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An Agricultural Law Research Article

Farms, Their Environmental Harms, and Environmental Law

Part 2

by

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through the process once again. Although states could reverse this continuation of past practice, farms appear likely to retain a safe harbor for their nonpoint source discharges.

3. *Clean Air Act*

The Clean Air Act (CAA) provides a complex and comprehensive regulatory framework covering stationary and mobile sources of air pollution.[235] Although farms do not enjoy the range of express exemptions under the CAA that they do under the CWA, they generally escape most CAA regulatory programs by virtue of de minimus discharge exceptions. By limiting their emphasis to "major sources" emitting more than threshold quantities of regulated pollutants, CAA regulatory programs essentially give farms yet another safe harbor, this one for air pollution.[236] By contrast, other sectors of the agriculture economy upstream and downstream of farms are heavily regulated by the CAA.[237]

A significant CAA regulatory program not tied to minimum emission quantity thresholds leaves the fate of farms open to the states and thus largely beyond direct federal control. Under Sections 108 and 109 of the CAA, EPA must designate "criteria" air pollutants that may reasonably be anticipated to endanger public health or welfare, and then establish nationally uniform

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235. *See* 42 U.S.C. §§ 7401-7671q (1994). For an overview of the CAA programs, see THE CLEAN AIR ACT HANDBOOK (Robert J. Martineau, Jr. & David P. Novello eds., 1998).

236. *See, e.g.*, 42 U.S.C. § 7412(a)(1) (1994) (defining major source of hazardous air pollutants as a source emitting 10 tons per year of any such pollutant or 25 tons per year of any combination of such pollutants); *id.* § 7479(1) (defining major source for purposes of permits designed to prevent significant deterioration of air quality generally as any source emitting 250 tons per year of any air pollutant; farms are not included in the list of specifically identified sources requiring only 100 tons per year to qualify as major); *id.* § 7602(j) (defining major source generally for the CAA to mean any source emitting 100 tons per year of any pollutant, unless otherwise specified). One exception is the CAA program for standards of performance for new stationary sources, which establishes no "major source" threshold. *See id.* § 7411. However, the new source emission limits apply only to categories of sources EPA has designated and for which it has promulgated such standards. EPA has not done so for farms generally, though grain terminal elevators storing over 2.5 million bushels are subject to gas emission opacity and particulate matter emission limits. *See* 40 C.F.R. subpt. DD, § 60.300 (1999) (standards of performance for grain elevators).

237. *See, e.g.*, 64 Fed. Reg. 33,550 (1999) (to be codified at 40 C.F.R. pts. 9 & 63) (EPA final rule regulating emissions of hazardous air pollutants from pesticide manufacturers); 64 Fed. Reg. 31,358 (1999) (to be codified at 40 C.F.R. pts. 9 & 63) (EPA final rule regulating emissions of hazardous air pollutants from fertilizer manufacturers).

ambient air quality standards.[238] Section 110 of the CAA allows states, if they elect to do so, to develop State Implementation Plans (SIPs) prescribing the enforceable measures the state will implement to achieve the NAAQS.[239] Within the SIP framework, the details are left to state discretion. The criteria pollutants are federally designated, but the questions of whom and what to regulate in order to achieve the federal standards are left to the states.[240] Although states could regulate air pollutant emissions from farms within that scope of discretion,[241] most states do not do so rigorously, and EPA actively dissuades them from doing so.[242]

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238. *See* 42 U.S.C. §§ 7408-7409 (1994). For a thorough overview of the NAAQS program, comparing its operation to that of the CWA water quality protection programs, see Adler, *supra* note 221, at 230-34.

239. *See* 42 U.S.C. § 7410 (1994). *See generally* Adler, *supra* note 221, at 234-50. If a state elects not to prepare a SIP, or prepares one that does not meet EPA approval, EPA must prepare a Federal Implementation Plan for the area in question. *See* 42 U.S.C. § 7410(c) (1994).

240. *See* United Electric Co. v. EPA, 427 U.S. 246, 267, 269 (1976) ("[T]he State has virtually absolute power in allocating emissions limitations so long as the national standards are met. . . . Congress plainly left the States, so long as the national standards were met, the power to determine which sources would be burdened by regulation and to what extent.").

241. EPA has explained that "the degree to which ambient air emissions from farming practices— such as prescribed burning— are allowed are location-specific (specific to a geographic area) within each State Implementation Plan." National Agric. Compliance Assistance Ctr., U.S. Envtl. Protection Agency, *Laws & Policies— Clean Air Act* 3 (visited Apr. 22, 1999) <http://es.epa.gov/oeca/ag/lcaa.html>.

242. For example, faced with the prospect that its new regulations establishing NAAQS for fine particulate matter could extend to farm emissions of soil and particulates from tilling, prescribed burning, and other practices, EPA is currently devising policies to allow farms to escape regulation. EPA has contended that farms do not constitute major sources of the fine particulates, though data to support that claim appear to be nonexistent. Farm industry advocates are concerned that states could nonetheless attempt to regulate farm emissions through the state SIPs, so EPA is developing "guidance" for states that will reflect the purportedly small contribution farms make to fine particulate emissions. These and other issues are the subject of the Agricultural Air Quality Task Force EPA and USDA jointly established in 1997. *See* Alec Zacaroli, *Agencies Develop MOU Addressing Agricultural Impacts on Air Quality*, 28 Env't Rep. (BNA) 1282 (1997). The issue has been complicated by a recent court decision striking down EPA's new rule on the ground that it violates the nondelegation doctrine. *See* American Trucking Ass'n v. EPA, 195 F.3d 4 (D.C. Cir. 1999); *see also* Alec C. Zacaroli, *Court Rulings Imperil EPA's Efforts to Clamp Down on Ozone Pollution*, 30 Env't Rep. (BNA) 325 (1999). A related program designed to protect visibility in and near national parks and other vista areas may provide states with another opportunity to regulate farm emissions. Section 169A of the CAA establishes this so-called "regional haze" regulatory program, new regulations which EPA recently promulgated to require all states to develop regional haze SIPs to achieve clear visibility for protected areas by the year 2064. *See* Regional Haze Regulations, 64 Fed. Reg. 35713 (July 1, 1999) (to be codified at 40 C.F.R. pt. 51); *see also* Eric L. Hiser, *Regional Haze and Visibility: Potential Impacts for Industry*, 29 Env't Rep. (BNA) 2597 (1999). Although few protected areas lie close to heavily

Under the CAA's program for prevention of significant deterioration (PSD) of air quality, in areas where the NAAQS is met for a regulated pollutant, states must establish "increments" of maximum air quality degradation and administer permits for major sources of the covered pollutant.[243] States may exclude from the increment "concentrations of particulate matter attributable to the increase in emissions from . . . temporary emission-related activities."[244] This provision would probably cover prescribed seasonal agricultural burning. Hence, although farms would not normally be regulated under the PSD permitting program as they would not meet the "major source" threshold,[245] the exclusion of seasonal burning removes any incentive a state may have to restrict such farming practices in order to protect the area's increment for other economically valuable sources of emissions.

Beyond the general omission of farm regulation from the CAA framework, several specific exemptions for farms apply, or are proposed to apply, under programs that might otherwise capture some farming emissions. For example, Section 112 of the CAA requires sources of designated hazardous air pollutants to comply with specified prevention, control, and reporting conditions. Facilities that use the chemicals in quantities above specified thresholds must prepare and file a "risk management plan" with EPA prescribing measures for prevention of and response to accidental releases.[246] Farms do not enjoy a blanket exemption from these requirements; rather, the program allows EPA wide discretion to set threshold quantities and "exempt entirely" any substance that is used as a nutrient in agriculture.[247] EPA has done so for ammonia, exempting it "when held by farmers."[248] EPA also has raised the quantity threshold

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farmed areas, the farm industry has expressed concerns that states may implement regional haze SIPs so as to restrict emissions from tilling and prescribed burning, which could be transported in the atmosphere to distant protected areas. Farming groups have suggested that they would seek congressional intervention should states focus on farms with that objective. *See* James Kennedy, *Farmers Fear Haze Rule Implementation, Could Seek Congressional Help, Group Says*, 29 Env't Rep. (BNA) 2558 (1999). As of yet there is no evidence that states are moving toward regulation of farms under regional haze SIPs any more than they have under the NAAQS SIPs.

243. *See* 42 U.S.C. §§ 7470-7478 (1994).

244. *Id.* § 7473(c)(1)(C).

245. *See supra* note 237 (discussing the major source feature of the PSD and other CAA programs).

246. *See* 42 U.S.C. § 7412 (1994).

247. *See id.* § 7412(r)(5).

248. 40 C.F.R. § 68.125 (1999). EPA has explained that the ammonia exemption applies "as long as it is used on that [farm] establishment. It would not be exempt if

for propane, widely used on farms for heating, cooling, drying grain, and powering irrigation systems, to a level that effectively removes farms from the scope of the planning requirement.[249]

Regulation of emissions from mobile source fuels and engines under Subpart II of the CAA[250] also takes a hands-off approach to farms. For example, Section 209 of the CAA preempts states from controlling emissions from "new engines . . . used in farm equipment or vehicles and which are smaller than 175 horsepower."[251] Farms also are exempt from the requirement that centrally-fueled fleets of vehicles use lower-polluting fuels.[252]

A recent example of the clout the farm industry has in securing safe harbors in the air pollution realm comes at the international environmental policy level. The production and consumption of methyl bromide, a colorless gas used as a pesticide on more than 100 crops, has been banned both domestically and internationally because it depletes the stratospheric ozone layer.[253] International protocols will ban methyl bromide in 2010.[254] Originally, the CAA specified a domestic phase-out date of 2001;[255] however, under tremendous

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resold or used on another establishment." National Agric. Compliance Assistance Ctr., U.S. Envtl. Protection Agency, *Laws & Policies— Clean Air Act* 6 (visited Apr. 22, 1999) <http://es.epa.gov/oeca/ag/lcaa.html>. Congress added the nutrient exemption option because it believed "the imposition of costly and burdensome regulation on routine use of ammonia emissions associated with the production of crop nutrients would place an undue economic burden on an already beleaguered farm economy," and because "America's farmers have learned to live with and handle ammonia safely." *See* S. REP. NO. 228, 101st Cong., 1st Sess. (1989), *reprinted in* 1990 U.S.C.C.A.N. 3385.

249. *See Browner Signs Administrative Stay to Exempt Fuels from Risk Management Requirements*, Daily Env't Rep. (BNA), May 25, 1999, at A-4. In response to a court-ordered stay issued in connection with litigation challenging EPA's authority to extend the program to fuel-related uses of propane, *see* National Propane Gas Assoc. v. EPA, No. 96-1278 (D.C. Cir. Apr. 27, 1999), EPA simultaneously stayed the risk management program for propane, *see* 64 Fed. Reg. 29,168 (1999), and proposed a regulation raising the propane threshold quantity to a level that effectively will exclude farms even if the litigation challenging coverage of propane does not succeed, *see* 64 Fed. Reg. 29,171 (1999) (to be codified at 40 C.F.R. pt. 68).

250. *See* 42 U.S.C. §§ 7521-7590 (1994).

251. *Id.* § 7543(e)(1).

252. *See id.* §§ 7586 (application of clean fuels requirement to centrally fueled fleets) & 7581(5) (exemption of farm vehicles).

253. For background on methyl bromide and the phase-out bans, see U.S. General Accounting Office, GAO/RCED-96-16, The Phaseout of Methyl Bromide in the United States (1995); Sondra Goldshein, *Methyl Bromide: The Disparity Between the Pesticide's Phaseout Dates Under the Clean Air Act and the Montreal Protocol on Substances that Deplete the Ozone Layer*, 4 ENVTL. LAW. 577 (1998).

254. *See* Goldshein, *supra* note 253, at 587-92.

255. *See id.* at 585-86.

farm industry lobby pressure, Congress extended the implementation date.[256] Hence, where the CAA's "passive" safe harbors for farms do not suffice to protect farms, Congress often provides targeted "active" safe harbors. Although there have been efforts by a few states to regulate farm air pollutant emissions more aggressively, they are trivial by comparison to the overall negligence in this area.[257]

4. *Agrochemical Regulation Laws*

Farms purchase pesticides and fertilizers, apply them to crops and soils, and any excess is removed by water runoff and air dispersal. As demonstrated above, the CWA and CAA do not purport to reach this "disposal" of chemicals in any meaningful way. Consistent with that theme, the nation's core agrochemical regulation statute, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),[258] does little to regulate farm applications of pesticides and leaves fertilizers untouched. FIFRA is primarily a product-licensing statute under which no one may sell, distribute, or use a pesticide unless it has been registered with EPA.[259] The registration process for new pesticides involves testing designed to detect the harmful effects a product may have on the environment.[260] Approved pesticides must be periodically

256. *See* Omnibus Consolidated Appropriations Act, Pub. L. No. 105-277, § 764(a), 112 Stat. 2681, 2681-36 (1998) (codified at 42 U.S.C. § 7671c(h) (1994)). EPA had indicated its receptiveness to the extension, and USDA lobbied outright in its favor. *See* Goldshein, *supra* note 253, at 599-601.

257. *See* Kip Betz, *Agricultural Coalition Asks Court to Void, Block Enforcement of Odor Regulations*, 30 Env't Rep. (BNA) 952 (1999) (discussing dispute over attempt by Missouri to promulgate ambient air standard for hydrogen sulfide); Kip Betz, *State's Largest Hog Producer Submits Plan to Control Odors, Risk of Waste Spills*, 30 Env't Rep. (BNA) 1338 (1999) (large hog farm agrees to odor control measures as part of consent agreement in settlement of state environmental law violations); Trevor Oliver, *Fighting Corporate Pigs: Citizen Action and Feedlot Regulation in Minnesota*, 83 MINN. L. REV. 1893, 1901-04 (1999) (discussing Minnesota's ambient air standard for hydrogen sulfide from feedlots, which has no federal counterpart).

258. 7 U.S.C. §§ 136-136y (1994). For an overview of the FIFRA program, see WILLIAM H. RODGERS, ENVIRONMENTAL LAW ch. 5 (2d ed. 1994). For an excellent summary of how FIFRA applies to farms, see Michael T. Olexa, Institute of Food and Agricultural Sciences, Fact Sheet FRE-71, Laws Governing Use and Impact of Agricultural Chemicals: Registration, Labeling, and the Use of Pesticides (rev. ed. 1995).

259. *See* 7 U.S.C. § 136a(a) (1994). EPA reviews about 15,000 pesticide registration applications annually, most of which involve new formulations containing active ingredients which have already been registered. Only about 15 new active ingredients are registered each year. *See* Rao et al., *supra* note 97, at 2. FIFRA allows states to register pesticides for use in their respective boundaries, subject to EPA review. *See* 7 U.S.C. § 136v(c) (1994).

260. *See* 7 U.S.C. § 136a(c)(5) (1994) (EPA must find that the pesticide "will

re-registered, which involves a thorough review of available data about the pesticide.[261] The end result of FIFRA's registration program, assuming the pesticide is approved and retains its registration, is a label describing, among other things, how the pesticide must be used.[262]

By regulating which pesticides can be made and sold, FIFRA clearly has a direct effect on farm pesticide use.[263] Direct regulation of farms, however, is not a main concern of FIFRA; the statute does little more than require that pesticides be applied by certified persons and consistent with their label instructions. Pesticides are approved for either "general use," in which case anyone can apply them,[264] or "restricted use," which requires application by a certified applicator.[265] For purposes of restricted pesticide use on farms, FIFRA divides users into "private applicators" who use or supervise the use of restricted pesticides for agricultural commodity production on property owned or leased by them or their employers,[266] and "commercial applicators" who are hired to apply restricted pesticides or otherwise do not qualify as private applicators.[267] Commercial applicators must pass a rigorous certification test administered by EPA or a state-approved program;[268] private applicators must also obtain certification, but may not be required to take an examination.[269] In addition to following worker safety rules,[270] all

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perform its intended function without unreasonable adverse effects on the environment.").

261. *See id.* § 136a-1.

262. *See id.* § 136a(c)(1)(C). It is a violation of FIFRA "to use any registered pesticide in a manner inconsistent with its labeling." *Id.* § 136j(a)(2)(G).

263. *See* Looney, *supra* note 6, at 796-97. EPA can take its product restriction authority one step further toward direct regulation of farm practices by conditioning the legal use of a pesticide. A current example is EPA's proposed rule to restrict the legal sale and use of five pesticides that are in common use on farms— alachlor, atrazine, cyanazine, metolachlor, and simazine— except in compliance with an EPA-approved state management plan outlining measures farms must employ for groundwater protection. *See* 61 Fed. Reg. 33,260 (1996) (to be codified at 40 C.F.R. pts. 152 & 156).

264. *See* 7 U.S.C. § 136a(d) (1994).

265. *See id.* § 136a(d)(1)(C)(i). A pesticide must be classified as restricted if EPA determines that it "may generally cause, without additional regulatory restrictions, unreasonable adverse effects on the environment, including injury to the applicator." *Id.* § 136a(d)(1)(C).

266. *See id.* § 136e(2).

267. *See id.* § 136e(3).

268. *See id.* § 136i. EPA has promulgated rules for states to use in administering the certified applicator tests. *See* 40 C.F.R. pt. 171 (1999).

269. *See* 40 C.F.R. § 171.5 (1999).

270. Thousands of farm workers have become ill or died from exposure to pesticides in the farm workplace. *See generally* Carpenter, *supra* note 4, at 191-95

certified applicators— private and commercial— must maintain records of restricted pesticide applications, showing product, amount, date, location, and area of application, and comply with any additional state recordkeeping requirements,[271] but they need not report the applications to anyone unless a federal agency (acting through the USDA), state agency (acting through a designated lead state agency), or health professional administering medical treatment so requests or state law requires regular disclosure.[272]

In short, so long as the label instructions are followed, the applicator is properly certified and the applicator follows worker safety and recordkeeping requirements, FIFRA imposes no direct restrictions or requirements on farms. While this does not amount to a complete safe harbor for farm use of pesticides, FIFRA's hands-off approach to farms— the primary users of pesticides— pales in comparison with the CAA and CWA's regulatory approach to their targeted industries. Under FIFRA, with regard to farmers, no permits are required, no environmental or efficiency performance standards are imposed, no technology-based standards are applied, no regular public reporting of pesticide applications is required, and no monitoring of pesticide levels in soils, runoff, or groundwater is required. Although some states regulate pesticide applications more aggressively than does FIFRA, it is fair to say that the nation has no comprehensive regulatory framework governing farm use of pesticides.

Farm use of fertilizers is subject to even less federal and state control. The Toxic Substances Control Act (TSCA)[273]

(summarizing studies of farming occupational health threats). Regulations to protect farm workers from the dangers of exposure to pesticides have been controversial, though ultimately limited in effect, for over twenty-five years. *See* Haugrud, *supra* note 6, § 8.2(C)(2)(h), at 366-67. Most such regulation at the federal level is channeled through EPA's authority to regulate the uses of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act, under which EPA has promulgated rules regarding hazard notification to workers and restriction of workers from areas where pesticides have recently been applied. *See* 40 C.F.R. pt. 170 (1999). EPA continues to explore other ways of directly and indirectly ensuring farm worker protection through this and other authorities. *See, e.g., Setting Residue Limits Not Way to Reduce Farm Children's Exposure, Industry Says*, Daily Env't Rep. (BNA), Dec. 22, 1998, at A8 (discussing issue of whether EPA should establish food pesticide residue limits as a way of reducing risks to children in farm occupational settings).

271. *See* 7 U.S.C. § 136i-1(a) (1999).

272. *See id.* § 136i-1(b) to (c). Certified commercial applicators must provide copies to the person for whom the application was performed. *See id.* § 136i-1(a)(2). USDA and EPA must also survey certified applicator records to develop a database sufficient to compile annual reports concerning pesticide use. *See id.* § 136i-1(f).

273. 15 U.S.C. §§ 2601-2692 (1994).

requires pre-manufacture registration of the chemical ingredients of fertilizers;[274] however, TSCA imposes no use restrictions equivalent to FIFRA's labeling, certification, worker safety, or recordkeeping provisions, and few states impose more rigorous controls.[275] As previously explained, the CWA and CAA offer a mixture of active and passive safe harbors for pollution that results from farm use of fertilizers. Other federal environmental laws contain numerous express exemptions for "normal application of fertilizers."[276] Overall, then, fertilizers are simply not in the sights of federal environmental laws.

5. *Chemical Storage and Release Reporting Laws*

One of the most prominent trends that has unfolded with the proliferation of federal environmental statutes is the use of information disclosure devices as an adjunct to direct regulation of pollution behavior.[277] These measures range from the requirements in Superfund[278] and the Emergency Planning and Community Right-to-Know Act (EPCRA)[279] that persons who release designated hazardous substances in specified quantities must report such events to public authorities,[280] to EPCRA's broader emergency planning and toxic release inventory (TRI) programs.[281] These programs have significantly increased the information available to the government and citizens about the sources and magnitude of chemical releases to the

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274. *See id.* § 2604(a).

275. Washington recently enacted fertilizer registration legislation that imposes restrictions on the metals content of fertilizers. *See* Nan Netherton, *Governor Signs Bill on Dairy Farms, Changes to Commercial Fertilizer Rules*, 30 Env't Rep. (BNA) 186 (1999).

276. *See, e.g., infra* notes 284 (hazardous substance release reporting), 286 (chemical storage reporting), and 299 (contaminated site remediation liability).

277. *See* Paul R. Kleindorfer & Eric W. Orts, *Informational Regulation of Environmental Risks*, 18 RISK ANALYSIS 155 (1998) (describing the regulatory impact of several environmental information disclosure programs). The growing importance of information disclosure and other "right-to-know" mechanisms to environmental regulation and enforcement is evidenced by EPA's recent decision to create a new Office of Information. *See* Sara Thurin Rollin, *New Information Office to Focus On TRI, Confidential Information, FOIA Rule Changes*, Daily Env't Rep. (BNA), June 16, 1999, at AA-1.

278. Superfund is the shorthand name for the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675 (1994). For an overview of the Superfund remediation and liability programs, see RODGERS, *supra* note 258, ch. 8.

279. 42 U.S.C. §§ 11001-11050 (1994). For an overview of the EPCRA program, see JAMES M. KUSZAJ, THE EPCRA COMPLIANCE MANUAL (1997).

280. *See* 42 U.S.C. §§ 9603(a) (1994) (Superfund) & 11004 (EPCRA).

281. *See id.* §§ 11022 (emergency planning) & 11023 (toxic releases).

environment.[282] But not surprisingly, farms have been left out of the information revolution in environmental law.

Superfund, for example, excludes "the normal application of fertilizer" from the definition of release[283] and excludes from reporting requirements any application of a FIFRA-registered pesticide.[284] EPCRA excludes from the definition of hazardous chemicals subject to emergency planning and storage notification any substance in "routine agricultural operations,"[285] and the EPCRA TRI emission reporting regulations specifically incorporate the CERCLA exemption for FIFRA-registered pesticides.[286] Farms also are outside the categories of facilities subject to the TRI program.[287] Information transfer from farms to the public concerning agrochemical use and release is simply not a part of the CERCLA and EPCRA programs.

6. *Hazardous Waste Management Laws*

Farms handle large volumes of chemicals, much of which are disposed either directly as spent or residue materials or indirectly as excess fertilizer or pesticide. Most industries in this position must deal with the mind-numbing complexity of the Resource Conservation and Recovery Act (RCRA), the nation's principal hazardous waste management and disposal regulation law.[288] Farms, however, do not.

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282. One of the most innovative uses of the information derived from the TRI and other information disclosure programs is found at the Environmental Defense Fund's "Scorecard" web page where a wealth of information about reporting facilities and the chemicals they emit can be obtained on a site-specific basis in a matter of seconds. *See* Environmental Defense Fund, *Scorecard* (visited Aug. 8, 1999) <http://www.scorecard.org>. As previously noted, *see supra* note 272, although FIFRA requires recordkeeping for restricted pesticide applications, there is no equivalent to the TRI public disclosure requirement under FIFRA.

283. *See* 42 U.S.C. § 9601(22)(D) (1994).

284. *See id.* § 9603(e).

285. *See id.* § 11021(e)(5).

286. *See* 40 C.F.R. § 355.40(2)(iv) (1999).

287. *See* 42 U.S.C. § 11023(b)(1)(A) (1994) (limiting the TRI requirements to "facilities . . . that are in Standard Industrial Classification Codes 20 through 39"). Courts have also ruled that EPA may not designate chemicals, including fertilizer components such as phosphoric acid, as toxic under the EPCRA TRI program based on their environmental effects; rather, only inherent toxicity may be considered. *See* Fertilizer Inst. v. Browner, 1999 U.S. Dist. LEXIS 9298 (D.D.C. Apr. 15, 1999). Although farms would not be required to report their applications of such fertilizers in any event, fertilizer manufacturers would be subject to reporting their emissions in manufacturing the chemicals.

288. *See* 42 U.S.C. §§ 6901-6992k (1994). For an overview of the RCRA program, see AMERICAN BAR ASSOCIATION, THE RCRA PRACTICE MANUAL (Theodore L. Garrett ed., 1994).

For example, EPA has not classified solid wastes generated from growing and harvesting crops and from raising livestock as hazardous wastes subject to RCRA's comprehensive "cradle-to-grave" regulations.[289] Similarly, farm irrigation return flows are not considered solid waste and are not subject to RCRA regulation, notwithstanding the fact that such return flows carry significant quantities of fertilizers, pesticides, contaminated soil, and animal wastes.[290] Farms disposing of waste pesticide from their own use are exempt from RCRA waste management regulations so long as empty containers are triple rinsed and the pesticides are disposed of consistent with label instructions.[291] Farms generating less than 25 gallons per month on average of used oil are exempt from RCRA's used oil management and disposal regulation,[292] and farms generating less than 100 kilograms per month on average of specified "universal wastes," which include obsolete or unused pesticides, enjoy exemptions from a variety of hazardous waste regulations.[293] Finally, wind dispersal of chemicals used in pesticides is generally not considered a RCRA problem, but instead is handled under the Clean Air Act— which does not regulate it in any meaningful way.[294] Although a farm that engages in hazardous waste management not related to farming would fall squarely within RCRA's scope, farms that stick to farming are outside that scope, notwithstanding the large volume of chemicals they dispose.

7. *Contaminated Site Remediation Laws*

Superfund's enactment in 1980 acknowledged that we had begun the process of beefing up environmental law too late to prevent the proliferation of thousands of contaminated properties around the country. While laws such as the CWA, CAA, and RCRA helped to stem the tide, Superfund was designed to establish a remedial program focused primarily on the contaminated sites that had been created before those laws were promulgated.[295]

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289. *See* 40 C.F.R. § 261.4 (1999).

290. *See* 42 U.S.C. § 6903(27) (1994).

291. *See* 40 C.F.R. §§ 261.4, 262.70 (1999).

292. *See id.* § 279.20(a)(4).

293. *See* 40 C.F.R. §§ 273.3, 273.10 to 273.20 (1999).

294. *See* RCRA PRACTICE MANUAL, *supra* note 288, at 9 ("Although air emissions from industrial facilities may exhibit hazard characteristics . . . , they ordinarily would not be 'solid wastes' within the meaning of RCRA, thus avoiding an overlap in the Clean Air Act and RCRA regulatory programs.").

295. For a discussion of Superfund's objectives and an overview of its remedial

While the administrative, legal, and remedial costs of Superfund have grown difficult to justify under any cost-benefit calculus,[296] the farm industry has not paid its share in any way. Despite the persistence of many agrochemicals in soils and sediments and the growing realization that urban expansion into converted farmland contains those latent chemical threats,[297] Superfund does not impose liability for any response costs resulting from application of FIFRA-registered pesticides,[298] and excludes the "normal application of fertilizer" from remediation and liability provisions.[299] Farms also enjoy a significant exemption under the related program for the remediation of petroleum product releases from underground storage tanks.[300]

8. *Common Law Nuisance and Statutory "Right-to-Farm" Laws*

It has often been said that the statutory form of modern environmental law is built on the backbone of the common law of nuisance.[301] Given the extent to which modern environmental law is prevented from reaching farms, it is no surprise that nuisance law continues to play an important role in efforts to control the environmental impact of farms. Particularly in areas where suburban development has encroached upon existing farm operations, new residents are likely to object to the resulting dust, noise, and odors, and nuisance provides an obvious cause of action.

It should also be no surprise that farms enjoy a substantial safe harbor even on this front. All states have enacted so-called "right-to-farm" laws, which generally exempt farms from common law nuisance attack.[302] Although the degree of protection

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and liability program, see RODGERS, *supra* note 258, ch. 8.

296. One recent study found that each case of cancer that Superfund-led remediations have purported to avoid in the future has carried a median cost of $418 million. *See Study Says Faulty Risk Perceptions, Political Influences Bias Site Remediation*, Daily Env't Rep. (BNA), June 1, 1999, at A-5.

297. *See supra* text accompanying note 105.

298. *See* 42 U.S.C. § 9607(i) (1994).

299. *See id.* § 9601(22).

300. The underground storage tank program is found in subchapter IX of RCRA. *See* 42 U.S.C. §§ 6991-6991i (1994). The program exempts from the definition of underground storage tank any "farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for non-commercial purposes." *Id.* § 6991(1)(A). For an overview of the underground storage tank program, see RICHARD P. FAHEY, UNDERGROUND STORAGE TANKS: A PRIMER ON THE FEDERAL REGULATORY PROGRAM (2d ed. 1995).

301. *See, e.g.*, RODGERS, *supra* note 258, ch. 2.

302. *See generally* Neil D. Hamilton, *Right-To-Farm Laws Reconsidered: Ten Reasons Why Legislative Efforts to Resolve Agricultural Nuisances May Be Ineffective,*

afforded by these laws varies,[303] the basic theme is to protect farms from private nuisance actions by codifying the "comes to the nuisance" rule.[304] Although the tide is turning against such laws in some areas,[305] they remain a significant obstacle to the use of common law environmental remedies against farms.

B. Significant Exceptions to the General Rule of Safe Harbor

The breadth and depth of the safe harbor that farms enjoy from environmental regulation make it all the more remarkable that three regulatory programs have managed to levy a significant degree of environmental controls on farming. The three programs represent three different approaches to environmental regulation. First, the regulation of concentrated animal feeding operations under the Clean Water Act NPDES program constitutes direct regulation of a limited class of farms; second, the Endangered Species Act is a general environmental protection program that has no safe harbor exceptions for farming; and third, the so-called "Swampbuster" provisions of the 1985 and 1990 Farm Bills indirectly regulate environmental impacts of farms through the manipulation of farm subsidy policies. In each case, farms have felt the unaccustomed pinch of environmental law.

1. Regulation of Concentrated Animal Feeding Operations

Only 190,000 of the 640,000 farms in the United States that

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3 DRAKE J. AGRIC. L. 103 (1998); McElfish, *supra* note 232, at 10,190-91; Alexander A. Reinert, *The Right to Farm: Hog-Tied and Nuisance-Bound*, 73 N.Y.U. L. REV. 1694 (1998). Prior to the advent of these laws in the past two decades, it was not uncommon for farms to be declared a nuisance. *See* Hank W. Hannah, *Farming in the Face of Progress*, PROB. & PROP., Sept.-Oct. 1997, at 9, 9-11.

303. *See generally* McElfish, *supra* note 232, at 10,191 (explaining variation among state laws); Hannah, *supra* note 302, at 11-13 (discussing plaintiff tactics for circumventing right-to-farm laws); Haugrud, *supra* note 6, § 8.2(B)(1), at 485-87 (dividing the laws into three models based on scope of covered farms and scope of the safe harbor). Most of the right-to-farm laws deny the protection when the farm is operated negligently in violation of federal or state laws or so as to cause water pollution or soil erosion.

304. *See* Hamilton, *supra* note 302, at 104; Haugrud, *supra* note 6, § 8.2(B)(1), at 484-85; McElfish, *supra* note 232, at 10,191.

305. Most significantly, the Iowa Supreme Court recently found that Iowa's right-to-farm law constituted an illegal taking of property adjacent to protected farms, and the United States Supreme Court let the decision stand. *See* Bormann v. Board of Supervisors, 584 N.W.2d 309 (Iowa 1998), *cert. denied sub nom.* Girres v. Bormann, 525 U.S. 1172 (1999). *But see* Pure Air and Water, Inc. v. Davidsen, 246 A.2d 786 (N.Y. App. Div. 1998) (differing result from *Bormann*); Jeff Feirick, *Upholding the New York Right to Farm Law*, AGRIC. L. UPDATE, Aug. 1999, at 1 (discussing *Davidsen*).

raise or keep livestock rely on pasture land to feed the livestock.[306] The remaining farms use animal feeding operations (AFOs) known as confined feedlots— food is brought to animals kept in confined quarters.[307] The size of an AFO is measured by the number of cows, hogs, chickens, or turkeys translated into "animal units" (AUs).[308] Many AFOs squeeze an impressive number of AUs into confined feedlots, resulting in what is known as a concentrated AFO (CAFO) and, consequently, a point source within the meaning of the Clean Water Act.[309] There were about 6,600 such CAFOs holding more than 1000 AUs each in operation in the United States in 1992.[310]

Anyone who has visited a CAFO is unlikely to forget the odoriferous experience. Most CAFOs handle their massive quantities of animal waste by collecting the manure and urine in large impoundments and applying it to farmland as crop fertilizer or simply as a method of disposal.[311] This practice results not

306. *See* Office of Enforcement and Compliance Assurance, U.S. Envtl. Protection Agency, *Compliance Assurance Implementation Plan for Concentrated Animal Feeding Operations* 2 (1998) (visited Feb. 4, 2000) <http://es.epa.gov/oeca/strategy.html>.

307. In their joint policy on AFOs, EPA and USDA explain that AFOs "congregate animals, feed, manure and urine, dead animals, and production operations on a small land area. Feed is brought to the animals rather than the animals grazing or otherwise seeking food in pastures, fields, or rangeland." USDA/U.S. Envtl. Protection Agency, *Unified National Strategy for Animal Feeding Operations* ¶ 2.1 (Mar. 9, 1999), *available at* <http://www.epa.gov/owm/finafost.htm> [hereinafter *Unified National Strategy*]. To qualify as an AFO, the confined feeding must occur at least 45 days per year and prevent any sustained vegetative production on the lot. *See* 40 C.F.R. § 122.23(b)(1) (1999).

308. One AU is equal to roughly 1 beef cow, 2.5 hogs, 5 horses, 10 sheep, 55 turkeys, or 100 chickens. *See* 40 C.F.R. pt. 122, app. B (1999).

309. *See* 33 U.S.C. § 1362(14) (1994) (including "concentrated animal feeding operation" within the CWA definition of point source). Generally any AFO is a CAFO if it either (1) confines at least 1000 AUs, (2) confines at least 300 AUs and discharges pollutants through a point source, or (3) confines under 300 AUs but is designated a CAFO on a case-by-case basis by the relevant permitting authority because it is a significant source of water pollution. However, such operations are not CAFOs if they discharge pollutants only in the event of a 25-year, 24-hour storm event. *See id.* The more technical details of deciding whether an AFO is a CAFO requiring an NPDES permit took EPA ten pages to explain in a recent draft guidance document on CAFO permits. *See* OFFICE OF WASTE MANAGEMENT, U.S. ENVTL. PROTECTION AGENCY, GUIDANCE MANUAL AND EXAMPLE NPDES PERMIT FOR CONCENTRATED ANIMAL FEEDING OPERATIONS 2-1 to 2-10 (1999) (review draft) (on file with author).

310. *See Unified National Strategy*, *supra* note 307, ¶ 4.5. EPA and USDA estimate that the number of large CAFOs has grown to 10,000 since the 1992 figure was compiled. *See id.* The vast majority of AFOs confine fewer than 250 AUs. *See id.* ¶ 2.1. Nevertheless, the proliferation of large CAFOs has boosted livestock production even as the total number of AFOs has decreased, indicating that the industry is consolidating into fewer, but larger, AFOs. *See id.*

311. For vivid descriptions of AFO operations, see generally Frarey & Pratt, *supra* note 15, at 8; Oliver, *supra* note 257, at 1895-97.

only in an intensely unpleasant odor, but it also increases the potential for environmental degradation and the transport of pathogens to human populations.[312] Given their intense and pernicious impacts on surrounding communities, CAFOs have become lightning rods for local land use controversy.[313]

Although regulation of CAFOs is a significant exception to the general rule that farms enjoy a safe harbor, the story has two sides. In 1998— over 25 years after Congress included CAFOs in the CWA's definition of point source— only 2,000 of the nation's 450,000 AFOs had NPDES permits or state equivalents.[314] One large safe harbor for AFOs from the CWA, of course, is the regulatory definition of a CAFO and its relatively high AU threshold. Even those AFOs which attain CAFO status through sufficient AUs or because of the nature of their discharge have another safe harbor in the exclusion of AFOs that only discharge pollutants through a point source in significant storm events. These two filters winnow the nation's 450,000 AFOs down to the 2,000 presently required to follow NPDES permitting requirements.

Clearly, the AFO issue encompasses more than the 2,000 farms presently under the thumb of NPDES permitting requirements. That reality has become a major focus of federal and state regulators in the past several years. The federal focus recently culminated in the issuance by USDA and EPA of a Unified National Strategy for Animal Feeding Operations (Unified National Strategy).[315] The cornerstone of the Unified National Strategy is a "national performance expectation" that all AFOs will develop and implement technically sound and economically

312. *See Unified National Strategy*, *supra* note 307, ¶ 2.2. Recent studies suggest that CAFOs present a measurable public health threat to surrounding communities. *See* Terry Hammond, *Study Finds Hog Lagoon Neighbors Report Higher Levels of Respiratory Illness*, Daily Env't Rep. (BNA), May 14, 1999, at A-5.

313. *See generally* Williams, *supra* note 120; Fern Shen, *Md. Hog Farm Causing Quite a Stink*, WASH. POST, May 23, 1999, at A1; William Claiborne, *Despite Stink, Hog Farm Proceeds on Tribal Land*, WASH. POST, Apr. 4, 1999, at A3.

314. *See Unified National Strategy*, *supra* note 307, ¶ 4.2.

315. *See Unified National Strategy*, *supra* note 307. The Clinton Administration's 1998 Clean Water Action Plan called for USDA and EPA to compile the National Uniform Strategy as one of 111 specific action plans. *See id.* ¶ 1.1. The agencies released a draft for public comment in September 1998. *See* 63 Fed. Reg. 50,192 (1998). For a detailed overview of the proposal, describing it as a sign that "AFOs and CAFOs are now entering the meat grinder of regulatory politics," see Gregory Blount et al., *The New Nonpoint Source Battleground: Concentrated Animal Feeding Operations*, 14 NAT. RESOURCES & ENV'T 42 (1999). For a comprehensive overview of the Unified National Strategy, see Dana R. Flick, *The Future of Agricultural Pollution Following USDA and EPA Drafting of a Unified National Strategy for Animal Feeding Operations*, 8 DICKINSON J. ENVTL. L. & POL'Y 61 (1999).

feasible nutrient management plans addressing such operational matters as feed management, manure handling and storage, and land application of manure.[316] Because the Unified National Strategy imposes no new regulatory requirements, preparation of a plan for most AFOs will be purely voluntary unless state law requires one.[317] On the regulatory front, the Unified National Strategy outlines provisions for CAFOs that will effectively expand the coverage of permitting controls. For example, the Unified National Strategy will expand the number of AFOs requiring NPDES permits to 15,000-20,000 by including most large (over 1000 AUs) operations as well as AFOs that are either operating under unacceptable conditions or are otherwise contributing to water quality impairment, regardless of their size.[318] Moreover, all AFOs needing an NPDES permit may be required to prepare nutrient management plans and comply with feedlot effluent standards.[319] EPA has begun to implement these proposals through TMDL rules [320] and guidance documents.[321]

Predictably, reaction to the Unified National Strategy has been mixed, with few interest groups fully in favor. Environmental groups contend the measures do not reach far enough, while farm groups assert that a purely voluntary program will be sufficient.[322] Many state government

316. *See Unified National Strategy*, *supra* note 307, ¶¶ 3.1-3.5.

317. *See id.* ¶ 4.1.

318. *See id.* ¶ 4.5. The Unified National Strategy envisions that the permitting program will be implemented over several phases and will rely on general permits for all but the larger (over 1,000 AUs) CAFOs, which will need to obtain individual permits. *See id.* ¶ 5.0 (Strategic Issue #3).

319. *See id.* ¶ 4.6. The effluent guidelines presently impose a "zero discharge" condition on CAFO feedlots with NPDES permits. *See* 40 C.F.R. pt. 412 (1999). EPA has announced plans to revise the standards, including measures to address phosphorous levels in runoff. *See* 63 Fed. Reg. 62,469 (1998) (codified at 40 C.F.R. §§ 412 & 122.23 (1999)). Farming interests have vociferously opposed EPA's efforts. *See USDA Proposal to Include Phosphorous in Nutrient Plans Concerns Farm Group*, 29 Env't Rep. (BNA) 610 (1998) (quoting American Farm Bureau official).

320. *See supra* note 223.

321. For example, EPA has issued a draft NPDES permit for CAFOs and other AFOs subject to permitting. *See* Office of Wastewater Management, U.S. Envtl. Protection Agency, *Draft Guidance Manual and Example NPDES Permit for Concentrated Animal Feeding Operations* (visited Sept. 9, 1999) <http://www.epa.gov/owm/afoguide.htm>.

322. *See Environmentalists Fault Feedlot Plan While Farmers Want Voluntary Approach*, Daily Env't Rep. (BNA), Sept. 17, 1998, at A-6; Susan Bruninga, *Farmers, Public Interest Groups Debate Merits of Animal Runoff Control Strategy*, 29 Env't Rep. (BNA) 1645 (1998); Susan Bruninga, *Ranchers and Farmers in the West Sound Off on Pollution Control Strategy*, 29 Env't Rep. (BNA) 1646 (1998). Farm groups have pointed to several significant voluntary efforts initiated by different farm sectors to improve nutrient management. *See, e.g.*, Registration and Agreement for Clean Water Act Section 301 Compliance Audit Program for the Pork Production Industry, 63 Fed.

representatives have expressed the concern that the Unified National Strategy will constrain state efforts to respond to the CAFO issue with locally-designed measures,[323] even though environmental groups have argued that past state efforts have been weak and poorly implemented.[324] Moreover, some congressional representatives have questioned whether EPA and USDA have the legal authority to issue and implement the National Uniform Strategy as a "strategy" without following

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Reg. 69,627 (1998) (recommending that EPA and pork producers agree to initiate voluntary third party compliance audit program for hog farms in return for reduced penalties and increased EPA educational support). Environmental groups contend that such efforts, while salutary, should not deter efforts to regulate CAFOs more stringently. *See Millions to Be Spent on Training, Oversight of EPA Agreement with Pork Producers*, Daily Env't Rep. (BNA), Nov. 30, 1998, at A-9.

323. EPA has compiled a comprehensive summary of state laws dealing with CAFOs, proving the states' claims that they are addressing CAFOs in ways that often go beyond EPA's regulations. *See* U.S. ENVTL. PROTECTION AGENCY, STATE COMPENDIUM: PROGRAMS AND REGULATORY ACTIVITIES RELATED TO ANIMAL FEEDING OPERATIONS (1999).

324. In the time it took for the Unified National Strategy to go from draft to final stages, a flurry of initiatives to address AFOs through increased regulation were passed by a variety of states. *See, e.g.*, Michael Blogna, *State Adopts New Reporting Rules for Spills from Livestock Waste Lagoons*, Daily Env't Rep. (BNA), Feb. 17, 1999, at A-3 (Illinois); Thomas R. Head, III, *Local Regulation of Animal Feeding Operations: Concerns, Limits, and Options for Southeastern States*, 6 ENVTL. LAW. 503 (2000) (canvassing federal law and the law of eight southeastern states); Theresa Heil, *Agricultural Nonpoint Source Runoff—The Effects Both On and Off the Farm: An Analysis of Federal and State Regulation of Agricultural Nonpoint Source Pollutants*, 5 WIS. ENVTL. L.J. 43, 50-63 (1998) (Wisconsin); Drew Kershen, *Clean Water and Concentrated Animal Feeding Operations*, LOOKING AHEAD: ABA SECTION OF NATURAL RESOURCES, ENERGY, & ENVTL. L. NEWSLETTER, Mar.-Apr. 1999, at 2 (Oklahoma, Colorado, and Mississippi); Oliver, *supra* note 257 (Minnesota); Carolyn Whetzel, *Regulators Issue Waste Discharge Plan for Dairy Farms in Southern California*, Daily Env't Rep. (BNA), Apr. 13, 1999, at A-4 (California); *Large Hog Farms to Have Releases Regulated by Water, Multimedia Permits*, 30 Env't Rep. (BNA) 71 (1999) (Mississippi); *Proposed Rules for Corporate Hog Farms Ready for Comment, State Official Says*, 29 Env't Rep. (BNA) 1215 (1998) (Missouri). Indeed, the Unified National Strategy recognizes that many states have already implemented permitting programs for CAFOs that equal or exceed the federal NPDES program requirements and has invited such states to seek delegation of authority to administer the NPDES program. *See Unified National Strategy*, *supra* note 307, ¶ 5.0 (Strategic Issue #3); Susan Bruninga, *Nonpoint Sources: Animal Waste Strategy to Recognize State Programs, Hold Corporations Liable*, 29 Env't Rep. (BNA) 2225 (Mar. 12, 1999). Nevertheless, state water regulators maintain that the Unified National Strategy will be too expensive to implement fully and have proposed an AFO initiative that relies more on incentives and voluntary measures. *See State Group Seeks More Flexibility in Regulation of Livestock Waste*, Daily Env't Rep. (BNA), Feb 26, 1999, at A-4; Susan Bruninga, *Faulting EPA-USDA Livestock Strategy, States Say Their Programs Already Work*, 29 Env't Rep. (BNA) 1757 (1999). Environmental groups charge that the state programs are inconsistent and ineffective. *See, e.g.*, AMERICA'S ANIMAL FACTORIES, *supra* note 125, at ix-xii (identifying 15 major deficiencies in the existing state-level regulation of AFOs).

rulemaking procedures.[325] In any event, issuance of and debate on the Unified National Strategy signals continuing federal and state commitment to retain the lone exception to farming's safe harbor from water pollution regulation and suggests that at least some components of the farming industry are amenable to direct, concerted environmental regulation.

2. *Endangered Species Act*

The Endangered Species Act (ESA)[326] is a rare example of an environmental law with sharp teeth and no safe harbor for farms. Once designated as endangered or threatened,[327] a species is protected through several provisions with virtually no federal, state, local, or private actor beyond the ESA's reach. Given their pervasive impact on wildlife habitat, farms have increasingly been at the center of ESA controversy.

Most of the ESA's land use battles begin through the application of one of two regulatory provisions. Section 9 of the ESA prohibits any federal, state, local, or private entity from "taking" a listed animal species,[328] which has been construed to

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325. Susan Bruninga, *Small Livestock Facilities May Get More Time to Comply with AFO Strategy*, 29 Env't Rep. (BNA) 2131, 2132 (1999).

326. 16 U.S.C. §§ 1531-1544 (1994). For an overview of the ESA programs, see MICHAEL J. BEAN & MELANIE J. ROWLAND, THE EVOLUTION OF NATIONAL WILDLIFE LAW 193-281 (3d ed. 1997).

327. For a discussion of the listing process and criteria, see J.B. Ruhl, *Section 4 of the ESA—The Cornerstone of Species Protection Law*, 8 NAT. RESOURCES & ENV'T 26 (1993); Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy*, 75 WASH. U. L.Q. 1029, 1049-50, 1117-29 (1997).

328. 16 U.S.C. § 1538(a) (1994). For an overview of the take prohibition as implemented, see Frederico M. Cheever, *An Introduction to the Prohibition Against Takings in Section 9 of the Endangered Species Act of 1973: Learning to Live with A Powerful Species Preservation Law*, 62 U. COLO. L. REV. 109 (1991); Albert Gidari, *The Endangered Species Act: Impact of Section 9 on Private Landowners*, 24 ENVTL. L. 419 (1994). Section 9(a) species protections vary according to whether a species is plant or animal and whether it is listed as endangered or threatened. Thus, Section 9(a)(1), the cornerstone of ESA regulation, applies only to "endangered species of fish or wildlife," making it unlawful for "any person subject to the jurisdiction of the United States to . . . take any such species within the United States or territorial sea of the United States." 16 U.S.C. § 1538(a)(1) (1994). Threatened species of fish or wildlife receive the same level of protection by regulations authorized under Section 4(d) of the ESA. *See id.* § 1533(d); 50 C.F.R. § 17.31(a) (1999); *see also* Keith Saxe, *Regulated Taking of Threatened Species Under the Endangered Species Act*, 39 HASTINGS L.J. 399 (1988). Plants receive less protection under Section 9(a) than do fish and wildlife species and are not in any circumstance protected from take in the broad sense used in the context of fish and wildlife species. Rather, Section 9(a)(2)(B) provides that endangered plants on federal lands are protected from being removed, maliciously damaged, or destroyed. *See* 16 U.S.C. § 1538(a)(2)(B) (1994). Endangered plants on non-federal lands are protected only if removing, damaging, or destroying

prohibit "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[329] As farming can involve both the conversion of habitat to farm uses and the degradation of farm and non-farm habitat through pollution, sedimentation, water resource depletion, and other farming impacts, the ESA's habitat modification restriction has increasingly become an issue for farming practices.[330]

While the Section 9 "take" prohibition applies directly to private actions, including farming, Section 7 of the ESA adds another layer of regulation for farms by restricting the practices of federal agencies that fund, carry out, or grant approvals to state, local, and private actions. Federal agencies must ensure that their actions conserve listed species[331] and do not jeopardize

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them would constitute "a knowing violation of any law or regulation of any State or . . . violation of a State criminal trespass law." *Id.* § 1538(a)(2)(B). Hence, farming implicates the ESA's take prohibition primarily through its effects on terrestrial and aquatic wildlife species.

329. 50 C.F.R. § 17.3 (1999). The Supreme Court recently upheld the regulation defining take to include habitat modification, albeit emphasizing the narrow criteria of actual death or injury required to make habitat modification into a prohibited take. *See* Babbitt v. Sweet Home Chapter of Communities for a Great Oregon, 515 U.S. 687 (1995). For a description of the controversial administrative and judicial developments leading up to and culminating in the *Sweet Home* case, see Steven G. Davison, *Alteration of Wildlife Habitat as a Prohibited Taking Under the Endangered Species Act*, 10 J. LAND USE & ENVTL. L. 155 (1995).

330. A current and highly controversial example is the black-tailed prairie dog, which is under consideration for listing as a threatened species. *See* 64 Fed. Reg. 14,424 (1999) (proposed to be codified at 50 C.F.R. pt. 17). Most of the reasons contributing to the species' impaired status relate to farming—for example, conversion of habitat to farming; sport and varmint shooting; competition and predation from species introduced through farming; habitat fragmentation through farming; and poisoning. *See id.* at 14,426-28. Farming interests have decried the potential listing of the species as "propaganda" and contend that the Section 9 prohibitions that would come with listing the species will destroy "the agricultural way of life . . . because it is not compatible with uncontrolled prairie dog populations." Jake Cummins, *Target on Prairie Dogs* (visited June 10, 1999) <http://www.fb.com/mtfb/newnews/ prairiedogs.htm> (statement of Montana Farm Bureau official); *see also Prairie Dog Receives Positive Petition Finding*, ENDANGERED SPECIES & WETLANDS REP., Apr. 1999, at 13. Recognizing the potential constraints Section 9 places on farming practices after a species is listed, the Farm Bureau has become active in challenging species listings. *See, e.g.*, Idaho Farm Bureau Fed'n v. Babbitt, 58 F.3d 1392 (9th Cir. 1995) (upholding listing of a small snail deemed endangered because of water depletion through farm irrigation and other farming practices).

331. Conservation is defined in the ESA as "the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary." 16 U.S.C. § 1532(3) (1994). Section 7(a)(1) of the ESA directs federal agencies to "utilize their authorities in furtherance of the purposes of this chapter by

the continued existence of any listed species.[332] As farming in the United States depends heavily on federal support through subsidies and access to federal public resources, Section 7 conditions have also become major battlegrounds between farming and the ESA.[333]

Although the restrictions in Sections 9 and 7 of the ESA are mitigated by the availability of permits for "incidental take" of listed species,[334] farms have no special status under the relevant permitting provisions and enjoy no general exemptions from Sections 9 and 7. Moreover, neither Section 9 nor Section 7 contains any threshold criteria or gaps in coverage that would allow farms to escape regulatory consequences covertly. While a farm that poses no on-site or off-site consequences to listed species need not take affirmative conservation steps to promote a listed species,[335] the ESA stands virtually alone among the major federal environmental laws as offering farms no safe harbor from its prohibitions and permitting requirements.[336]

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carrying out programs for the conservation of endangered species and threatened species." *Id.* § 1536(a)(1). Though mandatory on its face, agencies and courts have construed the conservation provision as a discretionary guideline for agency action. *See* J.B. Ruhl, *Section 7(a)(1) of the "New" Endangered Species Act: Rediscovering and Redefining the Untapped Power of Federal Agencies' Duty to Conserve Species*, 25 ENVTL. L. 1107 (1995).

332. Section 7(a)(2) of the ESA initiates a complicated set of procedures implementing the duty of federal agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of habitat of such species which is determined . . . to be critical." 16 U.S.C. § 1536(a)(2) (1994). Section 7(a)(2) has by far been the dominant ESA provision affecting federal agencies. *See* Ruhl, *supra* note 331, at 1119-20.

333. *See, e.g.*, Bennett v. Spear, 520 U.S. 154 (1997) (involving application of the Section 7(a)(2) "no jeopardy" provision to a federal agency granting ranching interests access to federal irrigation water); Sierra Club v. Glickman, 156 F.3d 606 (5th Cir. 1998) (involving application of the Section 7(a)(1) conservation duty to federal agency subsidization of farm irrigation water supplies).

334. Section 7(b)(4) provides for issuance of "incidental take statements" allowing projects that are carried out, funded, or authorized by federal agencies to obtain permission to commit take of listed species. 16 U.S.C. § 1536(b)(4) (1994). Section 10(a)(1)(B) of the ESA provides "incidental take permit" procedures and standards for all other projects. *Id.* § 1539(a)(1)(B). Both permitting paths involve complicated and expensive procedures and impact mitigation requirements. *See generally* J.B. Ruhl, *How to Kill Endangered Species, Legally: The Nuts and Bolts of Endangered Species Act "HCP" Permits for Real Estate Development*, 5 ENVTL. LAW. 345 (1999).

335. Section 7(a)(1) is the only provision of the ESA that imposes a conservation duty. By its terms it applies only to federal agency programs and thus does not extend to private actors whose actions do not require funding or approval from federal agencies.

336. *See generally* Lewandrowski & Ingram, *supra* note 54, at 252-55, 261-62.

3. *Subsidy-Based Conservation Programs*

Given the size of the farm economy, even without its related agricultural industries, federal farm policy has been a centerpiece of national politics since its emergence in the New Deal. The primary objectives of federal farm policy have been stabilizing commodity prices and supporting farm income.[337] Indeed, even what passes today as the "conservation" component of federal farm policy began as a means of controlling farm commodity production.[338] Nevertheless, the important role federal farm programs play today in the economics of farming[339] has created opportunities to influence environmental performance through means other than direct regulation.

For many decades the core of federal farm policy, and the feature that provides leverage for influencing farms' environmental record, has been a complicated web of commodity and income support programs.[340] These rely on a mixture of loan support and forgiveness measures, crop set-aside payments, government purchases, marketing agreements, low-cost insurance, benefit payments, price support payments, and import restrictions. When combined, these and other price and farm income supports create a remarkably convoluted and inconsistent set of incentives and disincentives with respect not only to farm production decisions[341] but also to the environment.[342] Notwithstanding recent changes in some federal

337. For an excellent overview and history of these objectives, see AGRICULTURAL POLICY REFORM IN THE UNITED STATES (Daniel A. Sumner ed., 1995).

338. *See* Charles E. Grassley & James J. Jochum, *The Federal Agriculture Improvement and Reform Act of 1996: Reflections on the 1996 Farm Bill*, 1 DRAKE J. AGRIC. L. 1, 4 (1996). For a concise history of the conservation side of federal farm policy, see Christopher R. Kelley & James A. Lodoen, *Federal Farm Program Conservation Initiatives: Past, Present, and Future*, 9 NAT. RESOURCES & ENV'T 17 (1995).

339. Farm income attributable to government payments exceeded $5 billion in 1997. *See* CENSUS, *supra* note 17, at United States Data 66, tbl.47.

340. *See* Grassley & Jochum, *supra* note 340, at 3 ("The commodity title is the heart of any farm bill."). For a brief history of these programs, see Haugrud, *supra* note 6, § 8.1(B)(3), at 465-70.

341. For example, crop set-aside payments reduce supply to increase commodity prices, but commodity price support programs provide incentive to increase supply, which reduces prices. *See* Kelley & Lodoen, *supra* note 338, at 19.

342. For example, commodity price support programs generally focus on crops with high agrochemical input and soil erosion impacts and discourage farmers from crop rotation. *See* Grossman, *supra* note 6, at 332-34; Kelley & Lodoen, *supra* note 338, at 19. For a thorough review of the environmental impact of the crop payment subsidy programs, see WALTER N. THURMAN, ASSESSING THE ENVIRONMENTAL IMPACT OF FARM POLICIES (1995).

farm commodity and income subsidy programs,[343] determining the amount and methods of federal support for farming through these and other mechanisms remains an annual rite of passage for American politics,[344] and the bill to taxpayers remains massive.[345]

A relatively recent appendage to these "crop payment" programs is a grab-bag of four major "green payments" programs designed to pay farmers *not* to put land into commodity production, with an ancillary objective being conservation of soil and wildlife resources.[346] The Conservation Reserve Program (CRP) pays farmers to take highly erodible land out of production

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343. Ostensibly to move closer to a market-based farming economy, in 1996 Congress overhauled the subsidy programs to wean farmers from their reliance on fixed, guaranteed payments by reducing subsidy levels in return for relaxing crop restrictions. *See* Freedom to Farm Act, Federal Agriculture Improvement and Reform Act of 1996, Pub. L. No. 104-127, 110 Stat. 888 (1996).

344. *See, e.g., Farmers' Plight Takes Campaign Spotlight*, USA TODAY, Aug. 9, 1999, at 4A (describing the politics behind the 1999 bill). As an example of how complicated and laden with specialized programs the farm bills have become, USDA's highly condensed title-by-title summary of the 1996 Farm Bill is 16 single-spaced pages long. *See* Office of Communications, Dep't of Agric., *The Federal Agricultural Improvement and Reform Act of 1996: Title-by-Title Summary of Major Provisions of the Bill* (visited Oct. 6, 1999) <http://www.usda.gov/farmbill/title0.htm>.

345. Notwithstanding Congress's professed theme of moving toward a market-based farm economy, the federal government will spend $15 billion in 1999 on direct payments to farmers, the highest of any fiscal year on record. *See Published Comments by Glickman on the Future of Agriculture*, AGRIC. L. UPDATE, Aug. 1999, at 7 (published speech of USDA Secretary Dan Glickman). Moreover, the combination of sagging export markets, bumper domestic and worldwide crops, increased domestic harvested cropland, and domestic droughts and floods led Congress to approve $6 billion in emergency farm support in 1998 and an $8.7 billion bailout in 1999. *See generally Congress Passes a Record $8.7B Farm Bailout Package*, USA TODAY, Oct. 14, 1999, at 4A; James Cox, *Farmers' Tough Row to Hoe*, USA TODAY, Aug. 24, 1999, at 1B; Debbie Howlett, *Farmers' Crops, Worries, Pile Up*, USA TODAY, Aug. 2, 1999, at 1A; Judy Keen, *In Iowa, a Full Harvest of Political Discontent*, USA TODAY, Aug. 9, 1999, at 4A.

346. Some commentators condemn the green payment programs, which are "putatively designed to protect the environment," as being "more honestly described as programs for boosting commodity prices and farm incomes by restricting output." Chen, *supra* note 4, at 343. For concise summaries of the grab-bag of green payment programs, which consists of a number of provisions in addition to the four major programs covered here, see Econ. Research Serv., Dep't of Agric., *Conservation and the 1996 Farm Act*, AGRIC. OUTLOOK, Nov. 1996, *available at* <http://usda.mannlib.cornell.edu/reports/erssor/economics/aob/1996/complete/agricultural_outlook_10.28.96>; Natural Resources Conservation Serv., Dep't of Agric., *USDA Conservation Programs* (visited Dec. 3, 1998) <http://www.nrcs.usda.gov/NRCSProg.html>. The four major programs discussed here were introduced through the 1985, 1990, and 1996 Farm Bills. *See* Federal Agriculture Improvement and Reform Act of 1996, Pub. L. No. 104-127, 110 Stat. 888 (1996); Food, Agriculture, Conservation, and Trade Act of 1990, Pub. L. No. 101-624, 104 Stat. 3359 (1990); Food Security Act of 1985, Pub. L. No. 99-198, 99 Stat. 1354 (1985).

for extended periods.[347] The Wetlands Reserve Program (WRP) pays farmers to remove wetlands from production for extended periods or permanently.[348] The Wildlife Habitat Incentives Program (WHIP) pays farmers to restore and develop wildlife habitat.[349] And finally, the Environmental Quality Incentives Program (EQIP) consolidates and expands financial incentives to farmers who agree to participate in conservation plans prescribing structural, vegetative, and land management practices.[350]

Almost no one is completely satisfied with the crop payment/green payment system of farm conservation policy. Although an impressive amount of farmland has been placed in temporary or permanent conservation status as a result of the four programs,[351] the results have come only at huge taxpayer cost.[352] Moreover, the crop payment and green payment programs have not dovetailed as completely as intended in terms of recipients.[353] Evidence suggests that farmer participation in the green payment programs is highly sensitive to market commodity prices and does not reflect any newly found farm stewardship ethic.[354] Farmers, like most of us, follow the money.

Hence, rather than relying entirely on an incentive-based approach to farm conservation policy, the so-called

347. *See* 16 U.S.C. §§ 3831-3836 (1994); *see also* Haugrud, *supra* note 6, § 8.2(B)(2)(a), at 493-99.

348. *See id.* §§ 3837-3837f.

349. *See id.* § 3836a.

350. *See id.* §§ 3839aa-3839aa-8.

351. Total acreage conserved under the CRP and WRP combined was 29.5 million acres in 1997, divided among 225,000 farms. *See* CENSUS, *supra* note 17, United States Data at 19, tbl.7.

352. There is considerable debate over whether the green payment programs are the most cost-efficient means of attaining lasting farm conservation progress. *See generally* Grossman, *supra* note 6, at 324; Ralph E. Heimlich & Roger Claassen, *Paying for Wetlands: Benefits, Bribes, Taxes*, NAT. WETLANDS NEWSLETTER, Nov.-Dec. 1998, at 1. Indeed, many commentators are quick to point out that the green payment programs violate the polluter pays principle that provides a common thread to most of environmental law— that is, while most landowners must obtain permits and pay mitigation costs to develop their land for productive purposes, farmers are paid not to develop their land. *See* Chen, *supra* note 4, at 344. The green payment programs are not an anomaly in this respect. For example, in 1999 federal agencies doled out $144 million to help CAFOs better manage their livestock wastes. *See Large Scale, Intensive Livestock Operations Getting USDA Help with Waste Management*, 30 Env't Rep. (BNA) 661 (1999).

353. For example, many farms favored by and thus heavily invested in the crop payment programs are not located in areas where the green payment programs are likely to focus. *See* Kelley & Lodoen, *supra* note 338, at 67.

354. *See* Tina Adler, *Prairie Tales*, 149 SCI. NEWS 44, 45 (1996) (discussing research showing "commodity prices determine the popularity of the [CRP] program among farmers").

Swampbuster and Sodbuster programs add a punitive element to farm conservation policy. The Swampbuster program makes farmers ineligible for all crop payment program benefits if a farmer converts certain wetlands to agricultural production.[355] Meanwhile the Sodbuster program imposes the same sanctions on farmers who put any highly erodible land into production without an approved conservation plan.[356] Unlike the green payment programs, these payment ineligibility provisions work close to the core of federal farm policy. Indeed, the subsidy programs have been so important to the farming industry that farmers may perceive any prerequisites to receiving subsidies as regulatory requirements.[357] Nevertheless, because the Swampbuster and Sodbuster programs remain coupled to crop payment subsidy programs, they depend on the subsidy programs for their force and thus do little to alter the fundamental incentives in federal farm policy.[358] Moreover, through a litany of exemptions from ineligibility and a lackluster enforcement record, the programs no doubt have accomplished less than they could have even given their inherent limits.[359] Including the Swampbuster and Sodbuster programs as the third major exception to the general rule of safe harbor for farms thus illustrates how paltry the universe of environmental regulations is for farms.[360]

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355. *See* 16 U.S.C. §§ 3821-3824 (1994); *see also* Grossman, *supra* note 6, at 323-24; Haugrud, *supra* note 6, § 8.2(A)(2)(c), at 480-81; Linda A. Malone, *Reflections on the Jeffersonian Ideal of an Agrarian Democracy and the Emergence of an Agricultural and Environmental Ethic in the 1990 Farm Bill*, 12 STAN. ENVTL. L.J. 3 (1993).

356. *See* 16 U.S.C. §§ 3811-3813 (1994); *see also* Grossman, *supra* note 6, at 322-23; Haugrud, *supra* note 6, § 8.2(C)(1)(d), at 518-20; Karen R. Hansen, *Agricultural Nonpoint Source Pollution: The Need for an American Farm Policy Based on an Integrated Systems Approach Recoupled to Ecological Stewardship*, 15 HAMLINE J. PUB. L. & POL'Y 303 (1994).

357. *See* PERCIVAL ET AL., *supra* note 218, at 970; *see also* Looney, *supra* note 6, at 799.

358. *See* Kelley & Lodoen, *supra* note 338, at 67. Of the 78 million acres of wetlands in the United States, only 17 million acres are suitable for conversion to croplands, and of those only 6 million acres would depend heavily on crop program payments to make production viable. *See* ECON. RES. SERV., USDA, AGRIC. INFO. BULL. NO. 587, THE U.S. FARMING SECTOR ENTERING THE 1990'S 27 (1990) [hereinafter U.S. FARMING SECTOR].

359. *See* Kelley & Lodoen, *supra* note 338, at 67.

360. Some commentators point to the CRP, WRP, and Swampbuster programs as providing "extensive evidence of agriculture's greatly improved [environmental] performance in recent years." Neil D. Hamilton, *Agricultural Production and Environmental Policy: How Should Producers Respond?*, 1 DRAKE J. AGRIC. L. 141, 142 (1996). Yet CRP, WRP, and Swampbuster are but small specks in the sea of environmental policy, under which farms stand out as one of the dirtiest of America's

III

FARMS AS A SPECIAL CASE IN ENVIRONMENTAL LAW— SEPARATING FACT FROM FICTION

The first two Parts of this Article demonstrate that farms cause substantial harms to the environment, and that, with a few minor exceptions, environmental law at federal and state levels has all but licensed those harms.[361] The problem is that each of the many exemptions to various environmental laws detailed earlier finds at least some justification from a variety of administrative, political, and economic perspectives. The collective body of anti-law, however, cries out for an immediate and comprehensive response. Yet environmental law would be tested to the limits if farms were included immediately in regulatory programs by simply removing all farm environmental exemptions. Instead, environmental law must address farms differently; it must reflect the attributes of farms that led to the creation of the safe harbors in the first place.

The conventional model of environmental law relies on prescriptive regulation and punitive, deterrent-based enforcement, both of which are designed primarily by federal authorities and implemented primarily by the states.[362] But the geographic, economic, and political demographics of the farming industry challenge any approach that attempts to use this conventional model. EPA recognized this at the dawn of modern environmental law when it sought a way out of regulating farm irrigation return flows under the CWA.[363] Even today, EPA thrusts the TMDL program on state and local governments as a

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dirty industries. Even if farming has improved its overall environmental performance record in recent years, an assertion that finds little support in the data presented *supra*, it clearly has not improved its position relative to other industries.

361. I have done so in detail here because I do not believe it is prudent to propose sweeping legal reform before it is clear that legal reform is needed. Elsewhere I have advocated that legal reform should be initiated to address sociolegal problems only when it is clear that other social institutions (for example, volunteerism, non-governmental groups) cannot or will not address the issue and only when legal reform can avoid exacerbating problems of social inequity and legal complexity. *See* J.B. Ruhl & Harold J. Ruhl, Jr., *The Arrow of the Law in Modern Administrative States: Using Complexity Theory to Reveal the Diminishing Returns and Increasing Risks the Burgeoning of Law Poses to Society*, 30 U.C. DAVIS L. REV. 405 (1997). My objective in Parts I and II of this Article has been to demonstrate beyond doubt that we have a problem with respect to the environmental performance of farms, and that the law has not merely stood by while other social institutions created the problem, but has endorsed the process all along. The issue, therefore, is not whether to initiate significant legal reform, but how. I address this issue in Parts III and IV of the Article.

362. *See* Clifford Rechtschaffen, *Deterrence vs. Cooperation and the Evolving Theory of Environmental Enforcement*, 71 S. CAL. L. REV. 1181, 1181-90 (1998).

363. *See supra* text accompanying notes 185-93.

means of controlling nonpoint source water pollution.[364] EPA is in no better position to "instruct each individual farmer on his farming practices" now than it was in the 1970s.[365] In short, because the farm industry is geographically, economically, and politically complex, farms present a special case in environmental law and require a special response.

A. Geographic Dimensions

Farms are unlike most industries in their number (about 1.9 million to be more precise),[366] their distribution throughout the nation, and their diversity. Given these characteristics, adopting the model of federally-designed, nationally-uniform, technology-based performance and emission standards would be difficult without vastly increased budgets for farm-by-farm permitting, monitoring, and enforcement.

Regulating the farming industry is thus a daunting prospect. EPA has observed that "[t]oo large a regulated community can make it impossible to implement and enforce requirements."[367] The dispersal of farms throughout the nation, including deep into rural areas,[368] further compounds the implementation issue. It also means that farms diverge based on the variety of local environmental and social conditions. For example, farms must respond differently to local conditions such as weather, soil salinity,[369] soil erosion potential,[370] leaching potential,[371] and

364. *See supra* text accompanying notes 220-30.

365. NRDC v. Costle, 568 F.2d 1369, 1380 (D.C. Cir. 1977). For example, in its recent policy statement on the development of nutrient criteria for water quality, an issue profoundly affected by and affecting farms, EPA stated that "EPA's custom of developing water quality criteria guidance in the form of single numbers for nationwide application is not appropriate for nutrients. EPA believes that distinct geographic regions and types of ecosystems need to be evaluated differently and that criteria specific to those regions and aquatic ecosystems need to be developed." 63 Fed. Reg. 34,648, 34,649 (1998); *see also* Zaring, *supra* note 61, at 10,133 ("EPA has concluded that in the context of nonpoint source pollution, site-specific decisionmaking that considers the nature of the watershed, the water body, the point sources, and the management practices to be regulated are more effective than uniform technical controls.").

366. *See* CENSUS, *supra* note 17, United States Data at 10, tbl.1.

367. U.S. ENVTL. PROTECTION AGENCY, PRINCIPLES OF ENVIRONMENTAL ENFORCEMENT 3-11 (1992).

368. *See* GEOGRAPHY OF HOPE, *supra* note 34, at 23.

369. *See id.* at 33-34.

370. *See id.* at 40-41.

371. *See id.* at 45-48; *see also* Robert L. Kellogg et al., *The Potential for Leaching of Agrichemicals Used in Crop Production: A National Perspective*, 49 J. SOIL & WATER CONSERVATION 294 (1994).

freshwater availability.[372] Social conditions that vary include proximity to metropolitan areas[373] and surrounding land use.[374] Farms also vary tremendously in terms of crop type[375] and production practice,[376] livestock type and concentration,[377] use of irrigation,[378] participation in the CRP,[379] tillage practices,[380] sediment runoff,[381] fertilizer runoff,[382] and pesticide runoff.[383] The environmental law of farms thus must balance the desire to establish a national policy of environmental protection against the reality that farms are too numerous, too dispersed, and too diverse to address through a one-size-fits-all regulatory framework.

B. Economic Dimensions

Farms in the United States have tremendous economic value and are a critical economic link to vast supplier and consumer industries. Part of the economic potency of farms has to do with the dispersal of the farm economy among many small farms. But the economic climate for farms is highly volatile today in terms of both individual farm profitability and industry-wide structure. Both factors will play an important role in shaping environmental policy for farms.

Financially speaking, farms are doing poorly. Predictions in the early 1990s that "the farm sector seems to be overcoming the financial difficulties of the mid-1980s"[384] have not come to pass. Today, many farms are crashing economically as commodity prices plummet below costs of production throughout the industry.[385] In addition to weak export markets, many farm

372. *See* GEOGRAPHY OF HOPE, *supra* note 34, at 49-51.
373. *See id.* at 28, 50.
374. *See id.* at 26-27.
375. *See id.* at 27.
376. *See* Office of Pest Management Policy, Dep't of Agric., *Completed Crop Profiles, By State/Territory* (visited Mar. 17, 1999) <http://ipmwww.ncsu.edu/opmppiap/proindex.htm> (describing crop production practices for various crops in many different states).
377. *See* GEOGRAPHY OF HOPE, *supra* note 34, at 42.
378. *See id.* at 31.
379. *See id.* at 36.
380. *See id.* at 37.
381. *See id.* at 40-41.
382. *See id.* at 43.
383. *See id.* at 46.
384. *See* U.S. FARMING SECTOR, *supra* note 358, at 2.
385. *See* Warren Cohen, *The Seeds of Discontent*, U.S. NEWS & WORLD REP., May 24, 1999, at 26; Daniel Eisenberg, *Lean Times on the Farm*, TIME, Jan. 11, 1999, at 40; Gary Strauss, *Far from Hog Heaven: Farms Fold Under Price Crunch*, USA TODAY,

advocates point to the changing economic structure of the farm and related industries as a major culprit. Faced with the increasingly sophisticated and expensive technology needs of farming,[386] the agriculture industry, from chemical producers to farms to food processors, is consolidating at a rapid pace. Roughly 3.6% of farms generate over $500,000 in annual product value each, accounting for over 56% of total farm production value.[387] Upstream and downstream industries exhibit even greater concentration and a propensity toward vertical integration,[388] leading to concerns about the viability of less advanced farms, the prospects for farm employment, and the impact on rural farm communities.[389] Increased environmental regulation of farms may reduce the economic viability of farms by raising costs, contributing to further concentration of the industry. Given the economic climate of the farm industry, this may be disastrous. This is not to suggest that our commitment to environmental regulation of farms should be based primarily on the industry's economic health. It does suggest, however, that the distribution of economic impacts on farms resulting from increased regulation will play a large role in the third factor to be considered— the politics of farm policy.

C. *Political Dimensions*

Farms possess immense political power not only because of their number, but because most are family-owned businesses. Of 1.9 million farms in operation in 1997, 1.6 million were family owned.[390] This is a substantial block of similarly situated voters. Moreover, farms are so widely distributed in the nation that few federal, state, or local politicians can escape pressure from the farm constituencies, and in farming areas, politicians are dominated by them.[391]

Although the broad dispersal of farms might hinder their

Feb. 2, 1999, at 1B.

386. *See* U.S. FARMING SECTOR, *supra* note 358, at 41-45.

387. *See* CENSUS, *supra* note 17, at 6, fig.2. *See generally* Dina Temple-Raston, *Corporate Competition Puts Hog Farmers in a Pinch*, USA TODAY, Apr. 6, 2000, at 12A (discussing competitive pressures in the hog industry).

388. *See generally* WILLIAM HEFFERMAN ET AL., CONSOLIDATION IN THE FOOD AND AGRICULTURE SYSTEM 1-13 (1999).

389. *See id.* at 13-16.

390. *See* CENSUS, *supra* note 17, United States Data at 10, tbl.1.

391. Over 500 counties in the United States are "farming dependent," meaning at least 20% of total business and labor income is from farming, and many more are "farming-important," meaning 10 to 20% of income is from farming. *See* U.S. FARMING SECTOR, *supra* note 358, at 14.

collective political action, this effect is offset by two important political forces. First, farms play a critical role in the economic fate of their suppliers and customers. The vast agrochemical and food processing industries are characterized by greater corporate presence and concentration of economic power than is found in the farm industry. These industries rely heavily on farms and can be expected to align themselves politically with the interests of farms. For example, the Chemical Manufacturers Association, the Fertilizer Institute, and the National Agricultural Chemicals Association regularly weigh in on farm policy issues.[392] Second, the American Farm Bureau Federation has amassed tremendous financial strength through its farm services arm and purports to speak for all farms; it has become one of the most powerful lobbying forces in the nation.[393] The Farm Bureau has fought steadfastly, and apparently quite successfully, against any and all proposed environmental regulation of farms.[394] To put it bluntly, any proposal for comprehensive environmental regulation of farming faces stiff political opposition.

The political scene is growing even more complex daily. An emerging political wrinkle in farm policy results from the concentration of the industry, which has left the so-called "small farms" in dire circumstances.[395] Smallness, of course, is not a particularly distinguishing factor for farms.[396] Nevertheless, with

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392. *See* Armour-Garb, *supra* note 34, at 346-47.

393. *See* Vicki Monks, *Farm Bureau vs. Nature*, DEFENDERS, Fall 1998, at 14, 14.

394. *See* N. William Hines, *The Land Ethic and American Agriculture*, 27 LOY. L.A. L. REV. 841 (1994); Monks, *supra* note 393, at 14. The Farm Bureau or its state offices are frequent plaintiffs and interveners in litigation challenging increased levels of environmental regulation, such as through implementation of Endangered Species Act programs. *See, e.g.*, Sierra Club v. Glickman, 156 F.3d 606 (5th Cir. 1998) (intervention in suit challenging irrigation subsidies under ESA); Idaho Farm Bureau Fed. v. Babbitt, 58 F.3d 1392 (9th Cir. 1995) (plaintiff in suit challenging listing of an endangered species); Defenders of Wildlife v. EPA, 882 F.2d 1294 (8th Cir. 1989) (intervention in suit challenging EPA approval of poison bait for farm animal predators); Wyoming Farm Bureau v. Babbitt, 987 F. Supp. 1349 (D. Wyo. 1997) (plaintiff challenging reintroduction of endangered wolves).

395. *See, e.g.*, William Claiborne, *Fighting the New Feudal Rulers*, WASH. POST, Jan. 3, 1999, at A3 (referring to "small family farms"); *What Price Pigs*, AUDUBON, Sept.-Oct. 1995, at 14 (referring to "smaller farmers").

396. USDA has noted that "most U.S. farms are small, noncommercial, and family owned and operated." U.S. FARMING SECTOR, *supra* note 359, at 1. But as most farms are family owned, small cannot mean simply family owned. USDA's "noncommercial" category describes farms with gross annual sales of less than $40,000, which often requires that the owners work outside the farm to make ends meet. *See id.* Recall, however, that over half of all farms generate less than $10,000 in revenue, *see* CENSUS, *supra* note 17, at 6, fig.1, meaning that well over half are in noncommercial status. Over half of all farms also are under 500 acres. *See id.*

absolutely no empirical foundation,[397] a "small is better" mentality has invaded all facets of farm policy, including environmental issues,[398] and made it politically imperative that any farm policy should save small farms.[399] Thus even assuming it can overcome political opposition from a multitude of powerful upstream and downstream industries, any proposal for comprehensive environmental regulation of farming must also somehow take into account the "save the small farm" factor. Yet, given the fact that most farms are small, is it unreasonable to conclude that small farms are a major part of the problem of environmental harm and should thus bear a major portion of the regulatory burden?[400] The politics of environmental law for farms are daunting indeed.

IV

MERGING THE ENVIRONMENT AND FARMING— A PROPOSED FRAMEWORK FOR A POSITIVE LAW OF FARMS AND THE ENVIRONMENT

Although the process has been undertaken cautiously and not without considerable debate, environmental law is increasingly testing models other than prescriptive regulation as means of influencing industry behavior.[401] Several approaches

397. Small farms "do not significantly affect the local economy's income and employment," *see* U.S. FARMING SECTOR, *supra* note 396, at 1, and are worse per unit of production than large farms for many environmental performance indicators. *See* Chen, *supra* note 4, at 345.

398. Chen refers to this as the "'microecological' variation on the agroecological theme," that is, "the frequently invoked but rarely tested assumption that small farm size and family ownership guarantee sound stewardship." Chen, *supra* note 4, at 336, 341.

399. For example, USDA has established a National Commission on Small Farms, which has devoted considerable attention to attacking corporate farming as the chief threat to small farms. *See, e.g.*, National Comm'n on Small Farms, Dep't of Agric., *A Time to Act: A Report of the USDA Nat'l Comm'n on Small Farms* (visited Apr. 4, 2000) <http://www.reeusda.gov/agsys/smallfarm/report.htm> (describing "the small farm as the cornerstone of our agricultural and rural economy" and proposing over 100 measures to assist small farms, particularly the position of small farms versus corporate farms). USDA has also in the past few years established a Deputy Secretary level Small Farms Council, a Small Farms Federal Advisory Commission, and a Small Farms Coordinator position in each USDA office. *See* Dep't of Agric., *Small Farms @ USDA* (visited Aug. 12, 1999) <http://www.usda.gov/oce/smallfarm/sfhome.htm>.

400. Much of the small farm rhetoric is lodged against "corporate farms." *See* Claiborne, *supra* note 313, at A3 (referring to "corporate farming ventures"); *What Price Pigs*, *supra* note 395, at 14 (referring to "corporate giants"). The "small" rhetoric thus appears to be intended to single out the much smaller universe of farms that are corporate owned, large in size, and very large in revenue. Those farms, while presenting many environmental challenges, by no means have caused the bulk of environmental harms inventoried in this Article. Small farms are a major part of the problem.

401. *See generally* Rechtschaffen, *supra* note 362; C. Boyden Gray, *Regulatory*

have established records of success, and are adaptable to the farming industry's complex demographics. These include information-based programs, taxation programs, incentive programs, and pollutant trading programs.[402] Even the most ardent defenders of the conventional environmental law model concede some role for these second-generation approaches.[403] Moreover, as centrally-planned prescriptive regulation becomes less dominant in the mix of instruments, decisionmaking must take place increasingly at the field level and consequently will require greater reliance on state and local authorities, albeit with a continuing federal role in national policy formation.[404] The core of a positive environmental law for farming thus should borrow from many models to assemble a cohesive approach that involves federal, state, and local authorities working in partnership rather than in feudal arrangements. This reformed law of farms and the environment will only work to its fullest potential, however, if policies in the related fields of farm subsidy, upstream and downstream agriculture industries, and foreign trade are aligned accordingly.

A. Core Programs

There are two paths that can be followed to craft a positive federal environmental law for farming. One path uses the existing structure of environmental statutes to correct the safe harbors problem and bring farming back into the various regulatory programs. That approach, however, would inherit the failings and pitfalls of the fractured system of environmental law, including multiple agency authorities, nonintegrated

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Reform: Past and Future, 12 NAT. RESOURCES & ENV'T 155 (1998).

402. Although instrument choice is a recurring issue throughout environmental law, perhaps only the field of international environmental law rivals the farm-environment question for "anti-law" and the consequent need to make sweeping governance and instrument choice decisions in the immediate future. *See* Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677 (1999). A comprehensive review and evaluation of all the environmental law instrument reform models that have been proposed is outside the scope of this Article. I discuss the basic themes of each of the five programs covered herein *infra*. For an overview of the basic policy issues and the various instruments that comprise the complete reform "toolbox," see PERCIVAL ET AL., *supra* note 218, at 131-79.

403. *See* Rechtschaffen, *supra* note 362, at 1243-65.

404. This so-called "devolution" of authority to the states in environmental policy has become a common refrain and an adjunct to the broader debate over instrument choice reform. *See, e.g.*, Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1996); *Environmental Protection Needs to Rest More With Local Governments, NEPI Says*, Daily Env't Rep. (BNA), Apr. 29, 1999, at A-6.

decisionmaking, media-specific statutory focus, and dominance of the prescriptive regulation model. The other path— the path I propose— simply abandons the existing structure and forges a new law built around a core body of environmental law programs tailored specifically for farming. Given how difficult it has proven for the existing mix of statutes to tackle the farms problem, and given how difficult it may be to fit farms into the usual models of those statutes, there is no way to begin to meaningfully regulate farms without starting from the ground up.

1. Regulation— Use Conventional Methods to Address CAFOs and Other Agro-Industrial Low-Hanging Fruit

As the proliferation of CAFOs illustrates, industrialization, technology, and economics have changed the farming industry dramatically since the day when EPA declined to apply the NPDES program to farms. Indeed, when one cuts through the protectionist rhetoric of the small farms movement, there is something to the small farm/corporate farm distinction: there are subcategories of farms that present opportunities for the use of direct prescriptive regulatory models to capture immediate gains at a relatively low administrative cost. Many commentators believe that within the diversity of the farm industry lie identifiable and manageable sectors, such as CAFOs and large crop irrigation farms, which ought to be treated as industrialized operations no different than refineries or steel mills.[405] When these "industrial farming" sectors are carved out of the larger farm universe, the number of individual operations requiring direct regulatory attention is less daunting,[406] the problems

405. As one prominent agriculture law scholar recently observed, "As agriculture becomes industrialized, it should be treated like the 'industrial' sector, meaning the 'command and control' style of environmental laws applied to 'smoke stack' industries should apply." Neil D. Hamilton, *Reaping What We Have Sown: Public Policy Consequences of Agricultural Industrialization and the Legal Implications of a Changing Production System*, 45 DRAKE L. REV. 289, 299-300 (1997). EPA has recently embarked on efforts to develop sector-based approaches to industrial pollution control and prevention, through which problem identification and problem solving is organized around industry sectors sharing common environmental issues. *See EPA Draft Fiscal 2000 Action Plan on Sector-Based Environmental Regulation*, 30 Env't Rep. (BNA) 723 (1999).

406. For livestock operations, recall that of the nation's 450,000 animal feeding operations, EPA believes only about 15,000 are concentrated animal feeding operations requiring permits under the Clean Water Act. *See supra* text accompanying notes 319-22. For crop production, in 1997 only 74,000 farms were larger than 2,000 acres, *see* CENSUS, *supra* note 17, United States Data at 69, tbl.47, and only 25,000 farms spent more than $50,000 on agricultural chemicals, *see id.* at 64, tbl.47.

associated with geographic diversity diminish,[407] and the cost of compliance is focused on the farms most capable of passing them on to consumers.[408] In short, these agro-industrial farm operations are low-hanging fruit, ripe for the picking.

Conventional regulation of such industrialized farming operations would go well beyond the halting approach EPA has taken toward regulation of animal waste discharges from CAFOs. Consistent with the trend in other industries toward integrated multi-media pollution permits,[409] an environmental regulatory program for industrial farms would initiate a fully integrated permitting program covering all sources and pathways of pollutants from such operations, including saline water from irrigation return flows, air pollutants, soil erosion, chemical waste runoff, and animal waste discharges.[410] As is currently done under the conventional prescriptive approach for other industries, these permits would require "best management practices" designed to reduce overall farm pollutant releases and would identify technology-based standards for specific media.[411]

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407. For example, although waste handling methods for CAFOs vary to some extent, "In general, wastes are held in storage structures until they can be applied to agricultural land as a fertilizer or soil conditioner. Irrigation equipment can be used to pump liquid waste from storage structures onto fields; dry waste is usually applied with a tractor-drawn manure spreader." U.S. GENERAL ACCOUNTING OFFICE, GAO/RCED-99-205, ANIMAL AGRICULTURE: WASTE MANAGEMENT PRACTICES 8-9 (1999).

408. *See* Hamilton, *supra* note 405, at 300 ("[A]n industrialized agriculture will be better able than farmers to pass the costs of environmental protection on to consumers in higher prices.").

409. There is a growing consensus that modern environmental law, because of its fracture into media-specific statutes, has largely overlooked pollution prevention and control issues and approaches that focus on product life-cycles, mass materials flows, multi-media pollution effects, and industrial production systems. *See generally* Charles W. Powers & Marian R. Chertow, *Industrial Ecology: Overcoming Policy Fragmentation*, *in* THINKING ECOLOGICALLY, *supra* note 6, at 19-36; John C. Dernbach, *Pollution Control and Sustainable Industry*, 12 NAT. RESOURCES & ENV'T 101 (1997). EPA has embraced the movement toward multi-media permitting in its sector-based initiative. *See EPA Draft Fiscal 2000 Action Plan on Sector-Based Environmental Regulation*, 30 Env't Rep. (BNA) 723 (1999).

410. Because of the multiple pathways farm pollution can take, researchers have concluded that integration of air, land, and water protection in permitting decisions is critical to comprehensive management of the farm-environment interface. *See Water Quality Policies Must Be Integrated Among Air, Water, Land, USGS Official Says*, Daily Env't Rep. (BNA), Mar. 8, 1999, at A-2. United States Geological Survey's National Water Quality Assessment found that 85% of nitrogen contributed to the Chesapeake Bay is from groundwater and the atmosphere, and suggested that integrated management will be needed to address watersheds, nonpoint source pollution, total maximum daily loads, and wetlands protection. *See id.*

411. For an overview of the various water runoff restrictions and best management practice instruments presently in use for CAFOs and, in some states, for other types of farms, see generally McElfish, *supra* note 232. No program, however, resembles the fully-integrated, multi-media permitting system proposed

The point is that if a sector-based approach is used to identify farming operations that exhibit high-impact polluting effects, such as CAFOs and large-scale crop operations, conventional prescriptive regulation can yield significant environmental benefits at manageable administrative cost levels.

2. Information— Use Reporting Requirements to Create a National Database of Farms' Chemical Releases

The proposal to address industrial farms through conventional prescriptive regulation requires that we know as much as possible about the identified farm sectors. Moreover, any program directed at the remainder of farms— and there must be one— will require massive amounts of information to enable the use of other instruments such as taxes, incentives, and trading to work effectively. Information, in other words, is a critical component of the administration of an environmental law for all farms, and one that is in short supply. Nowhere is this more true than for the use and release of agricultural pesticides and fertilizers.

The Toxic Release Inventory (TRI) program for reporting toxic chemical releases from manufacturing industries[412] illustrates how information can facilitate education of regulators, the public, and industry about the magnitude of pollutant releases. This aspect of the TRI alone has had beneficial pollution reduction effects.[413] A similar program for agro-chemical releases— a Farm Release Inventory (FRI)— would provide a crucial source of information for the industrial farm permitting program discussed above, would feed directly into the tax, incentives, and trading programs discussed below, and could

herein, although this is the direction in which EPA slowly is moving for CAFOs, *see supra* text accompanying notes 316-26, and in which some states are moving with respect to other farming issues, *see, e.g.*, Carolyn Whetzel, *Regulators Issue Waste Discharge Plan for 350 Dairies in Southern Part of State*, 29 Env't Rep. (BNA) 2489 (1999) (noting that Southern California regional water authorities propose a general permit for dairy farms requiring development of waste management plans).

412. *See supra* text accompanying notes 281-83.

413. Companies subject to the TRI reporting provision reported a total release of 10.4 billion pounds of specified toxic chemicals into the environment in 1987, down to 2.8 billion pounds in 1993. *See* PERCIVAL ET AL., *supra* note 218, at 464-65; *see also Toxic Chemical Releases Decrease by 8.6 Percent in 1994, Report Says*, 27 Env't Rep. (BNA) 531 (1996); *Toxic Chemical Releases Cut by 400 Million Pounds, Chemical Manufacturers Association Reports*, 27 Env't Rep. (BNA) 501 (1996). Industry sources believe the reporting requirement galvanized industry into voluntary pollution reduction goals that in many cases exceed anything required by law. *See CMA Initiative Cuts Toxic Emissions 49 Percent Over Six Years, Official Says*, 27 Env't Rep. (BNA) 11 (1996).

yield the same release reduction incentives the TRI has yielded.

The administration and pollution reduction benefits of an FRI program are already apparent in California, where state pesticide application reporting requirements exceed those of FIFRA.[414] Although the state's reporting data are not assembled as accessibly as TRI data,[415] Californians for Pesticide Reform was able to assemble a comprehensive analytical report for the period from 1990 to 1995[416] and a series of internet-accessible maps showing total use for different regions of the state.[417] These accomplishments demonstrate that a national FRI that fully adopts the TRI data collection and reporting system is feasible, not cost-prohibitive to farmers or the public, and of potentially tremendous benefit to future policy decisions. Indeed, I believe that no meaningful environmental regulation of farms will happen without this critical step.

3. Taxes— Use Tax-Based Instruments to Control Agrochemical Input Levels

Tax instruments have often been proposed as a means of influencing pollution behavior by internalizing the social costs of pollution in the polluter.[418] Many forms of farm pollution would be difficult to tax in this manner because of the difficulty in measuring pollution and the factors causing it. Runoff of pesticides and fertilizers, however, is directly linked to chemical application levels, which, under the information-based FRI program outline above, would be reported for all farms and thus amenable to measurement. If linked, the FRI and a farm chemical tax would provide a precise and powerful means of

414. California requires filing of a pesticide use report after each use of a restricted pesticide. *See* CAL. FOOD & AGRIC. CODE §§ 12979 & 14011.5. For a thorough description of California's so-called "full reporting system" for pesticide applications, see Dep't of Pesticide Reg., Cal. Envtl. Protection Agency, *Pesticide Use Reporting: An Overview of California's Unique Full Reporting System* (1995), *available at* (visited Apr. 21, 2000) <http://www.cdpr.ca.gov/docs/dprdoc/userptng/purhtm.htm>.

415. Access to California's pesticide use reporting databases is available at Dep't of Pesticide Reg., Cal. Envtl. Protection Agency, *DPR Databases* (visited Apr. 21, 2000) <http:www.cdpr.ca.gov/dprdatabase.htm>.

416. *See* James Liebman, *Rising Toxic Tide: Pesticide Use in California, 1991-1995* (1997), *available at* <http://www.igc.org/panna/risingtide/textoftide.html>.

417. These maps may be viewed at Californians for Pesticide Reform, *California Pesticide Use Maps* (last visited Aug. 18, 1999) <http://www.igc.org/cpr/resources/maps.html>.

418. Under this Pigouvian tax model, polluters subject to taxes per unit of pollution will reduce pollution to the point where marginal cost of abatement and the cost of the tax are equal. *See* Weiner, *supra* note 402, at 706-08.

influencing farm chemical inputs as well as a source of revenue for mitigation of their effects.

C. Ford Runge has outlined such a program, which he calls the "negative pollution tax," designed to use taxes to achieve desired levels of chemical inputs on farms.[419] Farms using chemicals in excess of the desired threshold would be subject to a progressive tax rate; farms using chemicals below the target level would be rewarded through decreased taxes or even subsidies.[420] Building on Runge's proposal, the French Ministry of the Environment recently recommended a new tax on pesticides and fertilizers that would be imposed directly on farmers and modulated based on each chemical's eco-toxicity. Based on maximum acceptable levels of each chemical set on a per-crop basis with regional adjustments, revenues from the taxes would be refunded to farmers who use less than the maximum ceiling, making the tax a burden only to farmers who exceed the ceiling. Moreover, organic farmers who use no chemicals would receive a payment equal to farmers who use chemicals up to the ceilings, so that the tax reimbursement scheme would not competitively disadvantage organic farming.[421]

Particularly for small farms, which contribute to the pesticide and fertilizer pollution problem but which would be difficult to regulate directly under a permit program, such a tax system would provide a means of addressing behavior on every farm in an economically and administratively efficient manner. Moreover, if small really is "better," as small farm rhetoric insists, small farmers will only benefit from a negative chemical input tax. The tax, in other words, will become the arbiter of performance. As it stands now, tax policy does little to promote environmental protection on farms and in many states actually promotes farm chemical usage.[422] By adopting tax programs such as those Runge has proposed and the French Ministry of the Environment has outlined, U.S. tax policy would point farms in the right direction for the environment.

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419. Runge, *supra* note 6, at 213-14.

420. For similar but less detailed proposals, see David E. Ervin, *Shaping a Smarter Environmental Policy for Farming*, ISSUES IN SCI. & TECH., Summer 1998, at 73, 78; Zaring, *supra* note 61, at 10,133-34.

421. *See* Lawrence J. Speer, *Report Blames Agriculture for Damages to Environment, Recommends Eco-Taxes*, Daily Env't Rep. (BNA), Mar. 15, 1999, at A-7; *Taxes on Fertilizers, Pesticides Said to Adapt "Polluter Pays" to Agriculture*, Daily Env't Rep. (BNA), Feb. 24, 1999, at A-3.

422. For example, 29 states exempt farm chemicals from state sales taxes. *See Sales Tax on Farm Chemicals Could Add $674 Million to State Revenue, Groups Say*, Daily Env't Rep. (BNA), July 1, 1999, at A-8.

4. Incentives—Build on the CRP and WRP to Implement Incentive-Based Retirement of Farmland with Important Habitat Value

There is a growing consensus that farmland conservation policy simply is not working. The regulation, information, and tax programs proposed above assume that farmers will continue farming— there is nothing inherent in either program that would prompt farmers to retire land for conservation purposes. The existing green payment programs designed to do so— principally the CRP and WRP— are temporary and dependant upon commodity market prices for farmer participation. Conservation-based prescriptive regulation of farming, such as the Endangered Species Act, may achieve some conservation goals, but it provokes farmers to oppose it legally or politically,[423] or to sell out to developers willing to weather the maze of permitting requirements.[424] Farmland protection laws designed to thwart developer takeovers of farms also do nothing to promote conservation of farmland. Overall, then, existing farmland conservation programs do not promise much in the way of permanent conservation.

The problem is that current approaches focus on *farmland* conservation policy and keep environmental objectives subordinate to farm policy. In short, conservation policy and farm policy must be decoupled if we are to make any significant farmland habitat conservation gains. Thus, for example, when New York City decided to protect its water supply watershed, it embarked on a $10 million farmland retirement program.[425] Federal efforts to restore the Everglades also involve significant farmland retirement plans.[426] The point is that where farms exist on environmentally critical lands, targeted social investments will permanently secure the social benefits of those lands. The public dollars presently being cycled through the CRP and WRP programs, however, are inefficiently deployed when not reaping permanent land conservation, leaving farmers in the decisionmaking role as to which lands to conserve, when, and for how long. This funding should be diverted to permanent

423. *See* Hamilton, *supra* note 405, at 300.

424. *See supra* note 335.

425. *See $10 Million Farm Land Retirement Plan Launched to Aid New York City Watershed*, 29 Env't Rep (BNA) 937 (1998). The federal funding share for this effort, however, is from USDA CRP funding and thus not for permanent acquisition.

426. *See* Drew Douglas, *New Deal for Everglades Land Purchase Would See 60,000 Farm Acres Acquired*, Daily Env't Rep (BNA), Jan. 12, 1999, at A-9.

acquisitions of land conservation easements and fee titles that environmental authorities (not farm policy authorities) deem worthy of public investment.[427] For example, researchers have concluded that restoration of wetlands and riparian zones in the Midwest would significantly reduce the hypoxia effects in the Gulf of Mexico.[428] Rather than having farmers decide when to receive subsidies for temporary conservation of lands *they* select, a land acquisition program oriented toward environmental protection would prioritize agricultural lands that can deliver the most benefits, secure them through permanent conservation easements or fee title, and finance restoration efforts.

5. Trading— Use Area-Based Planning Frameworks and Market-Based Trading Mechanisms to Address the Local Farm-Environment Interface

The regulation, information, tax, and incentives programs discussed above have the advantage of avoiding the more vexing problems of farm demographics: each is amenable to decisionmaking and policy implementation at federal levels, though state and local participation is to be expected; the costs of compliance for each are not inherently prohibitive; and they do not collide head-on with small farm protection policy. But they also leave much unaddressed, such as what to do when, even under the FRI and chemical tax program, a particular watershed is seriously impaired as a result of farm runoff.

Thus, there must be some core component of the environmental law of farms that takes national policy to the local level so as to respond to problems that operate on smaller geographic scales and which will be most efficiently solved through locally-based planning authority. My proposed solution combines two different kinds of programs that have had measurable success in other environmental law applications.

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427. Some commentators warn that aggressive habitat conservation on farmland "may be overdoing it" because "some of this land will be needed to produce more food as U.S. and world demand grows." Ervin, *supra* note 420, at 76. This concern seems unwarranted given that, notwithstanding the trend of reducing U.S. farm acreage through conversion to other uses and habitat conservation, U.S. farms continue to improve in productivity and efficiency, national average crop yields remain high, and export demand has been stagnant as other countries boost their agricultural productivity. *See Outlook for the Farm Economy in 2000*, AGRIC. OUTLOOK, Apr. 2000, at 2; *The Ag Sector: Yearend Wrap-up*, AGRIC. OUTLOOK, Dec. 1999, at 2-3. Moreover, at some point U.S. domestic environmental protection must take precedence over foreign demand for U.S. domestic food production.

428. *See* William J. Mitsch, *Hypoxia Solution Through Wetland Restoration in America's Breadbasket*, NAT'L WETLANDS NEWSL., Nov.-Dec. 1999, at 9.

Many environmental laws use local planning areas as the mechanism for implementing nationally-designed policy objectives. However, to avoid the pitfalls of some of those programs, which rely heavily on prescriptive regulation, I propose relying primarily on pollutant trading models that have been successfully employed in several contexts. The result is an area-wide, market-based approach that can adapt to the diverse geographic, economic, and political settings in which farming takes place.

a. Establishing Watershed-Based Planning Areas

Area-based planning and implementation of national environmental policy has a long tradition in federal environmental law. For example, the Clean Air Act's NAAQS program establishes uniform nationwide standards but gives states considerable discretion to allocate the burdens of compliance through local air quality control regions.[429] Similarly, the Coastal Zone Management Act[430] enlists states to develop comprehensive plans for land use and resource protection in coastal areas in return for federal funding assistance and the assurance that federal agencies will act consistently with the plan.[431] The Endangered Species Act has also utilized area-based planning approaches; regional habitat conservation planning permits allow local developing areas to balance endangered species and development needs.[432] Each of these federal programs allocates field-level decisionmaking authority to local government, while retaining strong components of national policy setting and enforcement.

To import this theme of area-based planning and implementation of nationally-designed policy objectives to the environmental law of farms, a unit of area-based planning must be selected. Given the close relationship between farming and water pollution, the most appropriate unit from the perspective of administration, compliance, monitoring, and enforcement will undoubtedly be the watershed. Watershed-based area planning is an old idea that is gaining new vitality and support in many

429. *See supra* text accompanying notes 239-43.

430. 16 U.S.C. §§ 1451-1465 (1994).

431. *See id.* §§ 1455 (coastal plan) & 1456(c) (federal consistency).

432. *See generally* TIMOTHY BEATLY, HABITAT CONSERVATION PLANNING: ENDANGERED SPECIES AND URBAN GROWTH (1994) (reviewing the background of several regional plans adopted in urbanizing areas).

applications.[433] There are several good reasons why watersheds are becoming the planning unit of choice to implement environmental policy at the landscape level: they can be defined topographically; their flows and processes have been the subject of study for many decades; the effects of human intervention have been well-documented; and the watershed concept is a familiar one.[434] Hence, it is no surprise that the Clinton Administration's Clean Water Action Plan emphasizes watershed-based planning, EPA has a division devoted specifically to watersheds, and the Fish and Wildlife Service uses watersheds as the building block of its new ecosystem-based focus for endangered species.[435]

The use of watersheds as the planning unit for the environmental law of farms is even more compelling given the growing importance of the Clean Water Act's total maximum daily load program[436] and the pressing need to integrate farms into it.[437] We know that the waterbody "segments" to which the TMDL program apply are often impaired, in many cases, by nonpoint source water pollution that begins in watersheds far from the segment itself. Until some connection is made between what is happening in the watersheds and what results in the segments, the TMDL program cannot reasonably be expected to make significant progress. Thus, although he does not focus attention on farming specifically, Professor Robert Adler has made a compelling case for implementing the TMDL program through watershed-based units.[438] Regardless of how TMDLs are implemented, addressing pollution from farms in general will work best when farms in a common watershed are viewed as

433. For brief histories of the use of watersheds as environmental policy planning units, see Robert W. Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973 (1995); Anderson, *supra* note 202, at 367-83; William Goldfarb, *Watershed Management: Slogan or Solution?*, 21 B.C. ENVTL. AFF. L. REV. 483 (1994); William E. Taylor & Mark Gerath, *The Watershed Protection Approach: Is the Promise About to Be Realized?*, 11 NAT. RESOURCES & ENV'T 16, 18 (1996).

434. *See generally* J.B. Ruhl, *The (Political) Science of Watershed Management in the Ecosystem Age*, 35 J. AM. WATER RESOURCES ASS'N 519 (1999) (discussing the politics of and political framework for ecosystem management, focusing on a watershed-based exosystem delineation standard).

435. *See id.* at 522.

436. *See* Barney Tumey, *States Lack Resources to Develop TMDLs Despite Support for New Program, EPA Told*, 30 Env't Rep. (BNA) 1026, 1027 (1999).

437. For background, see *supra* text accompanying notes 220-30.

438. *See* Adler, *supra* note 221, at 291-92; *see also* John H. Davidson, *Commentary: Using Special Water Districts to Control Nonpoint Sources of Water Pollution*, 65 CHI.-KENT L. REV. 503 (1989) (suggesting that farm water irrigation supply and return flow management districts established in many states could serve as planning units and regulatory targets for control of farm water pollution).

part of a shared problem, and managed as part of a shared solution.[439]

b. Implementing Watershed-Based Pollutant Trading

One advantage of dividing farms into watershed-based planning areas is that it will allow state and local governments to implement the permitting, tax, information, and incentives programs discussed above. The principal purpose of the watershed approach, however, will be to provide an efficient and flexible medium in which farms sharing responsibility for water pollution can share in the solution. As information about water quality in each watershed comes on line through the TMDL program and information about agrochemical usage becomes available through the FRI as I have proposed, we will be able to make more reliable linkages between farming and water quality impairment at the watershed level. In other words, we will be able to identify more precisely water quality impairment in a waterbody segment attributable to farms in that segment's watershed.

Once that component is identified and quantified, we can begin to manage farms within the watershed as part of the TMDL *problem*, without having to deal with each individual farm as part of the TMDL *program*. It is important for the success of the TMDL program that farms within a watershed that contribute to impairment of a waterbody segment are brought under the compliance umbrella. It is not necessary to treat each farm as if it were an individual point source, so long as all farms are in the solution on an equal footing with each other. This is essentially a pollution control trading system. When put into operation along with the FRI and negative pollution tax programs, the trading program can be expected to promote adoption of integrated pest management practices and other alternatives to present styles of chemical use.[440]

The success story of pollutant trading systems is the Clean Air Act's (CAA) program to allow large coal-burning electric utilities to trade units of sulfur dioxide pollution as part of a

439. For example, the French Ministry of the Environment recently recommended that in addition to a pesticide taxing scheme, agricultural zones with "critical agricultural pollution problems" will require tighter regulation and funding. *See* Speer, *supra* note 7, at A-7.

440. *See, e.g.*, N. Seppa, *Coming: A New Crop of Organic Pesticides*, 156 SCI. NEWS 228 (1999) (discussing use of certain plants that emit pesticidal toxins as a natural pest control measure); *New, Nonchemical Pest Control Proposed*, 284 SCI. 1249 (1999) (discussing use of less potassium in fertilizer as weed control measure).

national policy of reducing total industry emissions over time. A market incentive to engage in such trading was created by the combination of a declining ceiling of total industry emissions coupled with annual allotments of pollutant units based on historical usage. Facilities able to achieve emission levels lower than their respective allotments could sell allotments in an open market to those unable to do so. By most accounts the program has proven a success from administration, compliance, and pollution reduction perspectives alike.[441]

The farming scenario shares key features with the CAA's successful sulfur dioxide trading program. The objective of the CAA program is to control acid rain. Based on the assumption that sulfur dioxide emissions contribute to acid rain, major emission sources are the focus of the control program. Rather than dictate facility-specific emission levels, the CAA program allows facilities to respond to falling emission ceilings over time by balancing the financial burden of new technology with the financial burden of buying allotments. A similar program for farms is not difficult to construct. The objective of the farm emissions trading market is to improve water quality. The focus on farms is based on the evidence that farm emissions impair ambient water quality in a defined waterbody segment. The FRI program proposed above will supply data on the usage of fertilizer and pesticide by each farm located in the problem watershed. Those data will allow for computation of the total farm usage in the watershed. Regulators may then impose a total (and declining) agrochemical application ceiling for the watershed as a whole and individual allotments for each farm in the watershed. Most basically, this data will enable regulators to keep track of trades and compliance. Each individual farmer will obtain an allotment of fertilizer and pesticide usage. Whether he or she uses them, banks them for future use, sells them, or purchases additional allotments will depend on that farmer's decision whether to invest in best management practices or other technological solutions that reduce usage, or forgo them and play the market. As total usage in the watershed declines, total load of pollutants attributable to farming should decline, and water quality in the waterbody should improve. The key benefit is that each individual farmer can maximize the efficiency of his or

441. *See* MARKET-BASED APPROACHES TO ENVIRONMENTAL POLICY 95-136 (Richard F. Kosobud & Jennifer M. Zimmerman eds., 1997); Frank S. Arnold, *SO_2 Trading Success Not Easily Replicable*, ENVTL. F., May-June 1999, at 11.

her response to that regulatory program.[442]

The watershed-based chemical usage trading program thus satisfies what many environmental economists believe are necessary factors for pollutant trading programs to work: a large number of sources emitting the same pollutant, each with different abatement costs; a common "pollution-shed" in which each source's location is not of great consequence to the outcome so long as all sources are included in the trading regime; and a closed market in which the total quantity of allowable pollution being traded is capped.[443] The program is also consistent with EPA's general policies on watershed-based effluent trading,[444] and with the agency's recent effort to create pollutant trading markets in connection with the water quality TMDL and anti-degradation programs.[445]

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442. One key difference between the CAA's SO_2 trading program and the proposed farm chemical application program is that success under the SO_2 program is measured solely by emission reductions— acid rain reductions are not a direct criterion in the operation of the program— whereas in the farm program success would be measured by the reduction in total waterbody pollutant load attributable to farms in the watershed. The farm program uses source reduction rather than emission control to achieve that goal, that is, the reduction of chemical applications that lead to emissions rather than the treatment or reduction of farm runoff itself. In the event that farm runoff continues to impair a waterbody even after the farms in the watershed have reduced total applications below the prescribed ceiling, the options would be to lower the ceiling further or to impose emission control measures on farms in the watershed in the form of best management practices. The objective of the trading program is to avoid prescriptive regulation of farming practices to the extent practicable. At some point, farmers in the watershed may view the marginal costs of emission control as less than the marginal costs of further reductions in the chemical application ceilings. When farmers in the watershed agree that that point has been reached, they ought to be in a position as a group to choose emission controls over further reductions in the application ceiling.

443. *See* Arnold, *supra* note 441, at 11; Kurt Stephenson et al., *Toward an Effective Watershed-Based Effluent Allowance Trading System: Identifying the Statutory and Regulatory Barriers to Implementation*, 5 ENVTL. LAW. 775 (1999). For additional legal commentary on watershed-based pollution trading programs, see Elise Fulstone, *Effluent Trading: Legal Constraints on the Implementation of Market-Based Effluent Trading Programs Under the Clean Water Act*, 1 ENVTL. LAW. 459 (1995); Ann Powers, *Reducing Nitrogen Pollution on Long Island Sound: Is There a Place for Pollutant Trading?*, 23 COLUM. J. ENVTL. L. 137 (1998).

444. *See* OFFICE OF WATER, U.S. ENVTL. PROTECTION AGENCY, DRAFT FRAMEWORK FOR WATERSHED-BASED TRADING (1996). EPA's focus in the watershed context has been on trading the costs of pollution control measures rather than trading units of pollution as is done in the SO_2 program. *See id.* at xiii-xiv. Nevertheless, EPA appears fully committed to the policy of developing trading frameworks that operate on watershed levels.

445. *See* 64 Fed. Reg. 46,058, 46,068-70 (1999) ("EPA is seeking to establish a market for pollutant trading, in the hopes of creating more effective and efficient mechanisms for restoring water quality.").

B. Peripheral Problems

I have designed the proposed environmental law for farms with the key demographic constraints of farming in mind. Prescriptive, centrally-planned regulation is kept to a minimum, targeted mainly at true agro-industrial operations. The FRI is an information-based measure applied to all farms to increase public awareness of farm chemical usage and to facilitate the tax and trading programs. The agrochemical tax program applies an economic incentive solution to the problem of pesticide and fertilizer usage. The watershed-based trading program allows for focus on local water quality problem areas through a market-based instrument that maximizes overall efficiency. And the incentive program uses federal funding to acquire valuable conservation habitat instead of attempting to regulate its use. Overall, this package of instruments balances national authority with local authority, big farm with small farm, and prescriptive controls with flexible controls in a way that responds to the realities of the farm industry.

Nevertheless, this reform package cannot work alone. A separate federal environmental law for farms does not mean state and local initiatives are unwelcome or unnecessary. Indeed, the core programs this Article proposes do not address all of the harms that farms cause, much less offer solutions for them. Water resource depletion, water salinization, soil erosion, and air pollution remain unsettled. Because they are profoundly local in nature, strong initiatives from the states will be needed on these fronts. The proposed regulatory instruments are not intended to thwart other promising incentive-based programs.[446] Indeed, the watershed-based planning units I propose may provide a suitable planning base for local efforts.

A separate federal environmental law for farms also does not mean that reform of federal agricultural and environmental policy in general is unnecessary. Key additional changes will be needed if the environmental law of farms is to operate to its fullest potential. First and foremost, farm commodities subsidies and income subsidies must be reformed to support the objectives of the environmental program.[447] Second, upstream and downstream industries should be enlisted to facilitate the farm-

446. *See also* ENVIRONMENTAL DEFENSE FUND, PLOWING NEW GROUND: USING ECONOMIC INCENTIVES TO CONTROL WATER POLLUTION FROM AGRICULTURE (1994) (describing other possible economic incentives, including trading mechanisms).

447. For background, see *supra* text accompanying notes 341-55.

based environmental program.[448] Finally, international trade policy must be changed to eliminate the concern that further financial burdens on U.S. farmers will put them at competitive disadvantages with less environmentally responsible countries.[449] Each of these initiatives involves major challenges, and they merit more complete coverage at a later time. But none of them is worth worrying about until we build the core of a federal environmental law for farms.

CONCLUSION

I do not envy American farmers. They face dire economic circumstances, criticism from labor rights activists, animal rights activists, neighborhood activists, environmental activists, and an increasing industrialization and concentration of their livelihood that threatens their cherished ideals. Nevertheless, in addition to needing the food that farms produce, I also need the water, air, and land they pollute. The anti-law of farms and the environment has essentially left the balance between food and pollution up to farmers. It is no longer credible to suggest they have used that discretion wisely.

Because the debate about whether to forge a positive environmental law of farming needs to be put to rest once and for all, I have documented the environmental harms farms cause and the environmental safe harbors they enjoy. Based on that evidence, it is reasonable to ask farmers to leave their safe harbor and think unconventionally about farming and

448. For example, some states are experimenting with measures that place restrictions on how food processing companies deal with their farm feedlot contractors. *See, e.g., New NPDES Permit Condition to Hold Chicken Producers Accountable for Waste*, Daily Env't Rep. (BNA), Mar. 22, 1998, at A-2. Maryland proposes requiring producers to buy chickens only from growers who have an approved comprehensive nutrient management plan required by state law for any farm that uses animal manure or sludge as a fertilizer. *See id.* EPA recently has suggested that it will move in that direction with its CAFO regulations, or encourage states to do so generally. *See* GUIDANCE MANUAL AND EXAMPLE NPDES PERMIT FOR CONCENTRATED ANIMAL FEEDING OPERATIONS, *supra* note 309, at 2-10; Susan Bruninga, *Animal Waste Strategy to Recognize State Programs, Hold Corporations Liable*, 29 Env't Rep. (BNA) 2225 (1998) (discussing possible federal proposals to make processors co-permittees with CAFOs under NPDES program).

449. Trade liberalization and environmental protection have collided numerous times in the international arena; concerns that environmental standards will be used as non-tariff import barriers have made it increasingly difficult for a nation to impose strong domestic environmental responsibilities on its industries without exposing them to competitive disadvantages in international markets. *See* Steve Charnowitz, *Free Trade, Fair Trade, Green Trade: Defogging the Debate*, 27 CORNELL INT'L L.J. 459 (1994); Thomas Schoenbaum, *Free International Trade and Protection of the Environment: Irreconcilable Conflict?*, 86 AM. J. INT'L L. 700 (1992).

environmental policy.

I have sought to do so in this Article. Conventional, prescriptive, centrally-planned and rigidly-implemented environmental regulation is appropriate for only a small slice of the farm industry but can achieve significant benefits when applied to that narrow sector. For the rest of farming, the combination of information, tax, incentive, and trading programs I propose offers farmers opportunities to abate pollution flexibly and efficiently, rather than at the direction of bureaucrats. The question is whether the farm industry will use its substantial political clout to keep the debate at the "whether to" level, a battle they cannot win in the long run, or take action now in the "how to" debate to shape a positive environmental law of farming they can live with well into the future.