Is it Safe to Drink? The Problem of Contaminated Water and the Need for Federal Action

by

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I. INTRODUCTION

Everyone drinks water. It is a fundamental part of our lives, and many people probably do not question the safety of the source of their drinking water supply. The current condition of that water supply, however, should cause concern. Much of the water we consume is contaminated—at least to some degree.[1] Congress has recognized this danger and taken steps to ensure a greater quality of drinking water.[2] In 1974, Congress enacted the Safe Drinking Water Act (SDWA),[3] amended in 1996,[4] to regulate contamination of drinking water.

1. *See generally* Sarah J. Meyland, *Land Use & the Protection of Drinking Water Supplies*, 10 PACE ENVTL. L. REV. 563 (1993) (discussing the quality of public drinking water supplies).
2. *See generally id.* at 563 (discussing the quality of public drinking water supplies).
3. *See* Safe Drinking Water Act, Pub. L. No. 93-523, 99 Stat. 1660 (1974).
4. *See* Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, 110 Stat. 1613 (1996).

Congress also acted in 1972, passing the Federal Water Pollution Control Act, otherwise known as the Clean Water Act (CWA).[5] Despite many amendments, the CWA today is largely the same as originally enacted.[6]

These efforts have been effective in reducing water contamination caused by point sources.[7] A point source is defined as "any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged."[8] Any pollution not caused by a point source is considered a nonpoint source.[9] Currently, the CWA does not address nonpoint source pollution.[10] This failure is a large part of the continuing problem of contaminated water, as a large portion of contamination results from nonpoint sources. [11]

Much of water pollution is the result of agricultural activities, a nonpoint source.[12] The application of agricultural pesticides is a major source of groundwater contamination, and a majority of Americans rely on groundwater as their primary source of drinking water.[13] This contamination of water is widespread and exposes the public to the possibility of health risks.[14] Clearly, more action is needed to deal with the problem of nonpoint source contamination. The federal government's focus has been concentrated on point source contamination, which is easier to isolate and control.[15] If the problem of nonpoint source pollution is going to be alleviated, it will take more action from the federal government.

Part II of this Note examines the widespread use of pesticides in agricultural activities and the resulting problem of groundwater contamination. Part III looks at the current state of drinking water and considers the possible health risks resulting from the consumption of contaminated water. Part IV considers water contamination as a matter of public policy and the recent indications that the federal government might be addressing the problem more seriously, and it examines the need for further action at this level. Finally, this Note concludes that federal action is needed to address nonpoint source pollution.

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5. *See* Federal Water Pollution Control Act, Pub. L. No. 92-500, 86 Stat. 816 (1972).

6. *See* George A. Gould, *Agriculture, Nonpoint Source Pollution, and Federal Law*, 23 U.C. DAVIS L. REV. 461, 462 (1990).

7. *See id.*

8. 33 U.S.C. § 1362 (1994).

9. *See* Gould, *supra* note 6, at 472.

10. *See id.*

11. *See id.* at 462.

12. *See* Jodie T. Raccio, Comment, *Agriculture Use of Pesticides: Farmer and Manufacturer Liability for Groundwater Contamination*, 3 ALB. L.J. SCI. & TECH. 185, 186-87 (1993).

13. *See id.* at 187-88.

14. *See Pesticides: Drinking Water of 14 Million People Contaminated with Herbicides, Report Says*, 18 Chem. Reg. Rep. (BNA) 937 (Oct. 21, 1994).

15. *See* Raccio, *supra* note 12, at 187.

II. BACKGROUND INFORMATION

If the problem of contaminated water is going to be controlled, it is important to consider some of the causes of that contamination, as well as any efforts to control it. One of the biggest problems is contamination from nonpoint sources, of which agricultural activities are a major contributor. Although active in controlling point source contamination, federal action on nonpoint source pollution has been notably absent.

A. *Agriculture and Groundwater Contamination*

There is perhaps a bit of a paradox to American agriculture, as its great benefits bring with them serious consequences. While producing a great quantity of food, our agriculture system is also responsible for a great deal of water pollution.[16] This pollution is the result of a number of causes, most notably sediment pollution and pollution resulting from the use of pesticides.[17] Additionally, animal wastes, such as livestock or poultry, have contributed to water contamination.[18] Much of the effects of these agricultural activities are found in American waterways, such as lakes, rivers, and streams.[19]

Perhaps a bigger problem, however, is the threat to the quality of our drinking water resulting from groundwater contaminated with agricultural pesticides. Groundwater is water beneath the earth's surface that is stored in a system of aquifers, water-bearing sediment, or rock formations that supply water to wells or springs.[20] The problem of groundwater contamination was first realized in 1979, when agricultural chemicals were found in groundwater in both California and New York.[21] Prior to that discovery, it was believed that agricultural chemicals posed no threat to groundwater because they degraded rapidly.[22] It is now clear that many such chemicals do not rapidly degrade, resulting in contamination of the groundwater, thereby contaminating drinking water supplies derived from groundwater.[23] A majority of states take their drinking water primarily from groundwater, and agricultural activities are a primary source of

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16. *See* Gould, *supra* note 6, at 461.

17. *See id.* at 465.

18. *See* Martha L. Noble & J.W. Looney, *The Emerging Legal Framework for Animal Agricultural Waste Management in Arkansas*, 47 ARK. L. REV. 159, 163 (1994).

19. *See* Gould, *supra* note 6, at 464.

20. *See* Perry Beeman, *'Best . . . . in the Nation,' but Chemicals Pose Risks*, DES MOINES REG., Aug. 18, 1997, at 4A (citing the Iowa State Water Plan).

21. *See* Albert P. Barker & Richard B. Burleigh, *Agricultural Chemicals and Groundwater Protection: Navigating the Complex Web of Regulatory Controls*, 30 IDAHO L. REV. 443, 453 (1994).

22. *See id.*

23. *See id.*

groundwater contamination.[24] In heavily agricultural states, such as Iowa and Arkansas, the problem can be especially great.[25] Iowa applies more pesticides than any other state and ranks second in application of fertilizer, which causes many of Iowa's drinking water systems to have persistent contamination problems from chemical fertilizers.[26] Additionally, Arizona, California, Connecticut, and Hawaii also list agricultural activities as a primary source of contamination in their groundwater supplies.[27] By 1986, sixty percent of states had identified pesticides as a major contaminant of groundwater.[28] This pollution is caused "when pesticides leach through permeable strata in the soil and into the water table."[29] The result is a groundwater supply that is sometimes so severely contaminated that drinking water must be obtained from an alternative, safer source.[30]

To some extent, this contamination of water is inevitable and unavoidable. The use of chemicals and pesticides in agriculture is necessary if the safety and quality of our food supply is to be insured. The goal of the farmer is to keep pests off of his crops, but this goal can have drastic effects on the water supply. While extensive use of pesticides and fertilizers has improved agricultural productivity, it has also produced serious environmental problems.[31] Water contamination can also result from normal application of pesticides.[32] Another problem arises when pests that prey on crops become immune to pesticides, causing a farmer to begin to apply the pesticide in greater amounts or in combination with other chemicals.[33] Further, other dangerous contaminants in water result from the decomposition of these pesticides into other chemicals which, when combined with natural soil, form dangerous toxins.[34] This makes the problem of groundwater contamination from agricultural activities more serious and more difficult to control.[35]

The news, however, is not entirely bad. Some chemicals have a greater tendency than others in reaching the groundwater, depending on the persistence and mobility of the chemical.[36] There are farming practices that minimize the use of

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24. *See* Gould, *supra* note 6, at 464.

25. *See generally* Perry Beeman, *Reasons for Concern*, DES MOINES REG., Aug. 17, 1997, at 1A (discussing water contamination in Iowa); *see generally* Noble & Looney, *supra* note 18, at 159-60 (discussing water quality problems in Arkansas).

26. *See* Beeman, *supra* note 25, at 4A. Illinois ranks first in application of fertilizer. *See id.*

27. *See* Gould, *supra* note 6, at 464 n.28.

28. *See id.* at 465.

29. Raccio, *supra* note 12, at 189.

30. *See id.* at 189-190.

31. *See* John Charles Kluge, *Farming by the Foot: How Site-Specific Agriculture Can Reduce Nonpoint Source Water Pollution*, 23 COLUM. J. ENVTL. L. 89, 92 (1998).

32. *See* Barker & Burleigh, *supra* note 21, at 452.

33. *See* Raccio, *supra* note 12, at 190.

34. *See id.*

35. *See id.*

36. *See* Barker & Burleigh, *supra* note 21, at 452.

these chemicals and fertilizers.[37] Such practices are "crop rotation, accurate calculation of fertilizer needs, the adjustment of planting and harvesting times, the planting of pest resistant crops, and the use of biological controls and integrated pest management."[38] In addition, the growth of alternative agricultural methods, which reduce the use of chemicals and fertilizers, will also be helpful in minimizing water contamination.[39] Other basic choices, such as the type of pesticide and time of application, will also have some impact.[40]

B. *Lack of Federal Action to Control the Problem of Nonpoint Source Pollution*

Despite the efforts of farmers to minimize water contamination, it is clear that more needs to be done. Residues of pesticides and chemicals are appearing in water supplies more commonly than many scientists anticipated.[41] One reason the problem is so severe is that federal action in this area is minimal.[42] Although there is some indication that the federal government may be beginning to increase its efforts in controlling the problem of nonpoint source contamination, most of the problem has been left to the states to solve.[43]

The most notable of federal efforts in controlling the problem of water pollution has been the CWA.[44] While it has been successful in controlling the problem of point source pollution, the problem of nonpoint source pollution has been largely left untouched.[45] Clearly, the CWA's main priority is point source pollution, which is subject to strict regulations.[46] For example, any discharge of pollution from a point source is considered illegal, unless a permit has been issued establishing maximum discharge levels.[47] This permit is issued by the Environmental Protection Agency (EPA) pursuant to the National Pollution Discharge Elimination System (NPDES),[48] which includes all point sources in its required permit program.[49] Although agricultural feeding operations and large

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37. *See* Gould, *supra* note 6, at 468.
38. *Id.* at 469.
39. *See id.*
40. *See id.*
41. *See Pesticides: Current Exposure Assessment Methods Yield Unrealistic Risk Estimates, Researchers Say*, 14 Chem. Reg. Rep. (BNA) 599 (July 20, 1990).
42. *See generally* Raccio, *supra* note 11, at 185 (discussing inadequacy of current federal law).
43. *See* Drew L. Kershen, *Agricultural Water Pollution: From Point to Nonpoint and Beyond*, NAT. RESOURCES & ENV'T, Winter 1995, at 3, 5-6.
44. *See* Federal Water Pollution Control Act, Pub. L. No. 92-500, 86 Stat. 816 (1972).
45. *See* Gould, *supra* note 6, at 471-72.
46. *See id.* at 472.
47. *See id.* at 473.
48. *See id.* at 472.
49. *See id.* at 472. There have been efforts to exclude all agricultural pollution from this

dairies have been found to be included in the point source category,[50] such concentrated animal feeding operations represent only a fraction of agricultural pollution.[51] Because much of the pollution from agricultural activities results from the "disparate and uncollected runoff from fields," it is mostly defined as nonpoint source pollution.[52] This means that most agricultural pollution is not covered by the CWA, which does not subject nonpoint source pollution to the same "command and control regulation" that it does to point source pollution.[53] The primary reason for this difference is that point sources are easily defined, which makes the reduction techniques present in the CWA helpful in their control.[54] Because nonpoint sources are not easily defined and result from a wide range of possible land practices, these technologies are not as helpful.[55] Effective nonpoint source control would require adjustments in some of these activities, including agriculture, and the federal government has been reluctant to force such adjustments statutorily.[56] Land use is viewed as a primarily local concern and has been left to state and local control.[57]

The federal government has taken some steps to control nonpoint source pollution with amendments to the CWA, which directs states to take steps to address the problem.[58] Until 1987, agricultural nonpoint source pollution (AGNPS) was primarily governed by section 208 of the CWA.[59] This section's focus was "state identification, assessment, and planning with respect to all sources of nonpoint pollution."[60] Although it required states to address AGNPS, section 208 allowed great discretion to the states in how to address the problem and did not allow for enforcement penalties.[61] Section 208 was criticized as not providing an effective system of incentives resulting in minimal pollution regulation.[62] One

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requirement, but these efforts have been rejected. *See, e.g.*, Natural Resources Defense Council, Inc. v. Costle, 568 F.2d 1369 (D.C. Cir. 1977) (holding that the EPA was in violation of the Clean Water Act for exempting agricultural point sources from the permit system).

50. *See generally* Kershen, *supra* note 43, at 4 (citing Environment v. Southview Farm, 34 F.3d 114 (2d Cir. 1994)).

51. *See* David Zaring, Note, *Agriculture, Nonpoint Source Pollution, and Regulatory Control: The Clean Water Act's Bleak and Present Future*, 20 HARV. ENVTL. L. REV. 515, 521-22 (1996).

52. *Id.* at 521.

53. *See* Gould, *supra* note 6 at 472-73.

54. *See* Robert D. Fentress, Note, *Nonpoint Source Pollution, Groundwater, and the 1987 Water Quality Act: Section 208 Revisited?*, 19 ENVTL. L. 807, 813-14 (1989).

55. *See id.*

56. *See id.* at 814.

57. *See id.*

58. *See* Gould, *supra* note 6, at 473.

59. *See* Federal Water Pollution Control Act of 1972 § 208, 33 U.S.C. § 1288 (1982).

60. Kershen, *supra* note 43, at 4.

61. *See id.*

62. *See* Zaring, *supra* note 51, at 523.

reason for the ineffectiveness was that section 208 was designed as a primarily voluntary system.[63] Mandatory control of AGNPS was rejected for political reasons, as agricultural interests opposed strict regulation.[64] Responding to criticism of section 208's ineffectiveness, Congress attempted to better address AGNPS in 1987.[65] The stated goals of the CWA were revised to include control of nonpoint source pollution[66] and new section 319 was added.[67]

Like section 208, section 319 leaves programs designed to control nonpoint sources entirely up to individual states.[68] It requires states to submit assessment reports and management reports "that thoughtfully address AGNPS."[69] Specifically, section 319 requires the governor of each state to prepare and submit a report identifying the state's waters which, without further action, will fail to meet the applicable water quality standards.[70] Such reports must further identify categories, subcategories, or particular nonpoint sources that add significant pollution to the water,[71] describe the process to identify the best practices to control these sources,[72] and identify the state and local programs for controlling pollution from nonpoint sources.[73]

Each state must establish a state management plan covering four fiscal years that does the following: (1) *identifies* the best management practices and measures to reduce nonpoint source pollution; (2) *identifies* programs to achieve implementation of these practices; (3) *establishes* a schedule for the plan's implementation, containing annual milestones; (4) *provides* certification from the state attorney general that there is adequate legal authority for the plan; (5) *identifies* available funding for the plan; and (6) *identifies* federal programs that the state will review to determine whether they are consistent with the state's plan.[74]

Since the enactment of section 319 in 1987, all states have prepared and obtained approval for management plans addressing AGNPS.[75] However, section 319 has failed to adequately control nonpoint source pollution, partially because of

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63. *See id.*
64. *See id.*
65. *See* Fentress, *supra* note 54, at 826.
66. *See id.*
67. *See* Zaring, *supra* note 51, at 526.
68. *See* Barker & Burleigh, *supra* note 21, at 469.
69. Kershen, *supra* note 43, at 4.
70. *See* Federal Water Pollution Control Act of 1972, § 319, 33 U.S.C. § 1329(a)(1)(A) (1994).
71. *See id.* § 319, 33 U.S.C. § 1329(a)(1)(B) (1994).
72. *See id.* § 319, 33 U.S.C. § 1329(a)(1)(C) (1994).
73. *See id.* § 319, 33 U.S.C. § 1329(a)(1)(D) (1994).
74. *See id.* § 319, 33 U.S.C. § 1329(b)(1)-(2) (1994); *see also* Gould, *supra* note 6, at 478.
75. *See* Kershen, *supra* note 43, at 4.

insufficient incentives.[76] Further, there is no requirement imposed on states to implement nonpoint source pollution plans.[77] Another reason for the ineffectiveness of section 319 is that it generally focuses on navigable waters and not on groundwater where the problem lies.[78] The decision to implement a specific plan for protecting groundwater is voluntary, allowing the states to do so only if deemed necessary.[79] Such voluntary plans are not enough to adequately protect the groundwater supply. In Iowa, for example, the Iowa Groundwater Protection Act has been in place for ten years, but many questions still remain about the safety of Iowa's water supply.[80] In its current form, the CWA simply does not provide adequate protection of groundwater from agricultural chemical contaminants.[81]

III. THE CURRENT CONDITION OF DRINKING WATER

The current condition of drinking water in the United States is cause for alarm. The extent of contamination is severe and widespread geographically. There are a number of chemicals that are responsible for this contamination, and these chemicals present a variety of health risks to those who might be exposed to them.

A. *Extent of Contamination*

The lack of federal action in controlling the problem of AGNPS is especially evident when one considers the current state of our drinking water. In 1990, federal officials denied that any groundwater contamination crisis existed, while admitting that their surveys on the matter were incomplete.[82] That same year, geologists acknowledged a greater contamination from agricultural chemicals than anticipated.[83] Today, it is clear that the problem still exists nationwide and is particularly serious in the Midwest.

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76. *See* Zaring, *supra* note 51, at 526-27.

77. *See id.* at 527.

78. *See* Raccio, *supra* note 12, at 195. The term "navigable waters" is defined as the waters of the United States. *See* Federal Water Pollution Control Act of 1972, § 502, 33 U.S.C. § 1362(7) (1994). Waters of the United States include all waters susceptible for use in interstate and foreign commerce, as well as lakes, rivers, and streams. *See* 40 C.F.R. § 230.3 (1998).

79. *See* Raccio, *supra* note 12, at 195.

80. *See* Beeman, *supra* note 25, at A1.

81. *See* Barker & Burleigh, *supra* note 21, at 469.

82. *See Ground Water: Federal Officials Deny Crisis Exists, Downplay Need for Comprehensive Statute*, 14 Chem. Reg. Rep. (BNA) 161 (May 4, 1990).

83. *See Pesticides: Current Exposure Assessment Methods Yield Unrealistic Risk Estimates, Researchers Says*, *supra* note 41, at 599.

1. *Geographic Regions*

The problem of drinking water contamination is not isolated to a few states or regions; it is a problem that is found nationwide.[84] Because of a lack of comprehensive monitoring, it is impossible to know the full extent of the groundwater contamination problem.[85] It is clear, however, that the problem is likely to exist for some time.[86] Decontamination of groundwater is an extremely difficult task, and some commentators estimate that the contamination might continue for decades or even centuries after the last pesticide is applied.[87]

Perhaps the most significant amounts of contamination are found in the water supplies across the farm belt of the Midwest, where there is a heavy use of farm herbicides. A 1994 report estimated that more than fourteen million Americans, primarily in the Midwest, were drinking contaminated tap water.[88] Although the report focused on the industrial belt of the Midwest, water supplies in Kentucky and Louisiana were also studied.[89] In the Chesapeake Bay region, which includes Maryland, Virginia, Pennsylvania, and the District of Columbia, 7.4 million pounds of herbicides are used by farmers.[90] The report concluded that "nearly every Midwestern city south of Chicago is contaminated with agricultural weed killers."[91] Several cities were identified as having particularly high levels of contaminants: Springfield, Illinois; Indianapolis, Indiana; Columbus, Ohio; Kansas City, Missouri; and Omaha, Nebraska.[92] The report was criticized as being based on assumptions that most communities do not remove the herbicide contaminants

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84. *See generally* Barker & Burleigh, *supra* note 21, at 443 (discussing the concentration of agricultural chemicals found in Idaho's water supplies); Noble & Looney, *supra* note 18, at 159 (discussing water pollution in Arkansas); Meyland, *supra* note 1, at 583 (discussing the high cost of water cleanup in New York).

85. *See* Kluge, *supra* note 31, at 98.

86. *See id.* at 99.

87. *See id.*

88. *See Pesticides: Drinking Water of 14 Million People Contaminated with Herbicides, Report Says*, *supra* note 14, at 937 (citing RICHARD WILES ET AL., ENVIRONMENTAL WORKING GROUP PHYSICIANS FOR SOC. RESPONSIBILITY, TAP WATER BLUES: HERBICIDES IN DRINKING WATER (1994)). A copy of this report can be obtained from the Environmental Working Group, 1718 Connecticut Ave. N.W., Suite 600, Washington, D.C. 20009, telephone (202) 667-6982.

89. *See Pesticides: Drinking Water of 14 Million People Contaminated with Herbicides, Report Says*, *supra* note 14, at 937.

90. *See* Gary Lee, *Farm Herbicides Foul Tap Water for 14 million; Environmental Group's Study Identifies 5 Chemical Culprits*, WASH. POST, Oct. 19, 1994, at A03.

91. *Pesticides: Drinking Water of 14 Million People Contaminated with Herbicides, Report Says*, *supra* note 14, at 937.

92. *See id.*

during their water-treatment process when in fact some cities do.[93] Criticism aside, however, the report received the attention of federal officials and served as a warning that people "can no longer take for granted that water supplies are safe."[94]

2. *Specific Chemicals*

The 1994 report was the result of testing for traces of five common herbicides—atrazine, cyanazine, simazine, alachlor, and metolachlor.[95] Of theses herbicides, atrazine and cyanazine were found most frequently.[96] Atrazine is the most heavily used agricultural pesticide in the United States, although it has been banned in several other countries.[97] Alachlor is a herbicide used heavily by farmers in efforts to kill weeds that grow around corn.[98] Metolachlor is used for the same purposes but is less common than alachlor.[99] Enforceable standards, known as maximum contaminant levels, are in effect for atrazine, alachlor, and simazine.[100] No legal contamination standards for metolachlor and cyanazine have been established; instead, a non-enforceable lifetime health advisory exists.[101]

The report recommended a phaseout of the "triazines," as the herbicides atrazine, cyanazine, and simazine, are collectively known.[102] Additionally, the report urged weekly monitoring of all five herbicides even during the heaviest contamination period—May through August—when no monitoring was typically done.[103]

As a result of the 1994 report, the EPA began a special review of the triazines.[104] This review found that the triazines were among the most widely used pesticides, estimating annual use of atrazine to be between sixty-four million

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93. *See* Michael Mansur, *Weed Killers Boost Cancer Risk in Midwest Water, Study Finds*, KAN. CITY STAR, Oct. 19, 1994, at A1. For example, the water treatment process in place in Kansas City, Missouri, does remove these herbicides. *See id.*

94. *Id.* The article mentions remarks made by EPA Administrator Carol Browner in a television interview characterizing the report as a "wake-up call." *Id.*

95. *See Pesticides: Drinking Water of 14 Million People Contaminated with Herbicides, Report Says*, *supra* note 14, at 937.

96. *See id.*

97. *See id.* The countries in which atrazine has been banned are Germany, Italy, Norway, and Sweden. *See id.*

98. *See* Lee, *supra* note 90, at A3.

99. *See id.*

100. *See Pesticides: Drinking Water of 14 Million People Contaminated With Herbicides, Report Says*, *supra* note 14, at 937.

101. *See id.*

102. *See id.*

103. *See id.*

104. *See Pesticides: EPA Special Review of Triazines Yields Tens of Thousands of Comments*, 18 Chem. Reg. Rep. (BNA) 1855 (Mar. 31, 1995).

pounds and eighty million pounds.[105] Annual use of cyanazine and simazine were found to be between twenty-one million and thirty-four million pounds, and five million and seven million pounds, respectively.[106] Eighty percent of triazine use is on field corn in order to control broadleaf weeds and some grasses.[107]

The EPA's review resulted in the phaseout of cyanazine.[108] The planned phaseout should occur over a four-year period.[109] All sales and distribution of cyanazine products should cease as of December 31, 1999, and all use must cease by December 31, 2002.[110] The EPA phaseout applies only to cyanazine, as the future of atrazine and simazine remains under review.[111]

In addition to the five frequently used herbicides, water contamination results from a variety of other sources.[112] One common contaminant is nitrate, a by-product of nitrogen fertilizer.[113] Nitrate contamination is often the result of animal waste residue in the water.[114] Nitrates are a significant problem in several states,[115] including Iowa, where seventy-six percent of public water system samples show the presence of nitrates.[116] Water supplies have also been found to be contaminated with trihalomethanes.[117] Trihalomethanes are chlorination by-products, resulting from chlorine reacting with plant material in water.[118] In addition, Aldicarb, a highly toxic substance, has been found in groundwater in at least sixteen states.[119]

B. *Health Risks*

With this contamination of water comes a variety of health risks, many of which are potentially serious. Pesticides found frequently in water supplies carry a

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105. *See id.*
106. *See id.*
107. *See id.*
108. On August 2, 1995, the EPA announced agreement with DuPont Agricultural Products, the sole manufacturer of cyanazine, to phase it out over four years. *See Pesticides: DuPont Agrees to Phase Out Cyanazine; EPA Review of Other Herbicides Continues*, 19 Chem. Reg. Rep. (BNA) 469 (Aug. 4, 1995).
109. *See id.*
110. *See id.*
111. *See id.*
112. *See generally* Beeman, *supra* note 20, at 1A (discussing the various sources of water contamination).
113. *See id.*
114. *See* Noble & Looney, *supra* note 18, at 165.
115. *See, e.g.*, Barker & Burleigh, *supra* note 21, at 456; Meyland, *supra* note 1, at 576.
116. *See generally* Beeman, *supra* note 20, at 1A.
117. *See id.*
118. *See id.*
119. *See* Kluge, *supra* note 31, at 98.

risk of cancer.[120] Fifty-four pesticides are known to contaminate water.[121] Nine of these pesticides have been classified as probably being carcinogenic and six as possibly being carcinogenic.[122] Studies have shown that herbicide buildup in water has slightly increased the cancer risk of some Americans.[123] In fact, it is this potential cancer risk that the EPA cited as a major factor in launching its extensive review of commonly used farm herbicides.[124] Although the American Crop Protection Association has been critical of the assessment methods used by the EPA in calculating cancer risks,[125] it is not generally disputed that water contamination from herbicides creates a risk of cancer.[126]

In addition to the cancer risk from herbicides, there is also a cancer risk from drinking chlorinated water.[127] Specifically, consumption of chlorinated water can lead to an increased risk of bladder cancer,[128] colon cancer,[129] and rectal cancer.[130] In fact, approximately fifteen percent of rectal cancer cases each year are associated with consumption of chlorinated water.[131] Bladder cancer cases related to chlorinated water amount to approximately nine percent of the total cases.[132]

The presence of nitrates in drinking water supplies also presents health risks.[133] Nitrates may contribute to various types of cancer or non-Hodgkin's lymphoma.[134] Still, nitrates are not considered to be particularly dangerous to older children and adults, unless ingested at high levels.[135] The primary health threat of nitrates is to small children and infants.[136] Infants are susceptible to high nitrate levels and are at risk of developing a blood disorder known as methemoglobinemia, which is related to high nitrate intake.[137] Ingestion of nitrate at levels exceeding ten

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120. *See generally* Raccio, *supra* note 12, at 185 (discussing the health risks that come with contaminated drinking water).

121. *See id.* at 190.

122. *See id.*

123. *See* Lee, *supra* note 90, at A03.

124. *See Pesticides: EPA Special Review of Triazines Yields Tens of Thousands of Comments*, *supra* note 104, at 1855.

125. *See id.*

126. *See, e.g.*, Raccio, *supra* note 12, at 185; Beeman, *supra* note 20, at 4A.

127. *See* Beeman, *supra* note 20, at 4A.

128. *See id.* (citing a 1992 study by the National Cancer Institute).

129. *See id.* (citing a recent University of Minnesota study).

130. *See* Meyland, *supra* note 1, at 578 (citing a study conducted by Dr. Robert D. Morris that was published in the *American Journal of Public Health* in July 1992).

131. *See id.* The specific numbers are 6500 out of 44,000 cases. *See id.*

132. *See id.* Specifically, it is 4200 out of 47,000 cases. *See id.*

133. *See, e.g.*, Barker & Burleigh, *supra* note 21, at 443; Noble & Looney, *supra* note 18, at 159.

134. *See* Beeman, *supra* note 20, at 4A.

135. *See* Barker & Burleigh, *supra* note 21, at 457.

136. *See id.*

137. *See* Noble & Looney, *supra* note 18, at 165.

milligrams per liter can be fatal for infants younger than six months.[138] Additionally, nitrates may convert into carcinogenic compounds known as nitrosamines.[139] These health risks underscore the severity of the problem and should serve as an impetus to greater federal involvement in controlling groundwater contamination from nonpoint sources.

IV. PUBLIC POLICY AND THE FUTURE OF OUR WATER SUPPLY

Water contamination is not only a scientific and agricultural issue, but it is also an important public policy issue. Through its efforts in federal farm programs and other programs under the control of the EPA, the federal government has been involved in the issue. The one area in which federal action has been lacking is in control of nonpoint source pollution. However, there are recent indications that more action in this area is possible.

A. *Federal Farm Programs*

Throughout the past decade, as the problem of water contamination has grown, the government's efforts to deal with such contamination have grown as well. In the beginning, efforts were concentrated in certain environmental protection programs included in federal aid to farmers.[140] These efforts included provisions in both the Food Security Act of 1985 (1985 Farm Bill) and the 1990 Farm Bill.[141]

The sodbuster program of the 1985 Farm Bill is one example of these governmental efforts.[142] The goal of this program is to control soil erosion, which serves to protect water "from nonpoint source pollution from sediments, nutrients, salts, and chemicals."[143] Farmers who fail to comply with certain soil erosion protection plans are ineligible for some federal funding normally available to them under the farm programs.[144] Specifically, the sodbuster program makes farmers ineligible for federal aid if they produce an agricultural commodity "on a field on which highly erodible land is predominate . . . . "[145] Such violations make the farmer ineligible for contract payments, marketing assistance loans and price

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138. *See* Barker & Burleigh, *supra* note 21, at 457.
139. *See* Kluge, *supra* note 31, at 101.
140. *See* Kershen, *supra* note 43, at 5.
141. *See id.*
142. *See id.*
143. *Id.*
144. *See* DONALD B. PEDERSEN & KEITH G. MEYER, AGRICULTURAL LAW IN A NUTSHELL 392 (1995).
145. 16 U.S.C. § 3811 (1994).

supports, farm storage facility loans, or disaster payments.[146] However, there are certain exemptions available to farmers under the program.[147] For example, crops planted prior to the enactment of the program would not result in a farmer's ineligibility under section 3811.[148] Further, no one will become ineligible for aid for a failure to comply with a conservation plan if the "person has acted in good faith and without an intent to violate [the statute]."[149]

In addition to the sodbuster program, the 1985 Farm Bill contained a program designed to protect wetlands. The program, called swampbuster, makes farmers ineligible for federal benefits if the farmer converts a wetland into agricultural commodity production.[150] Although swampbuster was designed to protect the nation's wetlands, it also serves to protect water quality, as wetlands operate as traps for nonpoint source pollution.[151]

Another federal effort in the area of water pollution was the Agricultural Water Quality Incentives Program (AWQIP).[152] This was a voluntary participation program geared to developing "on-farm practices that prevent the release of AGNPS into the . . . nation's waters . . . ."[153] The AWQIP was repealed in 1996 by the implementation of the Environmental Quality Incentives Program (EQIP), included in the 1996 reauthorization of the Farm Bill.[154] Thus, EQIP serves as the primary effort for encouraging farmers to comply with environmental protection plans and helping to improve the quality of our water.

The stated purpose of EQIP is to combine the functions of previous agricultural and soil conservation programs, as well as water quality incentive programs, into a single program.[155] This single program should be carried out in a way "that maximizes environmental benefits per dollar expended,"[156] as well as provides "assistance to farmers and ranchers in making beneficial, cost-effective changes . . . needed to conserve and improve soil, water, and related natural resources . . . ."[157] To be eligible for such assistance, owners and producers of livestock or agricultural operations must submit a plan of operation that incorporates their conservation goals to the Secretary of Agriculture for

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146. *See id.* § 3811(1)(a)-(c).
147. *See id.* § 3812.
148. *See id.* § 3812(b).
149. *Id.* § 3812(f)(1).
150. *See* Kershen, *supra* note 43, at 5.
151. *See id.*
152. *See id.*
153. *Id.*
154. *See* Federal Agriculture Improvement and Reform Act of 1996, Pub. L. No. 104-127, § 334, 110 Stat. 888, 997.
155. *Id.*, 110 Stat. at 997.
156. *Id.*, 110 Stat. at 997.
157. *Id.*, 110 Stat. at 997.

approval.[158] In addition, a conservation farm option is available to producers of wheat, feed grains, cotton, and rice.[159] One of the goals of this option is the protection or improvement of water quality.[160]

While these programs represent an effort by Congress to address the problem of water contamination, more needs to be done. Farmer participation in such programs is voluntary. Failure to comply might result in ineligibility for federal funding, but that is all. There are no penalties in place for noncompliance. Further, the future of these farm programs is in doubt. The current reauthorization is due to expire in 2002,[161] and if it is not continued, there may be no financial or governmental incentives for farmers to help protect the nation's water supply.

B. *The EPA's Role*

The EPA also plays a significant role in the protection of our drinking water supplies. EPA involvement occurs through its implementation and enforcement duties under two federal programs that deal with water quality protection: the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the SDWA.[162] FIFRA was originally enacted in 1947 and changed substantially in 1972 by adding control aspects to the earlier act, which dealt primarily with labeling and licensing of pesticides.[163] FIFRA now regulates the use of pesticides by prohibiting the sale or use of pesticides that are not registered by the EPA.[164] Specifically, the EPA may limit the sale or use of any pesticide if such regulation is necessary to prevent adverse effects on the environment.[165] Although an objective of FIFRA is to protect groundwater from pesticide pollution,[166] FIFRA focuses only on pesticide regulation and is only marginally effective in controlling agricultural pollution of groundwater.[167]

The SDWA, originally enacted in 1974 and amended as recently as 1996, is primarily under the control of the EPA.[168] Although not specifically designed to deal with the problem of groundwater protection from the use of agricultural

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158. *See id.*, 110 Stat. at 1001.
159. *See id.*, 110 Stat. at 1002-03.
160. *See id.*, 110 Stat. at 1003.
161. *See id.* § 112, 110 Stat. at 900.
162. *See generally* Barker & Burleigh, *supra* note 21, at 443 (discussing various regulatory programs for controlling groundwater contamination).
163. *See id.* at 460.
164. *See* PEDERSON & MEYER, *supra* note 144, at 401.
165. *See* Barker & Burleigh, *supra* note 21, at 461.
166. *See* PEDERSON & MEYER, *supra* note 144, at 401.
167. *See* Raccio, *supra* note 12, at 191.
168. *See* 42 U.S.C. § 300f (1994).

pesticides, the SDWA provides some help in that area.[169] The SDWA regulates the quality of the United States' drinking water supply, which is heavily dependent on groundwater.[170] Thus, the SDWA is helpful in controlling the problem of groundwater contamination.[171]

The primary method by which the SDWA addresses chemical contamination of groundwater is through the establishment of maximum contaminant levels.[172] These levels are set by the EPA and represent the maximum level at which a chemical can be present in a water supply and still allow for adequate margin of safety and no anticipation of adverse health effects.[173] Under the SDWA, the EPA Administrator is given the authority to set a maximum contaminant level and promulgate a drinking water regulation for a specific chemical contaminant[174] if the following conditions are met: (1) the contaminant has adverse health effects;[175] (2) the contaminant is present, or likely to be present in public water systems at a level of public health concern;[176] and (3) regulation of the contaminant presents an opportunity to reduce the health risks of those served by the public water system.[177] The 1996 amendments also require the administrator to publish a list of contaminants that are not subject to any drinking water regulation but which are known to occur in public water systems.[178] This list must be reviewed every five years to determine whether the contaminants should be regulated.[179]

The process by which the EPA Administrator goes about making the decisions on regulation and maximum contaminant levels is also set forth in the SDWA.[180] The "best available, peer-reviewed science and supporting studies"[181] will be used as well as data collected by accepted or best available methods.[182] Further, in proposing the maximum contaminant levels, the EPA is required to seek public comment on the following matters: (1) health reduction benefits that are likely to occur as result of treatments to comply with the level;[183] (2) health reduction benefits which can be concluded as likely to occur from reduction of "co-

169. *See* Raccio, *supra* note 12, at 196.
170. *See* Barker & Burleigh, *supra* note 21, at 470.
171. *See id.*
172. *See* Raccio, *supra* note 12, at 196.
173. *See* Barker & Burleigh, *supra* note 21, at 470.
174. *See* Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182, § 102(a), 110 Stat. 1613, 1617-18.
175. *See id.*, 110 Stat. at 1618.
176. *See id.*, 110 Stat. at 1618.
177. *See id.*, 110 Stat. at 1618.
178. *See id.*, 110 Stat. at 1618.
179. *See id.*, 110 Stat. at 1618.
180. *See id.* § 103, 110 Stat. at 1621.
181. *Id.*, 110 Stat. at 1621.
182. *See id.*, 110 Stat. at 1621.
183. *See id.*, 110 Stat. at 1621.

occurring contaminants" as part of the compliance with maximum contaminant levels;[184] (3) costs that are likely to result from such compliance;[185] (4) incremental costs and benefits that might result from alternative maximum contaminant levels;[186] (5) effects of contaminant on general population and on groups at great risk of adverse health effects;[187] (6) any increased health risk that may result from such compliance;[188] and (7) other factors which may be deemed relevant, such as the quality of the information.[189]

Another significant aspect of the SDWA is the way in which it addresses potential treatments for water systems.[190] These treatments are also primarily overseen by the EPA.[191] The EPA is required to issue a list prepared after consultation with the states, of technologies that achieve compliance with the maximum contaminant levels.[192] However, it should be noted that such technologies and treatment plans are applicable only to small water systems—those serving populations of fewer than ten thousand people.[193] For other systems, the primary form of treatment is disinfection.[194] The EPA is required to promulgate national drinking water regulations that require disinfection of all public water systems, including ground water systems.[195]

Like most other programs that address the issue of contaminated drinking water, the SDWA's focus is on states. The EPA's strategy for controlling and preventing agricultural pollution of groundwater leaves most implementation to the states. Rather than adequately addressing the problem at the federal level, the federal government has allowed it to remain a state problem, and "continue[d] to avoid the liability issue."[196]

C. *Recent Federal Legislation*

While the federal government has shown some reluctance in making agricultural contamination of groundwater a national issue with a national solution, there is some indication that this may be changing. It is becoming clear that if the

184. *See id.*, 110 Stat. at 1622.
185. *See id.*, 110 Stat. at 1622.
186. *See id.*, 110 Stat. at 1622.
187. *See id.*, 110 Stat. at 1622.
188. *See id.*, 110 Stat. at 1622.
189. *See id.*, 110 Stat. at 1622.
190. *See id.* § 105, 110 Stat. at 1613.
191. *See id.*, 110 Stat. at 1613.
192. *See id.*, 110 Stat. at 1626.
193. *See id.*, 110 Stat. at 1625.
194. *See id.* § 107, 110 Stat. at 1627.
195. *See id.*, 110 Stat. at 1627.
196. Raccio, *supra* note 12, at 199.

problems of water contamination are going to be solved or at least more adequately controlled, then there must be some federal action to control AGNPS.[197] Congress has recently begun to debate the problem of AGNPS and the methods that might control such pollution.[198] One of the methods being considered is through changes in the CWA, that would end the current distinction between point source and nonpoint source pollution and, for the first time, apply the Act to nonpoint source pollution.[199] The 103rd Congress considered several bills to reauthorize the CWA that contained provisions requiring action on AGNPS and groundwater protection.[200] Although these attempts at reauthorization failed, the issue still remains on the congressional agenda, as the 105th Congress also considered a reauthorization bill.[201]

The Nonpoint Source Water Pollution Prevention Act of 1997 was introduced by Congressman Oberstar of Minnesota and was referred to the House Committee on Transportation and Infrastructure on February 4, 1997.[202] Congressman Bonior of Michigan later joined as a co-sponsor.[203] The Bill was viewed as the "sequel" to CWA section 319, and it was designed to finish the job started in the 1972 Act by better controlling nonpoint source pollution.[204] Although reauthorization was considered to be one of the goals of the 105th Congress, Congress failed to adopt this bill during the session.[205] Despite this, the Bill represented an important indication of the course that the federal government is beginning to take in addressing water contamination.

The Nonpoint Source Water Pollution Prevention Act stated its purpose as "amend[ing] the Federal Water Pollution Control Act to establish requirements and provide assistance to prevent nonpoint sources of water pollution . . . ."[206] The Bill recognized that despite long efforts in the area, one-third of the nation's water supplies have not met water quality standards,[207] and attributed this failure to nonpoint source pollution and the "unfinished agenda" of the original Federal Water Pollution Control Act.[208] The Bill further stated that although state and local governments will continue to play a major role in the problem of nonpoint source

197. *See generally* Kershen, *supra* note 43, at 3 (discussing recent congressional initiatives to deal with nonpoint source pollution).

198. *See id.*

199. *See id.*

200. *See id.* at 7.

201. *See* H.R. 550, 105th Cong. (1997).

202. *See id.*

203. *See* Search of LEXIS, Legis Library, Bltrck File (July 29, 1998).

204. *See* 141 CONG. REC. E510-04 (daily ed. Mar. 3, 1995) (statement of Rep. Oberstar).

205. *See Reauthorization of Clean Water Act*, WATER TECH. NEWS, June 1, 1997, *available in* 1997 WL 9674546.

206. H.R. 550.

207. *See id.* § 2(b)(2).

208. *See id.* § 2(b)(3).

pollution, "[t]he Federal Government . . . must accept its share of responsibility . . . ."[209]

Section 101 of the Bill would have amended section 319 of the CWA by requiring states to revise their management programs under section 319 to more adequately address the contamination problems in the state from nonpoint sources.[210] The governor of each state would have been required to assess the watershed areas of the state that are heavily contaminated from nonpoint sources and prioritize them on the basis of the severity of the nonpoint source pollution problem.[211] In addition, landowners and operators in areas granted the highest priority would have been given notice that they are required to implement "site-level programs"[212] to monitor their lands and to ensure that crop nutrient levels are not excessive, in an effort to minimize contamination from such chemicals.[213] The Bill also set a schedule for achieving clean water within eight years of the beginning of the watershed plans.[214] If the goal was not achieved at that point, additional measures would be implemented for every two years and the water quality standards must be met within twelve years.[215]

In addition to these new requirements placed on states to control nonpoint source pollution, the Bill would have amended the CWA by adding provisions that address nonpoint source pollution on federal lands.[216] A new subsection would have been added to section 319, which would require the President to issue regulations "for the prevention and control of nonpoint sources of pollution on all lands owned or managed by the Federal Government."[217] This program would require periodic testing of affected areas, and the implementation of measures to restore those waters.[218] This restoration would occur within eight years from the date the regulations were issued.[219]

Section 319 of the CWA was also proposed to be amended by the addition of a new subsection relating to agricultural program coordination.[220] This program would require the EPA Administrator and the Secretary of Agriculture to report on the status and effectiveness of water quality protection programs under federal farm

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209. *Id.*, § 2(b)(5).
210. *See id.* § 101.
211. *See id.* § 101.
212. *See id.* § 101.
213. *See id.* § 101.
214. *See* 141 CONG. REC. E510-04 (daily ed. Mar. 3, 1995) (statement of Rep. Oberstar).
215. *See id.*
216. *See* H.R. 550, § 201.
217. *Id.*
218. *See id.*
219. *See id.*
220. *See id.*, § 203.

bills,[221] as well as any potential barriers "to the prevention and control of nonpoint source pollution created by programs of the Department of Agriculture."[222] This report would have contained estimates of anticipated reductions in agricultural water pollution,[223] recommendations for improving the effectiveness of the farm programs,[224] and recommendations for removing any of the potential barriers. [225]

Lastly, the proposed reauthorization of the CWA would have required the EPA Administrator to revise existing water quality criteria within three years.[226] It listed the items the EPA Administrator should consider and gives priority to them in developing these criteria.[227] These included the "chemical, physical, and biological parameters" associated with water pollution from nonpoint sources,[228] such as nitrogen, phosphorus, and pesticides commonly used in the United States.[229]

The provisions of House Bill 550 were considered fair to the parties involved, which included municipalities and landowners.[230] As noted earlier, however, politics and the interests of landowners and agriculture have sometimes complicated federal action in the area of nonpoint source pollution. Perhaps in response to congressional reluctance in dealing with the matter, the Clinton administration unveiled a new clean water initiative in February 1998.[231]

The Clean Water Action Plan contains steps that are designed to restore the quality of the nation's polluted waterways.[232] One of the central goals of the plan is to reduce the polluted runoff from farms, which is a major cause of water contamination.[233] To do this, the plan calls for $120 million in federal assistance to curb runoff and encourage better pollution controls, as well as new strategies for controlling runoff from animal feeding operations by requiring discharge permits.[234] In addition, the plan includes $100 million in incentives and resources to help farmers control runoff.[235] Overall, the new initiatives in the plan could cost

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221. *See id.*
222. *Id.*
223. *See id.*
224. *See id.*
225. *See id.*
226. *See id.*
227. *See id.*
228. *Id.*
229. *See id.*
230. *See* 141 CONG. REC. E510-04 (daily ed. Mar. 3, 1995) (statement of Rep. Oberstar).
231. *See* Marc Lacey, *Clinton Unveils Waterway Cleanup Plan Environment*, L.A. TIMES, Feb. 20, 1998, at A16.
232. *See* Carl M. Cannon, *U.S. Plans Cleanup of Waters*, BALTIMORE SUN, Feb. 19, 1998, at 1A.
233. *See id.*
234. *See Clean Water Initiative*, WHITE HOUSE OFF. OF COMM., Mar. 2, 1998, 1998 WL 85641, at *2.
235. *See id.*

as much as $2.3 billion over five years,[236] and congressional approval is needed for the new funding.[237]

V. CONCLUSION

Neither the reauthorization bill nor the White House proposal represents the perfect solution for the problem of water pollution. Action by Congress has been lacking and most of the changes proposed by the Administration which affect farming are voluntary.[238] Although perhaps more politically feasible, these voluntary measures are likely to be considered as ineffective as some of the previous measures designed to address nonpoint source pollution.

It is possible that a perfect solution to the problem does not exist at all, and if it does, it has yet to be discovered. However, it is apparent that there is a serious problem with water pollution in the United States. Although water pollution from point sources appears to be under control, pollution from nonpoint sources continues to be a problem. This contamination is widespread, posing a variety of health risks to those who drink the contaminated water.

Thus far, efforts to improve the quality of water have been ineffective. Proposals that have left the control of nonpoint source pollution to state and local government or attempted to deal with it through voluntary incentives have not been successful. Now that the issue of nonpoint source pollution is at last being debated at the federal level, Congress should not back away from the challenge. It is clear that nonpoint source pollution should remain on the federal agenda until the problem is more adequately addressed. Whether it is in the form of a Clean Water Act reauthorization, or perhaps different legislation entirely, it is time for more federal action to control the problem of groundwater contamination from nonpoint sources.

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236. *See* Lacey, *supra* note 231, at A16.
237. *See* Cannon, *supra* note 232, at 1A.
238. *See id.*