

The National Agricultural
Law Center



University of Arkansas
System Division of Agriculture
NatAgLaw@uark.edu • (479) 575-7646

An Agricultural Law Research Article

**Legal Approaches to the Prevention
of Agricultural Water Pollution in
England and Wales**

by

William Howarth

Originally published in DRAKE LAW REVIEW
45 DRAKE L. REV. 197 (1997)

www.NationalAgLawCenter.org

LEGAL APPROACHES TO THE PREVENTION OF AGRICULTURAL WATER POLLUTION IN ENGLAND AND WALES

*William Howarth**

Farm pollution incidents seem to be a growing phenomenon with often serious effects on water quality. While we would accept that the vast majority of farmers are highly responsible in their approach to preventing water pollution on their farms, effective action is still needed as a matter of urgency to deal with the irresponsible minority causing the problems.¹

Given the success of the original [Nitrate Sensitive Areas Scheme] in reducing nitrate leaching from the soil, we believe that NSA measures provide a cost-effective means of stabilising and reducing high and/or rising nitrate levels, thereby helping to protect the future viability of groundwater sources.²

Category 1 [the most serious category] pollution incidents attributed to agriculture continued to decline, falling from 99 in 1991 to 36 in 1994. This welcome decline appears to reflect both the efforts of the National Rivers Authority and the Ministry of Agriculture, Fisheries and Food to encourage farmers to be aware of the dangers of pollution.³

I. INTRODUCTION

Until fairly recent times, there was a common belief that farming, as an activity conducted since the dawn of humanity, must be an environmentally benign operation, because if it were not, the adverse effects would have been noticed long ago. Historically, it may be true that the most harmful kinds of environmental pollution have been by-products of industrialization, and that an environmental legacy from Victorian manufacturers remains in the form

* Cripps Harries Hall/SAUR (UK) Professor of Environmental Law, University of Kent at Canterbury, UK.

1. HOUSE OF COMMONS, ENVIRONMENT COMMITTEE, POLLUTION OF RIVERS AND ESTUARIES, THIRD REPORT, ¶ 67 (Sess. 1986-87).

2. MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, PROPOSALS FOR THE CONTINUATION OF THE ORIGINAL (PILOT) NITRATE SENSITIVE AREAS 2 (1994).

3. NATIONAL RIVERS AUTHORITY, WATER POLLUTION INCIDENTS IN ENGLAND AND WALES—1994, at 29 (1995).

of contaminated land and highly toxic sediments which form the beds of many rivers and estuaries. A curious paradox is that, while the environmental record of industry has shown some encouraging improvements, agriculture has become increasingly prominent as a water pollution concern.

The concerns arising in relation to agricultural water pollution arise because of the intensification of agricultural production techniques which has taken place over recent years. Modern methods of animal husbandry, involving the indoor containment of stock to a greater extent than in traditional agricultural practice, have greatly increased the potential for water pollution when animal waste is not adequately contained. A large proportion of agricultural pollution incidents occur because slurry containment facilities are improperly constructed or poorly maintained, and permit effluent to escape into watercourses, having a serious deoxygenating effect. A related problem, stemming from agricultural intensification, is the production of a greater amount of silage rather than hay for animal fodder than previously, partially because of its higher nutritional value, and partially because of the greater need for food for animals over-wintering indoors. Silage production is also capable of producing a highly deoxygenating liquid effluent.

Beyond the problems arising from unsatisfactory containment of agricultural waste products, modern agriculture raises serious problems of water contamination due to the application of substances to the land. Particularly problematic is the application of nitrate fertilizer and pesticides. These substances may not be the cause of any particular pollution incident, but they have a highly damaging long-term effect, especially when water is to be used for supply purposes. The problem of preventing water contamination from substances applied to agricultural land is also especially challenging to traditional legal approaches to water pollution. Essentially, the difficulty is one of how best to regulate agricultural *land* use, rather than how to proceed against the eventual contamination of *water*.

This paper has three objectives: first, to outline the nature and extent of the problem of water quality posed by agricultural activity; second, to review the different legal responses toward it; and third, to draw out some more general inferences concerning preventative water pollution strategies in the agricultural sector. It will become evident that the legal approach to pollution from farms has undergone profound changes over the last few years and suggests that the new strategies are having a significant beneficial effect.⁴

4. For general literature on the law and policy issues relating to agricultural water pollution, see Allan Lennon & R.E.O. Mackay, *Agricultural Water Rights*, in *AGRICULTURAL LAW, TAX AND FINANCE* § P (1990); William Howarth & Christopher P. Rodgers, *Agricultural Pollution and the Aquatic Environment*, in *AGRICULTURE, CONSERVATION AND LAND USE* (1992); GARETH JONES, *AGRICULTURE AND THE ENVIRONMENT* (1993); PHILIP LOWE ET AL., *POLLUTION CONTROL ON DAIRY FARMS* (1992); NATIONAL RIVERS AUTHORITY, *RIVER POLLUTION FROM FARMS IN ENGLAND* (1995); NATIONAL RIVERS AUTHORITY, *THE INFLUENCE OF AGRICULTURE ON THE QUALITY OF NATURAL WATERS IN ENGLAND AND WALES* (1992); NATURE CONSERVANCY COUNCIL, *NATURE CONSERVATION AND POLLUTION FROM FARM WASTES* (1991); Neil Hawke & Nadia Kovaleva, *The EC Nitrate Directive and the UK*, *BULL. OF THE AGRIC. L. ASS'N*, March 1994; Neil Hawke & Nadia Kovaleva, *Pollution by Nitrates—Emerging Law and Policy*, *WATER L.*,

II. THE EXTENT OF THE PROBLEM OF AGRICULTURAL WATER POLLUTION

The point of commencement must be with some attempt to assess the extent of the problem and threat which agriculture poses to the aquatic environment. In particular, the degree of deterioration of the quality of our watercourses attributable to this activity must be objectively ascertained. It is fortunate in this respect that the data is reasonably well provided for, in relation to England and Wales, due to the documentation produced by the National Rivers Authority.⁵ The overall picture is of a recent upturn in river water quality after a period of decline.

It has been the customary practice to conduct extensive surveys of the quality of rivers, canals, and estuaries in England and Wales with information gathered over a five-year period. The latest quinquennial survey⁶ covered the period between 1985 and 1990 and indicated an overall picture of a "real and significant deterioration" in the quality of some rivers in England and Wales, with an overall downgrading of about four percent of the rivers. Although some consolation can be drawn from the fact that almost ninety percent of rivers, canals, and estuaries in England and Wales remain of either "good" or "fair" quality, according to the categories used in the survey, the significant net decline in water quality over the five years covered by the survey was generally regarded as a matter for concern.

Although the next quinquennial survey is not due to be published until 1996, there are indications that there may have been significant water quality improvements over the last five years. An interim report by the National Rivers Authority,⁷ published primarily for the purpose of describing improvements in water quality measurement by means of a General Quality Assessment Scheme, indicates an upgrading of almost eleven percent of the total length of the waters surveyed between 1990 and 1992. Clearly, this interim finding is to be welcomed; however, it remains to be seen whether the

1994, at 25; William Howarth, *Regulating Agricultural Water Pollution*, J. AGRIC. SOC'Y, 1992-93, at 101.

5. The environmental regulation authorities in England and Wales are presently in the process of reorganization as a consequence of the Environment Act of 1995. Primarily, this Act will establish an Environment Agency for England and Wales possessed of the responsibilities presently exercised by the National Rivers Authority, Her Majesty's Inspectorate of Pollution (in relation to the authorization of the most hazardous industrial processes), and the powers of local authorities in relation to waste management regulation. The powers and duties of the National Rivers Authority described in this paper was transferred to the Environment Agency from the date of its establishment on April 1, 1996. At the time of writing, however, the National Rivers Authority was the principal environmental regulatory authority in relation to the aquatic environment with powers and duties provided for under the Water Resources Act of 1991.

6. NATIONAL RIVERS AUTHORITY, *THE QUALITY OF RIVERS, CANALS AND ESTUARIES IN ENGLAND AND WALES* (1991).

7. NATIONAL RIVERS AUTHORITY, *THE QUALITY OF RIVERS AND CANALS IN ENGLAND AND WALES (1990 TO 1992)* (1994).

trend of water quality improvement will be maintained over the whole of the five-year period.

Although the interim report does not go into detail on the reasons for water quality improvement, some indication as to the reasons for the previous deterioration, indicated by the last full quinquennial survey, are evident in the regional breakdown as to changes of river length changing water quality classification. By a considerable margin, the worst decline in water quality over the 1985 to 1990 period was found in the southwest region of the National Rivers Authority, encompassing the relatively rural counties of Devon and Cornwall. This region saw a twenty-two percent decline in the quality classifications of its rivers measured by length. Significantly, the same region also showed the greatest deterioration in water quality over the period of the previous corresponding survey, between 1980 and 1985. The regional report for the southwest is explicit in pinning the blame upon "land use and agricultural practices."⁸ Therefore, a part of the United Kingdom that has a relatively low concentration of heavy industry came to possess amongst the lowest proportion of "good" and "fair" quality rivers due predominantly to the effects of agricultural rather than industrial pollution.

Further confirmation of the significance of farming activity in relation to the quality of watercourses is provided by another annual report of the National Rivers Authority concerned with water pollution incidents, with the most recent edition of this report covering incidents occurring in 1994.⁹ Figures for 1994 show a record total of 35,291 reported water pollution incidents in England and Wales during that year. Out of the 25,415 of these incidents that were substantiated, 3,329 were related to agricultural activity. It is gratifying, however, to know that, overall, the incidents of the most environmentally damaging kind, classified as "major," fell by about thirty-one percent compared with the previous year.

In respect to the breakdown as to the cause of pollution, it is indicated that the most problematic activity is the sewage and water industry, which was responsible for twenty-eight percent of the incidents. Thereafter, industry was responsible for twenty-one percent of incidents, agriculture for thirteen percent, and transport for seven percent. The remaining thirty-one percent of incidents were from a variety of other sources including domestic properties, restaurants, hotels, and schools. In relation to the 3,329 substantiated agricultural pollution incidents, by far the greatest proportion related to dairy farming (fifty-five percent) followed by pig farming (seven percent), arable (six percent), mixed (four percent), poultry (two percent), and sheep farming (two percent).

Of the total 25,415 substantiated incidents, 222 incidents resulted in successful prosecutions by the Authority—a figure which is less than one percent of the substantiated total. At the time of reporting, however, 151 outstanding cases remained to be prosecuted. Despite agriculture being responsible for only thirteen percent of pollution incidents, thirty-two percent

8. *Id.* at 37.

9. NATIONAL RIVERS AUTHORITY, WATER POLLUTION INCIDENTS IN ENGLAND AND WALES—1994 (1995).

of the convictions related to agricultural pollution incidents. After industry, agricultural activity is the most common activity which results in a conviction for water pollution.

On the other hand, the most dramatic downturn in serious water pollution incidents during 1994 occurred in the agricultural sector, with a forty-four percent decrease in the number of substantiated major pollution incidents concerning this activity compared with the previous year. This is indicative of a long-term trend whereby the number of major agricultural pollution incidents has declined in each of the last four annual surveys. It may be noted that the total number of substantiated agricultural pollution incidents overall actually rose by about fifteen percent. The decline in serious incidents, nevertheless, is welcomed and thought "to reflect both the efforts of the National Rivers Authority and the Ministry of Agriculture, Fisheries and Food to encourage farmers to be aware of the dangers of pollution."¹⁰ It may be the case that legal changes which have been introduced over recent years have also been a significant factor in this downward trend in serious agricultural water pollution incidents.

To summarize all the statistical information, the inference suggested is that farm pollution continues to constitute a serious threat to the aquatic environment. There are some encouraging signs of improvement to be drawn from the data on water pollution incidents, however, and there is reason to think that they may be related to changes in legislation and law enforcement over recent years.

Some caution must be exercised, however, in seeking to relate water quality in watercourses with pollution incidents, and this is particularly evident in relation to agricultural activities which may have an adverse effect upon the aquatic environment. While pollution incident data record "incidents" in which a sudden, discrete, and often dramatic entry of polluting matter has taken place, the recordings do not take account of more gradual contamination of watercourses which may arise cumulatively over a longer period of time through agricultural activity.

Arguably, a more intractable difficulty in relation to the overall state of water quality is not the result of identifiable "incidents," but rather a continuing percolation of diffuse forms of pollutant originating from certain kinds of land use. If this is the case, then agriculture must be heavily implicated due to the range of potentially polluting substances which are applied to land as a result of modern agricultural practices. The legal implications of diffuse forms of agricultural pollution are considered later.

III. CRIMINAL OFFENSES CONCERNING WATER POLLUTION

Turning to the legal response to the issues, the initial task is to review the traditional legal approach to agricultural water pollution, explaining its limitations where necessary. This will serve as a useful precursor to later discussion about recent changes in the law in which contrasting strategies have been pursued to tackle the problem of agricultural water pollution.

10. *Id.* at 29.

For over a century the criminal law has provided for an offense relating to water pollution.¹¹ The counterpart of this offense is now provided for under section eighty-five of the Water Resources Act of 1991 (1991 Act). Under the Act, a person commits an offense "if he causes or knowingly permits any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters"¹² or any trade effluent to enter such waters.¹³

Although the expression "poisonous, noxious or polluting" is not defined under the 1991 Act, the polluting potential of many forms of agricultural waste is self-evident.¹⁴ "Effluent" means any liquid, including particles of matter and other substances in suspension in the liquid. "Substance" includes micro-organisms and any natural or artificial substance or other matter, whether in solid or liquid form or in the form of a gas or vapor. "Trade effluent" includes:

[A]ny effluent which is discharged from premises used for carrying on any trade or industry, other than surface water and domestic sewage, and for the purposes of this definition, any premises wholly or mainly used (whether for profit or not) for agricultural purposes or for the purposes of fish farming or for scientific research or experiment shall be deemed to be premises used for carrying on a trade.¹⁵

The water pollution offense is deemed committed when there is an entry of polluting matter into "controlled waters." Controlled waters are defined to encompass the subcategories of "relevant territorial waters," "coastal waters," "inland freshwaters," and "ground waters."¹⁶ Controlled waters will encompass, therefore, almost all of those waters that are likely to be subject to agricultural pollution. That observation having been made, it may be significant that agricultural water pollution may arise through the indirect entry of polluting matter into water by applying certain substances to land. In part, this is provided for under the legislation by permitting the National Rivers Authority to issue a prohibition upon the discharge of trade effluent, such as certain kinds of agricultural waste, "on to or into any land," and when this is done, contravention of the prohibition will be an offense.¹⁷ When no such prohibition has been made, however, there are potential difficulties as to the point at which the application of substances to land becomes an offense of polluting controlled waters.

11. See Rivers Pollution Prevention Act, 1876 (Eng.). See generally WILLIAM HOWARTH, WATER POLLUTION LAW (1988) (providing a history of water pollution law in chapter one).

12. Water Resources Act, 1991, § 85(1) (Eng.).

13. *Id.* § 85(3).

14. William Howarth, 'Poisonous, Noxious or Polluting': *Contrasting Approaches to Environmental Regulation*, 56 MOD. L. REV. 171 (1993).

15. Water Resources Act, 1991, § 221(1) (Eng.).

16. *Id.* § 104(1)(a)-(d).

17. *Id.* § 85(4)(a)-(b).

An illuminating ruling on the meaning of "watercourse" for the purposes of the definition of "controlled waters" is *R. v. Dovermoss, Ltd.*,¹⁸ in which the defendant allegedly put animal slurry on a field at a time when a stream ran through a neighboring field. Due to a blockage of the stream, water subsequently flowed over the field where the slurry had been spread resulting in the contamination of subterranean water used for supply purposes. It was argued that because the stream had departed from its normal course, the polluting matter did not enter a controlled water. This contention, however, was rejected by the court which found that a "watercourse" did not cease to be such because it was dry at any particular time. Often ditches were dry for a great part of the year but did not cease to be watercourses because of that fact. Additionally, the definition of controlled waters referred to "waters of any . . . watercourse," not waters *in* any watercourse.¹⁹ It must be concluded, therefore, that a distinction is to be drawn between the "watercourse," comprising the channel in which water normally flows, and the controlled water which may be contained in that channel at any particular time. Clearly, the case illustrates that the application of polluting matter to land can ultimately involve the entry of that matter into controlled waters.

Provision for prohibition of certain discharges by notice or regulations allows the National Rivers Authority to give a person notice prohibiting him or her from making or continuing a discharge, unless specified conditions are observed.²⁰ It may also be noted that discharges of effluent of a regular nature need to be authorized by the Authority, termed a "discharge consent." Discharge consents may be granted, on application, subject to a range of conditions designed to protect the receiving waters. Providing that the entry of matter "into any waters or any discharge" is made under and in accordance with a discharge consent, no water pollution offense is committed.²¹

Without dwelling excessively upon the details, the principal water pollution offenses under section eighty-five of the Water Resources Act of 1991 apply to pollution of all watercourses which are likely to feature a connection with pollution from farms. The expression "poisonous, noxious or polluting" will encompass many kinds of farm waste, including problematic slurry and silage liquor. "Trade effluent" is expressly defined to include effluent which is discharged from premises used for agricultural purposes. Agricultural pollution is, therefore, clearly covered by long-established statutory provisions.

Moreover, the criminal offenses concerning causing water pollution have, since the decision in *Alphacell, Ltd. v. Woodward*,²² been understood to import strict liability so that they can be shown to have been committed despite the absence of any intention to pollute water or negligence in doing

18. *R. v. Dovermoss, Ltd.*, 159 J.P. 448 (1995).

19. Water Resources Act, 1991, § 104(1)(c) (Eng.).

20. *Id.* § 86.

21. *See id.* § 88(1)(a) & sched. 10 (providing details of discharge consent authorization).

22. *Alphacell, Ltd. v. Woodward*, 2 All E.R. 475 (1972).

so.²³ Arguably, this represents the strongest form of criminal law, but it is notable that the question as to what precisely constitutes "causing" the entry of polluting matter into controlled waters has occupied the courts on numerous occasions. It is evident that the application of the concept of causation to practical situations may not always be self-evident.²⁴

In addition, water pollution offenses may be relatively heavily punished. It is provided that a person who commits the offense, or contravenes the conditions of any discharge consent, will be subject to summary conviction to imprisonment for a term not exceeding three months, to a fine not exceeding twenty thousand pounds, or to both.²⁵ On conviction on indictment, a person may be subject to "imprisonment for a term not exceeding two years," a fine (of unlimited amount), or both.²⁶

IV. THE PEGRUM CASE

Many of the principles of criminal law relating to water pollution are well-illustrated in an agricultural context by *Southern Water Authority v. Pegrum & Pegrum*.²⁷ The defendants in this case were pig farmers, and effluent produced by the pigs was transferred into a lagoon from which it was emptied four or five times a year by contractors and spread on fields as manure. Because of the wet summer in 1987, the sediment from the lagoon had not been removed for some eighteen months, and as a result the storm drains had become clogged. After a period of four days of rain, the lagoon overflowed, and some of its contents escaped into a stream which flowed into the River Medway, resulting in a serious pollution incident. The farmers were charged with the offense of causing polluting matter to enter the stream.²⁸

Magistrates acquitted the farmers on the ground that, in order to be guilty of "causing" pollution, it had to be shown there was a positive act resulting in pollution. As a point of fact, it was found that the ingress of rain-water was an intervening event which broke the chain of causation between the farming activities and the pollution. The prosecution appealed this decision.

On the basis of the leading authority of *Alphacell, Ltd. v. Woodward* and other decisions, Henry, J., took the view that the following principles were applicable to the circumstances. First, when a defendant conducts some active operation involving storage, use, or creation of material capable of polluting a river should it escape, then if it does escape and pollute, the defendant is liable if he causes that escape. Second, "causing" must be construed in a common

23. See also *National Rivers Auth. v. Yorkshire Water Servs., Ltd.*, 1 All E.R. 225 (1995).

24. For examples of some of the difficulties in establishing causation in water pollution prosecutions, see *Wychavon DC v. National Rivers Auth.*, 2 All E.R. 440 (1993); *Price v. Cromack*, 2 All E.R. 113 (1975); and *Impress (Worcester) Ltd. v. Rees*, 2 All E.R. 357 (1971).

25. *Water Resources Act, 1991*, § 85(6)(a)-(b) (Eng.).

26. *Id.* § 85(6).

27. *Southern Water Auth. v. Pegrum & Pegrum*, 153 J.P. 581 (1989).

28. *Control of Pollution Act, 1974*, § 31(1) (Eng.) (the precursor to the *Water Resources Act, 1991*, § 85(1) (Eng.)).

sense way. Third, a defendant may be found to have caused an escape even though he did not intend it and even if he was not negligent. Fourth, it is a defense if the defendant can show that the escape was due to an intervening act of a third party or an act of God. Fifth, in deciding whether an intervening act was a defense on the general principles of causation, the general question was whether that intervening factor was some activity outside the defendant's control, such as the action of a trespasser or an act of God, and was of so powerful a nature that the defendant's conduct was not a cause at all, but was merely a part of the surrounding circumstances.

On the facts of the case, Henry J. found that the ingress of rainwater was the causative factor. The storage and release of effluent was within the active operation of the farm. In order to conclude that the ingress of rainwater was an act of God, it had to be so unpredictable as to excuse the farmers of all liability. There was nothing so extraordinary, however, about the amount of rain that had fallen, considering it was not so great that it could not have been contemplated. Furthermore, it was not possible to argue that the blocked drains were an intervening cause because these fell within the responsibility of the farmers. Consequently, the appeal by the Water Authority was allowed, and the case was remitted to the magistrates with a direction to convict.

V. ANTI-POLLUTION WORKS AND OPERATIONS

Alongside the criminal offenses concerning the water pollution, the National Rivers Authority has powers to conduct anti-pollution works and operations in relation to water pollution. In particular, when "it appears to the Authority that any poisonous, noxious or polluting matter or any solid waste matter is likely to enter, or to be or to have been present in, any controlled water, the Authority will be entitled to carry out" certain works and operations.²⁹ When matter "appears likely to enter any controlled waters, the works and operations" are intended to prevent that from occurring.³⁰ When the matter appears "to be or to have been present in any controlled waters, works and operations" are intended to remove or dispose of the matter,³¹ remedy or mitigate "any pollution caused by its presence in the waters,"³² or, "so far as it is reasonably practicable to do so, restor[e] the waters, including any flora and fauna dependent on the aquatic environment of the waters, to their state immediately before the matter became present in the waters."³³

Most frequently, these powers will be used in practice to minimize the environmental damage caused by actual pollution incidents, for example, by placing booms across watercourses to contain oil slicks or by introducing oxygen into waters that have been subject to contamination by deoxygenating substances. It is clear from the wording of the subsection, however, that it is not restricted to situations in which actual pollution of a watercourse has

29. Water Resources Act, 1991, § 161(1) (Eng.).

30. *Id.* § 161(1)(a).

31. *Id.* § 161(b)(i).

32. *Id.* § 161(b)(ii).

33. *Id.* § 161(b)(iii).

already occurred. Preventative work to stop the entry of polluting matter into a watercourse is equally within the scope of the provisions; hence, it is possible that the power could be used to undertake works on land when necessary to prevent the entry of matter into controlled waters. The scope for preventative operations of this kind on farm land is considerable.

Not only is the National Rivers Authority entitled to conduct preventative operations on agricultural premises, it is also entitled to recover the cost of such activities. When the Authority carries out any anti-pollution works or operations, it will be entitled to recover the expenses reasonably incurred in doing so from any person who caused or knowingly permitted the matter in question to be present at the place from which it was likely, in the opinion of the Authority, to enter any controlled waters; or caused or knowingly permitted the matter in question to be present in any controlled waters.³⁴

Although the power of the National Rivers Authority to recover the reasonable expenses of anti-pollution works and operations is frequently used in practice, when action has been taken by the Authority in the aftermath of a pollution incident, there has only been one instance in which the exercise of this power has been explicitly considered by the courts. This arose in the case of *Bruton & National Rivers Authority v. Clarke*,³⁵ when a serious pollution incident followed the collapse of a bank supporting a slurry lagoon at the defendant's pig farm. This allowed some three million gallons of ammonia-saturated slurry to enter an adjoining watercourse. Although the defendant admitted liability for the pollution incident, and the resulting fish mortality arising from it, actions were brought by the first defendant to recover civil damages for loss of amenity to the local angling association, and by the Authority to recover costs that it had incurred in restoring the watercourse to its former state.

With respect to the Authority's claim for recovery of clean-up costs, the judge reduced an amount claimed in respect to a fish survey (approximately £8000) on the basis that there was an element of "dual purpose" involved—this survey would have been conducted eventually regardless of the incident. The court found £5000 recoverable for this purpose, however, because the incident had necessitated the survey being conducted earlier than had been planned. Regarding a claim for scientific and technical costs of £22,000, it was held that these costs had to be shown to have been necessarily incurred under the statutory powers to conduct anti-pollution works and operations and, because this could not be established in all respects, the amount allowed was reduced to £12,000. With respect to fish restocking, the amount allowed was approximately £21,000 because an additional expenditure of £30,000 was found to have made no significant contribution to the restoration of the fishery. Overall, the outcome in the case indicates that courts will be cautious when allowing cost recovery for anti-pollution works and operations, unless it can be conclusively shown that such costs have been necessarily incurred in accordance with the statutory powers of the Authority regarding anti-

34. *Id.* § 161(3)(a)-(b).

35. *Bruton & National Rivers Auth. v. Clarke*, WATER L., 1994, at 145; Peter Carty, *Recovering Clean-up Costs*, WATER L., 1995, at 20.

pollution works and operations. Nevertheless, the decision provides a useful illustration of the considerable potential for clean-up costs to be recovered against polluters without the need for recourse to the civil law.

VI. COUNTERACTING AGRICULTURAL POLLUTION

Despite strict liability, relatively severe punishments, and the power to recover clean-up costs from farmers, it is far from clear that the traditional formulation of the water pollution offenses are always appropriate for the problems of water pollution generated by modern agricultural activities. The difficulty is that, traditionally, the law has conceived of the problem of pollution of watercourses in terms of a discrete and identifiable entry of polluting matter into a watercourse, causing a dramatic and sudden change in water quality and, usually, obvious environmental consequences such as the death of large numbers of fish. This picture may be typified by those kinds of cases which are most likely, among the farm pollution incidents, to result in convictions. An overall decline in the state of river water quality, however, may not be solely due to such incidents, but rather the more serious, pervasive, and intractable difficulties which arise through the gradual transmission of diffuse pollutants into watercourses.

Although pollution from diffuse sources is rarely a basis of criminal proceedings, it is clear that they constitute a substantial part of the overall problem in the agricultural context. Moreover, it is evident that diffuse pollutants constitute a problem which requires a different kind of legal approach than what is traditionally employed regarding agricultural pollution. Effective control of water pollution from these sources requires *proactive* controls upon potentially polluting agricultural land use, rather than *reactive* legal proceedings being pursued after a pollution incident has taken place and inflicted damage upon the aquatic environment.

Fortunately, the limitations of the traditional approach to the regulation of agricultural water pollution have been recently acknowledged through the provision of enabling powers facilitating the enactment of regulations to counteract those aspects of agricultural land use which constitute a water pollution hazard. Two particular examples of preventative approaches to agricultural water pollution are taken up for discussion: the enactment of precautionary regulations and the designation of nitrate sensitive areas.³⁶

36. It should also be noted that significant mechanisms for the prevention of agricultural water pollution are provided for under diverse legislation. Most notably in this respect, reference should be made to national legislation implementing the European Community Council Regulation 2078/92 on agricultural production and the protection of the environment, the "Agri-Environment Regulation," providing for the payment of grant aid by the Minister of Agriculture, Fisheries and Food for specified kinds of environmental land management. In accordance with this European Regulation, there have recently been enacted three sets of national regulations which allow for particular kinds of grant aid to be given in circumstances in which agricultural land is managed in a manner which seeks to reduce harm to the environment and, specifically, the pollution of water. The national regulations are the Habitat (Water Fringe) Regulations, S.I. 1994, No. 1291; the Habitat (Former Set-Aside Land)

VII. PRECAUTIONARY REGULATIONS

In environmental terms, prevention is always better than cure. In law, the application of this principle is well-illustrated by the broadly-formulated enabling power of the Secretary of State for the Environment and the Secretary of State for Wales to make regulations providing for preventative measures regarding water pollution.³⁷ Regulations of this kind may be used to prohibit a person from having custody or control of any poisonous, noxious, or polluting matter, unless prescribed works, precautions, and other steps have been taken for the purpose of preventing or controlling the entry of the matter into waters. Contravention of precautionary requirements is an offense *whether or not any offense of water pollution is actually committed*.³⁸

The ministerial power to create precautionary regulations has been exercised by the enactment of specific regulations in respect to agricultural water pollution in the form of the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations of 1991 (Regulations).³⁹ In general terms, these regulations introduce controls and set standards for the construction of new silage stores, slurry installations, and agricultural fuel oil stores for all farms in England and Wales.

The Regulations make it an offense for any person to have custody or control of any crop that is being made into silage, unless it is stored in a silo which conforms with specifications set out in Schedule 1 to the Regulations. Silage is to be stored in bales which are individually wrapped and sealed within an impermeable membrane and stored at least ten meters from any watercourse, and bales are not to be unpacked within ten meters of any watercourse in which silage effluent could enter. Schedule 1 to the Regulations sets out a range of requirements in respect of the construction of silage silos, such as requirements regarding the maximum loading capacity, an impermeable base, a prohibition on any part of the silo being constructed within ten meters of any watercourse, and a requirement that silos are to be designed and constructed so that, with proper maintenance, they are likely to satisfy other requirements of the Schedule for at least twenty years.

Regulations, S.I. 1994, No. 1292; and the Habitat (Salt-Marsh) Regulations, S.I. 1994, No. 1293.

Another measure deserving footnote reference is the European Community Directive on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (86/278/EEC). The "Sewage Sludge" Directive aims to control the use of sewage sludge in agriculture by establishing maximum limit values for concentrations of heavy metals in soil and in sludge, and defines conditions under which sludge may be applied to agricultural land. Although soil contamination is the immediate concern, it is clear that the Directive is also motivated by a concern to protect drinking water and groundwater from contamination. National implementation of the Sewage Sludge Directive is brought about by the Sludge (Use in Agriculture) Regulations, S.I. 1989, No. 1263, which are complemented by the DEPARTMENT OF THE ENVIRONMENT, CODE OF PRACTICE FOR AGRICULTURAL USE OF SEWAGE SLUDGE (1989).

37. Water Resources Act, 1991, § 92 (Eng.).

38. *Id.* § 92(c).

39. Control of Pollution Regulations, S.I. 1994, No. 324.

In relation to the storage of animal slurry, the Regulations require that a person having custody or control of slurry is to store it in a reception pit or a slurry storage tank which conforms to requirements set out in Schedule 2 to the Regulations. Schedule 2 imposes requirements to the effect that the slurry storage tanks are to be constructed with an impermeable base and walls capable of withstanding specified loads. Storage tanks are to have adequate storage capacity for the quantity of slurry produced on the premises—an amount which is presumed, in the absence of evidence to the contrary, to be the maximum quantity of slurry which is likely to be produced in any continuous four-month period taking into account the amount of rainfall which may enter the tank. Again, no tank is to be situated within ten meters of any watercourse, and tanks are to be designed and constructed so that with proper maintenance they are likely to satisfy the requirements of the Schedule for twenty years.

In relation to the storage of fuel oil on farms, no person is to have custody or control of such oil in a quantity exceeding 1500 liters, unless it is stored in a storage tank within a storage area which satisfies requirements set out in Schedule 3 to the Regulations. Schedule 3 includes requirements for oil storage tanks to be surrounded by an impervious bund which will retain 110 percent of the capacity of the tank in the event of an escape of its contents. Discharging taps from the tank must be within the bund and kept locked shut when not in use, and no part of the bund is to be situated within ten meters of any watercourse which fuel oil could enter if it escaped.

The prohibitions which the Regulations impose on silage silos, slurry storage tanks, and fuel storage tanks are applicable to all such facilities other than "exempt structures." This term encompasses facilities which were in use or constructed before March 1, 1991, or contracted to be constructed before that date and completed before September 1, 1991, when the Regulations came into effect. Provision is made, however, for the loss of exemption by a structure when it is substantially enlarged or reconstructed. Alternatively, exemption may be forfeited when the National Rivers Authority is satisfied that there is a significant risk of pollution, it serves notice upon a person having custody or control of the structure requiring works to be carried out, appropriate precautions taken, and, thereafter, the notice is not complied with. Notices requiring works on exempt structures are to describe the works to be conducted and specify a reasonable period within which requirements are to be complied with.

Contravention of the Regulations amounts to a criminal offense which is punishable, on summary conviction, by a fine not exceeding the statutory maximum, presently £5000, or on conviction on indictment by a fine of an unlimited amount. Moreover, in all instances, contravention of the Regulations constitutes an offense notwithstanding that no actual pollution of water takes place, and this does not detract from the need to avoid water pollution. The essence of the Regulations is that *a failure to take precautions* to prevent pollution has, by itself, become a punishable offense.

VIII. THE NITRATE PROBLEM

A further area in which preventative controls have been introduced concerns the pressing problem of deterioration of water quality caused by nitrate originating from fertilizer and manure applied to agricultural land. Given the importance of nitrogenous fertilizers in modern agricultural practice alongside the vital need to maintain the purity of potable water supplies and to prevent the over-enrichment or "eutrophication" of natural watercourses, the problem represents a formidable practical difficulty.

In legal terms, the nitrate pollution problem is also an urgent matter given recent proceedings in which the United Kingdom was found guilty by the European Court of failing to meet the requirements of Community Directives relating to drinking water quality⁴⁰ in respect of nitrate content exceeding the limit value of fifty milligrams per liter in some water supply zones.⁴¹ The important and distinctive features of the nitrate pollution problem are such that it has been specially provided for in national law by a facility for the designation of nitrate sensitive areas.

Powers provided under the Water Resources Act of 1991 enable the ministerial designation of a nitrate sensitive area to prevent or control the entry of nitrate into controlled waters as a result of, or anything done in connection with, the use of any land for agricultural purposes. When designation of a nitrate sensitive area is brought about, the Minister may require, prohibit, or restrict the carrying on of specified activities to prevent or control the entry of nitrate into waters and provide for amounts to be payable in connection with obligations arising from this. Designation, for these purposes, is by the "relevant minister," that is, the Secretary of State for Wales in relation to an area which is wholly in Wales. In relation to land which is wholly in England, or partly in England and partly in Wales, designation is by the Minister of Agriculture, Fisheries and Food and the Secretary of State for the Environment, acting jointly.⁴²

An order designating a nitrate sensitive area may confer powers upon the appropriate minister to determine the circumstances in which the carrying on of any activity is required, prohibited, or restricted. In addition, the order may apply a prohibition or restriction to activities which may only be carried on subject to ministerial consent and in accordance with conditions subject to which the consent is given. Contravention of a requirement, prohibition, or restriction in an order of this kind or of a condition of a consent is an offense which is punishable and subject to penalties which are not to exceed those provided for in respect to the principal water pollution offenses.⁴³

In addition to the power to control activities that may result in nitrate pollution of water, designation of a nitrate sensitive area may allow the rele-

40. European Community Commission v. United Kingdom, 1 ENVTL. L. REP. 299 (1993) (concerning Council Directives 75/440, 79/869, and 80/778).

41. See the discussion of the European Community dimension to nitrate pollution below, *infra* Part XI.

42. Water Resources Act, 1991, § 94(1)-(3), (7) (Eng.).

43. *Id.* § 94(4).

vant minister to enter into agreements to compensate landholders in the area for changes in farming practice. The ministerial power to enter into voluntary agreements of this kind allows undertakings to be entered into by the owner of the freehold interest in the land or any person having an interest in the land when the consent of the freeholder has been given. The substance of agreements of this kind is that in consideration for compensatory payments to be made by the relevant Minister, the other party accepts obligations with respect to the management of the land imposed under the agreement. An agreement of this kind will bind all persons deriving title to the land from the person entering into the agreement with the minister.⁴⁴

IX. THE NITRATE SENSITIVE AREAS SCHEME OF 1990

The legal powers to create nitrate sensitive areas were originally exercised by the Minister of Agriculture, Fisheries and Food under the "Pilot Nitrate Scheme" brought about, in part, by the Nitrate Sensitive Areas (Designation) Order of 1990.⁴⁵ Alongside the provision of advice to farmers about the application of nitrogen fertilizer to land, the objective of the scheme was to select ten specific areas in England, covering a total of fifteen thousand hectares, where nitrate concentrations in water sources exceeded, or were at risk of exceeding, the limit of fifty milligrams per liter specified in the European Community Drinking Water Directive,⁴⁶ and to monitor the entry of nitrate into water sources in the area in order to ascertain the effect of such controls upon water quality. The particular locations within the scheme were selected on the basis that they would serve as *pilot* areas in the sense that they would provide a means of evaluating the effectiveness of limiting nitrate use as a prelude to the general introduction of such schemes.

Within the ten designated nitrate sensitive areas, farmers were given free advice on ways to reduce the risk of nitrate leaching into water. More significantly, on application, farmers were allowed to enter into an agreement with the minister, subject to certain conditions, allowing for payment of compensation to the farmer in return for an assurance that farming practices would be adopted which involved the application of reduced amounts of nitrate to the land.

The detailed provisions regarding payments under nitrate sensitive area agreements are rather intricate. Broadly, two distinct schemes of payment are provided for under the Order: the "basic scheme" and the "premium scheme." These are distinguished according to the burden of the obligations involved. For example, the obligations arising under a basic scheme agreement primarily concern limitations upon the maximum amounts of organic and inorganic nitrogen which may be added to the land and the times at which it may be added. By contrast, premium scheme agreements commit

44. *Id.* § 95(3).

45. Nitrate Sensitive Areas (Designation) Order, S.I. 1990, No. 1013, as amended by S.I. 1990, No. 1187 and S.I. 1993, No. 3198.

46. Council Directive 80/778 on the Quality of Water Intended for Human Consumption, 1980 O.J. (L 229).

farmers to more fundamental changes in land use involving the conversion of arable land to low intensity grassland of various descriptions. Because of the greater extent of the duties involved, the rates of payment arising under the premium scheme are considerably higher; however, under both schemes the rates of payment vary according to the particular nitrate sensitive area concerned.

All nitrate sensitive area agreements contain a provision allowing the minister to monitor compliance with the agreement or to assess the effectiveness of the agreement in preventing the entry of nitrate into controlled waters. Accordingly, monitoring provisions allow entry upon the land in question, the taking of samples, the installation of equipment, and the examination of records. When a farmer fails, without reasonable excuse, to comply with the provisions of an agreement, the minister may terminate the agreement, withhold the whole or any part of the payment payable to the farmer, and recover any payment already made to him.

Evaluation of the effectiveness of changes in land management practice introduced under the original nitrate sensitive areas scheme has been largely favorable. Scientific monitoring of nitrate concentrations has demonstrated the success of the measures in reducing nitrate leaching and in providing a cost-effective means of stabilizing or reducing nitrate levels, thereby helping to protect the future viability of selected groundwater sources.⁴⁷ Accordingly, it has recently been announced that the scheme will be continued beyond the five-year period originally envisaged, with the original ten areas being incorporated within the scheme now provided for under the Nitrate Sensitive Areas Regulations of 1994.⁴⁸

X. THE NITRATE SENSITIVE AREAS REGULATIONS OF 1994

Further provision for nitrate sensitive areas in England is made under the Nitrate Sensitive Areas Regulations of 1994⁴⁹ which comply with the European Community Council Regulation on agricultural methods compatible with the requirements of protection of the environment and the maintenance of the countryside.⁵⁰ These regulations designate twenty-two additional nitrate sensitive areas and allow the Minister of Agriculture, Fisheries and Food to grant aid to farmers in the areas at rates of payment defined under the Regulations. The areas concerned are referred to in Schedule 1 of the Regulations and more particularly shown colored pink on definitive maps, dated, signed, and sealed by the minister and deposited at the offices of the Ministry of Agriculture, Fisheries and Food. In relation to these areas, three alternative schemes of aid are provided for: the basic scheme, the premium arable scheme, and the premium grass scheme.

47. See *supra* note 2.

48. See the announcement of Mr. Waldegrave, Minister of Agriculture, Fisheries and Food, in the House of Commons on June 30, 1995, in Hansard columns 811 to 812.

49. Nitrate Sensitive Areas Regulations, S.I. 1994, No. 1729.

50. Council Regulation 207/92 on Agricultural Methods Compatible with the Requirements of Protection of the Environment and the Maintenance of the Countryside, 1992 O.J. (L 92).

To be eligible for a payment under the Regulations, a farmer in any of the twenty-two nitrate sensitive areas must give undertakings to the minister, in relation to the land concerned, for a period of five years. The minister may make payments when certain "qualifying conditions" are satisfied: the land concerned is eligible for aid; the farmer makes an application in a specified form; the farmer gives the minister specified forms of undertaking; the minister accepts the application; and the farmer submits a claim for aid in an approved form.

In respect of the "qualifying conditions" for aid, these require that the land is in a nitrate sensitive area and is occupied by the farmer, or on his behalf, for agricultural purposes and he is the freehold owner of the land, or has an interest in the land as a tenant and the consent of his landlord. Alternatively, the conditions will be met when the farmer is a party to a share-farming agreement and the application is made jointly by all the parties to that agreement.

Land in a nitrate sensitive area will be eligible for aid if at the date of the undertaking it satisfies the appropriate conditions for the scheme under which aid is sought. Accordingly, for the basic scheme, the land must have been used for the production of any agricultural crop, other than a permanent crop or grass, grown for more than five consecutive years, excluding any period for which the land has been set-aside land. In respect to the premium arable scheme, the land must not have been woodland or permanent grassland and must have been used only for the production of any agricultural crop, other than a permanent crop or grass, grown for more than one consecutive year. In respect to the premium grass scheme, the land must have been grassland which has been receiving more than 250 kilograms of nitrogen in the form of inorganic fertilizer per hectare in each of the three years immediately preceding the date when the undertaking commences.

The undertakings to be provided by the farmer are that, for a period of five consecutive years commencing on October 1, in the year in which the application is made, the following general requirements will be adhered to. In any period of twelve months, no application of organic nitrogen fertilizer will be applied in excess of the quantity which would result in the application to the land of 250 kilograms of nitrogen per hectare. Additionally, no organic nitrogen fertilizer will be applied within fifty meters of a spring, well, or borehole that supplies water for human consumption, or for use in a dairy, or within ten meters of any watercourse. In addition to the general requirements to limit fertilizer application and not to apply it within the specified proximities to water, further requirements apply depending upon whether the application is made under the basic, premium arable, or premium grassland schemes. The detailed requirements with respect to the basic and premium schemes are set out in Schedules 3, 4, and 5 to the Regulations respectively.

When an application for aid is accepted, certain obligations arise for the farmer to allow specified persons to take action to monitor compliance with the undertaking or to assess the effectiveness of the undertaking in preventing the entry of nitrate into controlled waters. Specifically, the farmer must permit the minister, or servants or agents acting on his behalf, accompanied by any persons necessary for the purpose, to enter the land at all reasonable

times. These persons are entitled to enter the land, take samples from the land, install equipment on the land, and examine all records which may be kept in compliance with the undertakings. The farmer concerned is bound to render all reasonable assistance to persons exercising these powers, to produce documents or records for inspection, and accompany these persons in making an inspection or identification of the land concerned.

Special provision is made for various kinds of misconduct in relation to undertakings entered into under the Regulations. If a person makes a false statement or furnishes any false or misleading information, with a view to obtaining payment for himself or any other person, the minister may withhold the whole or any part of any aid payable and may recover aid already paid. Similarly, withholding payment or the recovery of payment is permitted when a farmer fails to comply with an undertaking, fails to permit entry upon or inspection of the land, or otherwise fails to comply with a requirement of the Regulations. In addition, a criminal offense arises when any person, for the purposes of obtaining aid under the Regulations, knowingly or recklessly makes a statement which is false in a material particular. On summary conviction, this offense is punishable by fine not exceeding level five on the standard scale of fines (presently £5000).

XI. THE EUROPEAN COMMUNITY DIMENSION TO NITRATE POLLUTION

While the Nitrate Sensitive Areas scheme devised in national law represents the first attempt to tackle the problem of nitrate contamination of water, it is evident that further measures will be needed in order to comply with European Community obligations. Specifically, the European Community Directive on pollution caused by nitrates from agricultural sources,⁵¹ referred to as "the Nitrates Directive," is founded upon the need to encourage agricultural practices which are environmentally beneficial and, in particular, the reduction at source of fresh water and marine pollution from diffuse sources including particular products used in agriculture.

Water pollution caused by nitrates originating from farming practices, such as the excessive application of nitrogen fertilizer and animal manure, is a serious problem in many parts of the Community. Despite a requirement in the Drinking Water Directive⁵² that drinking water should not exceed the specified limit of 50 milligrams per liter, this parameter has been exceeded in areas in many parts of the Union. As has been noted in a recent case before the European Court, the United Kingdom was found guilty of failing to comply with the Drinking Water Directive by supplying water exceeding the nitrate parameter established by that Directive.⁵³

The Nitrates Directive tackles the problem of water contamination by nitrates by requiring member states of the European Union to designate all zones vulnerable to water pollution from nitrate compounds according to

51. Council Directive 91/676, art. 1, 1991 O.J. (L 375).

52. Council Directive 80/778, art. 12, 1988 O.J. (L 229).

53. European Community Comm'n v. United Kingdom, 1 ENVTL. L. REP. 299 (1993).

zones vulnerable to water pollution from nitrate compounds according to specified criteria. These criteria make explicit reference to areas in which surface waters intended for the abstraction from surface or groundwaters for supply as drinking water contain more than 50 milligrams per liter concentration of nitrate, and also whether natural waters show nitrate enrichment, termed "eutrophication," or may become eutrophic if action is not taken.

Following the designation of nitrate vulnerable zones, member states are to take the necessary measures to ensure that, for each farm or livestock unit in a vulnerable area, the amount of livestock manure applied to the soil does not exceed specified amounts. A broad consequence is that the animal holding capacity of farms in the designated zones will be determined by the capacity for manure to be effectively disposed of without producing water contamination. Further rules will cover permissible methods of disposal of manure to land, including matters such as the minimum distance to be left between an area of manure disposal and nearby watercourses, and the suitability of storage facilities for manure. Similarly, in relation to nitrogen fertilizers, rules will establish maximum land application rates based on the uptake of nitrogen by crops and the amount of nitrogen already present in the soil concerned. Records are to be kept concerning the application of nitrogen in vulnerable zones, and member states are to consider incorporating certain matters concerning the application of fertilizers and manure in guidelines on good agricultural practice. Member states are also obliged to monitor waters in respect of nitrate content and publish periodic reports on the basis of the monitoring programs.

With regard to the implementation of the Nitrates Directive in England and Wales, it may be noted that many of the matters which it concerns are already provided for in national law. The facility for designation of nitrate sensitive areas has been described, and codes of good agricultural practice are in existence and described below. It is apparent, however, that further measures will need to be introduced in relation to the precise designation of vulnerable zones for the purposes of the Directive. Extensive consultation exercises have been undertaken in relation to this matter, and at the time of writing the precise boundaries of the seventy-two proposed areas will be subject to scrutiny by an Independent Review Panel.⁵⁴

XII. CODES OF GUIDANCE

In the context of the European Community Nitrates Directive, previous reference was made to the *Code of Good Agricultural Practice for the Protection of Water*. This Code, issued in 1991, is one of a series published by the

54. Consultation documents were issued in March 1992, March 1993, and May 1994. The most recent consultation document is MINISTRY OF AGRICULTURE, FISHERIES AND FOOD, DEP'T OF THE ENVIRONMENT AND WELSH OFFICE, GOVERNMENT RESPONSE TO THE CONSULTATION ON THE DESIGNATION OF NITRATE VULNERABLE ZONES IN ENGLAND AND WALES (1995).

Ministry of Agriculture, Fisheries and Food.⁵⁵ The Water Code is stated to be for the purpose of giving practical guidance to persons engaged in agriculture with respect to activities which may affect controlled waters and to promote desirable practices for avoiding or minimizing the pollution of such waters.⁵⁶ The advisory status of the Code is such that contravention will not of itself give rise to any criminal or civil liability, but the National Rivers Authority is to take account of any contravention for the purpose of exercising various powers in relation to pollution prevention.⁵⁷ It is pertinent to note the importance of guidance and education in relation to the prevention of water pollution for those engaged in activities in which there is potential for this to be caused.⁵⁸

XIII. CONCLUSION

The developments which have been outlined make it evident that the law relating to agricultural water pollution has been the subject of rather rapid and fundamental changes over the past few years. The progression from the traditional legal approach to water pollution offenses to the proactive measures that have been described will continue to make a significant contribution to improvements of the aquatic environment. This progression illustrates the adaptation of environmental law to meet new challenges and develop more sophisticated mechanisms to regulate problems identified by greater environmental awareness. The broad picture which has been described as a movement from the reactive prosecution of crimes against the aquatic environment to the use of the law to constrain land-based activities which constitute a threat to the aquatic environment. The new emphasis is clearly upon preventing water pollution rather than penalizing it after the event.

Without engaging in excessive degrees of speculation, the consequences of this new level of environmental regulation upon agricultural practice and rural land use are potentially momentous. Farmers are, for the most part, law-abiding citizens who will almost invariably comply with the new wave of environmental legislation. The broader questions involve how compliance will be secured and what changes to the rural landscape will result from compliance. The overall economic effects of compliance are likely to be considerable and, given the present financial difficulties facing agriculture in the United Kingdom and the rest of Europe, the cumulative effect of environmental regulation

55. CODE OF GOOD AGRICULTURAL PRACTICE FOR THE PROTECTION OF WATER (1991); CODE OF GOOD AGRICULTURAL PRACTICE FOR THE PROTECTION OF AIR (1992); CODE OF GOOD AGRICULTURAL PRACTICE FOR THE PROTECTION OF SOIL (1993) (all written by MINISTRY OF AGRICULTURE, FISHERIES AND FOOD); *see also* MINISTRY OF AGRICULTURE, FISHERIES AND FOOD & HEALTH AND SAFETY COMMISSION, PESTICIDES: CODE OF PRACTICE FOR THE SAFE USE OF PESTICIDES ON FARMS AND HOLDINGS (1990).

56. Water Resources Act, 1991, § 97(1) (Eng.).

57. *Id.* § 97(2).

58. A series of Pollution Prevention Guidelines have also been issued by the National Rivers Authority. Among these are guidance documents dealing with the prevention of pollution of controlled waters by pesticides (PPG9), the prevention of pollution of controlled waters by sheep dip (PPG12), and dairies and other milk handling operations (PPG17).

will necessitate a major policy re-evaluation. Implementation of new legal provisions will rekindle debates concerning the economic status of agricultural activity and the appropriate balance between agricultural productivity and efficiency and the levels of environmental constraint which must properly be imposed upon the future conduct of farming activities.