, § 1471-J (1980). *See also* notes 132-33 *supra*. The penalties themselves vary, including both civil and criminal sanctions of various amounts. *See, e.g.*, ME. REV. STAT. ANN. tit. 7, § 616(1) (1979), tit. 22, § 1471-J (1980). *See also* statutes cited *supra* note 133. Many statutes also incorporate specific provisions for injunctive relief for violation of the statute or rules promulgated thereunder. *See, e.g.*, ME. REV. STAT. ANN. tit. 7, § 616(2) (1979); MICH. COMP. LAWS ANN. § 286.576 (West 1979). In addition, many states provide that violation of the statute or rules may be grounds for license revocation. *See, e.g.*, ME. REV. STAT. ANN. tit. 22, § 1471-D(8)(E) (1980). *See generally* note 108 *supra* and accompanying text. In a variation of this last penalty, some state rules provide that certain violations are negligence per se. *See, e.g.*, WIS. ADM. CODE AG. § 29.15(1)(b) (1982); 302 KY. ADMIN. REGS. 31:005(14) (1984) [hereinafter cited as KAR]. In these and other states negligence (generally phrased as operation in a faulty, careless, or negligent manner) is again grounds for license revocation. *See, e.g.*, ME. REV. STAT. ANN. tit. 22, § 1471-D(8)(C) (1980).

¹⁵⁶ Perhaps the best that can be said about these divisions is that they are somewhat arbitrary. Consequently, it must be kept in mind that regulatory approaches discussed in one category have implications related to, or synergistic with, those listed in another.

to merge with another, for purposes of discussion, these are reviewed in four subcategories: (1) those which purport to preclude overspray or drift completely; (2) those which prohibit drift which causes injury at some delineated level; (3) those which attempt to control drift by establishing a general standard of care to be exercised by applicators; and (4) those which provide specific standards for applicator performance.

1. *Prohibition*

The District of Columbia has perhaps the most absolute attempt to regulate drift through a prohibitory standard. Although referring to wind velocity, the District's rules incorporate neither a standard of reasonableness nor a requisite of damage before providing that "[n]o pesticide application shall be made by air or ground equipment at such a time as the wind velocity will cause a pesticide to drift beyond the target area."¹⁵⁷ A variation on the District's approach is the Arizona regulation for highly toxic pesticides which indicates that "all persons and livestock must be removed from the area to be treated and drift onto adjacent dwellings, fields, where livestock are feeding or onto other crops, must be avoided."¹⁵⁸ Yet another variation on the theme is the Connecticut rule which requires a written release for aerial application of pesticides and fertilizers (other than B.t.) from "any landowner or resident whose property is under the spray pattern of the aerial application or *subject to drift from such application*."¹⁵⁹ The Connecticut rules then define "subject to drift" as a minimum of 200 feet from the flight path of a helicopter and 300 feet from the flight path of a fixed wing aircraft.¹⁶⁰

2. *Injury or Damage*

While somewhat less prohibitory in tone than the preceding approaches, Ohio and New Hampshire use a combination of

¹⁵⁷ DISTRICT OF COLUMBIA REGULATIONS, STANDARDS PERTAINING TO THE PESTICIDE OPERATIONS ACT, § 17 (1978) [hereinafter cited as D.C. REG.].

¹⁵⁸ ARIZ. ADMIN. COMP. R. § R3-10-74.13 (1983).

¹⁵⁹ CONN. AGENCIES REGS. § 22a-66-7(g)(1) (emphasis added). For *Bacillus thuringiensis* notice is required, but not consent. *Id.*

¹⁶⁰ *Id.*

rules that limits pesticide drift in almost absolute terms. New Hampshire is illustrative. First, a general rule is set out which prohibits pesticide application "in a manner that causes or may tend to cause unreasonable damage to non-target areas or unreasonable harm or injury to persons."¹⁶¹ In further explanation, New Hampshire adds: "Without limiting the generality of the foregoing, an 'unreasonable' amount of drift may be that which causes a violation of the food tolerance established by the USDA/FDA."¹⁶² Then New Hampshire defines other limits which do not incorporate the reasonableness standard: As to crops and pasturage, pesticide applications in "adjacent" areas "shall be such that contamination of crops or pasturage does not occur."¹⁶³ As to drift generally, New Hampshire rules indicate: "No application of pesticides shall be made by mechanically powered equipment at such times as the wind velocity shall cause a hazardous chemical to drift beyond the target area."¹⁶⁴ The New Hampshire Pesticide Board has interpreted the latter standard to mean "zero drift."¹⁶⁵

Beyond these absolutist provisions, many state agencies regulate drift with reference to injury or harm. For example, Alabama is one of two states identified as using the word "trespass" in a drift standard. The Alabama rule provides:

No person shall dispense or cause to be dispensed from aircraft or ground equipment engaged in custom pesticide application any pesticide:

(1) Under such conditions that would result in the *applied pesticide trespassing outside of the target area in sufficient*

¹⁶¹ N.H. ADMIN. CODE 502.02 (1980). See also OHIO ADMIN. CODE § 901:5-11-02(C) (1977) which provides:

No person shall operate equipment for the application of pesticides, including such auxiliary equipment as hoses and metering devices, in such condition or in such manner as to create a hazard from leaking, spillage, dripping, backflow, vapors or drift and thereby create a hazard to the health and safety of the public or to animals or wildlife.

¹⁶² N.H. ADMIN. CODE 502.02 (1980).

¹⁶³ N.H. ADMIN. CODE 502.04 (1974).

¹⁶⁴ N.H. ADMIN. CODE 502.06 (1974). See also N.H. ADMIN. CODE 701.05 (1982) (encapsulated methyl parathion shall not be allowed to drift). Ohio has a similar provision for contamination of crops. See OHIO ADMIN. CODE § 901:5-11-02(F) (1977).

¹⁶⁵ Telephone interview with Robert Cheney, New Hampshire Attorney General's Office, Concord, NH. However, representatives of New Hampshire at the North American Conference on Pesticide Spray Drift and Chemical Trespass (Portland, Me., 1984) reported that New Hampshire is considering amending its current rules.

quantities and under such circumstances that would injure, damage, destroy or render unfit for their intended use, plants, animals, wildlife, aquatic environments and their inhabitants, man and other inhabitants of the nontarget environments.¹⁶⁶

Washington, New York and Maryland regulations are quite similar to the Alabama provisions. Under Washington's rules, application of pesticides is prohibited where "weather conditions are such that physical drift or volatilization may cause damage to adjacent land, including humans, desirable plants or animals."¹⁶⁷ Under New York's rules, pesticides are to be used "in such a manner and under such wind and other conditions as to prevent contamination of crops, property, structures, lands, pasturage or waters adjacent to the area of application."¹⁶⁸ Maryland's approach is similar in requiring that "[a]ll reasonable precautions shall be observed in the handling, use, and secure storage of pesticides and disposal of containers so that man or other non-target areas or organisms will not suffer undue injury and so that hazardous environmental contamination does not occur."¹⁶⁹

These three states illustrate the use of a fairly general standard, leaving it up to the applicator to define the conditions when drift may be likely to occur and prohibiting application in those conditions where damage results; that is, in New York where "contamination would occur";¹⁷⁰ in Alabama, where drift "would injure, damage, destroy or render unfit" specified nontarget organisms; or, in the case of Maryland, where "undue injury" or "hazardous environmental contamination" results.¹⁷¹

¹⁶⁶ ALABAMA REGULATIONS GOVERNING THE CUSTOM APPLICATION OF PESTICIDES AND GROUND EQUIPMENT, § 6(b)(1)-(2) (1974) (emphasis added) [hereinafter cited as ALA. REG.].

¹⁶⁷ WASH. ADMIN. CODE R. 16-228-185(4) (1977).

¹⁶⁸ N.Y. ADMIN. CODE tit. 6, § 325.2(a) (1977) [hereinafter cited as N.Y. REG.]. Compare the Vermont language: "Pesticide applicators must use pesticides and conduct operations under conditions known to *minimize contamination* of non-target lands and water areas." VERMONT REGULATIONS FOR CONTROL OF PESTICIDES § IV.1.b (1981) (emphasis added) [hereinafter cited as VT. REG.].

¹⁶⁹ MARYLAND DEPARTMENT OF AGRICULTURE REGULATIONS tit. 15, subtit. 5, ch. 01, § 12 (1976) [hereinafter cited as MD. REG.]. Cf. MASS. ADM. CODE tit. 222, § 10.03(11) (1983).

¹⁷⁰ New York defines contamination as "the presence of a pesticide or pesticides, in or on areas other than the target area, in quantities which are or may be injurious to man or the environment." N.Y. REG. § 325.1(1) (1977).

¹⁷¹ See statutes cited *supra* notes 166-69.

New Jersey's rules are an amalgamation of the damage or injury standard and the California "due care" approach discussed in the next section. The New Jersey regulations, which apparently were the subject of significant controversy,¹⁷² require efforts to avoid or minimize drift or off-target residues as follows:

(b) No person shall transport, handle, store, mix or load any pesticide or pesticide container in a manner that causes harm or injury to persons or the environment, or a significant risk of injury or damage.

(c) No person shall apply pesticides in a manner that causes damage to non-target sites, harm or injury to persons or the environment, or a significant risk of injury or damage.

(d) No person shall directly apply any pesticide to a non-target site.

(e) No person shall make any application of a pesticide unless he takes reasonable precautions before, during and after the application to minimize exposure of individuals to the pesticide and insure the safety of any individuals necessarily exposed. . . .

(f) No person shall make an application of a pesticide to a target site in such a manner or under such conditions that drift which is avoidable through reasonable precautions infringes on a non-target site.¹⁷³

Within these regulations setting out a "reasonable" standard of care, New Jersey also incorporates, in paragraphs (b) and (c) quoted above, the standard of "significant risk of injury or damage." This term is defined by rule as a "potential for injury or damage which is not purely remote or highly speculative, but capable of being perceived or recognized based on the location, type and amount of pesticide involved, and available scientific information about the pesticide and its effects on persons, property and the environment."¹⁷⁴ Accordingly, it appears that in a direct application to a nontarget site, damage is not considered in determining whether a violation of New Jersey law has occurred. Also, reasonable precautions are required under para-

¹⁷² *Coalition Against Toxics v. Hughey*, No. A-3942-82TS (N.J. Super. Ct. App. Div. 1982).

¹⁷³ N.J. ADMIN. CODE tit. 7, § 7:30-10.6(b)-(f).

¹⁷⁴ N.J. ADMIN. CODE tit. 7, § 7:30-10.1.

graphs (c) and (f) apparently without regard to a measure of damages. However, general use and application incorporate a damage criterion whereby, absent at least a significant risk of injury or damage, the law is not violated when pesticides are applied with reasonable precautions.

Wisconsin presents another variation in the manner in which it regulates drift. Much like New Jersey, Wisconsin recognizes a distinction between direct and indirect spray.¹⁷⁵ Also like New Jersey, Wisconsin then seeks to define "significant risk of injury or damage" from drift as "a potential for injury or damage which is not purely remote or highly speculative, but capable of being perceived or recognized based on the location, type and amount of pesticide involved, and available scientific information about the pesticide and its effects on persons, property and the environment."¹⁷⁶

Given these definitions, Wisconsin's rules then declare certain applications or results to be negligent:

(b) Any use resulting in pesticide drift is negligent, and prohibited under par. (a), if it causes injury or damage, or creates a significant risk of injury or damage to other persons or their property, or wild animals other than those declared pests under s.AG 29.02. In any judicial or administrative enforcement action or proceeding brought by or on behalf of the department for violation of this subsection, proof of pesticide drift shall be prima facie evidence of a significant risk of injury or damage to other persons, their property and wild animals.

(c) Any use resulting in pesticide overspray is negligent, and prohibited under par. (a), regardless of whether it causes

¹⁷⁵ Wisconsin defines pesticide drift as "the drifting or movement of pesticides by air currents or diffusion onto property beyond the boundaries of the target area to be treated with pesticides, other than by pesticide overspray," and indicates in the definition that, in the absence of evidence of "pesticide overspray," an application "beyond the boundaries of the target area shall be considered to be the result of pesticide drift." WIS. ADMIN. CODE [Ag.] § 29.01(22) (1982). "Pesticide overspray" is then defined as an "application of pesticides onto property beyond the boundaries of the target area to be treated, by the failure to control the direct flow or application of pesticides from the application equipment, under surrounding conditions of use and application, so as to confine the pesticide to the target area." WIS. ADMIN. CODE [Ag.] § 29.01(23) (1982).

¹⁷⁶ WIS. ADMIN. CODE [Ag.] § 29.01(33) (1982).

injury or damage, or creates a significant risk of injury or damage to other persons, their property, or wild animals.¹⁷⁷

It appears that proof of drift, at least in enforcement actions, establishes a presumption of harm; while, in overspray situations, no harm need be proved.¹⁷⁸ By incorporating explicitly the statutory negligence standard, Wisconsin establishes that pesticide drift and pesticide overspray are grounds for imposition of penalties.¹⁷⁹

3. *General Standard of Care*

California law also incorporates a general standard as to the amount of drift that will be acceptable, but it does so in a slightly different fashion than the state provisions discussed in the preceding subsection. California statutes require that the use of any pesticide shall be in a manner "to prevent substantial drift,"¹⁸⁰ with "substantial drift" being defined by regulation as that amount of drift in which the "quantity of pesticide outside of the area treated is greater than that which would have resulted had the applicator used due care."¹⁸¹ California then requires as a standard of care that those performing pest control "shall . . . exercise reasonable precautions to avoid contamination of the environment."¹⁸²

The California regulations incorporate the legal standard of negligence by reference to reasonable precautions and due care. California then prescribes more specifically when—to avoid drift—pesticide application shall not be made or allowed to continue:

All applicators prior to and while applying a pesticide shall evaluate the equipment to be used, meteorological conditions, the property to be treated and surrounding properties to determine the likelihood of harm or damage. Notwithstanding

¹⁷⁷ WIS. ADMIN. CODE [Ag.] § 29.15(1)(b)(c) (1982).

¹⁷⁸ Compare WIS. ADMIN. CODE [Ag.] § 29.15(b) (1982) with WIS. ADMIN. CODE [Ag.] § 29.15(c) (1982).

¹⁷⁹ See WIS. STAT. ANN. § 94.71 (West 1972).

¹⁸⁰ CALIF. FOOD & AGRIC. CODE § 12972 (1978).

¹⁸¹ CALIF. ADMIN. CODE tit. 3, § 6000 (1983).

¹⁸² CALIF. ADMIN. CODE tit. 3, § 6600 (1983).

that substantial drift will be prevented, no pesticide application shall be made or continued when:

. . .

(b) There is a reasonable possibility of damage to non-target crops, animals or other public or private property; or

(c) There is a reasonable possibility of contamination of nontarget public or private property, including the creation of a health hazard, preventing normal use of such property. In determining a health hazard, the amount and toxicity of the pesticide, the type and uses of the property and related factors shall be considered.¹⁸³

The preceding generic provisions are sometimes applied with reference to more limited situations. For example, Rhode Island rules address drift in relation to "lands near or adjacent to public water supplies," to "areas adjacent to crops or pasturage," and lands adjacent to "pesticide applications for agricultural purposes."¹⁸⁴

4. *Performance Standards*

A more direct approach is used in North Carolina which prescribes detailed, substantive performance standards to set the minimum amount of care necessary to prevent drift. North Carolina rules regarding aerial application of pesticides first require the pilot to learn and confirm the boundaries and location of the target area, to identify nontarget areas that might present problems, and to assure that equipment has appropriate shutoffs so as "not to create a hazard from vapor or drift."¹⁸⁵ Second, the rules set a general standard prohibiting any person from aerially applying pesticides "under such conditions that drift . . . will cause adverse effect."¹⁸⁶ The rules also require

¹⁸³ CALIF. ADMIN. CODE tit. 3, § 6614 (1983).

¹⁸⁴ RHODE ISLAND PESTICIDE CONTROL ACT RULES, Rule 0(2), (6), (7), (10) (1976) [hereinafter cited as R.I. REG.]. Rhode Island rules also prohibit application by mechanically powered equipment "at such times as the wind velocity will cause a hazardous chemical to drift beyond the target area." R.I. REG. Rule 0(10). See also 3 MINN. CODE AGENCY R. § 1.0338.H (1978).

¹⁸⁵ See N.C. ADMIN. CODE § .1002(d)(g) (1983). West Virginia has similar provisions. See W. VA. ADMINISTRATIVE REGULATIONS, STATE DEPT. OF AGRICULTURE, c. 19-16B, §§ 30-31 (1981) [hereinafter cited as W. VA. REG.].

¹⁸⁶ N.C. ADMIN. CODE § .1003(2) (1983).

specific nozzle spacing, height above target and, for certain products, prescribed disks, pressures, nozzles and droplet sizes.¹⁸⁷ North Carolina now has proposed to amend its rules to include, among other changes, a specific requirement that "applicators shall be required to control drift" and an explicit recognition that the standards set out are a minimum.¹⁸⁸

North Carolina's rules are among the most detailed in the requirements imposed to avoid or decrease drift or off-target spray. Some of the same types of performance standards appear in the regulations of other states, though not necessarily in the

¹⁸⁷ N.C. ADMIN. CODE § .1003 (1983). These standards are applicable according to their terms to phenoxy herbicides, paraquat, picloram and to other restricted-use pesticides. See N.C. ADMIN. CODE § .1003(4)(5) (1983).

¹⁸⁸ The 1984 proposed amendments to N.C. ADMIN. CODE § .1003 provide: To control drift, it shall be required that all aerial applicators of liquid pesticide formulations include and utilize in their schedules and procedures the following methods:

- (1) Fixed nozzles shall be spaced on the boom to afford a uniform spray pattern at the height the aircraft will be flown.
- (2) No person shall apply a pesticide aurally under such conditions that drift from the application will cause adverse effect.
- (3) All pesticides applied aurally shall be released within 10 feet above the target, except where obstructions in or adjacent to the target would endanger the safety of the pilot while applying pesticides at that altitude. This restriction shall not apply to ultra-low volume (ULV) application.
- (4) All applications of the following liquid pesticide formulations shall be made using a D4 or larger disk with a 46 whirlplate with the discharge directed with the airstream or not more than 10 degrees below the horizontal, and operated at a maximum pressure of 40 pounds per square inch, or a system producing a droplet size range not smaller than the above system, except for rotary-wing aircraft flying at speeds of 60 mph or less, in which case the nozzles may be directed downward:
 - (a) phenoxyherbicides, (b) paraquat, (c) picloram (Tordon).
- (5) All applications of restricted-use pesticides other than those specified in (4) of this Rule shall be made using one of the procedures below:
 - (a) use a D4 or larger disk with a 45 whirlplate with the discharge directed with the airstream or not more than 10 degrees below the horizontal, and operated at a maximum pressure of 40 pounds per square inch, or a system producing a droplet size range not smaller than the above system, except for rotary-wing aircraft flying at speeds of 60 mph or less, in which case the nozzles may be directed downward; or
 - (b) use a boom with outside nozzles placed no closer to the wingtips than 12-1/2 percent of the total wingspan distance. If the length of the boom of the spraying equipment exceeds the nozzle span, a bleeder line shall be provided from the end of the boom to the last nozzle on the boom.

explicit context of drift control. Such performance standards may cover a wide variety of subjects including equipment, product, wind and weather conditions, applicator restrictions and the like. Different states use different combinations of standards and apply them in a variety of circumstances. While there are states where some type of standard is generally applicable¹⁸⁹ specific performance standards involving product dilution, equipment and weather conditions are most often set for specific herbicides or categories of herbicides.¹⁹⁰

The Arkansas rules for the application of "restricted herbicides," especially the control of certain hormone-type herbicides near cotton, are within this last category and are among the more intricate of the agency performance standards reviewed. The Arkansas approach is informative in its detail and in the tiered structure of its restrictions.

The Arkansas rules involve 2,4-D, 2,4,5-T and other hormone-type herbicides.¹⁹¹ Most stringent is the prohibition of use of these restricted herbicides by dusting, except by hand equipment for lawns.¹⁹² Next, permits are required for other uses. For example, the use of esters, except for low-volatile esters, requires a written permit from the director of the Arkansas State Plant Board.¹⁹³ After these restrictions, the products can be used only if application is consistent with very detailed standards, the stringency of which varies according to the location within the state. Specifically, the state is divided into two zones in order to tailor the application conditions to the cotton plantings.¹⁹⁴ Restrictions imposed include recordkeeping, spot checking, buff-

¹⁸⁹ Minnesota regulations provide that "[n]o person shall use, store, display, or handle any pesticide or container thereof in any manner inconsistent with labeling or so as to endanger humans, damage agricultural products, food, livestock, wildlife, pollinating insects, or pollute the environment." Minnesota regulations also require that pesticides be applied "in good workmanlike manner utilizing a pattern that will give uniform distribution of pesticides without creating hazard to non-target areas." See 3 MINN. CODE AGENCY R. § 1.0338.H (1978).

¹⁹⁰ See, e.g., ARKANSAS STATE PLANT BOARD REGULATIONS ON 2,4-D, 2,4,5-T AND OTHER HORMONE-TYPE HERBICIDES, § 4.5, 4.9 (1977) (all aerial spraying) [hereinafter cited as ARK. REG.]; IDAHO PESTICIDE USE APPLICATION RULES & REGULATIONS § 17 (1981) [hereinafter cited as IDAHO REG.]; LOUISIANA DEPT. OF AGRIC. RULES & REGS. § 12.1 [hereinafter cited as LA. REG.].

¹⁹¹ ARK. REG. ON 2,4-D, 2,4,5-T AND OTHER HORMONE-TYPE HERBICIDES (1977).

¹⁹² ARK. REG. § 4.2 (1977).

¹⁹³ ARK. REG. § 4.3 (1977).

¹⁹⁴ ARK. REG. § 4.9 (1977).

ers around susceptible crops (commercial plantings of cotton, tomatoes, grapes and okra) and notice.¹⁹⁵ As to performance standards, requirements are established for mixture of spray solution, nozzle placement and angles, airplane turning, wind velocity and aircraft equipment systems.¹⁹⁶

The state of Washington also has a spectrum of rules governing the application of pesticides, particularly herbicides. These rules vary from county to county, imposing a diverse scheme of requirements including weather, time of spraying, equipment calibration and notice standards.¹⁹⁷

Other states use at least part of the Arkansas or Washington approach, most often in regard to particular herbicides. Like Washington, Texas has regulations tailored to various counties;¹⁹⁸ California has established performance standards for equipment, products and weather for specified herbicides;¹⁹⁹ Mississippi sets out standards for pesticide mixture requirements, wind speed and height of application for herbicides;²⁰⁰ and West Virginia, using a similar approach, also includes a requirement for pilot reconnaissance of the intended application site before spraying.²⁰¹

¹⁹⁵ See ARK. REG. §§ 4.4; 4.6; 4.8; 4.9.B.1 (1977).

¹⁹⁶ See, e.g., ARK. REG. § 4.9 (1977).

¹⁹⁷ The scope of the Washington rules is shown by the subjects covered. See Washington Pesticide Control Act, ch. 15.58 (1983); Washington Pesticide Application, ch. 17.21 (1982); WASH. ADMIN. CODE R. 16-228-010 to 16-228-330 (1984) (General Pesticide Regulations) (Regulations Relating to 2,4-D Pesticides, Statewide); WASH. ADMIN. CODE R. 16-230-600 to 16-230-675 (1980). The following is a list of rules, regulations and orders for which citations are unavailable: Regulations Pertaining to the Use of Insecticides on Corn in Eastern Washington; Rules Relating to Desiccants and Defoliants, Eastern Washington; Rules Relating to the Use of Endrin in Apple Orchards; Regulations Relating to Heptachlor Treated Grain Feed; Order No. 1137 (DDT, DDD) (1970); Order No. 1127 (Lindane) (1969); Order No. 1633 (Picloram) (1979); Order No. 1596 (Microencapsulated Methyl Parathion) (1979); Summary of Eastern Washington 2,4-D Restrictions; Order No. 1426, Regulations Pertaining to Blossoming Alfalfa, Clover and Mint (1975).

Also there are separate regulations relating to 2,4-D restrictions for the following counties: Columbia, Yakima, Spokane, Lincoln, Grant, Adams, Benton, Douglas & Chelon, Franklin, Garfield, Klickitat, Okanogan, Walla Walla and Whitman.

¹⁹⁸ See HERBICIDE REGULATIONS OF THE TEXAS DEPARTMENT OF AGRICULTURE § 11.2 (1983). See also IDAHO REG. § 17 (1981) (phenoxy herbicide restrictions).

¹⁹⁹ See, e.g., CALIF. ADMIN. CODE tit. 3, § 2458 (1982).

²⁰⁰ See MISSISSIPPI REGULATIONS GOVERNING THE APPLICATION OF HORMONE-TYPE HERBICIDES BY AIRCRAFT, §§ 2-7 (1974).

²⁰¹ See W. VA. REG. ch. 19-16B, §§ 29-36 (1981).

It is also fairly common for performance standards to be applied to particular kinds and uses of equipment. North Dakota rules, for example, set out a general standard of care requiring all pesticide equipment to "be operationally sound and properly calibrated so as to prevent unreasonable adverse effects on the environment."²⁰²

Other states are more definitive. Minnesota provides specific standards for aircraft equipment,²⁰³ and Idaho prescribes limitations on the use of aircraft by establishing a maximum wind velocity and regulating turning or low flying.²⁰⁴ A few states also provide specified standards for ground equipment.²⁰⁵

Another focus of agency rules is the establishment of buffer zones. The buffer zone concept was alluded to in the previous discussions of certain FIFRA special exemptions, Oregon's spray-free areas and Arkansas's herbicide restrictions.²⁰⁶ The idea is obvious. Because drift may be impossible to prevent, a spray-free area is established as a buffer around particularly sensitive areas. As was the case with some of the more general performance standards, buffers are imposed under a variety of circumstances. While different states have different concerns, areas apt to be protected typically include schools, dwellings, water bodies or susceptible crops, with the extent of buffers depending on the nature of the site and the pesticide product involved.²⁰⁷

Variations are illustrated by a broad overview of several states. The Arkansas restricted herbicide rules provide for one-mile buffers for susceptible crops from April 15 to October 1 in some areas and, absent notification, 1/4 mile at other times in

²⁰² N.D. R4-25-05, § 05.1-3 (1976). *See also* N.Y. REG. § 325.27 (1977); WASH. ADMIN. CODE R. 16-228-190(5)-(6) (1977).

²⁰³ 3 MINN. CODE AGENCY R. § 1-0339.A-10 (1978); WASH. ADMIN. CODE R. 16-230-180 (1980) (thermometers/inversion).

²⁰⁴ IDAHO REG. §§ 8-9 (1981). *See also* ARIZ. ADMIN. COMP. R. § R3-10-74(11) (1983) (stating that in applying highly toxic pesticides "whenever possible, pilots should fly cross-wind, beginning at the downwind side of the field so that drift will be dispersed on return swath"). Likewise, Texas herbicide rules and certain Washington rules deal explicitly with wind, time and weather conditions.

²⁰⁵ *See, e.g.*, WASH. ADMIN. CODE R. 16-230-160 (1980) (desiccants and defoliants).

²⁰⁶ *See* notes 110-18 *supra* and accompanying text.

²⁰⁷ *See generally* notes 208-14 *infra*. In a few instances the courts have also directly or indirectly considered buffer zones as an indication of the adequacy of precautions taken in using pesticides. *See, e.g.*, *Wieting v. Ball Air Spray Inc.*, 173 N.W.2d 272 (S.D. 1969).

other areas.²⁰⁸ Idaho precludes phenoxy herbicides in some counties and provides a five-mile buffer from susceptible crops in others.²⁰⁹ Arizona provides for buffers around schools (1/4 mile) and dwellings (100-300 feet except with written permission) where "highly toxic" pesticides are applied.²¹⁰ It is not uncommon for these buffers to be established for a single product (such as Temik near certain water supplies in Maine²¹¹), or to protect a special use (as is the case with blueberries in New Jersey²¹² or vineyards in Washington²¹³). One of the most extensive and precise lists of buffers is that set out in West Virginia regulations for picloram, dicamba, and other herbicide formulations.²¹⁴

Often buffer zones are related to notice or consent. This concept acknowledges that, while it may be impossible to prevent drift, at least *unconsenting* (or *unknowing*) exposure may be lessened or eliminated. The Arkansas and Arizona provisions are examples of requirements of several states where buffers are imposed in the absence of notice to, and permission of, the landowner.²¹⁵

Regulations of still other states do not require consent or buffers, but do require notice.²¹⁶ In some instances posting may be required;²¹⁷ in others, notice is given only to the agriculture

²⁰⁸ ARK. REG. § 4.9.B.1-2 (1977).

²⁰⁹ IDAHO REG. § 17 (1981). *See also* WASH. ADMIN. CODE R. 16-228-260 (1983) (application of endrin restricted to a swath of four feet on each side of apple tree rows).

²¹⁰ ARIZ. ADMIN. COMP. R. §§ R3-10-77 to -79 (1983).

²¹¹ ME. REG. 01-026, ch. 41, 1(B) (1984).

²¹² N.J. ADMIN. CODE tit. 7, § 7:30-10.6(l).

²¹³ WASH. ADMIN. CODE R. 16-230-665 (1980).

²¹⁴ W. VA. REG. ch. 19, § 31 A-B (1981).

²¹⁵ *See* notes 208, 210 *supra* and accompanying text. *See also* WASH. ADMIN. CODE R. 16-231-001 (1980) (application of 2,4-D in certain counties).

²¹⁶ In some instances, notice is required in conjunction with a permit process. *See, e.g.*, CONN. AGENCIES REGS. § 22a-66-7(g)(2) (aerial application of B.t.). On a few occasions the courts have also discussed the obligation of a person using pesticides to give notice or warning to others of his or her intention to spray. Such an obligation was found to exist and to be the basis for assessing liability where the landowner, who knew that cattle pastured on an unfenced strip of his property, failed to warn the owner of the cattle prior to spraying a product known to be harmful to the animals. *See Hopkins v. Ravalli County Elec. Coop., Inc.*, 395 P.2d 106 (Mont. 1964). *See also Hall v. C & A Navarra Ranch, Inc.*, 101 Cal. Rptr. 249 (Cal. Ct. App. 1972); *Lenk v. Spezia*, 213 P.2d 47, 51 (Cal. Ct. App. 1949); *Bennett v. Larsen Co.*, 348 N.W.2d 540, 550 (Wis. 1984). Required notice has also arisen in the context of federal litigation. *See, e.g.*, *Oregon Envtl. Council v. Kunzman*, 714 F.2d 901 (9th Cir. 1983).

²¹⁷ *See, e.g.*, MASS. ADMIN. CODE tit. 333, § 10.03(20) (1983); WASH. ADMIN. CODE R. 16-228-265 (1983) (endrin).

department or to some governmental entity.²¹⁸ More often, notice is required for neighbors or for the public generally, with different requirements applying in different circumstances in different states.²¹⁹

Massachusetts's notice requirements are illustrative of one group of standards. For nonagricultural applications of restricted or limited use pesticides to areas in excess of twenty-five acres, notice must be given "by the applicator to members of the public residing on lands within the target area or on adjacent lands by publication of a timely notice in a newspaper of general circulation in the municipality affected."²²⁰ For other nonagricultural applications notice of the proposed application must be given "by the person or entity initiating said application to the public residing on adjacent lands by publication of a notice in a newspaper of general circulation normally used by the municipality for legal notices not later than two (2) days before the application and no sooner than ten (10) days before application."²²¹ The regulations here specify that the notice must "include the purpose of the control program, the general location of the control area, the control material to be used, the anticipated commencement date and time of the control program, and the name and telephone number of an individual from whom further information can be obtained."²²² For "agricultural use of a restricted or state limited use pesticide on ten (10) or more acres of land, when the treated area is within fifty (50) feet of a public road, or on land with four hundred fifty (450) feet of frontage on a public road," Massachusetts regulations require public notice by posting.²²³ The signs must state "Caution, Re-

²¹⁸ See, e.g., MONT. ADMIN. R. 4.10.901(3) (1982) (endrin); IOWA ADMIN. CODE § 400-37.2 (455B) (1977) (county supervisors/roadside).

²¹⁹ Cf. ME. REG. 01-001, ch. 51, § 2 (1984) 01-001, ch. (unnumbered) § 3 (1981) (trichlorfon); MASS. ADMIN. CODE tit. 333 § 10.03 (19)-(21) (1983); N.J. ADMIN. CODE tit. 7, § 7:30-10.9, -10.11; OHIO ADMIN. CODE 901:5-11-02(E), :5-11-04 (1977); VT. REG. § IV(4) (1981); DIVISION OF PESTICIDES, KY. DEPT. OF AGRIC., AERIAL RIGHT-OF-WAY APPLICATION.

²²⁰ MASS. ADMIN. CODE tit. 333, § 10.03(19)(b)(1983). Such applications also require prior notice to and approval of the Department. MASS. ADMIN. CODE tit. 333, § 10.03(19)(a) (1983).

²²¹ MASS. ADMIN. CODE tit. 333, § 10.03(21) (1983).

²²² MASS. ADMIN. CODE tit. 333, § 10.03(21) (1983).

²²³ MASS. ADMIN. CODE tit. 333, § 10.03(20) (1983).

stricted Pesticide in Use" and must be posted "at least every two hundred (200) feet and at every principle entrance fronting on a public road. The signs shall comply to size, color, print size, and other standards established by the Department."²²⁴

In a parallel manner, Vermont and West Virginia have regulations that require notice prior to right-of-way spraying.²²⁵ Proposals have been made in Vermont to make the notice requirement more precise;²²⁶ current rules mandate:

b. After applying for a permit to use herbicides on a right-of-way, the permit applicant shall publish a notice of his intent to use herbicides which satisfies the following criteria. . . .

c. In addition to newspaper advertisements, the permit applicant shall provide notification by one of the following methods:

(1) by three (3) spot messages per day on each of two (2) radio stations in the area of spraying . . .

(2) by U.S. mail to residents adjacent to the right-of-way . . .

(3) by a personally delivered printed statement to residents of property adjacent to the right-of-way . . .²²⁷

Still other types of notice requirements are suggested by the New Jersey provisions for public notice prior to community or area-wide spray applications where the applications include aggregate areas greater than three acres which are part of a governmental pesticide control program or which are controlled by one person.²²⁸ Also noteworthy are the Maine provisions for

²²⁴ MASS. ADMIN. CODE tit. 333, § 10.03(20) (1983).

²²⁵ See VT. REG. § IV.(4).b,c (1981); W. VA. REG. ch. 19, § 29.A (1981).

²²⁶ Proposed regulations amending VT. REG. § IV.4 (1983) would provide that in order to receive permits to use herbicides on a right-of-way, applicants must provide notice, in addition to newspaper advertisements, by one of the following methods: "(1) by three (3) spot messages per day on each of two (2) radio stations in the area of spraying . . . (2) by U.S. mail to residents adjacent to the right-of-way . . . [or] (3) by a personally delivered printed statement to residents of property adjacent to the right-of-way. . . ."

²²⁷ VT. REG. § IV.(4).b,c (1981).

²²⁸ See N.J. ADMIN. CODE tit. 7, § 7:30-10.1, -10.9. Note that agricultural spraying is exempted from the notice section. N.J. ADMIN. CODE tit. 7, § 7:30-10.9(b).

notice in regard to Captan and Dylox spraying.²²⁹ While these provisions indicate a wide variety of situations where notice has been required, perhaps the most common is the regulatory concern with protection of bees. Notice to apiarists is frequently mandated and is likely to involve fairly elaborate systems for assuring contact is made.²³⁰

In some instances rules as to mandatory notice are designed to create communication of sorts with those who may be affected by the spray. The Maine Captan and Dylox rules, for example, contemplate that following the required notice, the individual parties will make arrangements for more specific notice.²³¹ Similarly, the Vermont rules provide an opportunity for landowners to have their water supplies marked on right-of-way spraying maps and the areas flagged.²³²

These latter opportunities, created by regulation, are merely lesser variations on the Massachusetts rules which combine buffer, notice and consent concepts in allowing individuals to be excluded from spray areas upon following the specified procedures.²³³ For example, once an area is so designated, the rules provide for a detailed marking of sites using methods approved by the department.²³⁴

A. *Permitting*

As discussed in regard to statutory permitting requirements in the preceding section, permits are a way to focus governmental and public attention on a particular application.²³⁵ Pesticide

²²⁹ Notice is required for these products and content of the notice is specified by rule. ME. REG. 01-001, ch.51, 2 (1981), 01-026, ch. (unnumbered), § 3 (1981) (trichlorfon).

²³⁰ See, e.g., IOWA ADMIN. CODE § 30-10.31 (206) (1982); MASS. ADMIN. CODE tit. 333 § 10.03(13) (1983); N.J. ADMIN. CODE § 7:30-10.11; N.C. ADMIN. CODE § .1009 (1983).

²³¹ See, e.g., ME. REG. 01-001, c.51, 2.C (1981).

²³² VT. REG. § IV.(4).d (1981).

²³³ MASS. ADMIN. CODE tit. 333 § 10.03(22) (1983). Some areas cannot be excluded, namely those where a significant threat to public health or agriculture is involved. MASS. ADMIN. CODE tit. 333 § 10.03(22)(b) (1983).

²³⁴ MASS. ADMIN. CODE tit. 333, § 10.03(22)(a)(2) (1983).

²³⁵ "Permit" as used here does not include licensing or certification of applicators discussed beginning at note 247 *infra* and accompanying text. See also note 88 *supra*.

agencies require permits in a series of situations.²³⁶ These include: permits for specific sites²³⁷ (most notably water bodies²³⁸ and rights-of-way²³⁹); permits for specific products (most typically herbicides²⁴⁰ or restricted use pesticides²⁴¹); permits to be obtained for specific kinds of application (such as aerial applications²⁴²); as well as an assortment of more individualized situations.²⁴³

Generally speaking, the permit process itself can be valuable in raising awareness of drift problems. For example, to get a permit for agricultural use of a restricted material in California, applicants must first identify all known areas that could be adversely affected by use of the pesticide(s), "including . . . hospitals, schools and playgrounds, residential areas . . . waterways . . . livestock and crops."²⁴⁴ This assures that applicants have familiarized themselves with the area.

²³⁶ See generally N.H. ADMIN. CODE § 101.21 (1980) (defining "special permit"). While several types of permits are described here, the discussion of experimental use permits is beyond the scope of this Article. See generally 7 U.S.C. § 136c (1980); ME. REV. STAT. ANN. tit. 7, § 608 (1979 & 1982-83 Supp.); 40 C.F.R. pt. 172 (1983). See also note 119 *supra*.

²³⁷ See notes 238-39 *infra*. See also, e.g., N.H. ADMIN. CODE, § 505.03 (1974) (woodland tracts of 50 acres); N.C. ADMIN. CODE § .1005(a) (1983) (application in congested area by aircraft).

²³⁸ See, e.g., N.H. ADMIN. CODE § 502.10 (1974).

²³⁹ See, e.g., N.H. ADMIN. CODE § 505.02 (1977); OHIO ADMIN. CODE § 901:5-11-02(M) (1977); VT. REG. § IV.(4)(a) (1981).

²⁴⁰ See, e.g., ARK. REG. § 4.3 (1977) (esters); CAL. ADMIN. CODE art. 20 (1982); N.M. Pesticide Control Act Regulatory Order No. 9, R10 (1979) (hormone-type herbicides).

²⁴¹ See, e.g., CAL. ADMIN. CODE art. 20 (1982) (restricted materials); COLO. PESTICIDE ACT REG. XV(C)-(D) (limited use products); HAWAII REG. § 4-66-64 (1981); OHIO ADMIN. CODE § 901:5-11-02(N)(1977)(rodenticide, avicide, vertebrate repellents applied by aircraft); OR. ADMIN. R. §§ 603-57-301, 603-57-320 (1982) (2,4-D); WIS. ADMIN. CODE [Ag.] § 29.04 (1982).

²⁴² See, e.g., CONN. AGENCIES REGS. § 22a-54-1 (1971); HAWAII REG. § 4-66-64(a) (1981) (restricted product application by aircraft); N.H. ADMIN. CODE § 502.05 (1974); R.I. REG. Rule O, 9; VT. REG. § IV.5(c) (1981). Connecticut's rules, which are among the most stringent in this regard, provide: "No permit for the application of broad spectrum chemical pesticides from the air for non-agricultural purposes shall be issued by the commissioner of the department of environmental protection." Agricultural use requires a permit to be issued "only after the applicant has produced evidence satisfactory to the commissioner that the proposed material and its method of application shall not be injurious to the public health, aquatic and animal life, including pollinating insects, or property not owned or leased by the applicant on whose behalf the application is made." CONN. AGENCIES REGS. § 22a-54-1 (1971).

²⁴³ See, e.g., N.J. ADMIN. CODE tit. 7, § 7:30-10.2(a) (mosquito permit program).

²⁴⁴ CAL. ADMIN. CODE tit. 3, § 2452(j)(5) (1982). See also HAWAII REG. § 4-66-64(a)(2) (1981).

In a like way, Alaska's prerequisites assure, in more general terms, that specific attention has been paid to the planned precautions and to applicators' qualifications:

The department will deny an application for a permit to apply a pesticide if:

. . . .

(2) the minimum planned precautions are inadequate to protect the public health or safety, or the environment; [or]

(3) the applicant has failed to furnish evidence to the department that persons directing, conducting, or participating in pesticide projects have a working knowledge of the pesticide to be used, the necessary safety precautions, and the potential impact of the application on the environment²⁴⁵

The permit process also serves as a regulatory tool to impose conditions in certain situations. The Wisconsin standards for issuing permits are illuminating in this regard.

The standards allow issuance of a permit only when the regulatory agency has determined that a pesticide will be used with reasonable safety and without unreasonable hazard to the ecosystem. The standards also allow the agency to impose specific conditions and limitations on emergency use permits.²⁴⁶

C. Licensing

Agency regulations further define the statutory standards for certification of applicators. The approaches follow the federal

²⁴⁵ ALASKA ADMIN. CODE § 90.055(3)(2)-(3) (1978). *Accord* HAWAII REG. § 4-66-64(a)(2) (1974).

²⁴⁶ WIS. ADMIN. CODE [Ag] § 29.04(3), 06(3)(a) (1982). The standards provide: Standards for issuing permits; general.

Permits may be issued under this section only when, in the judgment of the department, adequate controls can be established to assure that the pesticide will be used with relative safety and without unreasonable hazard to persons, property, wild animals or the environment. . . .

Permit conditions and controls.

(a) The department may impose conditions or limitations on emergency use permits as necessary to protect persons, property, wild animals or the environment, including conditions and limitations on the duration of the permit, the amount of pesticide to be used, the location and size of the application site where the pesticide may be used, the method of pesticide application, and the disposal of unused pesticides and pesticide containers.

Id.

regulations promulgated under FIFRA closely and bear a remarkable similarity to each other. While the extent of inclusion in each category varies somewhat, most state regulations govern the certification of private applicators and of commercial applicators, with the latter group being divided into such subcategories as agricultural pest control, forest pest control, ornamental and turf pest control, and right-of-way pest control.²⁴⁷

As noted previously, the theory inherent in this type of regulatory control is that a trained applicator will apply pesticides properly and wisely. Examinations, as defined in the regulations, are intended to assure a minimum level of competency. For private applicators, the standard for testing seems to be quite general, seldom referring to drift directly. The most relevant provision commonly found in state rules in this regard parallels the federal provision previously quoted requiring ability to recognize special local environmental situations.²⁴⁸ As to commercial applicators, reference to drift is often made, and state rules tend to follow the federal language requiring knowledge of "prevention of drift."²⁴⁹ Subcategories of commercial applicators are often more specific, particularly those dealing with agricultural, forestry, aerial, ornamental and turf, and related applications.²⁵⁰

²⁴⁷ See, e.g., HAWAII REG. § 4-66-57 to -58 (1981); MO. ADMIN. CODE § 70-25.110, .150.

²⁴⁸ See note 76 *supra* and accompanying text. 302 KAR 31:005, § 9 (1980) is the source of the quotation, but the language is virtually identical to the majority of other states. See notes 104-07 *supra* and accompanying text.

²⁴⁹ See note 77 *supra* and accompanying text. See also, e.g., VA. REG. 25(b)(1)(vii) (c) (1980). This is only illustrative of prevalent language; even those rules which do not mention drift *per se* still appear to intend drift-related factors to be a significant area of knowledge.

²⁵⁰ Arizona rules, illustrative of the majority of states, provide:

1. Agricultural pest control. Practical knowledge is required concerning . . . non-target injury and community problems resulting from the use of restricted use pesticides in agricultural areas.

. . . .

2. Forest pest control. The Applicator must therefore demonstrate practical knowledge of control methods which will minimize the possibility of secondary problems such as unintended effects on wildlife. Proper use of specialized equipment must be demonstrated, especially as it may relate to meteorological factors and adjacent land use.

3. Ornamental and turf pest control. Applicators shall demonstrate practical knowledge of . . . drift, and persistence beyond the intended

D. Registration and Classification

Registration is among the areas where agency rules can be anticipated to have the least impact on the control of drift.²⁵¹ Only in a few instances—for example, California²⁵² and Massachusetts—are drift related factors mentioned in agency rules regarding registration. Massachusetts's criteria for registration and classification require that consideration be given to the risk "of contaminating non-target organisms and thereby causing acute, chronic, delayed or secondary adverse effects" and to the "extent to which ingredients or break-down products have the potential to move from the target area."²⁵³ Maine has also used its registration process to consider environmental data and as a tool to impose conditions on registration.²⁵⁴

Although some agencies do use registration to consider drift, classification as a restricted or general use pesticide is more often the focal point for reviewing the effect on the environment. The state definitions support this view. Hawaii, for example, includes in its standards for restricted use pesticides the following description: "Pesticides or pesticide uses which can reasonably be anticipated to result in significant population reductions in non-target organisms or fatal to members of endangered species."²⁵⁵ In another vein, Montana classifies according to anticipated residue levels and data such as LD50 for the product.²⁵⁶ Using criteria such as these to limit the use of a product to certified

period of pest control.

6. Right-of-way pest control. Applicators shall demonstrate practical knowledge of . . . problems of runoff, drift, and excessive foliage destruction and ability to recognize target organisms. They shall also demonstrate practical knowledge of the nature of herbicides and the need for containment of these pesticides within the right-of-way area, and the impact of their application activities in the adjacent areas and communities.

ARIZ. ADMIN. COMP. § R3-10-57 (1983).

²⁵¹ See generally notes 93-96 *supra* and accompanying text.

²⁵² See CALIF. ADMIN. CODE tit. 3, §§ 2360, 2367, 2369.5 (1982).

²⁵³ MASS. ADMIN. CODE tit. 333, § 8.05(4)(c)(12)-(13) (1983).

²⁵⁴ See generally ME. REG. 01-001, ch. 51 (1981) (captan); ME. REG. 01-026, ch. (unnumbered) (1981) (trichlorfon dylox).

²⁵⁵ HAWAII REG. § 4-66-32(b)(3) (1981). See also MONT. ADMIN. R. § 4.10.702, .703 (1980).

²⁵⁶ MONT. ADMIN. R. § 4.10.703 (1980).

applicators or to other restricted situations is a potentially effective way to control the likelihood of misapplication.

E. Enforcement-Related Activities

The various agency regulations falling under this heading cover a wide range, from those that are self-policing to those that involve policing by inspection or monitoring by the state.

Perhaps the most direct effort at self-policing is represented by the West Virginia regulation requiring utility owners to inspect their own application sites.²⁵⁷ More typical of self-policing are the many state agency regulations which require recordkeeping. While almost all state agencies require some sort of recordkeeping, particularly by commercial applicators, some focus on certain activities which are apt to call the applicators' attention to drift and its control. In addition to the routine requirements for records of time, date, place and "accidents,"²⁵⁸ several states require records to be kept of wind speed and direction at time of application,²⁵⁹ and a few require note to be made of adjacent properties or even of equipment used.²⁶⁰ While such records ultimately are open to state inspection, it seems their predominant value is in increasing applicator awareness.

A midpoint between self policing or government policing is represented by the requirements in some states that certain pesticide applications be carried out only after inspection of some sort—for example, by university personnel²⁶¹ or consistent with the written recommendation of qualified professionals.²⁶²

²⁵⁷ See W. VA. REG. ch. 19, § 32 (1981). Compare DIVISION OF PESTICIDES, *supra* note 219, at § 3 (prespray inspection).

²⁵⁸ See, e.g., COLO. PESTICIDE ACT REG. VI; CAL. ADMIN. CODE tit. 3, § 6634 (1982); IND. PESTICIDE USE LAW REG. 4 (1976); N.Y. REG. § 325.25 (1977).

²⁵⁹ See, e.g., ARK. REG. § 4.8(a) (1977); D.C. REG. No. 15 (1978); IDAHO REG. § 4.B(7) (1981); IOWA ADMIN. CODE § 30-10.26(206)(7)(1977); KAN. ADMIN. REGS. 4-13-5(7) (1983); MD. ADMIN. CODE § 15.05.01.11.A(11)-(12) (1976); MISS. LICENSING OF AGRICULTURAL AIRCRAFT REG. § 17 (1980); N.M. Pesticide Control Act Regulatory Order No. 5, § 8(a)(5) (1979), N.M. Pesticide Control Act Regulatory Order No. 9, § 11(e) (1980); OHIO ADMIN. CODE § 901:5-11-07 (1977).

²⁶⁰ See, e.g., ARK. REG. § 4.8(h) (1977) (crops); MISS. APPLICATION OF HORMONE-TYPE HERBICIDES BY AIRCRAFT REGULATIONS § 8 (1974) (adjoining property/crops).

²⁶¹ See, e.g., MONT. ADMIN. R. § 4.10.901 (1982) (endrin); WASH. ADMIN. CODE R. 16-228-245(2)(a) (1983) (endrin).

²⁶² See, e.g., CAL. ADMIN. CODE tit. 3, § 6656 (1982). These people or other consultants may themselves be subject to license requirements. See, e.g., CAL. FOOD & AGRIC. CODE §§ 12001, 12054 (1971). See also ARIZ. ADMIN. COMP. R. § R3-10-80 (1983); LA. PESTICIDE LAW REG. §§ 9.0-10.3; MD. REG. § 15.05.01.06 (1976).

Beyond recordkeeping and required advice, there are several aspects of government enforcement that are addressed by agency rules. Inspection itself is a key enforcement tool. The authorization for, or presence of, government officials at a spray site may tend to make applicators more aware and careful. Inspection is also crucial if liability is to be ascertained and damages or penalties assessed. Almost all state agencies have rules to implement inspection authority.²⁶³ Of most relevance to drift are those rules which deal with site inspection and the taking of on-site and off-target samples for residue analysis.

This last aspect of enforcement, the power to inspect, is to a large extent only relevant to the ability to use the information found or observed. This aspect of enforcement confirms the relevance of the whole issue of detectable residues. Most agency rules do not pursue this issue to any meaningful conclusion. A few agencies govern tolerances of pesticides, primarily in regard to food and feed.²⁶⁴ As an enforcement tool, there is apparently a difficult line to be drawn. As technology has improved, the ability to detect smaller and smaller amounts of pesticide has increased, causing some extreme limitations. In some instances, like New Hampshire's "zero drift" interpretation of its rules or the similar standard now proposed for Vermont, drift seems to be governed at the "no detectable residue" level. In other states, drift is governed by more generic standards—such as "damage," "contamination" or "significant harm"—none of which are particularly precise.

Because of the variety and complexity involved in setting rational standards, this definitional part of the regulatory process is difficult to come to terms with. California provides some guidance, not in its enforcement section, but in its registration and renewal requirements where it imposes on applicants the obligation to provide data relevant to residue standards.²⁶⁵ This provision suggests that one approach to setting appropriate res-

²⁶³ See, e.g., ALA. REG. § 16(A) (1978).

²⁶⁴ See, e.g., CAL. ADMIN. CODE tit. 3, § 2490.1 (1982); FLA. ADMIN. CODE 5E-2.04 (1981). A comprehensive study of food tolerances/residues was not undertaken. These appear to follow the food and drug tolerances. For further information, see DIGEST, *supra* note 22.

²⁶⁵ In prescribing the data requirements, California rules do provide for a continued registration pending development of information as necessary. See CAL. ADMIN. CODE tit. 3, §§ 2360, 2367, 2369.5 (1982).

idue levels for enforcement may be to have the manufacturers come forward with recommendations or supporting data as part of the registration or classification process. Even so, the "level" instigating enforcement activity remains an unanswered question of enforcement.

CONCLUSION

The preceding review shows that pesticide drift is a matter of serious concern in legislatures and courts throughout the country. While the issue has merited much attention, it is clear that there is no consistent or single answer to the concern engendered by the fact that pesticide drift cannot be completely eliminated or controlled. It is noteworthy that the EPA, which has the opportunity to adopt uniform federal performance standards to control drift throughout the country, has declined to do so, choosing instead to rely largely on general label precautions or prohibitions.

The use of pesticides is diverse: in product composition, in regard to target crops and the types of organisms likely to be found adjacent to them, in prevailing methods of application, and in regard to population densities and societal concerns in the areas where the products are used. Because of the wide scope of variation, it is particularly appropriate that in the absence of a clear federal direction, the states have fashioned a variety of answers reflective of the nature of the problems encountered in a particular region of the country. The preceding overview should provide state legislators with an understanding of the approaches taken to deal with the issue of drift. While one state may well provide a model for another, it can be anticipated that each will continue to fashion its approach to drift to suit home conditions.