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Changes in the Clean Water Act Since Kepone: Would They Have Made a Difference?

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CHANGES IN THE CLEAN WATER ACT SINCE KEPONE: WOULD THEY HAVE MADE A DIFFERENCE?

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I. INTRODUCTION

In the anti-regulatory climate that currently pervades the American political scene, it is important to emphasize the palpable and significant accomplishments of environmental regulation. One measure of the success of environmental law during the past twenty-five years is that long-term, relatively localized environmental contamination—such as the pollution of the lower James River by Kepone between 1966 and 1975—probably can no longer occur in the United States.[1] Major environmental statutes, enacted during the decade between 1976 and 1986, have precluded continuing environmental abuses of this scope and magnitude. The Resource Conservation and Recovery Act (RCRA), enacted in 1976, establishes a comprehensive system for tracking and managing hazardous wastes from "cradle to grave."[2] The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) passed in 1980 and extensively amended in 1986,[3] erects an administra-

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1. Sudden and catastrophic events, such as the wreck of the Exxon Valdez, are still very much a threat to the integrity of the environment. In addition, long-term, massive pollution on a global scale (e.g., global climate change) has not been addressed adequately by environmental regulation. Moreover, as shall be pointed out, the health and safety of industrial workers are insufficiently protected by water pollution control laws. *See infra* part IV.

2. 42 U.S.C. §§ 6901-6992k (1988 & Supp. V 1993); *see* ZYGMUNT J.B. PLATER ET AL., ENVIRONMENTAL LAW AND POLICY: NATURE, LAW, AND SOCIETY 927-46 (1992 & Supp. 1994) [hereinafter NLS].

3. CERCLA was amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). Pub. L. No. 99-499, 100 Stat. 1613 (1986). *See* NLS *supra* note 2, at 279.

tive mechanism for cleaning up certain hazardous waste disposal sites and, where possible, allocating responsibility jointly and severally for the expenses of response and remediation to generators, transporters, treaters, storers, and disposers of hazardous wastes.[4] Title III of the SARA amendments of 1986 (also known as the Emergency Planning And Community Right-To-Know Act) requires that information about the use, location, and release of over three hundred hazardous chemicals be reported to local, state, and federal authorities.[5] These and other federal statutes,[6] along with their state counterparts, assure that another Kepone-type incident is not likely to occur again in the United States.

The object of this article is to analyze the 1977 and 1987 amendments to the Clean Water Act, originally enacted in 1972,[7] from the standpoint of how they might have prevented or attenuated the environmental impacts of the manufacture of Kepone in Hopewell, Virginia, from 1966 to 1975, and, analogously, how they might deter such socially irresponsible conduct today. This article will most intensely scrutinize amendments to section 309 of the CWA, the section entitled "Federal Enforcement."[8]

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4. 42 U.S.C. §§ 9601-9675 (1988 & Supp. V 1993); *see* NLS *supra* note 2, at 243-320, 882-926. For a decision imposing "arranged for" liability on companies that "tolled" the manufacture of a pesticide, similar to the arrangement between Allied Chemical and Life Science in the Kepone situation, see United States v. Aceto Agricultural Chemicals Corp., 872 F.2d 1373 (8th Cir. 1989). Under the *Aceto* rule, it is clear that if the Life Science site had been listed on the Superfund National Priority List (NPL), Allied Chemical would have been liable under CERCLA for the costs of cleaning up the site. For a summary of the Kepone incident, see *infra* notes 9-15 and accompanying text.

5. 42 U.S.C. §§ 11001-11050 (1988 & Supp. V 1993).

6. For other federal statutes that might be relevant to an incident similar to the Kepone pollution of Hopewell, Virginia, and the lower James River, see NLS, *supra* note 2, at 244-255.

7. The Clean Water Act, 33 U.S.C. § 1251-1387 (1988 & Supp. V 1993) [hereinafter CWA] is the statutorily-sanctioned common name of the Federal Water Pollution Control Act Amendments. The Federal Water Pollution Control Act Amendments of 1972 were enacted by Pub. L. No. 92-500, 86 Stat. 816. Section 2 of the Clean Water Act of 1977, Pub. L. No. 95-217, § 1, 91 Stat. 1566, amended section 518 to allow the Federal Water Pollution Control Act to be commonly referred to as the Clean Water Act. The Water Quality Act of 1987, Pub. L. No. 100-4, 101 Stat. 7, was the most recent set of major amendments to the CWA.

8. 33 U.S.C. § 1319 (1988 & Supp. V 1993).

Part I briefly recapitulates the history of the Kepone incident. Part II will generally describe and evaluate the relevant portions of the 1977 CWA amendments, and Part III will similarly deal with the 1987 amendments. Part IV will focus specifically on the statutory changes that have been made since 1976 in the criminal enforcement provisions of section 309. Part V will summarize prior conclusions and make recommendations for further changes to the CWA.

II. THE KEPONE INCIDENT[9]

Allied Chemical Corporation (Allied Chemical), now known by its post-merger name of Allied-Signal, Inc. (Allied-Signal), has long been engaged in the research, development, manufacture, and sale of agricultural and industrial chemicals.

During the late 1940s and early 1950s, Allied Chemical developed a chemical pesticide known as Kepone, marketed primarily in Europe as an insecticide in potato farming and in Central America for use in banana groves. Allied Chemical's initial testing of Kepone revealed the substance to be highly toxic to all species tested and to cause cancer, liver damage, reproductive system failure, and the inhibition of growth and muscular coordination in fish, birds, and mammals. Despite these negative test results, the United States Department of Agriculture granted a pesticide registration to Allied Chemical for Kepone. Allied Chemical, however, voluntarily withdrew its petition to the Food and Drug Administration for the establishment of Kepone residue tolerances for agricultural products, thus assuring that the pesticide would not be applied in the United States.[10]

Between 1958 and 1966, Kepone was manufactured for Allied Chemical by other companies under "tolling contracts," a common arrangement in the chemical and oil industries.[11] In 1966,

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9. The following summary has been distilled from William Goldfarb, *Kepone: A Case Study*, 8 ENV. L. 645 (1978), excerpted in NLS *supra* note 2, at 28-101, 321-56, and from Allied-Signal, Inc. v. Commissioner, 63 T.C.M. (CCH) 2672 (1992), *aff'd without opinion*, 54 F.3d 767 (3d Cir. 1995).

10. Goldfarb, *supra* note 9, at 646.

11. *Allied-Signal*, 63 T.C.M. (CCH) at 2673.

however, foreign demand for Kepone increased, and Allied Chemical decided to manufacture the pesticide in its Semi-Works facility in Hopewell, Virginia.[12] Allied Chemical employees prepared a production manual, which recommended precautions such as spill and dust control, as well as protective clothing for Kepone workers.[13]

The Allied Chemical Semi-Works at Hopewell discharged production waste directly into Gravelly Run, a tributary of the James River. In 1970, the Federal government instituted a surface water discharge permit program under the Refuse Act of 1899.[14] On its Refuse Act Permit application, Allied Chemical listed its Kepone discharges on a short-form application as temporary, unmetered, and unsampled, in order to avoid having to treat Kepone wastes.[15]

In 1972 the Refuse Act Permit Program was abolished, but a new permit program had been enacted by Congress—the National Pollutant Discharge Elimination System (NPDES) permit program under the Federal Water Pollution Control Act Amendments of 1972.[16] In response to a request by the Environmental Protection Agency (EPA), which administered the NPDES program before its delegation to Virginia in 1974, Allied Chemical once again listed its Kepone discharge as temporary, unmetered, and unsampled.[17]

In 1973, Allied Chemical underwent a corporate reorganization, and, as a result, decided to once again toll Kepone production.[18] The processing company chosen by Allied Chemical was Life Science Products Company (Life Science). This company was owned by two former employees of Allied Chemical, William Moore and Virgil Hundtofte, both of whom were experienced in the production of Kepone. Moore had been the director of research in the agricultural division of Allied Chemical, and

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12. *Id.*
13. Goldfarb, *supra* note 9, at 647.
14. 33 U.S.C. §§ 401-467n (1988 & Supp. V 1993).
15. Goldfarb, *supra* note 9, at 647-48.
16. 33 U.S.C. § 1342 (1988 & Supp. V 1993). The FWPCA is now referred to as the Clean Water Act. *See supra* note 8.
17. Goldfarb, *supra* note 9, at 648.
18. *Id.* at 648-49.

Hundtofte had been the manager of the Allied Chemical facility in Hopewell.[19] Moore also held a patent with respect to the manufacture of Kepone.[20]

On November 30, 1973, Allied Chemical and Life Science entered into a tolling agreement whereby Life Science would manufacture Kepone for Allied Chemical.[21] The tolling contract provided that Allied Chemical would provide—at its own expense—all of the raw materials for Kepone production, with the title to remain in Allied Chemical.[22] Within certain broad limits, Allied Chemical would determine the monthly production rate of Kepone, which would be packed in Allied Chemical containers and transported in Allied Chemical trucks.[23] Allied Chemical also agreed to pay a large percentage of Life Science's taxes and capital expenditures.[24] Life Science was to receive between 32 and 38 cents per pound of Kepone over 650,000 pounds per year.[25] The next highest competing bid for Allied Chemical's Kepone tolling contract had been $3.00 per pound.[26] Moore and Hundtofte agreed not to produce Kepone for any company other than Allied Chemical and not to dispose of their shares in Life Science without Allied Chemical's consent.[27] As part of the tolling arrangement, Allied Chemical provided Life Science with its production manuals and guidebooks with respect to Kepone manufacture. Allied Chemical also supplied Life Science with warning labels for Kepone containers, alerting users that Kepone "may be fatal if swallowed, inhaled, or absorbed through the skin," and cautioning them to wash thoroughly after handling and to refrain from breathing Kepone dust or vapor.[28]

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19. *Id.* at 649.
20. Allied-Signal, Inc. v. Commissioner, 63 T.C.M. (CCH) 2762, 2674 (1992), *aff'd without opinion*, 54 F.3d 767 (3d Cir. 1995).
21. *Id.*
22. *Id.*
23. *Id.*
24. Goldfarb, *supra* note 9, at 649-50.
25. *Id.* at 649.
26. *Id.*
27. *Id.*
28. Allied-Signal, Inc. v. Commissioner, 63 T.C.M. (CCH) 2672, 2674 (1992).

"In March 1974, Life Science began manufacturing Kepone for [Allied Chemical], using a converted gas station in Hopewell as its processing plant."[29] Allied Chemical officials regularly toured Life Science's plant and sampled and analyzed Life Science's effluent. Whereas Allied Chemical had discharged the residues of its Kepone production process directly into tributaries of the James River, Life Science decided to become an "indirect discharger" to the Hopewell Publicly Owned Treatment Works (POTW), which was then incapable of treating Life Science's Kepone wastes. The Director of the POTW (another former Allied Chemical employee) recommended to Hopewell's City Manager that Life Science become the only industrial discharger allowed to discharge into the municipal sewerage system.[30] The POTW did not reveal on its NPDES application the presence of Kepone in its influent or effluent. The Commonwealth of Virginia, which in the interim had received delegation of the NPDES program from EPA, finally learned of Life Science's indirect discharge into the Hopewell POTW in October 1974 when the sludge digester at the POTW failed because it had been contaminated by Kepone. Virginia and EPA officials conducted negotiations with Life Science, resulting in the imposition of a Kepone pretreatment standard on Life Science in June 1975.[31] Allied Chemical participated in these negotiations and agreed to pay for the pollution control equipment that Life Science would require in order to meet the pretreatment standard. European demand for Kepone had strengthened, and Allied Chemical was eager to substantially increase Life Science's Kepone production. However, even after the control equipment was installed, the pretreatment standard was violated in nearly all samplings taken.[32]

In July 1975, as Life Science was preparing for increased Kepone production, the Virginia Department of Health was alerted by a local physician and the Center for Disease Control in Atlanta, Georgia, that many Life Science employees and members of their families were suffering from Kepone poison-

29. *Id.*
30. Goldfarb, *supra* note 9, at 650.
31. *Id.* at 651.
32. *Id.* at 651-52.

ing. Virginia Health Department officials found substantiation for the complaints, and immediately ordered the Life Science plant to close down. The Kepone poisoning occurred because Life Science either failed to follow or ignored well-known safety precautions in Kepone manufacture. Life Science became insolvent when its plant was closed.

As many as sixty-two current and former Life Science employees suffered from Kepone poisoning. The operations of Life Science resulted in Kepone contamination of the atmosphere, soil, and waterways. EPA reported Kepone particulates in the atmosphere as far away as Richmond. Pervasive Kepone contamination had also occurred at the Life Science plant, in the soil at the plant site, in a section of the Hopewell landfill where POTW sludge had been dumped, and in a lagoon adjacent to the Hopewell POTW's outfall pipe. EPA also found that the James River and its local tributaries had unacceptable levels of Kepone, as did shellfish and finfish taken from the river. In late July 1975, in response to these reports, the Governor of Virginia ordered the closing of the James River and portions of the Chesapeake Bay to sport and commercial fishing.

During the latter half of 1975, Allied Chemical voluntarily decontaminated the Life Science plant site at a cost of nearly one million dollars. Allied Chemical also sponsored health tests for former Life Science workers and conducted intensive research on methods of retrieving Kepone from the James River and incinerating Kepone residuals. In early 1976, Allied Chemical donated $88,000 to the Medical College of Virginia for monitoring and treating former Life Science employees who had been severely affected by Kepone. As a result of these studies, the College's medical team perfected a technique for accelerating elimination of Kepone from the human body, thereby speeding the recovery of those persons who had suffered from Kepone poisoning.

In early 1976, the United States Attorney for the Richmond, Virginia area empaneled a grand jury to consider whether federal criminal charges should be brought against Allied Chemical, its past and present employees, Moore, Hundtofte, Life Science, and the City of Hopewell for actions relating to the

Kepone incident. On May 7, 1976, the grand jury returned its first indictment against Allied Chemical on 940 counts of discharging Kepone and other chemicals from its Hopewell complex between 1971 and 1974, which was when Life Science began manufacturing Kepone for Allied Chemical under the tolling agreement. The first indictment also included a number of conspiracy counts against Allied Chemical and its employees arising out of Allied Chemical's deceptive permit applications.

The grand jury returned a second indictment, charging Allied Chemical, Life Science, Hundtofte, Moore, and the City of Hopewell with criminal responsibility for Life Science's illegal discharges into the Hopewell POTW after 1974. Hopewell was also charged with failure to report the presence of Kepone in its sewerage system. In attempting to hold Allied Chemical vicariously liable for Life Science's discharges, the United States relied upon three legal theories in the second indictment: (1) that Life Science was an *instrumentality* of Allied Chemical; (2) that Life Science was acting as an *agent* of Allied Chemical; and (3) that Allied Chemical was an *accomplice* of Life Science. On August 2, 1976, the grand jury returned a third indictment against Allied Chemical, which added a fourth ground for vicarious liability: that Allied Chemical and LSP were engaged in a conspiracy to violate pollution control laws.[33]

The City of Hopewell was allowed to plea bargain and received a $10,000 fine. After agreeing to testify for the United States, Hundtofte and Moore were also allowed to plea bargain, and received fines of $25,000 each. Life Science pleaded *nolo contendere* and received a fine of approximately four million dollars, a meaningless gesture in light of the company's insolvency.

Allied Chemical, which had originally pleaded not guilty to all counts, was permitted by the trial judge, the Honorable Robert R. Mehrige, Jr., of the United States District Court for the Eastern District of Virginia, to change its plea to *nolo contendere* on the 940 counts of first indictment. Allied Chemical's

33. The allegation charging that Allied Chemical and certain of its employees conspired to file false applications and reports with EPA was dismissed on the ground that a corporation cannot be engaged in a conspiracy with its own employees.

nolo contendre plea gave it a profound tactical advantage over a plea or verdict of guilty. The conviction of a defendant after a *nolo* plea cannot be used as evidence in subsequent civil actions for damages, such as the civil suits actually brought against Allied Chemical by former Life Science workers and local commercial fishermen, marina owners, restaurant owners, etc.[34]

For its conviction on the 940 counts of the first indictment, Allied Chemical was fined $13,240,000. Judge Mehrige later reduced the fine to five million dollars, on the stipulation that Allied Chemical transfer eight million dollars to the Virginia Environmental Endowment Fund for scientific research on alleviating the effects of Kepone and other environmental issues relevant to the Chesapeake Bay area. Allied Chemical's attempt to deduct its contribution to the Virginia Environmental Endowment Fund from its gross corporate income as an ordinary and necessary business expense was prohibited by the Internal Revenue Service, and later by the Tax Court of the United States and the Third Circuit.[35]

Allied Chemical settled for $5,250,000 (in addition to the nearly one million dollars it had already spent in cleaning up the Life Science plant site) all of the claims of the Commonwealth of Virginia and the City of Hopewell for Kepone-related costs that these governmental entities had incurred, as well as penalties assessed by the Virginia Water Control Board. The Internal Revenue Service allowed Allied Chemical to treat this payment as a deductible expense. Allied also was forced to settle dozens of lawsuits, that were brought by workers and directly injured neighbors, with total payments amounting to more than fifteen million dollars.[36]

However, after a bench trial, Judge Mehrige acquitted Allied Chemical of all counts of the second and third indictments, which charged Allied Chemical with vicarious liability for Life Science's discharges. Despite Allied Chemical's close involvement with Life Science's manufacturing and pollution control operations, Judge Mehrige was not convinced beyond a reason-

34. *See, e.g.*, Pruitt v. Allied Chemical Corp., 523 F. Supp. 975 (E.D. Va. 1981).
35. *See supra* note 9.
36. NLS, *supra* note 2 at 343.

able doubt that Life Science had acted as an instrumentality, an agent, an accomplice, or a co-conspirator of Allied Chemical.

III. THE 1977 CWA AMENDMENTS

The Clean Water Act of 1977[37] was widely seen as encompassing a set of "mid-course corrections" to the Federal Water Pollution Control Act of 1972.[38] The Kepone incident was clearly very much in the minds of members of Congress while they were considering these mid-course corrections.[39] Four sections of the 1977 amendments were directly inspired by the Kepone incident and major pollution events similar to it.

A. *Control of Toxic Pollutants*

The CWA's original toxic pollutant control mechanism was a cumbersome, pollutant-by-pollutant, harm-based system that resulted in little control of toxic pollutants.[40] Rejecting this exercise in futility, EPA decided to regulate toxic pollutants primarily through technology-based effluent limitations. EPA's decision was upheld by the famous "Consent Decree of 1976."[41] This decree established timetables for EPA to promulgate effluent limitations based on Best Available Technology Economically Achievable (BAT) for many industrial categories covering sixty-five families of compounds, which EPA has broken down into 126 "priority pollutants."[42] This new approach to regulat-

37. Pub. L. 95-217, 91 Stat. 1566 (1977).

38. The term "mid-course corrections" appears frequently in the legislative history of the 1977 amendments. *See, e.g.*, Clean Water Act of 1977, Pub. L. No. 95-217, 91 Stat. 1566 (1977) *reprinted in* COMM. ON ENV'T AND PUB. WORKS, 95TH CONG., 2D SESS., A LEGISLATIVE HISTORY OF THE CLEAN WATER ACT OF 1977 at 326 (1978) (Statement of House Managers on the Conference Report) [hereinafter LEG. HIST. 1977)].

39. References to the Kepone incident appear more than a dozen times in the legislative history of the 1977 amendments. *See* LEG. HIST. 1977, *supra* note 38, at 334, 335, 338, 430, 453, 454, 477, 549, 550, 863, 883, 886, 909.

40. Pub. L. 92-500, 86 Stat. 816, § 307(a); NLS, *supra* note 2, at 842; LEG. HIST. 1977, *supra* note 38, at 326-327 ("Procedural requirements have proven insurmountable for the Agency, to the point where only six toxic chemicals . . . have been regulated . . . in five years").

41. Also known as the "Flannery Decree," after the district court judge in the underlying case of NRDC v. Train, 6 Envtl. L. Rep. 20588 (D.D.C. June 9, 1976).

42. For a description and analysis of the CWA's categorical, technology-based

ing toxics was codified by the Clean Water Act of 1977.[43] The Kepone incident was closely linked to Congress' recognition that its original mechanism for regulating toxics had failed.[44]

B. *Industrial Pretreatment*

The Federal Water Pollution Control Act Amendments of 1972 required EPA to propose regulations within 180 days of enactment, establishing pretreatment standards for the introduction into POTWs of pollutants "which are determined not to be susceptible to treatment by such treatment works or which would interfere with the operation of such treatment works."[45] However, the defects of the 1972 Amendments' provisions for regulating toxic pollutants also prevented EPA from setting pretreatment standards for toxics.

The "Consent Decree of 1976" applied the categorical, technology-based approach to establishing effluent limitations for toxics to setting pretreatment standards.[46] The congressional codification of this methodology in the Clean Water Act of 1977 included pretreatment standards.[47] Although there is no direct supporting evidence in the legislative history, Congress may have

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system of setting effluent limitations, see NLS *supra* note 2, at 825-58.

43. Clean Water Act of 1977, Pub. L. No. 95-217, § 53(a), 91 Stat. 1589-90 (codified as amended at 33 U.S.C. § 1317(a)-(b)).

44. The reasons EPA virtually ignored toxic substances in the first go-round of the effluent guidelines program were the complexity of the task, high costs, the lack of testing methodologies and available data, time constraints, and its stated intention to rely on the *Section 307(a)* chemical-by-chemical regulatory approach. Thus, EPA developed numerical standards, telling dischargers in various industrial categories what they had to do to achieve BPT and BAT for the traditional parameters such as BOD, suspended solids, and pH, but very little about the control needed for such chemicals as carbon tetrachloride, *Kepone*, mirex, and others.

STAFF MEMORANDUM OF SUBCOMM. ON INVESTIGATION AND REVIEW, COMM. ON PUBLIC WORKS AND TRANSPORTATION, 95TH CONG., 2d SESS. (affixed to floor statement of House sponsors), *reprinted in* LEG. HIST. 1977, *supra* note 38 at 335 (emphasis added).

45. Clean Water Act of 1972, Pub. L. No. 92-500, §§ 307(b)-(d), 86 Stat. 857-58 (codified as amended at 38 U.S.C. § 1317(6)-(d) (1988 & Supp. V 1993)).

46. *See supra* note 42.

47. Clean Water Act of 1977, Pub. L. No. 95-217, § 53, 91 Stat. 1589 (codified as amended at 33 U.S.C. § 1317(a)(1)-(3) (1988)) (referring to "effluent limitations" and "effluent standards" interchangeably).

been responding to the Kepone incident in a number of other 1977 CWA amendments regarding pretreatment.

Public Law Number 95-217 introduced provisions (1) enabling EPA to sue, after thirty days notice to the POTW operator and the relevant state, a POTW operator and an indirect discharger that violates pretreatment standards;[48] (2) requiring a POTW discharge permittee to identify "in terms of character and volume of pollutants . . . any significant source introducing pollutants subject to pretreatment standards . . . into such works," and to establish "a program to assure compliance with such pretreatment standards by each such source;"[49] and (3) establishing a new regulatory program governing the disposal of sewage sludge.[50]

C. *Best Management Practices to Control Plant Site Runoff*

Congress was clearly cognizant of the Kepone incident when it authorized EPA to promulgate regulations, which, as part of categorical effluent limitations applicable to dischargers of toxic pollutants, contain best management practices "to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage."[51] These so-called "ancillary discharges" were seen as possessing significant potential to "contribute significant amounts of [toxic] pollutants to navigable waters."[52] In the Water Quality Act of 1987, the "ancillary industrial discharges" program was expanded into a major effort

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48. Clean Water Act of 1977, Pub. L. 95-217, § 54(b), 91 Stat. 1591 (codified as amended at 33 U.S.C. § 1319(f) (1988)). In such an action, a federal district court is authorized to award "appropriate relief, including, but not limited to, a permanent or temporary injunction." *Id.*

49. 33 U.S.C. § 1342(b)(8) (1988).

50. 33 U.S.C. § 1345 (1988). One component of the sludge disposal regulations was the identification of "concentrations of pollutants which interfere with" the beneficial uses of sewage sludge. 33 U.S.C. § 1345(d)(1)(c).

51. Pub. L. 95-217, § 50, 91 Stat. 1588 (codified as amended at 33 U.S.C. § 1314(e) (1988). According to Senator Muskie, the Senate sponsor of the 1977 amendments bill, "[t]he runoff of Kepone into the James River from outdoor storage areas could have been prevented" by such a provision. LEG. HIST. 1977, *supra* note 38, at 454.

52. LEG. HIST. 1977, *supra* note 38, at 454.

to regulate industrial stormwater discharges containing toxic pollutants.[53]

D. *Emergency Response Fund*

The Kepone incident was also instrumental in persuading Congress to establish an emergency fund, authorized at ten million dollars, "to provide assistance in emergencies caused by the release into the environment of any pollutant or other contaminant including, but not limited to, those which present, or may reasonably be anticipated to present, an imminent and substantial danger to the public health or welfare."[54] The new emergency response fund provision required EPA to prepare a contingency plan for responding to emergencies and authorized the Agency to pursue cost recovery against the owner or operator of a discharger creating an emergency.[55] This 1977 amendment was an important precursor of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which was enacted in 1980.[56]

IV. THE 1987 CWA AMENDMENTS

The Water Quality Act of 1987[57] represented a fine-tuning of the CWA, in contrast to the major mid-course correction that had occurred in 1977.[58] Nevertheless, the 1987 amendments included a number of provisions that might deter conduct potentially leading to a Kepone-type incident.

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53. Water Quality Act of 1987, Pub. L. No. 100-4, § 402, 101 Stat. 7, (codified as amended at 33 U.S.C. § 1311 (1988)). *See* sources cited *infra* notes 63-68.

54. Pub. L. 95-217, § 69, 91 Stat. 1607, *repealed by* Comprehensive Environmental Response, Compensation and Liability Act of 1980, Pub. L. No. 96-510, § 304, 94 Stat. 2767, 2768; *see* LEG. HIST. 1977, *supra* note 38, at 477 (containing a brief summary of the Kepone incident in supporting the creation of an emergency response fund).

55. *Id.*

56. CERCLA § 304(a), 42 U.S.C. § 9601 (1988) (repealing the duplicative § 304(b) of the Clean Water Act).

57. Water Quality Act of 1987, Pub. L. No. 100-4, 101 Stat. 7 (codified as amended in scattered sections of 33 U.S.C.).

58. *See supra* note 16.

A. *Focus On Chesapeake Bay*

The 1987 CWA amendments partially incorporated the philosophy of "place-based" environmental protection, which was becoming popular during the mid-1980s and is now in the forefront of environmental management.[59] Place-based environmental protection concentrates on particular areas that are (1) especially vulnerable, through one, or a combination, of past environmental degradation, ecological sensitivity, or impending threat, and (2) ecologically unique.[60] These areas cannot recover or retain their environmental integrity, even after the imposition of uniform national pollution control standards, without additional controls. Place-based strategies emphasize (1) management on a larger area scale than traditional pollution control methods, and (2) the need for "bottom-up" consensus solutions developed and implemented on a regional basis.[61] One of the most successful models of place-based environmental management is the Chesapeake Bay Program.

A 1975 amendment to the CWA had authorized a comprehensive EPA study of the pollution problems of estuarine areas; the EPA chose the Chesapeake Bay as its initial study area.[62] Released in 1983, this study identified nutrient enrichment as a significant area of environmental degradation of the Bay.[63] The findings of this study led directly to the first Chesapeake Bay Agreement, signed in 1983.[64] The EPA joined with the govern-

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59. Place-based environmental management is referred to by various names, including "ecosystem management," "watershed management," and "bioregionalism." *See generally* William Goldfarb, *Watershed Management: Slogan or Solution?*, 21 B.C. ENVTL. AFF. L. REV. 483 (1994).

60. *Id.*

61. *Id.* at 498.

62. 33 U.S.C. § 1325 (1988).

63. Water Quality Act of 1987, Pub. L. No. 100-4, 101 Stat. 7 (1988), *reprinted in* COMM. ON ENV'T AND PUB. WORKS, 100TH CONG., 2D SESS., A LEGISLATIVE HISTORY OF THE WATER QUALITY ACT OF 1987, at 1393-94, 1473-74, 1815 [hereinafter LEG. HIST. 1987] (containing an indirect reference to the Kepone incident). For a history of the Chesapeake Bay cleanup effort, see BRUCE GALLOWAY, A WORK IN PROGRESS: A RETROSPECTIVE ON THE FIRST DECADE OF THE CHESAPEAKE BAY RESTORATION (1993), and TOM HORTON & WILLIAM M. EICHBAUM, CHESAPEAKE BAY FOUNDATION, TURNING THE TIDE: SAVING THE CHESAPEAKE BAY (1991).

64. GALLOWAY, *supra* note 63, at 2.

ments of Virginia, Pennsylvania, Maryland, and the District of Columbia, as well as the Chesapeake Bay Commission (an interstate legislative coordinating body), to develop and implement coordinated plans to improve and protect the water quality and living resources of the Chesapeake Bay.[65] This experiment in intergovernmental coordination (known as the Chesapeake Bay Program) established a management structure to reach decisions, implement environmental protection strategies formulated through consensus, and measure progress by systematic and thorough water quality modelling.[66]

In 1987, the second Chesapeake Bay Agreement was signed and the CWA was amended to facilitate continuing federal participation in the Chesapeake Bay Program. The second agreement called for a forty percent reduction in nutrient loads reaching the Bay by the year 2000, and the imposition of a permanent cap at that level after 2000.[67] The Water Quality Act of 1987 authorized three million dollars per year through fiscal year 1990 for the establishment of an EPA Chesapeake Bay office[68] and ten million dollars per year for fifty percent federal matching implementation grants to states that have "approved and committed to implement all or substantially all aspects of the [agreements]."[69] Another section of the 1987 amendments established a new National Estuary Program, based on the Chesapeake Bay Program model.[70] The new program encouraged the formation of interstate management conferences to develop comprehensive management plans for other

65. *Id.*

66. The Chesapeake Bay Program also includes six other federal agencies, representatives of local governments, relevant interest groups, and the general public. According to Galloway, "[n]o other environmental management effort on this scale had ever been attempted in a system as complex as the Chesapeake." *Id.* at 10.

67. The 1987 agreement was amended in 1992 to reaffirm the forty percent nutrient reduction goal and refine strategies for achieving it. GALLOWAY, *supra* note 63, at 11. Between 1984 and 1992, loadings of phosphorus (the limiting nutrient in the Bay ecosystem) had declined almost thirty percent. HORTON & ELCHBAUM, *supra* note 63, at 67.

68. The functions of this office were to include information collection and dissemination, coordination of federal and state efforts to protect the Bay, and the determination of the impacts of pollution loadings on the Bay's ecology, with a particular emphasis on the striped bass as an indicator species.

69. 33 U.S.C. § 1267(b)(1), (d)(2) (1988).

70. 33 U.S.C. § 1330 (1988).

threatened estuaries.[71] Although empirical verification of this point is impossible, it seems clear that given the current level of public attention, public resources, and institutional coordination and commitment devoted to the preservation of the Chesapeake Bay, continuing pollution on the massive scale of the Kepone incident would be inconceivable. For example, the appalling lack of coordination among federal agencies, state and local governments, and local citizens was one of the major reasons why the Kepone pollution went virtually unaddressed by regulatory authorities for nearly a decade.[72]

B. *Toxic Hot Spots*

In the Water Quality Act of 1987, Congress established a new program for controlling pollution in so-called "toxic hot spots," where "[t]he cumulative discharge from several toxic polluters can result in unacceptable concentrations of toxic pollutants even after the implementation of technology-based controls."[73] Within two years of enactment, states were required to identify those bodies of water that would not meet water quality standards because of toxic pollutants, in spite of compliance with technology-based effluent limitations by appropriate dischargers. For each identified toxic hot spot, states were to determine the specific point sources discharging toxic pollutants and the amounts discharged. State submissions to the EPA were to include "Individual Control Strategies" for each discharger of toxics to an identified waterbody. Individual control strategies were to include water quality-based effluent limitations derived from numerical water quality criteria or

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71. Ironically, the interstate management conference was the institutional device that had failed to curtail water pollution prior to the 1972 Federal Water Pollution Control Act Amendments. *See* MARCI BENSTOCK & LEONARD ZWICK, WATER WASTELAND, Ch. XIV-1 (1971). By 1987, public consciousness of the dangers of water pollution and public commitment to remedy the problem had resulted in a policy consensus that validated the management conference—a fundamentally voluntary institutional structure.

72. *See supra* part I.

73. LEG. HIST. 1987, *supra* note 63, at 1324. For a description and analysis of the interactions between technology-based and harm-based effluent limitations in the Clean Water Act, see NLS, *supra* note 2, ch. 19 and WILLIAM GOLDFARB, WATER LAW, ch. 27 (2d ed. 1988), [hereinafter WATER LAW].

from bioassays.[74] Individual control strategies were required to result in compliance with water quality standards no later than three years after the effective date of the strategy.[75] Within 120 days after a state's submission to the EPA of its set of individual control strategies, the EPA was to approve or disapprove the state submission.[76] If a state did not submit its individual control strategies within the two-year period, or if EPA did not approve the state's submission, then the EPA was required to develop and implement individual control strategies for the state within one year.[77]

Congress intended individual control strategies to prevent toxic hot spots where multiple waste streams were discharged into urban waterbodies.[78] This scenario does not precisely fit the Kepone situation. Nevertheless, by directing state attention to identifying and controlling toxic pollution in urban waters, the toxic hot spots provision of the 1987 CWA amendments could only serve to forestall pollution such as in the Kepone case.

C. *Sewage Sludge Management*

Disposal of Kepone-contaminated sewage sludge from the Hopewell POTW in the Hopewell landfill was a symbol of a national problem with sewage sludge disposal and management.[79] The Federal Water Pollution Control Act of 1972 established a permit program governing sewage sludge disposal, but it was silent regarding standards for sludge disposal and management.[80] In the 1977 CWA amendments, Congress took a series of steps toward improving the regulation of sludge disposal. Within one year of enactment, the EPA was required to

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74. For an explanation of the water quality-based effluent limitation standard-setting process, see NLS, *supra* note 2, ch. 19.

75. 33 U.S.C. § 1314(*l*)(1)(D) (1988).

76. 33 U.S.C. § 1314(*l*)(2).

77. 33 U.S.C. § 1314(*l*)(3).

78. LEG. HIST. 1987, *supra* note 63, at 328.

79. WATER LAW, *supra* at note 73, at ch. 30 and 36.

80. 33 U.S.C. 1345(a)-(c) (1988). This permit program, under section 405 of the CWA, was separate from the National Pollutant Discharge Elimination System permit program administered under section 402 of the Act.

promulgate sludge disposal and management regulations for (1) identifying uses for sludge, (2) specifying best management practices for sludge disposal, and (3) identifying concentrations of toxic pollutants that might interfere with environmentally sound sludge disposal.[81] Sludge disposal in violation of these guidelines was declared illegal.[82] The EPA was also mandated to submit a comprehensive study of sewage sludge management practices to Congress by October 1, 1978.[83]

The EPA did little to implement these directives during the decade following the 1977 amendments.[84] As a result, Congress again addressed the sewage sludge management problem in the Water Quality Act of 1987.[85] The EPA was placed on a new timetable for promulgating regulations establishing best management practices and setting numerical pollution standards for pollutants that may be present in sewage sludge in potentially toxic concentrations. The rulemaking process was required to be completed by June 15, 1988, and compliance was necessary within two years of promulgation.[86]

For monitoring and enforcement purposes, sludge disposal and management standards were required to be included in POTW discharge permits under the CWA or in other federal or state permits.[87] Requiring sludge disposal standards to be included in POTW permits gives regulatory agencies information regarding potentially dangerous sludge disposal practices, such as that which occurred in the Kepone case, an incentive to investigate those practices, and a "handle" on regulating inade-

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81. 33 U.S.C. § 1345(e).
82. 33 U.S.C. § 1345(d).
83. 33 U.S.C. § 1254(d) (1988).
84. Senator Stafford remarked on the Senate floor that the EPA had
> utterly failed to heed this congressional directive. Although I am told that EPA has detected at least 76 toxic priority pollutants in POTW sludge, it has issued rules for only two pollutants: cadmium and PCBs—and only if these pollutants are landfilled or land spread. EPA has set no limits whatsoever on the toxicity of marketed sewage sludge products, and no limits on the many other toxic pollutants in sewage sludge which is landfilled or land spread.

LEG. HIST. 1987, *supra* note 63, at 620.
85. 33 U.S.C. § 1345(d)-(e).
86. *Id.*
87. 33 U.S.C. § 1345.

quate sludge management. However, the EPA's sludge disposal and management program has functioned fitfully at best. The regulations mandated by the 1987 amendments were not actually promulgated until 1993, five years after the statutory deadline.[88] In addition, in late 1994, a federal circuit court of appeals invalidated these regulations and remanded them to the EPA.[89]

D. *Control of Stormwater Discharges*

The Clean Water Act of 1977 had given permit writers the authority to include in discharge permits best management practices for plant site runoff containing toxic pollutants,[90] but this discretionary authority was infrequently exercised.[91] The Water Quality Act of 1987 supplanted these provisions[92] with a new regulatory program designed to control industrial stormwater discharges.[93] Applications for stormwater discharge permits were to be filed no later than three years from the date of enactment; permit issuance or denial was required within one additional year; and compliance was necessary within three years from the date of permit issuance (October 1, 1994 at the latest).[94]

The EPA's industrial stormwater control program has evolved into a model of regulatory efficiency.[95] A stormwater discharger must comply with the terms of a general permit for its industrial category.[96] Each general permit requires the development and implementation of pollution prevention plans incorporating appropriate best management practices such as planning, reporting, personnel training, preventive maintenance, and good

88. 58 Fed. Reg. 9248-9414 (Feb. 19, 1993) (codified at 40 C.F.R. § 157 (1993)).

89. Leather Industries v. EPA, 40 F.3d 392 (D.C. Cir. 1994).

90. *See supra* notes 52-54 and accompanying text.

91. For a case reviewing an EPA application of § 304(e) of the CWA, see Rybachek v. EPA, 904 F.2d 1276 (9th Cir. 1990).

92. Section 304(e), however, was not repealed.

93. 33 U.S.C. § 1342 (1988).

94. 33 U.S.C. § 1342(4)(A).

95. *See generally* EPA, Final NPDS General Permits for Storm Water Discharges Associated with Industrial Activity, 57 Fed. Reg. 41,236 (1992).

96. 57 Fed. Reg. 41,239.

housekeeping practices.[97] Stormwater pollution prevention plans must be reviewed and certified by a Registered Professional Engineer.[98]

Had the industrial stormwater permit program been in effect during the late 1960s and early 1970s when Kepone discharges into the James River were taking place, regulatory agencies would probably not have been able to ignore Life Science's egregious neglect of Kepone raw material and waste piles at its plant site.

V. AMENDMENTS TO THE CLEAN WATER ACT'S CRIMINAL ENFORCEMENT PROVISIONS

A. *The 1972 Act and the 1977 Amendments*

The Federal Water Pollution Control Act Amendments of 1972, under which the Kepone defendants were prosecuted,[99] provided that any person, who willfully or negligently violated a key regulatory section of the Act or a discharge permit issued under the Act, "shall be punished by a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or by both."[100] Maximum fines and jail terms were doubled for second and subsequent convictions.[101] Knowingly making a false statement in any application, record, report, or plan required under the Act, or knowingly tampering with a required monitoring device was punishable by a maximum fine of $10,000 or by imprisonment for up to six months, or by both.[102] The term "person" was defined to include "any responsible corporate officer."[103]

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97. 57 Fed. Reg. 41,242-245.

98. 57 Fed. Reg. 41,246.

99. 33 U.S.C. § 1319(c) (1988). The Kepone indictments also included a number of counts under the Refuse Act of 1899. 33 U.S.C.A. § 401 (1988). The Refuse Act is still effective, and possesses some advantages to prosecutors as compared to the CWA. But in modern environmental criminal practice, the Refuse Act is clearly subordinate to the criminal provisions of the CWA. *See* NLS, *supra* note 2, at 322-27.

100. 33 U.S.C. § 1309(c)(1) (1988).

101. 33 U.S.C. § 1319(c)(1)(B).

102. 33 U.S.C. § 1309(c)(2).

103. 33 U.S.C. § 1309(c)(6).

The Clean Water Act of 1977 made no changes to the criminal enforcement sections of the CWA that would be directly relevant to the Kepone situation or a similar incident.[104]

B. *The 1987 Amendments*

In the Water Quality Act of 1987, Congress refined, expanded, and strengthened the CWA's criminal enforcement provisions in certain fundamental respects. The $25,000 per day maximum fine and the one year maximum jail term (double for second offenders), applicable to both negligent and knowing violations of regulatory requirements and discharge permits by the 1972 Act, were restricted to negligent violation only.[105]

Knowing violations of regulatory provisions or discharge permits are now punishable "by a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than three years, or by both."[106] Maximum fines and jail sentences are doubled for subsequent convictions.[107]

In addition, whereas it was unclear whether the criminal enforcement provisions of the 1972 act applied to violations of pretreatment standards, coverage was made explicit by the 1987 amendments. A negligent or knowing violation subject to criminal prosecution may now also include a violation of "any requirement imposed in a pretreatment program approved un-

104. Section 54 of Pub. L. No. 95-217 did, however, (1) authorize a civil action by EPA against a POTW and an indirect discharger where a pretreatment standard was being violated, and (2) require that a POTW discharge permit include conditions mandating the POTW to identify significant sources of toxic pollutants in its influent, and to establish a program to insure compliance with pretreatment standards by such sources.

105. 33 U.S.C. § 1319(c)(1)(A).

106. 33 U.S.C. § 1319(c)(2)(B).

107. *Id.*

der" certain sections of the Act.[108] Moreover, it is now a crime to negligently or knowingly introduce

> into a sewer system or into a [POTW] any pollutant or hazardous substance which [a] person knew or reasonably should have known could cause personal injury or property damage or, other than in compliance with all applicable Federal, State, or local requirements or permits, which causes such [POTW] to violate any effluent limitation or condition in a permit issued to the [POTW]. . . .[109]

The maximum fine for knowingly making a false statement or tampering with a monitoring device is still $10,000, but the maximum jail sentence has been increased from six months to two years.[110] Maximum penalties have also been doubled for repeat offenders.[111]

As a result of the 1987 amendments to the CWA, judges now possess stronger criminal sanctions with which to punish knowing violators of the CWA, as were the Life Science officials indicted in the Kepone case.[112] It also has been made crystal clear that indirect dischargers, such as Life Science in the Kepone situation, are subject to equally formidable criminal sanctions as are their direct discharger counterparts. These developments can only enhance the deterrent effect of the CWA's criminal enforcement provisions in Kepone-type situations.

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108. 33 U.S.C. § 1319(c)(1)(A), (2)(A). For a case involving a conviction for knowingly introducing a pollutant into a POTW in violation of pretreatment standards (§ 1319(c)(2)(A)), see United States v. Rutana, 932 F.2d 1155 (6th Cir. 1991) (sentence vacated and remanded for departure from Federal Sentencing Guidelines), *cert. denied,* 112 S. Ct. 300 (1991); United States v. Rutana, 18 F.3d 363 (6th Cir. 1994) (sentence again remanded because of misinterpretation of Federal Sentencing Guidelines).

109. 33 U.S.C. § 1319(c)(1)(B). Maximum penalties, as previously described, are based on whether the violation was negligent or knowing.

110. 33 U.S.C. § 1319(c)(4).

111. *Id.*

112. With regard to a public welfare offense, such as a violation of an environmental law, criminal conviction for a "knowing" violation does not require criminal intent or "scienter" (i.e., that the perpetrator knew that his behavior was in violation of law); it requires only that the perpetrator was, or should have been, aware of the results of his actions. *See* NLS, *supra* note 2, at 348-56.

C. *Knowing Endangerment*

The Water Quality Act of 1987 added a new crime—"knowing endangerment"—that, on its face, appears to hold significant potential to punish and deter outrageously unacceptable conduct such as that which took place in the Kepone situation.[113]

Any person who knowingly violates a regulatory requirement of the CWA or a discharge permit condition "and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both."[114] The maximum fine for organizations[115] convicted of knowing endangerment is $1,000,000; these maximum punishments are doubled for second and subsequent convictions.[116]

In determining the requisite *scienter* for knowing endangerment, a natural person "is responsible only for actual awareness or actual belief that he possessed; and knowledge possessed by a person other than the defendant but not by the defendant himself may not be attributed to the defendant."[117] Circumstantial evidence may be introduced to prove actual knowledge, including "evidence that the defendant took affirmative steps to shield himself from relevant information."[118]

Consent of the person endangered is a defense to a prosecution for knowing endangerment,[119] but only in situations where "the danger and conduct charged were reasonably fore-

113. 33 U.S.C. § 1319(c)(3).

114. 33 U.S.C. § 1319(c)(3)(A). The term "serious bodily injury" means "bodily injury which involves a substantial risk of death, unconsciousness, extreme physical pain, protracted and obvious disfigurement, or protracted loss or impairment of the function of a bodily member, organ, or mental faculty." 33 U.S.C. § 1319(c)(3)(B)(iv).

115. The term "organization" means any legal entity other than a government. 33 U.S.C. § 1319(c)(3)(B)(iii).

116. 33 U.S.C. § 1319(c)(3)(A).

117. 33 U.S.C. § 1319(c)(3)(B)(i)(I),(II).

118. 33 U.S.C. § 1319(c)(3)(B)(i)(II).

119. The affirmative defense of consent need only be proven by a preponderance of the evidence. 33 U.S.C. § 1319(c)(3)(B)(ii)(II).

seeable hazards of—(I) an occupation, a business, or a profession; or (II) medical treatment."[120]

The new crime of "knowing endangerment," which was adapted from section 3008(e) of RCRA,[121] was intended to provide "enhanced felony penalties for certain life-threatening conduct based upon knowing violation of certain predicates in the Act."[122] The fifteen year maximum jail term for first offenders[123] reflects a Congressional finding that "knowing endangerments through water related violations of Federal law should be discouraged as strongly as possible and should be subject to extraordinary sanctions when they occur."[124] Such a lengthy maximum sentence is acceptable to society because "[s]trong public support exists for aggressive enforcement action in cases of environmental misconduct."[125]

The elements of the crime of knowing endangerment strongly suggest application to the Kepone incident. The Life Science workers were clearly placed in imminent danger of death or serious bodily injury. Hundtofte and Moore, at least, knew that they were violating the pretreatment requirements of the CWA. With their long and close experience with Kepone manufacturing, they also knew the profound adverse effects that Kepone could have on human beings who came in direct contact with it. The LSP workers could not have consented to being endangered because their comparatively low salaries and ignorance of Kepone's insidious effects meant that the danger was not "reasonably foreseeable."

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120. 33 U.S.C. § 1319(c)(3)(B)(ii).

121. 42 U.S.C. § 6928(e)(1988). In fact, the general strengthening of criminal penalties under the Water Quality Act of 1987 was intended to resolve a disparity in criminal sanctions between RCRA and the CWA. *See* LEG. HIST. 1987, *supra* note 63, at 822-23, 1450-51.

122. LEG. HIST. 1987, *supra* note 63, at 823.

123. Under the Federal Sentencing Guidelines, *Knowing Endangerment Resulting from Mishandling Hazardous or Toxic Substances, Pesticides or other Pollutants* takes a Base Offense Level of 24, which entails a jail sentence of between fifty-one and sixty-three months in prison for a first offender. Sentences may be adjusted upward for repeat violations, and if death or serious bodily injury has actually occurred. UNITED STATES SENTENCING COMMISSION, FEDERAL SENTENCING GUIDELINES, section 2Q1.1.

124. LEG. HIST. 1987, *supra* note 63, at 1451.

125. *Id.*

Nevertheless, an extremely narrow judicial interpretation of the CWA's knowing endangerment provision casts doubt on whether this crime might be applicable to Kepone-type situations. In *United States v. Borowski*,[126] the defendant was the president and sole stockholder of an optical mirror manufacturing company located in Burlington, Massachusetts. During the industrial process, mirrors were dipped in nickel plating baths, and the excess nickel was then stripped off with nitric acid. Spent nickel plating and nitric acid baths were disposed of by dumping them directly into plating room sinks without any form of pretreatment. The sink outlet pipes led into the Burlington sewer system, which terminated at the local POTW. This means of discharging plating wastes was in violation of pretreatment standards established by EPA regulations.[127]

Company employees experienced severe health effects consistent with exposure to nitric acid and nickel. Various employees testified to having had symptoms such as nosebleeds, headaches, chest pains, breathing difficulties, dizziness, rashes, and blisters. Exposure to these chemicals can also cause serious chemical burns, permanent respiratory damage, and cancer.[128]

Borowski was as cavalier about his employee's health and safety as were Hundtofte and Moore in the Kepone case:

> Repeated employee exposure to the chemicals was unavoidable. In discharging the spent nickel plating baths and nitric acid baths, for instance, . . . employees were told to bail out the harmful solutions by hand using a plastic bucket or a portable pump. Once a tank was nearly empty it was tipped over the edge of the sink and a scoop or small cup was used to scoop out any remaining solution. The employees were required to scrape the sides and bottom of nickel baths to extricate a layer of nickel byproduct. . . . Sometimes employees were told to dump "hot" nitiric acid solutions into the sinks. This created an "alka seltzer" like appearance on the surface of the sink. Employees testified that the nickel and nitric acid solutions sometimes splashed and spilled directly onto their skins. Indeed, one employee

126. 977 F.2d 27 (1st Cir. 1992).
127. *Id* at 28.
128. *Id.*

> complained that he was always "wet" with the solution and at times was scalded by the chemicals.[129]

Ventilation at the plating room was seriously deficient, and the workers were not provided with respirators or other protective gear.[130]

Borowski knew that his company's inadequate waste disposal practices created serious health risks to the employees. He also knew that the discharges were violating pretreatment standards. However, he ignored both the complaints of his workers and the warnings of regulatory agencies.[131]

A federal jury convicted Borowski on two counts of knowing endangerment.[132] On appeal, Borowski argued that the knowing endangerment sanction does not apply when the imminent danger is not to sewer workers or people at the POTW,[133] but rather to employees handling the pollutants on the premises from which the illegal discharge originates. The court agreed with Borowski, reasoning that

> there could be no violation unless the wastes ultimately ended up in a [POTW]. But the risks and dangers to these employees would have been the same if the plugs had always remained in the sinks so that no discharge to the [POTW] (and therefore no sec. 1317 violation) ever occurred. The danger to the employees was inherent in their handling of the various chemical solutions. . . . They would have been subject to the identical hazards had they been dumping the chemicals into drums or other containers for appropriate treatment under [RCRA]. In that respect, therefore, although the defendants knew that their employees were placed in imminent danger, that danger was not caused by the knowing violation of sec. 1317.[134]

The court concluded that, unlike RCRA, "(t)he Clean Water Act is not a statute designed to provide protection to industrial

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129. *Id.* at 28.
130. *Id.*
131. *Id.* at 29.
132. *Id.*
133. The prosecutor had presented no evidence of danger to POTW workers.
134. *Borowski*, 977 F.2d at 30 (footnote omitted).

employees who work with hazardous substances."[135] The federal government could have proceeded under the Occupational Safety and Health Act (OSHA),[136] but the court then conceded that OSHA does not carry criminal penalties for unsafe practices unless a death results from the employer's actions.[137]

If the knowing endangerment sanction does not apply when only industrial workers are placed in imminent danger, why did Congress include a "consent . . . to the reasonably foreseeable hazards of an occupation" defense in the CWA's knowing endangerment section?[138] According to the court, this defense applies to professional consultants called upon to advise a POTW on how to handle an illegal, but inadvertent, indirect discharge that has been voluntarily disclosed by the discharger.

Perhaps because the *Borowski* court distinguished RCRA from the CWA in terms of the scope of their (nearly identical) "knowing endangerment" provisions,[139] it did not refer to another federal circuit court opinion, arising under RCRA, that, at least implicitly, adopted a contrasting view of the scope of "knowing endangerment." *United States v. Protex Industries, Inc.*[140] was an appeal of the first conviction for knowing endangerment under section 3008(e) of RCRA, the antecedent of CWA section 309(e).[141]

In *Protex*, defendant operated a drum recycling facility, which cleaned and repainted used drums and then used them to store and ship products manufactured by the company. Some of these drums previously contained hazardous materials, especially

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135. *Id.*

136. 29 U.S.C. § 651-673 (1988 & Supp. II 1992).

137. *Borowski*, 977 F.2d at 31; *see* 29 U.S.C. § 666 (1988).

138. *See* sources cited *supra* notes 117-18.

139. The *Borowski* court's distinction between the scope of knowing endangerment under RCRA and the CWA hangs by a rather slender thread:

> [U]nlike the Clean Water Act, RCRA exhibits explicit concern for industrial health. It has a provision specifically requiring the EPA to provide information about employee hazards to the Secretary of Labor and OSHA for OSHA enforcement purposes. The Clean Water Act exhibits no equivalent concern for workplace dangers.

Borowski, 977 F.2d at 31 (citation omitted).

140. 874 F.2d 740 (10th Cir. 1989).

141. *See supra* note 119.

solvents. Safety provisions for the employees were "woefully inadequate" to protect employees against solvent poisoning, which can cause personality disorders as well as an increased risk of cancer. In fact, two Protex employees were suffering from "psychoorganic syndrome," a personality disturbance that has been associated with exposure to solvents.[142]

Defendant argued in the appellate court that "serious bodily injury" is unconstitutionally vague, particularly as applied to psychological effects without corresponding physical manifestations.[143] The court disagreed with defendant and upheld the conviction for knowing endangerment.[144] Apparently, defendant did not raise the argument that employees of a RCRA violator are not within the ambit of the crime of knowing endangerment.

The First Circuit's holding in *Borowski* conflicts with the spirit of the CWA. If followed by other federal circuits, it will virtually preclude the application of knowing endangerment to indirect discharge situations. Prosecutors will be faced with the overwhelming task of proving beyond a reasonable doubt that sewer and POTW workers—who work under conditions where pollutants from multiple indirect dischargers, storm runoff from streets, and illegal dumping into sewers, combine to form a proverbial "chemical soup"—have been endangered by a *particular* defendant's discharge. The essence of the CWA's technology-based approach to pollution control is that regulators (and presumably prosecutors) should not be compelled to "work backward from an overpolluted body of water to determine which point sources are responsible and which must be abated."[145] Additionally, it is clear that in the 1977 and 1987 CWA amendments Congress intended to strengthen the requirements imposed upon indirect dischargers to POTWs.[146]

Even if knowing endangerment does apply to corporate officials—like Hundtofte and Moore in the Kepone situation—who

142. *Protex*, 874 F.2d at 742.
143. *Id.*
144. *Id.* at 744.
145. Environmental Protection Agency v. California, 426 U.S. 200 (1976); *see also* NLS, *supra* note 2, at ch. 19.
146. *See* sources cited *supra* notes 46-51, 80-87, 102, 106-107.

jeopardize the health and safety of their employees through violations of federal pollution control laws, it is doubtful whether liability for this crime could be extended easily to officials of companies that "toll" the manufacture of hazardous chemicals.[147]

In order to be convicted of knowing endangerment, a natural person must have actual knowledge that his illegal conduct placed another person in imminent danger of death or serious bodily injury.[148] Circumstantial evidence can be introduced to show actual knowledge, including evidence that the defendant took steps to shield himself from relevant information.[149] However, knowledge possessed by another person cannot be imputed to the defendant.[150]

The legislative history of the RCRA precursor of the knowing endangerment section of the CWA[151] reveals that Congress was adamant about not allowing a knowing endangerment conviction of a natural person to be based on vicarious knowledge.[152] As for the corporations themselves, "[t]he criminal responsibility of a corporation for knowledge possessed by its

147. *See supra* Part I.
148. 33 U.S.C. § 1319(c)(3)(B)(I)(II) (1988).
149. *Id.*
150. *Id.*
151. 42 U.S.C. § 928(e)-(f) (1988).
152. *Id.* "The knowledge necessary for culpability of a natural person is actual knowledge, which may be established by direct or circumstantial evidence, but not constructive or vicarious knowledge." HAZARDOUS AND SOLID WASTE AMENDMENTS of 1980, H.R. CONF. REP. NO. 96-1444, 96th Cong., 2d Sess. 37 (1980) *reprinted in* 1980 U.S.C.C.A.N. 5028, 5037. "It is not the purpose of this amendment either to create criminal liability or to impose enhanced penalties for errors in judgment made without the necessary scienter, however dire may be the danger in fact created." *Id.* "[S]erious criminal charges are not an appropriate vehicle for second-guessing the wisdom of judgments that are made on the basis of what was known at the time where the person acted without the necessary element of scienter." *Id.* at 38-39, *reprinted in* 1980 U.S.C.C.A.N. at 5038. "[K]nowledge that defendant should have had, could have had, or would have had under various circumstances does not suffice if he did not actually have the requisite knowledge about the danger at the time he acted." *Id.* at 39, *reprinted in* 1980 U.S.C.C.A.N. at 5038. "[W]hether or not vicarious knowledge may be sufficient for other crimes, the new endangerment offense . . . applies only to those people who have personal knowledge of the danger their conduct created." *Id.* at 40, *reprinted in* 1980 U.S.C.C.A.N. at 5039.

officers and managing agents should be governed by traditional principles."[153]

The typical tolling contract insulates the tolling corporation from the day-to-day operations of the manufacturing process.[154] Furthermore, as the result of the Kepone criminal trial indicates, even in the comparatively rare instance where the tolling corporation becomes closely involved in the actual manufacturing and pollution control processes, it is difficult to prove actual knowledge on the part of officials of the tolling corporation, either of statutory violations or the placing of employees in imminent danger of death or serious bodily injury by the "tollee" company.[155]

Thus, the existence of the crime of knowing endangerment in the CWA may not, after all, be a deterrent to conduct such as that which occurred in the Kepone case.

VI. CONCLUSIONS AND RECOMMENDATIONS

Amendments to the Clean Water Act in 1977 and 1987, in addition to the enactment of other federal and state statutes since 1972, make it highly improbable that massive, long-term, but relatively localized, pollution of the ambient environment, such as occurred in the Kepone situation, could take place today in the United States. These CWA changes have related to (1) control of toxic pollutants, (2) industrial stormwater management, (3) industrial pretreatment, (4) sewage sludge disposal, (5) placed-based environmental protection (with an emphasis on Chesapeake Bay), and (6) expanding and strengthening the CWA's criminal enforcement mechanisms.

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153. *Id.* at 37, *reprinted in* 1980 U.S.C.C.A.N. at 5037.

154. *See supra* part I.

155. In the Kepone case, Life Science officials wrote letters to Allied Chemical stating that Life Science was in compliance with pretreatment standards. These communications were sufficient to raise a reasonable doubt in Judge Mehrige's mind whether Allied could be vicariously liable for Life Science's crimes, despite the fact that Allied officials regularly sampled Life Science's effluent, participated in negotiations between Life Science and regulatory agencies, and purchased pollution control equipment for Life Science. No evidence was introduced in the Kepone case that Allied officials knew about the illnesses of Life Science workers. *See supra* note 9.

The progressive tightening of the CWA's regulatory and enforcement provisions will be indirectly beneficial to workers in industries that use hazardous chemicals in their manufacturing processes and discharge wastes into waterbodies or POTWs. Adoption of best available technologies to decrease toxic discharges and best management practices to control stormwater runoff of hazardous materials will mean cleaner and safer workplaces as well as less polluted ambient environments. The trend toward pollution prevention[156] portends the substitution of less hazardous materials for more hazardous materials in manufacturing processes. But, as the *Kepone* and *Borowski* cases indicate, worker health and safety, especially in industries that are indirect dischargers, are still only an afterthought of water pollution control law, even though, ironically, acute effects on worker health often provide our initial warning of significant water pollution problems.[157]

The Clean Water Act should be amended to bring workers in discharging industries within "the environment" that the statute protects. Specifically, the following policy should be added to section 101 of the Act,[158] entitled "Declaration Of Goals And Policy":

> It is the national policy that the health and safety of workers in discharging facilities are within the scope of this Act, and should, wherever possible, consistent with other laws, be protected by the administration of this Act.

Section 309(c)(3)[159] should also be amended to overturn the *Borowski* decision and clarify that workers in discharging facilities are within the ambit of the crime of knowing endangerment.

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156. *See, e.g.*, NLS, *supra* note 2, at 1036-37.
157. In this sense, workers are indeed the "miner's canary" of pollution control.
158. 33 U.S.C. § 1251 (1988).
159. 33 U.S.C. § 1319(c)(3) (1988).