

University of Missouri School of Law Scholarship Repository

Faculty Publications

Spring 1990

Federal and State Water Quality Regulation and Law in Missouri

Peter N. Davis

University of Missouri School of Law, DavisPN@missouri.edu

Follow this and additional works at: <http://scholarship.law.missouri.edu/facpubs>

 Part of the [Administrative Law Commons](#), [Environmental Law Commons](#), [Natural Resources Law Commons](#), and the [Water Law Commons](#)

Recommended Citation

Peter N. Davis, Federal and State Water Quality Regulation and Law in Missouri, 55 Mo. L. Rev. 411 (1990)

This Article is brought to you for free and open access by University of Missouri School of Law Scholarship Repository. It has been accepted for inclusion in Faculty Publications by an authorized administrator of University of Missouri School of Law Scholarship Repository.

FEDERAL AND STATE WATER QUALITY REGULATION AND LAW IN MISSOURI

*Peter N. Davis**

INTRODUCTION

Watercourses and groundwater aquifers in Missouri serve as the only sources of water for drinking, livestock watering, industrial process and cooling water, and irrigation. Watercourses are the sole source of water for wildlife habitat, recreation and navigation. In Missouri, 66% of the population is served by watercourses and 34% by groundwater.¹ By coincidence, 66% of total water withdrawals are made from surface watercourses, while 34% are made from groundwater.² Groundwater is the source of 74% of all rural domestic (self-supplied) water, 75% of all irrigation water, 22% of public water supplies, and 39% of all industrial (self-supplied) water.³

As in all states, surface and ground waters in Missouri have been subjected to extensive waste discharges as a result of man's activities. The discharge sources are widely varied in location, type, and size. They include municipal and industrial wastes from point sources, urban

* Isador Loeb Professor of Law, University of Missouri-Columbia; B.A. 1959, Haverford; LL.B. 1963, S.J.D. 1972, University of Wisconsin.

Most of this article is comprised of two prior limited circulation works by the author, Section 3, in *TASK FORCE ON MISSOURI GROUNDWATER ISSUES, MISSOURI'S GROUNDWATER: PROTECTING A THREATENED RESOURCE* (J. O'Connor, ed. (1987)) (Coalition for the Env't Found., unpublished); and *ENVIRONMENTAL LAW IN MISSOURI: MISSOURI'S CLEAN WATER LAW* (1988) (mimeo, University of Missouri-Columbia CLE). All of the research in this article, including the unpublished research, will appear in a water pollution regulation and law book the author has under contract. Butterworths Legal Publishers expects to publish the book in 1991 or 1992.

1. Of Missouri's 4,929,000 population, 3,253,000 are served from surface watercourses and 1,676,000 are served from groundwater. *TASK FORCE ON MISSOURI GROUNDWATER ISSUES, MISSOURI'S GROUNDWATER: PROTECTING A THREATENED RESOURCE* I-6 (1987) (Coalition for the Env't Found., unpublished) (citing U.S. Geological Surv. (1985)) [hereinafter *TASK FORCE*].

2. In 1980, of 1,382,000,000 gallons per day withdrawn, withdrawals from surface watercourses (excluding hydroelectric withdrawals) totaled 912,000,000 gallons per day and groundwater withdrawals totaled 470,000,000 gallons per day. *TASK FORCE*, *supra* note 1, at I-6.

3. *Id.* at I-6 to I-7.

and agricultural runoff after rains, leaching into groundwater from landfills, underground storage tanks, and agricultural operations, drainage from mines, and erosion from construction and farming. In 1976, there were 3571 point source discharges into Missouri watercourses.⁴

In Missouri in 1988, about 52% of the state's 19,630 miles of watercourses meet applicable water quality standards.⁵ The principal pollutants are deposited sediment primarily from agriculture (8,299 miles), chlordane pesticide (833 miles), habitat alteration (180 miles), acid drainage from abandoned coal mines (88 miles), lead mine tailing deposits (24 miles), and reservoir releases (including low dissolved oxygen, dissolved manganese, and rapid temperature changes) (10 miles).⁶ Of the 9,445 miles of nonattainment watercourses, over 99% (9,377 miles) are contaminated from nonpoint sources.⁷ Groundwater quality in Missouri varies from very good south of the Missouri River in the Ozark karst area and the Bootheel to salinity levels rendering it unpotable in the northwest third of the state.⁸

The waste discharges from most of those sources are regulated and are subject to common law remedies. This article discusses that law in two parts. The first part examines the federal and Missouri waste discharge regulatory system. The second part analyzes common law rights and remedies related to water pollution.

PART I FEDERAL AND MISSOURI STATUTES REGULATING WATER QUALITY

Until recent years, federal attention into water quality has been directed towards surface watercourses. Currently, regulation of surface water quality is conducted under the Clean Water Act.⁹ But the

4. MO. DEP'T OF NAT. RESOURCES, WATER QUALITY MANAGEMENT BASIN PLAN (1976), which are mapped in MO. DEP'T OF NAT. RESOURCES, MISSOURI WATER ATLAS 48-51 (1982).

5. MO. DEP'T OF NAT. RESOURCES, MISSOURI WATER QUALITY REPORT 1 (1988). This report contains a series of maps delineating the nonattainment waters. *Id.* at 8-38.

6. *Id.* at 3.

7. *Id.*

8. MO. DEP'T OF NAT. RESOURCES, MISSOURI WATER ATLAS 52 (1982) (groundwater quality map); MO. DEP'T OF NAT. RESOURCES, MISSOURI WATER QUALITY REPORT 3, 39 (1988). Seventeen known groundwater contamination sites are listed *id.* at 43-47.

9. 33 U.S.C. §§ 1251-1387. For descriptions of the provisions of the Clean Water Act, see generally J. ARBUCKLE, G. FRICK, R. HALL, M. MILLER, T.

quality of groundwater is getting increasing attention at the federal level. The quality of public drinking water supplies is the subject of the Safe Drinking Water Act.¹⁰ Contamination of groundwater by leachate from licensed hazardous waste disposal facilities and solid waste disposal facilities is the subject of the Solid Waste Disposal Act of 1976.¹¹ Cleanup of abandoned hazardous waste disposal sites under the Superfund Act¹² will eliminate sources of groundwater contamination. Groundwater contamination by acid mine waste leachate is regulated by the Surface Mining Control and Reclamation Act.¹³ There is, however, no comprehensive federal regulation of groundwater quality.

Similarly, Missouri law focuses on regulating water quality in surface watercourses. That regulation is conducted under the Clean Water Law.¹⁴ Although that law also applies to pollution of groundwater,¹⁵ no regulatory program has been established because Missouri prohibits injection of wastes into groundwater.¹⁶ Under federal impetus, Missouri is beginning to direct its attention to regulating groundwater quality more comprehensively. Although Missouri currently does not regulate underground sources of drinking water, it does regulate underground storage tanks,¹⁷ and leachate from hazard-

SULLIVAN & T. VANDERVER, ENVIRONMENTAL LAW HANDBOOK ch. 3 (10th ed. 1989) [hereinafter ENVIRONMENTAL LAW HANDBOOK]; R. Beck & C. Goplerud, *Water Pollution and Water Quality: Legal Controls*, comprising 3 WATER & WATER RIGHTS (R. Clark, ed. 1988 & Supp. 1989); 1 F. GRAD, TREATISE ON ENVIRONMENTAL LAW ch. 3 (1973-90); 1 J. DAVIDSON & O. DELOGU, FEDERAL ENVIRONMENTAL REGULATION ch. 2 (1989); S. NOVICK, D. STEVER & M. MELLON, LAW OF ENVIRONMENTAL PROTECTION ch. 12 (eds. 1987); 2 W. RODGERS, ENVIRONMENTAL LAW (2d ed. 1986 & Supp. 1988); 2 D. STEVER, LAW OF CHEMICAL REGULATION & HAZARDOUS WASTE § 7.03(2) (1989).

This article will not discuss the wetlands dredge and fill regulatory program administered by the Corps of Engineers, U.S. Army, under Clean Water Act § 404, 33 U.S.C. § 1344. On the wetlands program, see generally, W. WANT, LAW OF WETLANDS REGULATION (1989).

10. 42 U.S.C. §§ 300f-300j.

11. 42 U.S.C. §§ 6901-6992.

12. Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601-9675.

13. 30 U.S.C. §§ 1201-1328.

14. MO. REV. STAT. §§ 644.006-.141 (1986 & Supp. 1989).

15. MO. REV. STAT. § 644.016(15) (1986).

16. *Id.* § 260.424 (hazardous waste injection prohibition); *Id.* § 577.155 (injection well prohibition). The power to grant injection well permits under the Clean Water Law has never been exercised. Statement by Jerry Vineyard, Director, Missouri Geological Surv., to Groundwater Protection Task Force, Jefferson City, 1987.

17. MO. REV. STAT. §§ 319.100-.137 (1986 & Supp. 1989).

ous waste disposal facilities under the Hazardous Waste Management Law.¹⁸ The Missouri Superfund Law assists cleanup of abandoned hazardous waste disposal sites.¹⁹ Acid and other mine leachate from surface coal mines is regulated under the Surface Coal Mining Law,²⁰ from barite mines under the Strip Mine Law,²¹ and from clay, limestone, gravel and sand pits and quarries under the Land Reclamation Act.²² The water quality aspects of all of these federal and Missouri statutes are discussed in this article.

The federal Clean Water Act provides the basis for both federal and state regulation of waste discharges into surface watercourses today. Under the concept of "creative federalism" embodied in the Act, Congress and the Environmental Protection Agency determine the basis policies of regulation; the states are given the opportunity to incorporate those policies in their own regulatory programs and to assume day-to-day implementation. If any state chooses not to adopt a state regulatory program conforming to that pattern, EPA will operate the federal waste discharge permit program in parallel with the state program. The effect of that arrangement imposed by the Act is a basic uniformity of regulatory policy throughout the United States.

Missouri's regulatory program for waste discharges into surface watercourses was approved by the Environmental Protection Agency in 1974.²³ Since Missouri regulates waste discharges into surface watercourses under federal oversight, the federal Clean Water Act and the Missouri Clean Water Law will be discussed simultaneously.

A. Regulation of Waste Discharges from Point Sources

The federal government has gradually increased its regulation of waste discharges into surface watercourses since World War II. In 1948, it began a grant-in-aid program for construction of municipal waste treatment plants,²⁴ and enlarged it during the 1950s. Under the Water Quality Act of 1965, the federal government first required imposition of water quality standards on interstate streams.²⁵ The first comprehensive regulation of waste discharges into surface

18. *Id.* §§ 260.350-.434.

19. *Id.* §§ 260.435-.552.

20. *Id.* §§ 444.800-.970.

21. *Id.* §§ 444.500-.775.

22. *Id.* §§ 444.760-.786.

23. 52 Fed. Reg. 27,578 (1987).

24. Water Pollution Control Act of 1948, Pub. L. No. 80-845, § 5, 62 Stat. 1155, 1158.

25. Pub. L. No. 89-234, § 5, 79 Stat. 903, 908 (1965).

watercourses was a massive regulation in 1971²⁶ under the Rivers and Harbors Act of 1899.²⁷ Following judicial impairment of that regulation by requiring preparation of Environmental Impact Statements under the National Environmental Policy Act²⁸ for each discharge permit application,²⁹ Congress enacted the first federal comprehensive statute in 1972.³⁰ That was the original version of the present federal Clean Water Act.³¹ A major amendment in 1977 gave the federal act its name and current format.³²

Missouri established its Water Pollution Board in 1957 and empowered it to require "necessary, reasonable treatment of sewage . . . [and] other wastes."³³ Regulation was based on ambient quality standards of receiving waters, not on discharge standards as is done today. The water quality standards were to reflect the "public interest in water supply, the conservation of fish, game and aquatic life, and agricultural, industrial and recreational uses."³⁴ The 1957 statute established a permit system for new and modified discharges.³⁵

The 1957 act apparently complied with the requirements of the federal Water Quality Act of 1965, requiring states to establish water quality standards for interstate waters,³⁶ since the Missouri Legislature did not amend it at that time. Most states, including Missouri, established water quality standards for intrastate streams as well.

When Congress enacted comprehensive regulation of waste discharges in 1972, Missouri, like many states, was required to massively amend their water pollution regulatory programs. Congress made two major changes in regulatory policy in the 1972 act. First, it established a federal waste discharge permit system which would operate in those states which failed to establish a federally approved state permit system. Second, it abandoned as unworkable the use of water quality standards as the basis for regulation and substituted technology-based waste discharge treatment standards.³⁷ In order for

26. Exec. Order No. 11,547, 35 Fed. Reg. 19,627 (1970). The permit regulations were published at 36 Fed. Reg. 6564 (1971).

27. § 13, 33 U.S.C. § 407 (1982).

28. § 102, 42 U.S.C. § 4332 (1982).

29. *Kalur v. Resor*, 335 F. Supp. 1, 14-15 (D.D.C. 1971).

30. Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816.

31. 33 U.S.C. §§ 1251-1387 (1982 & Supp. V 1987) [hereinafter CWA].

32. Pub. L. No. 95-217, 91 Stat. 1566 (1977).

33. 1957 Mo. Laws 659.

34. 1957 Mo. Laws 659, § 8(9).

35. *Id.* § 3(2).

36. Pub. L. No. 89-234, § 5(a), 79 Stat. 903, 907-909 (1965).

37. R. Zener, *The Federal Law of Water Pollution Control*, in FEDERAL

states to avoid imposition of a federal permit program in addition to their own, they would have to alter their own programs to meet the policies and minimum standards of the federal program. Congress tightened and refined the technology-based standards and extended time limits for compliance in the 1977 amendments. The Clean Water Act is administered by the Environmental Protection Agency (EPA).

The Missouri Legislature responded three times in 1972 and 1973 to bring its regulatory program into compliance with the federal requirements.³⁸ Together they are known as the Missouri Clean Water Law.³⁹ In May of 1974, the Missouri waste discharge permit program was approved by the Environmental Protection Agency.⁴⁰ Since that time, waste dischargers in Missouri have needed to obtain only a state permit. The changed standards imposed by the 1977 federal act did not require amendment of the Missouri act, but did require amendment of the regulations. The Missouri Clean Water Law is administered by the Department of Natural Resources (DNR).

1. Jurisdictional Waters

a. Surface Watercourses

The federal Clean Water Act extends to "navigable waters."⁴¹ By reference to the legislative history, the courts have held that the Act extends to all "the waters of the United States," not merely to the commercially navigable waters traditional to federal civil works jurisdiction.⁴²

ENVIRONMENTAL LAW 682, 719 (E. Dolgin & T. Guilbert eds. 1974).

38. 1972 Mo. Laws 819; 1973-74 Mo. Laws 324; 1973-74 Mo. Laws 336.

39. MO. REV. STAT. § 644.006 (1986). For a description of the law, see generally T. LAUER, P. DAVIS & J. CUNNINGHAM, MISSOURI STATE LAWS—WATER & RELATED LAND RESOURCES 57-68 (3d ed. 1977) (Mo. Clean Water Comm'n).

40. See *supra* note 23.

41. "Navigable waters" are defined as "the waters of the United States, including the territorial seas." CWA § 502(7), 33 U.S.C. § 1362(7).

42. *United States v. Ashland Oil & Transp. Co.*, 504 F.2d 1317, 1323 (6th Cir. 1974) (quoting 118 CONG. REC. 33,756-57 (1972) (statement of Rep. Dingell)).

Federal jurisdiction for regulation of obstructions to navigation, and for enforcement of the anti-pollution provisions of the Rivers & Harbors Act of 1899, §§ 13, 17, 33 U.S.C. §§ 407, 411, is limited to commercially "navigable waters of the United States." See *infra* text accompanying note 268.

b. Groundwater

The language of the Clean Water Act does not mention groundwater.⁴³ The case precedent is conflicting. Most courts have held that discharges into groundwater are not subject to the Act when EPA has sought to extend its jurisdiction to groundwater.⁴⁴ The current jurisdictional regulations reflect that interpretation.⁴⁵ It is not clear whether the Act's jurisdiction can be interpreted broadly to reflect the hydrologic cycle; one court has ruled that groundwater is not subject to the Act even when contaminated groundwater eventually percolates to and contaminates a surface watercourse,⁴⁶ while another has ruled to the contrary.⁴⁷

By contrast, Missouri's Clean Water Law expressly extends to "subsurface water."⁴⁸ Missouri has not needed to establish a permit program for waste discharges into groundwater since it expressly prohibits injection of wastes into groundwater in two statutes.⁴⁹

2. Waste Discharges by Point Sources

The purpose of the Clean Water Act is to restore the natural chemical, physical and biological integrity of the nation's surface watercourses,⁵⁰ and eventually to eliminate all waste discharges into them.⁵¹

43. See CWA § 502(7), 33 U.S.C. § 1362(7).

44. *Exxon Corp. v. Train*, 554 F.2d 1310 (5th Cir. 1977); *United States v. Solvents Recovery Serv.*, 496 F. Supp. 1127 (D. Conn. 1980); *United States v. GAF Corp.*, 389 F. Supp. 1379 (S.D. Tex. 1975). *Contra* *United States Steel Corp. v. Train*, 556 F.2d 822 (7th Cir. 1977).

45. 40 C.F.R. § 122.2 (1989).

46. *Kelley ex rel. Michigan v. United States*, 618 F. Supp. 1103 (W.D. Mich. 1985).

47. *New York v. United States*, 620 F. Supp. 374 (E.D.N.Y. 1985).

48. MO. REV. STAT. § 644.016(15) (1986).

49. MO. REV. STAT. § 260.424 (1986) (hazardous waste injection); MO. REV. STAT. § 577.155 (1986) (waste disposal wells).

50. CWA § 101, 33 U.S.C. § 1251.

51. CWA § 101, 33 U.S.C. § 1251.

a. Point Sources

The Clean Water Act extends regulation to discharges of "pollutants"⁵² from "point sources."⁵³ Point sources do not include agricultural stormwater discharges and irrigation return flows.⁵⁴

Originally, because of the difficulty in devising a technology for regulating them, nonpoint discharges were not regulated. But in 1987, the scope of regulation was expanded. First, to deal with hazardous waste disposal problems, the definition of "point source" was expanded to include discharges from landfill leachate collection systems.⁵⁵ Second, regulation was imposed on stormwater drainage outfalls.⁵⁶ Third, states were required to develop regulatory systems for dealing with nonpoint sources of pollution.⁵⁷

The Missouri regulatory system has been limited administratively to point source discharges⁵⁸ into surface watercourses. The Clean Water Law's language encompasses regulation of any direct or indirect entry of a water contaminant "by surface runoff, by sewer, by subsurface seepage, or otherwise."⁵⁹ That statutory language arguably goes

52. "Pollutant" is defined by the CWA § 502(6), 33 U.S.C. § 1362(6). The definition excludes (1) sewage from vessels and (2) water, gas, or other materials injected into an oil or gas well for secondary recovery operations or derived as part of oil and gas recovery and disposed of in a state-licensed injection well.

53. CWA § 402(a), 33 U.S.C. § 1342(a). A "point source" is a waste discharge from a discrete source, such as a pipe or channel. CWA § 502(14), 33 U.S.C. § 1362(14); *Sierra Club v. Abston Constr. Co.*, 620 F.2d 41 (5th Cir. 1980). There must be an addition of a pollutant from an external source. Hence, discharges from dams are not point sources. This is true whether the dam discharge is water with a low oxygen content, *National Wildlife Fed'n v. Gorsuch*, 693 F.2d 156 (D.C. Cir. 1982); *Missouri ex rel. Ashcroft v. Corps of Eng'rs*, 672 F.2d 1297, 1303-04 (8th Cir. 1982); or water containing pollutants originating in the reservoir above the dam, *National Wildlife Fed'n v. Consumers Power Co.*, 862 F.2d 580, 581-84 (6th Cir. 1988) (turbines ground up fish entrained in the reservoir).

54. CWA § 502(14), 33 U.S.C. § 1362(14).

55. Water Quality Act of 1987, Pub. L. No. 100-4, § 507, 101 Stat. 7, 78.

56. See *infra* notes 260-67 and accompanying text.

57. See *infra* notes 252-59 and accompanying text.

58. See MO. CODE REGS. tit. 10, § 20-6.010 (1989). A "point source" is defined by MO. REV. STAT. § 644.016(6) (1986).

59. MO. REV. STAT. § 644.016(12) (1986) (definition of "water contaminant"). See also *id.* § 644.016(1) (definition of "discharge"), 644.051-1(1) (unlawful to cause pollution by placing a "water contaminant" in a location where "it is reasonably certain to cause pollution"), 644.051-1(2) (unlawful to "discharge any water contaminants"), 644.051-2 (unlawful to "maintain any water contaminant or point source without a permit").

beyond point sources to encompass regulation of stormwater drainage and nonpoint sources.

Water contaminants need not be directly discharged into a watercourse in order to be subject to the Clean Water Law. Discharge into a septic tank whose effluent reached a watercourse by way of a dry ditch has been held subject to regulation.⁶⁰ Similarly, discharge of treated subdivision effluent into a pond which overflowed into a creek by way of an intermittent creek was held subject to regulation.⁶¹ But a water contaminant does require the addition of a pollutant from an external source, not the removal of oxygen from the water; hence, a dam's release of low oxygen water was held not to be a "discharge."⁶²

b. Permit System

Permits are required under the federal Clean Water Act for waste discharges from "point sources."⁶³ They are issued subject to conditions. New discharges must comply⁶⁴ with the national performance standards for discharges established by EPA⁶⁵ and with individualized effluent limitations based on available waste treatment technology. The permits have a five year term.⁶⁶ Federal facilities are subject to the permitting requirements of the Act,⁶⁷ as are state facilities.⁶⁸ Regulations have been established for the National Pollution Discharge Elimination System (NPDES) permit system.⁶⁹ Those regulations have been upheld in most respects.⁷⁰

60. *Hammack v. Missouri Clean Water Comm'n*, 659 S.W.2d 595 (Mo. Ct. App. 1983).

61. *Scheble v. Missouri Clean Water Comm'n*, 734 S.W.2d 541 (Mo. Ct. App. 1987).

62. *State ex rel. Ashcroft v. Union Elec. Co.*, 559 S.W.2d 216 (Mo. Ct. App. 1977); *see supra* note 53.

63. CWA § 401(a), 33 U.S.C. § 1341(a).

Permits are not required for irrigation return flows or stormwater runoff from oil, gas, and mining operations (unless contaminated by tailings or waste products located on the site). CWA § 402(l), 33 U.S.C. § 1342(l).

64. CWA § 402(b)(1)(A), 33 U.S.C. § 1342(b)(1)(A).

65. CWA § 306, 33 U.S.C. § 1316.

66. CWA § 402(b)(1)(B), 33 U.S.C. § 1342(b)(1)(B).

67. CWA § 313(a), 33 U.S.C. § 1323(a).

68. CWA §§ 301(a), 502(5), 33 U.S.C. §§ 1311(a), 1362(5) (prohibition of discharges by "persons" without a permit; definition of "person").

69. *See* 40 C.F.R. § 122 (1989).

70. *Natural Resource Defense Council v. EPA*, 859 F.2d 156 (D.C. Cir. 1988). The court rejected regulations requiring compliance with permit conditions unrelated to effluent limits because they were *ultra vires*, and rejected disallowance of the upset defense (violation beyond the control of the permittee).

In order for states to obtain federal approval, their permits must be made subject to those same federal performance standards and limitations.⁷¹ Regulations for federal approval of state permit programs have been established.⁷²

Missouri requires permits for water contaminant sources, which include "point sources."⁷³ State facilities and municipalities are not exempt from the permitting requirements.⁷⁴ Similarly, federal facilities are subject to the state act's permit requirements.⁷⁵

The Missouri Clean Water Law establishes a permit program for point sources.⁷⁶ In Missouri, application for waste discharge permits must be made at least thirty days before beginning construction or installation of the discharge facility or establishing the discharge.⁷⁷ The application must include submission of plans and specifications of the proposed facility.⁷⁸ Before issuing the permit, DNR must hold a public hearing.⁷⁹ The permit will be granted or denied within sixty days after all federal Clean Water Act permit issuance requirements have been met.⁸⁰ State permits are subject to the provisions of the federal Clean Water Act and any effluent limitations, water quality related effluent limitations, national performance standards, toxic and pretreatment standards, or water quality standards applied to the waste

Id. at 169-70, 205-10.

71. CWA § 402(b), 33 U.S.C. § 1342(b).

72. *See* 40 C.F.R. § 131 (1989).

73. MO. REV. STAT. §§ 644.016(13) (definition of "water contaminant source"), 644.051-2 (1986) (requirement for a permit).

Point sources subject to permit in 1976 are mapped in MO. DEPT OF NATURAL RESOURCES, MISSOURI WATER ATLAS 48-51 (1982).

74. Op. Mo. Att'y Gen. No. 37 (Hardwicke, Oct. 17, 1958, Nov. 7, 1958).

The Clean Water Law's language clearly indicates that state facilities are not exempt. MO. REV. STAT. § 644.051-1 (1986) provides that "persons" cannot engage in the prohibited polluting activities without a permit. Section 644.016(5) defines "person" as including "political subdivisions" and "any agency, board, department, or bureau of the state or federal government."

75. CWA § 313(a), 33 U.S.C. § 1323(a); Op. Mo. Att'y Gen. No. 53 (Lafser, Jan. 26, 1979). That section is a 1977 amendment reacting to *EPA v. California ex rel. State Water Resources Control Bd.*, 426 U.S. 200 (1976), which held that Congress must specifically direct that federal facilities be subject to state permitting requirements.

See supra note 74 on the definitional language of the Clean Water Law which confers regulatory jurisdiction over federal facilities.

76. MO. REV. STAT. §§ 644.026(13), 644.051(2) (1986 & Supp. 1989).

77. MO. REV. STAT. § 644.051(3) (1986).

78. MO. REV. STAT. § 644.026(12) (Supp. 1989).

79. MO. REV. STAT. § 644.051(4) (1986).

80. *Id.* § 644.051(5).

discharge.⁸¹ State permits must contain a compliance timetable if the discharge will initially violate them.⁸² Missouri permits have a maximum term of five years.⁸³ Renewal applications must be filed 180 days prior to expiration of the existing permit; compliance with the existing permit and with all effluent standards and limitations, water quality standards, and other federal and state statutory and regulatory requirements is a condition precedent to the granting of a renewal.⁸⁴ Permit regulations have been established.⁸⁵

Missouri prohibits the discharge of radiological, chemical, and biological warfare agents and high-level radioactive wastes.⁸⁶

c. Effluent Limitations

The Clean Water Act established a two-tier set of effluent limitation standards.⁸⁷ The first tier standard was designed to avoid public health hazards in receiving waters and required use of off-the-shelf technology. That standard, "best practical control technology currently available" (BPCT), was to be achieved by mid-1977.⁸⁸

The second tier standard is designed to achieve swimmable water. Conventional industrial discharges must utilize "best conventional control technology" (BCCCT) within 3 years after the effluent limitation is established, but not later than 1989.⁸⁹ Nonconventional industrial discharges must use "best available control technology economically achievable" (BACT)⁹⁰ within 3 years after the effluent limitation is established, but not later than early 1989.⁹¹ Toxic discharges must use such technology within three years after EPA sets discharge standards for specific toxic substances.⁹² Municipal treatment plants must apply

81. *Id.* § 644.051(4). A state permit is to be denied if it violates those standards. *Id.* Permits are issued under authority of section 644.026(13) (Supp. 1989).

82. MO. REV. STAT. § 644.051(4) (1986).

83. *Id.* § 644.051(9).

84. MO. REV. STAT. § 644.051(10) (1986).

85. MO. CODE REGS. tit. 10, § 20-6.010 (1989).

86. MO. REV. STAT. §§ 644.026(17), 644.051(1)(4) (1986).

87. For regulations on criteria and standards, see 40 C.F.R. §§ 125, 401 (1989).

88. CWA § 301(b)(1)(A), 33 U.S.C. § 1311(b)(1)(A).

89. CWA § 301(b)(2)(E), 33 U.S.C. § 1311(b)(2)(E).

90. CWA § 302(b)(2)(A), 33 U.S.C. § 1311(b)(2)(A).

91. CWA § 301(b)(2)(F), 33 U.S.C. § 1311(b)(2)(F).

92. CWA §§ 301(b)(2)(C), (D), 307(a), 33 U.S.C. §§ 1311(b)(2)(C), (D), 1317(a). For the regulations, see 40 C.F.R. § 129 (1989).

at least secondary treatment.⁹³ The individualized effluent limitations can be made more stringent as required to comply with the water quality standards established for the receiving waters.⁹⁴ Renewal permits cannot contain effluent limitations less stringent than those in the existing permit.⁹⁵ Also, states are authorized to establish and impose more stringent effluent limitations.⁹⁶

The first tier "best practical control technology" standard was designed to avoid public health hazards. BPCT applied to all industrial discharges, required use of off-the-shelf treatment technology and took economic effects into account. This standard for effluent limitations continues to apply to permitted discharges until the second tier standards come into force. The factors EPA was to consider in establishing that standard for classes and categories of industrial sources included (a) the total cost of applying the treatment technology in relation to the effluent reduction benefits, and (b) process changes. Additional factors common to all of the standards included: (1) the age of equipment and facilities involved; (2) the process employed; (3) the engineering aspects of various types of control technologies; (4) non-water quality environmental impacts; (5) energy requirements; and (6) other factors considered appropriate.⁹⁷

The second tier "best available control technology" and "best conventional control technology" standards are designed to produce swimmable receiving waters. BACT applies to nonconventional industrial discharges and requires use of state-of-the-art technology with little regard for the economic effect on individual plants.⁹⁸ The factors EPA is to consider in establishing this standard for classes and categories of point sources include the cost of achieving the effluent reduction, as well as the common factors listed under BPCT.⁹⁹

By contrast, the BCCCT standard, applying to conventional industrial discharges, does allow for greater recognition of economic effects on individual plants. The factors EPA is to consider in establishing this standard for classes and categories of point sources include: (a) the

93. CWA §§ 301(b)(1)(B), 304(d)(1), 33 U.S.C. §§ 1311(b)(1)(B), 1314(d)(1). For secondary treatment regulations, see 40 C.F.R. § 133 (1989).

94. CWA § 302(a), 33 U.S.C. § 1312(a). The water quality standards are set by the states, subject to EPA approval, under CWA § 303, 33 U.S.C. § 1313. EPA has discretion to accept or reject proffered state standards. *Mississippi Comm'n on Natural Resources v. Costle*, 625 F.2d 1269 (5th Cir. 1980).

95. CWA § 402(o)(1), 33 U.S.C. § 1342(o)(1). There are certain exceptions. CWA § 402(o)(2), 33 U.S.C. § 1342(o)(2).

96. CWA § 301(b)(1)(C), 33 U.S.C. § 1311(b)(1)(C).

97. CWA § 304(b)(1)(B), 33 U.S.C. § 1314(b)(1)(B).

98. *E.I. duPont de Nemours & Co. v. Train*, 430 U.S. 112 (1977).

99. CWA § 304(b)(2)(B), 33 U.S.C. § 1314(b)(2)(B).

reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived; (b) a comparison of the cost and level of reduction of various pollutants in the discharge from municipal treatment plants to the cost and level of reduction of the same pollutants from the class or category of industrial sources; and (c) process changes, as well as the common factors listed for BPCT.¹⁰⁰ Since those factors include some recognition of cost-benefit analysis, unlike the BAT standard imposed under the original 1972 Act,¹⁰¹ EPA has interpreted BCCT as allowing a comparison of the marginal cost of industrial treatment beyond BPCT with the marginal cost of tertiary treatment beyond the secondary treatment level required of municipal treatment plants.¹⁰²

Waste discharge permits issued by Missouri under the Clean Water Law are subject to federal effluent limitations and water quality related effluent limitations.¹⁰³ This means that Missouri permits will require achievement of BACT and BCCT no later than early 1989. Furthermore, the Missouri Clean Water Law requires the Clean Water Commission to adopt "reasonable" effluent control regulations as required by the federal Clean Water Act.¹⁰⁴ State effluent regulations have been established by regulation.¹⁰⁵

d. Standards of Waste Treatment Performance.

The Clean Water Act requires EPA to establish national standards of performance for twenty-seven categories of industries determined by the Act and other categories established by regulation.¹⁰⁶ A "standard of performance" will be required which EPA determines is achievable "through application of the best available demonstrated control technology, processes, operating methods, or other alternatives."¹⁰⁷ EPA uses technology-based performance standards,¹⁰⁸ which generally

100. CWA § 304(b)(4)(B), 33 U.S.C. § 1314(b)(4)(B).

101. See R. Zener, *supra* note 37, at 699-700.

102. That interpretation was upheld in *American Paper Inst. v. EPA*, 660 F.2d 954, 962-63 (4th Cir. 1981).

103. MO. REV. STAT. § 644.051(4) (1986). A state permit is to be denied if it violates those standards. *Id.*

104. *Id.* § 644.041.

105. See MO. CODE REGS. tit. 10, § 20-7.015 (1989).

106. CWA § 306(b)(1), 33 U.S.C. § 1316(b)(1). The statutory categories include the most obvious major sources of industrial waste discharges. See CWA § 306(b)(1)(A), 33 U.S.C. § 1316(b)(1)(A).

107. CWA § 306(a)(1), 33 U.S.C. § 1316(a)(1).

108. Use of technology-based performance standards was approved in *American Meat Inst. v. EPA*, 526 F.2d 442, 453-54 (7th Cir. 1975).

are uniform within each category for both existing and new sources.¹⁰⁹ New sources must comply with those standards,¹¹⁰ but cannot be required to comply with more stringent standards for ten years after completion of the source.¹¹¹ National performance standards have been established by regulation for fifty industries.¹¹² Municipal sewage treatment are to employ secondary treatment technology.¹¹³ Waste discharge permits issued by Missouri under the Clean Water Law are subject to national performance standards.¹¹⁴

e. Toxic and Pretreatment Standards

A total of 879 industrial and municipal sources in the United States, including eighty-eight bleached kraft paper mills, have been identified as contributing significantly to toxic pollution of surface watercourses. The metal finishing, pulp and paper, and natural gas industries account for 45% of the 627 industrial sources. Of the 879 industrial and municipal sources, 240 are municipal sewage plants, mostly receiving industrial effluents, and twelve are federal facilities.¹¹⁵

The Clean Water Act requires EPA to establish treatment standards for treating designated toxic pollutants.¹¹⁶ The initial list of toxic pollutants originated in a Congressional report¹¹⁷ and was adopted by statute in 1977.¹¹⁸ The list has been adopted and expanded by regulation.¹¹⁹ The toxic treatment standards must apply the "best available technology economically achievable,"¹²⁰ and provide an

109. Such uniformity was upheld in *E.I. duPont de Nemours & Co. v. Train*, 430 U.S. 112, 120-21 (1977).

110. CWA § 306(e), 33 U.S.C. § 1316(e).

111. CWA § 306(d), 33 U.S.C. § 1316(d).

112. See 40 C.F.R. §§ 405-471 (1989). For a list of the industries subject to national performance standards, see *infra* Appendix.

113. See *supra* note 93.

114. MO. REV. STAT. § 644.051(4) (1986). A state permit is to be denied if it violates those standards. *Id.* See performance standards regulations at MO. CODE REGS. tit. 10, § 20-7.031 (1989), and sewage treatment works requirements regulations at MO. CODE REGS. tit. 10, § 20-8.020 (1989).

115. 19 Env't Rep. (BNA) 433 (June 16, 1989).

116. CWA § 307(a)(2), 33 U.S.C. § 1317(a)(2).

117. HOUSE COMM. ON PUBLIC WORKS & TRANSP., DATA RELATING TO H.R. 3199 (Clean Water Act of 1977), Table 1 (Comm. Print No. 95-30, 1977).

118. CWA § 307(a)(1), 33 U.S.C. § 1317(a)(1).

119. See 40 C.F.R. § 116 (1989).

120. Taking into account toxicity, persistence, degradability, usual or potential presence and importance of affected organisms in receiving waters, and

ample margin of safety.¹²¹ Toxic treatment standards must be complied with one to three years after promulgation by EPA.¹²² Effluent standards for toxic materials have been established by regulation.¹²³ Compliance must be achieved by June 13, 1992.¹²⁴

The Clean Water Act also requires EPA to establish pretreatment standards for pollutants introduced into publicly owned treatment facilities either if those facilities do not adequately treat those pollutants or if their operation would be interfered with by them. Those pollutants must be treated prior to introduction into the public treatment facilities.¹²⁵ States may adopt pretreatment standards not in conflict with the federal standards.¹²⁶ New sources are subject to these pretreatment standards.¹²⁷ Pretreatment standards have been established by regulation.¹²⁸

Waste discharge permits issued by Missouri under the Clean Water Law are subject to federal toxic and pretreatment standards.¹²⁹ Furthermore, the Clean Water Law requires the Clean Water Commission to adopt "reasonable" pretreatment and toxic material control regulations as required by the federal Clean Water Act.¹³⁰

f. Water Quality Standards

The first federal involvement in water pollution regulation was a requirement that states establish water quality standards for interstate waters.¹³¹ While water quality standards were abandoned as the primary basis for regulation in 1972, they provide benchmarks against which to measure the sufficiency and effectiveness of the other federal

extent of effective regulation under other programs. *Id.*, as defined by CWA §§ 301(b)(2)(A), 304(b)(2), 33 U.S.C. §§ 1311(b)(2)(A), 1314(b)(2).

121. CWA § 307(a)(4), 33 U.S.C. § 1317(a)(4).

122. CWA § 307(a)(6), 33 U.S.C. § 1317(a)(6).

123. *See* 40 C.F.R. § 129 (1989).

124. 19 *Env't Rep.* (BNA) 433 (June 16, 1989).

125. CWA § 307(b)(1), 33 U.S.C. § 1317(b)(1).

126. CWA § 307(b)(4), 33 U.S.C. § 1317(b)(4).

127. CWA § 307(c), 33 U.S.C. § 1317(c).

128. *See* 40 C.F.R. § 403 (1989).

129. MO. REV. STAT. § 644.051(4) (1986). A state permit is to be denied if it violates those standards. *Id.* Regulations are issued under MO. REV. STAT. § 644.026(16) (Supp. 1989).

130. MO. REV. STAT. § 644.041 (1986). The pretreatment regulations are at MO. CODE REGS. tit. 10, § 20-6.100 (1989).

131. Water Quality Act of 1965, § 5, Pub. L. No. 89-234, 79 Stat. 903, 908 (1965).

standards.¹³² Hence, states are still required to establish, maintain and review water quality standards under the Clean Water Act.¹³³ In establishing those water quality standards, the states determine both the water uses appropriate for each segment of each watercourse and the physical, chemical and biological characteristics appropriate for each category of water use.¹³⁴ The standard for appropriateness is protection of the public health or welfare, enhancing water quality, and promoting the purposes of the Act,¹³⁵ taking into consideration the use and value of watercourses for public water supplies, fish and wildlife propagation, recreational purposes, and agricultural, industrial and other purposes, and their use and value for navigation.¹³⁶ Water quality standards must be reviewed every three years and modified when appropriate.¹³⁷

Whenever discharges from point sources under established effluent limitations interfere with attainment of the water quality standards for a particular segment of a watercourse, the effluent limitations for those discharges must be made more stringent so that the water quality standards can be attained or maintained.¹³⁸ The severity of those water quality related effluent limitations can be modified if the discharger demonstrates that there is no reasonable relationship between the economic and social costs and the benefits to be obtained.¹³⁹ Nonetheless, the effluent limitations must represent the maximum degree of control within the economic capability of the discharger and will result in reasonable progress beyond the effluent limitations established under section 301.¹⁴⁰

States are required to identify those receiving waters where effluent limitations are insufficient to achieve the applicable water quality standards.¹⁴¹ When revisions to effluent limitations are considered, their cumulative pollution load must assure attainment of the water quality standards.¹⁴² If water quality standards are being achieved,

132. S. REP. NO. 414, 92d Cong., 1st Sess. 8 (1971); R. Beck & C. Goplerud, *supra* note 9, at 57; 1 F. GRAD, *supra* note 9, at § 3.03(1)(a, a-1).

133. CWA §§ 303(a), (c), 33 U.S.C. §§ 1313(a), (c).

134. 1 F. GRAD, *supra* note 9, at § 3.03(4)(j). For regulations, see 40 C.F.R. § 131 (1989).

135. CWA § 303(c)(2)(A), 33 U.S.C. § 1313(c)(2)(A).

136. *Id.*

137. CWA § 303(c), 33 U.S.C. § 1313(c).

138. CWA § 302(a), 33 U.S.C. § 1312(a).

139. CWA § 302(b)(2)(A), 33 U.S.C. § 1312(b)(2)(A).

140. CWA § 302(b)(2)(B), 33 U.S.C. § 1312(b)(2)(B). On § 302 effluent limitations, see *supra* notes 87-105 and accompanying text.

141. CWA § 303(d)(1-3), 33 U.S.C. § 1313(d)(1-3).

142. CWA § 303(d)(4)(A), 33 U.S.C. § 1313(d)(4)(A).

revisions to effluent limitations must be consistent with an antidegradation policy.¹⁴³

Waste discharge permits issued by Missouri under the Clean Water Law are subject to water quality standards.¹⁴⁴ Water quality standards have been established by regulation for all watercourses in Missouri.¹⁴⁵ Streams are classified for various uses, including irrigation, livestock and wildlife watering, warm-water aquatic habitat, cold-water sport fishery, whole-body contact recreation, drinking water supply, industrial process and cooling water, commercial fishery, and boating and canoeing.¹⁴⁶ Missouri usually prohibits any discharges into "losing streams"¹⁴⁷ and into designated wild and scenic rivers.¹⁴⁸

g. Difficulties With Use of Water Quality Standards

Two difficulties arise with the use of water quality standards as benchmarks for determining the success of the regulatory program and as a basis for tightening effluent limitations. First, the standards assume that the normal flows in the receiving waters will not be reduced. That is a false assumption, however, because consumptive diversions are occurring in many areas. Irrigation is by far the largest diversion. When the normal flows are reduced, the watercourses are less able to assimilate the same volume of treated effluent as before. There is no legal basis for preventing such additional diversions, since

143. CWA § 303(d)(4)(B), 33 U.S.C. § 1313(d)(4)(B).

144. MO. REV. STAT. § 644.051(4) (1986). A state permit is to be denied if it violates those standards. *Id.*

145. Water quality standards are issued under MO. REV. STAT. § 644.026(7) (Supp. 1989). For the various water quality standards, see MO. CODE REGS. tit. 10, § 20-7.031 (1989). This regulation includes water quality parameters for each use classification and a list of all stream segment classifications.

146. MO. CODE REGS. tit. 10, § 20-7.031 (1989). Streams designated for whole-body contact recreation, cold-water sport fishery, and drinking water supply, and urban protected streams are mapped in MO. DEP'T OF NAT. RESOURCES, MISSOURI WATER ATLAS 46-47 (1982).

147. MO. CODE REGS. tit. 10, § 20-7.015(4)(A) (1989). A "losing stream" is one where 30% or more of streamwater percolates into the groundwater supply. MO. CODE REGS. tit. 10, §§ 20-7.015(1)(A)-3, 20-7.031(1)(I) (1989). This is characteristic of some streams in the karst topography of the Ozarks.

148. MO. CODE REGS. tit. 10, § 20-7.015(5)(B)-(C) (1989).

Wild and scenic rivers in Missouri include portions of the Eleven Point River. 16 U.S.C. § 1274 (1988). Potential additions to the system include the entire Gasconade River. 16 U.S.C. § 1276 (1988). The Ozark National Riverway includes portions of the Current and Jacks Fork Rivers. 16 U.S.C. § 460m (1988).

there are no provisions in the Clean Water Act, in Missouri's Clean Water Law, or in any other state water pollution statute for preventing encroachment on the assumed normal flow. In many western states and those few eastern states with diversion permit statutes, however, the diversion regulatory agency has authority to designate a minimum protected flow which cannot be diverted. The volumes of those protected flows can take waste assimilation into account.¹⁴⁹

The second difficulty is even more important. Recent research indicates that nonpoint sources are the predominant sources (65% to 75%) of surface watercourse pollution today.¹⁵⁰ These are largely uncontrolled sources, made up of diffused material from erosion, animal, bird, and insect feces, fertilizer and pesticide residues in runoff, oil leaks, and the generalized debris of human and natural activities. Until technological methods are developed to trap those materials and the regulatory techniques to require their use are established, nonpoint source pollution will continue to prevent the achievement of water quality standards.

h. Thermal Discharges

In addition to quality degradation caused by the addition of polluting materials, water quality can be degraded by the addition of heat. As the temperature of water increases, its biological activity increases while its ability to dissolve oxygen decreases. Hence, heated water in a watercourse is less able to assimilate residual wastes. Common law cases indicate that thermal discharges present a problem.¹⁵¹

The Clean Water Act requires cooling of discharges whose heat would adversely affect the environment. "Pollutant" is defined as including heat.¹⁵² Hence, heat is subject to regulation under the sections of the Act relating to permitting,¹⁵³ effluent limitations,¹⁵⁴ national performance standards,¹⁵⁵ water quality standards,¹⁵⁶ and

149. On this topic generally, see Davis, *Protecting Waste Assimilation Streamflows by the Law of Water Allocation, Nuisance and Public Trust, and by Environmental Statutes*, 28 NAT. RESOURCES. J. 357 (1988).

150. See *infra* notes 280-300 and accompanying text.

151. See *Sandusky Portland Cement Co. v. Dixon Pure Ice Co.*, 221 F. 200 (7th Cir.), *cert. denied*, 238 U.S. 630 (1915).

152. CWA § 502(6), 33 U.S.C. § 1362(6).

153. CWA § 402, 33 U.S.C. § 1342.

154. CWA § 301, 33 U.S.C. § 1311.

155. CWA § 306, 33 U.S.C. § 1316.

156. CWA § 303, 33 U.S.C. § 1313.

water quality related effluent standards.¹⁵⁷ The effluent limitation for the thermal component of a discharge (taking its interaction with other pollutants into account) must "assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on" the receiving waters.¹⁵⁸ The "best technology available for minimizing adverse environmental impact" is required for cooling water intake structures.¹⁵⁹ More stringent thermal effluent limitations cannot be imposed for ten years after completion of cooling facilities.¹⁶⁰

The definitions of "pollution" and "water contaminant" under the Missouri Clean Water Law include a temperature component.¹⁶¹ Hence, thermal discharges can be regulated under all aspects of the Law, including permits, effluent limitations, and water quality standards.

i. Variances

The federal Clean Water Act discourages the use of variances or individualized consideration of waste discharge sources based on economic considerations. If a particular source cannot afford to meet the Act's treatment requirements, Congress prefers that source to go out of business.¹⁶² Hence, there is absolutely no variance procedure for the 1977 BPCT effluent limitations. Congress was willing, however, to allow modification of the 1989 BCCT and BACT levels of effluent limitations for economic reasons. Such modifications may be granted upon a showing that: (1) the modification represents "the maximum use of technology within the economic capability" of the operator of the source; and (2) that it "will result in reasonable further progress toward the elimination of the discharge."¹⁶³

Another type of variance is available. The national performance standards are based on common industrial technologies. If a particular industrial source is using a technology "fundamentally different" from the one on which the national performance standard is based, a variance is available to take into account the different mix of pollutants which it

157. CWA § 302, 33 U.S.C. § 1312.

158. CWA § 316(a), 33 U.S.C. § 1326(a). More stringent thermal effluent limitations can be relaxed to that standard. *Id.*

159. CWA § 316(b), 33 U.S.C. § 1326(b).

160. CWA § 316(c), 33 U.S.C. § 1326(c).

161. MO. REV. STAT. §§ 644.016(7), (12) (1986).

162. *EPA v. National Crushed Stone Ass'n*, 449 U.S. 64 (1980).

163. CWA § 301(c), 33 U.S.C. § 1311(c).

produces.¹⁶⁴ This variance amounts to an individually tailored effluent limitation.¹⁶⁵

Variances are not available for water quality standards applied to receiving waters. To allow such variances would be inconsistent with the prohibition against variances to BPCT effluent limitations.¹⁶⁶

The Missouri Clean Water Commission is authorized to grant variances which do not violate the requirements of the federal Clean Water Act.¹⁶⁷ The discharger must establish that compliance with the rule, regulation, standard, requirement, limitation, or order would result in "an arbitrary and unreasonable taking of property or in the practical closing and elimination of [a] lawful business, occupation or activity . . . without sufficient corresponding benefit or advantage to the people."¹⁶⁸ Nonetheless, a variance will not be granted where the effect of the variance would permit continuation of a condition "which may unreasonably cause or contribute to adverse health effects upon humans or upon fish or other aquatic life or upon game or other wildlife."¹⁶⁹ Also, the granting of a variance does not relieve the discharger of any liability imposed by the law of nuisance.¹⁷⁰

j. Monitoring, Record-Keeping, and Reporting

Waste discharge permits are subject to monitoring, record-keeping and reporting requirements. The federal Clean Water Act requires permittees to monitor the physical, chemical, and biological characteristics of their waste discharges and to maintain records.¹⁷¹ That information must be reported periodically to EPA.¹⁷² Furthermore, EPA officials may enter the discharger's premises to inspect those records, to inspect monitoring equipment, and to sample effluents.¹⁷³

Information received from permittees or acquired by entry and inspection may be used as a basis for enforcement action against them.¹⁷⁴ The United States Supreme Court has held that use of data

164. CWA § 301(n)(1), 33 U.S.C. § 1311(n)(1)(A).

165. *National Ass'n of Metal Finishers v. EPA*, 719 F.2d 624 (3d Cir. 1983) (dictum), *rev'd on other grounds sub nom. Chemical Mfrs. Ass'n v. National Resources Defense Council*, 470 U.S. 116 (1985).

166. *Appalachian Power Co. v. EPA*, 671 F.2d 801 (4th Cir. 1982).

167. MO. REV. STAT. § 644.061(1) (1986).

168. *Id.*

169. *Id.*

170. *Id.*

171. CWA § 308(a)(A), 33 U.S.C. § 1318(a)(A).

172. *Id.*

173. CWA § 308(a)(B), 33 U.S.C. § 1318(a)(B).

174. *See* CWA § 309, 33 U.S.C. § 1319, discussed *infra* notes 185-206 and

supplied by permittees in enforcement actions against them does not constitute self-incrimination under the Fifth Amendment.¹⁷⁵

The Missouri Clean Water Commission requires monitoring, record-keeping and reporting of waste discharges.¹⁷⁶ It has the power of entry and inspection.¹⁷⁷

k. Delegation to States

Under the dual federal-state regulatory scheme under the federal Clean Water Act, states may assume sole responsibility for regulating waste discharges if they adopt state regulatory programs which comply with the minimum policies and standards established by the Act.¹⁷⁸ Upon EPA approval of a state program, the federal permit program is suspended.¹⁷⁹

In order to assure that the state conducts its program in compliance with federal policies and standards, EPA retains two forms of oversight. It may veto the issuance of individual state waste discharge permits¹⁸⁰ or it may withdraw federal approval of the state program.¹⁸¹

Although the Clean Water Act itself does not regulate waste discharges into groundwater, a state must do so in order to obtain EPA approval of the state program.¹⁸² Missouri's Clean Water Law regu-

accompanying text.

175. *United States v. Ward*, 448 U.S. 242, 254 (1980).

176. MO. REV. STAT. § 644.026(23) (Supp. 1989). The self-monitoring regulations were rescinded May 12, 1983. See former MO. CODE REGS. tit. 10, § 20-6.050.

177. MO. REV. STAT. § 644.026(20) (Supp. 1989). If disclosure is not required by the federal Clean Water Act, a search warrant is required if the discharger objects to entry. *Id.*

178. CWA § 402(b), 33 U.S.C. § 1342(b). The state permit programs must (1) insure compliance with the Act's policies and requirements for effluent limitations, water quality related effluent limitations, national performance standards, and toxic standards, (2) require permits with a maximum term of 5 years, (3) have adequate enforcement powers, (4) require monitoring, record-keeping, and reporting, and provide for entry and inspection, (5) require public notice and provide for a public hearing on permit applications, (6) provide for notice of permit applications to EPA and to other affected states, (7) and provide for pretreatment standards. *Id.* For regulations, see 40 C.F.R. § 123.1-123.30 (1989).

179. CWA § 402(c)(1), 33 U.S.C. § 1342(c)(1).

180. CWA § 402(d)(2), 33 U.S.C. § 1342(d)(2). This federal veto power is acknowledged in Missouri by MO. CODE REGS. tit. 10, § 20-6.010(9)(B) (1989).

181. CWA § 402(c)(3), 33 U.S.C. § 1342(c)(3).

182. CWA § 402(b)(1)(D), 33 U.S.C. § 1342(b)(1)(D).

lates groundwater,¹⁸³ and has been approved by the EPA.¹⁸⁴ Hence, EPA does not administer a federal permit program in Missouri.

l. Enforcement

Enforcement of provisions of the federal Clean Water Act and its regulations and permit requirements is done through compliance orders,¹⁸⁵ civil injunctions,¹⁸⁶ civil penalties,¹⁸⁷ and criminal fines and imprisonment.¹⁸⁸ EPA can bring enforcement actions for wholly past violations, as well as for present violations.¹⁸⁹ EPA's decision whether to pursue enforcement is discretionary, not mandatory.¹⁹⁰

Defenses to enforcement actions are limited. Sovereign immunity is not a defense for either the federal government, states, or municipalities. The federal government and its agencies expressly are subject to federal and state regulation.¹⁹¹ States and municipalities are not immune from federal enforcement actions because the Act expressly applies to them.¹⁹² Responsible corporate officers and state officials

183. MO. REV. STAT. § 644.016(15) (1986).

184. See *supra* note 23.

185. CWA § 309(a)(1), 33 U.S.C. § 1319(a)(1).

186. CWA § 309(b), 33 U.S.C. § 1319(b).

187. CWA §§ 309(d), (f), 33 U.S.C. §§ 1319(d), (f). Penalties range up to \$25,000 per day. They can be imposed administratively in amounts up to \$10,000 per day with cumulative maximums of \$25,000 or \$125,000 depending on the seriousness of the violation. Amounts in excess of those limits can be obtained only by civil suit.

188. CWA § 309(c), 33 U.S.C. § 1319(c). Criminal sanctions for negligent violations ranges from \$2,500 to \$25,000 per day and/or up to one year's imprisonment. Sanctions for knowing violations range from \$5,000 to \$50,000 per day (\$100,000 for a second violation) and/or up to 3 years' imprisonment (six years for a second violation). Conviction of a knowing endangerment of imminent danger of death or serious bodily injury can increase the sanctions to \$250,000 and/or 15 years' imprisonment for an individual and \$1,000,000 for an organization (double for a second violation). *Id.*

189. *United States v. Earth Sciences, Inc.*, 599 F.2d 368 (10th Cir. 1979).

190. *Dubois v. EPA*, 820 F.2d 943, 951 (8th Cir. 1987).

191. CWA § 313(a), 33 U.S.C. § 1323(a) (reversing the ruling in *EPA v. California ex rel. State Water Resources Control Bd.*, 426 U.S. 200 (1976)).

192. Enforcement actions may be brought against "any person in violation." CWA § 309(a)-(c), 33 U.S.C. § 1319(a)-(c). "Person" is defined as including a state. CWA § 502(5), 33 U.S.C. § 1362(5). This interpretation was upheld for the identical definitions applicable to the citizen suit provision in *CERCLA* (42 U.S.C. § 9659) in *Pennsylvania v. Union Gas Co.*, 109 S. Ct. 2273 (1989). See *infra* note 521.

are individually liable under the Act.¹⁹³ Federal officers are, however, immune from individual liability.¹⁹⁴ Although the Act is not clear whether the "upset defense" (activities beyond the control of the permittee) is viable, regulations disallowing that defense were rejected on review.¹⁹⁵ Lack of federal grant funds for construction of municipal treatment facilities is not a defense.¹⁹⁶ States expressly are made liable for municipal violations resulting from state actions preventing municipal compliance.¹⁹⁷ Impossibility is not a defense.¹⁹⁸

EPA also is given emergency response powers to deal with spills. When there is an "imminent and substantial endangerment to the health of persons," EPA may bring an action seeking immediate cessation of the polluting activity.¹⁹⁹

The Missouri Clean Water Law contains similar enforcement powers, including compliance orders,²⁰⁰ civil injunctions and penalties,²⁰¹ and criminal fines and imprisonment.²⁰² Intent, knowledge, willfulness, or negligence are not elements of liability, since the sanctions under the Clean Water Law are *malum prohibitum*.²⁰³ Civil and criminal relief are subject to the Act of God defense.²⁰⁴ In addition, the state may recover actual damages, including the costs of

193. CWA § 309(c)(6), 33 U.S.C. § 1319(c)(6). State officials are not immunized by the state's sovereign immunity. *Pennsylvania Environmental Defense Found. v. Mazurkiewicz*, 712 F. Supp. 1184, 1189 (M.D. Pa. 1989).

194. CWA § 313(a), 33 U.S.C. § 1323(a).

195. *Natural Resources Defense Council v. EPA*, 859 F.2d 156, 210 (D.C. Cir. 1988).

196. *Township of Franklin Sewerage Authority v. Middlesex County Util. Auth.*, 787 F.2d 117, 121 (3d Cir. 1986); *United States v. City of Detroit*, 720 F.2d 443, 450 (6th Cir. 1983); *State Water Control Bd. v. Train*, 559 F.2d 921, 926-27 (4th Cir. 1977).

197. CWA § 309(e), 33 U.S.C. § 1319(e).

198. *United States v. City of Hoboken*, 675 F. Supp. 189, 198-99 (D.N.J. 1987).

199. CWA § 504, 33 U.S.C. § 1364.

200. *Mo. Rev. Stat. § 644.056(3)* (1986). Compliance orders were enforced in *Scheble v. Missouri Clean Water Comm'n*, 734 S.W.2d 541, 559-69 (Mo. Ct. App. 1987); *Hammack v. Missouri Clean Water Comm'n*, 659 S.W.2d 595, 600 (Mo. Ct. App. 1983).

201. *Mo. Rev. Stat. § 644.076(1)* (1986). Penalties can range up to \$10,000 per day.

202. *Id.* § 644.076(3). Sanctions can range from \$2,500 to \$25,000 per day and/or one year's imprisonment (double for second violations).

203. *State ex rel. Ashcroft v. Mathias*, 616 S.W.2d 882, 885 (Mo. Ct. App. 1981).

204. *State ex rel. Ashcroft v. Church*, 664 S.W.2d 586, 589 (Mo. Ct. App. 1984).

restoring the receiving waters to their prior condition.²⁰⁵ No state or local government contract may be awarded to a discharger who has failed to obtain a permit or is in contempt of a court order enforcing the Clean Water Law.²⁰⁶

m. Preservation of Common Law Rights

The federal Clean Water Act expressly preserves rights for relief against water pollution created by the common law or by statute.²⁰⁷ The Missouri Clean Water Law also has a provision preserving common law rights, which expressly preserves the right to suppress nuisances.²⁰⁸ *State ex rel. Dresser v. Ruddy*²⁰⁹ holds that even the State retains the right to abate nuisances and that its remedies are not limited to those provided in the Clean Water Law. *Curd v. Missouri Clean Water Comm'n*²¹⁰ holds that the Clean Water Commission has no power to determine whether riparian rights have been violated by a discharge of treated effluent.

n. Citizen Suit Provision

The Clean Water Act contains a typical federal citizen suit provision. Any person may bring suit against the federal government, state government, any governmental agency or waste discharger for violation of an effluent standard, limitation, or administrative order.²¹¹ A citizen suit may be filed either by an individual,²¹² by a collective group,²¹³ or by a state.²¹⁴ A suit may be brought against the federal

205. MO. REV. STAT. § 644.096 (1986).

206. *Id.* § 644.091.

207. CWA § 505(e), 33 U.S.C. § 1365(e).

208. MO. REV. STAT. § 644.131 (1986).

209. 592 S.W.2d 789, 273 (Mo. 1980) (en banc).

210. 586 S.W.2d 58, 60 (Mo. Ct. App. 1979).

211. CWA § 505(a)(1), 33 U.S.C. § 1365(a)(1).

212. A "citizen" is "a person . . . having an interest which is or may be adversely affected." CWA § 505(g), 33 U.S.C. § 1365(g). A "person" is "an individual, corporation, partnership, association, State, municipality, commission, or political subdivision of a State, or any interstate body." CWA § 502(5), 33 U.S.C. § 1362(5). The nature of the "interest" appears to be coincidental to the definition adopted by the Supreme Court in *Sierra Club v. Morton*, 405 U.S. 727 (1972). *Middlesex County Sewerage Auth. v. National Sea Clammers, Inc.*, 453 U.S. 1 (1981).

213. Provided it can show that some of its members are adversely affected. *Chesapeake Bay Found. v. American Recovery Co.*, 769 F.2d 207, 209 (4th Cir. 1985); *Friends of the Earth v. Consolidated Rail Corp.*, 768 F.2d 57, 60 (2d Cir.

or state government for failure to perform a nondiscretionary act under the Clean Water Act.²¹⁵ Citizen suits against states, however, are expressly subject to whatever immunity the states may enjoy under the eleventh amendment.²¹⁶

Before a citizen suit may be filed, sixty days' notice must be given to EPA, the state agency and the violator.²¹⁷ The suit may not proceed if EPA or the state agency has initiated an enforcement lawsuit by the end of the sixty-day notice period,²¹⁸ but administrative actions short of a suit are insufficient to forestall a citizen suit.²¹⁹ In 1989, EPA proposed rules for the filing of citizen suit complaints and proposed consent decrees.²²⁰ The federal generic five-year statute of limitations apparently applies to the filing of citizen suits.²²¹

1985); RITE—Research Improves Env't, Inc. v. Costle, 650 F.2d 1312, 1319 (11th Cir. 1981); Montgomery Env'tl. Coalition v. Costle, 646 F.2d 568, 578 (D.C. Cir. 1980).

214. "Citizen" includes a state. *Massachusetts v. United States Veterans Admin.*, 541 F.2d 119, 121 (1st Cir. 1976). See CWA §§ 505(g), 502(5), 33 U.S.C. §§ 1365(g), 1362(5), described *supra* note 212.

215. CWA § 505(a)(2), 33 U.S.C. § 1365(a)(2). Performance of discretionary activities, such as investigations and initiation of enforcement actions, cannot be compelled under the citizen suit provision; the courts lack jurisdiction to hear such citizen suits. *Dubois v. EPA*, 820 F.2d 943, 951 (8th Cir. 1987); *Sierra Club v. Train*, 557 F.2d 485, 491 (5th Cir. 1977).

Civil penalties can be collected from the federal government in citizen suits. *Sierra Club v. Interior Dep't*, 30 Env't Rep. Cas. (BNA) 1841 (D. Colo. 1990), relying on CWA § 313(a), 33 U.S.C. § 1323(a).

216. CWA § 505(a)(1), 33 U.S.C. § 1365(a)(1). See U.S. CONST. amend. XI. But state officials responsible for violations are not immune. *Pennsylvania Environmental Defense Found. v. Mazurkiewicz*, 712 F. Supp. 1184, 1190 (M.D. Pa. 1989).

217. CWA § 505(b)(1)(A), 33 U.S.C. § 1365(b)(1)(A). For regulations on the giving of the 60 days notice, see 40 C.F.R. § 135.11 (1989).

218. CWA § 505(b)(1)(B), 33 U.S.C. § 1365(b)(1)(B).

219. Initiation of administrative investigations, proceedings or negotiations are insufficient to bar the citizen suit. *Friends of the Earth v. Consolidated Rail Corp.*, 768 F.2d 57 (2d Cir. 1985) (state administrative enforcement action); *Proffitt v. Commissioners, Township of Bristol*, 754 F.2d 504 (3d Cir. 1985) (EPA compliance order); *Northwest Env'tl. Defense Center v. Unified Sewerage Agency*, 30 Env't Rep. Cas. (BNA) 1117 (D. Or. 1989); *SPIRG v. Tenneco Polymers*, 602 F. Supp. 1394, 22 Env't Rep. Cas. 1327 (D.N.J. 1985) (EPA investigatory proceedings).

220. 54 Fed. Reg. 36,020 (1989).

221. The Ninth Circuit has held that the five-year statute of limitations in 28 U.S.C. § 2462 applies and that it is tolled when the 60-day notice is filed. *Sierra Club v. Chevron U.S.A., Inc.*, 834 F.2d 1517 (9th Cir. 1987). See also *Public Interest Research Group of N.J., Inc. v. Powell Duffryn Terminals*, 59

The citizen suit provision also provides for rights of intervention. EPA may intervene as a matter of right in citizen suits brought to enforce a national performance standard, an effluent limitation in a permit, or an order respecting a standard or limitation.²²² Citizens, including environmental groups, may intervene in suits by EPA against violators.²²³ Although they have no status as class representatives, citizens as individuals may intervene for the purpose of commenting on any future proposed consent decree or modification because they have an interest in proper remedial action.²²⁴

The Missouri Clean Water Law does not contain a citizen suit provision. Therefore, there is no basis for a citizen suit under Missouri law.²²⁵

(A) *Gwaltney* Decision

Most federal citizen suits are for injunctive relief against continued violations of the Clean Water Act or regulations or permits under it. In recent years, however, several citizen suits have been brought to recover civil penalties. There is no doubt that citizen suits can be brought to recover penalties for violations occurring at the time of the lawsuit.²²⁶ It was unclear for a time whether penalties for past violations could be recovered. Two circuit courts of appeals concluded that penalties could not be recovered for past violations.²²⁷ Then, another circuit court held that they could be recovered.²²⁸ Thereafter, still another circuit court held that penalties could be recovered for past violations if their

U.S.L.W. 2146 (3d Cir. Aug. 20, 1990)(No. 89-5831).

222. CWA § 505(c), 33 U.S.C. § 1365(c).

223. CWA § 505(b)(1)(B), 33 U.S.C. § 1365(b)(1)(B); *United States v. Metropolitan St. Louis Sewer Dist.*, 883 F.2d 54 (1989).

224. *United States v. Ashland Oil, Inc.*, 30 Env't Rep. Cas. (BNA) 1439 (W.D. Pa. 1989); *Proffitt v. Morrisville Mun. Auth.*, 716 F. Supp. 837 (E.D. Pa. 1989).

225. *But see infra* text accompanying notes 241-42 for a discussion of federal citizen suits against violators of the state act.

226. CWA § 505(a)(1), 33 U.S.C. § 1365(a)(1).

227. *City of Evansville v. Kentucky Liquid Recycling, Inc.*, 604 F.2d 1008 (7th Cir. 1979), *cert. denied*, 444 U.S. 1025 (1980); *Hamker v. Diamond Shamrock Chem. Co.*, 756 F.2d 392 (5th Cir. 1985). The latter court reached the same conclusion in a later case. *Sierra Club v. Shell Oil Co.*, 817 F.2d 1169 (5th Cir.), *cert. denied*, 484 U.S. 895 (1987).

228. *Chesapeake Bay Found., Inc. v. Gwaltney of Smithfield, Ltd.*, 791 F.2d 304 (4th Cir. 1986), *vacated*, 484 U.S. 49 (1987).

pattern was intermittent and could be expected to occur again in the future.²²⁹

To resolve the conflict between the circuits, the United States Supreme Court recently held in *Gwaltney of Smithfield, Ltd. v. Chesapeake Bay Foundation, Inc.*²³⁰ that citizen suits must be based on ongoing violations. The purpose of the citizen suit provision is forward-looking, to supplement government enforcement of the Act. The sixty-day notice prerequisite to a citizen suit was intended to give potential defendants an opportunity to comply with the Act and to render suit unnecessary.²³¹ That role would be undermined if citizens could bring suit even if violators complied with the Act upon receiving the sixty days' notice; it could even interfere with agreements for compliance negotiated by EPA.²³² Furthermore, the legislative history suggests that citizen suits should not be available for wholly past violations.²³³

Nonetheless, the Court reasoned that the statutory language did not require a citizen plaintiff to prove the existence of an ongoing violation as part of its pleading, but that a good faith allegation of an ongoing violation would be sufficient to confer jurisdiction on the federal courts.²³⁴ The citizen suit provision requires merely that the defendant be "*alleged to be in violation*" of an effluent standard or limitation in a discharge permit.²³⁵ Instead, plaintiff must prove the allegation if defendant asserts that the allegation is not true.²³⁶ Although the defendant apparently had stopped violating its discharge permit two months before the citizen suit was filed, the court below had not determined whether plaintiff had made a good faith allegation on an ongoing violation. Therefore, the Court remanded the case.

Gwaltney is causing some confusion because it is not clear whether it suggests an alteration in the prior learning on the requirements for standing in federal court. The majority opinion holds that a plaintiff need only allege ongoing violations in order to have standing.²³⁷ The dissent asserts that by that reasoning the case must proceed to the

229. *Pawtuxet Cove Marina, Inc. v. Ciba-Geigy Corp.*, 807 F.2d 1089 (1st Cir. 1986), *cert. denied*, 484 U.S. 975 (1987).

230. 484 U.S. 49 (1987).

231. *Gwaltney*, 484 U.S. at 60.

232. *Id.* at 60-61.

233. *Id.* at 62-64.

234. *Id.* at 64-65.

235. *Id.* at 65 (quoting CWA § 505(a)(1), 33 U.S.C. § 1365(a)(1) (emphasis added)).

236. *Id.* at 66.

237. *Id.* at 67.

merits regardless of whether the allegation is in fact true.²³⁸ But the concluding remarks of the majority opinion imply that if defendant can show that there was no ongoing violation, then he is entitled to summary judgment.²³⁹ If that is a correct interpretation of the majority opinion, *Gwaltney* does not alter the current understanding about standing. *Gwaltney* does decide definitively that a citizen suit cannot be brought to recover civil penalties for wholly past violations.

On review of the remanded case, the court of appeals held that although the discharger had come into compliance at about the time of the filing of the suit, the correct time for determining whether there was a likelihood of continued violations was at the time of the suit, and that jurisdiction could not be rendered moot later by a period of nonviolation.²⁴⁰

(B) Application of Citizen Suit Provision to Violators of State Act

Although the Missouri Clean Water Law does not contain a citizen suit provision, that does not mean that waste dischargers in Missouri are immune from citizen suits. The federal citizen suit provision expressly provides for suits for violations both of federal effluent standards and limitations and of EPA and state orders involving such standards and limitations.²⁴¹ Since state permits must incorporate federal effluent standards and limitations as minimums, their violation can trigger a citizen suit under the Clean Water Act. Federal approval of and deferral to a state regulatory program does not abrogate federal citizen suit authority.²⁴² Only if the discharger is violating a Missouri standard or limitation which is more stringent than the federal one, but not the federal standard or limitation itself, will he be immune from a federal citizen suit.

o. Act Does Not Create Any Private Right of Action

Violations of the federal Clean Water Act do not constitute *prima facie* violations of the common law rights of downstream riparians or landowners; those rights must be established under common law

238. *Id.* at 67-70.

239. *Id.* at 66-67.

240. *Chesapeake Bay Found., Inc. v. Gwaltney of Smithfield, Ltd.*, 890 F.2d 690 (4th Cir. 1989).

241. CWA § 505(a)(1), 33 U.S.C. § 1365(a)(1).

242. *Cf. Lutz v. Chromatex, Inc.*, 718 F.Supp. 413 (M.D. Pa. 1989) (SWDA citizen suit).

principles. Nor does the citizen suit provision create a private right to monetary damages.²⁴³

p. Spills and Accidental Releases

The federal Clean Water Act prohibits the discharge of oil and other hazardous substances into watercourses subject to the Act²⁴⁴ and declares them to be an imminent and substantial danger to public health or welfare.²⁴⁵ As soon as a person in charge of a vessel, on-shore facility, or offshore facility becomes aware of a discharge of oil or a listed hazardous substance, he is required to notify EPA or the state agency "immediately."²⁴⁶ If EPA acts to clean up the spill and to mitigate its effects, it may bring suit to recover the costs of those actions.²⁴⁷ In addition, EPA may recover civil penalties.²⁴⁸

Although Missouri initially accepted responsibility for dealing with spills of oil and hazardous materials in 1974, it relinquished that responsibility to EPA in 1975²⁴⁹ and no longer deals with them. The

243. *Middlesex County Sewerage Auth. v. National Sea Clammers Ass'n*, 453 U.S. 1 (1981); *City of Evansville v. Kentucky Liquid Recycling, Inc.*, 604 F.2d 1008 (7th Cir. 1979), *cert. denied*, 444 U.S. 1025 (1980).

244. CWA § 311(b)(1), 33 U.S.C. § 1321(b)(1). "Oil" is defined as including "petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil." CWA § 311(a)(1), 33 U.S.C. § 1321(a)(1). EPA has prepared a list of substances and their quantities designated as hazardous. See CWA §§ 311(b)(1)(A), (b)(4), 33 U.S.C. §§ 1321(b)(1)(A), (b)(4). On section 311 generally, see 3 LAW OF HAZARDOUS WASTE § 15.02 (S. Cooke ed. 1987-89).

245. CWA § 311(b)(2)(A), 33 U.S.C. § 1321(b)(2)(A). Section 311 does not apply to continuous or intermittent discharges from a permitted point source, which are dealt with under § 319. CWA § 311(a)(2)(C), 33 U.S.C. § 1321(a)(2)(C).

246. CWA § 311(b)(5), 33 U.S.C. § 1321(b)(5); *United States v. Messer Oil Corp.*, 391 F. Supp. 557 (D. Pa. 1975). The courts have held that imposing enforcement sanctions based on such notification does not violate the self-incrimination provision of the fifth amendment. *United States v. Texas Pipe Line Co.*, 528 F. Supp. 728 (W.D. Okla. 1978), *aff'd*, 611 F.2d 345 (10th Cir. 1979). For regulations, see 40 C.F.R. § 110.10 (1989).

247. CWA § 311(b)(6)(C), 33 U.S.C. § 1321(b)(6)(C).

248. Not to exceed \$50,000 (or \$250,000 if the spill were the result of willful negligence or willful misconduct). CWA § 311(b)(6)(B), 33 U.S.C. § 1321(b)(6)(B). EPA cannot recover civil penalties under both § 311 and § 319. CWA § 311(b)(6)(E), 33 U.S.C. § 1321(b)(6)(E). For regulations, see 40 C.F.R. §§ 113-114 (1989).

249. The spill notification regulations were rescinded in 1980.

statutory authority to deal with spills is provided in the Clean Water Law.²⁵⁰

3. Refuse Act of 1899

The Rivers & Harbors Act of 1899²⁵¹ originally was enacted to regulate obstructions to navigation. During most of the 19th century, Congress had enacted special acts authorizing specific obstructions, such as bridges and dams. In 1890, the first general legislation was enacted. It established the Corps of Engineers obstruction permit system. The 1899 Act reenacted and elaborated on that 1890 legislation, but a portion of the Act later developed important pollution control functions.

a. Provisions of the Act

Two sections of the Rivers & Harbors Act have come to be known as the Refuse Act of 1899.²⁵² Section 13²⁵³ prohibits the dumping or discharging of any refuse into a navigable water of the United States, unless the discharger holds a permit.²⁵⁴ Liquid wastes from streets and sewers are excepted.²⁵⁵

Section 17²⁵⁶ provides for enforcement fines. Violation of the act is a misdemeanor. Penalties are fines between \$500 to \$2500 a day and potential imprisonment from thirty days to one year. Like the Clean Water Act, the Refuse Act is a strict liability statute; it imposes liability regardless of intent or knowledge.²⁵⁷ Due care and compliance with industry standards or practices is not a defense.²⁵⁸ Furthermore,

250. Such spills are unlawful under MO. REV. STAT. § 644.076 (1986). Recovery of cleanup costs is authorized by MO. REV. STAT. § 644.096 (1986). Sanctions are provided in MO. REV. STAT. § 644.076-3 (1986).

251. Rivers & Harbors Act of 1899, 30 Stat. 1112 (codified as amended at 33 U.S.C. §§ 401-16). On the Refuse Act generally, see R. Beck & C. Goplerud, *supra* note 9, at 33-36; 1 F. GRAD, *supra* note 9, § 3.03(1)(b); 2 W. RODGERS, *supra* note 9, § 4.11; 1 D. STEVER, *supra* note 9, § 6.10(1).

252. CWA §§ 13, 17, 33 U.S.C. §§ 407, 411.

253. 33 U.S.C. § 411.

254. An NPDES permit under the Clean Water Act is such a permit.

255. 33 U.S.C. § 411; *United States v. Republic Steel Corp.*, 362 U.S. 482 (1960).

256. 33 U.S.C. § 417.

257. *United States v. United States Steel Corp.*, 328 F. Supp. 354 (N.D. Ind. 1970), *aff'd* 482 F.2d 439 (7th Cir.), *cert. denied*, 414 U.S. 909 (1973).

258. *United States v. White Fuel Corp.*, 498 F.2d 619 (1st Cir. 1974).

injunctions and other equitable remedies are available to enforce the Act's prohibition.²⁵⁹

b. Application of the Act to Waste Discharges

The Refuse Act became important as an important pollution control statute as a result of some cases decided in the 1960's. The Supreme Court held in *United States v. Republic Steel Corp.*,²⁶⁰ that the term "liquid wastes" means municipal sewage only, not other liquid wastes. This meant that suspended solids are not exempted from regulation under the Act. The reason is that suspended solids can settle out and block navigable channels. Later, in *United States v. Standard Oil Co.*,²⁶¹ the Court held that even commercially valuable products become refuse if they accidentally escape from control. It held that aviation gasoline is refuse once it is floating on a navigable water, and because it poses a fire hazard. Finally, in *United States v. Esso Standard Oil Co.*,²⁶² a Court of Appeals held that even indirect deposits which flow by gravity into navigable waters are refuse. Oil spilled on the ground at an oil terminal became refuse when it migrated to the harbor.

In 1970, the Nixon Administration discovered that this line of precedent enabled it to establish a waste discharge permit system by regulation. As one of its first responses to the environmental movement after Earth Day 1970, the Administration directed the Corps of Engineers to establish a joint permit program with EPA.²⁶³ In April 1971, the Corps promulgated its permit system.²⁶⁴ It required permits for all industrial waste discharges into traditional navigable waters and their tributaries where the navigable capacity of the mainstream would be affected. The permits would have a five year term, require self-monitoring and periodic reporting, and authorize inspection. In effect, the Corps designed the major parameters of the permit system later created under the Clean Water Act.

Many environmentalists applauded that initiative. Some thought, however, that it would grant a license to pollute, because they feared that the Corps of Engineers would be too accommodating to waste dischargers. They attached to the Corps their attitude about its water

259. *United States v. Consolidation Coal Co.*, 354 F. Supp. 173 (N.D.W. Va. 1973).

260. 362 U.S. 482 (1960).

261. 384 U.S. 224 (1966).

262. 375 F.2d 621 (2d Cir. 1967).

263. Exec. Order No. 11574, 35 Fed. Reg. 19,627 (1970).

264. Former 33 C.F.R. §§ 209.131 (1972); 36 Fed. Reg. 6564, 13,835 (1971).

facility construction programs, although the facts suggest that the Corps was planning to mount a vigorous cleanup program. Two of them filed a lawsuit alleging that the Corps waste discharge permit program could not be implemented unless Environmental Impact Statements were prepared and filed²⁶⁵ on the regulations themselves and for each and every one of the 23,000 odd permit applications filed. The federal district court reluctantly agreed in *Kalur v. Resor*.²⁶⁶ That decision created an insurmountable administrative burden and destroyed the permit program.

Congress was appalled by *Kalur*. It responded by enacting the statutory permit program embodied in the Clean Water Act. It adopted the major features of the Corps permit program, extended it to municipal discharges, extended it to all waters, exempted permits for existing sources from NEPA requirements, and transferred the program to EPA.²⁶⁷

*c. Jurisdiction Extends
Only to "Navigable Waters"*

Because the Refuse Act is a part of the Rivers & Harbors Act of 1899, the jurisdiction of the Refuse Act extends only to those waters which traditionally have been subject to the jurisdiction of the Corps of Engineers. Those waters are "navigable waters of the United States."²⁶⁸ They consist of waters which (1) are presently used as an interstate highway of commerce by commercial vessels,²⁶⁹ (2) have been so used in the past,²⁷⁰ or (3) are susceptible to such use in the future with reasonable improvements.²⁷¹ Jurisdiction extends also to

265. Under National Environmental Policy Act of 1969, § 102(C), 42 U.S.C. § 4332(C).

266. 335 F. Supp. 1 (D.D.C. 1971).

267. That 1972 legislation was called the Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (1972). It replaced the entire prior legislation, except the section establishing the short name of the act.

268. *United States v. Stoeco Homes, Inc.*, 498 F.2d 597 (3d Cir. 1974), *cert. denied*, 420 U.S. 927 (1975); *United States v. Sunset Coves, Inc.*, 3 Env'tl. L. Rep. (Env'tl. L. Inst.) 20,370 (D. Ore.), *aff'd in part*, 514 F.2d 1089 (9th Cir.), *cert. denied*, 423 U.S. 865 (1975); see W. RODGERS, *supra* note 9, § 4.11(C).

For jurisdictional regulations, see 33 C.F.R. §§ 329.11-.12 (1989).

269. *See, e.g.*, *The Daniel Ball*, 77 U.S. (10 Wall.) 557, 563 (1870).

270. *See, e.g.*, *Economy Light & Power Co. v. United States*, 256 U.S. 113, 123-24 (1921).

271. *See, e.g.*, *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 404-410 (1940).

tributaries where the waste discharge might flow into a navigable water.²⁷² The Clean Water Act jurisdiction cases indicate that this is a smaller set of waters than are subject to the Clean Water Act.²⁷³

d. Relation to Clean Water Act

Since 1972, EPA and the Corps have followed a policy of using the Refuse Act to prosecute single-instance waste discharges, whether accidental or deliberate, and using the Clean Water Act for dealing with continuous discharges and violations of permits.²⁷⁴ Permits no longer are available under the Refuse Act, except for fill materials.²⁷⁵ Refuse entering a navigable water from a nonpoint source is subject to the Refuse Act prohibition.²⁷⁶

e. Bounty Provision

One half the fine collected must be paid to the person(s) giving information leading to the conviction.²⁷⁷

f. No Private Right of Action

Under the common law, private parties have a cause of action to collect a fine, penalty or forfeiture in the name of the sovereign if the statute provides that the informer may keep part of that fine. It is called a *qui tam* action. While they may exist under other federal statutes, the federal courts have determined that *qui tam* actions do not

272. *United States v. American Cyanamid Co.*, 480 F.2d 1132, 1133 (2d Cir. 1973); *see United States v. Rio Grande Irrigation Co.*, 174 U.S. 690, 708-10 (1899).

273. *United States v. Ashland Oil & Transp. Co.*, 504 F.2d 1317, 1325 (6th Cir. 1974).

274. F. GRAD, *supra* note 9, § 3.03(1)(b); W. RODGERS, *supra* note 9, § 4.11(G).

275. CWA §§ 402(a)(5), 511(b), 33 U.S.C. §§ 1342(a)(5), 1371(b); CWA §511(a), 33 U.S.C. §1371(a).

276. *United States v. Pennsylvania Indus. Chem. Corp.*, 411 U.S. 655, 669-70 (1973); W. RODGERS, *supra* note 9, § 4.11(G).

277. § 17, 33 U.S.C. § 411 (1982); *Miller v. United States*, 455 F.2d 833, 836 (4th Cir. 1971).

exist under the Refuse Act of 1899.²⁷⁸ Furthermore, the Act does not create any private right of action on general principles.²⁷⁹

4. Regulation of Nonpoint Sources

From its inception, the federal Clean Water Act has required states to conduct planning studies which include methods for dealing with nonpoint sources of pollution.²⁸⁰ After 15 years of study, Congress concluded that techniques for controlling nonpoint sources of pollution had developed sufficiently to enable establishment of a regulatory program. Also, it had become clear that nonpoint sources constitute a much larger proportion of surface watercourse pollution than had originally been believed. An EPA report concludes that 76% of pollution in lakes and 65% in rivers is derived from nonpoint sources.²⁸¹ Of 17,000 heavily polluted water bodies in the United States, only 595 were polluted primarily by point sources.²⁸² In Missouri, 9,377 miles of watercourses are polluted from nonpoint sources, over 99% of the state's nonattainment waters; the bulk of those watercourses are contaminated with erosion from agricultural lands and construction sites.²⁸³ Control of nonpoint sources of pollution potentially should have a significant effect on groundwater quality, because the portion of diffused pollution sources that does not reach a surface watercourse contributes to groundwater contamination by percolation. The Water Quality Act of

278. *City of Evansville v. Kentucky Liquid Recycling, Inc.*, 604 F.2d 1008 (7th Cir. 1979), *cert. denied*, 444 U.S. 1025 (1980); *Connecticut Action Now, Inc. v. Roberts Plating Co.*, 457 F.2d 81 (2d Cir. 1972); *Bass Angler Sportsman Soc'y v. United States*, 447 F.2d 1304 (5th Cir. 1971), *affd per curiam*, 324 F. Supp. 412 (N.D., M.D. & S.D. Ala. 1971).

279. *Sierra Club v. United States Corps of Eng'rs*, 701 F.2d 1011 1033-34 (2d Cir. 1983) (Westways fill permit). A private right of action exists if (1) plaintiff is a member of the class for whose special benefit the statute was enacted, (2) there is legislative intent to create a private remedy (or least, not to deny it), (3) the private remedy is consistent with the statutory scheme, and (4) there is not a traditional state law right of action. *Id.* (citing *California v. Sierra Club*, 451 U.S. 287, 293 (1981); *Cort v. Ash*, 422 U.S. 66, 78 (1975)).

280. CWA § 208(b)(2)(F), 33 U.S.C. § 1288(b)(2)(F).

281. EPA Proposes Non-point Pollution Strategy, Seeks State, Local Assistance for New Plan, 19 Env't Rep. (BNA) 1280 (Nov. 4, 1988) (citing ENVIRONMENTAL PROTECTION AGENCY, NON-POINT SOURCES: AGENDA FOR THE FUTURE (1988)).

282. NRDC Offers Solution to "Poison Runoff," Calls It Leading Source of Water Pollution, 20 Env't Rep. (BNA) 569 (July 21, 1989) (citing NATURAL RESOURCES DEFENSE COUNCIL, POISON RUNOFF: A GUIDE TO STATE AND LOCAL CONTROL OF NONPOINT SOURCE WATER POLLUTION (1989)).

283. *See supra* note 7.

1987 enacted a new regulatory program for nonpoint sources of pollution of surface watercourses and for stormwater runoff.²⁸⁴

a. Nonpoint Sources

The Water Quality Act of 1987 requires states to identify nonpoint sources and categories of sources which require regulation in order to achieve water quality standards, to identify best management practices, to prepare management programs and to submit them to EPA for approval by August 1988.²⁸⁵ If a state fails to obtain approval, EPA is empowered to prepare a report containing that information.²⁸⁶ Alternatively, local governments within such states may prepare their own management programs.²⁸⁷ States and local governments which obtain federal approval may receive federal technical assistance and partial funding for implementation of their management programs and for protecting groundwater quality.²⁸⁸ While the Water Quality Act of 1987 does not mandate creation of comprehensive state programs for regulating nonpoint sources of pollution, it clearly is seeking to induce states to develop such programs.

Missouri has not yet established a regulatory program for control of nonpoint sources.²⁸⁹ The permit program under the Clean Water Law presently is limited to point sources.²⁹⁰

b. Stormwater Runoff

Stormwater runoff is one of the major sources of nonpoint pollution reaching surface watercourses. Recent research indicates that it is more polluting than point sources of treated effluents.²⁹¹

284. Pub. L. No. 100-4, §§ 319, 405, 101 Stat. 8, 52, 69, 33 U.S.C. §§ 1329, 1342(p) (Supp. V 1987) (hereinafter WQA 1987). See generally R. Beck & C. Goplerud, *supra* note 9, § 235, at 282-85; I. J. DAVIDSON & O. DELOGU, *supra* note 9, § 2, 13; F. GRAD, *supra* note 9, § 3.03 (4)(h); W. RODGERS, *supra* note 9, § 4.2A (Supp. 1988).

285. WQA 1987 §§ 319(a)-(c), 33 U.S.C. § 1329(a)-(c).

286. WQA 1987 § 319(d), 33 U.S.C. § 1329(d).

287. WQA 1987 § 319(e), 33 U.S.C. § 1329(e).

288. WQA 1987 § 319(f), (h), (i), 33 U.S.C. § 1329(f), (h), (i).

289. MISSOURI DEPT OF NATURAL RESOURCES, MISSOURI WATER QUALITY REPORT 58 (1988).

290. MO. REV. STAT. §§ 644.016(1), (6), (12), (13), 644.051(2) (1986).

291. For example, the stormwater runoff from Washington DC contains twice the Biological Oxygen Demand and 5 times the lead contained in the treated effluent of its metropolitan sewage treatment plant. See *supra* note 281.

The Water Quality Act of 1987 establishes a new permit program for point sources composed entirely of stormwater runoff.²⁹² Industrial and large municipal stormwater discharges must obtain permits by February 4, 1991.²⁹³ Smaller municipal stormwater discharges must obtain permits by February 4, 1993.²⁹⁴ Stormwater runoff from oil, gas and mining operations are exempted from either federal or state permitting.²⁹⁵ Also, agricultural stormwater runoff is exempted,²⁹⁶ but potentially is subject to future regulation under the nonpoint source management programs discussed above. These permits must require compliance with established stormwater management practices within three years.²⁹⁷ By October 1, 1992, EPA must issue regulations on which types of stormwater discharges must be regulated and establish minimum requirements for the state management programs, including management practices.²⁹⁸ Since these stormwater permit requirements constitute part of the point source discharge permit provisions of the Clean Water Act,²⁹⁹ EPA is required to establish a federal permit program in those states which do not obtain EPA approval for their own programs.

The Missouri Clean Water Law does not expressly provide for regulation of stormwater drainage from point sources. Nonetheless, the present statutory language appears to permit extension of regulation to stormwater point sources.³⁰⁰

B. Protection of Underground Public Drinking Water Sources

Underground sources of water supplies are threatened by a variety of sources, including leachate from landfills, leaks from underground storage tanks, injection wells, and percolation from contaminated

292. WQA 1987 § 405, 33 U.S.C. § 1342(p). Stormwater discharges were exempt from permitting prior to the 1987 amendment by regulation. 40 C.F.R. § 125.4(a)(f).

293. WQA 1987 § 405(4)(A), 33 U.S.C. § 1342(p)(4)(A). Large municipal stormwater discharges are those from municipalities serving a population of 250,000 or more. WQA 1987 § 405(p)(2)(C), 33 U.S.C. § 1342(p)(2)(D).

294. WQA 1987 § 405(4)(B), 33 U.S.C. § 1342(p)(4)(B). These smaller municipal stormwater discharges are from municipalities serving a population between 100,000 and 250,000. WQA 1987 § 405(2)(D), 33 U.S.C. § 1342(p)(2)(D).

295. WQA 1987 § 403, § 33 U.S.C. § 1342(l)(2).

296. WQA 1987 § 503, 33 U.S.C. § 1362(14) (definition of "point source").

297. WQA 1987 § 405(4)(A)-(B), 33 U.S.C. § 1342(p)(4)(A)-(B).

298. WQA 1987 § 405(3), (6), 33 U.S.C. § 1342(p)(3), (6).

299. CWA § 402, 33 U.S.C. § 1342.

300. See Mo. REV. STAT. §§ 644.016(1), (6), (12), (13), 644.051(2) (1986).

surface watercourses and ground surfaces. In Missouri, there are seventeen known major groundwater contamination sites, of which eleven affect public water supply wells.³⁰¹ Some of those sources of contamination are regulated specially. Protection of the aquifers themselves from all contaminating sources seemed appropriate as well, as evidenced by common law cases.³⁰²

In 1974, Congress enacted the Safe Drinking Water Act.³⁰³ It provides for the establishment of primary and secondary drinking water standards, and protection of underground sources of drinking water through regulation of underground injection wells. In 1986, Congress amended the act to include two further techniques for protecting groundwater sources for public water supplies: (1) sole source aquifer regulation, and (2) wellhead protection regulation.³⁰⁴ Like the federal-state relationship under the Clean Water Act, the Safe Drinking Water Act's basic policy is established by the federal government, with day-to-day implementation by the states.³⁰⁵ Drinking water standards do not directly affect groundwater quality, of course. But the ability of a water utility to utilize that source of water depends on their meeting the minimum drinking water standards. The Safe Drinking Water Act contains three regulatory programs directly influencing groundwater quality.

301. See MISSOURI WATER QUALITY REPORT 43-47 (1988).

302. See, e.g., *Chappell v. SCA Serv., Inc.*, 540 F. Supp. 1088 (C.D. Ill. 1982) (PCBs from hazardous waste landfill allegedly polluted public water supply well); *Rogers v. Bond Bros.*, 279 Ky. 239, 130 S.W.2d 22 (1939) (creosote drippings allegedly polluted public water supply well); *Village of Claycomo v. City of Kansas City*, 635 S.W.2d 365 (Mo. Ct. App. 1980) (landfill leachate polluted public water supply well); *Town of Rolesville v. Perry*, 21 N.C. App. 354, 204 S.E.2d 719 (1974) (leaks from auto repair garage allegedly would pollute public water supply well); *State v. Monarch Chem., Inc.*, 111 Misc. 2d 343, 443 N.Y.S.2d 967 (Sup. Ct. 1981), *modified*, 90 A.D.2d 907, 456 N.Y.S.2d 867 (1982) (hazardous chemical spill polluted public water supply well); *Barclay v. Commonwealth*, 25 Pa. 503 (1855) (manure seepage polluted public water supply spring).

303. Pub. L. No. 93-523, 88 Stat. 1661-1694 (codified as amended at 42 U.S.C. §§ 300f-300j-26 (1982)) [hereinafter SDWA]. On the Act generally, see F. GRAD, *supra* note 9, at § 3.05 (7); 3 LAW OF HAZARDOUS WASTE §§ 15.03(3)-(4) (S. Cooke ed. 1987-89); W. RODGERS, *supra* note 9, § 4.8(B) (1986), § 4.20A(C).

304. Pub. L. No. 99-339, 100 Stat. 657-664, 42 U.S.C. §§ 300h-6, -7 (Supp. V 1987).

305. SDWA §§ 1413, 1423, 42 U.S.C. §§ 300g-2, 300h-1 (Supp. V 1987).

1. Regulation of Underground Injection Wells

Injection wells pose a particular danger to groundwater aquifers, since they directly contaminate them and render them permanently unpotable. This form of pollution has been the subject of common law cases.³⁰⁶

The Safe Drinking Water Act evinces a Congressional policy that the states carry the primary burden of enforcing the policies of the Act. A precondition to a state taking over regulation of the safe drinking water program is establishment of a state program to regulate underground injection of wastes.³⁰⁷ Furthermore, EPA can require a state to develop and submit for approval a program for regulating underground injection wells.³⁰⁸ Underground injection must be prevented where it would endanger public drinking water sources.³⁰⁹ The state program must take the form either of a flat underground injection prohibition³¹⁰ or a permit program for underground injection wells.³¹¹ The permit program, however, is not to include underground injection of brine or other fluids from oil and gas primary or secondary recovery operations, unless necessary to avoid endangering drinking water sources.³¹² Monitoring of aquifers and the usual record-keeping and reporting requirements must be imposed.³¹³

EPA is to operate a federal permit program in those states which are required to have but do not have federally-approved state programs.³¹⁴ The permit system is governed by regulation.³¹⁵ EPA has

306. See, e.g., *Alliston v. Shell Petroleum Corp.*, 143 Kan. 327, 55 P.2d 396 (1936) (injected oil well brine polluted domestic & livestock well); *Augustine v. Hinnen*, 201 Kan. 710, 443 P.2d 354 (1968) (injected oil well brine polluted livestock well); *Theriot v. Mermentau, Inc.*, 385 So. 2d 939 (La. Ct. App. 1980) (hazardous waste injection allegedly would pollute aquifer); *Ressler v. Gerlach*, 189 Pa. Super. 192, 149 A.2d 158 (1959) (domestic sewage drainage well polluted domestic well).

307. SWDA § 1421(b)(1), 42 U.S.C. § 300h(b)(1).

308. SDWA § 1422(a)-(b), 42 U.S.C. § 300-h-1(a)-(b). For regulations, see 40 C.F.R. §§ 145, 147 (1989).

309. SDWA § 1421(B)(1), 42 U.S.C. § 300h(b)(1). "Endangerment" is defined as the presence or expectation of future presence of a contaminant which would result in noncompliance with national primary drinking water standards or otherwise adversely affect the health of persons drinking the water. SDWA § 1421(d)(2), 42 U.S.C. § 300h(d)(2).

310. SDWA § 1421(b)(1)(A), 42 U.S.C. § 300h(b)(1)(A).

311. SDWA § 1421(b)(1)(B), 42 U.S.C. 300h(b)(1)(B). For regulations, see 40 C.F.R. §§ 145, 147 (1989).

312. SDWA § 1421(b)(2), 42 U.S.C. § 300h(b)(2).

313. SDWA § 1421(b)(1)(C), 42 U.S.C. § 300h(b)(1)(C).

314. SDWA § 1422(c), 42 U.S.C. § 300h-1(c) (Supp. V 1987).

been given emergency powers to issue orders to protect groundwater used for public drinking water from contamination.³¹⁶

Congress also has enacted a partially overlapping provision in the Resources Conservation and Recovery Act which regulates injection of hazardous wastes into groundwater aquifers.³¹⁷

Missouri complies with the federal underground injection requirement, since it has a flat prohibition against underground waste injection, with certain exceptions for injections licensed under other statutes.³¹⁸ The state is proceeding to develop a more comprehensive groundwater protection management strategy.³¹⁹

2. Sole Source Aquifer Regulation

In order to protect the aquifer recharge areas of drinking water wells supplying the public, EPA may designate areas in which underground injection wells are prohibited. That may be done in areas where contamination of the aquifer would cause a significant public health hazard.³²⁰ This authority is designed to provide protection for sole source aquifers pending establishment of a state safe drinking water program which includes a permit program for underground injection wells.³²¹

Additionally, in 1986 Congress enacted a sole source aquifer protection demonstration program for critical aquifer protection areas.³²² State and local governments and other governmental entities

315. See 40 C.F.R. §§ 144, 146 (1989).

316. SDWA § 1431(a), 42 U.S.C. § 300i(a) (Supp. V 1987). EPA has been given authority to issue orders necessary to protect public health, including requiring provision of alternative water sources by the polluter and to bring civil actions for injunctive and remedial relief. *Id.* See *United States v. Price*, 688 F.2d 204 (3d Cir. 1982) (funding of diagnostic study by landfill operator). There are penalties for refusal to comply with such orders. SDWA § 1431(b), 42 U.S.C. § 300i(b) (Supp. V 1987).

317. Resources Conservation and Recovery Act § 3004(f), 42 U.S.C. § 6924(f) (Supp. V 1987) (discussed *infra* notes 359-62 and accompanying text).

318. MO. REV. STAT. § 577.155 (1986). The exceptions are fluids injected pursuant to licensed primary and secondary recovery operations of oil and gas wells, small residential heat pump injections, backfill operations of mines, licensed nonhazardous sanitary landfills, residential cesspools, and septic tanks. For regulations, see MO. CODE REGS. tit. 10, § 20-6.090 (1989).

319. See Missouri Dep't of Natural Resources, Missouri Ground-Water Strategy (Feb. 2, 1987) (draft mimeo).

320. SDWA § 1424, 42 U.S.C. § 300h-3(a)(1). EPA has designated only 2 sole source aquifer areas. See 40 C.F.R. § 149 (1989).

321. *Id.*

322. Safe Drinking Water Act Amendments of 1986, Pub. L. No. 99-339, §

can seek financial assistance for establishing a comprehensive management program for maintaining groundwater quality in those areas. There are no designated sole source aquifers in Missouri.

3. Wellhead Protection Area Regulation

Also in 1986, Congress enacted a wellhead protection area program for recharge areas of public water supply wells.³²³ Each state is required to adopt and submit for approval a program for regulating sources of contaminants in recharge areas of wells supplying water to the public.³²⁴ A wellhead protection area is a "surface and subsurface area surrounding a water well or wellfield . . . through which contaminants are reasonably likely to move toward and reach . . . [the] well."³²⁵ The state regulatory plan is to include control measures, technical and financial assistance, education and training, demonstration projects and contingency plans for alternative water sources.³²⁶ Also, potential sources of contamination must be considered in locating new water wells serving the public.³²⁷ The states are to submit their programs for approval by June 19, 1989,³²⁸ and should implement them within two years after submission.³²⁹ Missouri was not among the twenty-seven states which submitted wellhead protection area plans by the deadline.³³⁰

Federal facilities are subject to state regulation.³³¹ Partial federal funding is available to support state regulation under this program.³³²

203, 100 Stat. 657 (current version at 42 U.S.C. § 300h-6 (Supp. V 1987) (comprising SDWA § 1427)).

323. *Id.* § 205, 42 U.S.C. § 300h-7 (SDWA § 1428).

324. *Id.* § 205(a), 42 U.S.C. § 300h-7(a) (SDWA § 1428(a)).

325. *Id.* § 205(e), 42 U.S.C. § 300h-7(e) (SDWA § 1428(e)).

326. *Id.* § 205(a)(4)-(5), 42 U.S.C. § 300h-7(a)(4)-(5) (SDWA § 1428(a)(4)-(5)). States with more than 2,500 oil and gas wells which reinject brine by annular injection must adequately regulate them to avoid brine contamination of groundwater. *Id.* § 205(i), 42 U.S.C. § 300h-7(i) (SDWA § 1428(i)).

327. *Id.* § 205(a)(6), 42 U.S.C. § 300h-7(a)(6) (SDWA § 1428(a)(6)).

328. *Id.* § 205(a), 42 U.S.C. § 300h-7(a) (SDWA § 1428(a)).

329. *Id.* § 205(g), 42 U.S.C. § 300h-7(g) (SDWA § 1428(g)).

330. 20 *Env't Rep.* (BNA) 513 (July 7, 1989).

331. Safe Drinking Water Act Amendments of 1986, § 205(h), 42 U.S.C. § 300h-7(h) (Supp. V 1987) (SDWA § 1428(h)).

332. *Id.* § 205(k), 42 U.S.C. § 300h-7(k) (SDWA § 1428(k)).

C. Regulation of Drainage and Leachate from Landfills

The Resource Conservation and Recovery Act of 1976³³³ established a federal program for regulating (1) disposal of solid waste and (2) generation, transportation and disposal of hazardous waste. It provides for a comprehensive program under which the federal government establishes basic regulatory policy under which, if willing, the states do the day-to-day enforcement. Today this act is known as the Solid Waste Disposal Act.

Landfills have great potential for contaminating groundwater by percolation of leachate from buried waste. Regulations under the Act which require prevention or interception of such leachate percolation contribute to improved groundwater quality. That landfill leachate poses a threat to surface and ground water quality is demonstrated by common law cases seeking relief from such contamination.³³⁴

The cases show the even greater danger posed by leachate from hazardous waste landfills.³³⁵ The following discussion of the provisions of the Act will concentrate on those which relate to leachate percolation.

The Solid Waste Disposal Act has four main purposes: (1) prohibiting future open dumping and closing existing open dumps and converting them to more environmentally suitable facilities; (2) regulating the collection, transport, separation, recycling, and disposal of solid waste; (3) regulating the generation, collection, transport, and disposal of hazardous waste; and (4) regulating underground storage tanks.³³⁶

333. Pub. L. No. 94-580, §§ 1001-9010, 90 Stat. 2796 (1976), 42 U.S.C. §§ 6901-6991(i) (Supp. V 1987). On the Act generally, see ENVIRONMENTAL LAW HANDBOOK, *supra* note 9, ch. 5; 1A F. GRAD, *supra* note 9, § 4.03; 1 LAW OF HAZARDOUS WASTE chs. 1-5 (S. Cooke ed. 1987-89); 2 S. NOVICK, D. STEVER & M. MELLON, *supra* note 9, §§ 13.01-.03; 3 W. RODGERS, *supra* note 9, §§ 7.1-7.5; 1 D. STEVER, *supra* note 9, ch. 5.

334. See, e.g., Frank v. Environmental Sanitation Management, Inc., 687 S.W.2d 876 (Mo. 1985) (watercourse); Filisko v. Bridgeport Hydraulic Co., 176 Conn. 33, 404 A.2d 889 (1978) (groundwater); Village of Claycomo v. City of Kansas City, 635 S.W.2d 365 (Mo. Ct. App. 1980) (groundwater); Reinhart v. Lancaster Area Refuse Auth., 201 Pa. 614, 193 A.2d 670 (1963) (groundwater).

335. See, e.g., Village of Wilsonville v. SCA Serv., Inc., 86 Ill. 2d 1, 426 N.E.2d 824 (1981) (groundwater); Ayers v. Township of Jackson, 106 N.J. 557, 525 A.2d 287 (1987) (groundwater); Wood v. Picillo, 443 A.2d 1244 (R.I. 1982) (groundwater); Neal v. Darby, 282 S.C. 277, 318 S.E.2d 18 (1984) (groundwater).

336. SWDA § 1003(a), 42 U.S.C. § 6902(a) (Supp. V 1989). Regulation of underground storage tanks is not mentioned in that section, but is implied from the amendment of the Act in 1984 adding the underground storage tank

1. Solid waste

SWDA establishes standards for solid waste (nonhazardous) landfills, but neither establishes a federal permit program nor requires states to establish them. The Act's purposes are implemented by solid waste management plans developed by the states. Federal approval of such state plans is required for federal financial assistance.³³⁷ The state plans must include three features: (1) provide for resource conservation and recycling and for disposal of all solid waste in sanitary landfills; (2) prohibit all future open dumping; and (3) require closing or upgrading of all existing open dumps.³³⁸ EPA is required to develop guidelines for appropriate solid waste management³³⁹ which the states are to incorporate into their management plans.³⁴⁰ The EPA guidelines shall consider, *inter alia*: (1) the geographic, geologic, climatic and hydrologic characteristics of disposal sites "to insure the reasonable protection of the quality of the ground and surface waters from leachate contamination, [and] the reasonable protection of the quality of the surface waters from surface runoff contamination;" (2) the characteristics of collection, storage, processing and disposal operating methods; and (3) the constituents of waste.³⁴¹ The EPA guidelines were issued in 1979.³⁴² Those guidelines include provisions dealing with rainfall and leachate percolation.

Unlike its approach to hazardous waste management, the Act does not require states to establish solid waste management programs. If a state fails to establish a federally approved regulatory program, there are no federal sanctions except for noneligibility for federal financial

provisions. SWDA §§ 9001-9101, 42 U.S.C. § 6991-6991(i) (Supp. V 1987).

337. SWDA § 4007(b), 42 U.S.C. § 6947(b) (1982).

338. SWDA § 4003(a), 42 U.S.C. § 6943(a) (1982).

339. SWDA § 4002(b), 42 U.S.C. § 6942(b) (1982).

340. SWDA § 4002(b), 42 U.S.C. § 6942(b) provides that the EPA guidelines are to be used "to assist in the development and implementation of State solid waste management plans." A state plan must meet the minimum federal requirements specified in SWDA § 4003(a), 42 U.S.C. § 6943(a), in order to be eligible for federal approval. SWDA § 4007(a)(1), 42 U.S.C. § 6947(a)(1) (1982). The state plan, for example, must provide for "use or dispos[al] of . . . [solid] waste in a manner that is environmentally sound." SWDA § 4003(a)(6), 42 U.S.C. § 6943(a)(6) (1982). Nowhere does the Act expressly require incorporation of the EPA guidelines into the state solid waste management plans, but the Act clearly implies such a requirement.

341. SWDA § 4002(c), 42 U.S.C. § 6942(c) (1982).

342. 44 Fed. Reg. 45,079 (1979) (codified as amended at 40 C.F.R. § 256.01-.65 (1989)).

assistance. There is no backup federal regulatory program³⁴³ and no enforcement provisions.³⁴⁴

Although not required to do so, Missouri has enacted a solid waste management program.³⁴⁵ Some of its provisions relate to water pollution. The statute prohibits dumping or depositing solid wastes into streams, springs, and other bodies of surface and ground water.³⁴⁶ Solid waste disposal facilities must be operated under state permit.³⁴⁷ Sanitary landfills must be located and designed to minimize the impact of leachate on surface and ground water.³⁴⁸ It must have appropriate liners, infiltration resistance, and a leachate collection system.³⁴⁹

2. Hazardous Waste Management

Even more important to groundwater quality than management of solid waste disposal is management of hazardous waste disposal. The Resource Conservation and Recovery Act provides for a dual federal-state program to regulate the generation, transport, storage and disposal of hazardous wastes.³⁵⁰ The regulatory provisions of the Act apply only to post-enactment activities and active hazardous waste facilities.³⁵¹

343. See SWDA § 3005, 42 U.S.C. § 6925 (Supp. V 1987) (hazardous waste facility permits); SWDA §§ 9002-9003, 42 U.S.C. § 6991(a)(b) (Supp. V 1987) (underground storage tank notification and performance standards).

344. The SWDA enforcement provisions apply only to hazardous waste management and underground storage tank management. See SWDA § 3008 42 U.S.C. § 6928 (Supp. V 1987) (hazardous waste); SWDA § 9006, 42 U.S.C. § 9991(e) (Supp. V 1987) (underground storage tanks).

345. MO. REV. STAT. § 260.200-247 (1986 & Supp. 1989). For regulations, see MO. CODE REGS. tit. 10, § 80-3.010 (1989).

346. MO. REV. STAT. § 260.210(1) (1986).

347. MO. REV. STAT. § 260.205 (Supp. 1989).

348. MO. CODE REGS. tit. 10, § 80-3.010(4)-3, (6) (1989).

349. *Id.* § 80-3.010(7)(B)(G).

350. SWDA §§ 3001-3020, 42 U.S.C. §§ 6921-39b (Supp. V 1987).

351. Permits are required only for hazardous waste facilities existing on or after a postenactment date established by regulation. SWDA §§ 3005(a), 3010, 42 U.S.C. §§ 6925(a), 6930 (Supp. V 1989).

Abandoned and closed hazardous waste disposal facilities are dealt with under the Comprehensive Environmental Response, Compensation and Liability Act (Superfund), 42 U.S.C. § 9601-9675, discussed *infra* notes 472-523 and accompanying text. Also, preenactment disposal activities creating an imminent hazard can be dealt with and liability imposed under SWDA § 7003, 42 U.S.C. § 6973 (Supp. V 1987). *United States v. Northeastern Pharmaceutical & Chem. Co., Inc.*, 579 F. Supp. 823 (W.D. Mo. 1984).

a. Manifest System

Regulation of generators and transporters is based on a "cradle to grave" manifest system. The system applies to all hazardous wastes listed under the Act.³⁵² Factors used to determine hazardousness include: toxicity, persistence, degradability in nature, potential for accumulation in tissue, flammability, corrosiveness, and other hazardous characteristics.³⁵³ Several thousand materials have been listed as hazardous under the Act.³⁵⁴

The system is triggered by giving notice of the generation of a hazardous waste.³⁵⁵ The Act imposes container characteristic, labeling and recordkeeping requirements.³⁵⁶ Transport of hazardous materials is lawful only when accompanied by a SWDA manifest and when taken to a SWDA licensed hazardous waste treatment, storage or disposal facility.³⁵⁷ Such facilities can be licensed only if they comply with the requirements of the Act, including compliance with the manifest system, monitoring, recordkeeping, reporting, facility siting and design, operating and disposal practices, contingency planning, and financial responsibility.³⁵⁸

b. Prohibited Disposal Activities

Prohibitions against certain temporary and permanent disposal practices apply, all of which relate to protection of groundwater quality: (1) bulk storage of hazardous wastes in salt dome and bed formations, underground mines and caves; (2) placing bulk or noncontainerized liquids in landfills; (3) land disposal of specified cyanide, heavy-metal, acid, PCB and halogenated organic hazardous wastes; and (4) land disposal of solvent and dioxin containing hazardous wastes.³⁵⁹ EPA can add other hazardous wastes to the land disposal prohibitions and is required to review all listed hazardous wastes.³⁶⁰ Furthermore, the

352. SWDA § 3001(a)-(b), 42 U.S.C. § 6921(a)-(b) (Supp. V 1987).

353. SWDA § 3001(a), 42 U.S.C. § 6921(a) (1982). For regulations, see 40 C.F.R. § 261.1-.33 (1989).

354. 40 C.F.R. § 261.30-.33 (1989).

355. SWDA § 3002, 42 U.S.C. § 6922 (Supp. V 1987). For regulations, see 40 C.F.R. §§ 262.10-.70 (1989).

356. SWDA § 3002, 42 U.S.C. § 6922 (Supp. V 1987). For regulations, see 40 C.F.R. §§ 263.10-.31 (1989).

357. SWDA § 3003(a), 42 U.S.C. § 6923(a) (1982).

358. SWDA § 3004(a), 42 U.S.C. § 6924(a) (Supp. V 1987).

359. SWDA § 3004(b)-(e), 42 U.S.C. § 6924(b)-(e) (Supp. V 1987). For regulations, see 40 C.F.R. § 266.20-.80 (1989).

360. SWDA § 3004(g), 42 U.S.C. § 6924(g) (Supp. V 1987). Hazardous

liquid hazardous wastes specified in items (3) and (4) above cannot be disposed of in deep injection wells.³⁶¹ In each of those categories, EPA can authorize land or underground disposal of exempted hazardous wastes.³⁶²

*c. Performance Standards for
Disposal Facilities*

EPA has issued specific standards for ten different types of hazardous waste treatment, storage and disposal facilities. The ten types are:

- (1) containers
- (2) tanks
- (3) surface impoundments
- (4) waste piles
- (5) land treatment units
- (6) landfills
- (7) incinerators
- (8) thermal treatment units
- (9) chemical, physical and biological treatment units; and
- (10) underground injection wells.

The specific standards are set forth in the federal regulations.³⁶³

In addition, there are general performance standards applicable to all such facilities. All hazardous waste landfills and surface impoundments and enlargements thereof brought into operation after November 8, 1984, must have: (1) two or more liners with a leachate collection system above (landfills only) and between liners (landfills and impoundments); and (2) a groundwater monitoring system.³⁶⁴ Alternative operating practices and designs which are at least equally effective as

wastes are identified and listed under SWDA § 3001(a)-(b), 42 U.S.C. § 6921(a)-(b) (Supp. V 1987). Certain specified wastes are required to be listed. SWDA § 3001(e), 42 U.S.C. § 6921(e) (Supp. V 1987). For regulations, see 40 C.F.R. § 268 (1989).

361. SWDA § 3004(f), 42 U.S.C. § 6924(f) (Supp. V 1987).

362. SWDA § 3004(b)(1)-(2), (c)(3), (d)(1), (e)(2), (f)(5), 42 U.S.C. § 6924(b)(1)-(2), (c)(3), (d)(1), (e)(2), (f)(2). In addition, EPA has variance authority. SWDA § 3004(h), 42 U.S.C. § 6924(h) (Supp. V 1987).

363. 40 C.F.R., § 264 (1989).

364. SWDA § 3004(o)(1), 42 U.S.C. § 6924(o)(1) (Supp. V 1987). "Liner" is defined by SWDA § 3005(j)(12)(A), 42 U.S.C. § 6925(j)(12)(A) (Supp. V 1987).

liners and leachate collection systems may be approved on a site specific basis by EPA.³⁶⁵

Groundwater monitoring is required also for all other surface impoundments, waste piles, land treatment units and landfills regardless of date of first operation.³⁶⁶ Certain surface impoundments existing on November 8, 1984, are exempt from the double liner requirement. These have at least one liner which is not leaking, are located more than one quarter mile from an underground source of drinking water, and generally are in compliance with the groundwater monitoring requirements.³⁶⁷

d. Permit Program for Disposal Facilities

Permits have been required for all existing and new hazardous waste treatment, storage and disposal facilities since November 19, 1980.³⁶⁸ The permit application must estimate the composition, quantities and concentrations of hazardous wastes to be treated, stored or disposed of, and the location of the facility.³⁶⁹ Permits are subject to conditions imposed by EPA "to protect human health and the environment"³⁷⁰ and the applicable performance standards.³⁷¹ Permits have a fixed term not exceeding ten years.³⁷² They may be reviewed and modified after the first five years to assure continued compliance with currently applicable requirements.³⁷³ When the renewal application is made, new conditions may be imposed to reflect improvements in control and measurement technologies and changes in applicable regulations.³⁷⁴

365. SWDA § 3004(o)(2), 42 U.S.C. § 6924(o)(2) (Supp. V 1987).

366. SWDA §§ 3004(p), 3005(i)-(j), 42 U.S.C. §§ 6924(p), 6925(i)-(j) (Supp. V 1987). The groundwater monitoring regulations were upheld in *Chemical Waste Management, Inc. v. EPA*, 649 F. Supp. 347 (D.D.C. 1986).

367. SWDA § 3005(j)(2), 42 U.S.C. § 6925(j)(2) (Supp. V 1987).

368. SWDA § 3005(a), (e), 42 U.S.C. § 6925(a), (e) (Supp. V 1987). For regulations, see 40 C.F.R. § 270 (1982).

369. SWDA § 3005(b), 42 U.S.C. § 6925(b) (1982).

370. SWDA § 3005(c)(3), 42 U.S.C. § 6925(c)(3) (Supp. V 1987).

371. SWDA § 3005(c)(1), 42 U.S.C. § 6925(c)(1) (Supp. V 1987) (cross-referencing SWDA § 3004, 42 U.S.C. § 6924 (Supp. V 1987)). The substantive performance standards are described in the consolidated permit regulations. 40 C.F.R., §§ 122.1-124.128 (1989).

372. SWDA § 3005(c)(3), 42 U.S.C. § 6925(c)(3) (Supp. V 1987).

373. *Id.*

374. *Id.*

e. Enforcement

Unlike the federal water and air pollution control programs, SWDA does not require continuous reporting by owners or operators of hazardous waste treatment, storage and disposal facilities. They must, however, keep records³⁷⁵ and furnish this information to federal or state inspectors upon demand.³⁷⁶ The inspectors may take samples of wastes.³⁷⁷ Mandatory inspections are required at least every two years.³⁷⁸

Enforcement sanctions include compliance orders,³⁷⁹ civil penalties,³⁸⁰ permit suspension or revocation,³⁸¹ and criminal fines and imprisonment.³⁸² A person who violates SWDA requirements with knowledge that he is placing another person in imminent danger of death or serious bodily injury is subject to greater criminal sanctions.³⁸³

f. Citizen Suit Provision

Not only is SWDA enforced by EPA, violations of the act can be enforced by "any person" under the citizen suit provision.³⁸⁴ A prerequisite to such a lawsuit is the giving of sixty days' notice to EPA, the state regulatory agency, and the violator.³⁸⁵ However, if EPA or the state agency begins a civil or criminal action to require compliance with permit conditions, performance standards, regulations, requirements, or prohibitions, as the case may be, the citizen lawsuit is barred.³⁸⁶ Similarly, a citizen suit may be brought to abate an imminent and substantial endangerment to health or the environment, provided ninety days' notice is given, and subject to the same bar based on SWDA or Superfund enforcement prosecution, or Superfund cleanup study, action,

375. SWDA § 3004(a)(1)-(2), 42 U.S.C. § 6924(a)(1-2) (Supp. V 1987).

376. SWDA § 3007(a), 42 U.S.C. § 6927(a) (1982).

377. *Id.*

378. SWDA § 3007(e), 42 U.S.C. § 6927(e) (Supp. V 1987).

379. SWDA § 3008(a), 42 U.S.C. § 6928(a) (Supp. V 1987).

380. *Id.* (\$25,000/day maximum).

381. *Id.*

382. SWDA § 3008(d), 42 U.S.C. § 6928(d) (Supp. V 1987) (\$50,000/day and/or 2 years maximum). The sanctions can be doubled for second and subsequent offenses.

383. SWDA § 3008(e), 42 U.S.C. § 6928(e) (Supp. V 1987) (\$250,000 or 15 years maximum; fine for organizations is \$1,000,000 maximum).

384. SWDA § 7002, 42 U.S.C. § 6972 (Supp. V 1987).

385. SWDA § 7002(b)(1)(A), 42 U.S.C. § 6972(b)(1)(A) (Supp. V 1987).

386. SWDA § 7002(b)(1)(B), 42 U.S.C. § 6972(b)(1)(B) (Supp. V 1987).

or court order.³⁸⁷ Citizen suits are not permitted to challenge the siting of a hazardous waste treatment, storage or disposal facility or issuance of a permit.³⁸⁸

g. Imminent Hazard Provisions

Upon information received, EPA may determine the presence or release of a hazardous waste from a post-enactment facility or site presents a substantial hazard to human health or the environment.³⁸⁹ In that event, it may require the owner or operator to conduct monitoring, testing, analysis and reporting to ascertain the nature and extent of the hazard.³⁹⁰ If no owner or operator is able to carry it out, EPA may do so itself or authorize a state or local agency to do so.³⁹¹

EPA may sue any past or present generator, transporter or owner or operator of a solid or hazardous waste treatment, storage or disposal facility or site who presents "an imminent and substantial endangerment to health or the environment." The suit seeks to restrain any activity which would present an endangerment in the future and to cleanup or pay for cleanup of the results of activity in the past.³⁹² "Imminent and substantial endangerment" is activity which poses a "risk of harm" or "potential harm;" however, proof of actual harm is not required.³⁹³

h. Delegation to States

States are authorized to devise their own hazardous waste management programs.³⁹⁴ These programs must incorporate all federal minimum performance standards and permitting requirements, or their substantial equivalents.³⁹⁵ Federally-approved state programs

387. SWDA § 7002(b)(2), 42 U.S.C. § 6972(b)(2) (Supp. V 1987).

388. SWDA § 7002(b)(2)(D), 42 U.S.C. § 6972(b)(2)(D) (Supp. V 1987).

389. Releases from preenactment facilities and sites are handled under the Superfund Act § 106. 42 U.S.C. § 9606 (1982), discussed *infra* notes 478-96 and accompanying text.

390. SWDA § 3013(a), 42 U.S.C. § 6934(a) (1982).

391. SWDA § 3013(d), 42 U.S.C. § 6934(d) (1982).

392. SWDA § 7003(a), 42 U.S.C. § 6973(a) (Supp. V 1987).

The courts have upheld the constitutionality of the statutory provision making former owners liable for cleanup costs. *United States v. Price*, 688 F.2d 204 (3d Cir. 1982).

393. *United States v. Vertac Chem. Corp.*, 489 F. Supp. 870 (E.D. Ark. 1980).

394. SWDA § 3006, 42 U.S.C. § 6926 (Supp. V 1987).

395. SWDA § 3006(b), 42 U.S.C. § 6926(b) (Supp. V 1987). For regulations,

operate in lieu of the federal program, and state regulatory actions have the same force and effect as federal actions.³⁹⁶ If EPA determines that a state program is administering its program out of compliance with federal requirements, EPA may withdraw federal approval of the state program and reinstitute the federal program.³⁹⁷

i. Regulation of Hazardous Waste in Missouri

The Missouri Hazardous Waste Management Law³⁹⁸ was enacted in 1977³⁹⁹ to establish a regulatory program for hazardous wastes. It has received federal approval.⁴⁰⁰ The federal program is in abeyance in Missouri and only the state manifest and permit program operates within Missouri. Except for, *inter alia*, waste discharges from point sources, injections as part of oil and gas operations, and strip mine wastes,⁴⁰¹ all of which are regulated under other statutes, wastes⁴⁰² whose physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, or pose a present or potential threat to human health or the environment are subject to regulation under the statute.⁴⁰³ In general, the policies and methods of regulation under Hazardous Waste Management Law are similar to those set out in the Solid Waste Disposal Act.

Permits are required for hazardous waste landfills and other disposal facilities.⁴⁰⁴ Facility plans and an environmental and economic profile, including the extent of groundwater contamination, must be submitted with a permit application.⁴⁰⁵ The permit has a term not exceeding ten years, and is reviewable for modification after five years.⁴⁰⁶ Landfills built after October 31, 1980, must have a leachate collection system.⁴⁰⁷

see 40 C.F.R. § 271 (1989).

396. SWDA § 3006(d), 42 U.S.C. § 6926(d) (1982).

397. SWDA § 3006(e), 42 U.S.C. § 6926(e) (1982).

398. MO. REV. STAT. §§ 260.350-.430 (1986 & Supp. 1989).

399. 1977 Mo. Laws 415.

400. 40 C.F.R. § 272 (1989).

401. MO. REV. STAT. § 260.355 (1986).

402. "Wastes" are discarded materials and residual materials. *Id.* § 260.360(19) (1986).

403. MO. REV. STAT. § 260.360(10) (Supp. 1989).

404. MO. REV. STAT. §§ 260.375(12), 260.395-7 (1986 & Supp. 1989). For regulations, see MO. CODE REGS. tit. 10, § 25-7.270 (1989).

405. MO. REV. STAT. § 260.395-7(2), (5) (Supp. 1989).

406. *Id.* § 260.395-12 (Supp. 1989).

407. *Id.* § 260.395-18; see MO. CODE REGS. tit. 10, § 25-7.264(F) (1989).

Variances may be granted where the usual requirements will result in "an arbitrary and unreasonable taking of property or in the practical closing and elimination of any lawful business, occupation, or activity . . . without sufficient corresponding benefit or advantage to the people."⁴⁰⁸ Variances shall not be granted if such relief is prohibited by the requirements of the federal Solid Waste Disposal Act, or if it will permit "the continuance of a condition which unreasonably poses a present or potential threat to the health of humans or other living organisms."⁴⁰⁹

Enforcement includes inspection powers,⁴¹⁰ compliance orders,⁴¹¹ injunctive relief,⁴¹² civil penalties,⁴¹³ criminal fines and imprisonment,⁴¹⁴ permit suspension or revocation,⁴¹⁵ and abatement activities and recovery of cleanup costs.⁴¹⁶ Habitual violators whose violations have posed a threat to human health or the environment may not be issued a permit.⁴¹⁷ Emergency action may be taken to mitigate imminent hazards.⁴¹⁸ Common law and other civil and criminal remedies to enjoin public and private nuisances are preserved.⁴¹⁹ There is no citizen suit provision in the state statute.

Regulations have been established under the statute.⁴²⁰ Some of them address surface and ground water quality concerns. They provide detailed design and performance standards for siting, liners, leachate collection systems, and monitoring systems.⁴²¹

408. MO. REV. STAT. 260.405-1 (1986).

409. *Id.*

410. *Id.* § 260.377.

411. *Id.* § 260.410(3).

412. *Id.* § 260.425(1).

413. *Id.* § 260.425(1) (\$10,000 per day maximum).

414. *Id.* § 260.425(3) (\$2,500 to \$25,000 per day and/or up to 1 year).

415. MO. REV. STAT. §§ 260.395(10), 260.410(4) (1986 & Supp. 1989).

416. MO. REV. STAT. § 260.375(29) (1986).

417. MO. REV. STAT. § 260.395(16) (Supp. 1989). This provision may be applied to preenactment activity. *Jerry-Russell Bliss, Inc. v. Hazardous Waste Comm'n*, 702 S.W.2d 77 (Mo. 1985).

418. MO. REV. STAT. § 260.420(1) (1986). Such actions may include seeking temporary injunctive relief.

419. *Id.* § 260.415(3) (1986).

420. *See* MO. CODE REGS. tit. 10, § 25-7.270 (1989).

421. *See id.* § 25-7.264 (1989).

3. Regulation of Hazardous Waste Injection Into Groundwater

As an alternative to burying hazardous wastes, underground injection of liquid wastes has been tried. That is a bad practice because of the likelihood that this liquid waste will migrate to potable groundwater aquifers. Hence, injection wells now are subject to federal and state regulation.

In states without a federally approved state hazardous waste management program, EPA operates a permit system for authorizing the operation of those facilities, including underground injection wells.⁴²² They are subject to the specific and general performance standards discussed in subsection 2 above.

Injection of certain hazardous wastes into underground water formations is prohibited by SWDA under certain circumstances. Heavy metal wastes, dioxin and certain solvents cannot be injected into underground water formations pending a 45-month study.⁴²³ The regulations were issued in 1988.⁴²⁴

In addition to this regulation of hazardous waste injection under SWDA, Congress has established a partially overlapping program regulating injection of any wastes into groundwater aquifers used as a source for drinking water.⁴²⁵ Since May 8, 1985, it has been unlawful to inject any hazardous wastes into an underground water formation used as a source for drinking water within one quarter mile of the injection well or above such a formation.⁴²⁶

Missouri prohibits all underground injection of hazardous wastes.⁴²⁷ Its prohibition is approved by EPA as satisfying federal requirements.⁴²⁸

4. Regulation of Underground Storage Tanks

Underground storage tanks present a significant threat for localized groundwater pollution. EPA estimates that there are about 2,000,000 underground storage tanks nationwide, of which 95% hold petroleum

422. See generally 2 D. STEVER, *supra* note 9, § 7.04(4).

423. SWDA § 3004(f), 42 U.S.C. § 6924(f) (Supp. V 1987).

424. See 53 Fed. Reg. 28,118 (1988) (codified as amended at 40 C.F.R. § 148 (1989)).

425. SDWA §§ 1421-24, 42 U.S.C. §§ 300h to 300h-3 (1982 & Supp. V 1987), discussed *supra* notes 301-32 and accompanying text.

426. Pub. L. No. 98-616, § 405(a), 98 Stat. 3273 (1984), amended by Pub. L. No. 99-339, § 201(c), 100 Stat. 654 (codified as amended at 42 U.S.C. § 6939b(a)).

427. MO. REV. STAT. § 260.424 (1986).

428. 40 C.F.R. §§ 147.1300-.1301 (1989).

products and the other 5% hold non-petroleum hazardous substances. About one-half of the petroleum tanks are located at gas stations, of which 80% are bare-steel tanks which lack corrosion protection and account for the majority of leaks. EPA estimates that about 10,000 tanks are leaking in the United States.⁴²⁹ Common law cases demonstrate the danger from leaking underground storage tanks.⁴³⁰

In 1984, Congress added provisions to SWDA regulating installation and use of underground storage tanks holding petroleum products or other substances regulated under the act.⁴³¹ Those provisions were intended to regulate a major source of leakage of contaminants into groundwater. As with the remainder of SWDA, Congress intended that the main burden of day-to-day administration of the UGST program was to be assumed by the states, under overall policies established by the act and federal regulations.

In 1989, Missouri enacted a regulatory system for underground storage tanks.⁴³² The statute parallels the federal provision, since it was designed to meet the federal approval standards required for the state to assume responsibility for regulation. The Missouri statute also creates a regulatory system paralleling the federal system. It includes registration of existing and new tanks, performance standards, financial responsibility requirements, and an insurance trust fund for cleanup.

429. *Underground Tanks: Two Million Storage Tanks Must Retrofit to Meet Technical Standards in EPA Final Rule*, 19 *Env't Rep. (BNA)* 980 (Sept. 16, 1988); *Underground Tanks: EPA Issues Storage Tank Final Rules for Construction, State Program Requirements*, 19 *Env't Rep. (BNA)* 1116 (Sept. 30, 1988).

430. *See, e.g., Sinclair Ref. Co. v. Bennett*, 123 F.2d 884 (6th Cir. 1941); *Sinclair Ref. Co. v. Keister*, 64 F.2d 537 (6th Cir. 1933); *North Georgia Petroleum Co. v. Lewis*, 128 Ga. App. 653, 197 S.E.2d 437 (1973); *Yommer v. McKenzie*, 255 Md. 220, 257 A.2d 138 (1969); *Exxon Corp. v. Yarema*, 69 Md. App. 124, 516 A.2d 990 (1986); *Gendreau v. C.K. Smith & Co., Inc.*, 22 Mass. App. 989, 497 N.E.2d 16 (1986). Relief was denied on the facts in a similar case in Missouri. *Bollinger v. Mungle*, 175 S.W.2d 912 (Mo. Ct. App. 1943).

431. SWDA §§ 3004(w), 9001-09, 42 U.S.C. §§ 6924(w), 6991-91h (Supp V 1987), added by Pub. L. No. 98-616, tit. VI, § 601(a), 98 Stat. 3277 (1984). *See generally* 2 *LAW OF HAZARDOUS WASTE* ch. 7 (S. Cooke ed. 1987-89); R. Beck & C. Goplerud, *supra* note 9, § 242, at 335-36; 1 F. GRAD, *supra* note 9, § 4.03 (10); S. NOVICK, D. STEVER & M. MELLON, *supra* note 9, § 13.04; D. STEVER, *supra* note 9, § 7.04(3).

432. MO. REV. STAT. §§ 319.100-137 (Supp. 1989).

*a. Definition of Regulated
Underground Storage Tanks*

Underground storage tanks containing petroleum or any hazardous substance defined by the federal Superfund Act are subject to regulation under the federal and state underground storage tank provisions, except those hazardous substances which are already regulated under the hazardous waste provisions of the federal Solid Waste Disposal Act and the state Hazardous Waste Disposal Law.⁴³³ All underground tanks and incidental piping are regulated under the act, except the following:

- (1) small noncommercial farm and residential tanks storing motor fuel (1100 gallons or less);
- (2) heating oil tanks for on-site consumptive use;
- (3) septic tanks;
- (4) pipeline facilities regulated under federal or state laws;
- (5) surface impoundments, pits, ponds and lagoons;
- (6) storm water or waste water collection systems;
- (7) flow-through process tanks;
- (8) liquid traps related to oil or gas production or gathering operations;
- (9) storage tanks located in basements, mines or other underground areas.⁴³⁴

b. Notification and Registration

Owners of existing regulated underground storage tanks must give notice to EPA of their location, age, size, type and uses by May 8, 1986.⁴³⁵ Owners of such tanks taken out of service after January 1, 1974, and not removed from the ground thereafter, must give such notice, together with the date of removal from service.⁴³⁶ Owners of new regulated tanks must give such notice within thirty days of their entry into service.⁴³⁷ Notice is to be given to the state or local agencies specified by each state.⁴³⁸ Missouri designated the Department of Natural Resources as the state agency to receive UGST notices.

Under the new Missouri provisions, owners of existing regulated underground storage tanks currently in operation or removed from

433. SWDA § 9001(2), 42 U.S.C. § 6991(2) (Supp. V 1987); Mo. REV. STAT. § 319.100(6) (1986).

434. SWDA § 9001(1), 42 U.S.C. § 6991(1) (Supp. V 1987); Mo. REV. STAT. § 319.100(8) (1986).

435. SWDA § 9002(a)(1), 42 U.S.C. § 6991a(a)(1) (Supp. V 1987).

436. SWDA § 9002(a)(2), 42 U.S.C. § 6991a(a)(2) (Supp. V 1987).

437. SWDA § 9002(a)(3), 42 U.S.C. § 6991a(a)(3) (Supp. V 1987).

438. SWDA § 9002(b), 42 U.S.C. § 6991a(b) (Supp. V 1987).

service after January 1, 1974, must give notice to DNR by November 26, 1989.⁴³⁹ New tanks must be registered within thirty days after being brought into use.⁴⁴⁰ Notice must be given thirty days prior to taking a tank out of service.⁴⁴¹ The registration fee for tanks in service on August 28, 1989, is \$15 per year paid in five year increments.⁴⁴² Registration may be denied for fraudulent or deceptive registration, failure to comply with performance standards or financial responsibility and other requirements.⁴⁴³

c. Performance Standards

i. Federal

EPA was required to establish performance standards for new underground storage tanks by November 8, 1987,⁴⁴⁴ and for new and existing tanks storing petroleum products by May 8, 1987.⁴⁴⁵ Those performance standards are to regulate construction and lining characteristics,⁴⁴⁶ leak detection, recordkeeping and reporting, release response actions, closure, and financial responsibility.⁴⁴⁷ Prior to the effective date of those permanent performance standards, underground storage tanks were to be constructed to avoid releases due to corrosion or structure failure, to have cathodic protection against corrosion or be constructed of noncorrosive materials, and to have linings appropriate to the substance being stored.⁴⁴⁸ The Act's financial responsibility provisions require coverage of at least \$1,000,000 for classes of large tanks and lesser amounts for classes of small tanks.⁴⁴⁹

Permanent federal performance standards became effective on December 22, 1988.⁴⁵⁰ New underground storage tanks are subject to

439. MO. REV. STAT. § 319.103(1)-(2) (Supp. 1989).

440. *Id.* §§ 319.103(3), .120.

441. *Id.* § 319.103(6).

442. *Id.* § 319.123.

443. *Id.* § 319.125.

444. SWDA § 9003(f)(2), 42 U.S.C. § 6991b(f)(2) (Supp. V 1987).

445. SWDA § 9003(f)(1), 42 U.S.C. § 6991a(f)(1) (Supp. V 1987).

446. SWDA § 9003(b), 42 U.S.C. § 6991b(b) (Supp. V 1987). Factors to be taken into account are listed in this subsection.

447. SWDA § 9003(c), 42 U.S.C. § 6991b(c) (Supp. V 1987).

448. SWDA § 9003(g), 42 U.S.C. § 6991a(g) (Supp. V 1987).

449. SWDA § 9003(d)(5), 42 U.S.C. § 6991b(d)(5) (Supp. V 1987). Evidence of financial responsibility may be insurance, guarantee, insurance, surety bond, letter of credit, qualification as a self-insurer, or other method satisfactory to EPA. SWDA § 9003(d)(1), 42 U.S.C. § 6991b(d)(1) (Supp. V 1987).

450. For technical requirements, 53 Fed. Reg. 37,082 (1988); 40 C.F.R. § 280

strict construction standards. All tank operators are subject to monthly monitoring and periodic testing requirements, and cleanup and closure requirements. These regulations also impose performance standards on existing underground storage tanks. Existing petroleum tanks must be retrofitted with corrosion protection and spill and overflow prevention systems within ten years, although single-walled tanks will be allowed to remain. Leak detection systems must be retrofitted much more quickly, within one year for tanks twenty-five years or older, within five years for tanks less than ten years old, and on a sliding scale for tanks between ten and twenty-five years old. Many leak detection systems are provided for, varying from tight inventory control systems coupled with an annual tightness test to a groundwater monitoring system. The same retrofitting requirements apply to existing chemical tanks. In addition, chemical tanks must be retrofitted with the dual-containment and leak detection systems applied to new chemical tanks within ten years. Those requirements include double-walled tanks, concrete vaults, and leak detection systems between the containment layers.

ii. Missouri

DNR is required to establish state performance standards for new underground storage tanks (brought into service after August 28, 1989) and for upgrading tanks existing before that date. They must include standards on design, construction, installation, piping, release detection, operation, and compatibility.⁴⁵¹ Also, they must include requirements for reporting releases and tank closure.⁴⁵² Until permanent performance standards are issued, underground storage tanks are to be constructed to avoid releases due to corrosion or structural failure, to have cathodic protection, to be constructed of noncorrosive materials or with noncorrosive linings appropriate to the substance being stored, or to be designed to prevent releases.⁴⁵³

d. Financial Responsibility

The federal financial responsibility requirements take effect between October 26, 1989, and October 26, 1990, depending on the number of tanks owned by an operator. Tank owners must demonstrate financial responsibility to take corrective action and to compensate third

(1989). For approval of state regulatory programs, 53 Fed. Reg. 37,212 (1988); 40 C.F.R. § 281 (1989).

451. MO. REV. STAT. § 319.105(1) (1986).

452. MO. REV. STAT. §§ 319.109, .111 (Supp. 1989).

453. *Id.* § 319.105(2) (Supp. 1989). Leak detection performance standards are to be issued under MO. REV. STAT. § 319.107 (Supp. 1989).

parties. The amount of coverage is determined by facts related to the tank structure and tank owner; it must be sufficient to cover either \$500,000 or \$1,000,000 per occurrence, and either \$1,000,000 or \$2,000,000 annual aggregate costs.⁴⁵⁴

In Missouri, tank owners and operators are required to maintain evidence of financial responsibility "in an amount and form sufficient for taking corrective action and compensating third parties for bodily injury and property damage caused by sudden and nonsudden accidental releases."⁴⁵⁵ The amount of financial responsibility shall not exceed that required by EPA under the federal act.⁴⁵⁶

In addition to the annual state registration fee, the owner or operator of a tank in service on August 28, 1989, must pay a one-time fee of \$100 by December 31, 1989. The one-time fee for new tanks must be paid within thirty days after the tank is brought into service.⁴⁵⁷ Both the annual registration fee and the one-time fee will be deposited in the "Underground Tank Insurance Fund," which will be available for cleanup costs not paid by a tank owner or operator.⁴⁵⁸ Owners and operators may meet their financial responsibility obligations up to \$1,000,000 by insuring through the Fund, subject to a \$25,000 deductible, a 50% copayment for liabilities between \$25,000 and \$50,000, and a 25% copayment for liabilities between \$50,000 and \$100,000.⁴⁵⁹

e. Petroleum Release Response Program

EPA is authorized to require an owner/operator of an underground storage tank which is releasing petroleum to take corrective action or to take corrective action itself to protect human health and the environment.⁴⁶⁰ This corrective action may include temporary or permanent relocation of residents and providing alternative household water supplies.⁴⁶¹ EPA uses funds in the Leaking Underground Storage

454. 40 C.F.R. § 280.93 (1989).

455. MO. REV. STAT. § 319.114(1) (Supp. 1989). Evidence of financial responsibility may be a cash trust fund, guarantee, insurance, surety or performance bond, letter of credit, qualification as a self-insurer, or other method satisfactory to DNR. *Id.* § 319.114(2) (Supp. 1989).

456. *Id.* § 319.114(3), referring to SWDA § 9003(d)(5), 42 U.S.C. § 6991b(d)(5) (Supp. V 1987). *See supra* note 459.

457. MO. REV. STAT. § 319.129 (Supp. 1989).

458. *Id.* §§ 319.123, .129.

459. *Id.* §§ 319.131, .133.

460. SWDA § 9003(h)(1)-(2), 42 U.S.C. § 6991b(h)(1-2) (Supp V 1987).

461. SWDA § 9003(h)(5), 42 U.S.C. § 6991b(h)(5) (Supp. V 1987).

Tank Trust Fund for payment of costs of corrective actions,⁴⁶² which may be recovered from the owner/operator.⁴⁶³

The Missouri statute does not contain a special provision dealing with emergency responses. The general enforcement provision authorizing compliance orders and temporary and permanent injunctions could be used to deal with emergency responses.⁴⁶⁴ In order to facilitate emergency responses, the statute provides that no person shall be liable for releases of petroleum or other actions taken or omitted at the direction of a state response coordinator, except as a result of gross negligence or intentional, reckless, willful or wanton misconduct.⁴⁶⁵

f. Enforcement

Federal enforcement consists of compliance orders, corrective action orders, civil injunctions, and civil penalties.⁴⁶⁶ Missouri enforcement consists of compliance orders, civil injunctions, and civil penalties.⁴⁶⁷

g. Citizen Suit Provision

The general SWDA citizen suit provision appears to apply to the underground storage tank regulatory program.⁴⁶⁸ The Missouri statute does not contain a citizen suit provision.

h. Delegation to States

States which adopt regulatory programs complying with federal standards and requirements may operate them in lieu of the federal program.⁴⁶⁹ These federal requirements include requiring leak

462. SWDA § 9003(h)(1)-(2), 42 U.S.C. § 6991b(h)(1-2) (Supp. V 1987).

463. SWDA § 9003(h)(6), 42 U.S.C. § 6991b(h)(6) (Supp. V 1987).

464. MO. REV. STAT. § 319.127(1) (Supp. 1989).

465. *Id.* § 319.135.

466. SWDA §§ 9003(h)(4), 9006(a)-(d), 42 U.S.C. §§ 6991b(h)(4), 6991e(a)-(d) (Supp. V 1987). Maximum civil penalties are \$10,000/day for violations of the act, regulations or standards, and \$25,000/day for failure to comply with compliance or correction action orders.

467. MO. REV. STAT. § 319.127 (Supp. 1989) (civil penalties cannot exceed \$ 10,000 per day).

468. *See* SWDA § 7002(a)-(c), 42 U.S.C. § 6972(a)-(c), which applies to violations of "any permit, standard, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this chapter." *Id.*

469. SWDA § 9004(b), (d), 42 U.S.C. § 6991c(b), (d) (Supp. V 1987). EPA may withdraw approval if a state falls out of compliance with federal minimum standards and requirements and reinstitute the federal regulatory program.

detection and inventory control systems, tank testing, record maintenance, release reporting, corrective action, tank closure, financial responsibility, performance standards, and tank location notification systems.⁴⁷⁰

Missouri's 1989 statute⁴⁷¹ was designed to meet federal approval requirements, but had not yet been approved at press time.

*D. Comprehensive Environmental Response, Compensation & Liability Act*⁴⁷²

Abandoned landfills and dumps containing hazardous materials pose a great threat of contamination to groundwater and surface waters. Missouri was the victim of eighty-six dioxin-contaminated Superfund sites, which included the entire area of Times Beach, and several hazardous waste disposal Superfund sites, including the Conservation Chemical site near Kansas City.⁴⁷³ The threat posed by leachate from such sites is demonstrated by common law cases.⁴⁷⁴

In 1980, Congress enacted the "Superfund Act" to clean up abandoned hazardous waste disposal sites.⁴⁷⁵ It supplements the Solid Waste Disposal Act which regulates the operation and closure of hazardous waste disposal facilities in operation on or established after its 1976 enactment date. The Superfund Act covers sites closed before that date, or after that date where the owner/operator of the facility or of the land cannot be found or has gone out of existence. Also, the Act

SWDA § 9004(e), 42 U.S.C. § 6991c(e) (Supp. V 1987).

470. SWDA § 9004(a), 42 U.S.C. § 6991c(a) (Supp. V 1987).

471. MO. REV. STAT. §§ 319.100-.137 (Supp. 1989).

472. Pub. L. No. 96-510, 94 Stat. 2767 (codified as amended at 42 U.S.C. §§ 9601-9675 (Supp. V 1987)) [hereinafter CERCLA].

473. Missouri Dioxin Task Force Final Report, app. IV (Oct. 31, 1983); *Dioxin: Quandary for the 80's*, St. Louis Post-Dispatch, Nov. 14, 1983, at 20-21 [special section]; MO. DEPT OF NATURAL RESOURCES CONFIRMED ABANDONED OR UNCONTROLLED HAZARDOUS WASTE DISPOSAL SITES IN MISSOURI F.Y. 1987 (1988).

474. See generally *New York v. Shore Realty Corp.*, 759 F.2d 1032 (2d Cir. 1985); *Kenney v. Scientific, Inc.*, 204 N.J. Super. 228, 497 A.2d 1310 (1985); *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp. 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988).

475. CERCLA, Pub. L. No. 96-510, 94 Stat. 2767 (codified as amended at 42 U.S.C. §§ 9601-9675 (Supp. V 1987)). See generally ENVIRONMENTAL LAW HANDBOOK, *supra* note 9, ch. 10 (10th ed. 1989); 2 LAW OF HAZARDOUS WASTE chs. 12-14 (S. Cooke, ed. 1987-89); 2 J. DAVIDSON & O. DELOGU, *supra* note 9, ch 6; 1A F. GRAD, *supra* note 9, § 4A.02; S. NOVICK, D. STEVER & M. MELLON, *supra* note 9, §§ 13.05(3), 13.06(3), 13.07(2); 1 D. STEVER, *supra* note 9, §§ 6.04-6.09.

addresses clean up of accidental releases which pose an imminent hazard.

One of the principal dangers posed by abandoned hazardous waste disposal sites is percolation of the hazardous materials into groundwater aquifers. This discussion will emphasize the Superfund provisions related to groundwater contamination.

Unlike the other federal environmental regulatory statutes, the Superfund Act does not contemplate the states taking over cleanup of abandoned hazardous waste disposal sites. Instead, it provides for supplemental state liability requirements.⁴⁷⁶ Missouri has enacted a state superfund law which creates both a fund and a listing of abandoned hazardous waste sites.⁴⁷⁷

1. Abatement of Abandoned Hazardous Waste Disposal Sites

Corrective action under the federal Superfund Act is triggered by notice to the National Response Center of EPA of the location of a release of a hazardous material into the environment which poses an imminent and substantial danger to the public health or welfare.⁴⁷⁸ Releases from licensed hazardous waste disposal facilities are dealt with under the imminent hazard provision of SWDA.⁴⁷⁹ All other accidental releases are handled under the Superfund Act.

Remedial action under the Superfund Act is undertaken consistent with the National Contingency Plan.⁴⁸⁰ Remedial actions can include treatment, or removal and offsite disposal.⁴⁸¹ It is conducted either by EPA, the owner/operator of the facility or land, or other responsible party.⁴⁸² The remedial action must be pursuant to a prior-approved plan.⁴⁸³ The plan must include measures to restore ground and surface water quality to a level which assures protection of human health and the environment.⁴⁸⁴

476. CERCLA § 114(a), 42 U.S.C. § 9614(a).

477. MO. REV. STAT. §§ 260.391, 260.435-.550 (1986).

478. CERCLA § 103(a), 42 U.S.C. § 9603(a). Studies may be conducted to determine whether a release has occurred. CERCLA § 104(b), 42 U.S.C. § 9604(b). For regulations, see 40 C.F.R. § 302 (1989).

479. See SWDA § 3013, 42 U.S.C. § 6934 (Supp. V 1987), discussed *supra* notes 389-93 and accompanying text.

480. CERCLA § 104(a), 42 U.S.C. § 9604(a).

481. CERCLA § 121(b), 42 U.S.C. § 9621(b).

482. CERCLA § 104(a), 42 U.S.C. § 9604(a).

483. *Id.*

484. CERCLA § 104(c)(6), 42 U.S.C. § 9604(c)(6).

The cost of remedial action, regardless of who conducts it, is borne by the owner/operator of the facility where the release occurred, or by the owner of the land on which the facility is located.⁴⁸⁵ Recoverable are cleanup costs, other response costs, damages for injury to or destruction of natural resources, and health assessment costs.⁴⁸⁶ Liability is limited to \$5,000,000 for overland transportation operations, and \$50,000,000 plus response costs for stationary facilities.⁴⁸⁷ If the release was the result of willful misconduct, willful negligence, or violation of regulation, or if the owner/operator fails or refuses to reasonably cooperate with response activities, there is no limit to liability and full response costs and damages may be recovered.⁴⁸⁸

All cleanup costs incurred after enactment of the Superfund Act in 1980 may be recovered regardless of whether the release occurred before or after that date.⁴⁸⁹ The Superfund Response Fund ultimately will pay cleanup costs only if recovery cannot be obtained from an owner/operator.⁴⁹⁰ The state in which the release is located must fund ten percent of unreimbursed cleanup costs.⁴⁹¹

485. CERCLA § 107(a), 42 U.S.C. § 9607(a) ("owner or operator of . . . a facility"). "Facility" is defined to include the area where the hazardous material has been "deposited, stored, disposed of, or placed, or otherwise come to be located." CERCLA § 101(9), 42 U.S.C. § 9601(9).

Former owners of facilities remain liable under CERCLA. *See* *United States v. Northeastern Pharmaceutical & Chem. Co.*, 579 F. Supp. 823, 844-45 (W.D. Mo. 1984); *United States v. Reilly Tar & Chem. Corp.*, 546 F. Supp. 1100, 1113 (D. Minn. 1982). Current owners of land on which former disposal facilities were located are liable. *See* *New York v. Shore Realty Corp.*, 759 F.2d 1032 (2d Cir. 1985).

Off-site generators of hazardous wastes are liable. CERCLA § 107(a)(3), 42 U.S.C. § 9607(a)(3). *See* *New York v. General Elec. Co.*, 592 F. Supp. 291, 302 (N.D.N.Y. 1984); *City of Philadelphia v. Stepan Chem. Co.*, 544 F. Supp. 1135, 1148-49 (E.D. Pa. 1982).

486. CERCLA § 107(a)(4), 42 U.S.C. § 9607(a)(C). *See* defenses in CERCLA § 107(b), 42 U.S.C. § 9607(b).

487. CERCLA § 107(c)(1), 42 U.S.C. § 9607(c)(1).

488. CERCLA § 107(c)(2), 42 U.S.C. § 9607(c)(2).

489. *United States v. Northeastern Pharmaceutical & Chem. Co.*, 579 F. Supp. 823 (W.D. Mo. 1984).

490. No monies can be spent from the Fund until after a claim for reimbursement of response costs is made against a responsible party and the claim remains unsatisfied for 60 days thereafter. Also, no monies can be spent from the Fund during the pendency of an action to recovery response costs from a responsible party. CERCLA § 112(a), 42 U.S.C. § 9612(a). EPA has adopted the practice of always seeking reimbursement of response costs before spending monies from the Fund.

491. CERCLA § 104(c)(3), 42 U.S.C. § 9604(c)(3).

EPA may enter into agreements with potentially responsible parties to perform response activities, provided EPA determines that the response activity will be properly conducted.⁴⁹² The settlement agreement may include reimbursement from the Superfund,⁴⁹³ a determination of the extent of future liability of potentially responsible parties,⁴⁹⁴ a consent decree for that amount of liability,⁴⁹⁵ and a covenant by the United States not to sue for recovery of additional liability.⁴⁹⁶

a. National Contingency Plan

Cleanup and remedial actions take place under the national contingency plan.⁴⁹⁷ The plan provides for: (1) methods for discovering and investigating hazardous waste disposal facilities; (2) methods for evaluating and remedying any releases or threatened releases from facilities which pose substantial danger to the public health or the environment; (3) methods and criteria for determining the appropriate extent of removal, remedy, or other authorized measures; (4) determining and assigning appropriate roles and responsibilities to various levels of government and government entities in carrying out the plan; (5) providing for identification, procurement, maintenance, and storage of response equipment and supplies; (6) determining means of assuring that remedial actions are cost-effective; and (7) determining priorities among releases or threatened releases for the purpose of taking effective remedial and removal actions.⁴⁹⁸ The plan must include an assessment of the human health risks from contamination or potential contamination of surface water used for recreation or of drinking water directly or indirectly by hazardous substances or pollutants from hazardous waste sites and facilities.⁴⁹⁹

492. CERCLA § 122(a), 42 U.S.C. § 9622(a).

493. CERCLA § 122(b), 42 U.S.C. § 9622(b).

494. CERCLA § 122(c), 42 U.S.C. § 9622(c).

495. CERCLA § 122(d), 42 U.S.C. § 9622(d).

496. CERCLA § 122(f)(1)-(2), 42 U.S.C. § 9622(f)(1-2). However, such a covenant not to sue does not bar suit by the United States to recover liability for remedial actions resulting from conditions not known at the time of the consent decree. CERCLA § 122(f)(6), 42 U.S.C. § 9622(f)(6).

497. The plan was prepared under CERCLA § 105, 42 U.S.C. § 9605. It is published at 40 C.F.R. § 300 (1989).

498. CERCLA § 105(a), 42 U.S.C. § 9605(a).

499. CERCLA § 105(c)(2), 42 U.S.C. § 9605(c)(2).

b. National Priorities List

As part of the national contingency plan, EPA annually prepares a national priority list of sites and facilities meriting cleanup.⁵⁰⁰ The list establishes a ranking based on the relative risk or danger to public health or the environment. Criteria for ranking include: the population at risk, the hazard potential of the hazardous substances at the site or facility, the potential for contamination of drinking water supplies, the potential for direct human contact, the potential for destruction of sensitive ecosystems, the damage to natural resources which may affect the human food chain, the contamination or potential contamination of the ambient air, and the preparedness of the State to assume the ten percent state share of costs.⁵⁰¹ The first 100 sites on the list include at least one site selected by each state.⁵⁰² High priority is given to sites or facilities where the release of hazardous substances has caused the closing of drinking water wells or has contaminated a principal drinking water supply.⁵⁰³ As of March 31, 1989, the National Priority List contained 848 sites, including twelve in Missouri.⁵⁰⁴

c. Missouri Provisions

The Missouri superfund act is similar in its structure.⁵⁰⁵ It contains equivalents to the National Contingency Plan and the National Priority List. It provides for a hazardous substance emergency response plan⁵⁰⁶ and a registry of abandoned or uncontrolled sites, with priority of importance.⁵⁰⁷ The Missouri registry lists fifty-two hazardous waste sites.⁵⁰⁸ Leachate from thirteen sites is known to have percolated into groundwater aquifers.⁵⁰⁹ Transfer of ownership of a listed site is

500. CERCLA § 105(a)(8)(B), 42 U.S.C. § 9605(a)(8)(B).

501. CERCLA § 105(a)(8)(A), 42 U.S.C. § 9605(a)(8)(A).

502. CERCLA § 105(a)(8)(B), 42 U.S.C. § 9605(a)(8)(B).

503. CERCLA § 118, 42 U.S.C. § 9618.

504. The National Priority List is at 40 C.F.R. § 300, app. B (1989). The list is being added to frequently. For a list of recent amendments, see 19 *Envtl. L. Rep.* (Envtl. L. Inst.) 46,011 (Dec. 1989).

505. MO. REV. STAT. §§ 260.435-.550 (1986 & Supp. 1989). For regulations, see MO. CODE REGS. tit. 10, § 25-10.010 (1987).

506. MO. REV. STAT. § 260.505 (1986).

507. *Id.* §§ 260.440, 450 (1986).

508. MO. DEP'T OF NATURAL RESOURCES, CONFIRMED ABANDONED OR UNCONTROLLED HAZARDOUS WASTE DISPOSAL SITES IN MISSOURI F.Y. 1987 (1988).

509. MO. DEP'T OF NATURAL RESOURCES, MISSOURI WATER QUALITY REPORT 43-47 (1988).

prohibited without the approval of the Department of Natural Resources.⁵¹⁰ DNR has authority to conduct remedial actions.⁵¹¹ There is strict liability for the cost of remedial action by the state.⁵¹²

2. Imminent Hazard Provisions

In the event an actual or threatened release of hazardous substances poses an imminent and substantial endangerment to the public health or the environment from an abandoned site, EPA may obtain abatement by issuing a cleanup order or seeking injunctive relief. If the person required to abate under the order or injunction is not liable for response costs under the Act, he may seek reimbursement from the Hazardous Substances Superfund. Response actions are to conform to the National Contingency Plan.⁵¹³

Missouri DNR also has power to take necessary actions "to clean up such hazardous substance or end such hazardous substance emergency."⁵¹⁴

3. Enforcement

Refusal to comply with a cleanup order or an order pursuant to a settlement agreement subjects the violator to a civil penalty of \$25,000 per violation.⁵¹⁵ The same penalty may be assessed each day such a refusal to comply continues.⁵¹⁶ For second and subsequent violations, the civil penalty may be increased to \$75,000 per day.⁵¹⁷ Refusal to comply with a state cleanup order may subject the violator to punitive damages not exceeding three times cleanup costs.⁵¹⁸

a. Preservation of Common Law Rights

Common law and statutory rights of action cognizable under state law remain unaffected by enactment of the federal Superfund Act.⁵¹⁹ The Act extends any state statutes of limitation to the period of limitations specified by the Act for personal injury or property damage

510. MO. REV. STAT. § 260.465 (Supp. 1989).

511. MO. REV. STAT. § 260.510 (1986).

512. *Id.* § 260.530.

513. CERCLA § 106, 42 U.S.C. § 9606.

514. MO. REV. STAT. § 260.510(1)(3) (1986).

515. CERCLA § 109(a)(1), 42 U.S.C. § 9609(a)(1).

516. CERCLA § 109(b), (c), 42 U.S.C. § 9609(b), (c).

517. *Id.*

518. MO. REV. STAT. § 260.530-1 (1986).

519. CERCLA § 310(h), 42 U.S.C. § 9659(h).

caused by exposure to hazardous substances, pollutants or contaminants released into the environment from a hazardous waste site or facility.⁵²⁰

There does not appear to be any parallel Missouri provision preserving common law rights; however, it seems unlikely that a court would hold that they are preempted by the state superfund law.

b. Citizen Suit Provision

The Superfund Act contains a typical citizen suit provision which allows any person to bring suit against any other person, including any federal, state or local governmental entity, to enforce the Act, or regulation, standard, condition, requirement or order issued pursuant to the Act.⁵²¹ Prerequisites to such lawsuits are: (1) the giving of sixty days notice to EPA, the state agency and the alleged violator;⁵²² and (2) failure of EPA or the state agency to initiate a compliance lawsuit by the end of that sixty day period.⁵²³ Like in most Missouri environmental regulatory statutes, there is not a citizen suit provision in the state superfund law.

4. The Superfund

Both the federal and state superfund acts establish dedicated cleanup funds funded by taxes on the production of hazardous chemicals and petroleum.⁵²⁴

520. CERCLA § 309(a), 42 U.S.C. §§ 9658(a), 9659(h). The Superfund statute of limitations is set forth in CERCLA § 113(g-h), 42 U.S.C. § 9613(g-h).

521. CERCLA § 310, 42 U.S.C. § 9659. The Supreme Court held in *Pennsylvania v. Union Gas Co.*, 109 S. Ct. 2273 (1989), that Congress has the constitutional authority to override a state's sovereign immunity protected by the Eleventh Amendment, that such action must be done by express statutory language, and that it had done so by defining "person . . . who is alleged to be in violation" as including a "State." See CERCLA §§ 310(a)(1), 310(i), 101(21), 42 U.S.C. §§ 9659(a)(1), 9659(i), 9601(21).

522. CERCLA § 310(d)(1), 42 U.S.C. § 9659(d)(1).

523. CERCLA § 310(d)(2), 42 U.S.C. § 9659(d)(2).

524. Hazardous Substance Superfund Act of 1986, Pub. L. No. 99-499, § 517(a), 100 Stat. 1772 (codified as amended at 26 U.S.C. § 9507); CERCLA § 111, 42 U.S.C. § 9611 (Supp. V 1987); Mo. Rev. Stat. §§ 260.475-.480 (1986).

*E. Surface Mining Control & Reclamation Act*⁵²⁵

State common law does not require restoration of the surface following completion of surface mining,⁵²⁶ and vast areas of unreclaimed surface mined land were created in the first seven decades of the twentieth century.⁵²⁷ Among the many destructive aspects of surface mining methods is pollution of surface water and groundwater by acid and toxic materials associated with coal seams which are exposed and liberated by the mining process. The danger posed by surface mining is illustrated by common law cases.⁵²⁸

To mitigate the adverse environmental and property value effects of the rapidly growing amount of devastated land, some states and later Congress enacted remedial legislation requiring reclamation of surface coal mined land. Many, but not all, coal mining states enacted statutes regulating surface mining methods and requiring reclamation. Missouri was a latecomer among that number, enacting its first statute in 1971.⁵²⁹

The federal Surface Mining and Reclamation Act was enacted in 1977 to regulate the location and technique of surface mining of coal

525. Pub. L. No. 95-87, 91 Stat. 447 (1977) (codified as amended at 30 U.S.C. §§ 1201-1328 (1982)) [hereinafter SMRCA].

526. Comment, *The Common Law Rights to Subjacent Support and Surface Preservation*, 38 MO. L. REV. 234 (1973); Annotation, *Grant, Reservation or Lease of Minerals and Mining Rights as Including, Without Expressly so Providing, the Right to Remove the Minerals by Surface Mining*, 70 A.L.R.3d 383-521 (1976). Cf. *Bonds v. Sanchez O'Brien Oil & Gas Co.*, 715 S.W.2d 444 (Ark. 1986).

527. By 1965, 3,200,000 acres had been surface mined for various minerals, of which 2,000,000 acres had not been reclaimed. U.S. DEP'T OF THE INTERIOR, *SURFACE MINING AND OUR ENV'T* (1967), cited in H. CAUDILL, *MY LAND IS DYING* 23 (1971). In Missouri, 67,000 acres were surfaced mined before 1971. Although much of that land has recovered through natural processes, about 26,000 acres remain barren and continue to cause environmental problems. MO. DEP'T OF NATURAL RESOURCES, *MISSOURI'S LAND RECLAMATION PROGRAM-1989 REPORT* 5.

528. See *Williams v. M.C. West Constr. Co.*, 579 S.W.2d 883 (Tenn. Ct. App. 1979); *Central Indiana Coal Co. v. Goodman*, 111 Ill. App. 480, 39 N.E.2d 484 (1942). The host of acid drainage from underground mine cases involve the same polluting mechanism. See, e.g., *Commonwealth v. Barnes & Tucker Co.*, 472 Pa. 115, 371 A.2d 461 (1977), *appeal dismissed*, 434 U.S. 807 (1977); *Woodward Iron Co. v. Hill*, 38 Ala. App., 150, 79 So. 2d 711 (1955); *W.G. Duncan Coal Co. v. Jones*, 254 S.W.2d 720 (Ky. 1953); *Panther Coal Co. v. Looney*, 185 Va. 758, 40 S.E.2d 298 (1946).

529. MO. REV. STAT. §§ 444.500-.755 (1986 & Supp. 1989).

and the subsequent reclamation of the mined land.⁵³⁰ Among the concerns addressed was contamination of surface watercourses and groundwater aquifers by acid and toxic drainage from exposed formations, overburden, and tailings piles.

Like many other federal environmental regulatory acts, SMCRA contemplates that basic policies will be determined by the federal government and that implementation of those policies will be done by state agencies. Missouri has three statutes requiring reclamation of coal mines,⁵³¹ barite mines,⁵³² and clay, limestone, sand, and gravel pits.⁵³³ The surface coal mining law has received federal approval and the federal regulatory program is in abeyance.⁵³⁴

1. Jurisdiction Limited to Surface Coal Mines

The federal Act regulates only coal mines using surface mining techniques.⁵³⁵ Those techniques include contour, strip, auger, mountaintop removal, box cut, open pit, and area mining.⁵³⁶ The state act regulates "surface coal mining operations" and related activities.⁵³⁷

2. Permit System

The federal Act provides for a federal permit program.⁵³⁸ A permit must be acquired for each year's mining activity. Application must be made before mining activity begins.⁵³⁹ The application must describe the lands to be mined, the mining methods to be used,

530. Pub. L. No. 95-87, 91 Stat. 447 (1977) (codified as amended at 30 U.S.C. §§ 1201-1328 (1982)). On the Act generally, see 2 J. DAVIDSON & O. DELOGU, *supra* note 9, ch. 10; 5 ROCKY MTN. MIN. L. INST., *AMERICAN LAW OF MINING* ch. 172 (1986).

The Act was held constitutional in *Hodel v. Virginia Surface Mining & Reclamation Ass'n*, 452 U.S. 264 (1981). The regulations were upheld in *In re Permanent Surface Mining Regulation Litig.*, 653 F.2d 514 (D.C. Cir.), *cert. denied*, 454 U.S. 822 (1981).

531. Surface Coal Mining Law, MO. REV. STAT. §§ 444.800-970 (1986 & Supp. 1989).

532. Strip Mine Law, MO. REV. STAT. §§ 444.500-.755 (1986 & Supp. 1989).

533. Land Reclamation Act, MO. REV. STAT. §§ 444.760-.786 (1986 & Supp. 1989).

534. 30 C.F.R. §§ 925.10-.25 (1989).

535. SMCRA §§ 102, 701(28), 30 U.S.C. §§ 1202, 1291(28).

536. SMRCA § 701(28), 30 U.S.C. § 1291(28).

537. MO. REV. STAT. § 444.805(15)-(16) (Supp. 1989).

538. SMCRA § 506(a), 30 U.S.C. § 1256(a). For regulations, see 30 C.F.R. §§ 772-785 (1989).

539. SMCRA § 506(a), 30 U.S.C. § 1256(a).

identification of hydrologic consequences of mining and reclamation activities, and the reclamation plan to be followed.⁵⁴⁰ A permit can be issued if: (1) reclamation can be accomplished under the proposed plan; (2) material damage to the hydrologic balance outside the permit area can be prevented; (3) the proposed mining area is neither "an area designated as unsuitable for surface coal mining" nor being studied for such designation; and (4) the necessary surface owner consent has been obtained.⁵⁴¹ In addition, the permit applicant must file an Environmental Impact Statement under the National Environmental Act.⁵⁴²

The term of the permit cannot exceed five years,⁵⁴³ but it is renewable upon compliance with the conditions attached to the original permit.⁵⁴⁴ Performance bonds sufficient to pay for uncompleted reclamation must be provided before the permit can be issued.⁵⁴⁵ The bond will pay for reclamation not done by the permittee.

Missouri requires a permit for each year's mining activity, and requires that the mining and reclamation be completed during the permit's five year term, unless it is extended.⁵⁴⁶ The permit application must be accompanied by a reclamation plan, which must be approved before mining can begin.⁵⁴⁷ Among the matters to be dealt with are plans for controlling surface water drainage, and protecting surface and ground waters from the adverse effects of mining and reclamation.⁵⁴⁸ A performance bond or other approved surety must be posted.⁵⁴⁹

540. SMCRA § 507(b), 30 U.S.C. § 1257(b). On the scope of the reclamation plan, see SMCRA § 508(a), 30 U.S.C. § 1258(a).

541. SMCRA § 510(b), 30 U.S.C. § 1260(b).

542. SMCRA § 702(a), (d), 30 U.S.C. § 1292(a), (d). See generally National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-4347 (1982).

543. SMCRA § 506(b), 30 U.S.C. § 1256(b).

544. SMCRA § 506(d), 30 U.S.C. § 1256(d).

545. SMCRA § 509(a), 30 U.S.C. § 1259(a). Partial release of the performance bond may be obtained at two stages: (1) when backfilling, regrading and drainage control has been completed (60% release), and (2) after revegetation has been established (retention of only that portion needed repeat revegetation). The remainder of the bond is released five years thereafter. SMCRA §§ 515(b)(20), 519(c), 30 U.S.C. §§ 1265(b)(20), 1269(c).

546. MO. REV. STAT. § 444.815 (1986). For regulations, see MO. CODE REGS. tit. 10, §§ 40-6.010-.090 (1987).

547. MO. REV. STAT. §§ 444.820, .825 (1986).

548. MO. REV. STAT. §§ 444.825(1)(5), (13) (1986).

549. MO. REV. STAT. § 444.830 (Supp. 1989). Partial release of the bond when grading has been completed (60%), and when revegetation has been established. MO. REV. STAT. § 444.875-3 (1986). For regulations, see MO. CODE REGS. tit. 10, § 40-7.011 (1987).

3. Performance Standards

Surface mining must be conducted according to certain performance standards and subject to certain prohibited activities specified in the act.⁵⁵⁰ General performance standards include:

- (1) a ban of highwalls, spoil piles and depressions;
- (2) restoration of the surface to approximately the original contour;
- (3) restoration of the topsoil, revegetation and erosion control;
- (4) control of all acid-forming, toxic and flammable materials so as to prevent contamination of the ground and surface waters;
- (5) minimization of disturbance to the quantity and quality and hydrologic balance of surface and ground waters;
- (6) creation of slide and erosion barriers at the boundaries of the mined area during mining; and
- (7) downslope disposal of spoil on slopes greater than 20 degrees and complete backfilling of bench cuts.⁵⁵¹

While the federal Act contemplates reclamation of the mined area for restoration of the pre-mining use of the surface,⁵⁵² an exception may be granted to allow a different post-mining use if: (1) it is considered an equal or better economic or public use of the land; (2) it is compatible with surrounding land uses and is practicable with respect to private financial capability; and (3) it is consistent with existing state and local land use plans.⁵⁵³

The Missouri act imposes similar performance standards.⁵⁵⁴ Minimization of disturbance to the quality and quantity of ground and surface waters is required.⁵⁵⁵

a. Prime Farmlands

Special federal requirements apply to "prime farmlands," as defined by the U.S. Department of Agriculture.⁵⁵⁶ They cannot be mined unless they can be restored to equal or higher levels of yields as non-mined prime farmland in the area.⁵⁵⁷ The A and B soil horizons

550. SMCRA § 515(a), 30 U.S.C. § 1265(a).

551. SMRCA § 515(b), 30 U.S.C. § 1265(b). For regulations, see 30 C.F.R. §§ 810-828 (1989).

552. SMCRA § 515(b)(2), 30 U.S.C. § 1265(b)(2).

553. SMCRA § 515(c)(3), 30 U.S.C. § 1265(c)(3).

554. MO. REV. STAT. § 444.855 (1986). See regulations at MO. CODE REGS. tit. 10, §§ 40-3.010-3.310 (performance standards), 4.040 (steep-slopes), 5.010 (mining limitations) (1989).

555. MO. REV. STAT. § 444.855(2)(10) (1986). For regulations, see MO. CODE REGS. tit. 10, § 40-3.040 (1987).

556. SMCRA § 510(d), 30 U.S.C. § 1260(d).

557. *Id.*

within the root zone must be restored in the same order to uniform depths over the regraded spoil material.⁵⁵⁸ Missouri imposes similar requirements for prime farmlands.⁵⁵⁹

b. Lands Unsuitable for Mining

Certain lands cannot be surface mined. The federal Act specifies certain lands as being "unsuitable for surface coal mining." They include:

- (1) lands within National Parks, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, Wild and Scenic Rivers System, and National Recreation Areas,
- (2) lands within National Forests (unless the Secretary of Agriculture determines that there are no incompatible significant recreational, timber, economic or other values),
- (3) lands where surface mining would adversely affect any publicly owned park or places included in the National Register of Historic Sites,
- (4) lands within 100 feet of the right-of-way of any public road (unless relocated), and
- (5) lands within 300 feet from any occupied dwelling (unless waived by the owner), public building, school, church, community building, or institutional building, or public park, or within 100 feet from a cemetery.⁵⁶⁰

In addition, states are permitted to designate other lands as unsuitable for surface coal mining. They include:

- (1) lands which are technologically or economically infeasible to reclaim,
- (2) lands where surface mining is incompatible with existing state or local land use plans,
- (3) fragile or historic lands where surface mining operations could result in significant damage to important historic, cultural, scientific, and aesthetic values and natural systems,
- (4) renewable resource lands where surface mining operations could result in a substantial loss or reduction in long-range productivity of water supply or of food or fiber products, including aquifers and aquifer recharge areas, and
- (5) natural hazard lands where surface mining operations could substantially endanger life and property, including areas subject to frequent flooding and areas of unstable geology.⁵⁶¹

558. SMCRA § 515(b)(7), 30 U.S.C. § 1265(b)(7).

559. MO. REV. STAT. § 444.855(2)(7) (1986). For regulations, see MO. CODE REGS. tit. 10, § 40-4.030 (1989).

560. SMCRA § 522(e), 30 U.S.C. § 1272(e). For regulations, see 30 C.F.R. §§ 761-769 (1989).

561. SMCRA § 522(a)(2)-(3), 30 U.S.C. § 1272(a).

Missouri forbids mining on the same areas forbidden by the federal Act,⁵⁶² and it has established a planning process for determining whether to declare any of those lands unsuitable for surface coal mining.⁵⁶³

c. Surface Owner Consent Requirement

Surface mining can be conducted only on lands where consent has been obtained from the surface owner.⁵⁶⁴ Three alternative forms of surface owner consent will satisfy the federal Act: (1) express written consent of the surface owner; (2) a conveyance or lease which expressly grants or reserves the right to use surface mining methods; or (3) a surface-subsurface legal relationship established by state statutory or common law which permits use of surface mining methods.⁵⁶⁵

The Missouri act also requires surface owner consent as a prerequisite to a permit. But its list of the forms of consent varies somewhat: (1) express written consent of the surface owner; (2) a conveyance which expressly grants or reserves the right to use surface mining methods; or (3) a surface-subsurface legal relationship determined by a final court decree.⁵⁶⁶ The reason for the difference in the third alternative is that the Missouri courts never have ruled on the surface-subsurface legal relationship at common law where an express grant of the right to use surface mining methods is absent.

4. Enforcement

The federal Act is administered by the Office of Surface Mining (OSM) in the Department of the Interior. That agency issues permits

562. MO. REV. STAT. § 444.890(4)(1)(2)-(3) (1986).

563. MO. REV. STAT. § 444.890(1) (1986). For regulations, see MO. CODE REGS. tit. 10, § 40-5.020 (1989).

564. SMCRA §§ 510(b)(6), 714(c), 30 U.S.C. §§ 1260(b)(6), 1304(c) (for private and federal mineral estates respectively).

565. SMCRA § 510(b)(6), 30 U.S.C. § 1260(b)(6). The third alternative acknowledges the common law of a few states which recognizes the validity of the so-called "broad form deed" that allows the use of any mining method selected by the miner regardless of whether that method was common in the area when the conveyance or lease was entered into by the surface miner. *See Buchanan v. Watson*, 290 S.W.2d 40 (Ky. 1956). This was true at the time SMCRA was enacted. In 1987, however, Kentucky became the last state to abandon the broad form deed doctrine and to require payment of compensation for surface destruction. *Akers v. Baldwin*, 736 S.W.2d 294 (Ky. 1987).

566. MO. REV. STAT. § 444.835(2)(5) (1986).

and monitors mining and reclamation activities in those states which do not have a federally-approved state regulatory program.

OSM has been given the usual panoply of enforcement powers, which include inspection, cessation orders, permit suspension or revocation, civil injunctions and civil penalties.⁵⁶⁷

In Missouri, the state act is administered by the Land Reclamation Commission, which is staffed by the Department of Natural Resources.⁵⁶⁸ DNR has been given the usual enforcement powers, including inspection, cessation orders, permit suspension or revocation, civil injunctions, and civil penalties.⁵⁶⁹

5. Citizen Suit Provision

Like many other federal environmental statutes, SMCRA has a typical citizen suit provision which allows any person to bring suit to enforce the act, following the giving of sixty days' notice and the failure of OSM to initiate an enforcement lawsuit.⁵⁷⁰

The state act, unlike most Missouri environmental regulatory statutes, does provide for citizen suits; it contains the typical prerequisites, sixty days' notice and failure of DNR to prosecute an enforcement action.⁵⁷¹

6. Preservation of Common Law Rights

The federal and state acts expressly preserve common law rights and remedies.⁵⁷²

7. Delegation to States

The Act contemplates that implementation of federal surface mining regulatory policies will be done by the states. It allows the states to develop their own regulatory programs; if they incorporate federal regulatory policies, the federal permit program is put in abeyance.⁵⁷³

567. SMCRA §§ 517-18, 521(c), 30 U.S.C. §§ 1267-68, 1271(c) (civil penalties cannot exceed \$ 5,000 per day)

568. MO. REV. STAT. §§ 444.520, .810 (1986).

569. MO. REV. STAT. §§ 444.865-.870 (1986) (civil penalties cannot exceed \$ 5,000 per day). For regulations, see MO. CODE REGS. tit. 10, § 40-8.030 (1989).

570. SMCRA § 520, 30 U.S.C. § 1270.

571. MO. REV. STAT. § 444.880 (1986).

572. SMCRA § 520(e), 30 U.S.C. § 1270(e); MO. REV. STAT. § 444.880(5) (1986).

573. SMCRA § 502(e), 30 U.S.C. § 1252(e). For regulations, see 30 C.F.R. §§ 730-736 (1989).

In the absence of a federally-approved state regulatory program, a federal regulatory program is to be initiated.⁵⁷⁴

In order to obtain federal approval, a state regulatory program must include a permit program, a process for designating lands as unsuitable for mining,⁵⁷⁵ and enforcement capability.⁵⁷⁶ The state program may include requirements more stringent than, but not inconsistent with, federal requirements.⁵⁷⁷ Also, it may include sanctions in addition to those enumerated in the Act.⁵⁷⁸ In order to assure adequate enforcement, the Act authorizes initiation of a federal regulatory program if a state fails to maintain its enforcement program.⁵⁷⁹ Alternatively, the federal government may enforce the state program.⁵⁸⁰

Missouri's act has received federal approval; hence, surface coal mines must be permitted only under the state act, not the federal act.⁵⁸¹

8. Abandoned Mine Reclamation Fund

The federal Act creates a fund used to reclaim surface coal mines which ceased operations before the Act went into force.⁵⁸² It is funded by a surcharge of \$.35 per ton of surface mined coal and \$.15 per ton of underground mined coal.⁵⁸³ Half of the funds collected in each state or Indian reservation are allocated back to them respectively for reclamation.⁵⁸⁴ The other half is allocated by OSM as additional grants to states to use for specific reclamation projects,⁵⁸⁵ such as demonstration projects or reclaiming problem areas.

The Missouri act creates a state abandoned mine fund to reclaim preenactment abandoned surface coal mines⁵⁸⁶ which is funded by the

574. SMCRA § 504(a), 30 U.S.C. § 1254(a).

575. SMCRA §§ 503(a)(5), 522(a), 30 U.S.C. § 1253(a)(5), 1272(a).

576. SMCRA § 503(a), 30 U.S.C. § 1253(a).

577. SMCRA § 505, 30 U.S.C. § 1255.

578. SMCRA § 521(d), 30 U.S.C. § 1271(d).

579. SMCRA § 504(a)(3), 30 U.S.C. § 1254(a)(3).

580. SMCRA § 504(b), 30 U.S.C. § 1254(b).

581. *See supra* note 534.

582. SMCRA § 401(c), 30 U.S.C. § 1231(c). For regulations, see 30 C.F.R. §§ 870-888 (1989).

583. SMCRA § 402(a), 30 U.S.C. § 1232(a).

584. SMCRA § 402(g)(2), 30 U.S.C. § 1232(g)(2).

585. SMCRA § 402(g)(4), 30 U.S.C. § 1232(g)(4).

586. MO. REV. STAT. § 444.915 (1986). Missouri had completed reclamation of about 1700 acres of abandoned mine lands by 1989, and 770 acres were in the process of reclamation. MO. DEPT OF NATURAL RESOURCES, MISSOURI'S LAND

state share of the federal abandoned mine fund.⁵⁸⁷ It also establishes a state Coal Mine Land Reclamation Fund to complete reclamation of mines operated by defaulting permittees.⁵⁸⁸ It is funded by an assessment of \$.30 per ton for the first 50,000 tons sold each calendar year and \$.20 per ton for the next 50,000 tons sold.⁵⁸⁹

E. Protection of Water in Caves

Caves and sinkholes make apparently convenient places to discharge wastes. That practice, however, poses a great threat to the fauna living in the caves and to the quality of the groundwater and surface watercourses fed by water in the caves. Cases illustrate this phenomenon.⁵⁹⁰

Although the federal government has no statutes specifically protecting water in caves, Missouri does. The Cave Resources Act⁵⁹¹ prohibits the discharge into caves, sinkholes, or underground waters any substance that will violate the provisions of the Clean Water Law or established water quality standards or effluent limitations.⁵⁹² The prohibition does not apply: (1) to discharges made under a Clean Water Law permit; or (2) where natural underground drainage systems are used for stormwater drainage, artificial recharge of groundwater aquifers, irrigation return flows, or artificial improvements to natural drainage relationships; or (3) to underground mining operations.⁵⁹³ Violations are a misdemeanor.⁵⁹⁴

RECLAMATION PROGRAM-1989 ANNUAL REPORT 5.

587. MO. REV. STAT. § 444.920 (1986).

588. MO. REV. STAT. § 444.960 (Supp. 1989).

589. MO. REV. STAT. § 444.965 (Supp. 1989). When the fund accumulates \$ 7,000,000, or \$2,500 times the number of permitted unreclaimed acres, the size of the assessment is substantially reduced. MO. REV. STAT. §§ 444.960(3), .965(2) (1986 & Supp. 1989).

590. *See, e.g.,* Windle v. City of Springfield, 275 S.W. 585 (Mo. Ct. App. 1925), *aff'd*, 320 Mo. 459, 8 S.W.2d 61 (1928); Lynch v. Jefferson Township School Dist., 6 Pa. D. & C. 343 (C.P. 1924); Lytton v. Steward, 2 Tenn. Ch. App. 586 (1876).

591. MO. REV. STAT. §§ 578.200-.225 (1986) (enacted 1980).

592. *Id.* § 578.215-2.

593. *Id.* § 578.215(2).

594. *Id.* § 578.225.

PART II
COMMON LAW DOCTRINES INFLUENCING
WATER QUALITY

Several common law doctrines determine the relative rights of landowners to protection of the quality of surface and ground waters.⁵⁹⁵ They include the doctrines of private nuisance, negligence, strict liability, and water use rights. In addition, the public at large is protected by the public nuisance doctrine. By far the most commonly used doctrines protecting surface water quality are riparian rights and nuisance.⁵⁹⁶ For protecting groundwater quality nuisance and negligence are most common.⁵⁹⁷

595. On the common law of water pollution generally, see 1 F. GRAD, *supra* note 9, §§ 3.02 (1), 3.05(3); 1 W. RODGERS, *supra* note 9, ch. 2, at 28-168 (2d ed. 1986 & Supp. 1988); D. SELMI & K. MANASTER, *STATE ENVIRONMENTAL LAW* chs. 3-4 (1989). The last two books concentrate on the nuisance doctrine. Grad discusses all of the common law theories.

This article does not address the problem of waste discharges onto the surface of the ground, whether in the presence or absence of diffused surface water flows after rains and snowmelts. But there is some common law on that issue. In Missouri, there are three cases utilizing the private nuisance doctrine: *Bower v. Hog Builders, Inc.*, 461 S.W.2d 784 (Mo. 1970) (feedlot lagoon overflow flowed onto neighboring land, causing odors); *Manner v. H.E.T., Inc.*, 739 S.W.2d 724 (Mo. Ct. App. 1987) (construction erosion and debris flowed onto adjacent land); *Clark v. City of Springfield*, 241 S.W.2d 100 (Mo. Ct. App. 1951) (city combined sewer overflowed on residential land).

596. For a comprehensive list of pre-1970 cases throughout the United States, see Davis, *Theories of Water Pollution Litigation*, 1971 WIS. L. REV. 738, 782-804. At that time, out of 444 reported cases, 136 used riparian rights law, 233 used private nuisance law, and 75 used public nuisance law. *Id.* at 805-06. My recent unpublished research reveals 131 more cases of which 28 used riparian rights law, 13 used private nuisance law, 10 used public nuisance law, 11 used negligence law, 7 used strict liability law, 9 used trespass law, and 32 did not specify a decisional rule. These cases will be listed in my forthcoming book. See *supra* note *.

597. For a comprehensive list of pre-1974 cases throughout the United States, see Davis, *Groundwater Pollution: Case Law Theories for Relief*, 39 MO. L. REV. 117, 147-63 (1974). At that time, out of 201 reported cases, there had been 86 nuisance cases, 74 negligence cases, 24 strict liability cases, 2 cases following percolating groundwater use rules, 4 cases following underground stream rules, and 15 cases not specifying a decisional rule. *Id.* at 158-59. My recent unpublished research reveals 80 additional cases of which 26 were nuisance cases, 20 were negligence cases, 19 followed percolating groundwater allocation rules, 6 were strict liability cases, 5 were trespass cases, and 4 did not specify a decisional rule. These cases will be listed in my forthcoming book. See *supra* note *.

Remedies for Individuals

A. *Private Nuisance*

The nuisance doctrine is subdivided into private and public nuisance. The private nuisance doctrine determines the relative rights of landowners affected by the activities of one of them. The public nuisance doctrine determines the right of the public at large to protection from threats to the public health and safety. This section discusses the private nuisance doctrine, while the public nuisance doctrine is discussed in a later section.

Private nuisance is the most commonly employed legal theory dealing with both surface water and groundwater pollution.

1. Definition

A private nuisance is defined as an unreasonable and substantial nontrespassory interference with the use and enjoyment of another's land.⁵⁹⁸ It is any nontrespassory act which impairs the fitness of land for "the ordinary uses of life,"⁵⁹⁹ or any act which produces "a condition actually destructive of physical comfort or health, or a tangible, visible injury to property."⁶⁰⁰ The doctrine is directed at injurious consequences of the defendant's activity, not at the predictability of the contamination or subsequent injury or damage.⁶⁰¹

The private nuisance doctrine applies to pollution of surface and ground waters.⁶⁰² The vast bulk of surface watercourse private nuisance cases involve water supply contamination, odors adversely affecting places of habitation, and soil poisoning.⁶⁰³ In the case of

598. W. KEETON, D. DOBBS, R. KEETON & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 88 (5th ed. 1984); RESTATEMENT (SECOND) OF TORTS § 822 (1979); W. RODGERS, *supra* note 595, § 2.3, at 41-42; Davis, *supra* note 597, at 126; Comment, *The Law of Private Nuisance in Missouri*, 44 MO. L. REV. 20, 21 (1979).

599. *Mowrer v. Ashland Oil & Ref. Co.*, 518 F.2d 659, 661 (7th Cir. 1975); *Kriener v. Turkey Valley Community School Dist.*, 212 N.W.2d 526, 531 (Iowa 1973); *Bower v. Hog Builders, Inc.*, 461 S.W.2d 784, 795-97 (Mo. 1970); *Sterling v. Versical Chem. Corp.*, 647 F. Supp. 303, 319 (W.D. Tenn. 1986), *aff'd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988).

600. *Spartan Drilling Co. v. Bull*, 221 Ark. 168, 252 S.W.2d 408, 410 (1952); *Bowman v. Humphrey*, 124 Iowa 744, 746, 100 N.W. 854, 855 (1904).

601. *Durrance v. Sanders*, 329 So. 2d 26, 29 (Fla. Ct. App. 1976); *Nelson v. C & C Plywood Corp.*, 154 Mont. 414, 465 P.2d 314, 319 (1970).

602. RESTATEMENT (SECOND) OF TORTS §§ 832, 849 (1979).

603. *Livezey v. Town of Bel Air*, 174 Md. 568, 199 A. 838 (1938); *Trevett v.*

groundwater pollution, nearly all private nuisance cases have involved pollution of domestic and livestock wells.⁶⁰⁴

2. Exceptions

Not all uses of land which adversely affect use of neighboring land constitute nuisances. Although polluting, some are not considered to be nuisances, but are dealt with under negligence law. Those land uses or contaminations of groundwater pursuant to use of land which must be conducted at that location, such as mining or oil and gas production, fall within that exception regardless of the degree or nature of interference.⁶⁰⁵ By contrast, pollution from manufacturing sites could constitute nuisances, since they are not required by physical circumstance to be conducted at a particular location.⁶⁰⁶

3. Doctrine Available Only to Affected Landowners

Lawsuits under the private nuisance doctrine can be brought only by landowners affected by the interfering activity. Because the doctrine is designed to deal with disputes between landowners, members of the public and governmental agencies have no rights under the private nuisance doctrine and cannot sue.

4. Private Nuisance Doctrine Is Recognized in All States

The private nuisance doctrine has an ancient lineage in the common law. Therefore, it is recognized in all common law states.⁶⁰⁷ It has been applied to surface water pollution situations in thirty-nine states⁶⁰⁸ and in groundwater pollution situations in twenty-eight

Prison Ass'n, 98 Va. 332, 336, 36 S.E. 373, 374 (1900). Of 233 surface water-course quality private nuisance cases decided before 1970, 85% involved those three classes of situations. Davis, *supra* note 596, at 749-50, 793-801. My recent unpublished research does not affect this conclusion.

604. See, e.g., *Swift & Co. v. Peoples Coal & Oil Co.*, 121 Conn. 579, 590-92, 186 A. 629, 634 (1936); *Kinnaird v. Standard Oil Co.*, 89 Ky. 468, 474, 12 S.W. 937, 938 (1890); Davis, *supra* note 597, at 127.

605. Davis, *supra* note 597, at 127 nn.56-57 (citing cases).

606. See *id.*

607. Louisiana is the only non-common law state in the United States; it follows the civil law tradition of France.

608. See list and citations in Davis, *supra* note 596, at 793-801.

states.⁶⁰⁹ It is recognized in Missouri⁶¹⁰ and has been applied in twenty-two surface watercourse pollution cases⁶¹¹ and three ground-water pollution cases.⁶¹²

609. See list in Davis, *supra* note 597, at 158-59, with citations at 152-55.

610. A classic Missouri private nuisance case involving pollution of diffused surface water is *Bower v. Hog Builders, Inc.*, 461 S.W.2d 784 (Mo. 1970).

611. *Manhattan Oil Co. v. Mosby*, 72 F.2d 840 (8th Cir. 1934) (oil well brine polluted livestock water); *City of Harrisonville v. W.S. Dickey Clay Mfg. Co.*, 61 F.2d 210 (8th Cir. 1932), *rev'd on other grounds*, 289 U.S. 334 (1933) (inadequately treated city sewage damaged pastured); *Frank v. Environmental Sanitation Management, Inc.*, 687 S.W.2d 876 (Mo. 1985) (landfill leachate escaping to stream polluted livestock water and killed fish); *Stewart v. City of Springfield*, 350 Mo. 234, 165 S.W.2d 626 (1942) (city sewage polluted stream); *Smith v. City of Sedalia*, 182 Mo. 1, 81 S.W. 165 (1904) (city sewage polluted domestic and livestock water); *Smith v. City of Sedalia*, 152 Mo. 283, 53 S.W. 907 (1899), *affg after remand* by 182 Mo. 1, 81 S.W. 165 (1904) (city sewage polluted domestic and livestock water); *Smiths v. McConathy*, 11 Mo. 518 (1848) (farm animal wastes polluted domestic and livestock water); *Bartlett v. Hume-Sinclair Coal Mining Co.*, 351 S.W.2d 214 (Mo. Ct. App. 1961) (mine tailings polluted livestock water and killed crops); *Hillhouse v. City of Aurora*, 316 S.W.2d 883 (Mo. Ct. App. 1958) (city sewage in stream caused odors); *Newman v. City of El Dorado Springs*, 292 S.W.2d 314 (Mo. Ct. App. 1956) (city sewage polluted livestock water); *Divelbiss v. Phillips Petroleum Co.*, 272 S.W.2d 839 (Mo. Ct. App. 1954) (oil well brine in stream killed livestock); *Thompson v. City of Springfield*, 134 S.W.2d 1082 (Mo. Ct. App. 1939) (city sewage in stream caused odors); *Person v. City of Independence*, 114 S.W.2d 175 (Mo. Ct. App. 1938) (city sewage in stream caused odors); *Riggs v. City of Springfield*, 96 S.W.2d 392 (Mo. Ct. App. 1936), *rev'd on other grounds*, 344 Mo. 420, 126 S.W.2d 1144 (1939) (city sewage in stream caused odors); *Kent v. City of Trenton*, 48 S.W.2d 571 (Mo. Ct. App. 1931) (city sewage polluted domestic and livestock water); *Fansler v. City of Sedalia*, 189 Mo. App. 454, 176 S.W. 1102 (1915) (city sewage polluted livestock water); *Luckey v. City of Brookfield*, 167 Mo. App. 161, 151 S.W. 201 (1912) (city sewage polluted livestock water); *Kellogg v. City of Kirksville*, 149 Mo. App. 1, 129 S.W. 57 (1910) (city sewage polluted domestic and livestock water); *Kellogg v. City of Kirksville*, 132 Mo. App. 519, 112 S.W. 296 (1908); *City of Chillicothe v. Bryan*, 103 Mo. App. 409, 77 S.W. 465 (1903) (city sewage polluted livestock water); *Schumacher v. Shawhan*, 93 Mo. App. 573, 67 S.W. 717 (1902) (food processing wastes polluted domestic and livestock water); *Martinowsky v. City of Hannibal*, 35 Mo. App. 70 (1889) (city sewage in stream caused odors).

612. *Shelley v. Ozark Pipe Line Corp.*, 327 Mo. 238, 37 S.W.2d 518 (1938), *rev'g* 2 S.W.2d 115 (Mo. Ct. App. 1927) (pipeline leak polluted domestic well; damages granted); *Village of Claycomo v. Kansas City*, 635 S.W.2d 365 (Mo. Ct. App. 1980) (leachate from proposed landfill would pollute wells; motion to dismiss denied, remanded for trial); *Haynor v. Excelsior Springs Light, Power, Heat & Water Co.*, 129 Mo. App. 691, 108 S.W. 580 (1908) (oil & grease escaped into creek polluting domestic well; judgment for defendant).

In recent years, the courts have begun to deal with contamination of groundwater from hazardous waste disposal facilities, solid waste landfills and petroleum leaks under the law of private nuisance. The courts, not surprisingly, consider such contaminations a private nuisance.⁶¹³ Because of the grave danger posed by such facilities to groundwater quality, courts have awarded punitive damages where the defendant has failed to respond to the concerns of neighbors or has acted in a wanton or grossly negligent manner.⁶¹⁴

B. Water Allocation Doctrines

1. Surface Watercourses

The riparian doctrine is employed universally by the thirty-one states in the eastern United States to allocate water in watercourses between users. First formulated in modern terms in *Tyler v. Wilkinson*,⁶¹⁵ the doctrine provides that each landowner whose land abuts a watercourse has a coequal right both to natural flow and to make a reasonable use of that water, including consumptive uses. Reasonableness is determined by comparing the uses made of the water by each riparian and the relationship of those uses to the hydrologic characteristics of the watercourse.⁶¹⁶ Each state has had to emphasize either

613. *Relief granted*: *Filisko v. Bridgeport Hydraulic Co.*, 176 Conn. 33, 404 A.2d 889 (1978); *Pollard v. Land West, Inc.*, 96 Idaho 274, 526 P.2d 1110 (1974); *Village of Wilsonville v. SCA Serv., Inc.*, 86 Ill. 2d 1, 426 N.E.2d 824 (1981); *Salter v. B.W.S. Corp.*, 290 So. 2d 821 (La. 1974); *Village of Claycomo v. Kansas City*, 635 S.W.2d 365 (Mo. Ct. App. 1980); *Dempsey v. City of Souris*, 279 N.W.2d 418 (N.D. 1979); *Wood v. Picillo*, 443 A.2d 1244 (R.I. 1982).

Relief denied: *Chappell v. SCA Serv., Inc.*, 540 F. Supp. 1088 (C.D. Ill. 1982); *Theriot v. Mermentau, Inc.*, 385 So. 2d 939 (La. 1980); *Pirello v. Town of Arcadia*, 76 Misc. 2d 67, 348 N.Y.S.2d 950 (Sup. Ct. 1973), *affd.*, 356 N.Y.S.2d 248 (1974); *Durand v. Board of Coop. Educ. Serv.*, 70 Misc. 2d 429, 334 N.Y.S.2d 670 (Sup. Ct. 1972) *affd.*, 41 A.D.2d 803, 341 N.Y.S.2d 884 (1973); *Town of Rolesville v. Perry*, 21 N.C. App. 354, 204 S.E.2d 719 (1974); *see also* cases cited *supra* in notes 334, 335, 430, and 474.

614. *See, e.g.*, *Miller v. Cudahy Co.*, 858 F.2d 1449 (10th Cir. 1988); *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp. 303 (W.D. Tenn. 1986), *affd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988); *Bower v. Hog Builders, Inc.*, 461 S.W.2d 784 (Mo. 1970).

615. 24 F. Cas. 472 (C.C.D.R.I. 1827) (No. 14,312). *See* 3 J. KENT, COMMENTARIES 353-55 (1st ed. 1828).

616. *Harris v. Brooks*, 225 Ark. 436, 283 S.W.2d 129 (1955); *Townsend v. Bell*, 167 N.Y. 462, 60 N.E. 757 (1901). On the riparian doctrine generally, *see* A. TARLOCK, LAW OF WATER RIGHTS AND RESOURCES, ch. 3 (1988-90); P. Davis,

natural flow right or the reasonable use right, since they are inherently contradictory. Most states have adopted the reasonable use emphasis of the riparian doctrine.⁶¹⁷

Missouri is a riparian doctrine state. Curiously, the Missouri courts did not hand down a definitive decision until 1964, in *Bollinger v. Henry*,⁶¹⁸ although an 1896 decision suggested adoption of the riparian doctrine.⁶¹⁹ Adoption of the doctrine was confirmed in 1972 and 1979,⁶²⁰ where the court accepted the guidelines of the Restatement of Torts.⁶²¹ The 1964, 1972, and 1979 decisions each emphasize the reasonable use element of the riparian doctrine.

The riparian doctrine applies to waste discharges as well as to water uses.⁶²² The riparian is entitled to receive natural flow both in quantity and quality.⁶²³ At the same time, each riparian is entitled to make uses which alter the quality of that water, provided the alteration is not unreasonable.⁶²⁴ Comparative reasonableness is the

Eastern Water Diversion Permit Statutes: Precedents for Missouri?, 47 MO. L. REV. 429, 432-39 (1982); C. Davis, *The Right to Use Water in the Eastern States*, in 7 WATER AND WATER RIGHTS 27-111 (1976 & Supp. 1978); Lauer, *Reflections on Riparianism*, 35 MO. L. REV. 1, 9-10 (1970).

617. *Harris v. Brooks*, 225 Ark. 436, 283 S.W.2d 129 (1955); *Pyle v. Gilbert*, 245 Ga. 403, 265 S.E.2d 584 (1980). For a functional analysis of the reasonable use theory, see C. Davis, *supra* note 616, in 7 WATER AND WATER RIGHTS 1, 43-52 (R. Clark, ed. 1976).

618. 375 S.W.2d 161 (Mo. 1964). For detailed discussions of the riparian doctrine in Missouri, see T. LAUER, P. DAVIS & J. CUNNINGHAM, MISSOURI STATE LAWS PERTAINING TO WATER AND RELATED LAND RESOURCES 11-30 (Mo. Clean Water Comm'n ed. 1977); Note, *Reprise—The Rights of a Riparian Landowner in Missouri*, 49 UMKC L. REV. 115 (1980).

619. *Springfield Waterworks Co. v. Jenkins*, 62 Mo. App. 74 (1895).

620. *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971) (dictum in a groundwater case); *Ripka v. Wansing*, 589 S.W.2d 333 (Mo. Ct. App. 1979).

621. RESTATEMENT (SECOND) OF TORTS §§ 850, 850A (1979).

622. See generally A. TARLOCK, *supra* note 616, § 3.13; Davis, *supra* note 596. For a functional analysis, see 1 W. RODGERS, *supra* note 595, § 2.19.

623. *Beaunit Corp. v. Alabama Power Co.*, 370 F. Supp. 1044, 1052 (N.D. Ala. 1973); *H.B. Bowling Coal Co. v. Ruffner*, 117 Tenn. 180, 100 S.W. 116 (1906); *City of Richmond v. Test*, 18 Ind. App. 482, 48 N.E. 610, 614 (1897).

624. *Kennedy v. Moog Servocontrols, Inc.* 48 Misc.2d 107, 264 N.Y.S.2d 606, 613-14 (Sup. Ct. 1965), *modified*, 26 A.D.2d 768, 271 N.Y.S.2d 928 (1966), *aff'd*, 21 N.Y.2d 966, 127 N.E.2d 356 (1968); *Tennessee Coal, Iron & R.R. Co. v. Hamilton*, 100 Ala. 252, 14 So. 167, 169 (1893); *Lockwood v. Lawrence*, 77 Me. 297 (1885); *Parker v. American Woolen Co.*, 195 Mass. 591, 81 N.E. 468, 470 (1907); *Merrifield v. City of Worcester*, 110 Mass. 216 (1872); *Snow v. Parsons*, 28 Vt. 459 (1856).

standard employed in most pollution cases.⁶²⁵ An unreasonable discharge has been described as one causing an appreciable or substantial injury upon other riparians, not merely a slight inconvenience or occasional annoyance.⁶²⁶ Factors to be considered include the extent and nature of the wastes discharged, the locations and natures of the riparians' respective uses, the extent of pollution caused by third parties, the size and velocity of the receiving waters, economic and social factors, and public necessity.⁶²⁷ A right to discharge wastes has been sustained in thirty riparian rights cases⁶²⁸ and expressly recognized in five cases.⁶²⁹

Missouri has followed the riparian doctrine in water pollution cases. It allows waste discharges so long as they do not unreasonably interfere with water uses and waste discharges of others.⁶³⁰

2. Groundwater

Groundwater allocation rules are used to decide pollution cases much less often. Less than a handful of cases do so. The reason is obvious: the rules followed in most states define those circumstances under which water can be removed from an aquifer without any liability for injurious consequences on other groundwater users. There is no reasonableness element in the two most popular allocation rules.

625. *Borough of Westville v. Whitney Home Builders*, 40 N.J. Super. 62, 122 A.2d 233 (1956).

626. *Tennessee Coal, Iron & R.R. Co. v. Hamilton*, 110 Ala. 252, 14 So. 167 (1893); *Tetherington v. Donk Bros. Coal & Coke Co.*, 232 Ill. 522, 83 N.E. 1048 (1908); *Muncie Pulp Co. v. Koontz*, 33 Ind. App. 532, 70 N.E. 999 (1904); *Kennedy v. Moog Servocontrols, Inc.*, 48 Misc. 2d 107, 264 N.Y.S.2d 606 (Sup. Ct. 1965), *modified*, 26 A.D.2d 768, 271 N.Y.S.2d 928 (1966), *aff'd mem.*, 21 N.Y.2d 966, 237 N.E.2d 356, 290 N.Y.S.2d 193 (1968); *Snow v. Parsons*, 28 Vt. 459 (1856).

627. *Red River Roller Mills v. Wright*, 30 Minn. 249, 15 N.W. 167, 169 (1883); *Hayes v. Waldron*, 44 N.H. 580, 583-84 (1863); *Townsend v. Bell*, 167 N.Y. 462, 60 N.E. 757, 760 (1901).

628. *See cases in Davis, supra note 596, app. A, at 788-89.*

629. *Donnelly Brick Co. v. City of New Britain*, 106 Conn. 167, 137 A. 745 (1927); *Ferguson v. Firmenich Mfg. Co.*, 77 Iowa 576, 42 N.W. 448, 449 (1889); *Dwinel v. Veazie*, 44 Me. 167, 175 (1857); *Hayes v. Waldron*, 44 N.H. 580 (1863); *George v. Village of Chester*, 59 Misc. 553, 111 N.Y.S. 722 (Sup. Ct. 1908), *aff'd mem.*, 137 A.D. 889, 121 N.Y.S. 1131 (1910), *modified*, 202 N.Y. 398, 95 N.E. 767 (1911).

630. *City of Cape Girardeau v. Hunze*, 314 Mo. 438, 284 S.W. 471 (1926) ("reasonable use" applied in a sewer right-of-way condemnation case); *Joplin Consol. Mining Co. v. City of Joplin*, 124 Mo. 129, 27 S.W. 406 (1894) (city sewage rendered a stream useless for ore washing).

Hence, there is no basis for incorporating a qualitative element in them. A small minority of states, including Missouri, have adopted a comparative reasonableness allocation rule. By analogy to a similar rule applied to surface watercourses under the riparian doctrine, a qualitative component may exist in the groundwater allocation rule in those few states. A discussion of the three groundwater allocation rules operating in the United States will illustrate the qualitative component problem.

a. Absolute Ownership Rule

The first groundwater allocation rule is the "absolute ownership" rule. It provides that a landowner may use as much groundwater as he wishes and at any location without liability for the injurious effects on his neighbor's groundwater supply.⁶³¹ Absolute ownership is an application of the rule of capture, the concept that the landowner can take and use all of the groundwater he is physically able to reduce to possession by his well. This rule was developed in the middle nineteenth century and is considered the classic common law rule.⁶³² It is based on the premises: (1) that no one knows where percolating groundwater moves underground; (2) that no one can predict what effect diversion of groundwater will have on nearby wells; and (3) that a landowner owns everything which lies beneath the surface of his land, including groundwater.⁶³³ Fairness requires that a person should not be held liable for damage which he can neither predict nor avoid. In the middle nineteenth century, knowledge about hydrology was nonexistent and those premises were mandated by that ignorance. Although the science of hydrology is well understood today, nonetheless, the absolute ownership rule continues to be followed by many states.⁶³⁴ While it

631. See, e.g., *Behrens v. Scharringhausen*, 22 Ill. App. 2d 326, 161 N.E.2d 44 (1959); *Western Md. R.R. v. Martin*, 110 Md. 554, 73 A. 267 (1909); *Gamer v. Town of Milton*, 346 Mass. 617, 195 N.E.2d 65 (1964); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934); *Chatfield v. Wilson*, 28 Vt. 49 (1856); *A. TARLOCK*, *supra* note 616, § 4.04; *Davis, Wells and Streams: Relationship at Law*, 37 Mo. L. REV. 189, 202 (1972); *Davis, supra* note 597, at 120 n.13.

632. The absolute ownership rule was first formulated in the English decision of *Acton v. Blundell*, 152 Eng. Rep. 1223 (Ex. Ch. 1842), and was first adopted in the United States in *Wheatley v. Baugh*, 25 Pa. 528 (1855).

633. *Davis, supra* note 631, at 202.

634. My unpublished research of a few years ago shows that about 12 states still follow absolute ownership: Alaska, Connecticut, District of Columbia, Georgia, Illinois, Massachusetts, Mississippi, Montana, Rhode Island, Texas, and Vermont.

was unclear what rule Missouri followed before 1972, the Missouri court expressly rejected absolute ownership in that year.⁶³⁵

The theory of absolute ownership, that a landowner can use percolating groundwater any way he chooses without liability for injurious consequences, strongly suggests that injection of wastes into or contamination of groundwater should not to give rise to liability. There are no cases denying relief under the absolute ownership rule.⁶³⁶

b. American Rule

The second groundwater allocation rule is the "American Rule," sometimes misdescribed as the "reasonable use rule." It provides that a landowner may use as much groundwater as he wishes, but only on his own land, without liability for the adverse effects on his neighbor's groundwater supply.⁶³⁷ The use merely must be reasonable *per se*. The rule does not call, however, for a comparison with the uses made of the groundwater by his adversely affected neighbor. The American Rule was formulated to mitigate the harsh effects of the absolute ownership rule.⁶³⁸ In effect, the American Rule is a limitation on the absolute ownership rule, restricting the place of use to the landowner's overlying land.⁶³⁹ It, like absolute ownership, is an application of the rule of

635. *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971).

636. *Davis*, *supra* note 597, at 148. However, there is one case which considered the granting of relief under absolute ownership, but denied it because of procedural inadequacies in the case. *City of Greencastle v. Hazelett*, 23 Ind. 186 (1864). In addition, there are several cases which state in dicta that absent negligence the absolute ownership rule would apply. None of these cases indicate how the rule would be applied to groundwater pollution. See *Brown & Bros. v. Illius*, 27 Conn. 84 (1858); *Upjohn v. Board of Health*, 46 Mich. 542, 9 N.W. 845 (1881); *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 121 N.E.2d 249 (1954) (by implication); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934).

637. See, e.g., *De Bok v. Doak*, 188 Iowa 597, 176 N.W. 631 (1920); *Associated Constr. Stone Co. v. Pewee Valley Sanitarium & Hosp.*, 376 S.W.2d 316 (Ky. 1963); *Chesley v. King*, 74 Me. 164 (1882); *Finley v. Teeter Stone, Inc.*, 251 Md. 428, 248 A.2d 106 (1968); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 124 S.E.2d 552 (1962); *Rothrauff v. Sinking Spring Water Co.*, 339 Pa. 129, 14 A.2d 87 (1940); *A. TARLOCK*, *supra* note 616, § 4.05; *Davis*, *supra* note 630, at 202-03; *Davis*, *supra* note 597, at 120 n.14.

638. The Rule was first adopted in *Hougan v. Milwaukee & St. P. R.R.*, 35 Iowa 558 (1872).

639. *Davis*, *supra* note 630, at 202-03.

capture. Today the American Rule is followed by about as many states as follow absolute ownership.⁶⁴⁰

Courts have tended to call the American Rule the "reasonable use rule" even though it has no relationship to the comparative reasonableness rule applied to surface watercourses (under the riparian doctrine), to underground streams, or, in some states, to diffused surface water. This absence of comparative or relative reasonableness has caused considerable confusion among the courts in distinguishing the American Rule from the third rule, discussed below.⁶⁴¹ The Missouri courts clearly distinguish between the substance of the two rules, but not between nomenclature.⁶⁴²

Just as there are no cases applying the absolute ownership rule to groundwater pollution, until recent years there were none applying the American Rule.⁶⁴³ The concept of the rule, although a variant of absolute ownership, ought to impose liability for offsite contamination of groundwater, because the rule prohibits offsite groundwater use. A recent case confirms that interpretation and imposed liability for offsite groundwater contamination.⁶⁴⁴

c. Comparative Reasonableness Rule

The third rule of groundwater allocation has no commonly accepted name. It employs the same concept of comparative reasonableness adopted by the riparian doctrine for surface watercourses (and underground streams), and in some states for diffused surface water. It provides that a landowner may use groundwater only to the extent that it does not unreasonably reduce the amount of groundwater available

640. My unpublished research of a few years ago indicates that 14 states follow the American Rule: Alabama, Arizona, Iowa, Kentucky, Maine, Maryland, Michigan, Nebraska, New Jersey, New York, North Carolina, Ohio, Pennsylvania, and West Virginia.

641. On this problem of nomenclature, see Note, *Water Law—Groundwater Rights in Missouri—A Need for Clarification*, 37 MO. L. REV. 357-68 (1972).

Tarlock suggests that in recent years the courts are beginning to import comparative reasonableness notions into the American Rule. A. TARLOCK, *supra* note 616, § 4.05(1), at 4-9 to 4-10.

642. See *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971).

643. *Davis*, *supra* note 597, at 148. However, there are some cases stating in dicta that absent negligence the American Rule ought to apply to groundwater pollution. See *North Georgia Petroleum Co. v. Lewis*, 128 Ga. App. 653, 197 S.E.2d 437 (1973); *United Fuel Gas Co. v. Sawyers*, 259 S.W.2d 466 (Ky. 1953); *Bayer v. Nello L. Teer Co.*, 256 N.C. 509, 124 S.E.2d 552 (1962); *Schlichtkrull v. Mellon-Pollock Oil Co.* (No. 1), 301 Pa. 553, 152 A. 829 (1930).

644. *Hughes v. Emerald Mines Corp.*, 450 A.2d 1 (Pa. Super. Ct. 1982) (acid mine wastes polluted wells).

to his neighbor.⁶⁴⁵ Comparative reasonableness was applied to groundwater use situations because both absolute ownership and the American Rule were perceived to be unfair to the adversely affected groundwater user, especially where the groundwater diverter was thought to be overreaching.⁶⁴⁶ Today comparative reasonableness is applied to groundwater use in nearly as many states as the first two rules.⁶⁴⁷ Missouri expressly adopted comparative reasonableness for groundwater allocation in 1972, rejecting the other two rules, and confirmed that adoption in 1979.⁶⁴⁸

The comparative reasonableness concept provides that each groundwater user is entitled to use only that quantity of groundwater which does not adversely affect another's use of groundwater to an unreasonable extent. Since groundwater contamination can adversely affect groundwater use by others, and since the comparative reasonableness concept does contain a qualitative dimension when applied to surface watercourses,⁶⁴⁹ it should contain a qualitative dimension when

645. See, e.g., *Jones v. Oz-Ark-Val Poultry Co.*, 228 Ark. 76, 306 S.W.2d 111 (1957); *MacArtor v. Graylyn Crest III Swim Club, Inc.*, 41 Del. Ch. 26, 187 A.2d 417 (Sup. Ct. 1963); *Koch v. Wick*, 87 So. 2d 47 (Fla. 1956); *Higday v. Nicholaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971); *Bassett v. Salisbury Mfg. Co.*, 43 N.H. 569 (1862); *State v. Michels Pipeline Constr., Inc.*, 63 Wis. 2d 278, 217 N.W.2d 339 (1974); *Davis*, *supra* note 630, at 203-04; *Davis*, *supra* note 597, at 120 n.15.

Tarlock suggests that the comparative reasonableness rule is a variant of the western correlative rights rule of pro rata pumpage reductions in time of groundwater shortage. A. TARLOCK, *supra* note 616, § 4.06(2). I disagree, since the courts adopting the rule often analogize it to the riparian rights doctrine, which incorporates comparative reasonableness. See, e.g., *Higday v. Nicholaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971).

646. The courts first reined in large well users in cases like *Forbell v. City of New York*, 164 N.Y. 522, 58 N.E. 644 (1900). Soon thereafter, courts in a few states began to apply comparative reasonableness to all well users, large and small. *Jones v. Oz-Ark-Val Poultry Co.*, 228 Ark. 76, 306 S.W.2d 111 (1957); *MacArtor v. Graylyn Crest III Swim Club, Inc.*, 41 Del. Ch. 26, 187 A.2d 417 (Sup. Ct. 1963); *Koch v. Wick*, 87 So. 2d 47 (Fla. 1956); *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971); *State v. Michels Pipeline Constr., Inc.*, 63 Wis. 2d 278, 217 N.W.2d 339 (1974). But the first comparative reasonableness case came earlier. *Bassett v. Salisbury Mfg. Co.*, 43 N.H. 569 (1862).

647. My unpublished research of a few years ago indicates that comparative reasonableness is applied to groundwater allocation in 9 states: Arkansas, Delaware, Florida, Hawaii (artesian water), Minnesota, Missouri, New Hampshire, Tennessee, and Wisconsin.

648. *Ripka v. Wansing*, 589 S.W.2d 333 (Mo. Ct. App. 1979); *Higday v. Nickolaus*, 469 S.W.2d 859 (Mo. Ct. App. 1971), applying the formulation of the RESTATEMENT (SECOND) OF TORTS § 850A (1979).

649. *Ferguson v. Firmenich Mfg. Co.*, 77 Iowa 576, 42 N.W. 448 (1889); *Parker v. American Woolen Co.*, 195 Mass. 591, 81 N.E. 468 (1907); *Merrifield*

applied to groundwater use as well. A few cases indeed have held that groundwater contamination which unreasonably interferes with groundwater use by another does give rise to liability.⁶⁵⁰ Since Missouri has adopted comparative reasonableness for groundwater allocation, it ought to recognize the qualitative dimension to the rule.

4. Underground Streams

The three groundwater allocation rules just discussed apply to percolating groundwater, water which oozes and percolates through the soil.⁶⁵¹ The absolute ownership and American rules are premised on the assumption that the landowner cannot tell from the surface where percolating groundwater is coming from and where it is going. Therefore, it is not fair to impose liability when the landowner does not have the information necessary to avoid injuring his neighbor's well.⁶⁵² By contrast, the comparative reasonableness rule acknowledges that in modern times a landowner can and sometimes does acquire information about groundwater movement and provides that he should not be allowed to behave as if he did not have that information.⁶⁵³

Such considerations never have applied to the so-called "underground stream."⁶⁵⁴ It is considered to be analogous to a surface watercourse, with underground equivalents to banks and beds. But a special rule applies to them only if they are discernible from the surface, such as by a line of depressions, potholes or sinkholes, or a line of water-dependent vegetation.⁶⁵⁵ If they are not discernible, the

v. City of Worcester, 110 Mass. 216, 219 (1872); Stroebel v. Kerr Salt Co., 164 N.Y. 303, 58 N.E. 142 (1900); Davis, *supra* note 596, at 746-49.

650. Panther Coal Co. v. Looney, 185 Va. 758, 40 S.E.2d 298 (1946); *see also* P. Ballantine & Sons v. Public Serv. Corp., 86 N.J.L. 331, 91 A. 95 (1914) (stated in dicta that comparative reasonableness would control absent negligence).

651. Finley v. Teeter Stone Co., 251 Md. 428, 248 A.2d 106 (1968); Wheatley v. Baugh, 25 Pa. 528 (1855).

652. Frazier v. Brown, 12 Ohio St. 294 (1861); Wheatley v. Baugh, 25 Pa. 528 (1855); Chatfield v. Wilson, 28 Vt. 49 (1855).

653. Higday v. Nickolaus, 469 S.W.2d 859 (Mo. Ct. App. 1971); *cf.* Forbell v. City of New York, 164 N.Y. 522, 58 N.E. 644 (1900).

654. Hydrologists argue that the "underground stream," with a defined bed and banks, does not exist, except in karst topography. *See* Piper & Thomas, *Hydrology and Water Law: What is Their Future Common Ground?*, in WATER RESOURCES AND THE LAW 7, 10-11 (University of Michigan—Legislative Research Center 1958); Tolman & Stipp, *Analysis of Legal Concepts of Subflow and Percolating Waters*, 21 ORE. L. REV. 113, 121-24, 130-32 (1942).

655. Tampa Waterworks v. Cline, 37 Fla. 586, 20 So. 780 (1896); Saddler v. Lee, 66 Ga. 45 (1880); Jones v. Home Bldg. & Loan Ass'n, 252 N.C. 626, 114 S.E.2d 638 (1960); Clinchfield Coal Corp. v. Compton, 148 Va. 437, 139 S.E. 308

groundwater is presumed to be percolating.⁶⁵⁶ When an underground stream is discernible from the surface, the analogous surface water-course rules apply; in the eastern states, that is the riparian rights doctrine.⁶⁵⁷ In most of those states, that means the comparative reasonable use rule applies.

Courts have applied the same rules to pollution of underground streams. A landowner may pollute a discernible underground stream only to the extent that it does not unreasonably interfere with other uses of that water.⁶⁵⁸ There are no Missouri underground stream pollution cases.

C. Negligence

The negligence doctrine has been used occasionally in surface watercourse pollution cases.⁶⁵⁹ It is used much more, however, in groundwater pollution cases and is the second most common legal theory employed.⁶⁶⁰

1. Definition

Liability exists under negligence law if injury or damage occurring as a result of groundwater contamination is caused by defendant under

(1927).

656. *Jones v. Home Bldg. & Loan Ass'n*, 252 N.C. 626, 114 S.E.2d 638 (1960).

657. *See supra* note 655.

658. *Tampa Waterworks Co. v. Cline*, 37 Fla. 586, 20 So. 780 (1896) (reasonable use emphasis); *Masten v. Texas Co.*, 194 N.C. 540, 140 S.E. 89 (1927); *Kevil v. Princeton*, 118 S.W. 363 (Ky. 1909) (by implication); *Good v. Altoona*, 162 Pa. 493, 29 A. 741 (1894) (natural flow emphasis); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 173 A. 627 (1934) (dictum). *See generally* Davis, *supra* note 597, at 137-39, 148.

659. *See, e.g.*, *Bunyak v. Clyde J. Yancey & Sons Dairy, Inc.* 438 So. 2d 891 (Fla. Ct. App. 1983); *Magnolia Petroleum Co. v. Stinson*, 230 Miss. 533, 93 So. 2d 815 (1957); *Ennever v. Borough of Bergenfield*, 105 N.J.L. 419, 144 A. 809 (1928); *Kerr-McGee Corp. v. Petchiusky*, 438 P.2d 475 (Okla. 1968); *Atlas Chem. Indus., Inc. v. Anderson*, 524 S.W.2d 681 (Tex. 1975).

660. *H.W. Peerson Drilling Co. v. Scoggins*, 261 Ala. 284, 74 So. 2d 450 (1954); *Kostyal v. Casa*, 163 Conn. 92, 302 A.2d 121 (1972); *Miller v. Cudaby Co.*, 592 F. Supp. 976 (D. Kan. 1984); *Exxon Corp. v. Yarema*, 69 Md. App. 124, 516 A.2d 990 (1986); *Ayers v. Township of Jackson*, 202 N.J. Super. 106, 493 A.2d 1314 (A.D. 1985), *aff'd in part, rev'd in part*, 106 N.J. 557, 525 A.2d 287 (1987); *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp. 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988); *Town of East Troy v. Soo Line R.R.*, 476 F. Supp 252 (E.D. Wis. 1979); *see supra* note 597.

circumstances where he knew or should have known that such injury or damage was reasonably foreseeable.⁶⁶¹ The negligence doctrine is directed at the predictability of the contamination or of the injury or damage caused by defendant's activity, not at the degree or nature of that injury or damage.⁶⁶² The comparative reasonableness standard is used to determine liability.⁶⁶³ The law of negligence generally is applied to activities where there are neither unavoidable nor inherent consequences. It presumes that, in the normal conduct of such activities, injury or damage will not occur.⁶⁶⁴

Negligence law has been applied mostly to groundwater pollution situations, although a few surface watercourse pollution cases have used it. Most commonly it has been applied to activities which normally do not pollute ground or surface water, such as leaks from pipelines or underground storage tanks at service stations.⁶⁶⁵ In addition, negligence law is applied to polluting activities whose location is constrained by physical circumstances, such as mining and oil and gas recovery.⁶⁶⁶ By contrast, nuisance law generally has been applied to activities which have a high propensity for polluting groundwater, but whose location is not constrained by physical circumstances.⁶⁶⁷

2. Doctrine Is Available Only to Injured Party

The negligence doctrine is designed to deal with injuries or damage caused by one party to another party. Hence, the doctrine is not available to third parties, members of the public or governmental agencies.

661. *Phillips v. Sun Oil Co.*, 307 N.Y. 328, 331, 121 N.E.2d 249, 251 (1954); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159, 18 A. 1012, 1013 (1890).

662. *Swift & Co. v. Peoples Coal & Oil Co.*, 121 Conn. 579, 588, 186 A. 629, 632-33 (1936); *Ressler v. Gerlach*, 189 Pa. Super. 192, 195, 149 A.2d 158, 160 (1959); *Davis*, *supra* note 597, at 125-26.

663. That is the normal standard for liability under the negligence doctrine. *RESTATEMENT (SECOND) OF TORTS* § 283 (1965).

664. *Long v. Louisville & N. R.R.*, 128 Ky. 26, 31-34, 107 S.W. 203, 205-06 (1908); *Collins v. Chartiers Valley Gas Co.*, 131 Pa. 143, 159-60, 18 A. 1012, 1013-14 (1890); *Rose v. Socony-Vacuum Corp.*, 54 R.I. 411, 420, 173 A. 627, 629 (1934); *Davis*, *supra* note 597, at 125-26.

665. *Davis*, *supra* note 597, at 128-29; *supra* note 658.

666. *See supra* note 605.

667. *Davis*, *supra* note 597, at 128-29. This is confirmed for pollution of surface watercourses by my unpublished research.

3. Negligence Doctrine Is Recognized in All States

Because it is part of the common law inheritance, negligence law is recognized in all common law states.⁶⁶⁸ Missouri has applied the negligence doctrine in six cases.⁶⁶⁹

In recent years, the law of negligence has continued to be applied to spills and leaks of hazardous materials which contaminate groundwater.⁶⁷⁰ Most of those cases involve situations where normally no contamination would occur.

D. Strict Liability

The doctrine of strict liability occasionally has been applied to surface watercourse pollution, but more frequently has been employed

668. See *supra* note 660.

669. *Bollinger v. Mungle*, 175 S.W.2d 912 (Mo. Ct. App. 1943) (gas station leak polluted domestic well; no negligence found); *Reddick v. Pippin*, 421 S.W.2d 225 (Mo. 1967) (sewage lagoon overflow allegedly polluted domestic well; allegation not proved); *Shelley v. Ozark Pipe Line Corp.*, 2 S.W.2d 115 (Mo. Ct. App. 1927), *rev'd on other grounds*, 327 Mo. 238, 37 S.W.2d 518 (1931) (pipeline leak polluted domestic well; judgment for defendant); *Chapman v. American Creosoting Co.*, 220 Mo. App. 419, 286 S.W. 837 (1926) (creosote escaping from ditch saturated ground and polluted domestic well; procedural error found); *Shelley v. Ozark Pipe Line Corp.*, 247 S.W. 472 (Mo. Ct. App. 1923) (pipeline leak polluted domestic well; damages granted); *Ozark Pipe Line Corp. v. Decker*, 32 F.2d 66 (8th Cir. 1929) (oil pipeline leak polluted domestic & livestock well; insufficient evidence to support recovery); see also *Haynor v. Excelsior Springs Light, Power, Heat & Water Co.*, 129 Mo. App. 691, 108 S.W. 580 (1908) (dictum) (oil & grease escaped into creek polluting domestic well; judgment for defendant).

670. *Relief granted*: *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988); *Town of East Troy v. Soo Line R.R. Co.*, 476 F. Supp. 252 (E.D. Wis. 1979), *aff'd*, 653 F.2d 1123 (7th Cir. 1980), *cert. denied*, 450 U.S. 922 (1981); *Bracewell v. King*, 147 Ga. App. 691, 250 S.E.2d 25 (1978); *North Georgia Petroleum Co. v. Lewis*, 128 Ga. App. 653, 197 S.E.2d 437 (1973); *Village of Wilsonville v. SCA Serv., Inc.*, 86 Ill. 2d 1, 426 N.E.2d 824 (1981); *Ewell v. Petro Processors, Inc.*, 364 So. 2d 604 (La. App. 1978); see also *Ayers v. Township of Jackson*, 202 N.J. Super. 106, 493 A.2d 1314 (A.D. 1985), *aff'd in part, rev'd in part*, 106 N.J. 557, 525 A.2d 287 (1987); *Lien v. Murphy Corp.*, 201 Mont. 488, 656 P.2d 804 (1982); *Vanvooren v. John E. Fogarty Memorial Hosp.*, 113 R.I. 331, 321 A.2d 100 (R.I. 1974).

Relief denied: *Meehan v. State*, 95 Misc. 2d 678, 408 N.Y.S.2d 652 (Ct. Cl. 1978); *Williams v. M.C. West Constr. Co.*, 579 S.W.2d 883 (Tenn. Ct. App. 1978).

in certain cases of groundwater pollution.⁶⁷¹ Some states impose liability regardless of fault in situations where the activity is particularly likely to cause groundwater contamination (in the "ultrahazardous" or "abnormally dangerous" activity situation). It is most commonly imposed in the mining and oil and gas production industries,⁶⁷² and in escape of hazardous wastes.⁶⁷³

1. Definition

The formulations of the definition of situations calling for strict liability vary between the states. Most commonly, "abnormally dangerous" and "ultrahazardous" activities give rise to strict liability.⁶⁷⁴ In nonpollution cases, Missouri has adopted the "abnormally dangerous" activity definition.⁶⁷⁵

The degree of care exercised by defendant and the predictability of harm are not defenses to liability. That, of course, is what strict liability means. Conceptually, the activity must be sufficiently dangerous, either because of its propensity to cause injury or damage or because of the great extent of such injury or damage if it occurs, that the person engaging in it should be expected to compensate for it; it is considered unreasonable to expect the injured or damaged party to assume the burden of injury or damage under any circumstances.

671. See *infra* notes 677-78.

672. *Berry v. Shell Petroleum Co.*, 140 Kan. 94, 33 P.2d 953 (1934), *reh'g denied*, 141 Kan. 6, 40 P.2d 359 (1935); *Yommer v. McKenzie*, 255 Md. 220, 257 A.2d 138 (1969); *Bumbarger v. Walker*, 193 Pa. Super. 301, 164 A.2d 144 (1960); *Watson v. Great Lakes Pipeline Co.*, 85 S.D. 310, 182 N.W.2d 314 (1970); *Texas Co. v. Giddings*, 148 S.W. 1142 (Tex. Civ. App. 1912); *Davis*, *supra* note 597, at 136. See *id.* at 155-56 for fact situations of strict liability cases.

673. See *Sterling v. Velsicol Chem. Corp.*, 647 F. Supp. 303 (W.D. Tenn. 1986), *aff'd in part, rev'd in part*, 855 F.2d 1188 (6th Cir. 1988); *Anderson v. Cryovac, Inc.*, 852 F.2d 910 (1st Cir. 1988); *Kenney v. Scientific, Inc.*, 204 N.J. Super. 228, 497 A.2d 1310 (1985).

674. See, e.g., RESTATEMENT (SECOND) OF TORTS §§ 519-20, 822 (1977, 1979).

675. *Keener v. Dayton Elec. Mfg. Co.*, 445 S.W.2d 362 (Mo. 1969) (products liability).

2. Application of Doctrine to Water Pollution

Ten states have applied the strict liability doctrine to groundwater pollution situations,⁶⁷⁶ and three states have applied it to surface watercourse pollution.⁶⁷⁷ No state has rejected the doctrine in an appropriate case. Since many states have not yet reported a suitable case, one must conclude that the remaining 75% of states have left the question undetermined. Missouri is among the states which has yet to consider the application of the strict liability doctrine to groundwater pollution situations.⁶⁷⁸ In recent years, there have been a few strict liability decisions.⁶⁷⁹

Remedies for the Public

A. Public Nuisance

The common law also recognizes rights of members of the public to be free from the threats to public health and safety posed by surface water and groundwater contamination. A classic public nuisance situation would involve contamination of public water supply sources or several neighboring domestic and livestock wells.⁶⁸⁰ Relief is granted under the doctrine of public nuisance.

676. As of 1974, ten states had done so: Alabama, Illinois, Kansas, Maryland, Massachusetts, Minnesota, Oklahoma, Pennsylvania, South Dakota, and Texas. Davis, *supra* note 597, at 136 n.105, 155-56. Since then, Montana, New Jersey, Rhode Island, Tennessee, and Utah have used the doctrine. See case cited in *supra* notes 672-73, and *infra* note 679.

677. Florida, Kansas, New Jersey, North Carolina, Oklahoma and Texas. See, e.g., *Cities Serv. Co. v. State*, 312 So. 2d 799 (Fla. Dist. Ct. App. 1975); *Atlas Chem. Indus., Inc. v. Anderson*, 514 S.W.2d 309 (Tex. Civ. App. 1974), *aff'd in part & rev'd in part*, 524 S.W.2d 681 (Tex. 1975); *Biddix v. Henredon Furniture Indus., Inc.*, 76 N.C.App. 30, 331 S.E.2d 717 (1985); *State Dep't of Environmental Protection v. Ventrom Corp.*, 94 N.J. 473, 468 A.2d 150 (1983).

678. Davis, *supra* note 597, at 155-56.

679. *Lien v. Murphy Corp.*, 656 P.2d 804 (Mont. 1983); *Wood v. Picillo*, 443 A.2d 1244 (R.I. 1982); *Branch v. Western Petroleum, Inc.*, 657 P.2d 267 (Utah 1982).

680. Davis, *supra* note 596, at 306; Davis, *supra* note 597, at 162. See *supra* notes 596-97.

1. Enforcement

A public nuisance usually is enforceable only by a public official, such as a public health officer or prosecuting attorney.⁶⁸¹ If an individual is specially damaged or injured, a public nuisance may be enforced independently by him. That special damage or injury must be different in kind, not merely in degree, from the damage or injury suffered by the public at large.⁶⁸² Special damage can include damage to land sufficient to enable the owner to bring a private nuisance action, or a personal injury action.⁶⁸³

2. Public Nuisance Doctrine Is Recognized in All States

Public nuisance cases involving surface watercourse pollution are quite common, whether brought by public officials or by private individuals suffering special damage.⁶⁸⁴

Until recent years there were very few groundwater pollution cases applying the public nuisance doctrine.⁶⁸⁵ But the number of cases has

681. Attorney-General *ex rel.* Township of Wyoming v. City of Grand Rapids, 175 Mich. 503, 141 N.W. 890 (1913).

682. Nolan v. City of New Britain, 69 Conn. 668, 38 A. 703 (1897); Bair v. Central & So. Fla. Flood Control Dist., 144 So. 2d 818 (Fla. 1962).

683. W. KEETON, D. DOBBS, R. KEETON & D. OWEN, PROSSER AND KEETON ON THE LAW OF TORTS § 90 (5th ed. 1984).

684. Of 444 pre-1970 surface watercourse pollution cases, 75 used the public nuisance doctrine, including 12 involving odors affecting habitation, 9 involving domestic supplies, 14 involving public water supply supplies, and 9 involving livestock supplies. For a list of 75 cases up to 1970, see Davis, *supra* note 596, at 801-04. My recent unpublished research reveals ten more cases. See Carson v. Hercules Powder Co., 240 Ark. 887, 402 S.W.2d 640 (1966); People *ex rel.* Ricks Water Co. v. Elk River Mill & Lumber Co., 107 Cal. 214, 40 P. 486 (1895); Schoen v. Kansas City, 65 Mo. App. 134 (1895); Columbia River Fishermen's Protective Union v. City of St. Helens, 160 Or. 654, 87 P.2d 195 (1939); Nolan v. City of New Britain, 69 Conn. 668, 38 A. 703 (1897); City of Lakeland v. State *ex rel.* Harris, 143 Fla. 761, 197 So. 470 (1940); Attorney General *ex rel.* Township of Wyoming v. City of Grand Rapids, 175 Mich. 503, 141 N.W. 890 (1913); State v. Schenectaly Chem., Inc., 103 A.D.2d 33, 479 N.Y.S.2d 1010 (1984); Twitty v. State, 354 S.E.2d 296 (N.C. App. 1987); Commonwealth v. Barnes & Tucker Co., 472 Pa. 115, 371 A.2d 461 (1976), *appeal dismissed*, 434 U.S. 807 (1977).

685. Of 235 pre-1974 groundwater pollution cases, 3 used the public nuisance doctrine, 2 involving domestic wells and 1 involving a public water supply well. Berry v. Shell Petroleum Co., 140 Kan. 94, 33 P.2d 953 (1934), *reh'g denied*, 141 Kan. 6, 40 P.2d 359 (1935) (domestic well); Barclay v. Commonwealth, 25 Pa. 503 (1855) (public water supply); Watson v. Great Lakes

risen dramatically in recent years.⁶⁸⁶ Missouri has not had any public nuisance cases involving groundwater pollution,⁶⁸⁷ but it has applied the doctrine to stream pollution.⁶⁸⁸

B. Federal Common Law of Interstate Public Nuisance

State case law is not the only source of common law principles. The federal courts also have evolved a common law which sometimes is applicable. This law exists in the area of interstate groundwater pollution.

The existence of a federal common law of interstate public nuisance has two important consequences. First, it gives the federal district courts jurisdiction to hear these cases without satisfying the usual jurisdictional prerequisites of (1) violation of a federal statute,⁶⁸⁹ or (2) diversity of citizenship plus jurisdictional minimum amount in controversy.⁶⁹⁰ Second, it creates a source of substantive case law independent of state common law.

For many years, the federal courts had evolved federal common law in many areas, but in 1938 the United States Supreme Court abolished the federal common law in most of those areas. In *Erie R.R. v. Tompkins*,⁶⁹¹ it held that a federal court had no general power to develop its own substantive law and required application of the

Pipeline Co., 85 S.D. 310, 182 N.W.2d 314 (1970) (domestic well).

686. Since 1974 there have been 13 public nuisance cases involving groundwater pollution. See, e.g., *Village of Wilsonville v. SCA Serv., Inc.*, 86 Ill. 2d 1, 426 N.E.2d 824 (1981); *Anderson v. W.R. Grace & Co.*, 628 F. Supp. 1219 (D. Mass. 1986); *Lien v. Murphy Corp.*, 201 Mont. 488, 656 P.2d 804 (1983); *New York v. Shore Realty Corp.*, 759 F.2d 1032 (2d Cir. 1985); *Wood v. Picillo*, 443 A.2d 1244 (R.I. 1982); *Neal v. Darby*, 282 N.C. 277, 318 S.E.2d 18 (N.C. Ct. App. 1984).

687. *Davis*, *supra* note 597, at 152. However, one case in Missouri involves a classic public nuisance fact situation but does not state the theory by which relief was granted. *Windle v. City of Springfield*, 320 Mo. 459, 8 S.W.2d 61 (1928), transferred from, 275 S.W. 585 (Mo. Ct. App. 1925) (city sewage discharged into cave polluted spring and lake, and caused odors).

688. *Stewart v. City of Springfield*, 350 Mo. 234, 165 S.W.2d 626 (1942) (city sewage polluted stream); *State ex rel. Wear v. Springfield Gas & Elec. Co.*, 204 S.W. 942 (Mo. Ct. App. 1918) (industrial waste polluted livestock water and killed fish); *Schoen v. Kansas City*, 65 Mo. App. 134 (1895) (city sewage in stream caused odors).

689. 28 U.S.C. § 1331.

690. 28 U.S.C. § 1332. The minimum jurisdiction amount in controversy in diversity cases is \$50,000.

691. 304 U.S. 64 (1938).

appropriate state common law in diversity of citizenship cases. That eliminated the federal common law in areas such as contracts and torts.

The federal courts continued to develop and apply substantive law in those areas where the states had no jurisdiction to apply their own law. One such area is interstate pollution.⁶⁹²

1. Origin of Doctrine

For many years prior to 1938, the federal courts had applied their own substantive law of public nuisance in cases involving interstate water pollution⁶⁹³ and interstate air pollution.⁶⁹⁴ In 1972, the Supreme Court held that the abolition of the federal common law under *Erie R.R. v. Tompkins* did not abolish the federal common law related to interstate pollution. In *Illinois v. City of Milwaukee*,⁶⁹⁵ the Court ruled that the federal common law continued to apply to matters involving the federal relationship even when no federal statute exists. The federal question jurisdiction extends to all areas of federal law, not merely federal statutes. Since interstate water pollution affects the relationship between states, a federal question is created.⁶⁹⁶

2. Statutory Preemption

The decision in *Illinois v. City of Milwaukee* was predicated on the fact that the lawsuit was filed when there was no federal statute applying to interstate water pollution situations. The Court indicated that Congress might preempt the federal common law of interstate water pollution in the future.⁶⁹⁷

Congress enacted the Clean Water Act in 1972.⁶⁹⁸ It contains the well-known NPDES permit system which requires that states which would be affected by the granting of a permit be given notice and an opportunity to submit written comments.⁶⁹⁹ It also provides that EPA

692. On the federal common law of interstate water pollution generally, see 1 F. GRAD, *supra* note 9, § 3.03(12); 1 W. RODGERS, *supra* note 9, § 2.14, at 120-26.

693. See *New York v. New Jersey*, 256 U.S. 296 (1921); *Missouri v. Illinois*, 180 U.S. 208 (1901).

694. See *Georgia v. Tennessee Copper Co.*, 206 U.S. 230 (1907).

695. 406 U.S. 91 (1972).

696. *Id.* (citing *Texas v. Pankey*, 441 F.2d 236 (10th Cir. 1971) (another interstate water pollution case)).

697. *Illinois v. City of Milwaukee*, 406 U.S. at 107.

698. Pub. L. No. 92-500, 86 Stat. 816 (codified as amended at 33 U.S.C. § 1251-1376 (1986 & Supp. 1989)).

699. See discussion of the Clean Water Act *supra* notes 24-299 and

may veto the granting of a permit when waters of another state would be affected.⁷⁰⁰

In 1981, the Supreme Court held that those provisions of the Clean Water Act addressed the interstate water pollution problem and constituted preemption. Thus, *City of Milwaukee v. Illinois*⁷⁰¹ held that the federal common law of interstate water pollution had been abolished. This means that the federal common law of interstate public nuisance no longer applies to pollution of surface watercourses.⁷⁰²

3. Doctrine Still Applies to Groundwater

The preemption of the federal common law of interstate pollution announced in *City of Milwaukee v. Illinois* was based on enactment of a federal statute comprehensively regulating the field. Such preemption cannot occur in the absence of a statute. Since the Clean Water Act does not apply to groundwater pollution,⁷⁰³ and expressly excludes underground injection of water, gas or other materials derived from oil and gas production from regulation,⁷⁰⁴ that act could not preempt the federal common law as it applies to interstate groundwater pollution. Furthermore, underground injection of wastes is not comprehensively regulated either under the Safe Drinking Water Act⁷⁰⁵ or under the Resource Conservation and Recovery Act.⁷⁰⁶ Hence, there is no statute which could preempt the federal common law of interstate groundwater

accompanying text.

700. CWA § 402(d)(2)(A), 33 U.S.C. § 1342(d)(2)(A).

701. 451 U.S. 304 (1981).

702. *National Audubon Soc'y v. Department of Water & Power*, 858 F.2d 1409 (9th Cir. 1988).

In a recent case, the Supreme Court has held that the law of the state in which the waste discharger is located can be employed in a lawsuit seeking relief from interstate surface watercourse pollution. *International Paper Co. v. Ouellette*, 479 U.S. 481 (1987).

703. The statutory jurisdiction is limited to "navigable waters," defined to mean "waters of the United States." CWA § 502(7), 33 U.S.C. § 1362(7). Those terms reference surface watercourses and the courts have held they do not include groundwater. *United States v. Solvents Recovery Serv.*, 496 F. Supp. 1127 (D. Conn. 1980); *United States v. GAF Corp.*, 389 F. Supp. 1379 (S.D. Tex. 1975).

704. CWA § 502(6)(B), 33 U.S.C. § 1362(6)(B).

705. 42 U.S.C. § 300f-300j. See discussion *supra* notes 301-332 and accompanying text.

706. 42 U.S.C. § 6901-6987. See discussion *supra* notes 333-470 and accompanying text.

pollution. As a result, the federal courts have applied the federal common law of public nuisance to groundwater pollution.⁷⁰⁷

4. Substantive Law

The federal common law of interstate public nuisance ought to be substantively identical to the state common law of public nuisance. But there do not appear to be any federal cases describing the substantive elements of the federal cause of action. Theory suggests that the groundwater pollution ought to extend across a state boundary or have the capability in the future of having an interstate effect in order to have a federal cause of action. The federal courts do not appear to be in agreement whether such an interstate effect must be shown.⁷⁰⁸

CONCLUSION

Today, regulation of water quality is scattered among several federal and state statutes. Pollution of surface watercourses and of groundwater is separated at the federal level, while they are integrated in most states, including Missouri. At the federal level, waste discharges from point sources are fully regulated, as soon will be point sources of stormwater drainage. Regulation of nonpoint sources, however, has not yet occurred, although recent federal legislation requires the states to develop regulatory programs. Waste injection into groundwater is partially prohibited under federal regulation and fully prohibited under

707. *Exxon Corp. v. Train*, 554 F.2d 1310 (5th Cir. 1977); *United States v. Solvents Recovery Serv.*, 495 F. Supp. 1127 (D. Conn. 1980).

708. The only federal groundwater pollution action extant did not require the presence of an interstate effect. *United States v. Solvents Recovery Serv.*, 496 F. Supp. 1127 (D. Conn. 1980), held that an interstate effect need not be alleged in a SWDA § 7003 (42 U.S.C. § 6973) "imminent hazard" action, but that allegation of an intrastate public nuisance is sufficient.

That case may be limited to its facts. Most interstate watercourse pollution cases based on the federal common law of public nuisance have involved interstate effects. *See Ancarrow v. City of Richmond*, 600 F.2d 443 (4th Cir.), *cert. denied*, 444 U.S. 992 (1979). Indeed, *Committee for Consideration of Jones Falls Sewage System v. Train*, 539 F.2d 1006 (4th Cir. 1976) (water pollution) and *Reserve Mining Co. v. EPA*, 514 F.2d 492 (8th Cir. 1975), *modified*, 529 F.2d 181 (8th Cir. 1976) (air pollution), have expressly required an interstate effect.

However, several other pre-*Milwaukee* interstate surface watercourse pollution cases have held that an interstate effect need not be shown. *Illinois v. Outboard Marine Corp.*, 619 F.2d 623 (7th Cir. 1980), *vacated on other grounds*, 453 U.S. 917 (1981); *In re Oswego Barge Corp.*, 439 F. Supp. 312 (N.D.N.Y. 1977); *United States ex rel. Scott v. United States Steel Corp.*, 356 F. Supp. 556 (N.D. Ill. 1973).

Missouri law. Percolation of hazardous wastes into groundwater is regulated at the federal and state levels under several statutes. There is no regulation of groundwater pollution resulting from percolation of nonhazardous wastes from surface or underground sources. Future legislatures should fill those gaps in regulation.

Together the common law and equity always have provided relief in the form of damages for past pollution and injunctions to prevent future pollution. Causes of action for private relief exist under the doctrines of private and public nuisance, negligence, violation of riparian and groundwater allocation rights, and, for especially noxious or dangerous pollutants, strict liability. Public relief exists under the public nuisance doctrine. Those doctrines do not provide for comprehensive reduction in waste discharges, which is why regulatory systems were enacted. Nonetheless, recent cases show that the common law and equity are doing what they have always done, providing relief from new kinds of pollution.

APPENDIX

NATIONAL PERFORMANCE STANDARDS

(40 C.F.R.)

<u>Part</u>	<u>Industrial Category</u>	<u>Part</u>	<u>Industrial Category</u>
405	Dairy Products Processing	442	[reserved]
406	Grain Mills	443	Paving and Roofing Material Sources
407	Canned and Preserved Fruits and Vegetables Processing	444	[reserved]
408	Canned and Preserved Seafood Processing	445	[reserved]
409	Sugar Processing	446	Paint Formulating
410	Textiles	447	Ink Formulating
411	Cement Manufacturing	448	[reserved]
412	Feedlots	449	[reserved]
413	Electroplating	450	[reserved]
414	Organic Chemicals, Plastics, and Synthetic Fibers	451	[reserved]
415	Inorganic Chemicals Manufacturing	452	[reserved]
416	[reserved]	453	[reserved]
417	Soap and Detergent Manufacturing	454	Gum and Wood Chemicals Manufacturing
418	Fertilizer Manufacturing	455	Pesticides Chemicals Manufacturing
419	Petroleum Refining	456	[reserved]
420	Iron and Steel Manufacturing	457	Explosives Manufacturing
421	Nonferrous Metals Manufacturing	458	Carbon Black Manufacturing
422	Phosphate Manufacturing	459	Photographic Processing
423	Steam Electric Power Generating	460	Hospitals
424	Ferroalloy Manufacturing	461	Battery Manufacturing Point Source Category
425	Leather Tanning and Finishing	462	[reserved]
426	Glass Manufacturing	463	Plastics Molding and Forming
427	Asbestos Manufacturing	464	Metal Molding and Casting
428	Rubber Manufacturing	465	Coil Coating
429	Timber Products Processing	466	Porcelain Enameling
430	Pulp, Paper and Paper Board	467	Aluminum Forming
431	Builders' Paper and Board Mills	468	Copper Forming
432	Meat Products	469	Electrical and Electronic Components
433	Metal Finishing	470	[reserved]
434	Coal Mining	471	Nonferrous Metals Forming and Metal Powders
435	Offshore Oil and Gas Extraction		
436	Mineral Mining and Processing		
437	[reserved]		
438	[reserved]		
439	Pharmaceutical Manufacturing		
440	Ore Mining and Dressing		
441	[reserved]		

